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RESILIENCE 360° PROGRAM
FINAL PROGRAMMATIC ENVIRONMENTAL ASSESSMENT
TVA Power Service Area

PEAX-455-00-000-1736528856

Prepared by:
TENNESSEE VALLEY AUTHORITY

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Symbols, Acronyms, and Abbreviations

°F	degree(s) Fahrenheit
µm	micrometer
ACHP	Advisory Council on Historic Preservation
ACS	American Community Survey
BESS	battery energy storage systems
BMP	best management practice
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
CWA	Clean Water Act
dB	decibels
dBA	A-weighted decibels
DER	distributed energy resources
EBCI	Eastern Band of Cherokee Indians
EIS	environmental impact statement
EO	Executive Order
ESA	Endangered Species Act
GHG	greenhouse gas
gpm	gallons per minute
HAP	hazardous air pollutant
HUD	Housing and Urban Development
Hz	hertz
IPaC	Information for Planning and Consultation
IRP	Integrated Resource Plan
kW	kilowatt(s)
Ldn	day-night sound level
Leq	Equivalent sound level
LPC	local power company(ies)
MBCI	Mississippi Band of Choctaw
MGD	million gallons per day
MSA	metropolitan statistical area
MW	megawatt(s)
NAAQS	National Ambient Air Quality Standard
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NOx	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
OSHA	Occupational Safety and Health Administration
PA	Programmatic Agreement
PEA	programmatic environmental assessment
PM	particulate matter
$PM_{2.5}$	PM less than 2.5 micrometers in diameter

PM_{10}	PM less than 10 micrometers in diameter
PPA	Power Purchase Agreement
PSA	Power Service Area
SHPO	State Historic Preservation Office
SMZ	Streamside Management Zone
SO_2	sulfur dioxide
SOx	sulfur oxides
SWPPP	Stormwater Pollution Prevention Plan
TVA	Tennessee Valley Authority
U.S.	United States
U.S.C.	United States Code
USACE	U.S. Army Corps of Engineers
USCB	U.S. Census Bureau
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound

CHAPTER 1 - PURPOSE OF AND NEED FOR THE PROPOSED ACTION

1.1 Introduction

The Tennessee Valley Authority (TVA) has prepared this Programmatic Environmental Assessment (PEA) to propose a “Commercial Resiliency” program, titled Resilience 360°, to partner with vendors and TVA customers to improve and enhance resiliency during events that challenge the transmission of power on the grid [e.g., extreme weather, and minor incidences of cyber-attack or domestic terrorism (vandalism of one or a few substations or switchyards)] and to periodically support demand on the TVA system. This PEA establishes general siting and environmental criteria to ensure that installations do not cause greater impacts than those addressed in this PEA.

Under the initial phases of the program, TVA would partner with multiple vendors through a qualified resiliency network to provide backup generation in the form of onsite modular natural gas units or battery energy storage systems (BESS) to improve commercial resiliency for qualified customers. Under the proposal, vendors of natural gas units or BESS would install the units at host locations and would own, operate, and maintain the units. The host would provide the location, contribute to the installation and maintenance costs of the units, and pay for power used during qualifying resiliency events at the host site. Additionally, TVA would enter into a single Power Purchase Agreement (PPA) with a vendor to purchase and have control or dispatch rights to the units. Under normal grid conditions, TVA would dispatch these units as deemed economical and reliable. During qualifying events, TVA would purchase the energy generated from these units and sell such energy to the host’s local power company (LPC) to sell to the host. During these qualifying events, the units would provide generation onsite to the host. While the backup generation would be important to the host, the generation provided by individual hosts to TVA would be aggregated by third-party developers and not solely impact TVA’s overall operation of the transmission grid. The unavailability of one or several Resilience 360° installations would not materially affect TVA’s ability to balance generation and load on the TVA transmission grid.

Each host site would contain natural gas units or BESS that would generate about 100 kilowatts (kW) up to 25 megawatts (MW) of power. TVA anticipates establishing a Qualified Resilience Network of vendors to participate in the program. While each vendor’s equipment may vary in configuration, the individual units would typically be smaller than a standard shipping container. While the number of units at each location would depend on the host’s needs, the installation and operation of the unit(s) would generally occupy a small footprint near the existing host facility on previously disturbed land. The natural gas units would run on distribution-level natural gas or onsite propane or liquified natural gas; pipeline-level natural gas supply would not be needed. BESS systems would utilize grid energy for storage. Both the gas and the BESS units are expected to have a relatively low generation demand. TVA anticipates the gas units would be used less than 400 hours annually for TVA demand and dispatch. Initial estimates from TVA are that the units would be dispatched infrequently, potentially only 150 to 200 hours annually. The generation from the units would be dispatched by TVA primarily during periods when the operating reserve is limited, such as during extraordinary weather events. In addition, the units could be used infrequently for qualifying resilience events as necessary.

Installations under the program could involve various potential transmission interconnection scenarios. Connections with an LPC distribution system would likely result in TVA screening each site as part of TVA's Affected System process, with deference given to the respective LPC's interconnection standards. Interconnections for TVA direct serve customers would more than likely fall within TVA's standard small generator or large generator interconnection protocol, which includes facilities studies and/or system impact studies. Such direct serve projects would require a separate environmental review and approval process and would not be part of the Resilience 360° program.

Eventually under future phases of the program, in addition to the natural gas and BESS generation resources, TVA's Resilience 360° options could be expanded to include other generation sources in the future (including but not limited to biofuels, solar, thermal storage, and advanced nuclear). TVA would not consider generation sources that are inconsistent with its Integrated Resource Plan (IRP; TVA 2019a). For instance, diesel generation would not be considered as a Resilience 360° source at this time. Diesel generation is currently the most common type of backup generation option for customers. By comparison, the installation and operation of natural gas units or BESS to address resiliency represents an environmentally beneficial, carbon reduction option for program participants. Locations wishing to convert end-of-life diesel generation to natural gas units or BESS could participate in the Resilience 360° program.

This PEA addresses the potential impacts associated with Resilience 360° natural gas units and BESS. Other generation sources may be addressed by TVA in other subsequent National Environmental Policy Act (NEPA) reviews.

1.2 Purpose and Need

Energy resiliency ensures that those reliant on the LPC distribution system have a reliable, regular supply of energy and contingency measures in place in the event of a small or isolated power failure. Like other power providers, TVA seeks ways in which to improve and enhance resiliency during events that challenge the transmission of power on the grid, such as extreme weather and minor incidences of cyber-attack or domestic terrorism (vandalism of one or a few substations or switchyards). Commercial and industrial facilities, critical county and city infrastructure, federal government, emergency response centers, communities, LPCs, and TVA all stand to benefit from enhanced reliability.

In addition, as identified in the 2019 IRP, TVA needs flexible, dispatchable power that can successfully integrate increasing amounts of renewable energy sources while ensuring it can meet required year-round generation and maximum capacity system demands and planning reserve margin targets in responding to grid emergencies. While ensuring the host's critical resiliency needs are met, the proposed Resilience 360° program would also deliver near-term generation capacity to TVA as power demand increases under normal grid conditions. The Resilience 360° program would leverage the host's need for backup generation and resiliency in a manner which benefits both the grid and the host.

1.3 Scope of the PEA

TVA has prepared this PEA to develop new guidance, including an Environmental Screening Checklist, and a bounding analysis that would facilitate implementation of the program. The PEA analyzes the expected impacts of deploying up to 25 MW of natural gas or BESS

generation from the proposed Resilience 360° units at various locations across the TVA Power Service Area (PSA; Figure 1-1). This programmatic approach allows TVA to adequately address most of the site-specific activities that would occur under the PPA with the respective vendors, thereby streamlining the implementation of the Resilience 360° program.

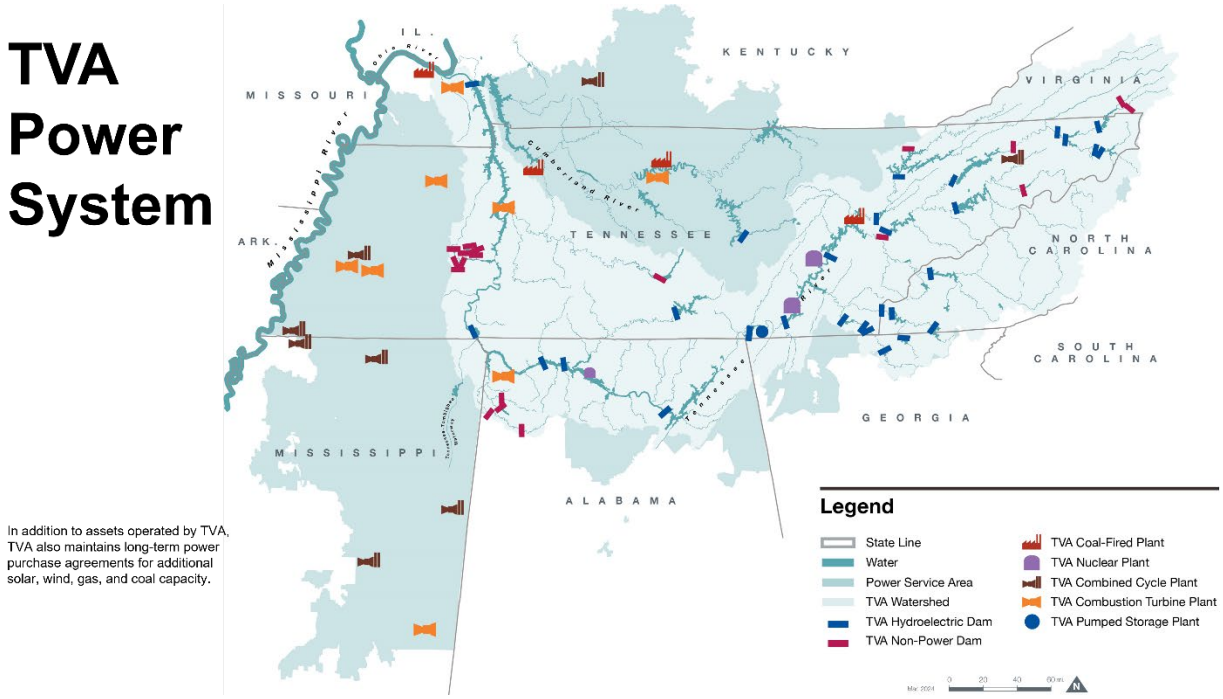


Figure 1-1. TVA Power Service Area

In this PEA, TVA establishes general siting and environmental criteria that would ensure that installations do not cause greater impacts than those addressed in the PEA. Among the criteria for siting these units are general requirements to ensure that impacts to archaeological and historic resources are mitigated. These criteria would likely be incorporated into a Programmatic Agreement (PA) with the State Historic Preservation Office (SHPO) of each of the seven TVA states and federally recognized Tribes with interest in the Valley, to ensure compliance with Section 106 of the National Historic Preservation Act (NHPA). TVA anticipates that the PA would allow site-specific actions to take place without additional Section 106 consultation for installations covered by the PA.

Should the siting of a natural gas unit or BESS not fully comply with the criteria established in the PEA, TVA may be required to complete additional environmental review on a case-by-case basis. In addition, if new gas pipelines or TVA transmission upgrades are required outside of the host's property to install generation at a site, in most cases TVA would be required to conduct a site-specific environmental review of those actions.

At this time, TVA does not believe an environmental impact statement (EIS) is necessary, given that the proposed installations of these units would occur primarily on previously disturbed lands already under use for commercial or industrial purposes, there would be a relatively low

capacity for these generation sources, and potential impacts to the environment would be non-significant.

TVA notes that it is not possible to complete the review of the program under one of TVA's categorical exclusions. TVA does not have a categorical exclusion that explicitly includes PPAs of this type, or which relate to actions involving installation and operation of new natural gas generation or BESS facilities. However, TVA intends to use Categorical Exclusion 14 for conducting or funding minor research, development, and demonstration projects and programs to conduct a pilot program for a few individual sites to help develop and test the Resilience 360° Program Environmental Screening Checklist. The results of the pilot program would inform the development of the Final PEA.

Based on initial information about the program, TVA has identified the following environmental resources that would require analysis in this review:

- Geology and Groundwater
- Land Use and Prime Farmland
- Soil Erosion and Surface Water
- Floodplains
- Wetlands
- Threatened and Endangered Species
- Terrestrial Zoology
- Botany
- Aquatic Ecology
- Cultural and Historic Resources
- Visual Resources
- Noise
- Air Quality
- Greenhouse Gas and Climate Change
- Transportation and Navigation
- Hazardous Materials and Solid Waste
- Public Health and Safety
- Socioeconomics

TVA's action would satisfy the requirements of Executive Order (EO) 11988 (Floodplain Management), EO 11990 (Protection of Wetlands), and EOs 13112 and 13751 (Invasive Species); and applicable laws including the NHPA, Endangered Species Act (ESA), Clean Water Act (CWA), and Clean Air Act (CAA).

1.4 Public and Agency Involvement

TVA's public and agency involvement includes publication of a notice of availability and a 30-day public review of the Draft PEA. The Draft PEA was posted to TVA's website, and a media advisory was issued on March 18, 2025. TVA also notified interested federal, state, and local agencies of the availability of the Draft during the 30-day public review period. Fourteen public comment submittals were received from individuals, businesses, non-profits (including the Center for Biological Diversity, the Southern Environmental Law Center, CleanUpTVA, Sierra Club, and Appalachian Voices), and governmental agencies (including the Virginia Department of Environmental Quality and Tennessee Department of Environment and Conservation).

Individual comments focused on alternatives, best management practices (BMPs), the Environmental Screening Checklist (Appendix A), resource areas, as well as implementation and support. Comments and responses are included in the Public Comments and Responses Appendix (Appendix E).

1.5 Related Environmental Reviews

The proposed Resilience 360° program would be consistent with TVA's 2019 IRP, for which TVA completed a Final EIS in June 2019. The promotion of resiliency and distributed energy resources (DER) were important issues studied by TVA during the development of its 2019 IRP. TVA considered the benefits of resiliency and DER in two of five strategies in the IRP process. Resiliency addresses operational flexibility and the ability to respond to short-term disruptions on the power system, while DER achieves higher, long-term penetration levels. The IRP also identified the need to "add up to 5,200 MW of combustion turbines by 2028 and up to 8,600 MW by 2038 if a high level of load growth materializes." The proposal would be consistent with TVA's objectives in promoting resiliency and DER while also helping meet TVA's need for new dispatchable generation.

1.6 Required Permits and Licenses

TVA does not anticipate the need for the natural gas units or BESS in this program to require issuance of an air permit under the CAA. However, if the installation and operation occur at a site that already has an air permit for other activities, the host would work with the permitting authority to determine if modifications to their permit are needed. Depending on the siting of these installations, however, some projects in this program may require other types of permitting, including but not limited to an individual or Nationwide Permit under Section 404 of the CWA, Section 401 Water Quality Certification, and local floodplain development permits.

Local building permits would be required for most projects. Likewise, a National Pollutant Discharge Elimination System (NPDES) construction stormwater permit would often be required. Because BESS and natural gas projects of the size considered in this PEA typically do not involve discharges to surface waters, are unlikely to be situated in wetlands or floodplains or involve work in streams, the remaining permits mentioned below are not likely to be required. Nevertheless, the following permits could apply to proposed resiliency projects, depending on site-specific circumstances.

Permit Type	Applicability
Local building or construction permit	As required by local governments.
Individual NPDES permit/permit modification	Required for new wastewater discharges or changes to existing discharges.
NPDES Construction Stormwater Permit and/or Non-coal Mining Permit	Required if 1 or more acres would be disturbed by construction activities such as clearing, grubbing, soil borrow or grading.
Clean Water Act Section 404 Permit	Required if work would be performed in streams, wetlands, reservoirs or other waters of the United States (U.S.) This also includes work below the normal high-water elevation even if the site is not inundated at the time the work is performed.
Clean Water Act Section 401 Water Quality Certification	Required for work under federal license or permit that would result in a discharge to waters of the U.S.

Permit Type	Applicability
Floodplain Development Permit	As required by local governments.
State Operating or “no discharge” permits	Required for activities that generate or manage wastewater where no discharge occurs (e.g., sewage and/or process wastewater holding tanks, equipment washing/cleaning).
Permit By Rule (Air Quality)	Required for stationary engines or generators allowing permitting under state-wide permits.
Local Air Permit	Required for facilities located in Davidson, Hamilton, Knox, or Shelby Counties, TN.

CHAPTER 2 - DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 Description of Alternatives

There are two reasonable alternatives available to TVA. These include the No Action Alternative and the Action Alternative. These alternatives are described below.

2.1.1 No Action Alternative – Alternative A

The No Action alternative provides a baseline for comparing against the Action Alternative. Under the No Action Alternative, TVA would not establish the proposed Resilience 360° program. TVA would continue to provide generation through alternative methods. Individual properties could independently provide their own backup generation.

2.1.2 Resilience 360° Program – Alternative B

TVA would partner with Qualified Resilience vendors to provide backup generation in the form of onsite modular natural gas units or BESS to improve resiliency for qualified customers (hosts). Under the proposal, a vendor would install these natural gas units or BESS at hosts' locations and own, operate, and maintain the units. The host would provide the location, contribute to the installation and maintenance costs of the units, and pay for power used during qualifying resiliency events. TVA would enter into a single PPA with each vendor, including a site-specific addendum for each host site, to purchase and have control or dispatch rights to the units, except during qualifying resiliency events when the units would provide generation onsite to the host. Under normal grid conditions, TVA would dispatch these units to support demand; however, during qualifying resiliency events, the units would provide generation onsite to the host.

Each unit would generate about 100 kW up to 25 MW of power and is smaller than a standard shipping container. Installations under the program could involve various potential transmission interconnection scenarios. Connections with an LPC distribution system would likely result in TVA taking a passive role, with deference given to the respective LPC's interconnection standards.

Typical host sites are up to 2 acres of previously disturbed land. Once materials arrive, construction would be completed in 4 to 12 weeks, typically finishing in 2 months. During construction, 3 trucks and 10 workers are anticipated daily. The most efficient route using existing infrastructure would be used for transport, maintenance, and waste disposal. All sites would comply with local regulations, including the use of a stormwater pollution prevention plan (SWPPP), as applicable. In addition, BMPs, as determined by local ordinances and state regulations, would be used to minimize disruption and to avoid contamination in the project area.

During construction and installation, preparation of the host site may include grubbing and grading, as well as excavation up to 5 feet deep for foundations. Trenching or directional boring up to 5 feet in depth could be used to connect the proposed project to existing natural gas and/or electrical lines. Alternatively, transmission connections may be above ground. Using BMPs and building on a previously disturbed site would minimize the disruption.

When developed, operations of the proposed project would be monitored remotely. The proposed project would have no water discharge but would have air and greenhouse gas (GHG) emissions associated with natural gas-powered units.

And, finally, end-of-life cycle decommissioning activities would generate a similar magnitude of impacts as construction activities. BMPs, as determined by local ordinances and state regulations, would be used to minimize disturbance. Units would be dismantled and materials disposed of or recycled in accordance with all applicable local, state, and federal regulations.

To ensure that each action falling under the PPA with the vendors would be adequately covered by the analysis in the PEA, TVA would establish an administrative approval process that considers the siting of each natural gas unit or BESS. TVA has prepared an Environmental Screening Checklist (Appendix A) to gather information about each proposed site during the approval process. TVA has successfully used such a checklist to streamline TVA's Fast Charge Network program for electric vehicle charging stations. By completing a similar checklist for each location/host, TVA specialists can verify whether the siting decision is adequately covered by the PEA or if an additional environmental review under NEPA is required.

2.2 Comparison of Alternatives

Impacts evaluated may be beneficial or adverse and may apply to the full range of natural, aesthetic, historic, cultural, and socioeconomic resources within the project areas of each alternative and within the surrounding areas. Impact severity is dependent upon their relative magnitude and intensity and resource sensitivity. In this document, four descriptors are used to characterize the level of impacts in a manner that is consistent with TVA's current practice. In order of degree of impact, the descriptors are as follows:

- No Impact (or "absent") – Resource not present or, if present, not affected by project alternatives under consideration.
- Minor – Environmental effects are not detectable or are so minor that they would not noticeably alter any important attribute of the resource.
- Moderate – Environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource.
- Significant – Environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.

A comparison of the environmental consequences associated with each alternative is presented in Table 2-1.

Table 2-1. Summary and Comparison of Alternatives by Resource Area

Resource Area	Impacts From No Action	Impacts From Proposed Action Alternative
Geology and Groundwater	No change from existing conditions	Construction – Temporary, Minor Operation – Minor Decommission – Temporary, Minor
Land Use and Prime Farmland	No change from existing conditions	Construction – Temporary, Minor Operation – Minor impact Decommission – Temporary, Minor

Resource Area	Impacts From No Action	Impacts From Proposed Action Alternative
Soil Erosion and Surface Water	No change from existing conditions	Construction – Temporary, Minor Operation – Minor Decommission – Temporary, Minor
Floodplains	No change from existing conditions	Construction – Temporary, Minor Operation – Minor impact Decommission – Temporary, Minor
Wetlands	No change from existing conditions	Construction – Temporary, Minor Operation – Minor Decommission – Temporary, Minor
Threatened and Endangered Species – Terrestrial Zoology	No change from existing conditions	Construction – Temporary, Minor Operation – Minor Decommission – Temporary, Minor
Threatened and Endangered Species – Botany	No change from existing conditions	Construction – Temporary, Minor Operation – Temporary, Minor Decommission – Temporary, Minor
Threatened and Endangered Species – Aquatic Ecology	No change from existing conditions	Construction – Temporary, Minor Operation – Temporary, Minor Decommission – Temporary, Minor
Cultural and Historic Resources	No change from existing conditions	Construction – No adverse effect with compliance with the Programmatic Agreement Operation – No adverse effect with compliance with the Programmatic Agreement Decommission – No adverse effect with compliance with the Programmatic Agreement
Visual Resources	No change from existing conditions	Construction – Temporary, Minor Operation – Minor Decommission – Temporary, Minor
Noise	No change from existing conditions	Construction – Temporary, Minor Operation – Minor Decommission – Temporary, Minor
Air Quality	No change from existing conditions	Construction – Temporary, Minor Operation – Minor Decommission – Temporary, Minor
Greenhouse Gas and Climate Change	No change from existing conditions	Construction – Temporary, Minor Operation – Minor Decommission – Temporary, Minor
Transportation and Navigation	No change from existing conditions	Construction – Temporary, Minor Operation – Minor Decommission – Temporary, Minor
Hazardous Materials and Solid Waste	No change from existing conditions	Construction – Minor Operation – Minor Decommission – Temporary, Minor
Public Health and Safety	No change from existing conditions	Construction – Temporary, Minor Operation – Minor Decommission – Temporary, Minor
Socioeconomics	No change from existing conditions	Construction – Temporary, Minor Operation – Minor Decommission – Temporary, Minor

2.3 Summary of Best Management Practices and Mitigation Measures

All individual projects would be subject to BMPs, as determined by local ordinances and state regulations. The vendor and/or host would be responsible for employing standard practices, routine measures, and other project-specific measures to avoid and minimize effects to resources from the implementation of the Proposed Action Alternative. TVA's analysis of potential impacts includes consideration of BMPs and mitigation measures implemented as required to reduce or avoid adverse effects. Standard measures that TVA expects would be required are summarized below and incorporated into the analysis in Chapter 3.

2.3.1 Standard and Routine Best Management Practices

Soil Erosion and Surface Water

- Low ground-pressure-type equipment would be used in specified locations (such as areas with soft ground) to reduce the potential for environmental impacts.
- Measures would be implemented to minimize erosion during site preparation.
- The vendor and/or host would develop a project specific SWPPP, if required, prior to the start of construction.
- Perennial, intermittent, and ephemeral streams that could be affected by the proposed construction would be protected by implementing standard BMPs as identified in the project SWPPP.
- Equipment washing and dust control discharges would be handled in accordance with BMPs described in the SWPPP for water-only cleaning and/or applicable state Stormwater Pollution Prevention Plan Guidance Manual for Industrial Activities to minimize construction impacts to surface waters.
- BMP procedures for controlling soil erosion and sediment control, such as the use of buffer zones, to the extent practicable, surrounding perennial and intermittent streams, would be implemented.

Wetlands

- Any wetland impacts would be mitigated under regulations implementing Sections 401 and 404 of the CWA, applicable state regulations and EO 11990.

Air Quality

- Fugitive dust produced from construction activities would be controlled by BMPs (e.g., wet suppression) as required by state and local agencies.
- Construction equipment with diesel emission controls and cleaner fuel (ultra-low sulfur diesel) would be utilized when possible.
- The operation of trucks with up-to-date emission control technologies and proper maintenance would help to minimize vehicle and equipment emissions during operation and idling. Idling would also be minimized to the extent practicable to decrease the impact of mobile source emissions on ambient air quality.

Botany

- Construction areas would be revegetated with native and/or non-invasive vegetation consistent with EO 13112 (Invasive Species).

2.3.2 Non-Routine Measures

Floodplain Management

- The vendor would contact the local floodplain administrator for an official floodplain determination, for all components of their development, including fill and access roads, and comply with the community's local floodplain ordinance, including receiving a local permit as appropriate.

- Natural gas units, BESS, temporary and/or permanent laydown areas, buildings, storage sheds, tanks, storage areas, as well as fill for any of these facilities would be located outside 100-year floodplains and at least one foot above the 100-year flood elevation at that location.

Pollution Prevention

- Where appropriate, the vendor would develop an effective Environmental Management System to ensure that the proposed facility is committed to complying with environmental regulations, reducing risk, minimizing environmental impacts, setting environmental goals, and achieving improvements in its environmental performance.

- To the extent practicable, the vendor would consider environmental attributes when choosing and purchasing materials and products, including energy efficiency, sustainability, and environmental commitment of contractors.

- To the extent practicable, pollution prevention techniques would be incorporated into the proposed facility maintenance and operation, with maintenance facilities having sufficient and suitable space to allow for effective inventory control and preventive maintenance.

- In general, when pesticides or herbicides must be used, their use would be strictly in accordance with manufacturers' recommendations. To the extent practicable, the vendor or maintenance contractor would use the least toxic pesticides or herbicides effective in controlling the target species, and selection of pesticides or herbicides will be evaluated on a site-specific or unit basis.

Threatened and Endangered Species

- In areas requiring tree removal, clearing activities would be limited to trees less than 3 inches in diameter at breast height or would be elevated for additional review. Tree removal resulting in impacts to potential suitable summer roosting habitat for the federally listed Indiana bat (*Myotis sodalis*) and northern long-eared bat (*Myotis septentrionalis*) and proposed endangered tricolored bat (*Perimyotis subflavus*) would be elevated to subject matter experts for additional review. Projects with the potential to adversely affect any federally listed species would be elevated for additional review. Relevant conservation measures required for categorical exclusion under this review would be identified in the Environmental Screening Checklist (Appendix A) and would be implemented as part of the proposed project.

Cultural and Historic Resources

- TVA has developed a PA with SHPOs, the Advisory Council on Historic Preservation (ACHP), and federally recognized Tribes with an interest in the PEA. The purpose of the PA is to establish an efficient program for compliance with Section 106 of the NHPA at a programmatic level. This PA stipulates roles and responsibilities and identifies undertakings exempt from further Section 106 review. TVA has received comments from the public, Advisory Council on Historic Preservation (ACHP), individual state SHPOs, and federally recognized Tribes with an interest in the PEA and is in the process of finalizing the document. For program activities not covered by this PA, or in the event that TVA does not have an executed PA with a particular SHPO, TVA would follow the Section 106 process for specific program related undertakings. The PA will be provided online at tva.com/nepa once it is executed.

2.4 Environmentally Preferred Alternative

The No Action Alternative would result in fewer impacts to the environment as no Resilience 360° units would be constructed. However, the No Action Alternative also means that these units would not be available to supply power for qualifying resiliency events or provide near-term generation capacity to TVA to meet power demand. Therefore, the No Action Alternative could potentially result in unanticipated environmental impacts if power is not available to certain facilities during qualifying resiliency events or at peak demand. Constraints to the bulk electric system during extreme weather or minor incidences of cyber-attack or domestic terrorism could lead to localized consequences including shutdown of essential services, with short-term health and safety or socioeconomic impacts. Therefore, the Preferred Alternative is the environmentally preferred alternative.

2.5 The Preferred Alternative

TVA has identified Alternative B as its preferred alternative. Under the preferred alternative, TVA would partner with Qualified Resilience vendors to provide backup generation in the form of onsite modular natural gas units or BESS to improve resiliency for qualified customers. TVA would also enter into a single PPA with the vendor to purchase and have control or dispatch rights to these units to support demand.

CHAPTER 3 - AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section describes the natural and human environment that exists within the TVA PSA and the potential impacts (environmental consequences) associated with implementing the Proposed Action in accordance with the Council on Environmental Quality (CEQ) guidelines set forth in 40 Code of Federal Regulation [CFR] Part 1508.8. The specific criteria for evaluating the potential reasonably foreseeable environmental impacts of the Proposed Action Alternative and No Action Alternative are described in the following sections. The significance of an action is also measured in terms of its context and intensity.

The context and intensity of potential environmental impacts are described in terms of their duration, magnitude, whether they are direct or indirect, and whether they are adverse or beneficial, as summarized in the following paragraphs:

- Short-term or long-term. Short-term impacts are those that would occur only for a limited, finite time with respect to the Proposed Action. Long-term impacts are those that would be persistent and chronic throughout the life of the Proposed Action or would last years after an impact producing activity occurred.

- Less-than-significant (negligible, minor, moderate) or significant, as defined in Section 2.2.

- Direct or indirect. Direct impacts are those that would occur as a result of and at the same time and place as the Proposed Action. Indirect impacts are those that would be caused by the Proposed Action but would occur at a different time or place.

- Adverse or beneficial. An adverse impact would cause unfavorable or undesirable outcomes on the human-made or natural environment. A beneficial impact would cause positive outcomes on the human-made or natural environment.

- The impact analysis also includes consideration of impacts associated with reasonably foreseeable future actions that have a close causal relationship to host locations. Potential effects could result from projects occurring at the same time and in close proximity to projects at respective host locations. Because specific host locations have not yet been identified, specific reasonably foreseeable future actions with a close causal relationship also cannot be identified; however, overall effects from such actions are addressed in the impact assessment.

3.1 Geology and Groundwater

3.1.1 Affected Environment

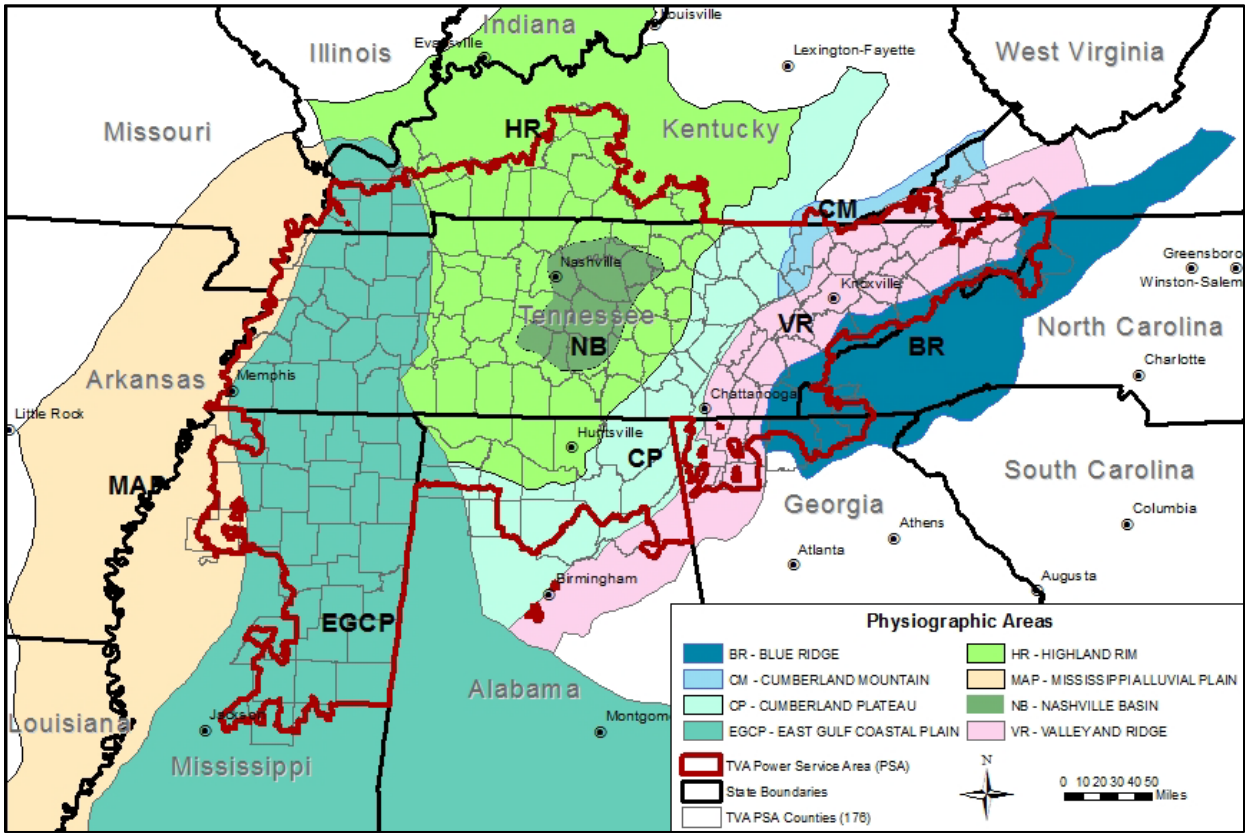
3.1.1.1 Geology

The TVA PSA encompasses portions of the following major physiographic provinces and physiographic sections (Figure 3-1; Fenneman 1938, Miller 1974):

1. Blue Ridge
2. Valley and Ridge

3. Interior Low Plateaus Province
4. Highland Rim
5. Nashville Basin
6. Appalachian Plateaus Province
7. Cumberland Plateau
8. Cumberland Mountains
9. Coastal Plain Province
10. East Gulf Coastal Plain

Physiographic provinces and sections are areas of characteristic geomorphology and geology resulting from similar geologic events.



Source: Adapted from Fenneman (1938).

Figure 3-1. Physiographic Areas of TVA PSA

The easternmost part of the TVA PSA is the Blue Ridge physiographic province, an area composed of the remnants of an ancient mountain chain. This province has the greatest variation in terrain within the TVA PSA. Terrain ranges from nearly level along floodplains at elevations of about 1,000 feet to rugged mountains that reach elevations greater than 6,000 feet above sea level. The rocks of the Blue Ridge have been subjected to significant folding and faulting and are primarily sedimentary (shales, sandstones, conglomerates, quartzite) and metamorphic (slate, phyllite, gneiss) rocks of Precambrian and Cambrian age.

Located west of the Blue Ridge and east of the Appalachian Plateau, the Valley and Ridge Province is characterized by alternating valleys and ridges that trend northeast to southwest.

Ridges have elevations up to 3,000 feet and are generally capped by dolomites and resistant sandstones, while valleys have been formed in less resistant dolomites and limestones. Dominant soils in this province are residual clays and silts derived from in-place weathering of rock. Karst features such as sinkholes and springs are common in the Valley and Ridge province.

The Appalachian Plateaus Province is an elevated area between the Valley and Ridge and Interior Low Plateaus provinces. It is comprised of two sections in the TVA PSA: the extensive Cumberland Plateau and the smaller Cumberland Mountains (Figure 3-1). The Cumberland Plateau rises about 1,000 to 1,500 feet above the adjacent provinces and is formed by layers of near horizontal Pennsylvanian sandstones, shales, conglomerates, and coals, and underlain by Mississippian and older shale and limestones. The sandstones are resistant to erosion and have produced a relatively flat landscape cut by deep stream valleys. Toward the northeast, the Cumberland Mountains section is more rugged due to extensive faulting and several peaks exceeding 3,000 feet elevation. This province has a long history of coal mining and encompasses the Appalachian coal field (USGS 1996). Coal mining has historically occurred in much of the province. The most recent Appalachian coal mining within the TVA PSA has been from the southern end of the province in Alabama, the northern portion of the Cumberland Plateau section in Tennessee and the Cumberland Mountains section.

Two sections of the Interior Low Plateaus Province occur in the TVA PSA. The Highland Rim section is a plateau that occupies much of central Tennessee and parts of Kentucky and northern Alabama. The bedrock of the Highland Rim is Mississippian limestones, chert, shale, and sandstone. The terrain varies from hilly to rolling to extensive relatively flat areas in the Northwest and Southeast. The southern end of the Illinois Basin coal region (USGS 1996) overlaps the Highland Rim in northwest Kentucky and includes part of the TVA PSA. The Nashville Basin (also known as the Central Basin) section is an oval area in middle Tennessee with an elevation about 200 feet below the surrounding Highland Rim. The bedrock is composed of generally flat-lying limestones. Soil cover is usually thin and streams cut into the limestone bedrock. Karst is well-developed in parts of both the Highland Rim and the Nashville Basin.

The Coastal Plain Province encompasses much of the western and southwestern TVA PSA (Figure 3-1). Most of the Coastal Plain portion of the TVA PSA is in the extensive East Gulf Coastal Plain section. The underlying geology is a mix of poorly consolidated gravels, sands, silts, and clays. Soils are primarily of windblown and alluvial (deposited by water) origin, low to moderate fertility and easily eroded. The terrain varies from hilly to flat in broad river bottoms.

The Mississippi Alluvial Plain section occupies the western edge of the TVA PSA and much of the historic floodplain of the Mississippi River. Soils are deep and often poorly drained. The New Madrid Seismic Zone, an area of large prehistoric and historic earthquakes, is in the northern portion of the section.

3.1.1.2 Groundwater

Three basic types of aquifers occur in the TVA PSA: alluvial, sand (composed primarily of sand with lesser amounts of gravel, clay, and silt), and fractured bedrock (primarily carbonate but non-carbonate also present). Groundwater movement in alluvial and sand aquifers occurs through the pore spaces between sediment particles. In some parts of the region, carbonate rocks, such as limestone and dolomite, readily transmit groundwater through enlarged fractures and cavities created by dissolution of carbonate minerals by acidic groundwater. Fractured non-carbonate rock aquifers include sedimentary and metamorphic rocks (e.g., sandstone,

conglomerate, and granite gneiss) which transmit groundwater through fractures, joints, and beddings planes.

Eight major aquifers occur in the TVA PSA (Table 3-1). These aquifers generally align with the major physiographic divisions of the PSA. The aquifers include (in order of increasing geologic age): Quaternary age alluvium occupying the floodplains of major rivers, notably the Mississippi River; Tertiary and Cretaceous age sand aquifers of the Coastal Plain Province; Pennsylvanian sandstone units found mainly in the Cumberland Plateau section; carbonate rocks of Mississippian, Silurian and Devonian age of the Highland Rim section; Ordovician age carbonate rocks of the Nashville Basin section; Cambrian-Ordovician age carbonate rocks within the Valley and Ridge Province; and Cambrian-Precambrian metamorphic and igneous crystalline rocks of the Blue Ridge Province.

Table 3-1. Aquifer, Well, and Water Quality Characteristics in the TVA PSA

Aquifer Description	Well Characteristics (common range, maximum)		Water Quality Characteristics
	Depth (feet)	Yield (gpm)	
Quaternary alluvium: Sand, gravel, and clay. Unconfined.	10–75, 100	20–50, 1,500	High iron concentrations in some areas.
Tertiary sand: Multi-aquifer unit of sand, clay, silt and some gravel and lignite. Confined; unconfined in the outcrop area.	100–1,300, 1,500	200–1,000, 2,000	Problems with high iron concentrations in some places.
Cretaceous sand: Multi-aquifer unit of interbedded sand, marl and gravel. Confined; unconfined in the outcrop area.	100–1,500, 2,500	50–500, 1,000	High iron concentrations in some areas.
Pennsylvanian sandstone: Multi-aquifer unit, primarily sandstone and conglomerate, interbedded shale and some coal. Unconfined near land surface; confined at depth.	100–200, 250	5–50, 200	High iron concentrations are a problem; high dissolved solids, sulfide or sulfate are problems in some areas.
Mississippian carbonate rock: Multi-aquifer unit of limestone, dolomite, and some shale. Water occurs in solution and bedding-plane openings. Unconfined or partly confined near land surface; may be confined at depth.	50–200, 250	5–50, 400	Generally hard; high iron, sulfide, or sulfate concentrations are a problem in some areas.
Ordovician carbonate rock: Multi-aquifer unit of limestone, dolomite, and shale. Partly confined to unconfined near land surface; confined at depth.	50–150, 200	5–20, 300	Generally hard; some high sulfide or sulfate concentrations in places.
Cambrian-Ordovician carbonate rock: Highly faulted multi-aquifer unit of limestone, dolomite, sandstone, and shale; structurally complex. Unconfined; confined at depth.	100–300, 400	5–200, 2,000	Generally hard, brine below 3,000 feet.
Cambrian-Precambrian crystalline rock: Multi-aquifer unit of dolomite, granite gneiss, phyllite, and metasedimentary rocks overlain by thick regolith. High yields occur in dolomite or deep colluvium and alluvium. Generally unconfined.	50–150, 200	5–50, 1,000	Low pH and high iron concentrations may be problems in some areas.

Note: gpm = gallons per minute
Source: Webbers 2003

The largest withdrawals of groundwater for public water supply are from the Tertiary and Cretaceous sand aquifers in the Mississippi Alluvial Plain and Coastal Plain physiographic areas. These withdrawals account for about two-thirds of all groundwater withdrawals for public water supply in the TVA PSA. The Pennsylvanian sandstone and Ordovician carbonate aquifers have the lowest groundwater use (less than 1 percent of withdrawals) and lowest potential for groundwater use.

The quality of groundwater in the TVA PSA largely depends on the chemical composition of the aquifer in which the water occurs (Table 3-1). Precipitation entering the aquifer is generally low in dissolved solids and slightly acidic. As it seeps through the aquifer it reacts with the aquifer matrix and the concentration of dissolved solids increases.

Groundwater quality may be degraded through spills, waste storage, and air pollutants:

- Spills – Electrical generating plants and other industrial facilities often utilize chemicals, including fuels, in their processes or to operate machinery. If accidental spills of these chemicals occur during usage, storage, or transport, vertical migration of the chemicals into the underlying groundwater aquifer may occur.

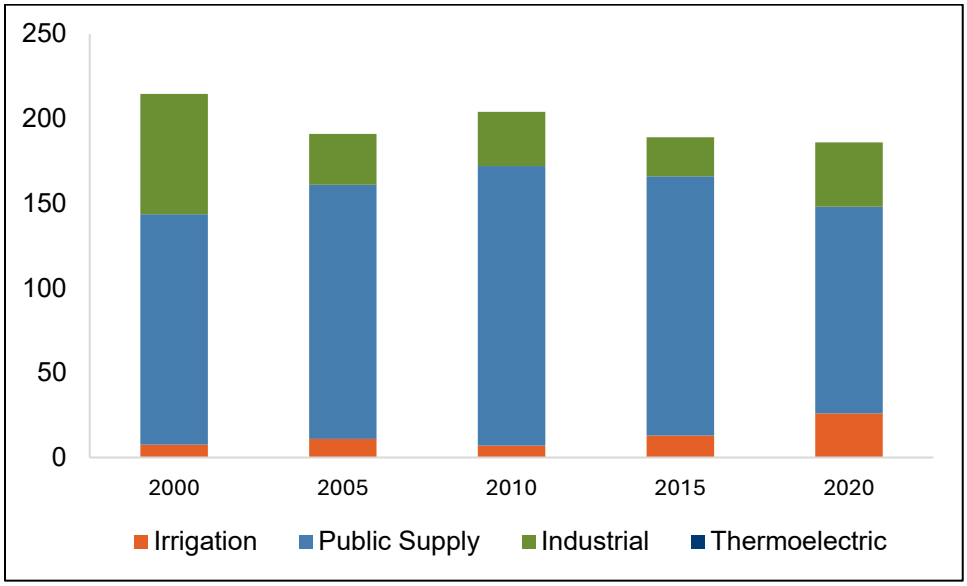
- Waste Storage – Over time, many electrical generating stations stored waste byproducts (e.g., coal combustion residuals) either in landfills or in surface impoundments. Rainfall infiltration into and through dry stacked waste can migrate vertically downward over time, carrying contaminants into groundwater, particularly in unlined landfills or surface impoundments. Capping and covering controls prevent rainfall infiltration. Depending on hydrogeologic and geologic conditions, storage of waste in unlined landfills and surface impoundments may result in direct contact between the waste material and groundwater, whereby contaminants can leach from the waste material into groundwater over time. Storage of waste in lined landfills could result in degraded groundwater quality if the liner fails and contaminants leach from the landfill into groundwater over time.

- Air pollution – Airborne pollutants (e.g., mercury, sulfates) can affect groundwater through rainfall and infiltration.

As discussed in Section 3.3.1, the majority of water use in the TVA PSA comes from surface water withdrawals, with the use of groundwater to meet public supply needs varying across the TVA PSA as the result of several factors, including water availability, quantity, and quality along with development of economic supply and public water demand. The use of groundwater to meet public water supply needs is greatest in West Tennessee and Northern Mississippi, where prolific aquifers and inadequate surface water resources have resulted in a predominance of groundwater use. In 2015, Shelby County, Tennessee (Memphis), accounted for about 38 percent of the annual total withdrawal. Approximately 60 percent of all groundwater withdrawals in the Tennessee River Basin were supplied by Tertiary sand aquifers in West Tennessee and North Mississippi. In addition, there are numerous sparsely populated, rural counties in the PSA that do not have public water systems but are self-served by individual wells or springs.

The largest use of groundwater is for public water supply, shown in Figure 3-2, which includes data for the Tennessee River Basin. Approximately 17.6 percent of the water used for domestic supply and 27.2 percent of water used for irrigation in the Tennessee River Basin is groundwater. Groundwater is also used for industrial, mining, livestock, and aquaculture purposes. Total groundwater use for public water supply in 2020 was 122 million gallons per day (MGD) in the Tennessee River Basin. Groundwater withdrawal for industrial use in the

Tennessee River Basin was 38 MGD, or 3.6 percent of total industrial withdrawal. Groundwater use for irrigation was 26 MGD, or 27.2 percent of total irrigation use. Wheeler-Wilson was the Water Use Tabulation Area with the highest groundwater withdrawal, at 43 MGD (Sharkey and Springston 2022). Except for 2010, groundwater use has shown a decreasing trend from 1995 to 2020. In 2020, groundwater withdrawals reached its lowest level since 1995.



Source: Sharkey and Springston 2022

Figure 3-2. Groundwater Use by Category in the Tennessee River Basin, 2000 to 2020

3.1.2 Environmental Consequences

The potential impacts to the geology and groundwater from a given action are assessed by evaluating the potential for an action to modify protected geologic resources, modify the availability of groundwater, or release contaminants to groundwater. Although the extent of geology and groundwater impacts would vary from site to site, general effects from the Proposed Action within the TVA PSA are discussed below.

3.1.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not establish the proposed Resilience 360° program. TVA would continue to provide generation through alternative methods. Therefore, there would be no impacts to geology or groundwater under the No Action Alternative.

3.1.2.2 Alternative B – Proposed Action

During construction and installation, preparation of the host site may include clearing, grubbing, and grading. Trenching or directional boring could be used to connect the proposed project to existing natural gas and/or electrical lines. Alternatively, transmission connections may be above ground. Compliance with all applicable regulations such as a SWPPP, use of BMPs, and building on a previously disturbed site would minimize the disruption. Additionally, excavation activities would not be expected to be more than 5 feet in depth. Therefore, construction impacts to geology and groundwater would be minor.

When developed, operations of the proposed project would be monitored remotely with periodic maintenance visits. Therefore, operational impacts to geology and groundwater would be minor.

Finally, end-of-life cycle decommissioning activities would generate a similar magnitude of impacts as construction activities. All applicable regulations would be followed and BMPs would be used to minimize disturbance. Therefore, decommissioning impacts to geology and groundwater would be minor.

Reasonably foreseeable future actions with a close causal relationship to the host locations could result in a wider spread of impacts to geology and groundwater depending on the nature of those actions. It is assumed that all projects would comply with all applicable local, state, and federal regulations and permit requirements including use of a SWPPP. Therefore, impacts to geology and groundwater associated with reasonably foreseeable future actions in the temporal and physical vicinity of host locations would be minor overall.

3.2 Land Use and Prime Farmland

This section describes the range of land uses in the TVA PSA. A majority of the Resilience 360° sites would likely occur on private property. However, some could also be placed on state or federal lands. Use of federal lands is generally regulated by the acts establishing the various agencies as well as other laws. For example, the TVA Act gives TVA the authority to regulate the use of lands it manages as well as development across, along, or in the Tennessee River or any of its tributaries. The Farmland Protection Policy Act of 1981 (7 United States Code [U.S.C.] §§ 4201 *et seq*.) recognizes the importance of prime farmland. Various state laws and local ordinances regulate land use, although a large portion of land in the TVA PSA is not subject to local zoning ordinances. The Environmental Screening Checklist would include data sources to identify and evaluate types of land uses that would or would not be compatible with each proposed host site.

3.2.1 Affected Environment

Major Land Uses in the TVA PSA

Major land uses in the TVA PSA include forestry, agriculture, and urban/suburban/industrial (USDA 2018). About 4.4 percent of the TVA PSA is water, primarily lakes and rivers (USDA 2020). This proportion has increased slightly since 1982 (when monitoring was started), primarily due to the construction of small lakes and ponds. About 5.7 percent of the land area is in federal ownership; this proportion has also increased slightly since 1982. The major components of federal land are national parks, national forests, national wildlife refuges, and TVA reservoir lands. Of the remaining non-federal land area, about 9 percent is classified as developed and 80 percent as rural (USDA 2020). Rural undeveloped lands include farmlands (19 percent of the rural area) and forestland (about 42 percent of the rural area). The greatest change since 1982 has been in developed land, which almost doubled in area due to high rates of urban and suburban growth in much of the TVA PSA. The rate of land development was high during the 1990s and early 2000s and slowed down in the late 2000s. More recent data for Tennessee shows that total developed land has grown almost 3 percent between 2012 and 2017 (USDA 2020).

Managed and Natural Areas

There are several managed and natural areas throughout the TVA PSA. Managed areas include lands held in public ownership that are managed by an entity (e.g., TVA, United States [U.S.]

Department of Agriculture [USDA], U.S. Forest Service, State of Tennessee) to protect and maintain certain ecological and/or recreational features. Natural areas include ecologically significant sites; federal, state, or local park lands; national or state forests; wilderness areas; scenic areas; wildlife management areas; recreational areas; greenways; trails; Nationwide Rivers Inventory streams; and state and national wild and scenic rivers. Ecologically significant sites are either tracts of privately owned land that are recognized by resource biologists as having significant environmental resources or identified tracts on TVA lands that are ecologically significant but not specifically managed by TVA's Natural Areas program.

Agriculture

Agriculture is a major land use and industry in the TVA PSA. In 2022, 40 percent of the land area in Tennessee, which makes up a majority of the TVA PSA, was farmland that comprised 63,105 individual farms (USDA 2024). The average farm size was 170 acres, smaller than the national average, though farm size in the TVA PSA varies considerably with numerous small farms and a smaller number of large farms.

Nationwide, farm average size has increased since 2007 by about 10 percent, though the total acreage and number of farms has decreased in that same period (USDA 2024). Statewide data for Tennessee follows the nationwide trends. For the state of Tennessee, cropland and pastureland comprise 17.8 and 15.2 percent, respectively, of rural, non-federal land in 2017 (USDA 2020). Both cropland and pastureland have decreased in area since 1982; however, the rate of cropland and pastureland loss in Tennessee has declined (USDA 2018).

Although the area of irrigated farmland is small (6.4 percent of farmland), it increased by 25 percent from 1987 to 2017 (USDA 2019). The area of irrigated farmland is likely to increase in the future as temperature and precipitation patterns become less predictable or if drought conditions become more prevalent (EPRI and TVA 2009). Between 2012 and 2017, statewide data from Kentucky, Tennessee, North Carolina, and Virginia show minor decreases in the percentage of farms using irrigation; however, in most cases, the acres of irrigated farmland have increased (USDA 2019).

Forest Management

Approximately 53 percent of the TVA PSA is forested (USGS 2021). Forestland increased in area through much of the 20th century; this rate of increase has slowed and/or reversed in parts of the TVA PSA in recent years (Conner and Hartsell 2002, USDA 2015). Forestland is predicted to decrease between 1997 and 2060 in most counties in the TVA PSA, with several counties in the vicinity of Memphis, Nashville, Huntsville, Chattanooga, Knoxville and the Tri-Cities area of Tennessee predicted to lose more than 25 percent of forest area (Wear and Greis 2013). Loss of forest area within the TVA PSA is primarily a result of increasing urbanization and development.

About 50 percent of the forestland in the TVA PSA is classified as timberland (USDA Forest Service 2024), forestland that is producing or capable of producing more than 20 cubic feet of merchantable wood per acre per year and is not withdrawn from timber harvesting by law. About 13.5 percent of timberland is in public ownership, which includes national forests, state and local lands, and other federal lands. About 87 percent is under private ownership, which includes both corporations and non-corporate owners. While the majority of corporate timberlands have historically been owned by forest industries, this proportion has decreased in recent years as many forest product companies have sold timberlands due to changing market conditions.

Prime Farmland

The federal Farmland Protection Policy Act was passed to minimize the amount of land irreversibly converted from prime farmland due to federal actions. It requires all federal agencies to evaluate impacts to prime and unique farmland prior to permanently converting to land use incompatible with agriculture. Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is available for these uses (USDA 2018). Prime farmland has the combination of soil properties, growing season, and moisture supply needed to produce sustained high yields of crops in an economic manner if it is treated and managed according to acceptable farming methods. Prime farmland is designated independently of current land use, but it cannot be areas of water, urban, or built-up land.

In general, prime farmlands have an adequate and dependable water supply, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content and few or no rocks. Prime farmland soils are permeable to water and air, not excessively erodible or saturated for extended period and are protected from frequent flooding.

Approximately 23 percent of the TVA PSA is classified as prime farmland (NRCS 2024). An additional roughly 4 percent of the TVA PSA would be classified as prime farmland if drained or protected from flooding.

Although the soils within a given project area may have the physical characteristics of prime farmland per the soil survey, lands at sites that have been converted to industrial uses are removed from the prime farmland category under the Farmland Protection Policy Act and its implementing regulations.

3.2.2 Environmental Consequences

The potential impacts to land use and prime farmland from a given action are assessed by evaluating the potential for an action to interfere with other land uses, including agriculture. Although the extent of land use and Prime Farmland impacts would vary from site to site, general effects from the Proposed Action within the TVA PSA are discussed below.

3.2.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not establish the proposed Resilience 360° program. TVA would continue to provide generation through alternative methods. Therefore, there would be no impacts to land use or prime farmland under the No Action Alternative.

3.2.2.2 Alternative B – Proposed Action

TVA anticipates that the majority of project sites, and therefore development, would be located on previously disturbed areas and occur on land zoned for light industrial or commercial development. Therefore, TVA does not anticipate an impact on land use in association with construction, operation, or decommissioning of the Resilience 360° units. Correspondingly the Resilience 360° project would not contribute to land use impacts in the area associated with reasonably foreseeable future actions.

TVA does not anticipate the program to result in new expansions or development within communities. However, if any area was to be newly affected, in compliance with the Farmland Protection Policy Act, TVA would determine on a case-by-case basis if prospective sites contain prime farmland. TVA would complete Form AD-1066 (Farmland Conversion Impact Rating), the

Natural Resources Conservation Service land evaluation and site assessment, using the established scoring system to evaluate potential adverse impacts on farmland. A score exceeding 160 indicates that the subject farmland needs further consideration for protection. For a site with a score exceeding 160, TVA would work with the vendor to consider alternative sites as appropriate. Therefore, impacts to prime farmland as a result of construction, operation, or decommissioning of the Resilience 360° units would be minor. Because TVA does not expect the program to result in new expansions or developments that affect prime farmland on most sites, the Resilience 360° project would not contribute to prime farmland impacts in the area associated with reasonably foreseeable future actions.

Thus, overall, potential effects to land use and prime farmlands for actions considered under this PEA are expected to be minor.

3.3 Soil Erosion and Surface Water

3.3.1 Affected Environment

The affected environment that would possibly be impacted by the Proposed Action would span several regions (including the Tennessee, Ohio, and lower Mississippi Rivers) and subregions (including the Cumberland, Mobile, Pearl, Tombigbee, Coosa, and Green Rivers). Fresh water abounds in much of this area and generally supports most beneficial uses, including fish and aquatic life, public and industrial water supply, waste assimilation, agriculture, and water-contact recreation (such as swimming, boating, and fishing). The quality of the TVA PSA's surface waters – its streams, rivers, lakes, and reservoirs – is critical to the protection of human health and aquatic life. Water resources provide habitat for aquatic life, recreation opportunities, domestic and industrial water supplies, and other benefits. Water quality in the TVA PSA is generally fair to good (TVA 2024a).

Surface water resources in the TVA PSA primarily consist of water bodies such as rivers, lakes or reservoirs, and tributary streams. These features collect and hold or convey precipitation from the surrounding landscape. Another source of surface water is groundwater that is hydraulically connected or discharges to surface waters through geologic features such as springs. Surface waters vary greatly in quality and size, based on land use (such as industrial activities, agriculture, urbanization, natural or managed wildlife habitat), soils, precipitation amounts, and influence from groundwater resources, which in turn influences soil erosion. These waters are regulated by the CWA and are managed by the individual states within the TVA PSA with oversight from the U.S. Environmental Protection Agency (USEPA).

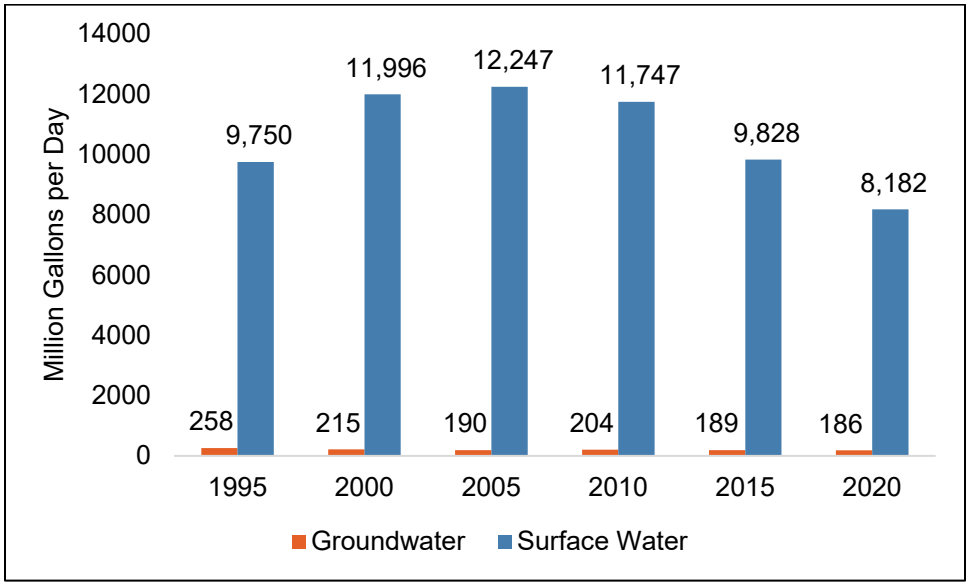
The seven states in the TVA PSA have enacted laws regulating water quality and implementing the Federal Water Pollution Control Act, commonly known as the CWA. As part of this implementation, the states classify water bodies according to their uses and establish water quality criteria specific to these uses. Each state has also issued an antidegradation statement containing specific conditions for regulated actions and designed to maintain and protect current uses and water quality conditions.

Major water quality concerns within the TVA PSA include point and non-point sources of pollution that degrade water quality at several locations on mainstream reservoirs and tributary rivers and reservoirs. Toxic substances have also been found in sediment and fish in reservoirs that otherwise have good water quality. Several of the water bodies discussed above are listed as impaired in 303(d) lists published by their respective state's environmental agencies. However, those 303(d) listings are primarily for pollutants such as mercury from atmospheric

deposition or toxic organics in contaminated sediments. Other water quality concerns include occurrences of low dissolved oxygen levels downstream of dams, which stress aquatic life and limit the ability of the water to assimilate waste. The river systems have seen extensive human alteration, including construction of reservoirs, navigation channels and locks. Despite these changes, diverse aquatic communities are present in each of these river systems.

The TVA PSA contains most of the Tennessee River Basin, which is one of the most water rich basins in the U.S. The Tennessee River Basin, which is about half of the TVA PSA, is one of the most intensively used basins in the contiguous U.S. as measured by intensity of freshwater withdrawals in gallons per day per square mile. While the withdrawal rate is high, the basin has a low consumptive use by returning over 95 percent of the withdrawals back for downstream use (Sharkey and Springston 2022).

Combined surface water and groundwater withdrawals in 2020 were estimated to average 8,368 MGD and the 2020 total withdrawal rate was 16.5 percent lower than it was in 2015. This was largely due to a reduction in thermoelectric withdrawal of 20.5 percent (Sharkey and Springston 2022). Of the total withdrawal, 97.8 percent, or 8,182 MGD came from surface water. Groundwater supplied the remaining 2.2 percent, or 186 MGD. Return flow totaled 7,965 MGD, or 95.2 percent of total withdrawal. Total net water demand was 403 MGD, or 4.8 percent of total withdrawal. Groundwater and surface water withdrawals in the Tennessee River Basin from 1995 to 2020 are shown in Figure 3-3.



Source: Sharkey and Springston 2022

Figure 3-3. Groundwater and Surface Water Withdrawals in the Tennessee River Basin, 1995 to 2020

Since 1995, the Tennessee River Basin's public water supply has been sourced primarily from surface water. In 2020, public supply water was comprised of 82.4 percent surface water and 17.6 percent groundwater. Total surface water withdrawals in the Tennessee River Basin have been decreasing since 2005.

While water resources are relatively abundant in the TVA PSA, future climate stressors could change that abundance, locally or regionally, leading to impacts and the need for adaptive measures by sectors of the economy, including aspects of the energy system (EPRI and TVA 2009). Increased precipitation during storms would increase flood risk, expand flood hazard areas, increase the variability of stream flows (i.e., higher high flows and lower low flows) and increase the velocity of water during high flow periods, thereby increasing erosion. On the other hand, intra-annual droughts, which are predicted to become more frequent and long-lasting in the Southeast, could reduce water availability. These changes would have adverse effects on water quality. Major watersheds in the region are shown in Figure 3-4.

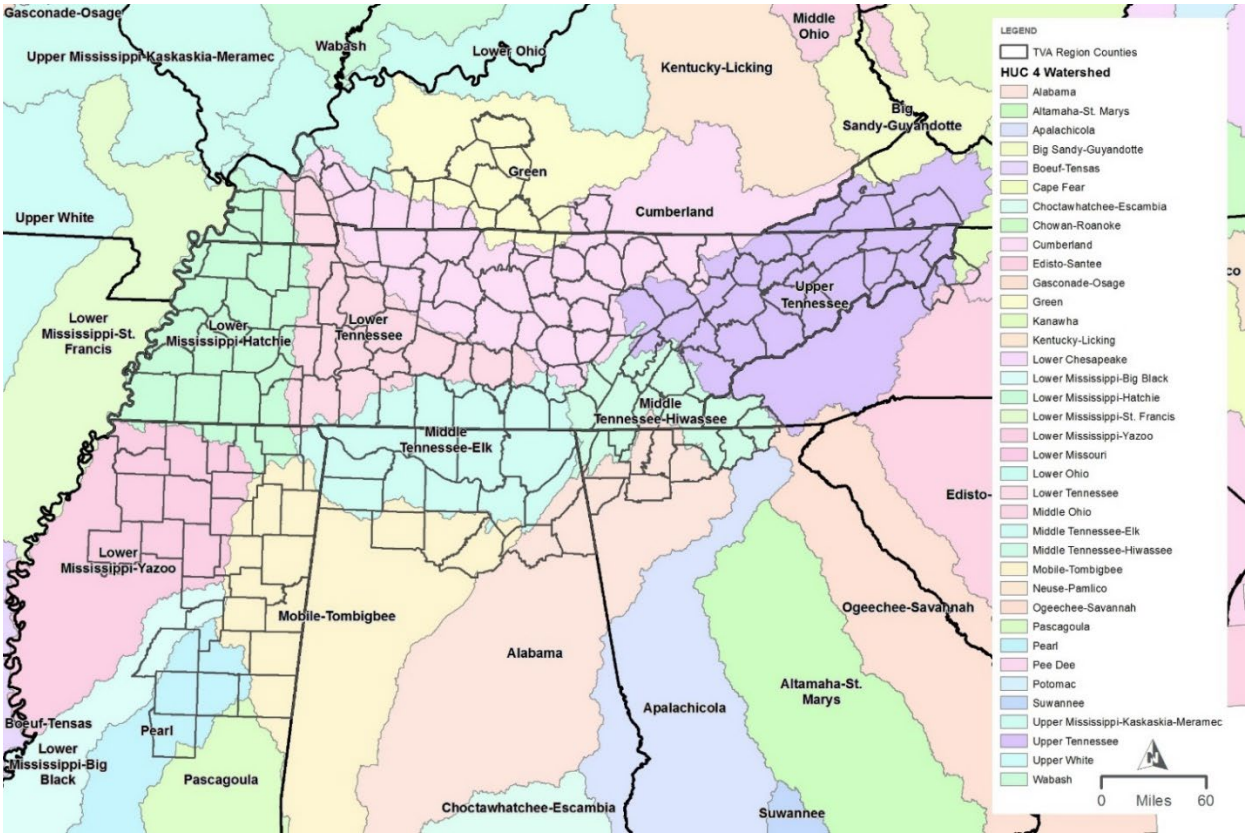


Figure 3-4. Major Watersheds Within TVA PSA

3.3.2 Environmental Consequences

Surface water quality can be affected by the construction of projects due to increased silt load resulting from runoff during and following soil-disturbing activities. Soil disturbances associated with installation or construction activities can potentially result in adverse water quality impacts. Soil erosion and sedimentation can clog streams and ground water features and can threaten aquatic life. Removal of onsite vegetation and the installation of impervious surfaces (e.g., paved areas and buildings) can alter site runoff patterns, though can be mitigated. During operations, the proposed project would have no cooling water needs and no water discharge and therefore would not cause a change in runoff volume or temperature from preconstruction conditions. Therefore, operational impacts to soil erosion and surface water would be minor for any proposed projects. Although the extent of soil and surface water impacts would vary from site to site, general effects from the Proposed Action within the TVA PSA are discussed below.

3.3.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not establish the proposed Resilience 360° program. TVA would continue to provide generation through existing methods, which could expand or be modified to ensure grid stability and meet power demand. TVA's mission to provide affordable, reliable power would be maintained and associated water quality impacts would be insignificant as all generation alternatives would continue to meet water regulatory compliance in alignment with antidegradation mandates. Therefore, there would be no impacts to soil or surface water under the No Action Alternative.

3.3.2.2 Alternative B – Proposed Action

Under this alternative, and with the application of appropriate BMPs, no significant impacts to surface water are anticipated. Rivers, streams, wetlands, and floodplains would be avoided to the extent practicable under the Proposed Action. Direct impacts to regulated water resources would be avoided by project design. Indirect impacts could result from stormwater runoff during construction, which would be adequately managed with adherence to BMPs to capture sediment prior to leaving the site. Potential impacts could occur directly or indirectly due to modification of the riparian zone and stormwater runoff resulting from construction or decommissioning activities. Potential impacts due to removal of streamside vegetation within the riparian zone include increased erosion and siltation (see Section 3.3), loss of instream habitat, and increased stream temperatures, though this is not anticipated. A potential indirect effect of routine maintenance includes potential herbicide runoff into streams. As necessary, appropriate BMPs determined by local ordinances and state regulations would be implemented to avoid potential adverse effects to water quality and aquatic life. Specifically, BMPs are expected to provide guidance for activities occurring in or around Streamside Management Zones (SMZs) to minimize the amount and length of disturbance to water bodies and maintain natural stream buffers. An NPDES stormwater construction permit would likely apply to most prospective projects. This permit requires the preparation of a SWPPP that outlines measures that would be implemented to avoid or reduce adverse effects to local waters.

All ground disturbance would be stabilized upon completion of construction or after decommissioning to prevent potential for long term erosion. Most project sites are not anticipated to require more than 1-2 acres of impervious surfaces, decreasing the possibility of erosion or damage to an area. The short duration (1-2 months) for construction and limited level of activity helps minimize potential for erosion. Other wastewaters generated during the proposed project may include domestic sewage, non-detergent equipment washings, dust control and hydrostatic test discharges. Overall, impacts to soil erosion and surface waters during construction (and later decommissioning) would be temporary and minor.

During operations, the proposed project would have no water discharge and would not cause a change in runoff volume or temperature from preconstruction conditions. Operational impacts to soil erosion and surface water would be minor.

BMPs would be determined by local ordinances and state regulations. Permits would be obtained and/or modified as necessary. Therefore, the Proposed Action would have temporary, minimal impact to erosion and surface waters.

It is assumed that all reasonably foreseeable future actions in the vicinity of the host locations would comply with all applicable local, state, and federal regulations and permit requirements including use of BMPs and implementation of a SWPPP. Therefore, impacts to soil erosion and

surface water associated with reasonably foreseeable future actions in the temporal and physical vicinity of host locations would be minor overall.

3.4 Floodplains

3.4.1 Affected Environment

A floodplain is the relatively level land area along a stream or river that is subject to periodic flooding. The area subject to a 1 percent chance of flooding in any given year is normally called the 100-year floodplain. The area subject to a 0.2 percent chance of flooding in any given year is normally called the 500-year floodplain. It is necessary to evaluate development in the floodplain to ensure that the project is consistent with the requirements of EO 11988 (Floodplain Management).

Natural gas units, BESS, transmission line interconnections, access roads, temporary and/or permanent laydown areas, gas pipelines, buildings, enclosed sheds, tanks, storage, and parking areas could be located anywhere on a host's property within the TVA PSA. Although likely placed on disturbed and/or developed areas, the potential exists for proposed facilities to be located within 100-year floodplains, the 500-year floodplain of the Tennessee River or a TVA reservoir, or on TVA property or where TVA owns property rights. Locations would vary based on the project site.

3.4.2 Environmental Consequences

As a federal agency, TVA adheres to the requirements of EO 11988 (Floodplain Management). The objective of EO 11988 is "…to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative" (EO 11988, Floodplain Management). The EO is not intended to prohibit floodplain development in all cases, but rather to create a consistent government policy against such development under most circumstances (U.S. Water Resources Council 1978). The EO requires that agencies avoid the 100-year floodplain unless there is no practicable alternative.

Although the extent of impacts to floodplains would vary from site to site, general effects from the Proposed Action within the TVA PSA are discussed below.

3.4.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not establish the proposed Resilience 360° program. TVA would continue to provide generation through alternative methods. No floodplains would be altered or built upon, so there would be no impacts to floodplains under the No Action Alternative.

3.4.2.2 Alternative B – Proposed Action

Project components such as transmission line interconnections, access roads, and gas pipelines associated with the Proposed Action could be located within 100-year floodplains. Consistent with EO 11988, these facilities are considered repetitive actions in the 100-year floodplain that should result in only minor impacts (TVA 1981). To minimize adverse impacts, the vendor would contact the local floodplain administrator for an official floodplain determination for all components of their development, including fill and access roads, and comply with the community's local floodplain ordinance, including receiving a local permit as appropriate.

Natural gas units, BESS, temporary and/or permanent laydown areas, buildings, storage sheds, tanks, storage areas, as well as fill for any of these facilities would be located outside 100-year floodplains and at least one foot above the 100-year flood elevation at that location; otherwise, additional analysis would be needed, because these facilities are not considered repetitive actions in the 100-year floodplain.

Under the Proposed Action, floodplain development permit requirements and BMPs determined by local ordinances and state regulations would be implemented to minimize adverse impacts to floodplains. Except where further review is needed, by implementing the measures associated with each floodplain question in the Environmental Screening Checklist, the proposed Resilience 360° program would have no significant impact on floodplains and their natural and beneficial values, only minor direct or indirect impacts are likely to occur.

It is assumed that all reasonably foreseeable future actions in the vicinity of the host locations would comply with all applicable local, state, and federal regulations and permit requirements pertaining to development within floodplains. Therefore, impacts to floodplains associated with reasonably foreseeable future actions in the temporal and physical vicinity of host locations would be minor overall.

3.5 Wetlands

3.5.1 Affected Environment

Wetlands are areas that are inundated or saturated by water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (40 CFR Part 230.3(t)). Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands are highly productive and biologically diverse ecosystems that provide multiple public benefits such as flood control, reservoir shoreline stabilization, improved water quality, and habitat for fish and wildlife resources. EO 11990 (Protection of Wetlands) directs federal agencies to minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. Wetlands are also protected by federal and state laws and regulations (e.g. Tennessee’s Aquatic Resources Alteration Permit program; CWA Sections 401 and 404).

Wetlands are ecologically important because of their beneficial effect on water quality, their moderation of flow regimes by retaining and gradually releasing water, their value as wildlife habitat, and as areas of botanical diversity. Wetlands are typically transitional ecosystems between terrestrial and aquatic communities.

Wetlands occur across the TVA PSA and are most extensive in the South and West, where they comprise 5 percent or more of the landscape (USGS 2016). Wetlands in the TVA PSA consist of two main systems: palustrine wetlands such as marshes, swamps, and bottomland forests dominated by trees, shrubs, and persistent emergent vegetation, and lacustrine wetlands associated with lakes such as aquatic bed wetlands (Cowardin et al. 1979). Riverine wetlands associated with moving water within a stream channel are also present but relatively uncommon.

3.5.2 Environmental Consequences

The potential impacts to wetlands from a given action are assessed by evaluating the potential for an action to result in dredging, clearing, or filling wetlands through site grading or other activities. Although the extent of wetland impacts would vary from site to site, general effects from the Proposed Action within the TVA PSA are discussed below.

3.5.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not establish the proposed Resilience 360° program. TVA would continue to provide generation through alternative methods. Therefore, there would be no impacts to wetlands under the No Action Alternative.

3.5.2.2 Alternative B – Proposed Action

As part of its site-specific screening process, TVA would determine if a proposed installation of natural gas or BESS units on the host site would have adverse effects to wetlands. Impacts to wetlands would be identified in the Environmental Screening Checklist. This includes jurisdictional (i.e., those wetlands that are subject to federal regulation) and non-jurisdictional wetlands. Generally, sites within or containing wetland areas tend to be unsuitable for the installation of gas or BESS units due to the presence of water. Any wetland impacts would be mitigated under regulations implementing Sections 401 and 404 of the CWA, applicable state regulations and EO 11990.

Based on the limited size of the natural gas or BESS units, impacts to wetlands would be expected to be unlikely or minor for most projects. Those that would affect wetlands would be subject to mitigation in accordance with regulations.

It is assumed that all reasonably foreseeable future actions in the vicinity of the host locations would comply with all applicable local, state, and federal regulations and permit requirements. Additionally, it is assumed rivers, streams, wetlands, and floodplains would typically be avoided for these reasonably foreseeable future actions. Therefore, impacts to wetlands associated with reasonably foreseeable future actions in the temporal and physical vicinity of host locations would be minor overall.

3.6 Threatened and Endangered Species

3.6.1 Affected Environment

Special status species are those species for which state or federal agencies provide an additional level of protection by law, regulation, or policy. The ESA (16 U.S.C. §§ 1531-1543) was passed to conserve the ecosystems upon which endangered and threatened species depend and to conserve and recover those species. An endangered species is defined by the ESA as any species in danger of extinction throughout all or a significant portion of its range. A threatened species is likely to become endangered within the foreseeable future throughout all or a significant part of its range. Areas known as critical habitats, essential to the conservation of listed species, also can be designated under the ESA. The ESA establishes programs to conserve and recover endangered and threatened species and makes their conservation a priority for federal agencies. Under Section 7 of the ESA, federal agencies are required to consider the potential effects of their proposed action on endangered and threatened species and critical habitats. If the proposed action has the potential to affect these resources, the

federal agency is required to consult with the U.S. Fish and Wildlife Service (USFWS) and take measures to avoid or mitigate adverse effects.

In addition to the federal classifications, all seven states in the TVA PSA have enacted their own laws protecting special status species under a variety of their own, state-specific classification systems. In some states, only species listed under the federal ESA receive legal protection under these laws. In other states, the legal protections also apply to the additional species designated by the state. TVA considers impacts to state-listed species in its environmental reviews as appropriate.

3.6.1.1 Terrestrial Zoology

The TVA PSA spans across nine ecoregions (USEPA 2017). These nine regions include the Blue Ridge, Interior Plateau, Interior River Valley and Hills, Ridge and Valley, Mississippi Alluvial Plain, Mississippi Valley Loess Plains, Southeast Plains, and Southwestern Appalachians. A wide range of habitats are present within these eco-regions consisting of forested mountains, wetlands, floodplains, and river systems, each supporting a wide array of terrestrial animal species. The diversity of these eco-regions contributes to the PSA's high ecological value. Terrestrial animals addressed in this section include amphibians, reptiles, birds, mammals, and terrestrial invertebrates with federal status, either under the ESA or other regulatory protection.

Federally Listed Species

Table 3-2 lists federally endangered, threatened, and protected or other special status terrestrial wildlife species reported in the TVA PSA based on TVA's Natural Heritage Database and the USFWS Information for Planning and Consultation (IPaC) online system (https://ecos.fws.gov/ipac/). Species considered to be extinct or locally extirpated are not included in the table. State-listed species not concurrently listed with federally listed species, are included in Appendix B.

Table 3-2. Special Status and Federally Protected Terrestrial Wildlife Species in the TVA PSA

Scientific Name	Common Name	Federal Status*
Vertebrates		
Birds		
Calidris canutus rufa	Rufa Red Knot	T
Charadrius melodus	Piping Plover	T
Dryobates borealis	Red-cockaded Woodpecker	T
Grus americana	Whooping Crane	EXPN
Haliaeetus leucocephalus	Bald Eagle	DL
Laterallus jamaicensis jamaicensis	Eastern Black Rail	T
Sterna antillarum athalassos	Interior Least Tern	DL
Amphibians		
Cryptobranchus alleganiensis alleganiensis	Eastern Hellbender	PE
Necturus alabamensis	Black Warrior Waterdog	E
Mammals		
Corynorhinus townsendii virginianus	Virginia Big-eared Bat	E

Scientific Name	Common Name	Federal Status*
Glaucomys sabrinus coloratus	Carolina Northern Flying Squirrel	E
Myotis grisescens	Gray Bat	E
Myotis septentrionalis	Northern Long-eared Bat	E
Myotis sodalis	Indiana Bat	E
Perimyotis subflavus	Tricolored Bat	PE
Reptiles		
Glyptemys muhlenbergii	Bog Turtle	SAT
Gopherus polyphemus	Gopher Tortoise	T
Graptemys pearlensis	Pearl River Map Turtle	T
Graptemys oculifera	Ringed Map Turtle	T
Graptemys pulchra	Alabama Map Turtle	SAT
Macrochelys temminckii	Alligator Snapping Turtle	PT
Sternotherus depressus	Flattened Musk Turtle	T
Invertebrates		
Mollusks		
Anguispira picta	Painted Snake Coiled Forest Snail	T
Patera clarkii	Noonday snail	T
Arachnids		
Microhexura montivaga	Spruce-fir Moss Spider	E
Insects		
Neonympha mitchellii	Mitchell's Satyr Butterfly	E
Danaus plexippus	Monarch Butterfly	PT
Crustacenas		
Lirceus usdagalun	Lee County Cave Isopod	E

*DL=Delisted. E=Endangered. PE=Proposed Endangered. SAT=Similarity of Appearance, Threatened. PT=Proposed Threatened. T=Threatened. EXPN = Experimental Population Non-Essential.
Source: TVA Regional Natural Heritage Database 2024 and USFWS IPaC 2025 online system (https://ecos.fws.gov/ipac/) (Appendix B).

For the purpose of discussing affected environment, the TVA PSA has been grouped into the following six categories, primarily based on habitat use:

1. Aquatic Habitat
2. Early Successional Habitat
3. Forested Habitat
4. Karst Habitat
5. Montane Habitat
6. Mature pine-savannah woodlands

Aquatic Habitat

Aquatic habitats within the TVA PSA, including wetlands, rivers, streams, and floodplains, are vital ecosystems that support a diverse array of terrestrial species. The construction of reservoir systems by TVA and the U.S. Army Corps of Engineers (USACE) created large areas of habitat for waterfowl, herons and egrets, ospreys, gulls, and shorebirds, especially in the central and

eastern portions of the TVA PSA where this habitat was limited. The Tennessee River and Mississippi River systems serve as critical breeding and foraging grounds for many species. Presently, many resident and migratory populations of birds can be found in the TVA PSA. Wetlands generally include swamps, marshes, and bogs. The abundance of wetlands varies across the nine ecoregions encompassing the TVA region. In eastern portions of the TVA region, wetlands occupy a relatively small percent of the landscape relative to uplands within the Blue Ridge, Ridge and Valley, and Central Appalachians ecoregions. These ecoregions are typically marked by relatively steep topography and deeply incised stream channels. Farther west, the topography levels out and wetlands become more common. Broad, flat floodplain areas are common features, and various types of wetland habitats, especially bottomland hardwood forested wetlands, are widespread. Federally listed terrestrial animal species known from the TVA PSA primarily associated with these aquatic habitats include Alabama map turtle, alligator snapping turtle, bald eagle, black warrior waterdog, eastern black rail, eastern hellbender, flattened musk turtle, interior least tern, Mitchell's satyr butterfly, Pearl River map turtle, piping plover, ringed map turtle, rufa red knot, and whooping crane.

Early Successional Habitat

Early successional habitats are dynamic ecosystems characterized by open, grassy, or shrubby areas that emerge after disturbances such as fire, logging, and industrial or agricultural abandonment. These habitats are critical for a variety of species that rely on the dense vegetation, abundant sunlight, and diverse plant communities found in these transitional landscapes. Common features include grasslands, old fields, and shrublands, which provide food, cover, and breeding grounds for many wildlife species. A wide range of species including many grassland breeding and/or overwintering birds, amphibians, mammals, reptiles, and a variety of invertebrates (e.g., butterflies, dragonflies, and crickets) depend on this habitat. Monarch butterfly relies on early successional habitat for feeding and reproduction.

Forested Habitat

Forested habitats encompass a diverse range of ecosystems, including deciduous hardwood forests and mixed pine-hardwood forests. These forests are vital for maintaining biodiversity, providing critical habitat for numerous species, and supporting ecological processes such as carbon sequestration and water regulation. The region's forests are particularly prominent in the Appalachian Mountains and Cumberland Plateau, where they host a variety of tree species like oak, hickory, maple, and pine. Federal status species found in these forested habitats include Indiana bat, northern long-eared bat, and tricolored bat. During the spring and summer, Indiana bats and northern long-eared bats roost under exfoliating bark, cavities, cracks, and crevices of snags and live trees. Tricolored bats primarily roost among live and dead leaf clusters of live or recently dead deciduous hardwood trees. These bat species rely on forest edges, tree lines, and forest openings for foraging.

Karst Habitat

Karst habitats are unique landscapes formed by the dissolution of soluble bedrock, such as limestone, creating features like caves, sinkholes, and underground streams. Caves are abundant features throughout much of the TVA region, especially in north Alabama, northwest Georgia, and the eastern half of Tennessee. These sites provide a unique mixture of microhabitats used by a diverse array of cave-dependent species, some endemic to single cave systems. There are more than 14,000 known caves in these areas – 9,200 in Tennessee, 4,800 in Alabama, and 600 in Georgia (Jenkins 2009). Where conditions within a cave are suitable (e.g., humidity, air flow, temperature) there is potential for cave-dwelling bats to occur. Federally

listed species found in these habitats include gray bat and Virginia big-eared bat, which roost in caves and rely on karst systems for survival. The Indiana bat, northern long-eared bat, and tricolored bat also use caves for hibernation. Additionally, the Lee County cave isopod is only known from four subterranean basins and associated caves in Lee County, Virginia.

Montane Habitat

The montane habitats within the TVA PSA, particularly in the southern Appalachian Mountains, are characterized by high elevation forests, rugged terrain, and cool, moist climates. These areas are often dominated by mixed hardwood and coniferous forests. Montane habitats in this region are ecologically significant, providing critical refuge for numerous species and supporting unique biodiversity. Federally listed species found in these habitats include the bog turtle, which inhabits wetland areas often associated with montane regions, and the Carolina northern flying squirrel, which relies on high-elevation spruce-fir forests. Additionally, the painted snake coiled forest snail inhabits forested areas with mesic cliffs, exposed rock, and a thick humus layer. The spruce-fir moss spider is found in the moss-covered rocks and forests of these high-elevation ecosystems.

Mature Pine-Savannah Woodlands

Mature pine-savanna woodlands are unique and characterized by an open canopy of mature pine trees, a diverse understory of grasses, herbs, and shrubs, and a lack of dense mid-story vegetation. These habitats are typically maintained by frequent, low-intensity fires, which prevent the encroachment of hardwoods and promote the growth of fire-adapted species. Pine savannas support a wide range of plant and animal species, both endemic and rare. The open structure and diverse plant community provide habitat for numerous insects, birds, reptiles, and mammals. These habitats are home to several species that are adapted to the unique conditions of pine savannas, for example, the gopher tortoise and red-cockaded woodpecker. The gopher tortoise requires fire-maintained, open-understory habitat for foraging, nesting, and burrowing. The red-cockaded woodpecker relies on mature longleaf and loblolly pine forests for nesting and foraging. Only a small percentage of suitable habitat remains for the red-cockaded woodpecker throughout its range, and is limited, in most cases, to that which occurs on lands (e.g., U. S. Forest Service, national wildlife refuges, or state-managed park property) that are specifically managed for this species within the TVA PSA. Known colonies of the red-cockaded woodpecker are relatively stationary and are located in the Southwestern Appalachian, Interior Plateau, and Southeastern Plains Ecoregions.

State-listed Species

Based on TVA's Natural Heritage database, approximately 600 terrestrial wildlife species determined to be rare and in need of protection at the state level have also been documented within the seven-state TVA PSA. A listing of state-level endangered, threatened, and species of conservation concern within the TVA PSA can be found in Appendix B. TVA would utilize state-specific resources in the site-specific screening process to determine the potential for effects to state-listed species.

3.6.1.2 Botany

The TVA PSA spans a wide range of ecoregions containing forested mountains, wetlands, floodplains, and river systems, each supporting a wide array of terrestrial vegetation species. The diversity of these eco-regions contributes to the PSA's high ecological value. Terrestrial vegetation addressed in this section includes non-vascular and vascular plants with federal status, either under the ESA or other regulatory protection.

Special-Status Species

Table 3-3 lists federally endangered, threatened and protected or other special status vegetation species reported in the TVA PSA. Species considered to be locally extirpated are not listed. This list is from TVA's Natural Heritage Database which keeps records of these species as listed by state and federal agencies. State listed species not concurrently listed with federally listed species are included in Appendix B.

Table 3-3. Special Status and Federally Protected Vegetation Species in the TVA PSA

Scientific Name	Common Name	Federal Status
Non-Vascular Plants		
Gymnoderma lineare	Rock Gnome Lichen	E
Vascular Plants		
Apios priceana	Price's Potato-bean	T
Arabis georgiana	Georgia Rockcress	T
Arabis perstellata	Braun's Rock-cress	E
Asplenium scolopendrium var. americanum	American Hart's-tongue Fern	T
Astragalus bibullatus	Pyne's Ground Plum	E
Clematis morefieldii	Morefield's Leather-flower	E
Clematis socialis	Alabama Leather Flower	E
Conradina verticillata	Cumberland Rosemary	T
Dalea foliosa	Leafy Prairie-clover	E
Geum radiatum	Spreading Avens	E
Hedyotis purpurea var. montana	Roan Mountain Bluet	E
Helianthus verticillatus	Whorled Sunflower	E
Helonias bullata	Swamp-pink	T
Isotria medeoloides	Small Whorled Pogonia	T
Leavenworthia crassa	Fleshy-fruit Gladecress	E
Lesquerella lyrata	Lyre-leaf Bladderpod	T
Lesquerella perforata	Spring Creek Bladderpod	E
Liatris helleri	Heller's Blazing Star	T
Lindera melissifolia	Pondberry	E
Marshallia mohrii	Mohr's Barbara's Buttons	T
Physaria globosa	Short's Baldderpod/ Lesquereux's Mustard	E
Pityopsis ruthii	Ruth's Golden Aster	E
Platanthera integrilabia	White Fringeless Orchid	T
Ptilimnium nodosum	Harperella	E
Sagittaria secundifolia	Kral's Water-plantain/ Arrowhead	T
Sarracenia oreophila	Green Pitcher Plant	E
Scutellaria montana	Large-flowered Skullcap	T
Solidago spithamaea	Blue Ridge Goldenrod	T

Scientific Name	Common Name	Federal Status
Spiraea virginiana	Virginia Spiraea	T
Thelypteris pilosa var. alabamensis	Alabama Streak-sorus Fern	T
Xyris tennesseensis	Yellow-eyed-grass	E

E=Endangered. T=Threatened.
Source: TVA Regional Natural Heritage Database 2024 and USFWS IPaC 2025 online system (https://ecos.fws.gov/ipac/) (Appendix B).

Federally Listed Species

A majority of federally listed plant species within the TVA PSA are found in globally rare communities present within the Blue Ridge, Interior Plateau, and Southwest Appalachians Ecoregions. Thirty-six species of plants in the TVA PSA are listed under the ESA as endangered or threatened by the USFWS (Appendix B). Habitat requirements for species in the PSA are described and can be found in NatureServe (2024).

Federally listed plant species from the PSA could be affected by the Proposed Action; however, this would be dependent on the site and proximity to potential habitat.

Based on habitat evaluations of the federally listed plant species found within the TVA PSA, six species have the potential to be affected by actions associated with the installation of gas or BESS units on host sites and are discussed further in this section.

Alabama leather flower, Mohr's Barbara's buttons, and whorled sunflower are found in prairie openings.

Price's potato bean and green pitcher plant can occur within transmission line rights-of-way and other open spaces.

Fleshy-fruit gladecress, known from six populations in two northern Alabama counties, grows in limestone cedar glades that exhibit various degrees of disturbance, including pastures, roadside rights-of-way, and cultivated or plowed fields.

State-Listed Species

Based on TVA's Natural Heritage database, terrestrial vegetation species determined to be rare and in need of protection at the state level have also been documented within the TVA PSA. Each of the seven states within the TVA PSA maintains databases of listed species. A listing of state-level endangered, threatened, and species of conservation concern within the TVA PSA can be found in Appendix B. TVA would utilize state-specific resources in the site-specific screening process to determine the potential for effects to state-listed species.

3.6.1.3 Aquatic Ecology

The TVA PSA contains portions of several major river systems including all the Tennessee River drainage and portions of drainages of the Cumberland, Mobile (primarily the Coosa and Tombigbee rivers) and the Mississippi rivers. Aquatic features of these river systems drain a diverse physiography and associated topography providing abundant habitats which are occupied by extremely diverse aquatic faunas and represent important commercial and recreational fisheries (TVA 2004). These aquatic habitats have been affected by varying levels of agricultural, residential, and industrial land uses. A description of the aquatic communities within the Tennessee River system is provided in Section 3.2 of the update of TVA's Natural

Resource Plan Final Supplemental Environmental Impact Statement (TVA 2020a). Section 3.3 of this PEA covers water bodies and surface water for the TVA PSA.

The river systems within the TVA PSA support a large variety of freshwater fishes and invertebrates (including freshwater mussels, snails, crayfish and insects). Due to the presence of several major river systems, the PSA's high geologic diversity and the lack of glaciation, the PSA is recognized as a globally important area for freshwater biodiversity (Stein et al. 2000; TVA 2015).

As with other smaller impoundment types, phytoplankton, periphyton and macrophytes supply most of the organic matter to the food web in reservoirs and ponds. Due to fluctuating water levels, phytoplankton production can dominate freshwater impoundments like reservoirs; however, rooted and floating macrophytes can dominate where water levels are stable in a reservoir (Wallace et al. 1992). Fish, amphibians, reptiles, birds and mammals are the main groups of vertebrates found in and associated with reservoirs in the southeast during a portion of their life cycle (Wallace et al. 1992). Fish populations are mainly comprised of forage fishes including shads and silversides in reservoirs and sunfishes in impoundments (Noble 1981), while the dominant predators in reservoirs are typically basses (Wallace et al.1992).

Common invertebrate species found in southeastern reservoirs include rotifers, protozoans and crustaceans. Within the benthos of most reservoirs in the southeast, larvae of true midges and oligochaete worms are the dominant macroinvertebrates (Diggins and Thorp 1985). Most of the freshwater mussel species known to occur in the United States are distributed in the southeast, with approximately 182 species in Alabama, 130 species in Tennessee, and 126 species in Georgia (Neves et al. 1997). However, many benthic organisms have narrow habitat requirements that are not always met in reservoirs or tailwaters below dams.

Special Status Species

Table 3-4 lists federally endangered, threatened and protected or other special status aquatic species reported in the TVA PSA. Species considered to be locally extirpated are not listed. This list is from TVA's Natural Heritage Database, which keeps records of these species as listed by state and federal agencies. State-listed species not concurrently listed with federally listed species are included in Appendix B.

Table 3-4. Special Status and Federally Protected Aquatic Species in the TVA PSA

Scientific Name	Common Name	Fed Status
Invertebrates		
Alasmidonta atropurpurea	Cumberland Elktoe	E
Alasmidonta raveneliana	Appalachian Elktoe	E
Athearnia anthonyi	Anthony's River Snail	E, XN
Cambarus cracens	Slenderclaw Crayfish	E
Cambarus williami	Brawleys Fork Crayfish	PT*
Campeloma decampi	Slender Campeloma	E
Cumberlandia monodonta	Spectaclecase (mussel)	E
Cyprogenia stegaria	Fanshell	E, XN
Dromus dromas	Dromedary Pearlymussel	E, XN
Epioblasma brevidens	Cumberlandian Combshell	E, XN
Epioblasma capsaeformis	Oyster Mussel	E, XN

Scientific Name	Common Name	Fed Status
Epioblasma florentina florentina	Yellow-blossom Pearlymussel	DL*
Epioblasma florentina walkeri	Tan Riffleshell	E
Epioblasma metastriata	Upland Combshell	DL*
Epioblasma obliquata obliquata	Purple Cat's Paw	E, XN
Epioblasma othcaloogensis	Southern Acornshell	DL*
Epioblasma penita	Southern Combshell	E
Epioblasma torulosa gubernaculum	Green Blossom Pearlymussel	DL*
Epioblasma torulosa rangiana	Northern Riffleshell	E
Epioblasma torulosa torulosa	Tuberculed Blossom Pearlymussel	DL*
Epioblasma triquetra	Snuffbox Mussel	E
Epioblasma turgidula	Turgid Blossom Pearlymussel	DL*
Fusconaia cor	Shiny Pigtoe Pearlymussel	E, XN
Fusconaia cuneolus	Fine-rayed Pigtoe	E, XN
Fusconaia subrotunda	Longsolid	T
Hamiota altilis	Finelined Pocketbook	T
Hamiota perovalis	Orangenacre Mucket	T
Hemistena lata	Cracking Pearlymussel	E, XN
Lampsilis abrupta	Pink Mucket	E
Lampsilis altilis	Fine-lined Pocketbook	T*
Lampsilis perovalis	Orange-nacre Mucket	T*
Lampsilis virescens	Alabama Lampmussel	E, XN
Lasmigona subviridis	Green Floater	PT
Lemiox rimosus	Birdwing Pearlymussel	E, XN
Leptodea leptodon	Scaleshell	E*
Leptoxis ampla	Round Rocksnail	T
Leptoxis compacta	Oblong Rocksnail	PE
Leptoxis foreman	Interrupted (=georgia) Rocksnail	E
Lioplax cyclostomaformis	Cylindrical Lioplax	E*
Marstonia ogmorhaphe	Royal Springsnail	E
Marstonia pachyta	Armored marstonia	E
Medionidus acutissimus	Alabama Moccasinshell	T
Medionidus conradicus	Cumberland Moccasinshell	PE
Medionidus parvulus	Coosa Moccasinshell	E
Obovaria cf. unicolor		PT
Obovaria retusa	Ring Pink	E, XN
Obovaria subrotunda	Round Hickorynut	T
Obovaria unicolor	Alabama Hickorynut	PE
Orconectes shoupi	Nashville Crayfish	E, PDL
Palaemonias alabamae	Alabama Blind Cave Shrimp	E
Palaemonias ganteri	Mammoth Cave Shrimp	E
Pegias fabula	Little-wing Pearlymussel	E
Plethobasus cicatricosus	White Wartyback	E, XN
Plethobasus cooperianus	Orange-foot Pimpleback	E, XN

Scientific Name	Common Name	Fed Status
Plethobasus cyphyus	Sheepnose	E
Pleurobema clava	Clubshell	E, XN
Pleurobema curtum	Black Clubshell	E
Pleurobema decisum	Southern Clubshell	E
Pleurobema furvum	Dark Pigtoe	E
Pleurobema georgianum	Southern Pigtoe	E
Pleurobema hanleyianum	Georgia Pigtoe	E
Pleurobema marshalli	Flat Pigtoe	DL*
Pleurobema oviforme	Tennessee Clubshell	PE
Pleurobema perovatum	Ovate Clubshell	E
Pleurobema plenum	Rough Pigtoe	E, XN
Pleurobema rubrum	Pyramid Pigtoe	PT*
Pleurobema taitianum	Heavy Pigtoe	E
Pleuronaia barnesiana	Tennessee Pigtoe	PE
Pleuronaia dolabelloides	Slabside Pearlymussel	E
Pleuronaia gibber (Pleurobema gibberum)	Cumberland Pigtoe	E
Potamilus capax	Fat Pocketbook	E
Potamilus inflatus	Inflated Heelsplitter	T
Ptychobranchus greenii	Triangular Kidneyshell	E
Ptychobranchus subtentus (subtentum)	Fluted Kidneyshell	E
Quadrula cylindrica	Rabbitsfoot	T*
Quadrula cylindrica cylindrica	Smooth Rabbitsfoot	T
Quadrula cylindrica strigillata	Rough Rabbitsfoot	E
Quadrula fragosa	Winged Mapleleaf	E, XN
Quadrula stapes	Stirrupshell	DL*
Simpsonaias ambigua	Salamander Mussel	PE
Theliderma (Quadrula) intermedia	Cumberland Monkeyface (pearlymussel)	E, XN
Theliderma (Quadrula) sparsa	Appalachian Monkeyface (pearlymussel)	E, XN
Toxolasma cylindrellus	Pale Lilliput	E
Venustaconcha trabalis	Tennessee Bean	E*
Villosa fabalis	Rayed Bean	E
Villosa perpurpurea	Purple Bean	E
Villosa trabalis	Cumberland Bean (pearlymussel)	E, XN
Vertebrates		
Chrosomus saylori	Laurel Dace	E
Cyprinella caerulea	Blue Shiner	T
Elassoma alabamae	Spring Pygmy Sunfish	T
Erimonax monachus	Spotfin Chub	T, XN
Erimystax cahni	Slender Chub	T, XN
Etheostoma akatulo	Bluemask Darter	E
Etheostoma boschungi	Slackwater Darter	T
Etheostoma chermocki	Vermilion Darter	E
Etheostoma chienense	Relict Darter	T

Scientific Name	Common Name	Fed Status
Etheostoma etowahae	Etowah Darter	E
Etheostoma lemniscatum	Tuxedo Darter	LE*
Etheostoma marmorpinnum	Marbled Darter	LE*
Etheostoma nuchale	Watercress darter	E
Etheostoma percnurum	Duskytail Darter	E, XN
Etheostoma phytophilum	Rush Darter	E
Etheostoma scotti	Cherokee Darter	T
Etheostoma sitikuense	Citico Darter	LE, XN*
Etheostoma susanae	Cumberland Darter	E
Etheostoma trisella	Trispot Darter	T
Etheostoma wapiti	Boulder Darter	E, XN
Fundulus julisia	Barrens Topminnow	E
Notropis albizonatus	Palezone Shiner	E
Notropis cahabae	Cahaba Shiner	E
Noturus baileyi	Smoky Madtom	E, XN
Noturus crypticus	Chucky Madtom	E
Noturus flavipinnis	Yellowfin Madtom	T, XN
Noturus munitus	Frecklebelly Madtom	T
Noturus stanauli	Pygmy Madtom	E, XN
Percina antesella	Amber Darter	E
Percina aurolineata	Goldline Darter	T
Percina brevicauda	Coal Darter	PT
Percina jenkinsi	Conasauga Logperch	E
Percina tanasi	Snail Darter	DL*
Percina williamsi	Sickle Darter	T
Phoxinus cumberlandensis	Blackside Dace	T
Scaphirhynchus albus	Pallid Sturgeon	E
Speoplatyrhinus poulsoni	Alabama Cavefish	E

DL=Delisted. E=Endangered. LE=Listed Endangered. PE=Proposed Endangered. PT=Proposed Threatened. T=Threatened. XN=Experimental Population Non-Essential. * = only TVA Natural Heritage Database
Source: TVA Regional Natural Heritage Database 2024 and USFWS IPaC 2025 online system (https://ecos.fws.gov/ipac/) (Appendix B).

Federally Listed Species

Over 90 percent of the federally listed species occur within five of the nine ecoregions in the TVA PSA. A majority of federally listed animal species are found in the Interior Plateau, the Ridge and Valley, Southwest Appalachians, and Southeastern Plains Ecoregions. One hundred-six species of aquatic animals in the TVA PSA are listed under the ESA by the USFWS (Appendix B). Of these, 82 are listed as endangered and 24 are listed as threatened. Eleven additional species have been proposed for listing as threatened or endangered. Habitat requirements for species in the PSA are described and can be found in NatureServe (2024).

The highest concentrations of aquatic species listed under the ESA occur in the Blue Ridge, Appalachian Plateaus, and Interior Low Plateau regions. Relatively few listed species occur in the Coastal Plain and Mississippi Alluvial Plain regions. The taxonomic groups with the highest

proportion of species listed under the ESA are fish and mollusks. Factors contributing to the high proportions of vulnerable species in these groups include the high number of endemic species in the TVA PSA and the alteration of their habitats by reservoir construction and water pollution. River systems with the highest numbers of listed aquatic species include the Tennessee, Cumberland, and Coosa rivers (TVA 2015).

Federally listed aquatic species from the PSA that could be affected by the Proposed Action because of their use of aquatic habitats would be dependent on the site and proximity to aquatic habitat.

State-listed Species

Based on TVA's Natural Heritage database, roughly 300 aquatic species determined to be rare and in need of protection at the state level have also been documented within the TVA PSA. Each of the seven states within the TVA PSA maintains databases of listed species. A listing of state-level endangered, threatened, and species of conservation concern within the TVA PSA can be found in Appendix B. TVA would utilize state-specific resources in the site-specific screening process to determine the potential for effects to state-listed species.

Invasive Species

Invasive species are species that are not native to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health (NISC 2016). Human actions, both intentional and unintentional, are the primary means of their introduction.

Several aquatic plants designated by the USDA as noxious weeds under the Plant Protection Act occur in the TVA PSA: hydrilla, giant salvinia, and giant hogweed (USDA 2025). Hydrilla is a submersed aquatic plant present in several TVA reservoirs. Giant salvinia, also an aquatic plant, occurs in ponds, reservoirs, and slow-moving streams. It primarily occurs south of the TVA PSA and has not yet been reported from the Tennessee River drainage. Giant hogweed generally occurs near stream bank areas as water is an important link to giant hogweed establishment and proliferation.

There are additional invasive plants considered to be an established or emerging threat that occur on or near TVA generating facilities in an aquatic environment (TN-IPC 2023). These include phragmites and Eurasian water milfoil. Phragmites occur in ash ponds at several TVA coal-fired plants and are otherwise uncommon in the TVA PSA. In recent years, the non-native eelgrass Rockstar Hybrid has displaced native aquatic plants in several TVA reservoirs.

Other invasive aquatic animals in the TVA PSA that harm or potentially harm aquatic communities include the common, grass, bighead, and silver carp; alewife; blueback herring; rusty crayfish; Asiatic clam; and zebra mussel. Because of their potential to affect water intake systems, TVA uses chemical and warm-water treatments to control Asiatic clams and zebra mussels at some of its generating facilities.

3.6.2 Environmental Consequences

The potential impacts to terrestrial zoology, botany, or aquatic ecology from a given action are assessed by evaluating the potential for an action to injure or kill individuals, disturb habitat, or otherwise result in a reduction in the populations of protected species. Although the extent of impacts to these resources would vary from site to site, general effects from the Proposed Action within the TVA PSA are discussed below.

3.6.2.1 Terrestrial Zoology

3.6.2.1.1 Alternative A – No Action

Under the No Action Alternative, TVA would not establish the proposed Resilience 360° program. TVA would continue to provide generation through alternative methods. Therefore, there would be no impacts to terrestrial animal species under the No Action Alternative.

3.6.2.1.2 Alternative B – Proposed Action

The installation of onsite modular natural gas or BESS units has low potential to adversely affect any federally listed terrestrial animals. Given that these units would be installed in areas that have already been disturbed or developed and are adjacent to existing facilities, there is a low likelihood that federally listed terrestrial animals would be present in these areas. To further minimize the potential to affect any of these listed species, each site would be analyzed using the USFWS IPaC tool and the Environmental Screening Checklist (Appendix A). By reviewing the site-specific Environmental Screening Checklists, TVA would independently determine if a proposed project associated with the proposed Resilience 360° program would adversely affect protected species. For those projects with the potential to cause adverse effects to listed species, further review would be warranted and mitigation measures to eliminate the potential for any significant impacts to listed terrestrial species would be developed and implemented. With additional review and implementation of these mitigative measures, no significant effects on listed terrestrial species are expected. If a proposed project cannot implement conservation measures, additional consultation with the USFWS may be warranted. Overall, impacts to terrestrial species as a result of construction, operation, or decommissioning of the Resilience 360° project would be minor.

It is assumed that all reasonably foreseeable future actions in the vicinity of the host locations would comply with all applicable local, state, and federal regulations. Therefore, impacts to terrestrial species associated with reasonably foreseeable future actions in the temporal and physical vicinity of host locations would be minor overall.

3.6.2.2 Botany

3.6.2.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not establish the proposed Resilience 360° program. TVA would continue to provide generation through alternative methods. Therefore, there would be no impacts to vegetation under the No Action Alternative.

3.6.2.2.2 Alternative B – Proposed Action

Under the Proposed Action, establishment of new structures would require construction and clearing of areas. BMPs determined by local ordinances and state regulations, and use of the Environmental Screening Checklist, would be used to determine the best areas for construction. These would likely avoid any sensitive or protected species or habitats. Any herbicides or pesticides used during construction may also need mitigation for impacts caused by runoff or other soil contamination. Post-construction, re-planting of an area may take place for various reasons including to restore native plant communities or to obscure visual disturbances (see Section 3.8). Botanical species within the TVA PSA are unlikely to be impacted by the proposed installation of natural gas or BESS units on host sites. Overall, impacts to botanical areas would likely be temporary and minor.

3.6.2.3 Aquatic Ecology

3.6.2.3.1 Alternative A – No Action

Under the No Action Alternative, TVA would not establish the proposed Resilience 360° program. TVA would continue to provide generation through alternative methods. Therefore, there would be no impacts to aquatic species under the No Action Alternative.

3.6.2.3.2 Alternative B – Proposed Action

Aquatic ecology could be affected by the proposed Resilience 360° program. Potential impacts could occur directly or indirectly due to modification of the riparian zone and stormwater runoff resulting from construction activities. Potential impacts due to removal of streamside vegetation within the riparian zone include increased erosion and siltation (see Section 3.3), loss of instream habitat, and increased stream temperatures, though this is not anticipated. A potential indirect effect of routine maintenance includes potential herbicide runoff into streams. As necessary, appropriate BMPs determined by local ordinances and state regulations would be implemented to avoid potential adverse effects to water quality and aquatic life. Specifically, these BMPs would provide guidance for activities occurring in or around SMZs to minimize the amount and length of disturbance to water bodies and maintain natural stream buffers.

By reviewing the site-specific Environmental Screening Checklists, TVA would independently determine if a prospective project associated with the proposed Resilience 360° program would adversely affect protected aquatic species. For those projects that would cause adverse effects to such species, mitigation measures to eliminate the potential for any significant impacts to listed aquatic species would be developed and implemented in consultation with USFWS. With the implementation of these measures, no significant effects on listed aquatic species are expected.

Overall, minor temporary direct adverse impacts during construction and decommissioning are possible. However, because appropriate BMPs and SMZs would be implemented during construction, operation, maintenance, and decommissioning, and because all appropriate permits would be obtained, any direct or indirect impacts to aquatic life are anticipated to be minor. No substantial loss or degradation of aquatic habitat would occur because of the Proposed Action; therefore, the Proposed Action would have no effect on any critical habitat.

It is assumed that all reasonably foreseeable future actions in the vicinity of the host locations would comply with all applicable local, state, and federal regulations. Additionally, it is assumed rivers, streams, wetlands, and floodplains would typically be avoided for these reasonably foreseeable future actions. Therefore, impacts to aquatic species associated with reasonably foreseeable future actions in the temporal and physical vicinity of host locations would not be anticipated.

3.7 Cultural and Historic Resources

Cultural resources include pre-contact and historic archaeological sites, districts, buildings, structures, and objects, as well as locations of important historic events that lack material evidence of those events. Historic architectural structures are also cultural resources and include standing structures (e.g., houses, barns, dams, power plants) that are usually at least 50 years of age and are considered eligible for listing on the National Register of Historic Places (NRHP). Cultural resources are considered historic properties if included in, or considered eligible for inclusion in, the NRHP maintained by the National Park Service. The eligibility of a

resource for inclusion in the NRHP is based on the Secretary of the Interior's criteria for evaluation (36 CFR Part 60.4), which state that significant cultural resources possess integrity of location, design, setting, materials, workmanship, feeling and association, and:

1. are associated with important historical events; or

2. are associated with the lives of significant historic persons; or

3. embody distinctive characteristics of a type, period, or method of construction or represent the work of a master, or have high artistic value; or

4. have yielded or may yield information (data) important in history or prehistory.

Because of their importance to the Nation's heritage, historic properties are protected by multiple laws. Federal agencies, including TVA, have a statutory obligation to facilitate the preservation of historic properties, stemming primarily from NHPA (16 U.S.C. §§ 470 et seq.). Other relevant laws include the Archaeological and Historic Preservation Act (16 U.S.C. §§ 469-469c), Archaeological Resources Protection Act (16 U.S.C. §§ 470aa-470mm) and the Native American Graves Protection and Repatriation Act (25 U.S.C. §§ 3001- 3013).

Section 106 of the NHPA requires federal agencies to consider the potential effects of their actions on historic properties and to allow the ACHP an opportunity to comment on the action. Section 106 involves four steps: 1) initiate the process; 2) identify historic properties; 3) assess adverse effects; and 4) resolve adverse effects. This process is conducted in consultation with the SHPO of the state in which the action would occur, all federally recognized Tribes with interest in the project location, and with other interested consulting parties.

Section 110 of the NHPA sets out the broad historic preservation responsibilities of federal agencies and is intended to ensure that historic preservation is fully integrated into their ongoing programs. Federal agencies are responsible for identifying and protecting historic properties and avoiding unnecessary damage to them. Section 110 also charges each federal agency with the affirmative responsibility for considering projects and programs that further the purposes of the NHPA, and it declares that the costs of preservation activities are eligible project costs in all undertakings conducted or assisted by a federal agency.

3.7.1 Affected Environment

Archaeological resources typically are identified through Phase I archaeological surveys conducted for compliance with Section 106. Numerous surveys have been conducted along reservoir shorelines, within reservoirs, and on power plant reservations. Some TVA transmission line corridors and roadways have also been surveyed. Outside of TVA reservoirs and plant reservations, the overall density of archaeological resources can be difficult to quantify due to the lack of consistent survey coverage. Archaeological surveys outside of reservations for power generation vary state by state with most surveys conducted on a project-by-project basis. Across all these types of areas, through hundreds of surveys, TVA has identified many thousands of archaeological sites, representing the entire time range of known human habitation of the Tennessee Valley including historic periods.

3.7.2 Environmental Consequences

The potential impacts to cultural or historic resources from a given action are assessed by evaluating the potential for an action to directly damage, or indirectly modify the context, of a

protected resource. Although the extent of impacts to cultural or historic resources would vary from site to site, general effects from the Proposed Action within the TVA PSA are discussed below.

3.7.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not establish the proposed Resilience 360° program. TVA would continue to provide generation through alternative methods. Therefore, there would be no impacts to cultural resources under the No Action Alternative.

3.7.2.2 Alternative B – Proposed Action

The installation of onsite modular natural gas units or BESS has the potential to adversely affect cultural resources. Given that these units can be installed anywhere across the TVA PSA, there is potential that pre-contact and/or historic period archaeological sites would be present. Extant historic architectural resources could also be present, especially in urban areas. Any activities associated with the installation and operation of these units that have potential to cause ground disturbance could affect sub-surface cultural deposits. Furthermore, any unit installed within a historic district or within direct line of sight of a historic architectural structure could adversely affect the historic significance and integrity of the district or historic structure.

Under the Proposed Action, TVA has developed a PA with SHPOs, the ACHP, and federally recognized Tribes with an interest in the PEA. The purpose of the PA is to establish an efficient program for compliance with Section 106 of the NHPA at a programmatic level. This PA stipulates roles and responsibilities and identifies undertakings exempt from further Section 106 review. TVA has received comments from the public, ACHP, individual state SHPOs, and federally recognized Tribes with an interest in the PEA and is in the process of finalizing the document. The Draft PA is included in Appendix C. The PA will be provided online at tva.com/nepa once it has been executed.

For states with which TVA does not have an executed PA in place, or for activities which are not covered by the PA, TVA would conduct an individual site-specific assessment of effects to historic properties under Section 106. Any individual project associated with the Proposed Action that has the potential to adversely affect cultural resources would require mitigation to resolve the adverse effect. Mitigation methods to be employed are dependent upon factors such as the nature and extent of prior cultural resource investigations of the area, eligibility and integrity of any resources present, and the scope of the proposed undertaking. Such mitigation would be undertaken in accordance with Section 106.

With adherence to the stipulations of the PA, overall, adverse effects to cultural and historic resources as a result of construction, operation, and decommissioning of the Resilience 360° project are not expected.

It is assumed that all reasonably foreseeable future actions in the vicinity of the host locations would comply with all applicable local, state, and federal regulations. Therefore, impacts to cultural and historic resources associated with reasonably foreseeable future actions in the temporal and physical vicinity of host locations would not be anticipated.

3.8 Visual Resources

3.8.1 Affected Environment

Visual resources are the visual characteristics of a place and include both natural and manmade attributes. To many observers, including residents and visitors, visual resources of a particular location provide the context of historical and culturally significant settings. The human response to visual changes in the landscape can vary dramatically depending on the setting. For example, changes in agricultural and rural settings solicit different feelings in an observer than those in urban or industrial areas.

This assessment provides a review and classification of the visual attributes of existing scenery, along with the anticipated attributes resulting from the Proposed Action. The classification criteria used in this analysis are adapted from a scenic management system developed by the U.S. Forest Service and integrated with planning methods used by TVA. The classification process is also based on fundamental methodology and descriptions adapted from Landscape Aesthetics, A Handbook for Scenery Management, Agriculture Handbook Number 701 (U.S. Forest Service 1995).

The visual landscape of an area is formed by physical, biological and man-made features that combine to influence both landscape identifiability and uniqueness. Scenic resources within a landscape are evaluated based on a number of factors that include scenic attractiveness, integrity and visibility. Scenic attractiveness is a measure of scenic quality based on human perceptions of intrinsic beauty as expressed in the forms, colors, textures and visual composition of each landscape. Scenic integrity is a measure of scenic importance based on the degree of visual unity and wholeness of the natural landscape character. The varied combinations of natural features and human alterations both shape landscape character and help define their scenic importance. The subjective perceptions of a landscape's aesthetic quality and sense of place is dependent on where and how it is viewed.

Scenic visibility of a landscape may be described in terms of three distance contexts: (1) foreground, (2) middleground and (3) background. In the foreground, an area within 0.5 miles of the observer, individual details of specific objects are important and easily distinguished. In the middleground, from 0.5 to 4 miles from the observer, object characteristics are distinguishable, but their details are weak and tend to merge into larger patterns. In the distant part of the landscape, the background, details and colors of objects are not normally discernible unless they are especially large, standing alone, or have a substantial color contrast. In this assessment, the background is measured as 4 to 10 miles from the observer. Visual and aesthetic impacts associated with a particular action may occur because of the introduction of a feature that is not consistent with the existing viewshed. Consequently, the character of an existing site is an important factor in evaluating potential visual impacts.

For this analysis, the affected environment is considered to include the project area within an existing industrial or commercial location, which encompasses both permanent and temporary impact areas, as well as the physical and natural features of the landscape. Principal features in the foreground would vary depending on the nature and use of the site. It is expected that most of the potential sites would have limited amounts of vegetation, although there may be some small patches of grassed areas and/or small trees within the facility grounds. Therefore, scenic attractiveness of the affected environment is considered to be minimal to common (industrial to commercial in appearance), whereas the scenic integrity is considered to be low.

Individuals that would likely have the most direct views of the project area include authorized employees, contactors and visitors to the facility adjacent to the project area. Views of the project area are generally restricted to the foreground (i.e., within a half mile) in all directions, however that may be buffered by nearby vegetation and the local topography.

3.8.2 Environmental Consequences

The potential impacts to the visual environment from a given action are assessed by evaluating the potential for changes in the scenic value class ratings based upon landscape scenic attractiveness, integrity and visibility. The location and context of the setting, whether urban or rural, flat or mountainous, affect the visual experience. Sensitivity of viewing points available to the general public, their viewing distances and visibility of the Proposed Action are also considered during the analysis. These measures help identify changes in visual character based on commonly held perceptions of landscape beauty and the aesthetic sense of place.

Although the extent of visual impacts would vary from site to site, general visual effects from the Proposed Action within the TVA PSA are discussed below.

3.8.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not establish the proposed Resilience 360° program. TVA would continue to provide generation through alternative methods. Therefore, there would be no impacts to visual resources under the No Action Alternative.

3.8.2.2 Alternative B – Proposed Action

The Proposed Action would include minor discernible alterations that would be viewed within and adjacent to any given facility where the units are located. TVA anticipates that installations would take place within existing developed areas and property boundaries of host facilities. During the construction and decommissioning phase, there would be slight visual discord from the existing conditions due to an increase in personnel and equipment in the area. Visual impacts from additional vehicular traffic associated with the transport of materials and construction-related traffic to the work site are expected to be insignificant as the roads in the vicinity of facilities are already likely used regularly for industrial or commercial activity. This small increase in visual discord would be temporary and primarily occur during construction and decommissioning.

The resulting visual footprint of the Proposed Action would differ on a case-by-case basis. Some installations may be adjacent to or at an angle where they may be viewed by the public. Enclosures and facilities would be a maximum 12.5 feet in height. Some may have a stack of 0-30 feet depending on local air permitting requirements in some areas. However, the installations would not be anticipated to exceed existing structure heights or result in a significant visual contrast. It may also be likely that the existing buildings and structures would result in the project area to not be visible or to not result in visual contrast since the surrounding area is already developed.

Once the Proposed Action is completed, landscaping to cover new additions may enhance the foreground landscape character compared to the current condition. In more distant views, changes would likely merge with the overall industrial/commercial components of the facility. Therefore, the Proposed Action would generally be absorbed by existing adjacent facilities and would become visually subordinate to the overall landscape character associated with the site. Therefore, visual impacts resulting from implementation of the Proposed Action would be minor.

It is assumed that all reasonably foreseeable future actions in the vicinity of the host locations would comply with all applicable local, state, and federal regulations. Because most of the host sites are already located in developed areas, likely zoned for industrial or commercial uses, impacts to visual resources from the Resilience 360° sites in conjunction with reasonably foreseeable future actions in the temporal and physical vicinity of host locations would not be anticipated.

3.9 Noise

3.9.1 Affected Environment

Sound occurs when vibrations travel through a medium, such as air, and are interpreted by biological components of the ear. Noise is defined as any sound that becomes unpleasant, disruptive, loud, or damaging. Sound levels are quantified in units called decibels (dB), which can be amplified by frequency and intensity, and are given a level on a logarithmic scale. The higher the decibel level, the louder the noise. The sound intensity the human ear hears can be quantified in A-weighted decibels (dBA) (FAA 2022). The “pitch” (high or low) of the sound is a description of frequency, which is measured in Hertz (Hz). Most common environmental sounds are a composite of sound energy at various frequencies. A normal human ear can usually detect sounds that fall within frequencies from 20 Hz to 20,000 Hz. However, humans are most sensitive to frequencies between 500 Hz to 4,000 Hz.

Generally, noise levels decrease by approximately 6 dBA as the distance doubles from the point source (e.g., a piece of construction equipment or an airplane) (Abbott 2022). Noise levels in rural, suburban, and urban environments can differ, especially when considering time of day and location of measurement. Wildlife and human responses to noise can vary depending on the type of noise, proximity to the noise, sensitivity to the noise, and times of day the noise-generating events take place. Typically, environmental noise causes annoyance or stress in humans, but exposures to high noise levels can cause hearing loss (National Institute on Deafness and Other Communication Disorders 2022). Settings where occupants are more vulnerable to the negative effects of noise exposure are generally referred to as sensitive receptors and typically include hospitals, schools, daycare facilities, elderly housing, convalescent facilities, and residential settings.

Noise Regulations

State and local governments are the primary entities responsible for controlling and regulating noise sources and levels in the environment. The Noise Control Act of 1972 (42 U.S.C. § 4901 et seq.) and subsequent amendments, such as the Quiet Communities Act of 1978, delegate authority to the states to regulate environmental noise and direct government agencies to comply with local community regulations and statutes. Many local noise ordinances are qualitative, such as prohibiting excessive noise or noise that results in a public nuisance. Because of the subjective nature of such ordinances, they are often difficult to enforce. Only one of the counties in which TVA fossil fuel power plants are located (Anderson County, Tennessee) has established quantitative sound-level regulations specifying environmental sound level limits based on the land use of the property receiving the noise. The U.S. Department of Housing and Urban Development (HUD) considers a day-night sound level (Ldn) of 65 dBA or less to be compatible with residential areas (HUD 1985).

Background Noise Levels

The average ambient noise level ranges from approximately 35 to 45 dBA in rural areas, approximately 45 to 55 dBA in suburban neighborhoods, and approximately 55 dBA to 70 or 80 dBA in urban areas (Nextech 2024). To account for sound fluctuations, environmental noise is commonly described in terms of the equivalent sound level or Leq. The Leq value, expressed in dBA, is the energy averaged, A-weighted sound level for the time period of interest. The Ldn is the 24-hour equivalent sound level, which incorporates a 10-dBA correction penalty for the hours between 10 p.m. and 7 a.m., to account for the increased sensitivity of people to sounds that occur at night.

Noise levels continuously vary with location and time. In general, noise levels are high around major transportation corridors along highways, railways, airports, industrial facilities and construction activities. Sound from a source spreads out as it travels from the source, and the sound pressure level diminishes with distance. In addition to distance attenuation, the air absorbs sound energy; atmospheric effects (wind, temperature, precipitation) and terrain/vegetation effects also influence sound propagation and attenuation over distance from the source. An individual's sound exposure is determined by measurement of the noise that the individual experiences over a specified time interval.

Community noise refers to outdoor noise near a community. A continuous source of noise is rare for long periods and is typically not a characteristic of community noise. Typical background day/night noise levels for rural areas range between 35 and 50 dB whereas higher-density residential and urban areas background noise levels range from 43 dB to 72 dB (USEPA 1974). Background noise levels greater than 65 dBA can interfere with normal conversation, watching television, using a telephone, listening to the radio and sleeping.

3.9.2 Environmental Consequences

The potential noise impacts of a given action are assessed by evaluating the potential for an action to generate noise in excess of state or local regulations or guidance. Although the extent of noise impacts would vary from site to site, general effects from the Proposed Action within the TVA PSA are discussed below.

3.9.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not establish the proposed Resilience 360° program. TVA would continue to provide generation through alternative methods. Therefore, there would be no impacts from noise under the No Action Alternative.

3.9.2.2 Alternative B – Proposed Action

Potential noise impacts associated with implementation of the Proposed Action would occur primarily during construction and decommissioning. Heavy equipment such as front-end loaders, graders, equipment to drive support pilings, and backhoes, if used for site preparation, could produce noise levels as great as 95 dBA within a distance of 50 feet. Such noise decreases as distance from its source increases, and noise levels would decrease to approximately 66 dBA at 0.25 mile (TVA 2001). A noise level of 65 dBA is comparable to ambient noise in a commercial area or normal speech at a range of 3 feet. Construction is anticipated to take between 4-12 weeks once materials are available. Thus, construction (and later similar decommissioning) activities could contribute temporary, short-duration noise to the ambient sound environment around each project site. However, construction activities would be

of relatively short duration and would occur during daylight hours, when people are less disturbed by noise.

Transportation noise related to the Proposed Action includes noise from highway traffic. Three primary factors influence highway noise generation: traffic volume, traffic speed and vehicle type. Generally, heavier traffic volumes, higher speeds and greater numbers of trucks increase the loudness of highway traffic noise. Other factors that affect the loudness of traffic noise include a change in engine speed and power, such as at traffic lights, hills and intersecting roads and pavement type. Highway traffic noise is not usually a serious problem for people who live more than 500 feet from heavily traveled freeways or more than 100 to 200 feet from lightly traveled roads (FHWA 2011). Due to the nature of the decibel scale and the attenuating effects of noise with distance, a doubling of traffic would result in a 3 dBA increase in noise levels, which in and of itself would not normally be a perceivable noise increase.

Maximum noise levels within 50 feet of facilities during operations are anticipated to be approximately 68 dB for 500 kW sets, and 80 dB or below for other sets. These would constitute a minor increase in site noise levels and can be customized to meet any other noise requirements (i.e. use of enclosures). Individual sites would comply with all local and state ordinances and restrictions related to noise. Though, TVA does not anticipate that projects would result in offsite noise impacts.

The associated inverters and transformers typically emit a hum during operation. Inverters are typically encased in cabinets and are frequently located centrally on the site for practical reasons. The level of noise generated by inverters and transformers depends on several factors such as their electrical capacity and the amount of noise damping provided by their enclosures. Nevertheless, because noise levels from this equipment are typically low, noise at the site boundary tends to be indistinguishable from background noise.

A significant adverse effect to noise would occur if generated noise were permanently intrusive to nearby sensitive receptors; if it exceeds applicable noise limit thresholds; or if it causes harm or injury to people or communities. As any of the construction noise would be temporary, and operational noise would be minimal, the Proposed Action would have a long-term, minimal impact to noise.

It is assumed that all reasonably foreseeable future actions in the vicinity of the host locations would comply with all applicable local, state, and federal regulations. Construction and operation of the Resilience 360° host sites in conjunction with reasonably foreseeable future actions in the temporal and physical vicinity of host locations could result in impacts to noise in the immediate vicinity. These impacts would be anticipated to be minor overall, with temporary short-term impacts during construction and intermittent short-term impacts during operations.

3.10 Air Quality

3.10.1 Affected Environment

Air quality is a vital resource that impacts us in many ways. Poor air quality can affect human health, ecosystem health, forest and crop productivity, economic development and enjoyment of scenic views. This section summarizes current conditions and trends over the past 35 years for key air quality issues. Air quality within the TVA PSA has steadily improved over the past 35 years (TVA 2024b).

The CAA is the comprehensive law that affects air quality by regulating emissions of air pollutants from stationary sources (such as power plants) and mobile sources (such as automobiles). It requires USEPA to establish National Ambient Air Quality Standards (NAAQS) and directs the states to develop State Implementation Plans to achieve these standards. This is primarily accomplished through permitting programs that establish limits for emissions of air pollutants (USEPA 2024a).

In this PEA, the affected environment is the TVA PSA shown in Figure 1-1. This service area includes 178 counties in a seven-state region and has an estimated population of about 10 million people. The primary air quality parameters of concern for this PEA are NAAQS criteria air pollutants, hazardous air pollutants and volatile organic compounds (VOCs).

Criteria Air Pollutants

The USEPA has established NAAQS for the six criteria air pollutants: Sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone, carbon monoxide (CO), particulate matter (PM), and lead. There are two different standards for PM. Primary standards protect public health, while secondary standards protect public welfare (e.g., visibility, crops, forests, soils, and materials). Class 1 areas are locations where air quality is deemed especially sensitive such as national parks and wilderness areas and receive heightened protection under the CAA (USEPA 2024b). There are several Class 1 areas in and near the TVA PSA (e.g., Mammoth Cave National Park) as shown in Figure 3-5.

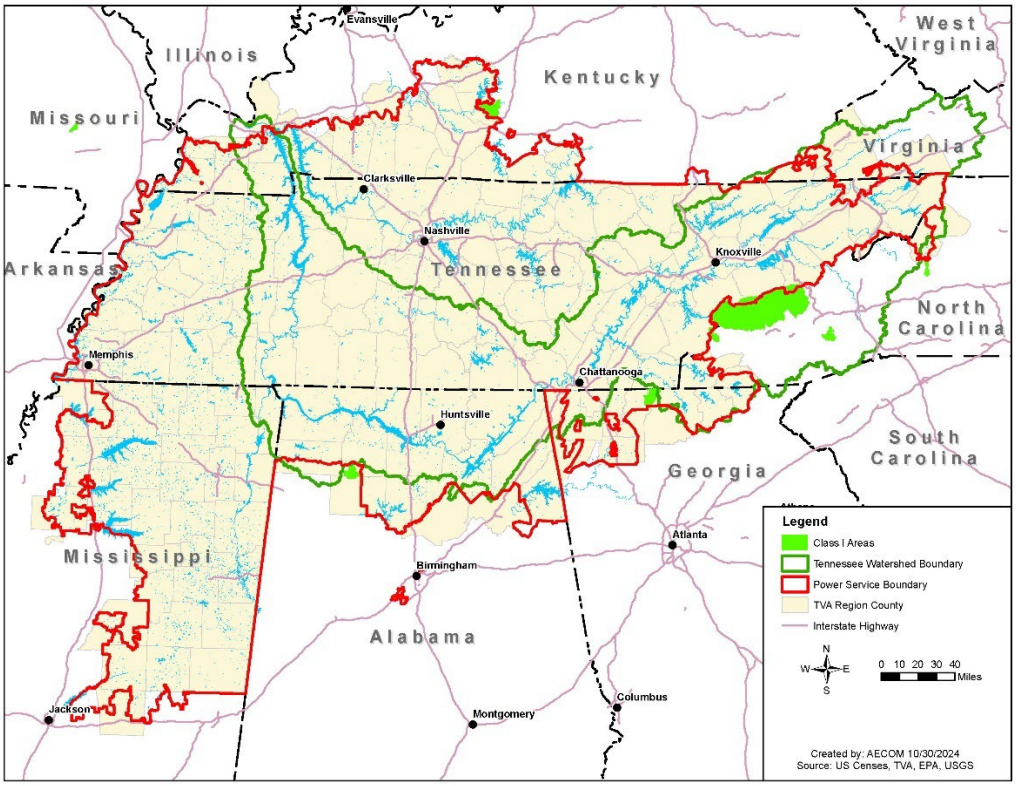


Figure 3-5. Class I Areas in and near the TVA PSA

USEPA has numerous ambient air quality monitoring programs related to the NAAQS. The most basic is the Ambient Air Monitoring Program, which collects national air quality data on criteria pollutants and VOCs. The program is carried out by USEPA and state and local air pollution agencies with oversight and guidance provided by USEPA. USEPA has several other programs involving local, tribal, state, regional, and national air quality data (USEPA 2024c).

Sulfur Dioxide

USEPA's national ambient air quality standards for SO_2 are designed to protect against exposure to the entire group of sulfur oxides (SOx). SO_2 is the component of greatest concern and is used as the indicator for the larger group of gaseous SOx. Other gaseous SOx are found in the atmosphere at concentrations much lower than SO_2 (USEPA 2024d).

Control measures that reduce SO_2 can generally be expected to reduce people's exposures to all gaseous SOx. This may have the important co-benefit of reducing the formation of particulate sulfur pollutants, such as fine sulfate particles (USEPA 2024d).

Emissions that lead to high concentrations of SO_2 generally also lead to the formation of other SOx. The largest sources of SO_2 emissions are from fossil fuel combustion at power plants and other industrial facilities (USEPA 2024d). Natural gas combustion produces very little SO_2 compared to other fossil fuels (Swarthmore 2024).

Short-term exposures to SO_2 can harm the human respiratory system and make breathing difficult. People with asthma, particularly children, are sensitive to these effects of SO_2 (USEPA 2024d).

TVA's SO_2 emissions have decreased by 94 percent since 1974. This reduction is in part by switching to low-sulfur coal at some plants and equipping most of its coal-fired capacity with scrubbers (TVA 2024c). The majority of the TVA PSA is in attainment for SO_2 except for Sullivan County in Tennessee, Henderson and Webster Counties in Kentucky, and Giles County in Virginia (USEPA 2024e).

Nitrogen Oxides

NO_2 is one of a group of highly reactive gases known as oxides of nitrogen or nitrogen oxides (NOx). Other nitrogen oxides include nitrous acid and nitric acid. NO_2 is used as the indicator for the larger group of nitrogen oxides (USEPA 2024f).

NO_2 is primarily generated from fuel burning in forms from emissions from cars, trucks and buses, power plants, and off-road equipment. NO_2 along with other NOx reacts with other chemicals in the air to form both PM and ozone. Both of these are also harmful when inhaled due to effects on the respiratory system. NO_2 and other NOx interact with water, oxygen and other chemicals in the atmosphere to form acid rain. Acid rain harms sensitive ecosystems such as lakes and forests (USEPA 2024f).

In the TVA PSA, transportation sources such as on-road and off-road vehicles, boats and airplanes account for about two-thirds of total NOx emissions. All point sources in the PSA such as power plants, refineries and mills account for about one-fourth of total NOx emissions, but TVA point sources only account for about one-tenth of the total NOx emissions in the PSA. The remaining amount comes from area sources such as decaying vegetation, industrial processes and nitrogen fertilizers (TVA 2024d).

Across the TVA system, NOx emissions have decreased by 91 percent since 1995 and all counties withing the TVA PSA are in attainment for NO_2 (USEPA 2024e).

Ozone

Naturally occurring ozone in the upper layer of the atmosphere forms a protective shield around the Earth, filtering out harmful solar radiation. The ozone NAAQS applies to ground-level ozone. Ground-level ozone is produced by a series of reactions involving other chemicals, mostly VOCs and NOx. Especially high levels of ozone develop in the summer, when the sunlight is intense, and the air is hot and stagnant (TVA 2024e).

Ozone is most likely to reach unhealthy levels on hot sunny days in urban environments but can still reach high levels during colder months. Ozone can also be transported long distances by wind, so even rural areas can experience high ozone levels. Ozone in the air we breathe can harm our health, especially on hot sunny days when ozone can reach unhealthy levels. People at greatest risk of harm from breathing air containing ozone include people with asthma (USEPA 2024g).

Non-attainment areas in the TVA PSA for ozone include Bullett, Jefferson, and Oldham counties in Kentucky and Arlington, Fairfax, Loudon, and Price William counties in Virginia (USEPA 2024e).

Carbon Monoxide

CO is a colorless, odorless gas that can be harmful when inhaled in large amounts. CO is released when something is burned. The greatest sources of CO to outdoor air are cars, trucks and other vehicles or machinery that burn fossil fuels (USEPA 2024h).

Breathing air with a high concentration of CO reduces the amount of oxygen that can be transported in the blood stream to critical organs like the heart and brain. At very high levels, which are possible indoors or in other enclosed environments, CO can cause dizziness, confusion, unconsciousness and death. Very high levels of CO are not likely to occur outdoors. However, when CO levels are elevated outdoors, they can be of particular concern for people with some types of heart disease. These people already have a reduced ability for getting oxygenated blood to their hearts in situations where the heart needs more oxygen than usual. They are especially vulnerable to the effects of CO when exercising or under increased stress. In these situations, short-term exposure to elevated CO may result in reduced oxygen to the heart accompanied by chest pain also known as angina (USEPA 2024h).

All counties within the TVA PSA are in attainment for CO (USEPA 2024e).

Particulate Matter

PM consists of small solid “dust” particles or liquid droplets. PM is regulated by size class: PM less than 10 micrometers (µm) in diameter (PM_{10}), and PM less than 2.5 µm in diameter ($PM_{2.5}$). Particles emitted directly from a pollution source are called primary particles, whereas those formed after emission—by the chemical and physical conversion of gaseous pollutants—are called secondary particles (USEPA 2024i).

PM has many natural and human-made sources. Natural sources include windblown dust, forest fires, volcanoes, and ocean spray, while human-made sources include motor vehicles, fossil-fuel combustion, industrial processes, mining, agricultural activities, waste incineration and construction. Some are emitted directly from a source, such as construction sites, unpaved roads, fields, smokestacks or fires. Most particles form in the atmosphere as a result of complex

reactions of chemicals such as SO_2 and NOx, which are pollutants emitted from power plants, industries and automobiles (USEPA 2024i).

Particulate Matter contains microscopic solids or liquid droplets that are so small that they can be inhaled and cause serious health problems. Some particles less than 10 µm in diameter can get deep into the lungs and even the bloodstream. Of these, particles less than 2.5 µm in diameter, also known as fine particles or $PM_{2.5}$ pose the greatest risk to health. Fine particles are also the main cause of reduced visibility (haze) in parts of the U.S., including in national parks and wilderness areas (USEPA 2024i).

There are no non-attainment areas for PM in the TVA PSA (USEPA 2024e).

Lead

While lead is one of the criteria pollutants, major sources of lead in the air are ore and metals processing and not fuel combustion (USEPA 2024j); therefore, lead is not considered for this PEA. Additionally, there are no non-attainment areas for lead in the TVA PSA (USEPA 2024e).

Other Air Pollutants and Air Quality Concerns

Other pollutants that could affect air quality include other GHGs, hazardous air pollutants and VOCs. The most common air pollutants and emissions associated with natural gas combustion are methane and carbon dioxide. Both contribute to GHG emissions (USEPA 1998).

Hazardous Air Pollutants

Hazardous air pollutants (HAPs) are toxic air pollutants, which are known or suspected to cause cancer or other serious health effects or adverse environmental effects. The CAA identifies 188 pollutants as HAPs (USEPA 2024k). Most HAPs are emitted by human activity, including motor vehicles, factories, refineries and power plants.

Volatile Organic Compounds

VOCs are compounds that have a high-vapor pressure and low water solubility and are emitted as gases from certain solids or liquids. VOCs are often components of petroleum fuels, hydraulic fluids, paint thinners, and dry-cleaning agents. Organic chemicals are widely used as ingredients in household products including paints, varnishes, cleaning and disinfecting products, cosmetics, degreasing, and hobby products. All of these products can release organic compounds while in use, and, to some degree, when they are stored (USEPA 2024l).

The most common sources of man-made VOCs are petrochemical storage and transport, chemical processing, motor vehicles, paints and solvents. Natural sources of VOCs include vegetation, biological decay and forest fires. In many areas of the Southeast, natural sources contribute up to 90 percent of total VOCs. TVA does not emit a significant amount of VOC emissions. While VOCs are not a criteria pollutant, they are important because they are a precursor to ground-level ozone (TVA 2024e).

Most VOCs in the Tennessee Valley's air come from natural sources, and the remaining ones are generated by motor vehicles and some industries (TVA 2024e).

3.10.2 Environmental Consequences

The potential impacts to air quality from a given action are assessed by evaluating the potential for an action to generate air or dust emissions in excess of federal, state, or local regulations.

Although the extent of air emission impacts would vary from site to site, general effects from the Proposed Action within the TVA PSA are discussed below.

3.10.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not establish the proposed Resilience 360° program. TVA would continue to provide generation through alternative methods. Therefore, there would be no impacts to air quality under the No Action Alternative.

3.10.2.2 Alternative B – Proposed Action

Alternative B involves activities that would result in air emissions. Construction and decommissioning of generator sites, including transportation of the gas-fired or BESS units, other equipment, and workers, would result in vehicle, equipment, and dust emissions. Emissions from equipment that use diesel or gas as fuel may include particulates, CO, carbon dioxide (CO_2), HAPs, NOx, ozone, SO_2 and VOCs. Earth moving could produce dust that could affect particulate levels. Air quality impacts from construction activities would be temporary and would be dependent upon both man-made factors (e.g., intensity of activity, control measures), and natural factors (e.g., wind speed, wind direction, soil moisture). However, construction and later decommissioning would be temporary and limited to an area of up to 2 acres (including laydown areas). If disposal of trees or vegetation is necessary during construction, vegetation would be disposed of through means other than open burning. Therefore, construction and decommissioning would result in minor impacts.

Emissions would also occur during operations as a result of operation of the gas units. Each unit would be anticipated to operate no more than 400 hours per year. Natural gas generator emissions would include particulates, CO, CO_2, NOx, SO_2, ozone, HAPs, and VOCs. However, the total amount of these emissions would be temporary and small occurring only when the gas units are operational. Operational use would result in minor impacts.

Battery storage facilities would presumably operate with no emissions during normal operation, but lithium-ion battery fires, may generate substantial quantities of criteria pollutants, HAPs, or other pollutants. Where appropriate, the vendor would apply hazard mitigation practices if and where siting of battery storage units is required.

It is assumed that all reasonably foreseeable future actions in the vicinity of the host locations would comply with all applicable local, state, and federal regulations and permit requirements pertaining to air quality and emissions. Because construction activities are short-term and TVA anticipates the respective Resilience 360° sites would be operated less than 400 hours annually and dispatched infrequently, both construction and operation of individual Resilience 360° host sites would have a minor impact on air quality and local emissions in conjunction with reasonably foreseeable future actions in the vicinity. Additionally, while multiple Resilience 360° sites could be constructed across the TVA PSA, the geographic separation between individual sites would minimize the project's contribution to regional air quality conditions.

3.11 Greenhouse Gas and Climate Change

3.11.1 Affected Environment

Since 1901, the average surface temperature across the contiguous 48 states has risen at an average rate of 0.17 degrees Fahrenheit (°F) per decade. Average temperatures have risen more quickly since the late 1970s (0.32 to 0.51°F per decade since 1979). For the contiguous

U.S., nine of the ten warmest years on record have occurred since 1998, and 2012 and 2016 were the two warmest years on record. Worldwide, 2023 was the warmest year on record and 2014–2023 was the warmest decade on record since thermometer-based observations began. Global average surface temperature has risen at an average rate of 0.17°F per decade since 1901, similar to the rate of warming within the contiguous U.S. Since the late 1970s, however, the U.S. has warmed faster than the global rate. Some parts of the U.S. have experienced more warming than others, while some parts of the Southeast have experienced little change (USEPA 2024m).

Because human-induced warming is superimposed on a naturally varying climate, the temperature rise has not been, and will not be, uniform or smooth across the country over time (USGCRP 2023).

The 2023 National Climate Assessment concluded global climate is projected to continue to change over this century and beyond. The amount of warming projected beyond the next few decades is directly linked by these studies to the cumulative global emissions of GHG and particulates. By the end of this century, the 2023 National Climate Assessment concluded a 3.6°F rise is expected under the lower emissions scenario and a 5.4°F to 7.2°F rise for a higher emissions scenario. As with all future scenario modeling exercises, there is an important distinction to be made between a “prediction” of what “will” happen, and a “projection” of what future conditions are likely given a particular set of assumptions (USGCRP 2023).

The Southeastern U.S. is one of the few regions globally that does not exhibit an overall warming trend in surface temperature over the 20th century. This “warming hole” also includes part of the Great Plains and Midwest regions in the summer. Historically, temperatures increased rapidly in the Southeast during the early part of the 20th century, then decreased rapidly during the middle of the 20th century. Since the 1960s, temperatures in the Southeast have been increasing. Recent increases in temperature in the Southeast have been most pronounced in the summer season, particularly along the Gulf and Atlantic coasts. However, temperature trends in the Southeast over the period of 1895 to 2011 are found to be statistically insignificant for any season. Generally, in the Southeast, the number of extreme hot days has tended to decrease or remain the same while the number of very warm summer nights has tended to increase. The number of extreme cold days has tended to decrease. Global warming is a long-term trend, but that does not mean that every year will be warmer. Day-to-day and year-to-year changes in weather patterns will continue to produce variation, even as the climate warms. Generally, climate change results in Earth’s lower atmosphere becoming warmer and moister, resulting in the potential for more energy for storms and certain severe weather events. Trends in extreme rainfall vary from region to region (NOAA 2013).

Natural Greenhouse Gas Emissions

The sun is the primary source of energy for the Earth’s climate. About 30 percent of the sun’s energy that reaches Earth is reflected to space by clouds, gases and small particles in the atmosphere. The remainder is absorbed by the atmosphere and the surface. The Earth’s temperature depends on the balance between the energy entering and leaving the planet’s system. When energy is absorbed by the Earth’s system, global temperatures increase. Conversely, when the sun’s energy is reflected into space, global temperatures decrease (Walsh et al. 2014).

In nature, CO_2 is exchanged continually between the atmosphere, plants and animals through processes of photosynthesis, respiration and decomposition, and between the atmosphere and oceans through gas exchange. Billions of tons of carbon in the form of CO_2 are annually

absorbed by oceans and living biomass (i.e., sinks) and are annually emitted to the atmosphere through natural and man-made processes (i.e., sources). When in equilibrium, carbon fluxes among these various global reservoirs are roughly balanced (Galloway et al. 2014).

Greenhouse Effect

Like the glass in a greenhouse, certain gases, primarily CO_2, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride, absorb heat that is radiated from the surface of the Earth. It is believed that increases in the atmospheric concentrations of these gases cause the Earth to warm by trapping more heat. The common term for this phenomenon is the “greenhouse effect,” and these gases are typically referred to as GHGs. Atmospheric levels of CO_2 are currently increasing at a rate of 0.5 percent per year. Atmospheric levels measured at Mauna Loa in Hawaii and at other sites around the world reached 400 parts per million in 2013, higher than the Earth has experienced in over a million years (Walsh et al. 2014).

While water vapor is the most abundant GHG in the atmosphere, it is not included in the list of GHGs because changes in the atmospheric concentration of water vapor are generally considered to be the result of climate feedbacks related to the warming of the atmosphere, rather than a direct result of human activity. That said, the impact of water vapor is critically important to projecting future climate change and quantifying the effect of feedback loops on global and regional climate is the subject of ongoing data collection and active research (Walsh et al. 2014).

The modeling projections of warming depend largely on the amount of GHG accumulating in the atmosphere. GHGs can remain in the atmosphere for different amounts of time, ranging from a few years to thousands of years. GHGs are assigned global warming potentials, a measure of the relative amount of infrared radiation they absorb, their absorbing wavelengths and their persistence in the atmosphere (Table 3-5). All these gases remain in the atmosphere long enough to become well mixed, meaning the amount that is measured in the atmosphere is roughly the same all over the world, regardless of the source of the emissions (Walsh et al. 2014).

Table 3-5. Major Greenhouse Gases and Their Global Warming Potentials

Gas	Global Warming Potential
Carbon Dioxide	1
Methane	28
Nitrous oxide	265
Hydrofluorocarbons	4-12,400
Perfluorocarbons	6,630-11,100
Sulfur hexafluoride	23,500

Source: Intergovernmental Panel on Climate Change 2014

Greenhouse Gas Emissions

Electric utilities are one of the major emitters of CO_2 as a result of the combustion of coal, natural gas and other fossil fuels. Global energy-related CO_2 emissions increased to over 36.8 billion tons in 2022 (IEA 2023).

In 2022, U.S. GHG emissions totaled 6,343 million metric tons of CO_2 equivalents. It is estimated that 25 percent of those emissions were from electric power generation (USEPA 2024n). CO_2 emissions from TVA-owned generating facilities were 44,871,628 tons in 2022 and 41,620,653 tons in 2023 (TVA 2024f).

3.11.2 Environmental Consequences

The potential impacts to GHG emissions and global climate change from a given action are assessed by evaluating the potential for an action to generate GHG emissions in excess of federal, state, or local regulations. Although the magnitude of such emissions would vary from site to site, general effects from the Proposed Action within the TVA PSA are discussed below.

3.11.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not establish the proposed Resilience 360° program. TVA would continue to provide generation through alternative methods. Therefore, there would be no impacts, adverse or beneficial, resulting from changes to GHG emissions under the No Action Alternative.

3.11.2.2 Alternative B – Proposed Action

Changes to climate can result from the discharge of large quantities of GHGs to the atmosphere. Climate effects occur on a regional or larger scale. GHG emissions associated with this alternative relate to the emissions produced from the operation of combustion engine equipment during construction and the operation of the gas generators. Emissions from these activities would include CO_2, methane, and NOx.

Because construction (and later decommissioning) activities for individual host locations would be temporary, generally lasting from 4 to 12 weeks, the contribution to climate change in association with construction and decommissioning would be negligible. Additionally, operation of the generation units at individual host sites is anticipated to be no more than 400 hours per unit, annually. Therefore, the operational GHG emissions are also expected to be temporary and minor. Finally, the individual host locations are anticipated to be widely dispersed across the TVA PSA and thus would not contribute to local effects in conjunction with reasonably foreseeable future actions in the vicinity. Therefore, no changes to climate or significant increases in GHGs are anticipated as a result of either construction, operation, or decommissioning of the Resilience 360° units.

3.12 Transportation and Navigation

3.12.1 Affected Environment

This section describes the transportation and navigation infrastructure that could be affected by the project alternatives. The approach taken in this programmatic review focuses on a regional scale rather than a site-specific scale. Transportation refers to how raw materials for construction or operation reach the intended facilities, or waste is removed. Methods of transportation evaluated in this PEA include road, rail, and barge. Navigation refers to the commercial navigation channel of the Tennessee River system, secondary channels, and use of public waters on tributary reservoirs. TVA works with USACE and the U.S. Coast Guard to manage navigation on the Tennessee River system.

There are numerous public roadways, railways, and navigable water bodies in the TVA PSA. Roads that would be used to reach potential project sites vary from two-lane roads to four-lane

divided highways. Public road managers for this system include state departments of transportation, county highway departments and municipal road departments. Rail lines are managed by large railroad operators such as Union Pacific Railroad and Burlington Northern and Santa Fe Railway) in the western part of the PSA, Norfolk Southern Railway in the eastern part and CSX Transportation, Inc. throughout the PSA. Several short-line and local railroads exist in the PSA as well. Barge operation is present on the Mississippi River, Ohio River, Tennessee River and the Tennessee-Tombigbee Waterway.

3.12.2 Environmental Consequences

The potential impacts to transportation or navigation from a given action are assessed by evaluating the potential for an action to interfere with existing traffic and shipping levels, or to cause the potential for safety hazards associated with traffic and ships. Although the extent of transportation and navigation impacts would vary from site to site, general effects from the Proposed Action within the TVA PSA are discussed below.

3.12.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not establish the proposed Resilience 360° program. TVA would continue to provide generation through alternative methods. Therefore, there would be no impacts to transportation or navigation under the No Action Alternative.

3.12.2.2 Alternative B – Proposed Action

Individual projects covered under this document are not anticipated to adversely affect local roadway networks. TVA anticipates that most of the transportation for material delivery and disposal would be via truck utilizing existing roads which support commercial deliveries. The material required for construction would not require the use of oversized trucks and would not normally require roadway closures. Construction (and later decommissioning) activities and the deliveries of construction materials and equipment could possibly cause minor temporary delays on adjacent roadways. However, potential traffic delays could be avoided through mitigation strategies such as flagging during heavy commute periods and avoiding deliveries during periods of heavy traffic load.

The construction (and decommissioning) workforce traveling to and from a host site would contribute to the traffic on the local transportation network. A construction workforce of approximately 10 workers per day could be expected to support activities under this alternative. This workforce volume would occur at the beginning and end of the workday. Additional construction related vehicles (including but not limited to dozers, backhoes, graders, and loaders) would be delivered to or removed from each site on flatbed trailers under both the mobilization and demobilization stages of the project. Overall, the traffic volume generated by the construction workforce and the construction-related vehicles would be relatively minor. It is assumed that these motorists would use interstate highways or major arterial roadways as much as possible but would likely have to use lower functioning roadways (such as collectors and local roads) closer to individual project sites.

Given the units are typically transported by truck, unusual circumstances would be needed to require use of rail or barge for transport, and it would only be for a small number of sites. Rail or barge transport may only be used for a destination site that already has an existing rail or barge unloading facility and existing rail or barge traffic. Given that the destination sites would have to already have existing services using pre-established routes, there would be no new impacts to railways or river navigation because of this action.

Operation and maintenance of the facilities are not anticipated to change the existing levels of service on the surrounding road network since most operations would be conducted remotely. Therefore, overall, impacts to transportation and navigation are expected to be negligible to minor.

It is possible that construction of the Resilience 360° host sites could occur in close temporal and physical proximity to reasonably foreseeable future actions in the vicinity with a resulting increase in local transportation volume or congestion. Because the Resilience 360° construction activities would be of short duration (1-2 months), it is expected these impacts would be temporary and minor.

3.13 Hazardous Materials and Solid Waste

3.13.1 Affected Environment

This section focuses on the solid and hazardous waste produced by the construction and operation of the gas-fired generating and BESS units. Wastes typically produced by construction activities include vegetation, demolition debris, oily debris, packing materials, scrap lumber, and domestic wastes (garbage). During operations, the units are not expected to be a direct source of either hazardous materials or solid waste. However, general maintenance of these units may add, slightly, to the volume of non-hazardous waste produced by the host facility. These materials may include personal protective equipment, paint, oils and lubricants, spent resins, desiccants, batteries, and domestic waste. Any additional wastes associated with the units are not expected to add significantly to the total volume, and would likely be combined with other materials stored, managed, and disposed by the host facility.

3.13.2 Environmental Consequences

The potential impacts associated with hazardous materials or solid waste from a given action are assessed by evaluating the potential for an action to use, store, generate, spill, or dispose of these materials during construction or operations. Although the extent of hazardous material or solid waste impacts would vary from site to site and would depend on the types and numbers of units installed on a site, general effects from the Proposed Action within the TVA PSA are discussed below.

3.13.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not establish the proposed Resilience 360° program. TVA would continue to provide generation through alternative methods. Therefore, there would be no impacts due to the use or generation of hazardous materials or solid waste under the No Action Alternative.

3.13.2.2 Alternative B – Proposed Action

Under the Proposed Action Alternative, the proposed Resilience 360° program would be established at host sites.

Units at host sites would be constructed, operated, and decommissioned as required pursuant to state and federal regulations, which could include groundwater monitoring, corrective measures, and post-closure care activities.

During construction, waste generated would primarily be solid, non-hazardous waste including wood, paper, steel, and plastic. Using BMPs determined by local ordinances and state

regulations, oils and solvents would be recycled, and their use deliberate. Sanitary waste from the portable toilets would be the vendor's responsibility and would be removed by a contracted sanitary service. Construction impacts to waste would be minor.

When developed, operations of the proposed project would be monitored remotely. During operations, the proposed project would have no water discharge. Both natural gas and BESS facilities produce little waste during operation. Used oil and coolant, along with maintenance wastes, would be the responsibility of the vendor and would be disposed in accordance with all local, state, and federal regulations. Operational impacts to waste would be minor.

Similarly, end-of-life cycle decommissioning activities would generate waste similar to construction waste. The vendor would be responsible for the fate of the units. All proposed closure activities would be conducted in accordance with state and local regulations, and it is expected that waste materials would be contained.

Any lighting ballasts containing polychlorinated biphenyls would be removed and properly disposed offsite during preliminary activities after power termination and during the early stages of demolition. Other materials that are removed and typically recycled in early retirement activities include used oils, glycols, and refrigerants. Consumer commodities (such lubricants, aerosols, and cleaners) are reused if possible, or sent for disposal if an outlet cannot be found. Fuels would be used elsewhere or sent for recycling. Bulk chemicals/materials are typically recycled or disposed of as applicable. Mercury devices, batteries, light bulbs, and e-waste are recycled.

The vendor would manage removal and disposal of solid and hazardous wastes in accordance with local, state, and federal regulations, and recycle these wastes as practical; thus, decommissioning impacts to solid and hazardous waste would be minor.

It is assumed that all reasonably foreseeable future actions in the vicinity of the host locations would also comply with all applicable local, state, and federal regulations and permit requirements pertaining to hazardous materials and solid waste. Therefore, impacts to hazardous materials and solid waste associated with reasonably foreseeable future actions in the temporal and physical vicinity of host locations would be minor overall.

3.14 Public Health and Safety

Workplace health and safety regulations are designed to eliminate personal injuries and illnesses from occurring in the workplace. These laws may comprise both federal and state statutes. U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) is the main statute protecting the health and safety of workers in the workplaces. OSHA regulations are presented in Title 29 CFR Part 1910 (29 CFR Part 1919), OSHA Standards. A related statute, 29 CFR Part 1926, contains health and safety regulations specific to the construction industry. The Tennessee Department of Labor and Workforce Development has adopted federal OSHA standards contained in 29 CFR Parts 1910 and 1926 pursuant to Tennessee Code Annotated Section 50-3-201. Additionally, the federal regulations govern workplace health and safety requirements in private sector workplaces in Alabama since no state law governs workplace safety for public sector employers. The Kentucky Occupational Safety and Health Program, under the statutory authority of Kentucky Revised Statutes Chapter 338 has a state plan approved by the OSHA to protect the health and safety of workers in the workplaces.

3.14.1 Affected Environment

The implementation of proper engineering and equipment design, administrative controls such as employee training and compliance with regulatory requirements related to Health and Safety, would help ensure that the risks associated with installation and operations of the gas or BESS units at the host sites would be minimal. Health risks are also associated with emissions and discharges from the facilities as well as accidental spills/releases and there are comprehensive environmental regulatory programs in place to manage and reduce such risks to acceptable levels.

3.14.2 Environmental Consequences

The potential public health and safety impacts from a given action are assessed by evaluating the potential for construction or operations to be accessible to the general public, and the extent to which site employees would be trained and operate in accordance with regulations and industry standards. Although the extent of these impacts would vary from site to site and depend on the number and type of gas-powered or BESS units deployed, general effects from the Proposed Action within the TVA PSA are discussed below.

3.14.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not establish the proposed Resilience 360° program. TVA would continue to provide generation through alternative methods. Therefore, there would be no impacts to public health or safety under the No Action Alternative.

3.14.2.2 Alternative B – Proposed Action

The Proposed Action would be implemented consistent with standards as established by OSHA and state requirements. These activities include construction, operation, and decommissioning tasks. TVA anticipates that the vendor(s) would have established health and safety plans that are approved by the host(s). Additionally, only trained and certified workers would be used for both construction and operational activities. For the public, TVA anticipates that all sites would be within a secured, protected area. Examples of BMP barriers may include, but are not limited to fencing, perimeter walls, and restricted access. The equipment is also closed and locked to prevent unauthorized access. Therefore, the risk of adverse impacts to workers and public safety would be minimal.

It is assumed that all reasonably foreseeable future actions in the vicinity of the host locations would also comply with all applicable standards as established by OSHA and state requirements. Therefore, impacts to public health and safety associated with reasonably foreseeable future actions in the temporal and physical vicinity of host locations would be negligible.

3.15 Socioeconomics

3.15.1 Affected Environment

Socioeconomics

This section describes social and economic conditions in the TVA PSA. It presents and compares qualitative and quantitative data from varying geographies to characterize the regional human population and associated demographics and economics. Depending on availability and comparability, the census data derive from the U.S. Census Bureau (USCB) 2010 decennial census, the 2020 decennial census, and the most current population estimates

from the 2022 American Community Survey (ACS; 2018 – 2022 5 Year estimates). These data were obtained utilizing USCB American FactFinder and USCB TIGER Products. Spatial data for figures were obtained through USCB TIGER Products and ESRI. Other quantitative and qualitative data were gathered from TVA staff, regional commissions, counties and communities, and other relevant sources, as cited within each subsection.

Generally, when census data are presented, information on the TVA PSA is given as a baseline for comparison to smaller parts of the PSA. The TVA PSA considered for socioeconomics consists of 181 counties and two independent cities in seven states, including all counties in Tennessee and portions of Alabama, Georgia, Kentucky, Mississippi, North Carolina, and Virginia (see Appendix D-1 for a complete list of counties considered). Smaller areas are defined as relevant to the topic and may consist of metropolitan statistical areas (MSAs), urban or rural areas, counties, or census tracts.

Where relevant, information from USCB Division 6, East South Central, is employed for comparative purposes. Division 6 includes the majority of the TVA PSA, consisting of Alabama, Kentucky, Mississippi, and Tennessee (USCB 2000). USCB Division 6 data may be more comparable to the TVA PSA than that of USCB Region 3, the South, because of similarities in population densities, demographics, sociocultural characteristics, and economics. For many topics, U.S.-wide data are also employed due to their usefulness in understanding how the TVA PSA compares with the rest of the nation.

Population and Demographics

Population and various demographic data including minorities are presented in this subsection. First, population change for the TVA PSA between 2010 and 2022 are compared with that for Division 6 and the U.S. Then, population variation across the TVA PSA and among its most populous MSAs is discussed. Finally, demographic variables for the TVA PSA are compared with those of Division 6 and the nation.

On March 11, 2020, the novel coronavirus COVID-19 pandemic was declared by the World Health Organization. The pandemic affected the main components of population change; natural increase (or decrease) related to the number of births and deaths within the population, and net migration gain (or loss). As a result, population trends were altered in both rural and urban America, producing a patchwork of population loss and gain across the country.

Population

As shown in Table 3-6, the estimated population of the TVA PSA was 9.8 million in 2010 and 10.5 million in 2022, a 7.4 percent increase. During the same time, population in Division 6 and in the U.S. increased 5.2 percent and 7.0 percent respectively. The rate of population growth was greater in the TVA PSA as compared to the Division and the nation (USCB 2010, USCB 2022a).

Table 3-6. Population Data for the TVA PSA, TVA MSAs, Division 6, and U.S.

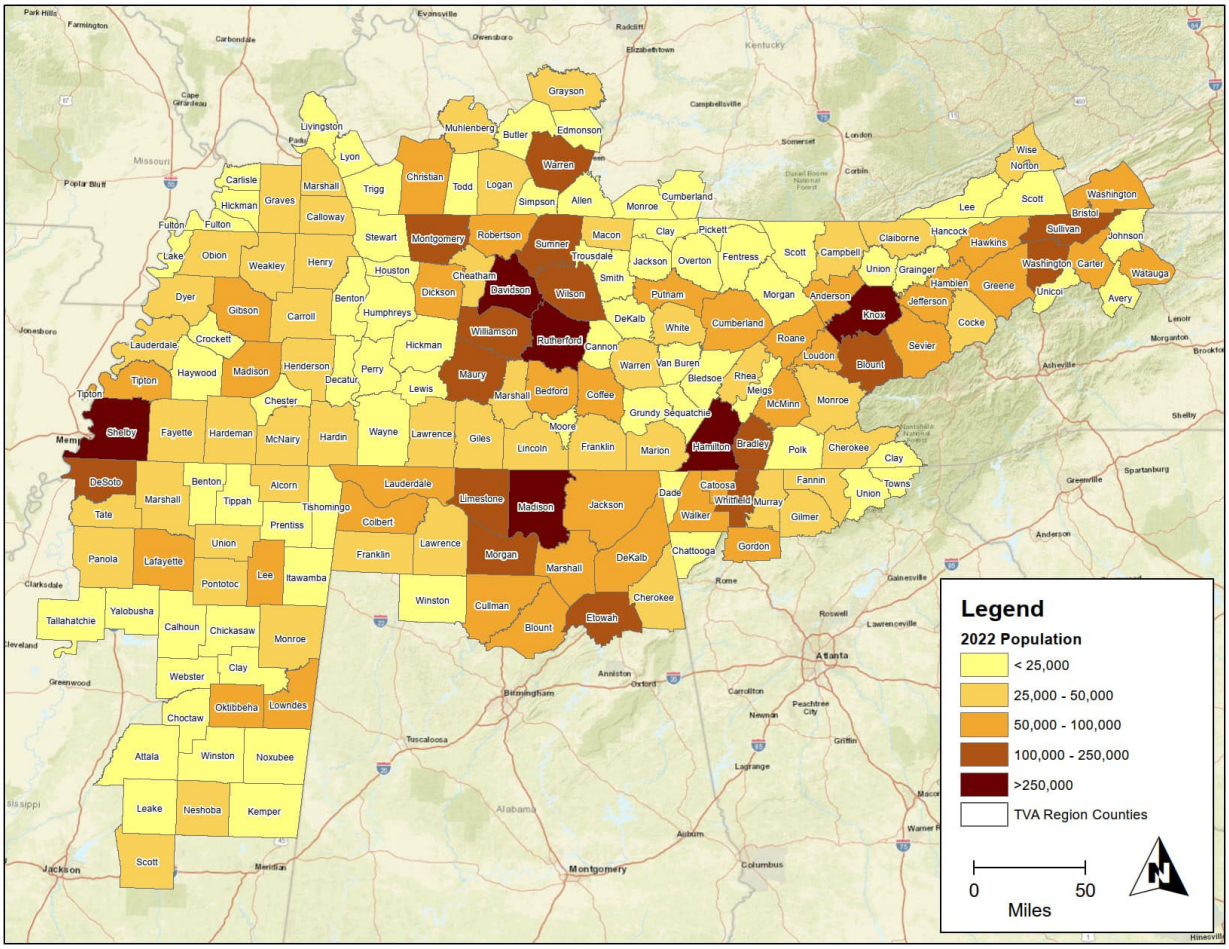
Area	2010 Population	2020 Population	2022 Population	% Increase 2010 – 2020	% Increase 2010 – 2022	% of TVA PSA Pop., 2022
United States	309,338,421	331,449,281	331,097,593	7.1	7.0	--
Division 6 (East South Central)	18,459,846	19,402,234	19,413,645	5.1	5.2	--
TVA PSA	9,810,629	10,520,062	10,540,347	7.2	7.4	--

Area	2010 Population	2020 Population	2022 Population	% Increase 2010 – 2020	% Increase 2010 – 2022	% of TVA PSA Pop., 2022
MSAs in TVA PSA						
Bowling Green, KY	159,309	179,639	180,624	12.8	13.4	1.7
Chattanooga, TN-GA	529,196	562,647	564,466	6.3	6.7	5.4
Clarksville, TN-KY	261,619	320,535	322,949	22.5	23.4	3.1
Cleveland, TN	115,913	126,164	126,479	8.8	9.1	1.2
Dalton, GA	142,315	142,837	143,096	0.4	0.5	1.4
Decatur, AL	153,949	156,494	156,218	1.7	1.5	1.5
Florence-Muscle Shoals, AL	147,260	150,791	151,599	2.4	2.9	1.4
Huntsville, AL	419,279	491,723	493,980	17.3	17.8	4.7
Jackson, TN	130,031	180,504	180,446	38.8	38.8	1.7
Johnson City, TN	199,010	207,285	207,442	4.2	4.2	2.0
Kingsport-Bristol-Bristol, TN-VA	309,494	307,614	308,386	-0.6	-0.4	2.9
Knoxville, TN	838,748	879,773	884,359	4.9	5.4	8.4
Memphis, TN-AR	1,326,280	1,337,779	1,335,804	0.9	0.7	12.7
Morristown, TN	114,219	142,709	143,196	24.9	25.4	1.4
Nashville- Davidson-Murfreesboro-Franklin, TN	1,675,757	1,989,519	1,990,873	18.7	18.8	18.9
TVA MSA TOTALS	6,522,379	7,176,013	7,189,917	10.0	10.2	68.2

Source: USCB 2010, USCB 2020, USCB 2022a

However, in more recent years, the rate of population increase has declined in the TVA PSA, Division 6, and the nation. The annual rate of population growth in the TVA PSA declined from 0.72 percent between 2010 and 2020 to 0.1 percent between 2020 and 2022. In the nation, population decreased from 331.4 million at the 2020 decennial census, to 331.0 million in 2022. Growth in Division 6 was flat during the same period (USCB 2010, USCB 2020, USCB 2022a). Between 2022 and 2040, the annual rate of population growth in the TVA PSA is projected to be 0.69 percent, greater than the projected growth rate of the nation of 0.4 percent (CBER 2022, GOPB 2023, KSDC 2022, SDC MS 2024, NC OSBM 2023, TN SDC 2022, Cooper Center 2022, USCB 2023a).

Population varies greatly among the counties in the TVA PSA as shown in Figure 3-6. The larger population concentrations tend to be located along major river corridors: the Tennessee River and its tributaries from northeast Tennessee through Knoxville and Chattanooga into north Alabama; the Nashville area along the Cumberland River; and the Memphis area on the Mississippi River. Low population counties are scattered around the PSA, but most are in Mississippi, the Cumberland Plateau in Tennessee, and the Highland Rim in Tennessee and Kentucky.



Source: USCB 2023b, USCB 2020

Figure 3-6. Variation in Population of Counties in the TVA PSA

As shown in Table 3-6, an increasing proportion of the total population of the TVA PSA, 66.5 percent in 2010 and an estimated 68.2 percent in 2020 and 2022, lives in USCB-defined metropolitan statistical areas[1]. Two of these areas were estimated to have populations greater than one million in 2022: Nashville, 1.9 million, and Memphis, 1.3 million. The Knoxville and Chattanooga MSAs were estimated to have populations of approximately 884,000 and 564,000, respectively. These four MSAs accounted for 45 percent of the TVA PSA's population in 2022 (USCB 2010, USCB 2020, USCB 2022a).

While the proportion of the TVA PSA's population living in metropolitan areas was estimated to be lower than the national average of about 80 percent, the proportion has been increasing, and this trend appears likely to continue in the future. This is reflective of a decades-long nationwide trend of urbanization, characterized by a decline of population in rural areas and an increase in metropolitan areas. Population increase in metropolitan areas may be attributed to a combination of internal growth, outward expansion to include new growth or integration of communities previously existing outside the urban area, and in-migration of young adults seeking lifestyle and employment opportunities (USCB 2023c, Frey 2019). As a result,

[1] The Memphis MSA has two counties outside the TVA PSA, Crittenden County, Arkansas and Tunica County, Mississippi.

residential populations in the urban core areas of several cities in the TVA PSA have increased, including the largest cities. A notable exception to this trend is Memphis, Tennessee, which experienced a 4 percent decline in population between 2010 and 2022 (Bellow 2023).

The COVID-19 pandemic caused a major opposing shift in the migration flows of most states as people moved from metropolitan areas to rural counties. A shift to remote work as many businesses remained closed potentially influenced geographic mobility. As a result, population grew in rural counties during the pandemic, especially in Southern states. Most people that relocated during this time, moved to rural areas within their state of origin (Melotte 2023, USDA 2022).

Southern states within the TVA PSA – including Alabama, Georgia, North Carolina, and Tennessee – also benefit from another decades-long migration pattern of northeast residents moving to southern states. Many are seniors of the large Baby Boomer generation seeking a warmer climate, lower cost of living, housing opportunities, and a favorable tax environment. Others are opportunity-seeking young adults of the equally large Millennial generation, who form the backbone of labor forces and consumer bases. According to the Tennessee State Data Center, the population of both metropolitan and rural counties in Tennessee increased during and after the pandemic, resulting in widespread gains across the state (TN SDC 2022, Frey 2019).

Demographics

As shown in Table 3-7, the median age in the TVA PSA was 41.4 years in 2022, an increase from the median age of 37.9 years in 2010. In 2022, the TVA PSA had a higher population of people over 65 years of age (17 percent) as compared to Division 6 or the nation as a whole, which had 16.8 percent and 16.5 percent, respectively. The percentage of people identifying themselves as white was 73.3 percent in the TVA PSA, greater than Division 6 and the U.S., which were 70.4 percent and 58.9 percent, respectively (USCB 2022a, USCB 2022b, USCB 2022c).

Table 3-7. Demographics of the TVA PSA, Division 6, and U.S.

Geography	Median Age	% White Alone	% Age 65 or More	% High School or Higher
United States	38.5	58.9	16.5	89.1
Division 6	38.9	70.4	16.8	88.2
TVA PSA	41.4	73.3	17.0	88.1

Source: USCB 2022a, USCB 2022b, USCB 2022c

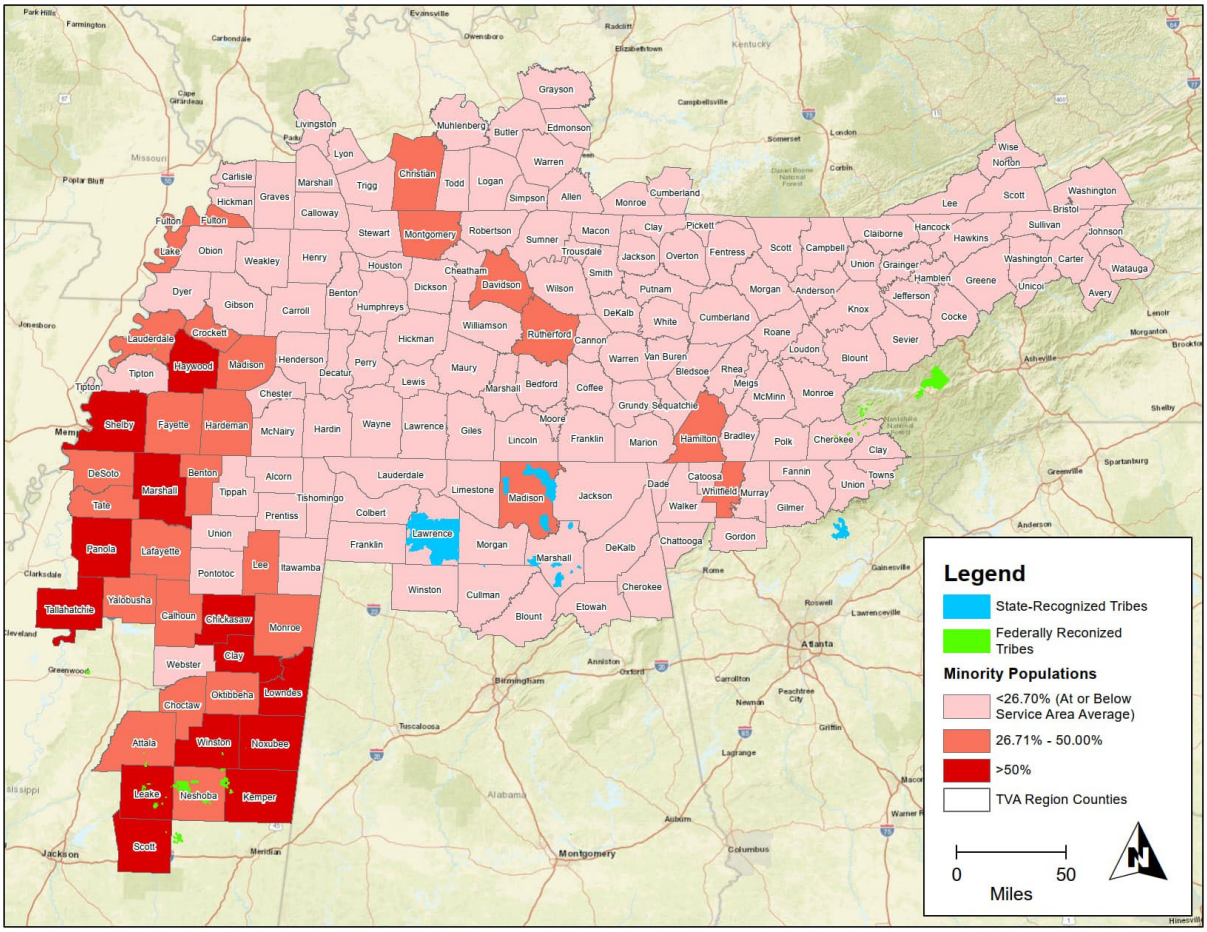
As shown in Table 3-7, of the TVA PSA population 25 years old or older, approximately 88 percent held a high school diploma, equivalency diploma, or higher degree in 2022. This percentage is similar to Division 6 (88 percent) and the U.S. as a whole (89 percent) (USCB 2022c).

Minority Populations

The TVA PSA contains minority populations which were identified using the 2022 ACS (2018 – 2022 5 Year estimates) for each of the 181 counties or independent cities in the TVA PSA. Minority populations are identified when either the minority population of the affected area exceeds 50 percent, or the minority population percentage of the study area is meaningfully greater than the minority population percentage in the general population or other appropriate

unit of geographic analysis In 2022, the minority population in the TVA PSA was 26.7 percent. As shown in Figure 3-7, 13 counties in the PSA had minority populations that exceeded 50 percent, well above the TVA PSA average. These included Haywood and Shelby counties in Tennessee and Lowndes, Winston, Chickasaw, Scott, Leake, Marshall, Panola, Clay, Tallahatchie, Kemper, and Noxubee counties in Mississippi. The minority percentages of each county are shown in Table 3-8. In these areas, the African American population composed the highest percentage of the population, averaging 52 percent (USCB 2022b).

An additional 38 counties had a minority population greater than the TVA PSA average. All of the counties with minority percentages higher than the TVA PSA as a whole are listed in Appendix D-4 (USCB 2022b).



Source: USCB 2022b, USCB 2023b

Figure 3-7. Minority Populations at the County Level in the TVA PSA

Table 3-8. Counties in the TVA PSA with Minority Populations Exceeding 50 Percent

Geography	2022 Population	2022 Minority (%)	Black or African American (%)	American Indian, Alaskan Native (%)	Asian (%)	Native Hawaiian, Pacific Islander (%)	Some other race (%)	Two or more races (%)	Hispanic or Latino (%)
Division 6	19,413,645	29.6	20.0	0.2	1.5	0.0	0.3	2.7	4.8
TVA PSA	10,540,347	26.7	15.7	0.2	1.6	0.1	0.3	2.9	6.0
TVA PSA Counties									
Chickasaw County, MS	17,024	50.9	43.7	0.0	0.2	0.0	0.0	1.9	5.1
Clay County, MS	18,598	62.0	60.0	0.0	0.0	0.0	0.0	1.8	0.2
Kemper County, MS	8,980	66.6	61.8	3.8	0.0	0.0	0.0	0.2	0.8
Leake County, MS	21,335	52.3	39.8	5.7	0.4	0.0	0.0	1.4	5.1
Lowndes County, MS	58,547	50.0	44.5	0.1	1.1	0.0	0.4	1.5	2.4
Marshall County, MS	33,980	52.9	45.5	0.0	0.1	0.0	0.5	2.4	4.3
Noxubee County, MS	10,261	74.4	73.6	0.4	0.0	0.0	0.0	0.2	0.3
Panola County, MS	33,157	53.1	49.6	0.1	0.3	0.4	0.1	1.9	0.6
Scott County, MS	27,943	51.3	35.6	0.1	0.1	0.0	0.2	3.5	11.8
Tallahatchie County, MS	12,621	65.1	61.4	0.0	0.1	0.0	0.2	1.5	1.9
Winston County, MS	17,741	50.4	46.7	0.5	0.1	0.0	0.0	1.6	1.5
Haywood County, TN	17,806	56.3	50.0	0.0	0.1	0.0	0.4	1.4	4.3
Shelby County, TN	926,440	65.5	53.6	0.1	2.9	0.0	0.3	1.9	6.8

Urban-Rural Distinctions

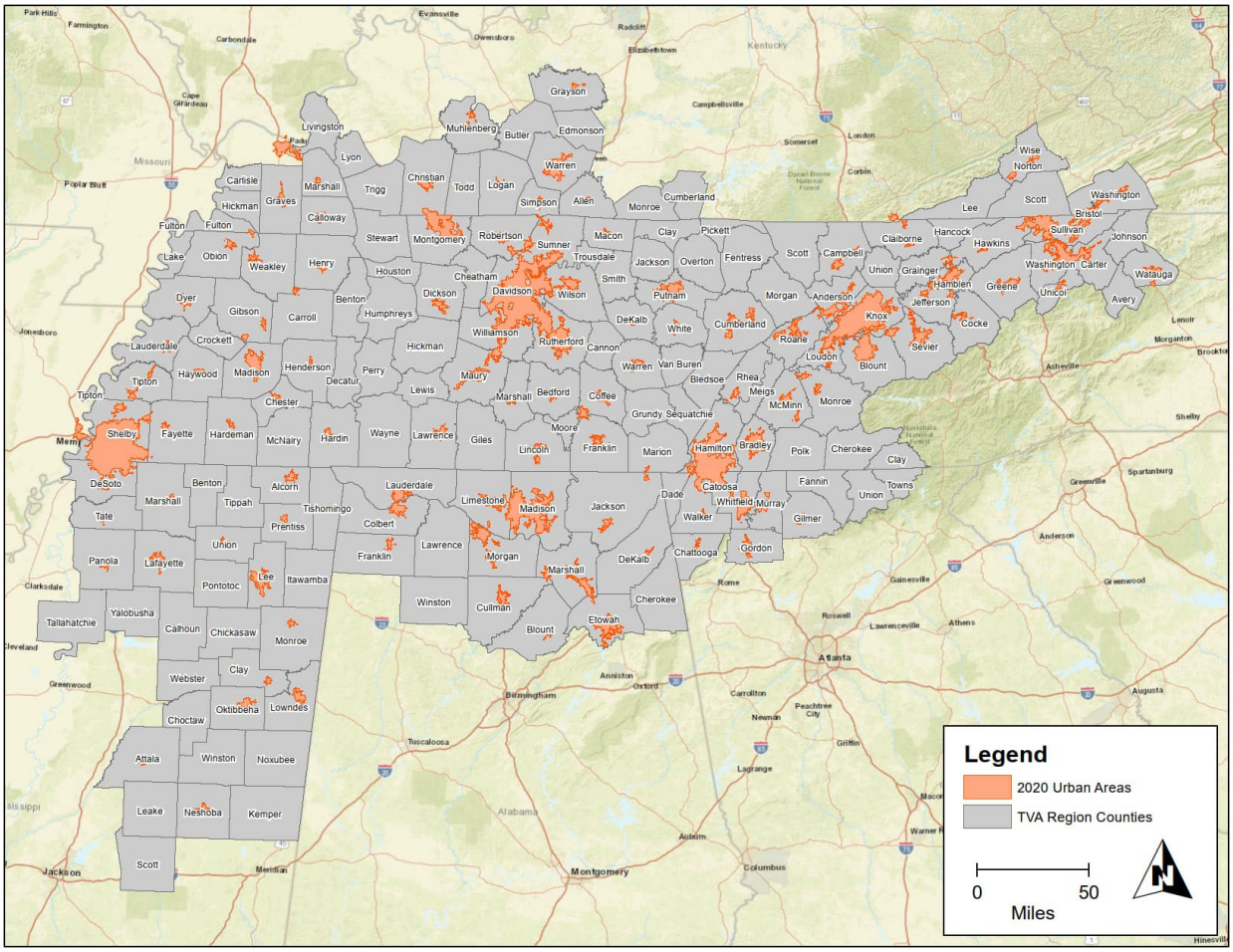
Distinctions between urban and rural areas across the TVA PSA are described in this subsection. Following the 2020 Census, the USCB changed the way urban areas are defined, and released a new list of urban areas. USCB-defined urban areas comprise a densely settled core of census blocks that have at least 2,000 housing units or a population of at least 5,000. This includes adjacent territory containing non-residential and commercial uses. Rural areas are defined as all population, housing and territory not included within an urban area. In general, population density of urban areas has increased from 2,343 persons per square mile in 2010 to 2,553 in 2020 (USCB 2023c).

As shown in Figure 3-8, the TVA PSA included 120 separate USCB-designated urban areas in 2020. Urban areas comprised approximately 5 percent of the TVA PSA and contained nearly 56 percent of the population (USCB 2023b, USCB 2023d). This is compared with the U.S., where approximately 80 percent of the population resided within approximately 3.1 percent of the total land area in 2020. Across Division 6, approximately 59 percent of the population lived in urban areas (USCB 2023c, USCB 2024, Visual Capitalist 2020).

USCB considers all portions outside of designated urban areas to be rural areas. In 2020, approximately 95 percent of the TVA PSA was considered rural, accounting for almost 44 percent of the population in the TVA PSA (USCB 2023b, USCB 2023d). Twenty percent of the U.S. population was considered rural in the same year (USCB 2024).

In 2022, the three most populous counties in or partially within the TVA PSA were Shelby, Davidson, and Knox counties, Tennessee as shown in Table 3-9. Each county had a population greater than 430,000 residents, and greater than 50 percent of land was classified as urban in the 2020 Census (USCB 2023d). Nashville and portions of its metropolitan area encompass Davidson County, Tennessee, and Shelby County is primarily composed of the City of Memphis. Knox County is largely composed of the Knoxville metropolitan area. The population of Davidson and Knox counties increased 13.3 percent and 11.4 percent respectively between

2010 and 2022, while the population of Shelby County decreased 0.1 percent (USCB 2010, USCB 2022a).



Source: USCB 2023b, USCB 2023d

Figure 3-8. Urban and Rural Areas in the TVA PSA

Table 3-9. Population Data for the Most/Least Populous Counties in the TVA PSA

Geography	2010 Population	% Urban Population, 2010	2020 Population	% Urban Population, 2020	% Land classified as Urban, 2020	2022 Population	% Increase 2010 – 2022
Shelby County, TN	927,644	97.2	929,744	96.6	50.9	926,440	-0.1%
Davidson County, TN	626,681	96.6	715,884	96.9	58.6	709,786	13.3%
Knox County, TN	432,226	89.1	478,971	90.8	54.8	481,406	11.4%
Pickett County, TN	5,077	0.0	5,001	0.0	0.0	5,042	-0.7%
Carlisle County, KY	5,104	0.0	4,826	0.0	0.0	4,782	-6.3%
Hickman County, KY	4,902	0.0	4,521	0.0	0.0	4,491	-8.4%

Source: USCB 2010, USCB 2022a, USCB 2023d

In 2022, the three least populous counties in or partially within the TVA PSA were Pickett County, Tennessee, and Carlisle and Hickman counties, Kentucky, as shown in Table 3-9. The entirety of these counties was considered rural areas in 2020, as defined by the USCB (USCB

2023d). The population of each county declined between 2010 and 2022. The population of Hickman County decreased the most (8.4 percent); while the population of Carlisle and Pickett declined in population 6.3 percent and 0.7 percent, respectively (USCB 2010, USCB 2022a).

Economics

In this subsection, major industries and employment, income, and poverty data are presented for the TVA PSA, as compared with Division 6 and the U.S.

Regional Economy

The gross domestic product for the TVA PSA for FY 2023 was estimated at $685.5 billion, based on the Bureau of Economic Analysis gross domestic product data by state and Bureau of Labor Statistics county level employment data. In 2022, the top three industries for employment in the TVA PSA and Division 6, listed by rank highest to lowest, were: (1) educational services, health care, and social assistance industries; (2) manufacturing; and (3) retail trade. For the U.S., these were: (1) educational services, health care, and social assistance industries; (2) professional, scientific, management, administrative, and waste management industries; and (3) retail trade (USCB 2023e). TVA revenues in FY 2023 were $12.1 billion, representing about 1.8 percent of the total TVA PSA economy.

In the TVA PSA and Division 6, the economy depends more on manufacturing than the U.S. as a whole. While the relative importance of manufacturing has been declining for years, this has occurred to a greater degree for the nation overall than for the TVA PSA. In the TVA PSA, manufacturing jobs still employ 14.6 percent of the civilian working population, second among industrial sectors (USCB 2023e). Factors contributing to the high proportion of manufacturing include location with good access to markets in the Northeast, Midwest, Southwest, and the rest of the Southeast; good transportation; relatively low wages and cost of living; right-to-work laws; and abundant, relatively low-cost resources including land and electricity.

TVA plays an important role in the regional economy through its Economic Development program. TVA works to attract new businesses to the Tennessee Valley, engage with communities and existing companies to grow the economy, and partner with state, regional, and local economic development organizations to amplify job growth and capital investment in the PSA (TVA 2022a). TVA offers site selection services, incentives, research and technical assistance to help companies locate, stay, and expand existing operations in the Tennessee Valley (TVA 2020b). Development efforts target six key markets: aerospace and defense, automotive and mobility technologies, clean technologies, food and industrial technologies, information systems and security and life sciences (TVA 2023). Table 3-10 shows the amount of capital investment by TVA for FY 2019 through FY 2023.

Table 3-10. TVA Capital Investment Between 2019 and 2023

Fiscal Year	Capital Investment (in billions of U.S. dollars)
2019	$8.9
2020	$8.6
2021	$8.8
2022	$10.2
2023	$9.2
Total	$57.0

Source: TVA 2022a, TVA 2023, TVA 2020c, TVA 2021

Employment

In 2022, the participation rate of the civilian labor force, defined as the percentage of the population aged 16 or more that is either working or actively looking for work, was estimated to be 5.1 million, or 60.1 percent, in the TVA PSA. In comparison, the participation rate of the civilian work force was less than the nation (62.2percent) but more than Division 6 (59.2 percent). The unemployment rate in the TVA PSA was 5.0 percent, lower than the nation (5.3 percent) and Division 6 (5.3 percent) during the same time period. There was considerable geographic variation in unemployment rates with adjacent counties sometimes having large differences. Unemployment rates across the TVA PSA range from a low of 0.8 percent in Trousdale County, Tennessee, located within the Nashville-Davidson-Murfreesboro-Franklin, Tennessee, metropolitan area, to a high of 14.1 percent in the rural county of Kemper County, Mississippi (USCB 2023e).

In 2022, the TVA PSA and Division 6 had similar percentages of people employed in various occupations as shown in Table 3-11. The TVA PSA had a higher percentage of employees in production, transportation, and material moving fields (17.7 percent) as compared to the nation (13.1 percent) (USCB 2023e).

Table 3-11. Employment in Occupations in the TVA PSA, Division 6, and U.S.

Geography	% Employed in:				
	Mgt., Business, Science, and Arts	Service	Sales and Office	Natural Res., Construction, Maintenance	Production, Transportation, Material Moving
United States	41.0	16.8	20.5	8.7	13.1
Division 6	33.6	16.1	20.8	9.1	17.5
TVA PSA	36.5	15.7	20.9	9.2	17.7

Source: USCB 2023e

TVA's Economic Development program fosters job growth throughout the PSA by forming partnerships with state, regional, and local economic development organizations. TVA's efforts bring greater opportunities for businesses and working people in the cities and rural communities it serves. Table 3-12 shows the number of TVA assisted jobs between 2019 and 2023. New and retained job numbers reported by TVA are certified and provided to TVA by TVA customers, defined as an entity that purchases or distributes power from TVA. New jobs are defined as newly created, paid positions (including contract jobs) at a facility of a TVA customer. Retained jobs are paid positions (including contract jobs) at a facility of a TVA customer that were created prior to the current TVA fiscal year and that continue to be filled in the current TVA fiscal year (TVA 2023).

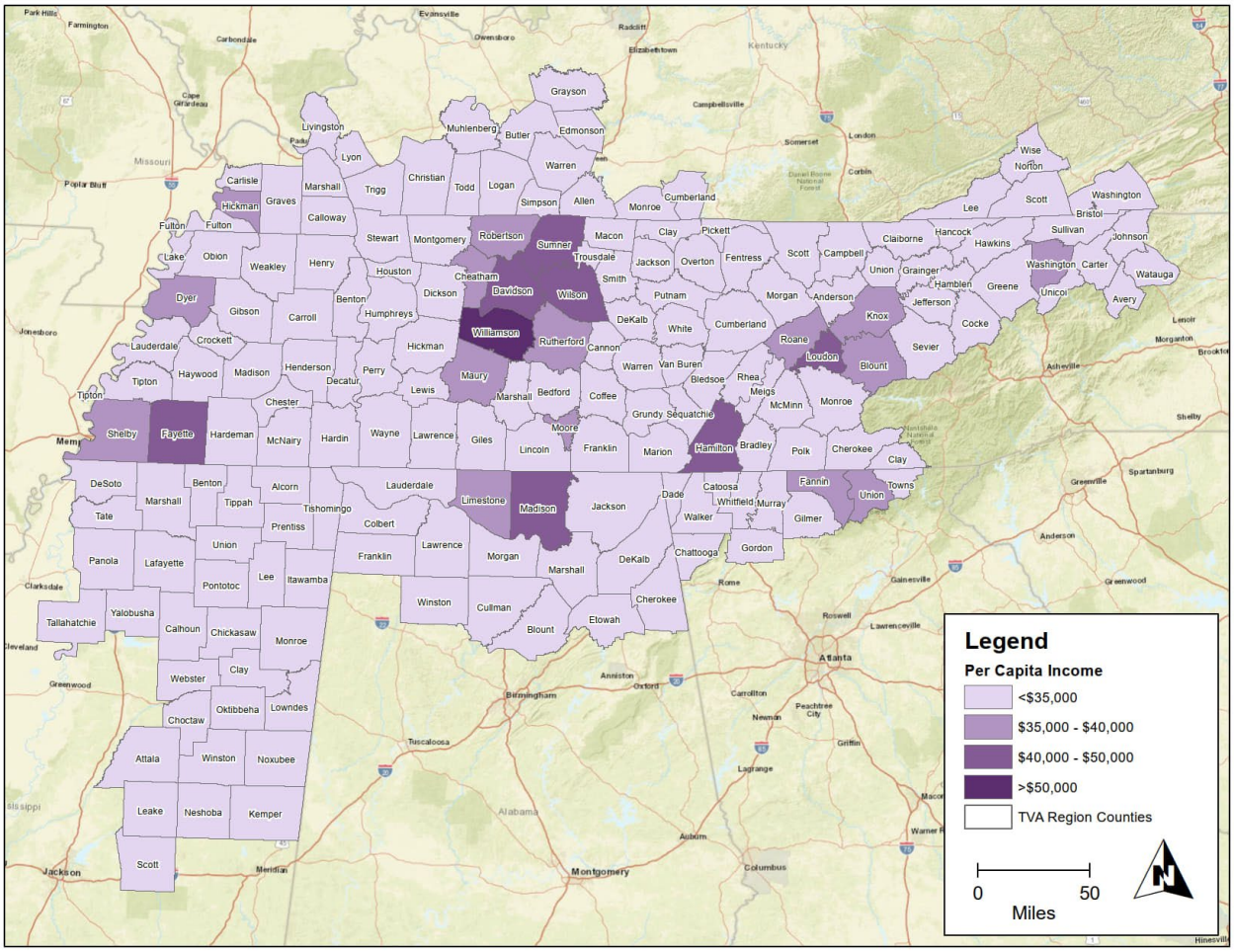
Table 3-12. TVA-Assisted Jobs Between 2019 and 2023

Fiscal Year	New Jobs	Retained Jobs	Total Jobs
2019	21,400	45,100	66,500
2020	19,000	48,000	67,000
2021	22,550	58,350	80,900
2022	26,500	40,000	66,500
2023	12,275	46,125	58,400

Source: TVA 2018, TVA 2019b, TVA 2020c, TVA 2021, TVA 2022b, TVA 2023

Income and Poverty

In 2022, per capita income in the TVA PSA ranged from $19,695 (Lake County, Tennessee) to $61,451 (Williamson County, Tennessee). Only five counties in the TVA PSA had incomes above the nation's per capita income of $41,261. Four of the five were located in Tennessee (Williamson County, Davidson County, Wilson County, and Hamilton County). One county was located in Madison County, Alabama. Each of these counties were located within a metropolitan area. Per capita income in Division 6 was $33,716. Within the TVA PSA, only 29 counties had per capita income greater than the Division, indicating that higher per capita income concentrates in few areas in the TVA PSA. Figure 3-9 illustrates the differences in per capita income rates of TVA PSA counties (USCB 2023e).



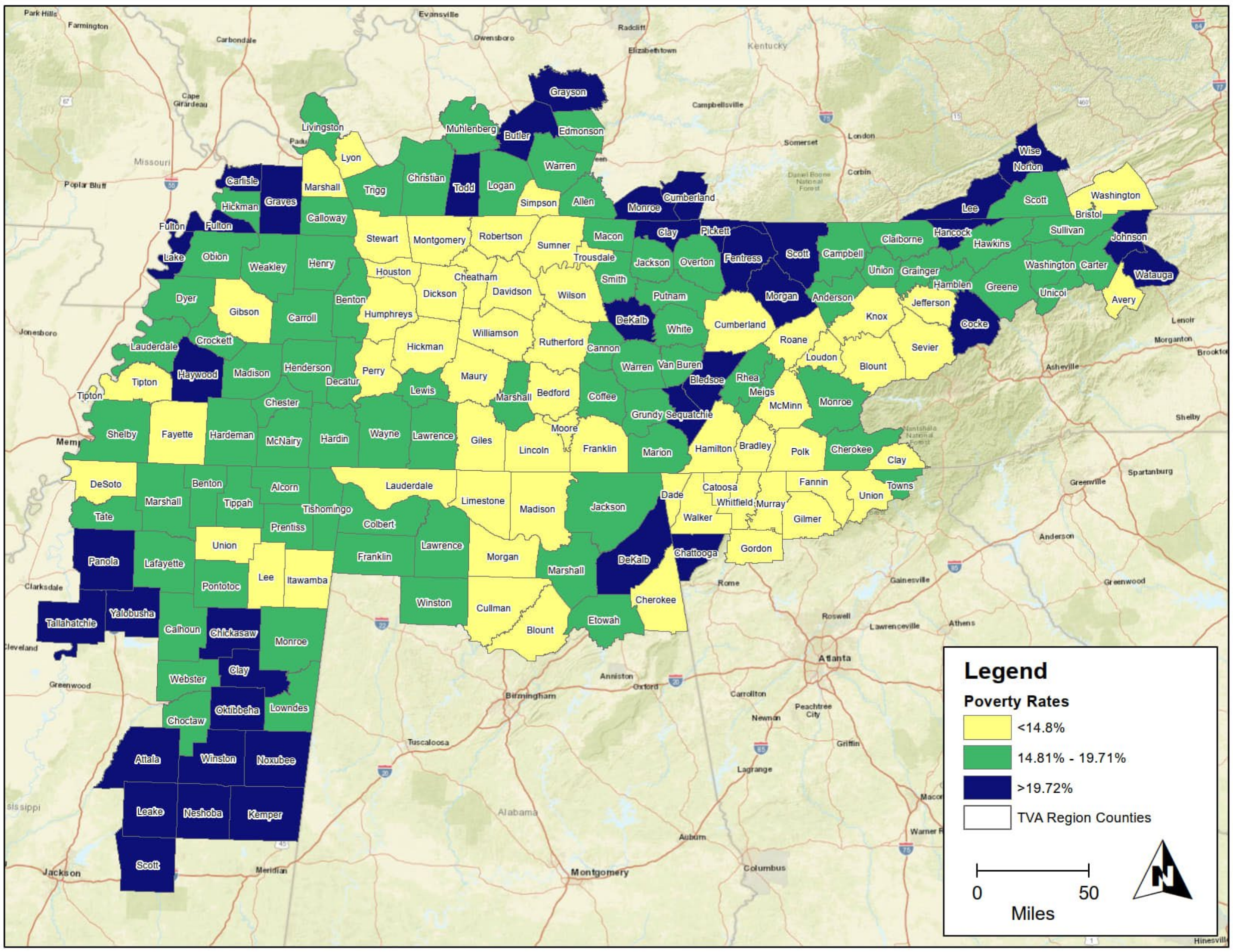
Source: USCB 2023e, USCB 2023b

Figure 3-9. Per Capita Incomes of TVA PSA Counties

Low-income populations are identified using the annual statistical poverty threshold from the USCB Current Population Reports Series P-60 on Income and Poverty. Where relevant, TVA PSA-wide low-income data is compared with information from USCB Division 6, East South Central. Division 6 includes the majority of the TVA PSA, consisting of Alabama, Kentucky, Mississippi, and Tennessee (USCB 2000).

The USCB-provided 2022 poverty threshold for an individual was $13,590 and the official poverty rate for the U.S. in 2022 was 11.5 percent (USCB 2023f, USDHHS 2022). For this analysis, low-income populations were defined as those with poverty rates above the TVA PSA average rate of 14.8 percent. Additional low-income populations were identified at the census tract level using poverty rates reported in the 2022 ACS (USCB 2023g). Within the TVA PSA 124 counties and two independent cities had poverty rates above the PSA average, as illustrated in Figure 3-10. The 2022 ACS estimates for per capita income and the percentage of the population living in poverty for PSA counties are included in Appendix D-2 (USCB 2023g).

A total of 1,196 census tracts in 178 counties or independent cities and seven states had poverty rates above the TVA PSA average. Low-income census tracts are in all but five counties of the TVA PSA. The per capita income levels and poverty rates from the 2022 ACS are included in Appendix D-3 (USCB 2023h).



Source: USCB 2023f, USCB 2023b

Figure 3-10. Poverty Rates of Counties in the TVA PSA

Federally Recognized Tribes

The federal government has a unique relationship and trust responsibility to federally recognized Tribes. TVA upholds this responsibility and consults with Tribes on a government-to-

government basis. TVA must consult with Tribes on programs and undertakings pursuant to the American Indian Religious Freedom Act, Archaeological Resources Protection Act, Native American Graves Protection and Repatriation Act, NHPA, and other laws, executive orders, and presidential memoranda.

With respect for tribal sovereignty and self-determination, TVA regularly consults with over 20 federally recognized Tribes that have religious and cultural interests in TVA's PSA. Many of the Tribes with whom TVA consults were subject to forcible relocation to Indian territory (now Oklahoma), mandated by the Federal government in the Indian Removal Act of 1830. Currently, the majority of these Nations are headquartered in the state of Oklahoma, and they retain strong ties to their ancestral homelands. Two federally recognized Tribes – the Eastern Band of Cherokee Indians (EBCI) in southwestern North Carolina and the Mississippi Band of Choctaw Indians (MBCI) in east central Mississippi – still reside in the Tennessee Valley.

The two Tribes residing in the Valley are shown in Figure 3-7. These sovereign nations are part of the minority population in the TVA PSA. The EBCI has approximately 13,000 tribal members. About 60 percent live on the 56,000-acre Qualla Boundary, land held in trust for the Tribe by the federal government located in western North Carolina. Tribal lands span Swain and Jackson counties, with smaller parcels in Cherokee, Graham and Haywood counties (DOJ 2024, Cherokee Chamber of Commerce 2024). The MBCI has approximately 10,000 tribal members, located on 35,000 acres in east central Mississippi, spanning 10 counties. Neshoba County is the largest of the reservation areas, and the location of the Tribe's headquarters. The MBCI is a major contributor to the state's economy and provides permanent full-time jobs for over 5,000 employees (Choctaw.org 2024a, Choctaw.org 2024b, RRT 2024).

In a 2017 study, the Center for Disease Control found that compared with other racial or ethnic groups, American Indians have a "lower life expectancy, lower quality of life, and are more likely to be affected by many chronic conditions" (CDC 2018). Demographic characteristics of Tribal Nations EBCI and MCBI located within the TVA PSA is shown in Table 3-13.

Table 3-13. Demographics of Federally Recognized Tribal Nations in the TVA PSA

	Eastern Band of Cherokee Indians (EBCI)	Mississippi Band of Choctaw Indians (MBCI)
Population	7,930	7,384
Percent of Population under 5 years	4.9	9.0
Percent of Population between ages 25 and 54	32.1	37.29
Percent of Population 65 and over	17.4	8.7
Median Age	37.7	28.3
Percent of Population between ages 25 and 54	32.1	37.29
Graduated high school or higher, 25 years old and over	83.8	72.7
Attained bachelor's degree or higher, 25 years old and over	14.0	8.2
Military veterans in the civilian population 18 years and over	8.2	5.7
Population 16 years and over in labor force	2,875	2,917
Percent Employed Population 16 years and over in the labor force	91.3	89.4
Unemployment Rate	8.7	10.6
Employed in service occupations	32.2	43
Median household income	44,925	39,955
Percent of Individuals Living below the Poverty Level	21.0	42.8

	Eastern Band of Cherokee Indians (EBCI)	Mississippi Band of Choctaw Indians (MBCI)
Occupied Housing Units	3,324	1,976
Percent of owner-occupied units	73.0	79.8
Median Housing Value	137,900	71,800
Percent of civilian noninstitutionalized population with health insurance	62.3	65.6
Percent of civilian noninstitutionalized population with no health insurance	37.7	34.4

Source: USCB 2022d, USCB 2022e

3.15.2 Environmental Consequences

This section describes the potential impacts to socioeconomic resources of concern should the No Action or the Proposed Action Alternatives be implemented. Social and economic issues considered for evaluation within the impact area include change to current and projected population levels, change in expenditures for goods and services, and short-term or long-term impacts on employment and income. Although the extent of socioeconomic impacts would vary from site to site, general effects from the Proposed Action within the TVA PSA are discussed below.

3.15.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not establish the proposed Resilience 360° program; therefore, no project related changes to socioeconomic resources would occur. Also, no disproportionately high and adverse direct or indirect impacts to any minority or low-income populations would occur. Therefore, there would be no impacts to socioeconomics under the No Action Alternative.

3.15.2.2 Alternative B – Proposed Action

Implementation of the Proposed Action would entail a variety of construction, operation and maintenance, and decommissioning activities; however, these activities would not result in any significant change to population, demographic, or employment and income, characteristics.

There is no site-specific location in which to analyze communities, but it is possible that project activities could take place in minority and low-income communities, or areas near indigenous sacred sites However, project activities would occur in compliance with the criteria established in this PEA.

For purposes of this programmatic analysis, siting and environmental criteria, and the range of known construction activities provided the bounding conditions which informed the impact analysis for all resource areas presented in this PEA. It was determined that there would be no significant adverse health impacts on members of the public or significant adverse environmental impacts on the physical environment (water, air, aquatic, and terrestrial resources) for facilities meeting the environmental checklist criteria. Therefore, construction, operation, and decommissioning of Resilience 360° units at host locations would be expected to have negligible to minor impacts on socioeconomics in the vicinity and within the PSA.

Because of the scale of the individual Resilience 360° activities at host locations, it is unlikely that the project would result in impacts in conjunction with reasonably foreseeable future actions in the temporal and physical vicinity of host locations.

3.16 Unavoidable Adverse Impacts

Because the Proposed Action would include the construction and operation of new natural gas generating units, an increase in vehicle and dust emissions during construction, emissions from the combustion of natural gas, and emissions of GHGs are unavoidable. Because these emissions would contribute to the overall emissions in the TVA PSA, they would be, by definition, adverse. However, these emissions are not likely to be significant contributors to existing air quality or global climate change impacts.

3.17 Relationship of Short-Term Uses and Long-Term Productivity

Other than transportation and materials used for construction, there would be no short-term uses associated with the project. The land area needed for construction is not expected to be much larger than the units themselves, and the area would be confined to within the host's facility. Following construction, the host's operation of the units is expected to be long-term. Because the purpose of the Proposed Action is to support continued power supply to the host facilities during extreme events, the project would protect long-term productivity objectives by minimizing damage or loss of materials during these events, thus allowing the facilities to return to normal operations much more quickly. In addition, operation of the BESS units to support the TVA grid would help to achieve long-term carbon reduction goals.

3.18 Irreversible and Irretrievable Commitments of Resources

Because the size of the natural gas and BESS units is small, they are not expected to use any land area that would be needed for other long-term productivity uses. Use of natural gas would be, by definition, an irretrievable use of that resource, making it unavailable for later use for another purpose. However, the volume of gas to be used would be so small that it would not significantly interfere with the needs of future users. While the production of metals for the units would be irreversible, at least some of those materials could be recycled after use and therefore, may not be completely irretrievable.

CHAPTER 4 - LITERATURE CITED

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CHAPTER 5 - LIST OF PREPARERS

5.1 NEPA Management

Carol Butler Freeman (TVA)
Position: Project Manager, NEPA Specialist
Education: MS, Geological Sciences and Space Studies; BS, Geology
Experience: 17 years in NEPA Compliance
Involvement: NEPA Compliance and Project Management

Dana Nelson (TVA)
Position: Environmental Program Manager
Education: B.S., Environmental Science
Experience: 17 years environmental compliance; 6 years NEPA document preparation
Involvement: Environmental Planning and Project Management

James W. Allen III (TVA)
Position: Project Manager
Education: B.S. Finance and Computer Information Systems, PMP
Experience: 7 years of project and portfolio management for large capital and construction projects, and executive Business Plan development, 2 years Power Billing, and 5 years of Business Development
Involvement: Resilience 360° senior program lead

Thomas Minwell (TVA), NCSO, PMP
Position: Sr. Consultant, Business Development & Strategy
Education: B.S. Business Management, M.S Construction Management
Experience: 6 years of contract management for large capital projects, 5 years of Power System Operation, 1 year of Business Development
Involvement: Resilience 360° program design and implementation

Susan Innis (AECOM)
Position: Project Manager
Education: MPA Public Affairs, BSc Biology
Experience: 25 years in environmental and energy planning and NEPA compliance
Involvement: Project Management

5.2 Other Contributors

Anneliesa Barta (AECOM)
Position: Environmental Planner
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Experience: 13 years of experience in environmental and sustainability planning, 5 years of experience in NEPA compliance
Involvement: Socioeconomics

Regina Greer (AECOM)

Position:	Project Administrator
Education:	B.S., Computer Science
Experience:	29 years in project administration and 20 years of experience in NEPA document preparation
Role:	Technical Editor and Document Preparation

Kate Melanson (AECOM)

Position:	Ecologist
Education:	Ph.D., Ecology and Evolutionary Biology, M.A., Ecology and Evolutionary Biology; B.A, Biology
Experience:	9 years in research, 3 years in government, and 2 years in NEPA compliance
Role:	Aquatic Ecology, Soil Erosion, Surface Water, Navigation, Land Use, Prime Farmland, Noise, Public Health and Safety, Transportation, Visual

Laura Owens (AECOM)

Position:	Environmental Scientist
Education:	B.S., Physics and Geology
Experience:	27 years in environmental services and 10 years in NEPA compliance
Role:	Geology, Groundwater, Hazardous Materials and Solid Waste

Nicole Spangler (AECOM)

Position:	Chemical Engineer
Education:	B.S., Chemical Engineering
Experience:	27 years in environmental services and 10 years in NEPA compliance
Role:	Air Quality, Greenhouse Gas, Climate Change

Molly Notestine (AECOM)

Position:	Ecologist
Education:	M.S., Plant, Soil & Insect Science; B.S., Resource Ecology & Management
Experience:	20 years in environmental consulting and NEPA compliance
Role:	Project Reviewer, QA/QC

Cameron Wyse (AECOM)

Position:	Biologist
Education:	B.S., Biology
Experience:	3 years in environmental services
Role:	Terrestrial Zoology, Wetlands

Sara McLaughlin-Johnson (TVA)

Position:	Terrestrial Zoologist
Education:	B.S., Biology
Experience:	11 years in Biological Compliance, NEPA compliance, and ESA Section 7 Consultation. 18 years in biological field studies.
Role:	Terrestrial Zoology

Emily Doub (TVA/ Johnson Service Group)

Position:	Terrestrial Zoologist
Education:	M.S. Comparative Biomedical Science, B.S. Wildlife & Fisheries Science, B.S. Animal Science
Experience:	7 years in biological field studies, 2 years in NEPA compliance and ESA consultation for T&E terrestrial species
Role:	Terrestrial Zoology

Maria Aguirre (TVA/Johnson Service Group)

Position:	Terrestrial Zoologist
Education:	B.S. Environmental Science
Experience:	4 years in biological field studies, 3 years in Biological Compliance, NEPA compliance, and ESA Section 7 consultation.
Role:	Terrestrial Zoology

Fang Yang (AECOM)

Position:	Air Quality Scientist
Education:	M.S., Atmospheric Science; B.S., Physics
Experience:	Over 35 years of experience in air quality and noise studies and 29 years in NEPA compliance
Role:	Air Quality, Greenhouse Gas and Climate Change Reviewer

Carrie Williamson, P.E. (TN), CFM

Position:	Program Manager, Flood Risk
Education:	M.S., Civil Engineering; B.S., Civil Engineering; Professional Engineer, Certified Floodplain Manager
Experience:	12 years in Floodplains and Flood Risk; 3 years in River Forecasting; 11 years in Compliance Monitoring
Involvement:	Floodplains and Flood Risk

Fallon Parker Hutcheon, PWS

Position:	Wetland Biologist
Education:	M.S., Environmental Studies; B.S., Biology; Professional Wetland Scientist
Experience:	6 years in wetland delineation, wetland impact analysis, and NEPA and CWA compliance
Involvement:	Wetlands

Appendix A – Environmental Screening Checklist

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Resilience 360° Environmental Screening Checklist

The goal of this program is to improve and enhance resiliency during events that challenge the transmission of power on the grid. TVA will review this checklist and follow up with the Program Participant as appropriate, in accordance with TVA's legal and policy requirements associated with this program.

Please provide the following information to TVA program management staff via email (Resilience360@tva.gov) at least six (6) months before any ground disturbing activities are scheduled to begin. TVA's final environmental review and site approval must be completed before any construction activities begin. Review and approval could take approximately 6 weeks and up to 6 months.

In general, if the proposed Resilience 360° site is located within previously developed areas, such as: parking lots, recently graded land, sites situated on fill material, sites situated on high ground relative to the remainder of the property, or other similar low impact situations; and associated activities such as installation of signage, construction of new utility distribution poles or underground utilities, etc. are completely within previously disturbed areas, reviews should be more expeditious.

The Program Participant (Vendor) should complete sections 1.0, 2.0, 3.0, and 4.0 of the Checklist.

1.0 General Project Description

Vendor Name: _____

Proposed Customer Facility (Host Site): _____

Proposed Site Address (or lat/long): _____

_____

Property Landowner: _____

2.0 Project Attachments

Attach/submit the following to/with this checklist:

- ☐ Labeled pictures showing the proposed project location and surrounding environment including:
  - from a variety of angles (at a minimum of four photos looking in each of the cardinal directions looking at the site)
  - the area surrounding the installation (looking outward away from the site) capturing all neighboring facilities
  - any structures proposed for modification or demolition (external and internal if possible)
  - any vegetation proposed for clearing from multiple angles (see Attachment A for guidance)
  - tops of nearby utility poles, lights, or other tall structures adjacent to the proposed site
  - any visible nests
  - any areas on or near the site where water ponds frequently
  - interconnection point to existing transmission

- interconnection point to nearest existing gas supply

- ☐ Aerial map/diagram of the proposed site with an imposed project footprint identifying (including shapefiles, kmz, and/or CAD files):
  - the project location
  - laydown area(s)
  - nearest gas pipeline access point/existing lines
  - access route(s) to the project location
  - the associated facility (including but not limited to gas units, BESS, proposed utilities, parking, grading, excavation, storage sheds, tanks, and fill)
  - interconnection point(s) to existing transmission
  - interconnection point(s) to existing gas supply
  - trenching locations/layout
  - overall site layout plan showing locations of all proposed new facilities
- ☐ Any documentation showing past disturbance at the proposed site (previous construction maps, grading diagrams, historic photographs, survey reports, etc.) including any evidence of the depth of previous disturbance
- ☐ Phase I Environmental Site Assessment(s) if available
- ☐ Attachments associated with the checklist in Section 4.0:
  - 4.6 Air Quality & Climate: US Environmental Protection Agency Green Book Current Nonattainment Area Counties for All Criteria Pollutants | US EPA (https://www3.epa.gov/airquality/greenbook/astate.html
  - 4.6 Air Quality & Climate: US Environmental Protection Agency List of Areas Protected by the Regional Haze Program | US EPA (https://www.epa.gov/visibility/list-areas-protected-regional-haze-program

3.0 Project Characteristics

Project Characteristic	**Site-Specific Detail**
Facility land use (i.e. commercial, industrial, medical, etc.)	
Facility function (i.e. water treatment, server farm, chemical manufacturing, etc.)	
Resilience 360 Unit Generation Type (Gas or BESS)	
Minimum generation at the site	
Maximum generation at the site	
Maximum disturbance area (including laydown up to 2 acres)	
Maximum trenching depth	
Anticipated new build facilities/structures (e.g. buildings, tanks, storage, parking, new utility poles, etc.)	
Total number of natural gas/battery units at the site (both existing and new)	Existing (if any) – New –

Project Characteristic	**Site-Specific Detail**
Maximum height of new build facilities/structures (including any new utility poles)	
Maximum emissions for all relevant criteria pollutants (in pounds per Megawatt hour [lb/MWh]), *not applicable for BESS units*	NOx – CO – VOC – PM – SO_2 –
Foundation Characteristics	Style (pad, piers, piles, etc.) – Depth of foundation –
Anticipated required permits and the dates those permits would be expected to be acquired	
Anticipated new distribution equipment required	
Anticipated construction duration (including anticipated construction start)	
Anticipated daily construction truck traffic needs (not including worker vehicles)	
Anticipated types of construction equipment (particularly consider whether pile drivers or other higher decibel equipment may be needed)	
Approximate maximum number of construction workers expected to be needed	
Approximate maximum number of full-time employees during operations	
Anticipated commencement of operations date	
Anticipated types and estimated quantities of construction waste (including but not limited to any hazardous wastes)	
Anticipated types and estimated quantities of operational waste (including but not limited to any hazardous wastes)	

4.0 Project Checklist

TVA subject matter experts (SMEs) will review the specific resources potentially affected. Based on the SME review(s), further review of environmental impacts by TVA or by the Program Participant, as directed by TVA (such as site visits and/or field surveys), or specific best management practices (BMPs), may be required. If the answer to any question is *YES*, consider reconfiguring the site or locating another site that avoids these potential impacts and reach out to TVA to understand additional review responsibilities, potential longer review times, and costs.

Consider the entire site footprint/disturbance area, including laydown areas and interconnection points, when answering the questions below.

4.1 General	
□ Yes □ No	Would the installation (including the interconnect to utility/gas) or operation of the proposed unit(s) require ground disturbance? If yes, what is the maximum depth of excavation? _____ feet below ground surface and identify excavation areas on the provided maps/diagrams
□ Yes □ No	If yes to the above question, would the ground disturbance affect previously undisturbed soils/areas? If yes, show the area including undisturbed soils on the attached aerial map(s).
□ Yes □ No	Would the installation of the unit(s) require the demolition or alteration of any structure or building? If yes, list/describe the affected structures (including the date the structure was constructed) and the modifications needed:
□ Yes □ No	Would best management practices including use of dust suppression measures and covering of equipment carrying loose material (such as borrow/fill) be utilized? If yes, describe: If no, describe why these measures would not be necessary:
□ Yes □ No	Would drilling, blasting, or pile driving be required? If yes, describe the planned actions including anticipated duration:
□ Yes □ No	Would anticipated noise levels exceed Occupational Safety and Health Administration limits, local ordinances, and/or 65 dBA at the site boundary during either construction or operations? If yes, provide additional details:
□ Yes □ No	Would offsite borrow material be required? If yes, what is the maximum that would be needed and from where would this material be procured:
□ Yes □ No	Would soil/rock be removed from the site to an offsite disposal area? If yes, how much and where would this material be disposed:

□ Yes □ No	Would all equipment and facilities be removed upon future decommissioning? If no, what facilities or structures would need to be left in place?
4.2 Water Resources (including Wetlands)	
□ Yes □ No	Would development of the site require disturbance to known wetlands, streams, rivers, reservoirs, or jurisdictional features or to onsite areas where water is currently present or ponds frequently? If yes, please provide additional description:
□ Yes □ No	Is there or would there be a Stormwater Pollution Prevention Plan (SWPPP) in place? In no, describe the onsite stormwater management system in relation to the proposed action.
4.3 Floodplains	
□ Yes □ No	Is the proposed site (including any gas units, BESS, temporary and/or permanent laydown areas, buildings, enclosed sheds, tanks, storage areas, as well as fill for any of these facilities) located below the 100-year flood elevation at the proposed site (if the 100-year flood elevation is known) or within the 100-year floodplain or floodway?
4.4 Ecological Resources	
□ Yes □ No	Would removal of trees with a trunk diameter greater than 3 inches at breast height be necessary? If so, how many trees or acres of trees would be cleared? _____ trees/acres If yes, how would the cleared trees be disposed (i.e. sold, hauled offsite, mulched, burned, etc.): _____
□ Yes □ No	Can the project commit to tree clearing only within a winter window (approximately October 15-March 31 dates may vary depending on site location)?
□ Yes □ No	Are there any visible caves, rock ledges, overhangs, sinkholes, or large springs in view of the host site?
4.5 Cultural Resources	
□ Yes □ No	Is the associated host site facility greater than 50 years of age? If yes, what was the year the facility was constructed:
4.6 Air Quality and Climate	
□ Yes □ No	Are the new generation units replacing older generation units? If yes, describe the older units:
□ Yes □ No	Is the site located in a county that is in a non-attainment status for any criteria pollutant per the US Environmental Protection Agency Green Book Current Nonattainment Area Counties for All Criteria Pollutants | US EPA (https://www3.epa.gov/airquality/greenbook/astate.html)? Attach the state nonattainment areas report to this checklist.

□ Yes □ No	Is this site located within 0.5 mile of a Class I area per the US Environmental Protection Agency List of Areas Protected by the Regional Haze Program | US EPA (https://www.epa.gov/visibility/list-areas-protected-regional-haze-program)? Attach the Class I areas list to this checklist.
□ Yes □ No	Would a construction permit be required to construct the proposed units at the specific host site? If so, provide details and attach the supporting information for the permit:
□ Yes □ No	Would an air permit be required to operate the proposed units at the specific host site? If so, provide details and attach the supporting information for the air permit:
□ Yes □ No	Would emissions from construction or operations of the proposed action lead to concentrations of any pollutants exceeding National Ambient Air Quality Standards (NAAQS)? If yes, provide additional details regarding which pollutants are exceeded and mitigation measures that would be applied:
4.7 Health and Safety	
□ Yes □ No	Is the edge of the facility property located more than 0.1 mile from a gas supply line? If yes, provide the distance from the facility boundary to the interconnection point and the landownership/easement information necessary to access that interconnection point.
□ Yes □ No	Has there been prior contamination or waste storage at the proposed site, in the immediate vicinity (approximately 200 feet from the site), or is there potential for contamination? (ex. previously used for other industry, disturbance, or fill issues on-site). If yes, provide applicable documentation along with the Phase I Environmental Site Survey in the attachments.

This form must be completed and signed by an authorized representative or agent for the Program Participant, an individual who can certify, under penalty of law, and based on information and belief formed after reasonable inquiry and appropriate training or licensing, that the statements and information contained in this Environmental Screening Checklist are true, accurate and complete.

Vendor Representative (Signature): _____ Date: _____
(or Designated Agent)

Vendor Representative (Name, Title): _____
(or Designated Agent)

5.0 TVA Review

TVA subject matter experts reviewed the material presented in this checklist. Documentation of their review is attached.

In accordance with the National Environmental Policy Act (NEPA), TVA must evaluate and document whether the proposed action described within this document is already covered under an existing NEPA review. The following questions record the evaluation of three criteria for making this determination.

Determination of NEPA Adequacy	
□ Yes □ No	Are there significant circumstances or information relevant to site-specific environmental concerns that would substantially change the analysis in the Resilience 360° PEA? If yes, describe:
□ Yes □ No	Are there effects that would result from the site-specific proposed action that were not addressed in the Resilience 360° PEA? If yes, describe:
□ Yes □ No	Is additional site-specific NEPA necessary? If yes, explain:

Based on the evaluation documented herein, I conclude that the Resilience 360° Programmatic Environmental Assessment (PEA) and Finding of No Significant Impact (FONSI) fully covers the proposed site-specific action and constitutes TVA's compliance with the requirements of NEPA. The site-specific project does not present significant changes to the proposed action or significant new circumstances or information relevant to environmental concerns that would require supplemental analysis. Impacts associated with the proposed action would be minor to moderate and are bounded by the conclusions of the Final PEA and FONSI and the information in the Determination of NEPA Adequacy section of this form. This form documents TVA's compliance with the NEPA for this site-specific action. The completed form will be transmitted to Resilience360@tva.gov.

_____ _____

NAME
Manager, NEPA Compliance
Tennessee Valley Authority

Date Signed

Appendix B – Comprehensive Federally and State-Listed Species List

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	SCIENTIFIC	COMMON_NAM	FED_STATUS
Vertebrates			
	Accipiter striatus	Sharp-shinned Hawk	PS
	Charadrius melodus	Piping Plover	E, T
	Chrosomus saylori	Laurel Dace	E
	Corynorhinus townsendii virginianus	Virginia Big-eared Bat	E
	Cryptobranchus alleganiensis	Hellbender	PS
	Cryptobranchus alleganiensis alleganiensis	Eastern Hellbender	PS:E
	Cyprinella caerulea	Blue Shiner	T
	Elassoma alabamae	Spring Pygmy Sunfish	T
	Erimonax monachus	Spotfin Chub	T
	Erimystax cahni	Slender Chub	T
	Etheostoma akatulo	Bluemask Darter	E
	Etheostoma boschungi	Slackwater Darter	T
	Etheostoma chienense	Relict Darter	T
	Etheostoma lemniscatum	Tuxedo Darter	LE
	Etheostoma marmorpinnum	Marbled Darter	LE
	Etheostoma nuchale	Watercress darter	E
	Etheostoma percnurum	Duskytail Darter	LE
	Etheostoma sitikuense	Citico Darter	LE
	Etheostoma susanae	Cumberland Darter	E
	Etheostoma trisella	Trispot Darter	T
	Etheostoma wapiti	Boulder Darter	E
	Falco peregrinus	Peregrine Falcon	PS:LE
	Fundulus julisia	Barrens Topminnow	E
	Gallinula galeata	Common Gallinule	PS
	Glaucomys sabrinus coloratus	Carolina Northern Flying Squirrel	E
	Glyptemys muhlenbergii	Bog Turtle	T, SAT
	Graptemys oculifera	Ringed Map Turtle	T
	Graptemys pulchra	Alabama Map Turtle	SAT
	Grus canadensis	Sandhill Crane	PS
	Lanius ludovicianus	Loggerhead Shrike	PS
	Laterallus jamaicensis	Black Rail	T
	Macrochelys temminckii	Alligator Snapping Turtle	PT
	Myotis grisescens	Gray Bat	E
	Myotis septentrionalis	Northern Long-eared Bat	E
	Myotis sodalis	Indiana Bat	E
	Necturus alabamensis	Black Warrior Waterdog	E
	Nerodia erythrogaster neglecta	Copperbelly Watersnake	PS:LT
	Notropis albizonatus	Palezone Shiner	E
	Noturus baileyi	Smoky Madtom	E
	Noturus crypticus	Chucky Madtom	E
	Noturus flavipinnis	Yellowfin Madtom	T
	Noturus munitus	Frecklebelly Madtom	PS:T
	Noturus stanauli	Pygmy Madtom	E
	Percina antesella	Amber Darter	E
	Percina aurolineata	Goldline Darter	T
	Percina jenkinsi	Conasauga Logperch	E
	Percina williamsi	Sickle Darter	T

	SCIENTIFIC	COMMON_NAM	FED_STATUS
	Perimyotis subflavus	Tricolored Bat	PE
	Peromyscus gossypinus	Cotton Mouse	PS
	Peromyscus polionotus	Oldfield Mouse	PS
	Phoxinus cumberlandensis	Blackside Dace	T
	Picoides borealis	Red-cockaded Woodpecker	T
	Pituophis melanoleucus	Pine Snake	PS
	Scaphirhynchus albus	Pallid Sturgeon	E
	Speoplatyrhinus poulsoni	Alabama Cavefish	E
	Sternotherus depressus	Flattened Musk Turtle	T
	Tamiasciurus hudsonicus	Red Squirrel	PS
	Vireo bellii	Bell's Vireo	PS
	Zapus hudsonius	Meadow Jumping Mouse	PS
Invertebrates			
	Alasmidonta atropurpurea	Cumberland Elktoe	E
	Alasmidonta raveneliana	Appalachian Elktoe	E
	Anguispira picta	Painted Snake Coiled Forest Snail	T
	Athearnia anthonyi	Anthony's River Snail	E
	Bombus affinis	Rusty-patched Bumble Bee	E
	Cambarus cracens	Slenderclaw	E
	Cambarus williami	Brawleys Fork Crayfish	PT
	Campeloma decampi	Slender Campeloma	E
	Cumberlandia monodonta	Spectaclecase	E
	Cyprogenia stegaria	Fanshell	E
	Dromus dromas	Dromedary Pearlymussel	E
	Epioblasma brevidens	Cumberlandian Combshell	E
	Epioblasma capsaeformis	Oyster Mussel	E
	Epioblasma capsaeformis	Duck River Dartersnapper	E
	Epioblasma florentina walkeri	Tan Riffleshell	E
	Epioblasma obliquata obliquata	Purple Catspaw	E
	Epioblasma penita	Southern Combshell	E
	Epioblasma torulosa rangiana	Northern Riffleshell	E
	Epioblasma triquetra	Snuffbox	E
	Fusconaia cor	Shiny Pigtoe Pearlymussel	E
	Fusconaia cuneolus	Fine-rayed Pigtoe	E
	Fusconaia subrotunda	Longsolid	T
	Hemistena lata	Cracking Pearlymussel	E
	Hesperia leonardus	Leonard's Skipper	PS
	Lampsilis abrupta	Pink Mucket	E
	Lampsilis altilis	Fine-lined Pocketbook	T
	Lampsilis perovalis	Orange-nacre Mucket	T
	Lampsilis virescens	Alabama Lampmussel	E
	Lemiox rimosus	Birdwing Pearlymussel	E
	Leptodea leptodon	Scaleshell	E
	Lioplax cyclostomaformis	Cylindrical Lioplax	E
	Lirceus usdagalun	Lee County Cave Isopod	E
	Marstonia ogmorhaphe	Royal Springsnail	E
	Marstonia pachyta	Armored marstonia	E
	Medionidus acutissimus	Alabama Moccasinshell	T

	SCIENTIFIC	COMMON_NAM	FED_STATUS
	Medionidus conradicus	Cumberland Moccasinshell	PE
	Medionidus parvulus	Coosa Moccasinshell	E
	Neonympha mitchellii	Mitchell's Satyr	LE
	Nicrophorus americanus	American Burying Beetle	T
	Obovaria retusa	Ring Pink	E
	Obovaria subrotunda	Round Hickorynut	T
	Obovaria unicolor	Alabama Hickorynut	PE
	Orconectes shoupi	Nashville Crayfish	E, PDL
	Palaemonias alabamae	Alabama Blind Cave Shrimp	E
	Palaemonias ganteri	Mammoth Cave Shrimp	E
	Pegias fabula	Little-wing Pearlymussel	E
	Plethobasus cicatricosus	White Wartyback	E
	Plethobasus cooperianus	Orange-foot Pimpleback	E
	Plethobasus cyphyus	Sheepnose	E
	Pleurobema clava	Clubshell	E
	Pleurobema curtum	Black Clubshell	E
	Pleurobema decisum	Southern Clubshell	E
	Pleurobema georgianum	Southern Pigtoe	E
	Pleurobema gibberum	Cumberland Pigtoe	E
	Pleurobema hanleyianum	Georgia Pigtoe	E
	Pleurobema oviforme	Tennessee Clubshell	PE
	Pleurobema perovatum	Ovate Clubshell	E
	Pleurobema plenum	Rough Pigtoe	E
	Pleurobema rubellum	Warrior Pigtoe	PS
	Pleurobema taitianum	Heavy Pigtoe	E
	Pleuronaia barnesiana	Tennessee Pigtoe	PE
	Pleuronaia dolabelloides	Slabside Pearlymussel	E
	Potamilus capax	Fat Pocketbook	E
	Ptychobranchus greenii	Triangular Kidneyshell	E
	Ptychobranchus greenii	Rayed Kidneyshell	E
	Ptychobranchus subtentum	Fluted Kidneyshell	E
	Quadrula cylindrica cylindrica	Smooth Rabbitsfoot	T
	Quadrula cylindrica strigillata	Rough Rabbitsfoot	E
	Quadrula fragosa	Winged Mapleleaf	E
	Quadrula intermedia	Cumberland Monkeyface	E
	Quadrula sparsa	Appalachian Monkeyface	E
	Simpsonaias ambigua	Salamander Mussel	PE
	Speyeria idalia	Regal Fritillary Butterfly	PE,PT
	Toxolasma cylindrellus	Pale Lilliput	E
	Venustaconcha trabalis	Tennessee Bean	E
	Villosa fabalis	Rayed Bean	E
	Villosa ortmanni	Kentucky Creekshell	PE
Non-Vascular Plants			
	Gymnoderma lineare	Rock Gnome Lichen	E

	SCIENTIFIC	COMMON_NAM	FED_STATUS
Vascular Plants			
	Agalinis decemloba	Blue Ridge False Foxglove	PS
	Apios priceana	Price's Potato-bean	T
	Arabis georgiana	Georgia Rockcress	T
	Arabis perstellata	Braun's Rock-cress	E
	Asplenium scolopendrium var. americanum	American Hart's-tongue Fern	T
	Astragalus bibullatus	Pyne's Ground Plum	E
	Clematis morefieldii	Morefield's Leather-flower	E
	Clematis socialis	Alabama Leather Flower	E
	Conradina verticillata	Cumberland Rosemary	T
	Dalea foliosa	Leafy Prairie-clover	E
	Geum radiatum	Spreading Avens	E
	Hedyotis purpurea var. montana	Mountain Bluet	E
	Helianthus verticillatus	Whorled Sunflower	E
	Helonias bullata	Swamp-pink	T
	Isotria medeoloides	Small Whorled Pogonia	T
	Leavenworthia crassa	Fleshy-fruit Gladecress	E
	Lesquerella lyrata	Lyre-leaf Bladderpod	T
	Lesquerella perforata	Spring Creek Bladderpod	E
	Liatris helleri	Heller's Blazing Star	T
	Lindera melissifolia	Pondberry	E
	Marshallia mohrii	Mohr's Barbara's Buttons	T
	Physaria globosa	Lesquereux's Mustard	E
	Pityopsis ruthii	Ruth's Golden Aster	E
	Platanthera integrilabia	White Fringeless Orchid	T
	Ptilimnium nodosum	Harperella	E
	Sagittaria secundifolia	Arrowhead	T
	Sarracenia oreophila	Green Pitcher Plant	E
	Scutellaria montana	Large-flowered Skullcap	T
	Solidago spithamaea	Blue Ridge Goldenrod	T
	Spiraea virginiana	Virginia Spiraea	T
	Torreya taxifolia	Florida Torreya	E
	Xyris tennesseensis	Yellow-eyed-grass	E

STATE1	SCIENTIFIC_NAME	COMMON_NAME	ST_RANK	ST_STATUS
Alabama				
Vertebrates				
	Aneides aeneus	Green Salamander	S3	SP
	Bonasa umbellus	Ruffed Grouse	S1	GBNOS
	Carpiodes carpio	River Carpsucker	S2	CNGF
	Chondestes grammacus	Lark Sparrow	S3B	SP
	Coluber flagellum flagellum	Eastern Coachwhip	S3	SP
	Corynorhinus rafinesquii	Rafinesque's Big-eared bat	S2	SP
	Cryptobranchus alleganiensis	Hellbender	S1S2	SP
	Cyprinella caerulea	Blue Shiner	S1	SP
	Elassoma alabamae	Spring Pygmy Sunfish	S1	SP
	Erimonax monachus	Spotfin Chub	SX	SP
	Etheostoma boschungi	Slackwater Darter	S1	SP
	Etheostoma neopterum	Lollipop Darter	S1	SP
	Etheostoma nuchale	Watercress darter	S1	SP
	Etheostoma trisella	Trispot Darter	S1	SP
	Etheostoma tuscumbia	Tuscumbia Darter	S2	SP
	Etheostoma wapiti	Boulder Darter	S1	SP
	Falco peregrinus	Peregrine Falcon	SHB,S3N	SP
	Haliaeetus leucocephalus	Bald Eagle	S4B	SP
	Macrochelys temminckii	Alligator Snapping Turtle	S3	SP
	Moxostoma anisurum	Silver Redhorse	S2	CNGF
	Mustela frenata	Long-tailed Weasel	S3	SP
	Myotis austroriparius	Southeastern Bat	S2	SP
	Myotis grisescens	Gray Bat	S2	SP
	Myotis lucifugus	Little Brown Bat	S3	SP
	Myotis septentrionalis	Northern Long-eared Bat	S2	SP
	Myotis sodalis	Indiana Bat	S2	SP
	Necturus alabamensis	Black Warrior Waterdog	S1	SP
	Notropis albizonatus	Palezone Shiner	S1	SP
	Noturus eleutherus	Mountain Madtom	S1	CNGF
	Noturus exilis	Slender Madtom	S3	CNGF
	Noturus flavus	Stonecat	S1	CNGF
	Noturus miurus	Brindled Madtom	S1	CNGF
	Pandion haliaetus	Osprey	S4	SP
	Percina tanasi	Snail Darter	S1	SP
	Peucaea aestivalis	Bachman's Sparrow	S3	SP
	Picoides borealis	Red-cockaded Woodpecker	S2	SP
	Pituophis melanoleucus melanoleucus	Northern Pine Snake	S3	SP
	Plestiodon anthracinus	Coal Skink	S3	SP
	Polyodon spathula	Paddlefish	S3	SP, CNGF
	Sciurus niger	Eastern Fox Squirrel	S3S4	GA
	Speoplatyrhinus poulsoni	Alabama Cavefish	S1	SP
	Spilogale putorius	Eastern Spotted Skunk	S2S3	SP
	Sternotherus depressus	Flattened Musk Turtle	S2	SP
	Sylvilagus obscurus	Appalachian Cottontail	S1	GA
	Thryomanes bewickii bewickii	Bewick's Wren	SP	SP
	Typhlichthys subterraneus	Southern Cavefish	S3	SP
	Tyto alba	Common Barn-owl	S3	SP
	Vireo gilvus	Warbling Vireo	S1B	SP
	Zapus hudsonius	Meadow Jumping Mouse	S1	SP

STATE1	SCIENTIFIC_NAME	COMMON_NAME	ST_RANK	ST_STATUS
Invertebrates				
	Actinonaias ligamentina	Mucket	S2	PSM
	Actinonaias pectorosa	Pheasantshell	SX	PSM
	Alasmidonta marginata	Elktoe	S1	PSM
	Alasmidonta viridis	Slippershell Mussel	S1	SP
	Arcidens confragosus	Rock Pocketbook	S3	PSM
	Athearnia anthonyi	Anthony's River Snail	S1	SP
	Campeloma decampi	Slender Campeloma	S1	SP
	Cumberlandia monodonta	Spectaclecase	S1	SP
	Cyclonaias tuberculata	Purple Wartyback	S5	PSM
	Cyprogenia stegaria	Fanshell	S1	SP
	Dromus dromas	Dromedary Pearlymussel	SX	SP
	Ellipsaria lineolata	Butterfly	S4	PSM
	Elliptio crassidens	Elephant-ear	S5	CHM
	Epioblasma arcaeformis	Sugarspoon	SX	PSM
	Epioblasma biemarginata	Angled Riffleshell	SX	PSM
	Epioblasma brevidens	Cumberlandian Combshell	S1	SP
	Epioblasma capsaeformis	Oyster Mussel	SX	SP
	Epioblasma florentina florentina	Yellow-blossom Pearlymussel	SX	SP
	Epioblasma florentina walkeri	Tan Riffleshell	SX	SP
	Epioblasma haysiana	Acornshell	SX	PSM
	Epioblasma lenior	Narrow Catspaw	SX	PSM
	Epioblasma metastriata	Upland Combshell	SX	SP
	Epioblasma obliquata obliquata	Purple Catspaw	SX	SP
	Epioblasma othcaloogensis	Southern Acornshell	SX	SP
	Epioblasma personata	Round Combshell	SX	PSM
	Epioblasma propinqua	Tennessee Riffleshell	SX	PSM
	Epioblasma stewardsonii	Cumberland Leafshell	SX	PSM
	Epioblasma torulosa torulosa	Tuberculed Blossom Pearlymussel	SX	SP
	Epioblasma triquetra	Snuffbox	S1	PSM
	Eurynia dilatata	Spike	S1	PSM
	Fusconaia cor	Shiny Pigtoe Pearlymussel	S1	SP
	Fusconaia cuneolus	Fine-rayed Pigtoe	S1	SP
	Fusconaia subrotunda	Longsolid	S1	PSM
	Hemistena lata	Cracking Pearlymussel	S1	SP,P1
	Lampsilis abrupta	Pink Mucket	S1	SP
	Lampsilis fasciola	Wavy-rayed Lampmussel	S2	PSM
	Lampsilis ovata	Pocketbook	S2	PSM
	Lampsilis virescens	Alabama Lampmussel	S1	SP
	Lasmigona complanata	White Heelsplitter	S2	PSM
	Lasmigona costata	Flutedshell	S2	PSM
	Lasmigona holstonia	Tennessee Heelsplitter	S1	PSM
	Lemiox rimosus	Birdwing Pearlymussel	S1	SP
	Leptodea fragilis	Fragile Papershell	S5	PSM
	Leptodea leptodon	Scaleshell	SX	SP
	Ligumia recta	Black Sandshell	S2	PSM
	Marstonia pachyta	Armored marstonia	S1	SP
	Medionidus acutissimus	Alabama Moccasinshell	S2	SP
	Medionidus conradicus	Cumberland Moccasinshell	S1	SP
	Obovaria olivaria	Hickorynut	SX	PSM
	Obovaria retusa	Ring Pink	SH	SP
	Obovaria subrotunda	Round Hickorynut	S2	PSM

STATE1	SCIENTIFIC_NAME	COMMON_NAME	ST_RANK	ST_STATUS
	Palaemonias alabamae	Alabama Blind Cave Shrimp	S1	SP
	Plethobasus cicatricosus	White Wartyback	S1	SP
	Plethobasus cooperianus	Orange-foot Pimpleback	SX	SP
	Plethobasus cyphyus	Sheepnose	S1	SP
	Pleurobema clava	Clubshell	SX	SP
	Pleurobema cordatum	Ohio Pigtoe	S2	PSM
	Pleurobema decisum	Southern Clubshell	S2	SP
	Pleurobema georgianum	Southern Pigtoe	S1	SP
	Pleurobema oviforme	Tennessee Clubshell	S1	PSM
	Pleurobema perovatum	Ovate Clubshell	S1	SP
	Pleurobema plenum	Rough Pigtoe	S1	SP
	Pleurobema rubellum	Warrior Pigtoe	S1	SP
	Pleurobema rubrum	Pyramid Pigtoe	S1	SP
	Pleurobema sintoxia	Round Pigtoe	S1	SP
	Pleuronaia barnesiana	Tennessee Pigtoe	S1	PSM
	Pleuronaia dolabelloides	Slabside Pearlymussel	S1	SP
	Potamilus alatus	Pink Heelsplitter	S5	CHM
	Potamilus ohiensis	Pink Papershell	S3	PSM
	Ptychobranchus fasciolaris	Kidneyshell	S2	PSM
	Ptychobranchus greenii	Triangular Kidneyshell	S1	SP
	Ptychobranchus subtentum	Fluted Kidneyshell	SX	SP
	Quadrula cylindrica cylindrica	Smooth Rabbitsfoot	S1	SP
	Quadrula fragosa	Winged Mapleleaf	SNA	SP
	Quadrula intermedia	Cumberland Monkeyface	SX	SP
	Strophitus subvexus	Southern Creekmussel	S3	PSM
	Strophitus undulatus	Squawfoot	S1	PSM
	Theliderma metanevra	Monkeyface	S3	PSM
	Toxolasma cylindrellus	Pale Lilliput	S1	SP
	Toxolasma lividus	Purple Lilliput	S2	PSM
	Toxolasma parvum	Lilliput	S3	PSM
	Tritogonia verrucosa	Pistolgrip	S4	CHM
	Truncilla truncata	Deertoe	S1	PSM
	Villosa iris	Rainbow Mussel	S3	PSM
	Villosa nebulosa	Alabama Rainbow	S3	PSM
	Villosa taeniata	Painted Creekshell	S2	PSM
	Villosa vanuxemensis	Mountain Creekshell	S3	PSM
Georgia				
Vertebrates				
	Aneides aeneus	Green Salamander	S3	R
	Corynorhinus rafinesquii	Rafinesque’s Big-eared bat	S3	R
	Cryptobranchus alleganiensis	Hellbender	T	R
	Cyprinella caerulea	Blue Shiner	S2	E
	Erimystax insignis	Blotched Chub	S2	E
	Etheostoma brevirostrum	Holiday Darter	S1	E
	Etheostoma ditrema	Coldwater Darter	S1	E
	Etheostoma duryi	Black Darter	S1	R
	Etheostoma rupestre	Rock Darter	S2	R
	Etheostoma trisella	Trispot Darter	S1	E
	Etheostoma vulneratum	Wounded Darter	S1	E
	Falco peregrinus	Peregrine Falcon	S1	R
	Fundulus catenatus	Northern Studfish	S2	R
	Glyptemys muhlenbergii	Bog Turtle	S2	E

STATE1	SCIENTIFIC_NAME	COMMON_NAME	ST_RANK	ST_STATUS
	Graptemys geographica	Map Turtle	S1	R
	Graptemys pulchra	Alabama Map Turtle	S3	R
	Gyrinophilus palleucus	Tennessee Cave Salamander	S1	T
	Haliaeetus leucocephalus	Bald Eagle	S3	T
	Hemitremia flammea	Flame Chub	S1	E
	Hybopsis amblops	Bigeye Chub	S1S2	R
	Ichthyomyzon bdellium	Ohio Lamprey	S1	R
	Macrhybopsis etnieri	Cf. M. Aestivalis	S1	E
	Moxostoma carinatum	River Redhorse	S3	R
	Moxostoma sp. 2	Sicklefin Redhorse	S1	E
	Myotis grisescens	Gray Bat	S1	E
	Myotis septentrionalis	Northern Long-eared Bat	E	T
	Notropis ariommus	Popeye Shiner	S1	E
	Notropis asperifrons	Burrhead Shiner	S2	T
	Notropis lineapunctata	Lined Chub	S2	R
	Notropis photogenis	Silver Shiner	S1	E
	Noturus munitus	Frecklebelly Madtom	S1	E
	Percina antesella	Amber Darter	S1	E
	Percina aurantiaca	Tangerine Darter	S2	E
	Percina aurolineata	Goldline Darter	S2	E
	Percina jenkinsi	Conasauga Logperch	S1	E
	Percina kusha	Bridled Darter	S1	E
	Percina lenticula	Freckled Darter	S2	E
	Percina sciera	Dusky Darter	S3	R
	Percina squamata	Olive Darter	S1	E
	Percina tanasi	Snail Darter	S1	E
	Peucaea aestivalis	Bachman's Sparrow	S2	R
	Phenacobius uranops	Stargazing Minnow	S1	T
	Plethodon petraeus	Pigeon Mountain Salamander	S2	R
	Sylvilagus obscurus	Appalachian Cottontail	S1S2	R
	Typhlichthys subterraneus	Southern Cavefish	S1	E
	Vermivora chrysoptera	Golden-winged Warbler	S1B,S2M	E
Invertebrates				
	Bombus affinis	Rusty-patched Bumble Bee	SH	E
	Cambarus cymatilis	Conasauga Blue Burrower	S1	E
	Cambarus extraneus	Chickamauga Crayfish	S2	T
	Cambarus parrishi	Hiwassee Headwaters Crayfish	S1	E
	Cambarus scotti	Chattooga River Crayfish	S2	T
	Cambarus unestami	Blackbarred Crayfish	S3	T
	Elliptio arca	Alabama Spike	S1	E
	Elliptio arctata	Delicate Spike	S2	E
	Epioblasma metastriata	Upland Combshell	SX	E
	Epioblasma othcaloogensis	Southern Acornshell	SX	E
	Gomphus consanguis	Cherokee Clubtail	S2	T
	Lampsilis altilis	Fine-lined Pocketbook	S2	T
	Medionidus acutissimus	Alabama Moccasinshell	S1	T
	Medionidus parvulus	Coosa Moccasinshell	S1	E
	Pleurobema decisum	Southern Clubshell	S1	E
	Pleurobema georgianum	Southern Pigtoe	S1	E
	Pleurobema hanleyianum	Georgia Pigtoe	S1	E
	Pleurobema perovatum	Ovate Clubshell	SH	E
	Ptychobranchus foremanianus	Rayed Kidneyshell	S1	E

STATE1	SCIENTIFIC_NAME	COMMON_NAME	ST_RANK	ST_STATUS
	Ptychobranchus greenii	Triangular Kidneyshell	S1	E
	Strophitus connasaugaensis	Alabama Creekmussel	S1	E
Vascular Plants				
	Arabis georgiana	Georgia Rockcress	S1	T
	Aureolaria patula	Spreading False-foxglove	S1	T
	Berberis canadensis	American barberry	S1	E
	Calamagrostis porteri	Porter's Reedgrass	S1	R
	Carex biltmoreana	Biltmore Sedge	S1	T
	Coreopsis latifolia	Broad-leaved Tickseed	S1	R
	Crataegus triflora	Three-flowered Hawthorn	S1	T
	Cymophyllus fraserianus	Fraser's Sedge	S1	T
	Cypripedium acaule	Pink Lady's-slipper	S4	U
	Cypripedium parviflorum	Small Yellow Lady's-slipper	S3	R
	Cypripedium parviflorum var. pubescens	Large Yellow Lady's-slipper	S3	R
	Desmodium ochroleucum	Creamflower Tick-trefoil	S1	T
	Gentianopsis crinita	Fringed Gentian	S1	T
	Helonias bullata	Swamp-pink	S1	T
	Hydrastis canadensis	Goldenseal	S2	E
	Isotria medeoloides	Small Whorled Pogonia	S2	T
	Jeffersonia diphylla	Twinleaf	S1	R
	Leavenworthia exigua var. exigua	Glade Cress	S2	T
	Lilium michiganense	Michigan Lily	S1	R
	Lysimachia fraseri	Fraser Loosestrife	S2	R
	Marshallia mohrii	Mohr's Barbara's Buttons	S2	T
	Melanthium woodii	Ozark Bunchflower	S2	R
	Neviusia alabamensis	Alabama Snow-wreath	S1	T
	Pedicularis lanceolata	Swamp Lousewort	S1	E
	Potentilla tridentata	Three-toothed Cinquefoil	S1	E
	Sabatia capitata	Cumberland Rose Gentian	S2	R
	Sanguisorba canadensis	Canada Burnet	S1	T
	Sarracenia oreophila	Green Pitcher Plant	S1	E
	Sarracenia purpurea var. montana	Mountain Purple Pitcherplant	S1	E
	Scutellaria montana	Large-flowered Skullcap	S3	T
	Silene ovata	Ovate Catchfly	S1S2	R
	Spiraea virginiana	Virginia Spiraea	S1	T
	Spiranthes magnicamporum	Great Plains Ladies'-tresses	S1	E
	Symphyotrichum georgianum	Georgia Aster	S3	T
	Thalictrum debile	Southern Meadow-rue	S1	T
	Thaspium pinnatifidum	cutleaf meadow-parsnip	S1	E
	Torreya taxifolia	Florida Torreya	S1	E
	Trientalis borealis	Northern Starflower	S1S2	E
	Viburnum bracteatum	Arrow-wood	S1	E
	Xerophyllum asphodeloides	Eastern Turkeybeard	S1	R
	Xyris tennesseensis	Yellow-eyed-grass	S1	E
Kentucky				
Vertebrates				
	Accipiter striatus	Sharp-shinned Hawk	S3B,S4N	S
	Acipenser fulvescens	Lake Sturgeon	S1	E
	Alosa alabamae	Alabama Shad	S1	E
	Ammocrypta clara	Western Sand Darter	S1	E
	Ammodramus henslowii	Henslow's Sparrow	S3B	S
	Amphiuma tridactylum	Three-toed Amphiuma	S1	E

STATE1	SCIENTIFIC_NAME	COMMON_NAME	ST_RANK	ST_STATUS
	Anas clypeata	Northern shoveler	S1B	E
	Anas discors	Blue-winged Teal	S1S2B	T
	Apalone mutica mutica	Midland Smooth Softshell	S3	N
	Ardea alba	Great Egret	S2B	T
	Atractosteus spatula	Alligator Gar	S1	E
	Botaurus lentiginosus	American Bittern	SHB	H
	Bubulcus ibis	Cattle Egret	S1S2B	S
	Cemophora coccinea	Scarlet Snake	S3	S
	Certhia americana	Brown Creeper	S1S2B,S4S5N	T
	Chondestes grammacus	Lark Sparrow	S2S3B	S
	Chrysemys picta dorsalis	Southern Painted Turtle	S2	T
	Circus hudsonius	Northern Harrier	S1S2B,S4N	T
	Cistothorus stellaris	Sedge Wren	S3B	S
	Clonophis kirtlandii	Kirtland's Snake	S2	T
	Corvus ossifragus	Fish Crow	S3B	S
	Corynorhinus rafinesquii	Rafinesque’s Big-eared bat	S3	S
	Cryptobranchus alleganiensis alleganiensis	Eastern Hellbender	S2S3	S
	Cyprinella camura	Bluntface Shiner	S1	E
	Cyprinella venusta	Blacktail Shiner	S3	S
	Egretta caerulea	Little Blue Heron	S1B	E
	Elaphe guttata	Corn Snake	S3	S
	Erimystax insignis	Blotched Chub	S1	E
	Erimyzon sucetta	Lake Chubsucker	S2	T
	Esox niger	Chain Pickerel	S3	S
	Etheostoma chienense	Relict Darter	S1	E
	Etheostoma fusiforme	Swamp Darter	S1	E
	Etheostoma lemniscatum	Tuxedo Darter	S1	E
	Etheostoma lynceum	Brighteye Darter	S1	E
	Etheostoma maculatum	Spotted Darter	S2	T
	Etheostoma microlepidum	Smallscale Darter	S1	E
	Etheostoma parvipinne	Goldstripe Darter	S1	E
	Etheostoma proeliare	Cypress Darter	S2	T
	Etheostoma pyrrhogaster	Firebelly Darter	S1	E
	Etheostoma sagitta	Arrow Darter	S3	S
	Etheostoma susanae	Cumberland Darter	S1	E
	Etheostoma swaini	Gulf Darter	S1	E
	Etheostoma tecumsehi	Shawnee Darter	S2S3	S
	Eumeces inexpectatus	Southeastern Five-lined Skink	S2S3	S
	Eurycea guttolineata	Three-lined Salamander	S2	T
	Falco peregrinus	Peregrine Falcon	S1B	E
	Farancia abacura reinwardtii	Western Mud Snake	S3	S
	Fulica americana	American Coot	S1B	E
	Fundulus chrysotus	Golden Topminnow	S1	E
	Fundulus dispar	Starhead Topminnow	S1	E
	Gallinula galeata	Common Gallinule	S1S2B	T
	Haliaeetus leucocephalus	Bald Eagle	S3B,S3S4N	S
	Hemitremia flammea	Flame Chub	S1	E
	Hybognathus hayi	Cypress Minnow	S1	E
	Hyla avivoca	Bird-voiced Treefrog	S3S4	N
	Hyla cinerea	Green Treefrog	S4S5	N
	Hyla gratiosa	Barking Treefrog	S3S4	N
	Hyla versicolor	Gray Treefrog	S2S3	S

STATE1	SCIENTIFIC_NAME	COMMON_NAME	ST_RANK	ST_STATUS
	Ichthyomyzon castaneus	Chestnut Lamprey	S2	S
	Ichthyomyzon gagei	Southern Brook Lamprey	S1	E
	Ichthyomyzon greeleyi	Mountain Brook Lamprey	S2	T
	Ictinia mississippiensis	Mississippi Kite	S2S3B	S
	Ictiobus niger	Black Buffalo	S3	S
	Ixobrychus exilis	Least Bittern	S1S2B	T
	Lampetra appendix	American Brook Lamprey	S2	T
	Lampetra sp. 1	A brook lamprey	S1	E
	Lampropeltis elapsoides	Scarlet Kingsnake	S1	E
	Lepomis marginatus	Dollar Sunfish	S1	E
	Lepomis miniatus	Redspotted Sunfish	S2	T
	Lithobates blairi	Plains Leopard Frog	S1	E
	Lophodytes cucullatus	Hooded Merganser	S2B,S3S4N	T
	Macrochelys temminckii	Alligator Snapping Turtle	S1	E
	Menidia beryllina	Inland Silverside	S2	T
	Moxostoma poecilurum	Blacktail Redhorse	S1	E
	Myotis austroriparius	Southeastern Bat	S3	S
	Myotis grisescens	Gray Bat	S2	T
	Myotis leibii	Eastern small-footed bat	S2	T
	Myotis septentrionalis	Northern Long-eared Bat	S1	E
	Myotis sodalis	Indiana Bat	S1S2	E
	Nerodia cyclopion	Mississippi Green Water Snake	S1	E
	Nerodia fasciata confluens	Broad-banded Water Snake	S1	E
	Notropis albizonatus	Palezone Shiner	S1	E
	Notropis amnis	Pallid Shiner	S1	E
	Notropis maculatus	Taillight Shiner	S2S3	T
	Noturus exilis	Slender Madtom	S1	E
	Noturus hildebrandi	Least Madtom	S1	E
	Noturus phaeus	Brown Madtom	S1	E
	Nyctanassa violacea	Yellow-crowned Night-heron	S2B	T
	Nycticorax nycticorax	Black-crowned Night-heron	S1S2B	T
	Ophisaurus attenuatus longicaudus	Eastern Slender Glass Lizard	S2	T
	Pandion haliaetus	Osprey	S3S4B	S
	Percina macrocephala	Longhead Darter	S1	E
	Percopsis omiscomaycus	Trout-perch	S3	S
	Perimyotis subflavus	Tricolored Bat	S2	T
	Peromyscus gossypinus	Cotton Mouse	S2	T
	Peucaea aestivalis	Bachman's Sparrow	S1B	E
	Phalacrocorax auritus	Double-crested Cormorant	S2B	S
	Phenacobius uranops	Stargazing Minnow	S2S3	S
	Phoxinus cumberlandensis	Blackside Dace	S2	T
	Pituophis melanoleucus melanoleucus	Northern Pine Snake	S1	E
	Plestiodon anthracinus	Coal Skink	S1	E
	Podilymbus podiceps	Pied-billed Grebe	S1B,S4N	E
	Rallus elegans	King Rail	S1B	E
	Rana areolata circulosa	Northern Crawfish Frog	S3	S
	Riparia riparia	Bank Swallow	S3B	S
	Scaphirhynchus albus	Pallid Sturgeon	S1	E
	Sistrurus miliarius streckeri	Western Pigmy Rattlesnake	S1	E
	Sorex cinereus	Common Shrew	S3	S
	Sterna antillarum athalassos	Interior Least Tern	S1S2B	E
	Thamnophis proximus	Western Ribbon Snake	S1S2	T

STATE1	SCIENTIFIC_NAME	COMMON_NAME	ST_RANK	ST_STATUS
	Thamnophis proximus proximus	Western Ribbon Snake	S1	E
	Thamnophis sauritus sauritus	Common Ribbon Snake	S3	S
	Thoburnia atripinnis	Blackfin Sucker	S2	S
	Thryomanes bewickii	Bewick's Wren	SHB	H
	Typhlichthys subterraneus	Southern Cavefish	S2S3	S
	Tyto alba	Common Barn-owl	S3	S
	Umbra limi	Central Mudminnow	S2S3	T
	Vireo bellii	Bell's Vireo	S2S3B	S
Invertebrates				
	Alasmidonta marginata	Elktoe	S2	T
	Allocapnia cunninghami	Karst Snowfly	S1S2	T
	Amphiagrion saucium	Eastern Red Damsel	S1S2	E
	Anodontoides denigratus	Cumberland Papershell	S1	E
	Arigomphus maxwelli	Bayou Clubtail	S1S2	T
	Barbicambarus cornutus	Bottlebrush Crayfish	S2S3	S
	Batriasymmodes quisnamus	A Cave Obligate Beetle	SH	H
	Batrisodes henroti	ant loving beetle	SH	H
	Cambarellus shufeldtii	Cajun Dwarf Crayfish	S2S3	S
	Cambarus friaufi	Hairy Crayfish	S3S4	S
	Crangonyx longidactylus	An Amphipod	S2	T
	Cumberlandia monodonta	Spectaclecase	S1	E
	Cyprogenia stegaria	Fanshell	S1	E
	Dromus dromas	Dromedary Pearlymussel	S1	E
	Epioblasma florentina walkeri	Tan Riffleshell	S1	E
	Epioblasma obliquata obliquata	Purple Catspaw	S1	E
	Epioblasma torulosa rangiana	Northern Riffleshell	S1	E
	Epioblasma triquetra	Snuffbox	S1	E
	Euphyes dukesi	Dukes' Skipper	S2	T
	Fumonelix wetherbyi	Clifty Covert	S2	S
	Fusconaia subrotunda	Longsolid	S3	S
	Helicodiscus notius specus	A Land Snail	S1	T
	Hemistena lata	Cracking Pearlymussel	SX	X
	Kleptochthonius microphthalmus	A Cave Obligate Pseudoscorpion	SH	H
	Lampsilis abrupta	Pink Mucket	S1	E
	Lampsilis ovata	Pocketbook	S1	E
	Leaunio pataecus	Dwarf Rainbow	S1	E
	Leptoxis praerosa	Onyx Rocksnail	S3S4	S
	Lioplax sulculosa	Furrowed Lioplax	S3S4	S
	Lithasia armigera	Armored Rocksnail	S3S4	S
	Lithasia salebrosa	Muddy Rocksnail	S2S4	S
	Lithasia verrucosa	Varicose Rocksnail	S3S4	S
	Nicrophorus americanus	American Burying Beetle	SX	X
	Obovaria retusa	Ring Pink	S1	E
	Orconectes burri	Blood River Crayfish	S2	T
	Orconectes lancifer	Shrimp Crayfish	S1	E
	Orconectes palmeri palmeri	Gray-Speckled Crayfish	S1	E
	Orconectes pellucidus	Mammoth Cave Crayfish	S3	S
	Orconectes ronaldi	Mud River Crayfish	S2S3	N
	Palaemonias ganteri	Mammoth Cave Shrimp	S1	E
	Papaipema sp. 5	Rare Cain Borer Moth	S1S2	T
	Papaipema speciosissima	Osmunda Borer Moth	S2	T
	Pegias fabula	Little-wing Pearlymussel	S1	E

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	Plethobasus cooperianus	Orange-foot Pimpleback	S1	E
	Plethobasus cyphyus	Sheepnose	S1	E
	Pleurobema clava	Clubshell	S1	E
	Pleurobema oviforme	Tennessee Clubshell	S1	E
	Pleurobema plenum	Rough Pigtoe	S1	E
	Pleurobema rubrum	Pyramid Pigtoe	S1	E
	Pleurocera alveare	Rugged Hornsnail	S3S4	S
	Pleurocera curta	Shortspire Hornsnail	S2	S
	Pleuronaia dolabelloides	Slabside Pearlymussel	SX	X
	Poanes viator		S1	E
	Potamilus capax	Fat Pocketbook	S2	T
	Potamilus purpuratus	Bleufer	S1	E
	Procambarus viaeviridis	Vernal Crayfish	S1S2	T
	Pseudanophthalmus calcareus	Limestone Cave Beetle	S1	E
	Pseudanophthalmus pubescens intrepidus	A Cave Beetle	S1S2	T
	Pseudanophthalmus transfluvialis	A Cave Obligate Ground Beetle	SH	H
	Quadrula cylindrica cylindrica	Smooth Rabbitsfoot	S2	T
	Rabdotus dealbatus	Whitewashed Rabdotus	S1S2	T
	Satyrium favonius ontario	Northern Hairstreak	S2	S
	Scoterpes copei	A Cave Obligate Millipede	S3S4	N
	Stygobromus vitreus	An Amphipod	S1	S
	Stylurus notatus	Elusive Clubtail	S1	E
	Toxolasma lividus	Purple Lilliput	S1	E
	Toxolasma texasense	Texas Lilliput	S2	T
	Triodopsis multilineata	Striped Whitelip Snail	S2	T
	Villosa ortmanni	Kentucky Creekshell	S1S2	E
	Villosa vanuxemensis	Mountain Creekshell	S2	T
	Phaeophyscia leana	Lea's Bog Lichen	S1?	E
Vascular Plants				
	Adiantum capillus-veneris	Southern Maidenhair Fern	S2S3	T
	Aesculus pavia	Red Buckeye	S2S3	T
	Agalinis auriculata	Earleaf Foxglove	S1	E
	Amianthium muscitoxicum	Fly Poison	S1	E
	Amsonia tabernaemontana var. gattingeri	A Blue-star	S2?	N
	Anagallis minima	Chaffweed	S2	S
	Apios priceana	Price's Potato-bean	S1	E
	Aralia nudicaulis	Wild Sarsaparilla	S2S3	T
	Armoracia lacustris	Lake-cress	S1S2	T
	Asclepias hirtella	Green Milkweed	S2	T
	Aureolaria patula	Spreading False-foxglove	S3	S
	Baptisia aberrans	Eastern Prairie Blue Wild Indigo	S1	E
	Baptisia bracteata var. leucophaea	Cream Wild Indigo	S3	S
	Baptisia tinctoria	Yellow Wild-indigo	S1S2	T
	Bartonia virginica	Screwstem	S2	T
	Berchemia scandens	Supple-jack	S1S2	T
	Cabomba caroliniana	Carolina Fanwort	S2	T
	Callicarpa americana	American Beautyberry	S1	E
	Carex alata	Broadwing Sedge	S1S2	T
	Carex atlantica ssp. capillacea	Howe Sedge	S1S2	E
	Carex aureolensis	Southern Frank's sedge	S1?	T
	Carex corrugata	Prune-fruit sedge	S3?	S
	Carex crawei	Sedge	S3	S

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	Carex crebriflora	Sedge	S1?	E
	Carex decomposita	Epiphytic Sedge	S2	T
	Carex gigantea	Large Sedge	S1S2	E
	Carex reniformis	Sedge	S1?	E
	Carex seorsa	Weak Stellate Sedge	S2	T
	Carex superata	Limestone Forest Sedge	S2S3	S
	Carex timida	Timid Sedge	S2	T
	Carex venusta	Dark Green Sedge	S1	E
	Carya aquatica	Water Hickory	S2S3	T
	Carya carolinae-septentrionalis	Southern Shagbark Hickory	S3S4	N
	Cayaponia quinqueloba	Five-lobe Cayaponia	S1?	E
	Ceanothus herbaceus	Prairie Redroot	S2	T
	Centrosema virginianum	Coastal Butterfly-pea	S2S3	T
	Chelone obliqua var. speciosa	Rose Turtlehead	S3	S
	Clematis catesbyana	satincurls	S1	E
	Clematis crispa	Blue Jasmine Leather-flower	S2	T
	Collinsonia verticillata	Whorled Horsebalm	S1?	E
	Dalea candida	White Prairie-clover	S3	S
	Dalea purpurea	Purple Prairie-clover	S3?	S
	Decodon verticillatus	Water-willow	S3?	N
	Delphinium carolinianum	Carolina Larkspur	S1S2	T
	Desmodium ochroleucum	Creamflower Tick-trefoil	S1	E
	Diarrhena obovata	Beak Grass	S2?	N
	Didiplis diandra	Water-purslane	S1S2	E
	Dodecatheon frenchii	French's Shootingstar	S3	S
	Draba cuneifolia	Wedge-leaf Whitlow-grass	S1	E
	Echinodorus berteroi	Burhead	S2	T
	Echinodorus tenellus	Dwarf Burhead	S1	E
	Eryngium integrifolium	Button Snakeroot	S1	E
	Erysimum capitatum var. capitatum	Western Wallflower	S1?	E
	Euphorbia mercurialina	Mercury Spurge	S1S2	T
	Eurybia hemispherica	Tennessee Aster	S1	E
	Fimbristylis perpusilla	Harper's Fimbristylis	S1?	S
	Fimbristylis puberula	Hairy Fimbristylis	S2	T
	Forestiera ligustrina	Upland Swamp Privet	S2S3	T
	Gentiana puberulenta	Downy Gentian	S1	E
	Glandularia canadensis	Rose Vervain	S1?	E
	Gleditsia aquatica	Water Locust	S3?	S
	Gratiola pilosa	Shaggy Hedgehyssop	S2	T
	Gratiola quartermaniae	Quarterman's Hedge-hyssop	S1	E
	Gymnopogon ambiguus	Broadleaf Beardgrass	S2S3	S
	Halesia carolina	Carolina Silverbell	S1S2	E
	Halesia tetraptera var. tetraptera	Common Silverbell	S1S2	E
	Hedeoma hispida	Rough Pennyroyal	S2	T
	Helianthus eggertii	Eggert's Sunflower	S2	T
	Heteranthera dubia	Grassleaf Mud-plantain	S3	S
	Heteranthera limosa	Smaller Mud-plantain	S2S3	S
	Heterotheca subaxillaris var. latifolia	Broad-leaf Golden-aster	S2	T
	Hieracium longipilum	Hairy Hawkweed	S2	T
	Hydrocotyle ranunculoides	Floating Pennywort	S1S2	E
	Hydrolea ovata	Hydrolea	S1	E
	Hydrolea uniflora	One-flower Fiddleleaf	S1	E

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	Hydrophyllum virginianum var. virginianum	Eastern Waterleaf	S2	T
	Iris brevicaulis	Lamance Iris	S1S2	T
	Iris fulva	Red Iris	S1	E
	Isoetes butleri	Butler's Quillwort	S1	E
	Isoetes melanopoda	Blackfoot Quillwort	S1	E
	Juglans cinerea	Butternut	S2S3	T
	Juncus filipendulus	Plain's Rush	S2?	T
	Leavenworthia torulosa	Necklace Glade-cress	S2	T
	Lespedeza capitata	Round-head Bush-clover	S3	S
	Liatris cylindracea	Slender Blazing-star	S2S3	T
	Lilium michiganense	Michigan Lily	S4?	N
	Lilium superbum	Turk's Cap Lily	S1S2	T
	Limnobium spongia	American Frog's-bit	S2S3	T
	Lobelia nuttallii	Nuttall's Lobelia	S2	T
	Ludwigia hirtella	False Looestrife	S1	E
	Lycopodiella appressa	Southern Bog Clubmoss	S1	E
	Lysimachia terrestris	Swamp Loosestrife	S1	E
	Malus angustifolia	Southern Crabapple	S3S4	N
	Malus ioensis	Iowa Crabapple	S2?	S
	Malvastrum hispidum	Hispid Falsemallow	S2?	T
	Matelea carolinensis	Carolina Anglepod	S1?	E
	Melanthera nivea	Snow Squarestem	S3?	S
	Melanthium virginicum	Bunchflower	S1	E
	Melanthium woodii	Ozark Bunchflower	S2	T
	Muhlenbergia cuspidata	Plains Muhlenbergia	S2	T
	Muhlenbergia glabrifloris	Muhly	S2S3	S
	Myriophyllum heterophyllum	Broadleaf Water Milfoil	S3?	S
	Najas gracillima	Naiad	S2S3	S
	Nemophila aphylla	Nemophila	S2?	T
	Oenothera linifolia	Sundrops	S1S2	E
	Oenothera perennis	Small Sundrops	S1S2	E
	Oenothera triloba	Sundrops	S1S2	T
	Oldenlandia uniflora	Oldenlandia	S1	E
	Onosmodium hispidissimum	Hairy False Gromwell	S2	E
	Onosmodium molle ssp. occidentale	Western False Gromwell	S1	E
	Orbexilum onobrychis	Lanceleaf Scurfpea	S3?	N
	Packera paupercula var. paupercula	Balsam Ragwort	S2?	T
	Paspalum boscianum	Bull-grass	S2S3	S
	Perideridia americana	Perideridia	S2	T
	Phacelia ranunculacea	Blue Scorpion-weed	S3	S
	Phemeranthus calcaricus	Limestone Fame-flower	S1	E
	Philadelphus inodorus	Mock-orange	S1S2	T
	Philadelphus pubescens	Hoary Mock-orange	S1	E
	Polygala cruciata	Crossleaf Milkwort	S1	E
	Polymnia laevigata	Tennessee Leafcup	S1S2	E
	Prenanthes aspera	Rough Rattlesnake-root	S1	E
	Prenanthes crepidinea	Nodding Rattlesnake-root	S3	S
	Ptilimnium capillaceum	Hair-like Mock Bishop-weed	S1S2	T
	Ptilimnium costatum	Eastern Mock Bishop's-weed	S1?	E
	Ptilimnium nuttallii	Nuttall's Mock Bishop's-weed	S1S2	E
	Quercus texana	Nuttall's Oak	S2S3	T
	Rhododendron canescens	Hoary Azalea	S1	E

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	Rhynchosia tomentosa	Hairy Snoutbean	S1S2	E
	Rudbeckia subtomentosa	Sweet Coneflower	S1	E
	Sabatia campanulata	Slender Marsh Pink	S1	E
	Sagittaria graminea	Grassleaf Arrowhead	S1S2	T
	Sagittaria platyphylla	Ovate-leaved Arrowhead	S1	E
	Schoenoplectus hallii	Hall's Bulrush	S1	E
	Silene ovata	Ovate Catchfly	S1	E
	Silphium integrifolium	Rosinweed	S3S4	N
	Silphium laciniatum	Compass-plant	S2	T
	Silphium pinnatifidum	Prairie-dock	S3	S
	Solidago buckleyi	Buckley's Goldenrod	S2S3	S
	Solidago curtisii	Curtis' Goldenrod	S3	S
	Solidago puberula	Downy Goldenrod	S2	S
	Sphenopholis pensylvanica	Swamp Wedgescale	S1S2	S
	Spiranthes magnicamporum	Great Plains Ladies'-tresses	S2	T
	Sporobolus clandestinus	Rough Dropseed	S2S3	T
	Stellaria longifolia	Longleaf Stitchwort	S2S3	S
	Styrax grandifolius	Bigleaf Snowbell	S1S2	E
	Symphyotrichum pratense	Barrens Silky Aster	S3	S
	Symphyotrichum priceae	White Heath Aster	S1	E
	Symphyotrichum puniceum var. puniceum	Swamp Aster	S2S3	T
	Trepocarpus aethusae	Trepocarpus	S3	S
	Trichomanes boschianum	Appalachian Bristle Fern	S3S4	N
	Trifolium reflexum	Buffalo Clover	S1S2	E
	Trillium pusillum	Least Trillium	S1	E
	Ulmus serotina	September Elm	S3	S
	Utricularia macrorhiza	Greater Bladder-wort	S1	E
	Viburnum molle	Kentucky Viburnum	S3?	S
	Viburnum nudum	Possum-haw Viburnum	S1	E
	Viola egglestonii	Eggleston's Violet	S3	S
	Vitis rupestris	Sand Grape	S2	T
	Zizaniopsis miliacea	Southern Wildrice	S1S2	T
Mississippi				
Vertebrates				
	Aneides aeneus	Green Salamander	S1	LE
	Chrosomus erythrogaster	Southern Redbelly Dace	S2	LE
	Cryptobranchus alleganiensis	Hellbender	S1	LE
	Crystallaria asprella	Crystal Darter	S1	LE
	Eurycea lucifuga	Cave Salamander	S1	LE
	Graptemys nigrinoda	Black-knobbed Map Turtle	S2	LE
	Graptemys oculifera	Ringed Map Turtle	S2	LE
	Gyrinophilus porphyriticus	Spring Salamander	S1	LE
	Myotis grisescens	Gray Bat	S1	LE
	Myotis sodalis	Indiana Bat	S1B	LE
	Notropis boops	Bigeye Shiner	S1	LE
	Noturus munitus	Frecklebelly Madtom	S2	LE
	Noturus stigmosus	Northern Madtom	S1	LE
	Phenacobius mirabilis	Suckermouth Minnow	S1	LE
	Picoides borealis	Red-cockaded Woodpecker	S1	LE
	Ursus americanus luteolus	Louisiana Black Bear	S1	LE

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Invertebrates				
	Cyclonaias tuberculata	Purple Wartyback	S1	LE
	Epioblasma penita	Southern Combshell	S1	LE
	Lampsilis perovalis	Orange-nacre Mucket	S1	LE
	Medionidus acutissimus	Alabama Moccasinshell	S1	LE
	Neonympha mitchellii	Mitchell's Satyr	S1	LE
	Nicrophorus americanus	American Burying Beetle	SX	LE
	Pleurobema curtum	Black Clubshell	SX	LE
	Pleurobema perovatum	Ovate Clubshell	S1	LE
	Pleurobema taitianum	Heavy Pigtoe	SX	LE
	Ptychobranchus fasciolaris	Kidneyshell	S1	LE
North Carolina				
Vertebrates				
	Aegolius acadicus	Northern Saw-whet Owl	S2B,S2N	T
	Ambystoma talpoideum	Mole Salamander	S2S3	SC
	Catharus ustulatus	Swainson's Thrush	S1B,S5N	SR
	Clinostomus funduloides ssp. 1	Smoky Dace	S2	SC
	Coccyzus erythropthalmus	Black-billed Cuckoo	S2B	SR
	Corynorhinus townsendii virginianus	Virginia Big-eared Bat	S1	E
	Cottus carolinae	Banded Sculpin	S1	SC
	Crotalus horridus	Timber Rattlesnake	S3	SC
	Cryptobranchus alleganiensis	Hellbender	S3	SC
	Cryptobranchus alleganiensis alleganiensis	Eastern Hellbender	S3	SC
	Desmognathus aeneus	Seepage Salamander	S3	WL
	Desmognathus organi	Northern Pygmy Salamander	S2	SR
	Desmognathus wrighti	Southern Pygmy Salamander	S2S3	SR
	Empidonax alnorum	Alder Flycatcher	S2B	SR
	Erimystax insignis	Blotched Chub	S2	SR
	Eurycea junaluska	Junaluska Salamander	S1S2	T
	Eurycea longicauda longicauda	Longtail Salamander	S1S2	SC
	Eurycea quadridigitata	Silver-bellied Dwarf Salamander	S1	SC
	Falco peregrinus	Peregrine Falcon	S1B,S2N	E
	Glaucomys sabrinus coloratus	Carolina Northern Flying Squirrel	S2	E
	Glyptemys muhlenbergii	Bog Turtle	S2	T
	Haliaeetus leucocephalus	Bald Eagle	S3B,S3N	T
	Hemidactylium scutatum	Four-toed Salamander	S3	SC
	Ichthyomyzon bdellium	Ohio Lamprey	S1	SC
	Loxia curvirostra	Red Crossbill	S3B,S3N	SC
	Microtus chrotorrhinus carolinensis	Southern Rock Vole	S3	SC
	Moxostoma sp. 2	Sicklefin Redhorse	S2	T
	Mustela nivalis	Least Weasel	S2	SR
	Myotis austroriparius	Southeastern Bat	S2	SC
	Myotis leibii	Eastern small-footed bat	S2	SC
	Myotis lucifugus	Little Brown Bat	S3	SR
	Myotis septentrionalis	Northern Long-eared Bat	S2	T
	Myotis sodalis	Indiana Bat	S1S2	E
	Necturus maculosus	Mudpuppy	S1	SC
	Neotoma magister	Allegheny Woodrat	S2S3	SC
	Percina squamata	Olive Darter	S2	SC
	Perimyotis subflavus	Tricolored Bat	S3	SR
	Pituophis melanoleucus melanoleucus	Northern Pine Snake	S2	T
	Plethodon aureolus	Tellico Salamander	S2?	SR

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	Plethodon chattahoochee	Chattahoochee slimy salamander	S1?	SR
	Plethodon welleri	Weller's Salamander	S2	SC
	Poecile atricapilla	Black-capped Chickadee	S3	SC
	Pooecetes gramineus	Vesper Sparrow	S2B,S2N	SC
	Pseudacris brachyphona	Mountain Chorus Frog	S2	SC
	Setophaga cerulea	Cerulean Warbler	S2B	SC
	Setophaga coronata	yellow-rumped warbler	S1B,S5N	SR
	Setophaga magnolia	Magnolia Warbler	S2B	SR
	Sphyrapicus varius	Yellow-bellied Sapsucker	S2S3B,S5N	SC
	Sternotherus minor	Stripeneck Musk Turtle	S1	SC
	Sylvilagus obscurus	Appalachian Cottontail	S3	SR
	Thryomanes bewickii altus	Appalachian Bewick's Wren	SXB	E
	Vermivora chrysoptera	Golden-winged Warbler	S2S3B	SC
	Vermivora pinus	Blue Winged Warbler	S2B	SR
	Zapus hudsonius	Meadow Jumping Mouse	S3	WL
Invertebrates				
	Anguispira strongylodes	Southeastern Tigersnail	S2S3	SR
	Appalachina sayana	Spike-lip Crater Snail	S2	SR
	Callophrys irus	Frosted Elfin	S2	SR
	Cambarus brimleyorum	Valley River Crayfish	S3	E
	Cambarus eeseeohensis	Grandfather Mountain Crayfish	S1	E
	Cambarus hiwasseensis	Hiwassee Crayfish	S3S4	WL
	Cambarus parrishi	Hiwassee Headwaters Crayfish	S1	SC
	Discus bryanti	Saw-tooth Disc	S2	SC
	Elimia christyi	Christy's Elimia	S1	E
	Elimia interrupta	Knotty Elimia	SNA	E
	Erora laeta	Early Hairstreak	S2S3	SR
	Euphydryas phaeton	Baltimore	S2	SR
	Eurynia dilatata	Spike	S2	SC
	Fusconaia subrotunda	Longsolid	S1	E
	Glyphyalinia vanattai	Honey Glyph	S1	SC
	Idia majoralis	Greater Idia Moth	S1S3	SR
	Lacanobia grandis	Grand Arches Moth	S1S2	SR
	Lampsilis fasciola	Wavy-rayed Lampmussel	S2	SC
	Mesodon andrewsae	Balsam Globe	S2S3	SR
	Mesodon subpalliatus	Velvet Covert	S2S3	SC
	Nesticus mimus	A Cave Spider	S2?	SR
	Nesticus sheari	A Cave Spider	S2?	SR
	Paravitrea andrewsae	High Mountain Supercoil	S2	SC
	Paravitrea multidentata	Dentate Supercoil	S2S3	SR
	Paravitrea umbilicaris	Open Supercoil	S2	SC
	Pleurobema oviforme	Tennessee Clubshell	S1	E
	Pleuronaia barnesiana	Tennessee Pigtoe	S1	E
	Polygonia progne	Gray Comma	S1	SR
	Speyeria idalia	Regal Fritillary Butterfly	SX	SR
	Vaejovis carolinianus	Carolina Scorpion	S2?	WL
	Ventridens coelaxis	Bidentate Dome	S3?	SC
	Ventridens decussatus	Crossed Dome	S3?	SR
	Ventridens lawae	Rounded Dome	S2S3	SR
	Ventridens suppressus	Flat Dome Snail	S1S2	SR
	Villosa iris	Rainbow Mussel	S2	T
	Villosa vanuxemensis	Mountain Creekshell	S1?	T

STATE1	SCIENTIFIC_NAME	COMMON_NAME	ST_RANK	ST_STATUS
Non-Vascular Plants				
	Gymnoderma lineare	Rock Gnome Lichen	S3	E
	Homalia trichomanoides	Lime Homalia	S1	SR-P
	Porella wataugensis	Liverwort	S1	SR-L
	Rockefellera crossophylla	Old Gray Crosslobes	S2	SR-T
Vascular Plants				
	Abies fraseri	Fraser Fir	S2	WL
	Arethusa bulbosa	Bog-rose	S1	E
	Buchnera americana	Bluehearts	S1	E
	Carex leptonervia	Sedge	S3	WL
	Carex oligosperma	Few-seeded Sedge	S1	E
	Carex projecta	Sedge	S1	SR-P
	Coeloglossum viride var. virescens	American Frog Orchid	S1	E
	Dichanthelium annulum	Witchgrass	S1	SR-P
	Dryopteris cristata	crested woodfern	S3	WL
	Epilobium ciliatum	Willow-herb	S2	SR-P
	Frasera caroliniensis	American Columbo	S2S3	SR-P
	Geum aleppicum	Yellow Avens	S1	E
	Geum geniculatum	Bent Avens	S1S2	SC-V
	Geum laciniatum var. trichocarpum	Rough Avens	S1	E
	Geum radiatum	Spreading Avens	S2	E
	Glyceria nubigena	Smoky Mountain Manna-grass	S2	SR-L
	Hedyotis purpurea var. montana	Mountain Bluet	S2	E
	Huperzia appalachiana	Appalachian Fir-clubmoss	S3	WL
	Hypericum mitchellianum	Blue Ridge St. John's-wort	S2S3	WL
	Juglans cinerea	Butternut	S2S3	WL
	Juncus caesariensis	New Jersey Rush	S1	E
	Liatris helleri	Heller's Blazing Star	S2	T
	Lilium grayi	Gray's Lily	S1S2	T
	Muhlenbergia glomerata	Muhly	S1	SC-V
	Orbexilum pedunculatum	Sampson's Snakeroot	S1	SR-P
	Orbexilum pedunculatum var. pedunculatum	Sampson's Snakeroot	S1	E
	Platanthera integrilabia	White Fringeless Orchid	SH	SC-H
	Rhodiola rosea	Roseroot Stonecrop	SH	E
	Sarracenia oreophila	Green Pitcher Plant	S1	E
	Shortia galacifolia var. galacifolia	Southern Shortia	S2	SC-V
	Solidago spithamaea	Blue Ridge Goldenrod	S2	T
	Sporobolus heterolepis	Northern Dropseed	S1	T
	Stewartia ovata	Mountain Camellia	S2	SR-P
	Trichophorum cespitosum	Tufted Clubrush	S2S3	SR-D
	Vaccinium macrocarpon	Large Cranberry	S2	T
Tennessee				
Vertebrates				
	Acipenser fulvescens	Lake Sturgeon	S1	E
	Ambystoma barbouri	Streamside Salamander	S2	E
	Ammocrypta beani	Naked Sand Darter	S2	D
	Ammocrypta clara	Western Sand Darter	S1	T
	Ammocrypta vivax	Scaly Sand Darter	S2	D
	Ammodramus henslowii	Henslow's Sparrow	S1B	T
	Aquila chrysaetos	Golden Eagle	S1	D
	Atractosteus spatula	Alligator Gar	S1	D
	Carpiodes velifer	Highfin Carpsucker	S2S3	D

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	Chrosomus saylori	Laurel Dace	S1	E
	Chrosomus tennesseensis	Tennessee Dace	S3	D
	Clinostomus funduloides ssp. 1	Smoky Dace	S1S2	D
	Corynorhinus rafinesquii	Rafinesque's Big-eared bat	S3	D
	Corynorhinus townsendii virginianus	Virginia Big-eared Bat	S1	E
	Cryptobranchus alleganiensis	Hellbender	S3	E
	Cycleptus elongatus	Blue Sucker	S2	T
	Cyprinella caerulea	Blue Shiner	S1	T
	Desmognathus abditus	Cumberland Dusky Salamander	S2S3	D
	Desmognathus aeneus	Seepage Salamander	S2	D
	Desmognathus welteri	Black Mountain Salamander	S3	D
	Desmognathus wrighti	Southern Pygmy Salamander	S2S3	D
	Egretta caerulea	Little Blue Heron	S2B,S3N	D
	Erimonax monachus	Spotfin Chub	S2	T
	Erimystax cahni	Slender Chub	S1	T
	Etheostoma akatulo	Bluemask Darter	S1	E
	Etheostoma aquali	Coppercheek Darter	S2S3	T
	Etheostoma baileyi	Emerald Darter	S2	D
	Etheostoma barbouri	Teardrop Darter	S2	D
	Etheostoma barrenense	Splendid Darter	S3	D
	Etheostoma bellum	Orangefin Darter	S3	D
	Etheostoma boschungi	Slackwater Darter	S1	T
	Etheostoma brevirostrum	Holiday Darter	S1	T
	Etheostoma cinereum	Ashy Darter	S2S3	E
	Etheostoma corona	Crown Darter	S1S2	E
	Etheostoma denoncourti	Golden Darter	S2	D
	Etheostoma ditrema	Coldwater Darter	S1	T
	Etheostoma forbesi	Barrens Darter	S1	E
	Etheostoma gutselli	Tuckasegee Darter	S1	E
	Etheostoma lemniscatum	Tuxedo Darter	S1	E
	Etheostoma luteovinctum	Redband Darter	S4	D
	Etheostoma marmorpinnum	Marbled Darter	S1	E
	Etheostoma microlepidum	Smallscale Darter	S2	D
	Etheostoma neopterum	Lollipop Darter	S1S2	D
	Etheostoma olivaceum	Sooty Darter	S3	D
	Etheostoma pseudovulatum	Egg-mimic Darter	S1	E
	Etheostoma pyrrhogaster	Firebelly Darter	S2	D
	Etheostoma sagitta	Arrow Darter	S2	D
	Etheostoma sitikuense	Citico Darter	S1	E
	Etheostoma striatulum	Striated Darter	S1	T
	Etheostoma susanae	Cumberland Darter	S1	E
	Etheostoma tippecanoe	Tippecanoe Darter	S1S2	D
	Etheostoma trisella	Trispot Darter	S1	T
	Etheostoma vulneratum	Wounded Darter	S2S3	D
	Etheostoma wapiti	Boulder Darter	S1	E
	Eurycea junaluska	Junaluska Salamander	S2	D
	Fundulus chrysotus	Golden Topminnow	S1S2	D
	Fundulus julisia	Barrens Topminnow	S1	E
	Glaucomys sabrinus coloratus	Carolina Northern Flying Squirrel	S1S2	E
	Glyptemys muhlenbergii	Bog Turtle	S1	T
	Gyrinophilus gulolineatus	Berry Cave Salamander	S1	T
	Gyrinophilus palleucus	Tennessee Cave Salamander	S2	T

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	Haliaeetus leucocephalus	Bald Eagle		D
	Hemidactylium scutatum	Four-toed Salamander	S3	D
	Hemitremia flammea	Flame Chub	S3	D
	Ichthyomyzon gagei	Southern Brook Lamprey	S1	D
	Ichthyomyzon unicuspis	Silver Lamprey	S2	D
	Ixobrychus exilis	Least Bittern	S2B	D
	Limnothlypis swainsonii	Swainson's Warbler	S3	D
	Macrhybopsis etnieri	Cf. M. Aestivalis	S1	E
	Macrhybopsis gelida	Sturgeon Chub	S1	D
	Macrhybopsis meeki	Sicklefin Chub	S2	D
	Macrochelys temminckii	Alligator Snapping Turtle	S2S3	T
	Microtus chrotorrhinus carolinensis	Southern Rock Vole	S2	D
	Myotis grisescens	Gray Bat	S2	E
	Myotis leibii	Eastern small-footed bat	S2S3	D
	Myotis lucifugus	Little Brown Bat	S3	T
	Myotis septentrionalis	Northern Long-eared Bat	S1S2	T
	Myotis sodalis	Indiana Bat	S1	E
	Neotoma floridana haematoreia	Southern Appalachian Woodrat	S2	D
	Neotoma floridana illinoensis	Eastern Woodrat	S3	D
	Neotoma magister	Allegheny Woodrat	S3	D
	Nerodia cyclopion	Mississippi Green Water Snake	S2	D
	Notropis buccatus	Silverjaw Minnow	S1	E
	Notropis dorsalis	Bigmouth Shiner	S1	D
	Notropis lineapunctata	Lined Chub	S1	D
	Notropis rupestris	Bedrock Shiner	S2	D
	Noturus baileyi	Smoky Madtom	S1	E
	Noturus crypticus	Chucky Madtom	S1	E
	Noturus fasciatus	Saddled Madtom	S2	T
	Noturus flavipinnis	Yellowfin Madtom	S1	T
	Noturus munitus	Frecklebelly Madtom	S1	T
	Noturus stanauli	Pygmy Madtom	S1	E
	Noturus stigmosus	Northern Madtom	S3	D
	Ophisaurus attenuatus longicaudus	Eastern Slender Glass Lizard	S3	D
	Parascalops breweri	Hairy-tailed Mole	S3	D
	Percina antesella	Amber Darter	S1	E
	Percina apina	Tennessee logperch	S2	D
	Percina aurantiaca	Tangerine Darter	S3	D
	Percina burtoni	Blotchside Logperch	S2	D
	Percina jenkinsi	Conasauga Logperch	S1	E
	Percina macrocephala	Longhead Darter	S2	T
	Percina phoxocephala	Slenderhead Darter	S3	D
	Percina squamata	Olive Darter	S2	D
	Percina stictogaster	Frecklebelly Darter	S1	D
	Percina tanasi	Snail Darter	S2S3	T
	Percina williamsi	Sickle Darter	S2	T
	Perimyotis subflavus	Tricolored Bat	S2S3	T
	Peucaea aestivalis	Bachman's Sparrow	S1B	E
	Phenacobius catostomus	Riffle Minnow	S2	D
	Phoxinus cumberlandensis	Blackside Dace	S2	T
	Pituophis melanoleucus melanoleucus	Northern Pine Snake	S3	T
	Plestiodon anthracinus	Coal Skink	S1	D
	Plethodon welleri	Weller's Salamander	S2	D

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	Rallus elegans	King Rail	S2	D
	Scaphirhynchus albus	Pallid Sturgeon	S1	E
	Setophaga cerulea	Cerulean Warbler	S3B	D
	Sistrurus miliarius streckeri	Western Pigmy Rattlesnake	S2S3	T
	Sorex palustris	Water Shrew	S2	D
	Sterna antillarum athalassos	Interior Least Tern		E
	Synaptomys cooperi	Southern Bog Lemming	S4	D
	Thoburnia atripinnis	Blackfin Sucker	S2	D
	Vermivora chrysoptera	Golden-winged Warbler	S3B	T
Invertebrates				
	Alasmidonta atropurpurea	Cumberland Elktoe	S1S2	E
	Alasmidonta raveneliana	Appalachian Elktoe	S1	E
	Anguispira picta	Painted Snake Coiled Forest Snail	S1	T
	Athearnia anthonyi	Anthony's River Snail	S1	E
	Barbicambarus simmonsi	Tennessee Bottlebrush Crayfish	S2?	T
	Cambarus bouchardi	Big South Fork Crayfish	S1	E
	Cambarus cymatilis	Conasauga Blue Burrower	S1	E
	Cambarus extraneus	Chickamauga Crayfish	S1S2	E
	Cambarus obeyensis	Obey Crayfish	S2	E
	Cambarus pristinus	Pristine Crayfish	S2	E
	Cambarus stockeri	Cocoa Crayfish	S1S2	T
	Cambarus williami	Brawleys Fork Crayfish	S2	T
	Cumberlandia monodonta	Spectaclecase	S2S3	E
	Cyprogenia stegaria	Fanshell	S1	E
	Dromus dromas	Dromedary Pearlymussel	S1	E
	Epioblasma brevidens	Cumberlandian Combshell	S1	E
	Epioblasma capsaeformis	Oyster Mussel	S1	E
	Epioblasma florentina walkeri	Tan Riffleshell	S1	E
	Epioblasma metastriata	Upland Combshell	SH	E
	Epioblasma obliquata obliquata	Purple Catspaw	S1	E
	Epioblasma torulosa torulosa	Tuberculed Blossom Pearlymussel	SX	E
	Epioblasma triquetra	Snuffbox	S3	E
	Epioblasma turgidula	Turgid Blossom Pearlymussel	SX	E
	Fallicambarus hortoni	Hatchie Burrowing Crayfish	S1	E
	Faxonius alabamensis	Alabama Crayfish	S2	D
	Fusconaia cor	Shiny Pigtoe Pearlymussel	S1	E
	Fusconaia cuneolus	Fine-rayed Pigtoe	S1	E
	Hemistena lata	Cracking Pearlymussel	S1	E
	Lampsilis abrupta	Pink Mucket	S2	E
	Lampsilis altilis	Fine-lined Pocketbook	S1S2	T
	Lampsilis virescens	Alabama Lampmussel	S1	E
	Lemiox rimosus	Birdwing Pearlymussel	S1	E
	Marstonia ogmorhaphe	Royal Springsnail	S1	E
	Medionidus acutissimus	Alabama Moccasinshell	S1	T
	Medionidus parvulus	Coosa Moccasinshell	S1	E
	Obovaria retusa	Ring Pink	S1	E
	Orconectes incomptus	Tennessee Cave Crayfish	S1	E
	Orconectes shoupi	Nashville Crayfish	S1S2	E
	Orconectes wrighti	Hardin Crayfish	S2	E
	Pegias fabula	Little-wing Pearlymussel	S1	E
	Plethobasus cicatricosus	White Wartyback	S1	E
	Plethobasus cooperianus	Orange-foot Pimpleback	S1	E

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	Plethobasus cyphyus	Sheepnose	S2S3	E
	Pleurobema clava	Clubshell	SH	E
	Pleurobema georgianum	Southern Pigtoe	S1	E
	Pleurobema gibberum	Cumberland Pigtoe	S1	E
	Pleurobema hanleyianum	Georgia Pigtoe	S1	E
	Pleurobema perovatum	Ovate Clubshell	SH	E
	Pleurobema plenum	Rough Pigtoe	S1	E
	Pleuronaia dolabelloides	Slabside Pearlymussel	S2	E
	Ptychobranchus foremanianus	Rayed Kidneyshell	S1	E
	Ptychobranchus greenii	Triangular Kidneyshell	S1	E
	Ptychobranchus subtentum	Fluted Kidneyshell	S2	E
	Quadrula cylindrica cylindrica	Smooth Rabbitsfoot	S3	T
	Quadrula cylindrica strigillata	Rough Rabbitsfoot	S2	E
	Quadrula fragosa	Winged Mapleleaf	S1	E
	Quadrula intermedia	Cumberland Monkeyface	S1	E
	Quadrula sparsa	Appalachian Monkeyface	S1	E
	Toxolasma cylindrellus	Pale Lilliput	S1	E
	Villosa fabalis	Rayed Bean	S1	E
Non-Vascular Plants				
	Archidium alternifolium	A moss	S1	T
	Bryoxiphium norvegicum	Sword Moss	S1	T
	Cephaloziella spinicaulis	Liverwort	S1	S
	Cololejeunea ornata	Liverwort	S1	T
	Drepanolejeunea appalachiana	a liverwort	S1	S
	Frullania caulisequa	Liverwort	S1	S
	Funaria americana	American Funaria Moss	S1?	T
	Grimmia olneyi	Grimmia Moss	SH	S
	Homaliadelphus sharpii	Sharp's Homaliadelphus	S1	E
	Jungermannia fossombronioides	A liverwort	S1	S
	Lejeunea blomquistii	Blomquist Leafy Liverwort	S1S2	S
	Lejeunea sharpii	Sharp's Lejeunea	S1S2	E
	Megaceros aenigmaticus	Hornwort	S2S3	S
	Metzgeria uncigera	Liverwort	S1	S
	Myurella julacea	Small Mousetail Moss	SH	S-P
	Palamocladium leskeoides	Palamocladium	S1	T
	Pellia appalachiana	A Liverwort	S2	S
	Plagiochila punctata	Spotty featherwort	S1	S
	Plagiomnium carolinianum	Mountain Wavy-leaf Moss	S1	S
	Porella wataugensis	Liverwort	S1S2	T
	Preissia quadrata	Narrow Mushroom-headed Liverwort	S1	T
	Radula voluta	Liverwort	S2	S
	Rhachithecium perpusillum	Budding Tortula	SH	S
	Scopelophila cataractae	Agoyan Cataract Moss	S1	S
	Tortula fragilis	Fragmented Screw-moss	S1	E
Vascular Plants				
	Abies fraseri	Fraser Fir	S1S2	T
	Acalypha deamii	Deam's Copperleaf	S1	S
	Aconitum reclinatum	White Monkshood	S1	E
	Actaea rubifolia	Appalachian Bugbane	S3	W
	Adlumia fungosa	Climbing Fumitory	S2	T
	Agalinis auriculata	Earleaf Foxglove	S2	E
	Agalinis decemloba	Blue Ridge False Foxglove	S1	E

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	Agalinis heterophylla	Prairie False-foxglove	S1	E
	Agalinis oligophylla	Ridge-stem False-foxglove	S1	E
	Agalinis plukenetii	Purple Gerardia	S1	E
	Agalinis setacea	Thread-leaved Gerardia	SH	S
	Agastache scrophulariifolia	Giant Hyssop	S1S2	T
	Ageratina luciae-brauniae	Lucy Braun's White Snakeroot	S3	T
	Allium burdickii	Narrow-leaved Wild Leek	S1S2	T-CE
	Allium tricoccum	Small White Leek	S1S2	S-CE
	Amelanchier sanguinea	Round-leaved Serviceberry	S2	T
	Ammoselinum popei	Pope Sand-parsley	S2	T
	Amsonia tabernaemontana var. gattingeri	A Blue-star	S3	S
	Anemone caroliniana	Carolina Anemone	S1S2	E
	Apios priceana	Price's Potato-bean	S3	E
	Arabis hirsuta	Western Hairy Rock-cress	S1	T
	Arabis patens	Spreading Rockcress	S1	E
	Arabis perstellata	Braun's Rock-cress	S1	E
	Arenaria lanuginosa	A Sandwort	S1	E
	Aristida ramosissima	Branched Three-awn Grass	S1	E
	Armoracia lacustris	Lake-cress	S2	S
	Arnoglossum plantagineum	Fen Indian-plantain	S2	T
	Asclepias purpurascens	Purple Milkweed	S1	S
	Asplenium scolopendrium var. americanum	American Hart's-tongue Fern	S1	E
	Astragalus bibullatus	Pyne's Ground Plum	S1	E
	Astragalus tennesseensis	Tennessee Milk-vetch	S3	S
	Athyrium filix-femina ssp. angustum	Lady Fern	S2	S
	Aureolaria patula	Spreading False-foxglove	S3	S
	Baptisia bracteata var. leucophaea	Cream Wild Indigo	S1S2	S
	Berberis canadensis	American barberry	S2	S
	Blephilia subnuda	Smooth Blephilia	S1	E
	Boechera shortii	Short's Rock-cress	S1S2	S
	Bolboschoenus fluviatilis	River Bulrush	S1	S
	Botrychium jenmanii	Alabama Grapefern	S1	T
	Botrychium matricariifolium	Matricary Grapefern	S1	S
	Botrychium oneidense	Blunt-lobe Grapefern	S1	S
	Brachyelytrum aristosum	Northern Shorthusk	S2	S
	Buckleya distichophylla	piratebush	S2	T
	Bulbostylis ciliatifolia var. coarctata	Beak-rush	S1	E
	Calamagrostis porteri	Porter's Reedgrass	S1	E
	Calamovilfa arcuata	Sandreed Grass	S2	T
	Caltha palustris	Marsh-marigold	S1	E
	Campanula aparinoides	Marsh Bellflower	S2	S
	Cardamine clematitis	mountain bittercress	S2	T
	Cardamine flagellifera	Bitter Cress	S2	T
	Cardamine rotundifolia	Roundleaf Water-cress	S2S3	S
	Carex barrattii	Barratt's Sedge	S2	E
	Carex bromoides ssp. montana	Brome-like Sedge	S1	T
	Carex bullata	Button Sedge	S3	S
	Carex buxbaumii	Buxbaum's Sedge	S1	E
	Carex comosa	Sedge	S2	T
	Carex davisii	Davis' Sedge	S1	S
	Carex echinata ssp. echinata	Little Prickly Sedge	S1?	S
	Carex folliculata	northern long sedge	S1	T

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	Carex hirtifolia	Sedge	S1S2	S
	Carex hitchcockiana	Sedge	S1	T
	Carex hyalina	Tissue Sedge	S1	S
	Carex manhartii	Manhart's Sedge	S2	E
	Carex misera	Wretched Sedge	S2	T
	Carex muskingumensis	Sedge	S1	E
	Carex ouachitana	Ouachita Sedge	S1	S
	Carex pellita	Wooly Sedge	S1	E
	Carex reniformis	Sedge	S1	S
	Carex roanensis	Sedge	S2	S
	Carex ruthii	Ruth's Sedge	S2	T
	Carex tetanica	Rigid Sedge	S1	E
	Castanea dentata	American Chestnut	S2S3	S
	Caulophyllum giganteum	Blue Cohosh	S1	T
	Ceratophyllum echinatum	Prickly Hornwort	S1	S
	Chelone obliqua	Red Turtlehead	S1	S
	Chrysogonum virginianum	Green-and-gold	S2	T
	Clematis fremontii	Fremont's Virgin's-bower	S1	E
	Clematis glaucophylla	Whiteleaf Leatherflower	S1	S
	Clematis morefieldii	Morefield's Leather-flower	S2	E
	Clethra alnifolia	Coast Pepper-bush	S1	E
	Coeloglossum viride var. virescens	American Frog Orchid	S1	E
	Collinsia verna	Blue-eyed Mary	S1	E
	Comptonia peregrina	Sweet Fern	S1	E
	Conradina verticillata	Cumberland Rosemary	S3	T
	Corallorhiza maculata	Spotted Coral-root	S1	T
	Coreopsis latifolia	Broad-leaved Tickseed	S1S2	E
	Corydalis sempervirens	Pale Corydalis	S1S2	S
	Cotinus obovatus	American Smoke-tree	S2	S
	Crataegus harbisonii	Harbison's Hawthorn	S1	E
	Cymophyllus fraserianus	Fraser's Sedge	S3	S
	Cyperus dentatus	Toothed Sedge	S1	S
	Cyperus plukenetii	Plukenet's Cyperus	S1	S
	Cypripedium kentuckiense	Lady-slipper	S2	E
	Cypripedium reginae	Showy Lady-slipper	S1	E
	Dalea candida	White Prairie-clover	S2	T
	Dalea foliosa	Leafy Prairie-clover	S2S3	E
	Dalea purpurea	Purple Prairie-clover	S1	E
	Danthonia epilis	Bog Oat-grass	S1S2	S
	Delphinium exaltatum	Tall Larkspur	S2	E
	Desmodium ochroleucum	Creamflower Tick-trefoil	S1	E
	Diamorpha smallii	Small's Stonecrop	S1S2	E
	Diarrhena obovata	Beak Grass	S1	S
	Dichanthelium acuminatum ssp. leucothrix	Panic-grass	S1	S
	Dichanthelium acuminatum ssp. spretum	Eaton's Witchgrass	S1	E
	Dichanthelium ensifolium ssp. curtifolium	Panic-grass	S1	E
	Didiplis diandra	Water-purslane	S1	T
	Diervilla lonicera	Northern Bush-honeysuckle	S2	T
	Diervilla sessilifolia var. rivularis	Mountain Bush-honeysuckle	S2	T
	Draba cuneifolia	Wedge-leaf Whitlow-grass	S1S2	S
	Draba ramosissima	Branching Whitlow-wort	S2	S
	Drosera brevifolia	Dwarf Sundew	S2	T

STATE1	SCIENTIFIC_NAME	COMMON_NAME	ST_RANK	ST_STATUS
	Drosera capillaris	Sundew	S1	T
	Drosera intermedia	Spoon-leaved Sundew	S2	S
	Drosera rotundifolia	Roundleaf Sundew	S1	T
	Dryopteris carthusiana	Spinulose Woodfern	S1	T
	Dryopteris cristata	crested woodfern	S2	T
	Echinacea pallida	Pale-purple Coneflower	S1	E
	Echinacea simulata	Wavy-leaf Purple-coneflower	S2	T
	Echinacea tennesseensis	Tennessee Coneflower	S2	T
	Echinochloa walteri	Walter's Barnyard Grass	S1	S
	Eleocharis compressa	Flat-stemmed Spike-rush	S1	S
	Eleocharis elliptica	Elliptic Spikerush	S1	E
	Eleocharis equisetoides	Horse-tail Spikerush	S1	E
	Eleocharis intermedia	Spike-rush	S1	E
	Eleocharis lanceolata	Lance-like Spikerush	S1	S
	Eleocharis tortilis	Twisted Spike-rush	S1	S
	Eleocharis wolfii	Wolf Spikerush	S1	E
	Elodea nuttallii	Waterweed	S2	S
	Elymus svensonii	Svenson's Wild-rye	S2	T
	Epilobium ciliatum	Willow-herb	S1	T
	Epilobium leptophyllum	Willow-herb	S1	T
	Eriocaulon decangulare	Ten-angle Pipewort	S1	E
	Eriogonum harperi	Harper's Umbrella-plant	S1	E
	Eriophorum virginicum	Tawny Cotton-grass	S1S2	E
	Eryngium integrifolium	Button Snakeroot	S1	T
	Erysimum capitatum	Western Wallflower	S1S2	E
	Erythronium rostratum	Yellow Trout-lily	S2	S
	Eupatorium godfreyanum	Godfrey's Thoroughwort	S1	S
	Eupatorium leucolepis	White-bract Thoroughwort	S1	E
	Eurybia saxicastellii	Rockcastle Aster	S1S2	E
	Eurybia schreberi	Schreber Aster	S1	S
	Euthamia gymnospermoides	Viscid Bushy Goldenrod	S1	E
	Evolvulus nuttallianus	Evolvulus	S3	S
	Festuca paradoxa	Cluster Fescue	S1	S
	Fimbristylis perpusilla	Harper's Fimbristylis	S1	E
	Fimbristylis puberula	Hairy Fimbristylis	S1S2	T
	Fothergilla major	Witch-alder	S2	T
	Fuirena squarrosa	Hairy Umbrella-sedge	S1	S
	Galium asprellum	Rough Bedstraw	S1	S
	Galium palustre	Marsh Bedstraw	S1	S
	Gaylussacia dumosa	Dwarf Huckleberry	S3	T
	Gentiana austromontana	Appalachian Gentian	S3	WL
	Gentiana puberulenta	Downy Gentian	S1	E
	Geranium robertianum	Herb-robert	S1	S
	Geum aleppicum	Yellow Avens	S1	E
	Geum geniculatum	Bent Avens	S1	E
	Geum laciniatum	Rough Avens	S1	S
	Glyceria acutiflora	Manna-grass	S2	S
	Glyceria laxa	Northern Manna-grass	S1	E
	Goodyera repens	Dwarf Rattlesnake-plantain	S1	S
	Gratiola floridana	Florida Hedge-hyssop	S1	E
	Gymnopogon brevifolius	Shortleaf Beardgrass	S1S2	S
	Hasteola suaveolens	Sweet-scented Indian-plantain	S2	S

STATE1	SCIENTIFIC_NAME	COMMON_NAME	ST_RANK	ST_STATUS
	Helenium brevifolium	Shortleaf Sneezeweed	S1	E
	Helianthemum propinquum	Low Frostweed	S1S2	E
	Helianthus eggertii	Eggert's Sunflower	S3	S
	Helianthus glaucophyllus	White-leaved Sunflower	S1	T
	Helianthus occidentalis	naked-stem sunflower	S2	S
	Helianthus verticillatus	Whorled Sunflower	S1	E
	Heracleum maximum	Cow Parsnip	S2	S
	Heteranthera limosa	Smaller Mud-plantain	S1S2	T
	Heteranthera missouriensis	Multiflowered Mud-plantain	S1	S
	Hexastylis virginica	Virginia Heartleaf	S2	S
	Hieracium longipilum	Hairy Hawkweed	S1	S
	Hieracium scabrum	Rough Hawkweed	S2	T
	Hottonia inflata	Featherfoil	S2	S
	Hydrocotyle americana	American Water-pennywort	S1	E
	Hydrolea ovata	Hydrolea	S1	S
	Hydrophyllum virginianum	Virginia Waterleaf	S3	T
	Hymenophyllum tayloriae	Gorge Filmy Fern	S2	S
	Hypericum adpressum	Creeping St. John's-wort	S1	E
	Hypericum ellipticum	Pale St. John's-wort	S1	E
	Hypericum graveolens	Mountain St. John's-wort	S3	E
	Hypericum mitchellianum	Blue Ridge St. John's-wort	S2	T
	Hypericum nudiflorum	St. John's-wort	S2	S
	Iris brevicaulis	Lamance Iris	S1	E
	Iris fulva	Red Iris	S2	T
	Iris prismatica	Narrow Blue Flag	S2S3	T
	Isoetes melanopoda	Blackfoot Quillwort	S1S2	E
	Isoetes tennesseensis	Hiwassee Quillwort	S1	E
	Isotria medeoloides	Small Whorled Pogonia	S1	E
	Juglans cinerea	Butternut	S3	T
	Juncus brachycephalus	Short-head Rush	S2	S
	Lachnanthes caroliana	Red Root	S1	E
	Lachnocaulon anceps	Bog-buttons	SH	S
	Lathyrus palustris	Marsh Pea	S1	S
	Lechea pulchella	Leggett's Pinweed	S1	E
	Lespedeza angustifolia	Narrowleaf Bushclover	S2	T
	Lesquerella perforata	Spring Creek Bladderpod	S1	E
	Leucothoe racemosa	Fetter-bush	S2	T
	Liatris cylindracea	Slender Blazing-star	S2	T
	Lilium grayi	Gray's Lily	S1	E
	Lilium michiganense	Michigan Lily	S3	W
	Lilium philadelphicum	Wood Lily	S1	E
	Liparis loeselii	Loesel's Twayblade	S1	T
	Listera australis	Southern Twayblade	S1S2	E
	Lobelia amoena	Southern Lobelia	S1S2	T
	Lonicera canadensis	American Fly-honeysuckle	S1	T
	Lonicera dioica	Mountain Honeysuckle	S2	S
	Lonicera flava	Yellow Honeysuckle	S1	T
	Ludwigia sphaerocarpa	Globe-fruited Ludwigia	S1	T
	Lycopodiella alopecuroides	Foxtail Clubmoss	S2	T
	Lysimachia fraseri	Fraser Loosestrife	S2	E
	Lysimachia hybrida	Lanceleaf Loosestrife	S2	S
	Lysimachia quadriflora	Four-flowered Loosestrife	S1	E

STATE1	SCIENTIFIC_NAME	COMMON_NAME	ST_RANK	ST_STATUS
	Lysimachia terrestris	Swamp Loosestrife	S1	E
	Lysimachia x producta	Loosestrife	S1	S
	Magnolia virginiana	Sweetbay Magnolia	S2	T
	Maianthemum stellatum	Starflower Solomons-seal	S1	E
	Marshallia obovata	Obovate Marshallia	S1	E
	Marshallia pulchra	Large-flowered Barbara's-buttons	S2	E
	Marshallia trinervia	Broadleaf Barbara's-buttons	S2S3	T
	Meehania cordata	Meehania Mint (Heart-leaf Meehania)	S2	T
	Melanthium latifolium	Broadleaf Bunchflower	S1S2	E
	Melanthium virginicum	Bunchflower	S1	E
	Melanthium woodii	Ozark Bunchflower	S2	S
	Menziesia pilosa	Fetterbush	S2	S
	Minuartia cumberlandensis	Cumberland Sandwort	S2	E
	Minuartia godfreyi	Godfrey's Stitchwort	S1	E
	Mirabilis albida	Pale Umbrella-wort	S2	T
	Monotropsis odorata	Sweet Pinesap	S2	T
	Muhlenbergia cuspidata	Plains Muhlenbergia	S1	E
	Muhlenbergia glabrifloris	Muhly	S1	S
	Muhlenbergia torreyana	Torrey Muhly	S1	E
	Myriophyllum pinnatum	Water-milfoil	S1	E
	Nestronia umbellula	Nestronia	S1	E
	Neviusia alabamensis	Alabama Snow-wreath	S2	T
	Oenothera macrocarpa	Missouri Primrose	S2	T
	Oenothera parviflora	Northern Evening-primrose	S1	S
	Oligoneuron album	Prairie Goldenrod	S1S2	E
	Onosmodium hispidissimum	Hairy False Gromwell	S1	E
	Onosmodium molle ssp. occidentale	Western False Gromwell	S1S2	T
	Onosmodium molle ssp. subsetosum	False Gromwell	S1	E
	Packera plattensis	Prairie Ragwort	S1	S
	Panax quinquefolius	American ginseng	S3S4	S-CE
	Panicum hemitomon	Maidencane	S2	S
	Parnassia grandifolia	Large-leaved Grass-of-parnassus	S3	S
	Paronychia argyrocoma	Silverling	S1S2	T
	Patis racemosa	Mountain ricegrass	S1	E
	Paysonia densipila	Duck River Bladderpod	S3	S
	Paysonia stonensis	Stones River Bladderpod	S1	E
	Pedicularis lanceolata	Swamp Lousewort	S1S2	S
	Penstemon tubiflorus	Small Flowered Beardtongue	S1	S
	Perideridia americana	Perideridia	S2	E
	Phegopteris connectilis	Northern Beechfern	S1	E
	Phemeranthus calcaricus	Limestone Fame-flower	S3	S
	Phemeranthus mengesii	Fame-flower	S2	T
	Phemeranthus teretifolius	Roundleaf Fameflower	S2	T
	Phlox bifida ssp. stellaria	Cleft Phlox	S3	T
	Phlox ovata	Wideflower phlox	S2S3	S
	Phlox pilosa ssp. ozarkana	Downy Phlox	S1S2	S
	Phlox subulata	Moss phlox	S1	S
	Physaria globosa	Lesquereux's Mustard	S2	E
	Pieris floribunda	Mountain Fetter-bush	S2	T
	Pilularia americana	American Pillwort	S1S2	S
	Pityopsis ruthii	Ruth's Golden Aster	S1	E
	Plantago cordata	Heartleaved Plantain	S1	E

STATE1	SCIENTIFIC_NAME	COMMON_NAME	ST_RANK	ST_STATUS
	Platanthera cristata	Yellow-crested Orchid	S2S3	S
	Platanthera flava var. herbiola	Pale Green Orchid	S2	T
	Platanthera grandiflora	Large Purple Fringed Orchid	S2	E
	Platanthera integra	Yellow Fringeless Orchid	S1	E
	Platanthera integrilabia	White Fringeless Orchid	S2S3	E
	Platanthera nivea	Snowy Orchid	S1	E
	Platanthera psycodes	Small Purple Fringe Orchid	S2	S
	Poa palustris	Fowl Bluegrass	S1	E
	Poa saltuensis	Drooping Bluegrass	S1	T
	Pogonia ophioglossoides	Rose Pogonia	S2	E
	Polygala boykinii	Boykin's Milkwort	S2	T
	Polygala mariana	Maryland Milkwort	S1	S
	Polygala nana	Dwarf Milkwort	S1	E
	Polygala nuttallii	Nuttall's Milkwort	S1	E
	Polygonella americana	Southern Jointweed	S1S2	E
	Polygonum arifolium	Halberd-leaf Tearthumb	S1	T
	Polygonum cilinode	Fringed Black Bindweed	S1S2	T
	Polymnia johnbeckii	John Beck's Leafcup	S1	E
	Polytaenia nuttallii	Prairie Parsley	S1	T
	Ponthieva racemosa	Shadow-witch Orchid	S1	E
	Potamogeton amplifolius	Large-leaf Pondweed	S1	T
	Potamogeton epihydrus	Creekgrass	S1S2	S
	Potamogeton tennesseensis	Tennessee Pondweed	S2	T
	Prenanthes alba	White Rattlesnake-root	S1	S
	Prenanthes aspera	Rough Rattlesnake-root	S1	E
	Prenanthes barbata	Barbed Rattlesnake-root	S2	S
	Prunus pumila	Sand Cherry	S1	E
	Prunus virginiana	Chokecherry	S1	S
	Pseudognaphalium helleri	Heller's Catfoot	S2	S
	Pycnanthemum torreyi	Torrey's Mountain Mint	S1	E
	Pycnanthemum verticillatum	Mountain-mint	S1	E
	Pyrola americana	American Wintergreen	S2	E
	Quercus margaretta	Sand Post Oak	S1	S
	Ranunculus aquatilis var. diffusus	White Water Buttercup	S1	E
	Ranunculus flabellaris	Yellow Water-crowfoot	S2	T
	Rhamnus alnifolia	Alderleaf Buckthorn	S1	E
	Rhynchospora caduca	Falling Beaked-rush	S1	S
	Rhynchospora capillacea	Horned Beakrush	S1	E
	Rhynchospora chalarocephala	Loose-head Beakrush	S1	T
	Rhynchospora inexpansa	Nodding Beakrush	S1	S
	Rhynchospora perplexa	Beakrush	S2	T
	Rhynchospora rariflora	Beakrush	S1	E
	Ribes curvatum	Granite Gooseberry	S1	T
	Ribes missouriense	Missouri gooseberry	S2	S
	Ribes odoratum	Buffalo Currant	S1	T
	Rudbeckia subtomentosa	Sweet Coneflower	S2	T
	Sabatia capitata	Cumberland Rose Gentian	S2	E
	Sacciolepis striata	Gibbous Panic-grass	S1	S
	Sagittaria brevirostra	Short-beak Arrowhead	S1	T
	Sagittaria graminea	Grassleaf Arrowhead	S1	T
	Sagittaria platyphylla	Ovate-leaved Arrowhead	S2S3	S
	Sagittaria rigida	Sessile-fruited Arrowhead	S1	E

STATE1	SCIENTIFIC_NAME	COMMON_NAME	ST_RANK	ST_STATUS
	Salvia azurea var. grandiflora	Blue Sage	S3	S
	Sanguisorba canadensis	Canada Burnet	S1	E
	Saxifraga caroliniana	Carolina saxifrage	S1S2	E
	Saxifraga pensylvanica	Swamp Saxifrage	S1	E
	Schisandra glabra	Bay Starvine	S2	T
	Schoenolirion croceum	Sunnybell	S3	T
	Schoenoplectus subterminalis	Water Bulrush	S1	E
	Scleria verticillata	Low Nutrush	S2	S
	Scutellaria montana	Large-flowered Skullcap	S4	T
	Sedum nevii	Nevius' Stonecrop	S1	E
	Silene caroliniana ssp. pensylvanica	Wild Pink	S1S2	T
	Silene ovata	Ovate Catchfly	S2	E
	Silphium brachiatum	Cumberland Rosinweed	S3	E
	Silphium laciniatum	Compass-plant	S2	T
	Silphium pinnatifidum	Prairie-dock	S2	T
	Smilax laurifolia	Laurel-leaf Greenbrier	S1	S
	Solidago austrina	Virginia goldenrod	S1	S
	Solidago gattingeri	Gattinger's Goldenrod	S1	E
	Solidago porteri	Porter's Goldenrod	S1	E
	Solidago rupestris	Rock Goldenrod	S1	E
	Solidago tarda	Late Goldenrod	S1	S
	Sparganium androcladum	Branching Burreed	S1	E
	Spiraea alba	Narrow-leaved Meadow-sweet	S1	E
	Spiraea virginiana	Virginia Spiraea	S2	E
	Spiranthes lucida	Shining Ladies'-tresses	S1S2	T
	Spiranthes magnicamporum	Great Plains Ladies'-tresses	S1	E
	Spiranthes ochroleuca	Yellow Nodding Ladies'-tresses	S1	E
	Spiranthes odorata	Sweetscent Ladies'-tresses	S1	E
	Sporobolus heterolepis	Northern Dropseed	S1	T
	Sporobolus junceus	A Dropseed	S1	E
	Stachys clingmanii	Clingman's Hedge-nettle	S1S2	T
	Stellaria alsine	Trailing Stitchwort	S1	E
	Stellaria fontinalis	Water Stitchwort	S3	S
	Stellaria longifolia	Longleaf Stitchwort	S1	S
	Stenanthium diffusum	Lily	S1	E
	Stenanthium tennesseense	Death-camas	S2	T
	Streptopus amplexifolius	Clasping Twisted-stalk	S1	T
	Stylisma humistrata	Southern Southern Morning-glory	S1	T
	Sullivantia sullivantii	Sullivantia	S1	E
	Symphyotrichum praealtum	Willow Aster	S1	E
	Symphyotrichum pratense	Barrens Silky Aster	S1	E
	Symplocarpus foetidus	Skunk Cabbage	S1	E
	Symplocos tinctoria	Horsesugar	S2	S
	Taxus canadensis	Canadian Yew	S1	E
	Thaspium pinnatifidum	cutleaf meadow-parsnip	S1	E
	Thermopsis fraxinifolia	Ash-leaved Bush-pea	S3	T
	Thermopsis mollis	Soft-haired Thermopsis	S2S3	S
	Torreyochloa pallida	Pale Manna Grass	S1	S
	Trautvetteria fonticalcarea	Leatherleaf Tassel-rue	S2	T
	Triadenum fraseri	Fraser's Marsh St. Johnswort	S1?	S
	Triantha glutinosa	Sticky False-asphodel	S1	E
	Triantha racemosa	Coastal False-asphodel	S1	E

STATE1	SCIENTIFIC_NAME	COMMON_NAME	ST_RANK	ST_STATUS
	Trichomanes boschianum	Appalachian Bristle Fern	S1S2	T
	Trichomanes petersii	Dwarf Filmy-fern	S2	T
	Trichophorum cespitosum	Tufted Clubrush	S1	E
	Tridens flavus var. chapmanii	Chapman's Redtop	S1	E
	Trientalis borealis	Northern Starflower	S1	T
	Trifolium calcaricum	Running Glade Clover	S1	E
	Trifolium reflexum	Buffalo Clover	S1	E
	Trillium decumbens	Trailing Trillium	S1	E
	Trillium lancifolium	Lance-leaf Trillium	S1	E
	Trillium pusillum	Least Trillium	S2	E
	Trillium rugelii	Southern Nodding Trillium	S2	E
	Trillium tennesseense	Lilly	S1	E
	Tsuga caroliniana	Carolina Hemlock	S3	T
	Turritis glabra	Tower-mustard	S1	S
	Ulmus crassifolia	Cedar Elm	S2	S
	Utricularia cornuta	Horned Bladderwort	S1	E
	Utricularia subulata	Zigzag Bladderwort	S1	T
	Vaccinium elliottii	Elliott's Blueberry	S1	E
	Vaccinium macrocarpon	Large Cranberry	S2	T
	Veronica americana	American Speedwell	S1	S
	Veronica catenata	Sessile Water-speedwell	S1	E
	Veronica scutellata	Marsh-speedwell	S1	E
	Viburnum bracteatum	Arrow-wood	S2	S
	Vitis rupestris	Sand Grape	S1	E
	Woodsia scopulina ssp. appalachiana	Appalachian Cliff-fern	S1S2	S
	Woodwardia virginica	Virginia Chainfern	S2	S
	Xerophyllum asphodeloides	Eastern Turkeybeard	S3	T
	Xyris ambigua	Coastal-plain Yellow-eyed-grass	S1	E
	Xyris fimbriata	Fringed Yellow-eyed-grass	S1	E
	Xyris laxifolia var. iridifolia	Yellow-eyed-grass	S2	T
	Xyris tennesseensis	Yellow-eyed-grass	S1	E
	Zanthoxylum americanum	Northern Prickly-ash	S2	S
Virginia				
Vertebrates				
	Ammocrypta clara	Western Sand Darter	S1	LT
	Erimonax monachus	Spotfin Chub	S1	LT
	Erimystax cahni	Slender Chub	S1	LT
	Lanius ludovicianus	Loggerhead Shrike	S1B,S2N	LT
	Myotis grisescens	Gray Bat	S1	LE
	Myotis septentrionalis	Northern Long-eared Bat	S1S3	LT
	Myotis sodalis	Indiana Bat	S1	LE
	Notropis atherinoides	Emerald Shiner	S1S2	LT
	Noturus flavipinnis	Yellowfin Madtom	S1	LT
	Perimyotis subflavus	Tricolored Bat	S1S3	LE
	Phoxinus cumberlandensis	Blackside Dace	S1	LT
	Polyodon spathula	Paddlefish	S1	LT

STATE1	SCIENTIFIC_NAME	COMMON_NAME	ST_RANK	ST_STATUS
Invertebrates				
	Cumberlandia monodonta	Spectaclecase	S1	LE
	Cyclonaias pustulosa	Pimpleback	S2	LT
	Cyprogenia stegaria	Fanshell	S1	LE
	Dromus dromas	Dromedary Pearlymussel	S1	LE
	Elliptio crassidens	Elephant-ear	S1	LE
	Epioblasma brevidens	Cumberlandian Combshell	S1	LE
	Epioblasma capsaeformis	Oyster Mussel	S1	LE
	Epioblasma triquetra	Snuffbox	S1	LE
	Fusconaia cor	Shiny Pigtoe Pearlymussel	S1	LE
	Fusconaia cuneolus	Fine-rayed Pigtoe	S1	LE
	Hemistena lata	Cracking Pearlymussel	S1	LE
	Holsingeria unthanksensis	Thankless ghostsnail	S2	LE
	Io fluvialis	Spiny Riversnail	S2	LT
	Lasmigona holstonia	Tennessee Heelsplitter	S1	LE
	Lemiox rimosus	Birdwing Pearlymussel	S1	LE
	Leptodea fragilis	Fragile Papershell	S1	LT
	Ligumia recta	Black Sandshell	S2	LT
	Lirceus usdagalun	Lee County Cave Isopod	S1	LE
	Pegias fabula	Little-wing Pearlymussel	S1	LE
	Plethobasus cyphyus	Sheepnose	S1	LE
	Pleuronaia dolabelloides	Slabside Pearlymussel	S2	LE
	Ptychobranchus subtentum	Fluted Kidneyshell	S2	LE
	Quadrula cylindrica strigillata	Rough Rabbitsfoot	S2	LE
	Quadrula intermedia	Cumberland Monkeyface	S1	LE
	Quadrula sparsa	Appalachian Monkeyface	S1	LE
	Toxolasma lividus	Purple Lilliput	SH	LE
	Truncilla truncata	Deertoe	S1	LE
Plants				
	Trifolium calcaricum	Running Glade Clover	S1	LE

Appendix C – Draft National Historic Preservation Act Section 106 Programmatic Agreement

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March 14, 2025

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Nashville, Tennessee 37243-0442

Mr. Craig Potts
Executive Director
and State Historic Preservation Officer
Kentucky Heritage Council
300 Washington Street

Mr. Barry White
Director
Mississippi Department of Archives and History
Historic Preservation Division
Post Office Box 571
Jackson, Mississippi 39205-0521

Dear Sir/ Madam:

TENNESSEE VALLEY AUTHORITY (TVA), RESILIENCE 360° PROGRAM PROGRAMMATIC AGREEMENT (PA), DRAFT REVIEW, MULTI-STATE, MULTI-COUNTY

TVA is proposing a “Commercial Resiliency” program, titled Resilience 360°, to partner with vendors and TVA customers to improve and enhance resiliency during events that challenge the transmission of power on the grid (e.g., extreme weather, and minor incidences of cyber-attack or domestic terrorism [e.g., vandalism of one or a few substations or switchyards]). Under the initial phases of the program, TVA would partner with multiple vendors through a qualified resiliency network to provide backup generation in the form of on-site modular natural gas units or battery energy storage systems (sometimes referred to as microgrids) to improve commercial

resiliency for qualified customers. The exact locations of these units are not yet known, but the program could place units across all seven states in the TVA power service area.

TVA initiated consultation with your office about the drafting of a PA for this program in a letter dated October 23, 2024. Your office agreed to participate in the development of the PA. Please find attached a draft of the Resilience 360° PA for your review.

Pursuant to 36 CFR Part 800.3(f)(2), TVA is consulting with federally recognized Indian tribes regarding the development of the PA.

Please contact Derek Reaux by email, djreaux@tva.gov with your comments.

Sincerely,

Michaelyn Harle
Manager, Cultural Projects, Economic Development, and Environment
Deputy Federal Preservation Officer
Cultural Resources

DJR:ERB

Appendix D – Socioeconomics

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D.1 Counties within the TVA PSA

State	County		
Alabama	Blount County	Etowah County	Limestone County
	Cherokee County	Franklin County	Madison County
	Colbert County	Jackson County	Marshall County
	Cullman County	Lauderdale County	Morgan County
	DeKalb County	Lawrence County	Winston County
Georgia	Catoosa County	Gilmer County	Union County
	Chattooga County	Gordon County	Walker County
	Dade County	Murray County	Whitfield County
	Fannin County	Towns County	
Kentucky	Allen County	Fulton County	Marshall County
	Butler County	Graves County	Monroe County
	Calloway County	Grayson County	Simpson County
	Carlisle County	Hickman County	Todd County
	Christian County	Livingston County	Trigg County
	Cumberland County	Logan County	Warren County
	Edmonson County	Lyon County	
Mississippi	Alcorn County	Leake County	Prentiss County
	Attala County	Lee County	Scott County
	Benton County	Lowndes County	Tallahatchie County
	Calhoun County	Marshall County	Tate County
	Chickasaw County	Monroe County	Tippah County
	Choctaw County	Neshoba County	Tishomingo County
	Clay County	Noxubee County	Union County
	De Soto County	Oktibbeha County	Webster County
	Itawamba County	Panola County	Winston County
	Kemper County	Pontotoc County	Yalobusha County
	Lafayette County		
North Carolina	Avery County	Clay County	
	Cherokee County	Watauga County	
Tennessee	Anderson County	Hamilton County	Morgan County
	Bedford County	Hancock County	Obion County
	Benton County	Hardeman County	Overton County
	Bledsoe County	Hardin County	Perry County
	Blount County	Hawkins County	Pickett County
	Bradley County	Haywood County	Polk County
	Campbell County	Henderson County	Putnam County
	Cannon County	Henry County	Rhea County
	Carroll County	Hickman County	Roane County
	Carter County	Houston County	Robertson County
	Cheatham County	Humphreys County	Rutherford County
	Chester County	Jackson County	Scott County
	Claiborne County	Jefferson County	Sequatchie County
	Clay County	Johnson County	Sevier County
	Cocke County	Knox County	Shelby County
	Coffee County	Lake County	Smith County
	Crockett County	Lauderdale County	Stewart County
	Cumberland County	Lawrence County	Sullivan County
	Davidson County	Lewis County	Sumner County
	Decatur County	Lincoln County	Tipton County
	DeKalb County	Loudon County	Trousdale County
	Dickson County	McMinn County	Unicoi County
	Dyer County	McNairy County	Union County
	Fayette County	Macon County	Van Buren County
	Fentress County	Madison County	Warren County
	Franklin County	Marion County	Washington County
	Gibson County	Marshall County	Wayne County
	Giles County	Maury County	Weakley County
	Grainger County	Meigs County	White County

State	County		
	Greene County	Monroe County	Williamson County
	Grundy County	Montgomery County	Wilson County
	Hamblen County	Moore County	
Virginia Counties and	Lee County	Washington County	Bristol City
Independent Cities	Scott County	Wise County	Norton City

D.2 Limited-Income Counties in the TVA PSA

Geography	Population 16 years and Over	Per Capita Income ($)	Poverty (%)
Lawrence County, Alabama	26,784	29,486	15.8
Colbert County, Alabama	46,692	30,724	15.9
Etowah County, Alabama	83,569	28,479	15.9
Franklin County, Alabama	24,985	24,874	16.6
Marshall County, Alabama	75,849	29,509	16.6
Winston County, Alabama	19,441	26,933	18.2
Jackson County, Alabama	43,027	27,695	18.6
DeKalb County, Alabama	56,883	24,915	20.2
Gilmer County, Georgia	26,144	34,412	14.8
Towns County, Georgia	11,180	33,443	15.3
Chattooga County, Georgia	19,821	21,576	19.9
Logan County, Kentucky	21,629	27,741	15.7
Muhlenberg County, Kentucky	25,111	31,621	16.3
Allen County, Kentucky	16,412	28,307	16.5
Christian County, Kentucky	54,414	25,973	16.7
Hickman County, Kentucky	3,724	38,895	16.7
Livingston County, Kentucky	7,432	31,024	16.8
Edmonson County, Kentucky	10,186	26,781	17.0
Warren County, Kentucky	107,619	34,201	17.2
Trigg County, Kentucky	11,426	30,172	18.2
Calloway County, Kentucky	31,421	27,850	18.7
Butler County, Kentucky	9,872	23,862	19.8
Graves County, Kentucky	28,886	28,978	19.8
Carlisle County, Kentucky	3,790	31,403	20.1
Monroe County, Kentucky	9,035	26,549	20.9
Grayson County, Kentucky	20,959	25,565	21.1
Todd County, Kentucky	9,432	30,252	21.1
Fulton County, Kentucky	5,273	19,960	27.4
Cumberland County, Kentucky	4,784	22,668	28.3
Webster County, Mississippi	7,802	27,836	15.8
Prentiss County, Mississippi	20,085	27,979	16.3
Monroe County, Mississippi	27,302	27,619	16.7
Pontotoc County, Mississippi	23,824	26,359	16.7
Tate County, Mississippi	22,445	28,306	16.7
Alcorn County, Mississippi	27,882	27,320	17.1
Benton County, Mississippi	6,299	24,690	17.6
Lowndes County, Mississippi	46,255	29,750	18.1
Calhoun County, Mississippi	10,644	24,192	18.8
Tippah County, Mississippi	17,150	27,762	18.9
Choctaw County, Mississippi	6,615	27,628	19.1
Tishomingo County, Mississippi	15,268	26,896	19.2
Marshall County, Mississippi	27,768	27,680	19.5
Lafayette County, Mississippi	46,935	32,536	19.6
Panola County, Mississippi	25,797	25,822	20.4
Yalobusha County, Mississippi	10,171	24,719	20.5
Leake County, Mississippi	17,041	25,662	21.0
Scott County, Mississippi	21,373	23,043	21.9
Kemper County, Mississippi	7,547	22,046	22.0
Clay County, Mississippi	14,892	24,702	23.0
Noxubee County, Mississippi	7,996	19,804	23.2
Attala County, Mississippi	13,759	27,625	23.6
Tallahatchie County, Mississippi	10,281	20,348	25.7
Winston County, Mississippi	14,208	27,743	26.0
Chickasaw County, Mississippi	13,269	21,968	26.6
Neshoba County, Mississippi	22,051	23,538	28.0
Oktibbeha County, Mississippi	43,626	28,221	28.5
Cherokee County, North Carolina	24,817	28,752	16.7

Geography	Population 16 years and Over	Per Capita Income ($)	Poverty (%)
Watauga County, North Carolina	48,773	30,807	24.9
Smith County, Tennessee	16,117	31,446	14.9
Cannon County, Tennessee	11,799	30,234	15.1
Sullivan County, Tennessee	132,231	33,934	15.2
Anderson County, Tennessee	62,800	32,803	15.4
Meigs County, Tennessee	10,544	26,843	15.4
Crockett County, Tennessee	10,987	30,362	15.6
Greene County, Tennessee	58,501	28,237	15.6
Marshall County, Tennessee	27,611	32,225	15.6
Rhea County, Tennessee	26,860	26,678	15.7
Washington County, Tennessee	111,727	35,562	15.7
Chester County, Tennessee	14,082	24,788	15.8
Union County, Tennessee	16,123	28,174	15.9
Monroe County, Tennessee	38,029	27,356	16.0
Hardeman County, Tennessee	21,321	22,098	16.1
Lawrence County, Tennessee	34,372	26,865	16.1
Obion County, Tennessee	24,703	28,782	16.1
Dyer County, Tennessee	28,929	37,415	16.3
Marion County, Tennessee	23,698	29,314	16.3
Putnam County, Tennessee	65,684	29,419	16.3
Carroll County, Tennessee	22,845	26,818	16.4
Macon County, Tennessee	19,914	24,979	16.5
McNairy County, Tennessee	21,082	25,004	16.7
Unicoi County, Tennessee	14,956	27,930	16.7
Warren County, Tennessee	32,671	27,059	16.8
Coffee County, Tennessee	45,845	29,277	16.9
Hawkins County, Tennessee	47,568	28,648	16.9
Van Buren County, Tennessee	5,156	24,099	17.0
Hamblen County, Tennessee	51,238	27,845	17.1
White County, Tennessee	21,993	26,213	17.1
Overton County, Tennessee	18,398	29,556	17.3
Grainger County, Tennessee	19,744	26,545	17.6
Benton County, Tennessee	13,164	27,185	18.0
Henderson County, Tennessee	22,415	25,873	18.0
Lauderdale County, Tennessee	20,161	24,358	18.0
Carter County, Tennessee	47,403	28,321	18.1
Henry County, Tennessee	26,438	28,098	18.1
Shelby County, Tennessee	721,643	36,230	18.1
Grundy County, Tennessee	11,124	25,075	18.2
Madison County, Tennessee	79,529	31,380	18.2
Claiborne County, Tennessee	26,655	25,408	18.3
Lewis County, Tennessee	10,232	26,873	18.9
Weakley County, Tennessee	27,581	26,820	18.9
Decatur County, Tennessee	9,438	27,578	19.2
Campbell County, Tennessee	32,109	26,791	19.4
Hardin County, Tennessee	22,102	26,068	19.4
Wayne County, Tennessee	13,806	26,538	19.6
Jackson County, Tennessee	9,973	25,534	19.7
Cocke County, Tennessee	29,708	25,864	20.1
DeKalb County, Tennessee	16,416	27,684	20.2
Fentress County, Tennessee	15,403	24,595	20.2
Morgan County, Tennessee	17,542	27,320	20.9
Pickett County, Tennessee	4,201	27,259	21.0
Johnson County, Tennessee	15,396	26,627	21.6
Haywood County, Tennessee	14,396	26,031	21.9
Clay County, Tennessee	6,208	22,931	22.3
Sequatchie County, Tennessee	13,212	25,954	22.3
Scott County, Tennessee	17,387	22,273	25.7
Bledsoe County, Tennessee	12,644	24,241	26.0
Lake County, Tennessee	6,018	19,695	27.9

Geography	Population 16 years and Over	Per Capita Income ($)	Poverty (%)
Hancock County, Tennessee	5,417	24,120	32.3
Bristol city, Virginia	13,904	30,419	17.0
Scott County, Virginia	18,094	26,681	17.0
Wise County, Virginia	30,055	23,702	19.9
Lee County, Virginia	18,676	23,257	26.0
Norton city, Virginia	3,138	27,666	29.1

Source: USCB 2023f

D.3 Low-Income Census Tracts in the TVA PSA

Geography	Population 16 Years and Over	Per Capita Income ($)	Poverty (%)
Census Tract 207.05; Colbert County; Alabama	913	26,663	14.8
Census Tract 9792.01; Lawrence County; Alabama	1,464	25,628	14.9
Census Tract 307.02; Marshall County; Alabama	3,175	38,894	14.9
Census Tract 9558.01; Cherokee County; Alabama	1,852	23,869	15.0
Census Tract 104.01; Etowah County; Alabama	3,232	21,477	15.0
Census Tract 9506.01; Jackson County; Alabama	3,195	23,851	15.0
Census Tract 310.01; Marshall County; Alabama	2,443	22,629	15.0
Census Tract 208.02; Colbert County; Alabama	2,850	28,554	15.1
Census Tract 9649.01; Cullman County; Alabama	3,035	37,422	15.2
Census Tract 9793; Lawrence County; Alabama	3,335	35,025	15.3
Census Tract 14.04; Madison County; Alabama	3,194	36,939	15.4
Census Tract 112.02; Madison County; Alabama	4,545	52,382	15.4
Census Tract 57.01; Morgan County; Alabama	1,697	29,545	15.4
Census Tract 57.03; Morgan County; Alabama	2,578	31,875	15.5
Census Tract 31; Madison County; Alabama	5,078	49,399	15.6
Census Tract 110.02; Etowah County; Alabama	3,855	22,382	15.7
Census Tract 505.02; Blount County; Alabama	2,911	32,678	15.8
Census Tract 304.01; Marshall County; Alabama	3,757	31,212	15.8
Census Tract 9561.02; Cherokee County; Alabama	1,918	24,271	15.9
Census Tract 9657; Winston County; Alabama	3,163	29,720	15.9
Census Tract 9729; Franklin County; Alabama	3,113	24,515	16.1
Census Tract 5.02; Madison County; Alabama	1,627	31,700	16.2
Census Tract 9642.02; Cullman County; Alabama	2,742	24,585	16.6
Census Tract 17; Etowah County; Alabama	1,124	26,497	16.8
Census Tract 111; Etowah County; Alabama	3,985	24,836	16.9
Census Tract 104.05; Madison County; Alabama	3,181	45,558	16.9
Census Tract 9558.02; Cherokee County; Alabama	2,318	31,300	17.0
Census Tract 9602; DeKalb County; Alabama	2,666	24,020	17.1
Census Tract 7.02; Madison County; Alabama	2,395	30,742	17.1
Census Tract 109.01; Lauderdale County; Alabama	3,090	30,844	17.3
Census Tract 9641; Cullman County; Alabama	5,145	28,445	17.4
Census Tract 9; Etowah County; Alabama	2,111	21,511	17.6
Census Tract 308.01; Marshall County; Alabama	3,815	31,889	17.6
Census Tract 501.07; Blount County; Alabama	2,042	23,043	17.7
Census Tract 9606.02; DeKalb County; Alabama	3,931	25,305	17.8
Census Tract 201.04; Limestone County; Alabama	2,743	27,553	17.8
Census Tract 9504; Jackson County; Alabama	1,806	38,913	17.9
Census Tract 206; Limestone County; Alabama	3,880	22,903	17.9
Census Tract 9510; Jackson County; Alabama	3,569	28,695	18.0
Census Tract 14.03; Madison County; Alabama	2,066	40,351	18.1
Census Tract 103; Etowah County; Alabama	2,326	23,128	18.2
Census Tract 6.02; Madison County; Alabama	1,798	30,976	18.5
Census Tract 9792.02; Lawrence County; Alabama	1,870	25,583	18.6
Census Tract 204.04; Limestone County; Alabama	2,513	58,030	18.6
Census Tract 25.02; Madison County; Alabama	2,852	22,233	18.7
Census Tract 9605; DeKalb County; Alabama	5,303	23,222	18.8
Census Tract 308.04; Marshall County; Alabama	3,793	17,610	18.8
Census Tract 53.05; Morgan County; Alabama	4,650	27,137	18.9
Census Tract 203; Limestone County; Alabama	2,675	34,130	19.2
Census Tract 501.03; Blount County; Alabama	1,614	29,396	19.3
Census Tract 9611; DeKalb County; Alabama	2,602	23,331	19.3
Census Tract 106; Lauderdale County; Alabama	2,183	25,518	19.3
Census Tract 205; Limestone County; Alabama	2,384	24,036	19.3
Census Tract 9655.02; Winston County; Alabama	2,981	31,126	19.3
Census Tract 503.02; Blount County; Alabama	2,130	24,425	19.4
Census Tract 307.01; Marshall County; Alabama	2,775	31,594	19.4

Geography	Population 16 Years and Over	Per Capita Income ($)	Poverty (%)
Census Tract 202; Colbert County; Alabama	1,478	22,512	19.5
Census Tract 9733; Franklin County; Alabama	2,610	24,243	19.5
Census Tract 9503.01; Jackson County; Alabama	2,132	25,326	19.7
Census Tract 15; Madison County; Alabama	5,425	20,873	20.1
Census Tract 51.09; Morgan County; Alabama	3,636	23,010	20.1
Census Tract 9730; Franklin County; Alabama	3,922	19,369	20.2
Census Tract 6.01; Madison County; Alabama	1,097	29,506	20.4
Census Tract 501.05; Blount County; Alabama	4,113	32,880	20.5
Census Tract 9; Morgan County; Alabama	4,495	22,269	20.5
Census Tract 308.03; Marshall County; Alabama	2,005	23,045	20.6
Census Tract 106.25; Madison County; Alabama	4,405	22,280	20.8
Census Tract 9655.03; Winston County; Alabama	2,451	27,346	20.9
Census Tract 9557.01; Cherokee County; Alabama	2,547	25,478	21.2
Census Tract 9607.02; DeKalb County; Alabama	1,236	25,111	21.2
Census Tract 107; Etowah County; Alabama	2,970	26,449	21.2
Census Tract 208.01; Colbert County; Alabama	3,744	33,718	21.3
Census Tract 211.01; Limestone County; Alabama	3,040	28,553	21.4
Census Tract 8; Morgan County; Alabama	2,174	23,590	21.4
Census Tract 205; Colbert County; Alabama	4,126	26,362	21.7
Census Tract 6; Etowah County; Alabama	1,785	17,336	21.7
Census Tract 9614; DeKalb County; Alabama	3,039	31,060	21.8
Census Tract 9603.03; DeKalb County; Alabama	3,604	26,475	22.1
Census Tract 302.04; Marshall County; Alabama	1,432	30,844	22.2
Census Tract 306.02; Marshall County; Alabama	3,578	28,834	22.5
Census Tract 52.02; Morgan County; Alabama	3,793	27,008	22.5
Census Tract 507.02; Blount County; Alabama	2,259	24,848	22.6
Census Tract 9653; Cullman County; Alabama	3,729	25,619	23.0
Census Tract 102; Lauderdale County; Alabama	1,777	28,096	23.0
Census Tract 9608; DeKalb County; Alabama	3,532	19,388	23.1
Census Tract 9656.02; Winston County; Alabama	2,587	22,144	23.1
Census Tract 9609; DeKalb County; Alabama	3,227	23,645	23.2
Census Tract 305.02; Marshall County; Alabama	3,911	31,618	23.2
Census Tract 110; Lauderdale County; Alabama	3,670	26,385	23.3
Census Tract 312; Marshall County; Alabama	4,262	24,146	23.3
Census Tract 9655.01; Winston County; Alabama	1,525	23,570	23.4
Census Tract 108; Lauderdale County; Alabama	2,623	18,842	23.6
Census Tract 311; Marshall County; Alabama	3,634	22,889	23.6
Census Tract 309.03; Marshall County; Alabama	3,684	23,337	24.1
Census Tract 9737.01; Franklin County; Alabama	1,014	22,960	24.2
Census Tract 9795.02; Lawrence County; Alabama	3,034	29,820	24.2
Census Tract 9734; Franklin County; Alabama	1,945	23,618	24.4
Census Tract 9794; Lawrence County; Alabama	3,749	24,501	24.5
Census Tract 301.01; Marshall County; Alabama	1,665	20,613	24.5
Census Tract 201; Colbert County; Alabama	2,960	30,897	24.7
Census Tract 108; Etowah County; Alabama	2,315	34,421	24.9
Census Tract 210; Colbert County; Alabama	3,059	29,298	25.3
Census Tract 9659; Winston County; Alabama	1,866	21,463	25.4
Census Tract 5.01; Madison County; Alabama	1,596	21,242	25.5
Census Tract 310.02; Marshall County; Alabama	2,601	18,983	25.7
Census Tract 1; Morgan County; Alabama	3,559	22,400	25.9
Census Tract 9507; Jackson County; Alabama	3,658	32,148	26.0
Census Tract 9508; Jackson County; Alabama	3,458	27,246	26.1
Census Tract 9502; Jackson County; Alabama	2,822	28,990	26.2
Census Tract 9606.01; DeKalb County; Alabama	996	26,988	26.3
Census Tract 9650.02; Cullman County; Alabama	3,592	29,958	26.6
Census Tract 501.06; Blount County; Alabama	2,322	22,148	27.3
Census Tract 107; Lauderdale County; Alabama	1,028	14,658	27.4
Census Tract 9607.03; DeKalb County; Alabama	3,539	22,581	27.5
Census Tract 109.02; Lauderdale County; Alabama	3,395	29,019	27.7

Geography	Population 16 Years and Over	Per Capita Income ($)	Poverty (%)
Census Tract 9501.01; Jackson County; Alabama	2,389	21,901	28.1
Census Tract 9654.01; Cullman County; Alabama	2,793	20,158	28.5
Census Tract 24; Madison County; Alabama	2,788	21,210	28.5
Census Tract 56.02; Morgan County; Alabama	1,804	29,076	28.6
Census Tract 3.01; Madison County; Alabama	3,069	21,318	28.9
Census Tract 12; Etowah County; Alabama	2,163	26,936	29.5
Census Tract 23; Madison County; Alabama	4,404	20,903	29.5
Census Tract 9503.02; Jackson County; Alabama	2,520	22,071	29.9
Census Tract 5; Etowah County; Alabama	1,424	20,902	31.0
Census Tract 112; Etowah County; Alabama	2,201	25,029	31.1
Census Tract 54.05; Morgan County; Alabama	4,054	27,138	31.7
Census Tract 2; Etowah County; Alabama	2,537	18,933	32.0
Census Tract 9736; Franklin County; Alabama	1,081	21,089	32.2
Census Tract 104; Lauderdale County; Alabama	2,921	24,694	32.8
Census Tract 7.01; Madison County; Alabama	2,294	23,670	33.8
Census Tract 22; Madison County; Alabama	1,588	19,803	34.1
Census Tract 9506.02; Jackson County; Alabama	1,671	24,884	34.4
Census Tract 9613; DeKalb County; Alabama	4,158	20,787	35.2
Census Tract 13.01; Madison County; Alabama	3,080	18,711	35.5
Census Tract 7; Morgan County; Alabama	2,935	16,115	35.5
Census Tract 2.03; Madison County; Alabama	5,173	10,815	35.6
Census Tract 3.02; Madison County; Alabama	3,167	14,035	35.9
Census Tract 207; Limestone County; Alabama	1,914	28,442	36.7
Census Tract 8; Etowah County; Alabama	864	15,001	36.9
Census Tract 9607.01; DeKalb County; Alabama	1,802	18,173	37.1
Census Tract 25.01; Madison County; Alabama	2,149	15,797	38.9
Census Tract 9601.01; DeKalb County; Alabama	1,414	22,419	39.0
Census Tract 10; Etowah County; Alabama	858	18,152	39.3
Census Tract 30; Madison County; Alabama	2,110	16,823	39.9
Census Tract 13; Etowah County; Alabama	2,312	21,427	40.1
Census Tract 203; Colbert County; Alabama	1,866	21,696	41.5
Census Tract 21; Madison County; Alabama	1,878	16,168	41.5
Census Tract 101; Lauderdale County; Alabama	2,007	12,400	41.9
Census Tract 3; Etowah County; Alabama	1,750	13,430	42.0
Census Tract 6; Morgan County; Alabama	1,987	16,191	43.4
Census Tract 12; Madison County; Alabama	2,145	13,548	43.6
Census Tract 7; Etowah County; Alabama	653	10,940	50.2
Census Tract 103; Lauderdale County; Alabama	948	15,330	60.6
Census Tract 9708.02; Gordon County; Georgia	1,632	31,506	14.8
Census Tract 803.01; Gilmer County; Georgia	1,908	30,347	15.0
Census Tract 15; Whitfield County; Georgia	5,187	26,931	15.0
Census Tract 307.02; Catoosa County; Georgia	3,755	27,878	15.1
Census Tract 11; Whitfield County; Georgia	3,693	20,343	15.2
Census Tract 401.02; Dade County; Georgia	3,072	23,792	15.5
Census Tract 2; Whitfield County; Georgia	3,783	27,020	15.5
Census Tract 9702.01; Gordon County; Georgia	2,745	35,677	15.6
Census Tract 104.01; Murray County; Georgia	2,034	20,818	15.6
Census Tract 9603.02; Towns County; Georgia	2,023	33,717	15.6
Census Tract 1.04; Union County; Georgia	2,195	32,709	16.2
Census Tract 206.02; Walker County; Georgia	3,778	22,778	16.4
Census Tract 208; Walker County; Georgia	2,347	31,192	16.5
Census Tract 101; Chattooga County; Georgia	2,069	25,825	16.6
Census Tract 9703.02; Gordon County; Georgia	4,014	25,981	16.6
Census Tract 802; Gilmer County; Georgia	5,400	35,078	17.4
Census Tract 104.02; Murray County; Georgia	2,198	23,606	17.4
Census Tract 1.01; Whitfield County; Georgia	3,048	29,350	17.4
Census Tract 9602; Towns County; Georgia	3,432	32,940	17.6
Census Tract 9706.02; Gordon County; Georgia	2,855	18,960	17.8
Census Tract 2.03; Union County; Georgia	1,833	34,257	18.1

Geography	Population 16 Years and Over	Per Capita Income ($)	Poverty (%)
Census Tract 203.01; Walker County; Georgia	4,279	25,834	18.3
Census Tract 9704; Gordon County; Georgia	4,922	32,643	18.4
Census Tract 101; Murray County; Georgia	2,762	28,902	18.6
Census Tract 805; Gilmer County; Georgia	3,530	29,806	18.7
Census Tract 203.02; Walker County; Georgia	4,247	24,384	20.0
Census Tract 105.01; Chattooga County; Georgia	2,332	11,259	20.1
Census Tract 1.01; Union County; Georgia	3,380	39,100	20.2
Census Tract 201.01; Walker County; Georgia	3,076	27,352	20.3
Census Tract 103; Chattooga County; Georgia	1,835	24,975	20.4
Census Tract 9707; Gordon County; Georgia	3,920	26,292	20.5
Census Tract 202; Walker County; Georgia	2,745	26,910	20.6
Census Tract 103; Murray County; Georgia	3,586	22,608	21.0
Census Tract 9701.02; Gordon County; Georgia	1,704	28,152	21.1
Census Tract 9705; Gordon County; Georgia	4,034	31,695	21.9
Census Tract 803.02; Gilmer County; Georgia	3,172	28,884	22.5
Census Tract 207.02; Walker County; Georgia	3,554	15,438	22.9
Census Tract 3.01; Whitfield County; Georgia	2,940	25,137	22.9
Census Tract 105.02; Chattooga County; Georgia	2,767	21,390	23.3
Census Tract 804.01; Gilmer County; Georgia	2,328	36,492	23.5
Census Tract 201.02; Walker County; Georgia	1,848	21,297	23.6
Census Tract 207.01; Walker County; Georgia	2,133	21,653	24.1
Census Tract 10; Whitfield County; Georgia	3,002	19,329	26.1
Census Tract 5.02; Whitfield County; Georgia	5,865	23,493	26.3
Census Tract 305.01; Catoosa County; Georgia	2,331	24,280	26.4
Census Tract 4.01; Whitfield County; Georgia	5,200	20,734	27.2
Census Tract 209.02; Walker County; Georgia	1,580	24,655	29.2
Census Tract 104.02; Chattooga County; Georgia	2,066	17,659	30.3
Census Tract 102.02; Chattooga County; Georgia	2,410	17,999	31.1
Census Tract 9203; Edmonson County; Kentucky	1,157	27,436	14.8
Census Tract 9602.02; Muhlenberg County; Kentucky	2,600	40,555	14.9
Census Tract 2002; Christian County; Kentucky	2,847	26,201	15.1
Census Tract 9301; Monroe County; Kentucky	1,543	31,215	15.2
Census Tract 9602; Logan County; Kentucky	2,990	28,388	15.3
Census Tract 9704.01; Simpson County; Kentucky	3,728	25,940	15.3
Census Tract 9206; Allen County; Kentucky	2,599	25,197	15.7
Census Tract 108.05; Warren County; Kentucky	2,968	37,866	16.1
Census Tract 117.02; Warren County; Kentucky	2,895	24,805	16.1
Census Tract 9702.02; Trigg County; Kentucky	2,857	31,126	16.2
Census Tract 107.01; Warren County; Kentucky	4,573	30,386	16.4
Census Tract 9304; Monroe County; Kentucky	3,837	25,915	16.5
Census Tract 9202; Edmonson County; Kentucky	3,550	24,235	16.6
Census Tract 9701; Hickman County; Kentucky	3,724	38,895	16.7
Census Tract 107.02; Warren County; Kentucky	5,868	36,279	16.7
Census Tract 2009.01; Christian County; Kentucky	2,144	50,036	16.8
Census Tract 2013.01; Christian County; Kentucky	2,725	25,592	16.8
Census Tract 9601; Logan County; Kentucky	4,155	26,918	16.8
Census Tract 9602.01; Muhlenberg County; Kentucky	3,167	23,743	17.2
Census Tract 9701; Simpson County; Kentucky	2,046	35,361	17.2
Census Tract 9703; Simpson County; Kentucky	3,661	29,145	17.4
Census Tract 113; Warren County; Kentucky	3,665	26,620	17.4
Census Tract 9506; Grayson County; Kentucky	2,816	24,599	17.5
Census Tract 9506.02; Marshall County; Kentucky	1,980	29,020	17.5
Census Tract 108; Calloway County; Kentucky	2,821	27,792	17.7
Census Tract 401; Livingston County; Kentucky	2,357	28,966	17.7
Census Tract 9604; Logan County; Kentucky	3,684	25,207	17.8
Census Tract 209; Graves County; Kentucky	2,445	26,367	17.9
Census Tract 9703.02; Trigg County; Kentucky	1,679	28,132	18.1
Census Tract 9603; Carlisle County; Kentucky	1,160	25,477	18.3
Census Tract 9204.02; Edmonson County; Kentucky	3,076	30,352	18.4

Geography	Population 16 Years and Over	Per Capita Income ($)	Poverty (%)
Census Tract 9605; Muhlenberg County; Kentucky	2,999	44,620	18.6
Census Tract 2005; Christian County; Kentucky	3,173	27,893	18.9
Census Tract 9203; Allen County; Kentucky	3,952	25,997	19.0
Census Tract 9603; Logan County; Kentucky	4,807	25,241	19.0
Census Tract 9704.02; Simpson County; Kentucky	1,787	25,710	19.2
Census Tract 402.02; Livingston County; Kentucky	2,513	27,193	19.3
Census Tract 9603; Muhlenberg County; Kentucky	3,027	25,872	19.3
Census Tract 9204; Allen County; Kentucky	3,384	31,376	19.4
Census Tract 9201; Allen County; Kentucky	2,795	29,477	19.5
Census Tract 103.04; Calloway County; Kentucky	3,069	25,409	19.5
Census Tract 202; Graves County; Kentucky	3,669	27,885	19.5
Census Tract 9304; Butler County; Kentucky	1,433	25,372	19.6
Census Tract 104; Calloway County; Kentucky	2,035	23,762	19.6
Census Tract 106.01; Calloway County; Kentucky	2,254	26,506	19.7
Census Tract 9604; Muhlenberg County; Kentucky	4,150	29,619	19.7
Census Tract 9501.01; Grayson County; Kentucky	835	31,844	20.4
Census Tract 9702.01; Trigg County; Kentucky	2,326	28,119	20.4
Census Tract 9504.02; Grayson County; Kentucky	3,918	23,947	20.8
Census Tract 9602; Fulton County; Kentucky	2,341	21,229	20.9
Census Tract 2007; Christian County; Kentucky	4,591	30,422	21.4
Census Tract 2013.04; Christian County; Kentucky	2,302	20,844	21.4
Census Tract 9504.01; Grayson County; Kentucky	1,669	31,725	21.7
Census Tract 9503; Grayson County; Kentucky	3,119	20,477	22.2
Census Tract 110.02; Warren County; Kentucky	5,786	22,663	22.3
Census Tract 9502; Cumberland County; Kentucky	1,684	24,217	22.4
Census Tract 2004; Christian County; Kentucky	2,233	20,076	22.6
Census Tract 108.01; Warren County; Kentucky	2,985	51,880	22.6
Census Tract 205; Graves County; Kentucky	3,098	25,211	22.7
Census Tract 9502; Todd County; Kentucky	4,189	30,680	22.8
Census Tract 9506.03; Marshall County; Kentucky	860	45,661	22.9
Census Tract 9501.02; Marshall County; Kentucky	1,819	28,577	23.4
Census Tract 105; Calloway County; Kentucky	2,539	26,000	23.5
Census Tract 9303; Monroe County; Kentucky	2,051	26,342	24.2
Census Tract 9607; Muhlenberg County; Kentucky	2,544	21,057	24.2
Census Tract 9302; Butler County; Kentucky	1,332	20,929	24.3
Census Tract 9502; Grayson County; Kentucky	2,454	20,023	24.8
Census Tract 9507; Grayson County; Kentucky	1,754	25,778	25.3
Census Tract 9602; Carlisle County; Kentucky	1,449	21,925	25.9
Census Tract 2001; Christian County; Kentucky	3,337	19,605	26.6
Census Tract 110.01; Warren County; Kentucky	3,305	18,365	27.3
Census Tract 109; Warren County; Kentucky	3,658	39,472	27.8
Census Tract 2008; Christian County; Kentucky	1,971	13,318	28.7
Census Tract 9505; Grayson County; Kentucky	2,472	27,906	28.8
Census Tract 203.02; Graves County; Kentucky	1,448	26,566	29.5
Census Tract 9501; Cumberland County; Kentucky	3,100	21,878	31.3
Census Tract 9601; Fulton County; Kentucky	2,932	19,065	31.3
Census Tract 203.01; Graves County; Kentucky	2,813	23,705	31.4
Census Tract 9503; Todd County; Kentucky	1,788	27,926	31.6
Census Tract 104; Warren County; Kentucky	4,445	6,736	31.7
Census Tract 9302; Monroe County; Kentucky	1,604	24,058	32.1
Census Tract 9505.02; Marshall County; Kentucky	2,282	23,864	32.6
Census Tract 9701; Trigg County; Kentucky	2,152	25,837	32.6
Census Tract 108.04; Warren County; Kentucky	2,982	24,484	32.8
Census Tract 112; Warren County; Kentucky	3,444	24,321	32.8
Census Tract 201; Graves County; Kentucky	3,574	27,286	33.6
Census Tract 9303.02; Butler County; Kentucky	2,443	18,902	40.0
Census Tract 102; Warren County; Kentucky	2,597	15,122	40.6
Census Tract 2003; Christian County; Kentucky	2,612	14,386	44.2
Census Tract 103.03; Calloway County; Kentucky	2,833	15,297	49.0

Geography	Population 16 Years and Over	Per Capita Income ($)	Poverty (%)
Census Tract 105; Warren County; Kentucky	2,654	22,747	52.1
Census Tract 103; Warren County; Kentucky	2,760	13,508	56.6
Census Tract 103.01; Calloway County; Kentucky	2,667	5,764	56.7
Census Tract 101; Warren County; Kentucky	2,885	16,636	60.6
Census Tract 9801; Edmonson County; Kentucky	157	8,568	76.2
Census Tract 9504.03; Lafayette County; Mississippi	2,827	35,469	14.9
Census Tract 9504.04; Lafayette County; Mississippi	4,756	42,930	14.9
Census Tract 9501; Tate County; Mississippi	4,162	23,090	14.9
Census Tract 9504.01; Tippah County; Mississippi	3,992	27,418	14.9
Census Tract 9504; Calhoun County; Mississippi	2,283	24,699	15.0
Census Tract 9504.02; Tishomingo County; Mississippi	3,420	25,815	15.1
Census Tract 9504; Prentiss County; Mississippi	3,663	26,883	15.2
Census Tract 9501; Tallahatchie County; Mississippi	3,279	26,881	15.3
Census Tract 9503; Union County; Mississippi	3,589	31,110	15.3
Census Tract 9509.01; Lee County; Mississippi	2,184	39,421	15.4
Census Tract 9501; Tippah County; Mississippi	3,602	40,639	15.4
Census Tract 9503; Tallahatchie County; Mississippi	3,211	15,797	15.5
Census Tract 9502.02; Panola County; Mississippi	864	24,562	15.6
Census Tract 711.22; DeSoto County; Mississippi	1,673	36,104	15.7
Census Tract 9504; Panola County; Mississippi	4,197	25,795	15.8
Census Tract 9501.02; Prentiss County; Mississippi	1,780	38,949	15.8
Census Tract 9509.02; Lee County; Mississippi	2,718	30,033	16.0
Census Tract 603; Attala County; Mississippi	2,619	24,484	16.1
Census Tract 9502; Clay County; Mississippi	1,975	25,129	16.1
Census Tract 703.25; DeSoto County; Mississippi	2,543	26,027	16.1
Census Tract 604; Attala County; Mississippi	2,146	25,921	16.2
Census Tract 9504.01; Alcorn County; Mississippi	2,158	24,102	16.3
Census Tract 401; Leake County; Mississippi	2,204	35,562	16.3
Census Tract 9502.02; Lee County; Mississippi	4,114	27,001	16.4
Census Tract 705.23; DeSoto County; Mississippi	6,161	31,751	16.6
Census Tract 9504.02; Tippah County; Mississippi	2,048	16,962	16.6
Census Tract 405; Leake County; Mississippi	2,250	26,492	16.7
Census Tract 9501; Clay County; Mississippi	3,911	21,004	16.9
Census Tract 5; Lowndes County; Mississippi	3,261	29,396	16.9
Census Tract 205; Scott County; Mississippi	4,051	20,595	16.9
Census Tract 9507; Alcorn County; Mississippi	3,201	22,809	17.0
Census Tract 9503.02; Lee County; Mississippi	3,366	27,255	17.0
Census Tract 703.10; DeSoto County; Mississippi	3,068	25,341	17.1
Census Tract 703.23; DeSoto County; Mississippi	3,916	23,755	17.1
Census Tract 9505.02; Panola County; Mississippi	3,240	29,646	17.2
Census Tract 9504; Union County; Mississippi	2,679	23,895	17.2
Census Tract 9501; Yalobusha County; Mississippi	2,876	26,183	17.3
Census Tract 602; Attala County; Mississippi	1,971	23,482	17.4
Census Tract 9502.01; Prentiss County; Mississippi	3,002	34,594	17.5
Census Tract 9505.02; Monroe County; Mississippi	3,245	30,945	17.6
Census Tract 9502; Webster County; Mississippi	2,843	25,010	17.6
Census Tract 705.21; DeSoto County; Mississippi	2,180	23,869	17.7
Census Tract 9505; Prentiss County; Mississippi	1,361	19,877	17.7
Census Tract 9502; Benton County; Mississippi	1,970	23,242	17.8
Census Tract 9501.01; Pontotoc County; Mississippi	2,697	32,451	18.0
Census Tract 9505; Pontotoc County; Mississippi	3,670	26,080	18.0
Census Tract 9505.07; Lafayette County; Mississippi	3,810	30,377	18.3
Census Tract 9502; Noxubee County; Mississippi	2,168	23,735	18.3
Census Tract 9503; Pontotoc County; Mississippi	4,298	26,170	18.4
Census Tract 9510.01; Lee County; Mississippi	2,828	24,394	18.6
Census Tract 9511.01; Lee County; Mississippi	2,079	25,047	18.7
Census Tract 9502.01; Monroe County; Mississippi	2,691	21,644	18.7
Census Tract 9501.02; Pontotoc County; Mississippi	4,985	23,400	18.7
Census Tract 9503.02; Prentiss County; Mississippi	2,829	34,931	19.0

Geography	Population 16 Years and Over	Per Capita Income ($)	Poverty (%)
Census Tract 9501; Noxubee County; Mississippi	3,574	18,633	19.3
Census Tract 9501.01; Tishomingo County; Mississippi	1,470	33,095	19.5
Census Tract 9502; Winston County; Mississippi	2,553	29,989	19.5
Census Tract 9502.02; Marshall County; Mississippi	3,467	33,020	19.9
Census Tract 206; Scott County; Mississippi	2,504	19,689	19.9
Census Tract 704.22; DeSoto County; Mississippi	2,121	20,644	20.0
Census Tract 10; Lowndes County; Mississippi	2,077	39,856	20.1
Census Tract 703.22; DeSoto County; Mississippi	3,194	25,573	20.2
Census Tract 9504.01; Chickasaw County; Mississippi	1,520	22,280	20.3
Census Tract 9506.04; Oktibbeha County; Mississippi	2,207	24,207	20.4
Census Tract 9502; Choctaw County; Mississippi	3,453	24,756	20.5
Census Tract 9502.02; Monroe County; Mississippi	2,835	24,606	20.5
Census Tract 9504.02; Chickasaw County; Mississippi	2,364	26,600	20.6
Census Tract 702.21; DeSoto County; Mississippi	2,911	28,577	20.6
Census Tract 404.02; Leake County; Mississippi	2,237	18,537	20.6
Census Tract 9503.01; Marshall County; Mississippi	3,077	32,869	20.7
Census Tract 704.21; DeSoto County; Mississippi	2,489	26,893	20.8
Census Tract 9501.02; Panola County; Mississippi	2,204	24,597	21.5
Census Tract 9501.02; Benton County; Mississippi	1,853	23,175	21.6
Census Tract 9503.01; Tate County; Mississippi	3,612	32,317	21.8
Census Tract 9504.01; Marshall County; Mississippi	2,233	26,784	22.0
Census Tract 201.01; Scott County; Mississippi	2,444	27,874	22.0
Census Tract 9503.02; Tate County; Mississippi	4,264	30,961	22.1
Census Tract 202; Scott County; Mississippi	3,645	24,223	22.4
Census Tract 9504; Tate County; Mississippi	5,164	21,053	22.5
Census Tract 9503; Calhoun County; Mississippi	2,466	21,959	22.6
Census Tract 704.11; DeSoto County; Mississippi	1,406	16,020	22.6
Census Tract 701.01; DeSoto County; Mississippi	2,492	29,412	22.7
Census Tract 9506.02; Lee County; Mississippi	3,035	32,568	22.8
Census Tract 9502; Yalobusha County; Mississippi	3,593	23,180	23.1
Census Tract 4.05; Lowndes County; Mississippi	4,682	22,415	23.2
Census Tract 9506; Monroe County; Mississippi	2,218	24,582	23.4
Census Tract 9502.01; Marshall County; Mississippi	2,948	22,817	23.5
Census Tract 9505; Calhoun County; Mississippi	1,981	21,227	23.6
Census Tract 9503; Alcorn County; Mississippi	2,985	34,583	23.7
Census Tract 407; Leake County; Mississippi	3,129	30,556	23.8
Census Tract 9504; Monroe County; Mississippi	2,598	21,299	24.1
Census Tract 107; Neshoba County; Mississippi	3,176	28,177	24.2
Census Tract 605; Attala County; Mississippi	2,689	47,572	24.3
Census Tract 9503.03; Lafayette County; Mississippi	1,610	27,030	24.4
Census Tract 104; Neshoba County; Mississippi	2,814	29,862	24.8
Census Tract 9507; Lee County; Mississippi	2,992	29,198	25.2
Census Tract 9505.02; Lafayette County; Mississippi	2,250	22,795	25.4
Census Tract 11; Lowndes County; Mississippi	1,221	27,113	25.8
Census Tract 9502; Tishomingo County; Mississippi	1,668	22,968	25.8
Census Tract 9503; Chickasaw County; Mississippi	4,126	21,110	26.2
Census Tract 9504; Winston County; Mississippi	2,523	31,233	26.2
Census Tract 9505.01; Marshall County; Mississippi	1,872	23,350	26.5
Census Tract 9507; Monroe County; Mississippi	1,815	29,203	26.9
Census Tract 703.24; DeSoto County; Mississippi	3,350	19,474	27.1
Census Tract 9506.01; Oktibbeha County; Mississippi	4,796	38,858	27.3
Census Tract 9502.01; Tippah County; Mississippi	3,522	23,327	27.7
Census Tract 7; Lowndes County; Mississippi	4,036	21,834	27.9
Census Tract 9503; Oktibbeha County; Mississippi	2,764	20,400	28.4
Census Tract 406; Leake County; Mississippi	4,537	21,249	28.5
Census Tract 9505.02; Alcorn County; Mississippi	2,308	17,385	28.8
Census Tract 9508; Monroe County; Mississippi	2,129	26,868	28.9
Census Tract 9501; Winston County; Mississippi	2,429	24,821	29.1
Census Tract 9502; Chickasaw County; Mississippi	2,485	18,637	29.2

Geography	Population 16 Years and Over	Per Capita Income ($)	Poverty (%)
Census Tract 9503; Choctaw County; Mississippi	1,285	20,780	29.2
Census Tract 9510.02; Lee County; Mississippi	2,941	20,651	29.2
Census Tract 9505.02; Marshall County; Mississippi	2,208	35,316	29.3
Census Tract 9504.01; Tishomingo County; Mississippi	2,623	26,532	29.3
Census Tract 9502.01; Oktibbeha County; Mississippi	3,212	29,639	29.4
Census Tract 201.02; Scott County; Mississippi	2,840	16,624	29.5
Census Tract 9505.04; Lafayette County; Mississippi	2,554	25,655	29.6
Census Tract 9502.02; Tippah County; Mississippi	1,711	18,965	29.6
Census Tract 106; Neshoba County; Mississippi	3,579	20,288	29.7
Census Tract 102; Neshoba County; Mississippi	2,385	20,370	29.9
Census Tract 9507.02; Oktibbeha County; Mississippi	3,012	32,456	30.8
Census Tract 9501.02; Oktibbeha County; Mississippi	3,294	25,800	30.9
Census Tract 9504.02; Marshall County; Mississippi	4,093	15,538	31.2
Census Tract 9503; Webster County; Mississippi	1,309	21,914	31.4
Census Tract 9506.02; Panola County; Mississippi	1,871	13,721	31.7
Census Tract 9504.02; Oktibbeha County; Mississippi	2,255	28,425	32.1
Census Tract 9506.03; Oktibbeha County; Mississippi	2,274	47,548	32.4
Census Tract 9501; Chickasaw County; Mississippi	2,774	22,240	33.1
Census Tract 9502; Calhoun County; Mississippi	980	22,167	33.2
Census Tract 9502; Tallahatchie County; Mississippi	2,085	18,044	33.3
Census Tract 301; Kemper County; Mississippi	3,970	19,140	33.6
Census Tract 9504; Clay County; Mississippi	3,514	26,669	33.7
Census Tract 9503; Noxubee County; Mississippi	2,254	18,210	33.7
Census Tract 9501.02; Tishomingo County; Mississippi	1,191	25,651	34.1
Census Tract 9502.01; Alcorn County; Mississippi	2,783	21,086	34.4
Census Tract 606; Attala County; Mississippi	2,527	18,685	34.7
Census Tract 9501.01; Oktibbeha County; Mississippi	5,298	22,082	34.9
Census Tract 601; Attala County; Mississippi	1,807	22,346	35.0
Census Tract 9503.01; Prentiss County; Mississippi	2,459	16,844	35.1
Census Tract 9503.04; Lafayette County; Mississippi	2,032	27,561	35.4
Census Tract 9501.01; Panola County; Mississippi	2,990	14,595	35.4
Census Tract 704.12; DeSoto County; Mississippi	3,245	19,577	35.7
Census Tract 9503.01; Yalobusha County; Mississippi	1,623	23,508	36.0
Census Tract 204; Scott County; Mississippi	2,358	27,193	36.2
Census Tract 9.02; Lowndes County; Mississippi	1,825	28,577	36.3
Census Tract 9505; Oktibbeha County; Mississippi	3,558	26,313	37.3
Census Tract 9401; Neshoba County; Mississippi	3,288	15,227	38.6
Census Tract 9503; Winston County; Mississippi	3,174	23,623	40.1
Census Tract 8; Lowndes County; Mississippi	2,445	13,897	41.9
Census Tract 9503; Clay County; Mississippi	2,262	17,417	42.1
Census Tract 9502.04; Lafayette County; Mississippi	2,030	42,774	43.5
Census Tract 105; Neshoba County; Mississippi	2,581	21,693	45.1
Census Tract 9502.03; Lafayette County; Mississippi	2,704	25,802	46.0
Census Tract 9503.01; Lafayette County; Mississippi	6,213	8,404	49.0
Census Tract 6; Lowndes County; Mississippi	2,476	10,871	50.9
Census Tract 9504; Tallahatchie County; Mississippi	1,706	20,334	51.4
Census Tract 9504.01; Oktibbeha County; Mississippi	4,735	13,366	53.7
Census Tract 9502.01; Panola County; Mississippi	1,385	14,569	55.6
Census Tract 9305.02; Cherokee County; North Carolina	3,169	32,767	15.9
Census Tract 9303.02; Avery County; North Carolina	2,225	30,883	17.4
Census Tract 9207.03; Watauga County; North Carolina	5,270	39,658	17.7
Census Tract 9501.01; Clay County; North Carolina	2,516	34,744	18.6
Census Tract 9502.02; Clay County; North Carolina	2,318	23,387	20.9
Census Tract 9306.04; Cherokee County; North Carolina	1,504	24,760	22.9
Census Tract 9304.02; Cherokee County; North Carolina	1,589	27,543	23.0
Census Tract 9301.01; Cherokee County; North Carolina	2,021	27,293	23.1
Census Tract 9301.02; Cherokee County; North Carolina	1,741	23,312	23.5
Census Tract 9206.02; Watauga County; North Carolina	2,315	46,666	26.7
Census Tract 9304.01; Cherokee County; North Carolina	3,653	27,679	30.1

Geography	Population 16 Years and Over	Per Capita Income ($)	Poverty (%)
Census Tract 9205; Watauga County; North Carolina	7,387	11,327	38.9
Census Tract 9204; Watauga County; North Carolina	7,526	25,205	41.6
Census Tract 9206.01; Watauga County; North Carolina	6,322	17,068	62.3
Census Tract 102.01; Bradley County; Tennessee	2,121	32,463	14.8
Census Tract 9623; Carroll County; Tennessee	3,496	28,766	14.8
Census Tract 502; Hawkins County; Tennessee	4,112	23,100	14.8
Census Tract 9607; Lawrence County; Tennessee	3,196	27,140	14.8
Census Tract 14.01; Madison County; Tennessee	1,790	26,100	14.8
Census Tract 9203; Cocke County; Tennessee	3,962	34,753	14.9
Census Tract 9710.02; Coffee County; Tennessee	4,266	34,369	14.9
Census Tract 9502.02; Hickman County; Tennessee	2,714	25,819	14.9
Census Tract 106; Maury County; Tennessee	4,295	25,628	14.9
Census Tract 1020.01; Montgomery County; Tennessee	5,211	33,244	14.9
Census Tract 201.02; Shelby County; Tennessee	2,226	34,533	14.9
Census Tract 426; Sullivan County; Tennessee	3,112	32,383	14.9
Census Tract 611; Washington County; Tennessee	4,337	37,515	14.9
Census Tract 106; Blount County; Tennessee	3,577	23,985	15.0
Census Tract 9250.02; Monroe County; Tennessee	3,169	30,593	15.0
Census Tract 201.02; Sumner County; Tennessee	4,288	27,510	15.0
Census Tract 9633; Benton County; Tennessee	2,883	27,076	15.1
Census Tract 9550.03; Decatur County; Tennessee	1,955	23,903	15.1
Census Tract 48; Knox County; Tennessee	4,130	29,481	15.1
Census Tract 9554; Marshall County; Tennessee	3,529	31,413	15.1
Census Tract 9657; Obion County; Tennessee	3,648	28,088	15.1
Census Tract 206.35; Shelby County; Tennessee	2,198	30,951	15.1
Census Tract 413; Sullivan County; Tennessee	4,047	35,891	15.1
Census Tract 802; Unicoi County; Tennessee	5,002	28,267	15.1
Census Tract 9701.02; Chester County; Tennessee	2,869	28,858	15.2
Census Tract 1007; Hamblen County; Tennessee	4,684	27,972	15.2
Census Tract 9502; Hardeman County; Tennessee	5,702	12,402	15.2
Census Tract 706; Jefferson County; Tennessee	3,833	33,034	15.2
Census Tract 39.01; Knox County; Tennessee	3,382	34,639	15.2
Census Tract 63; Shelby County; Tennessee	2,180	42,802	15.2
Census Tract 112.01; Blount County; Tennessee	4,134	31,719	15.3
Census Tract 701.03; Cheatham County; Tennessee	3,292	29,420	15.3
Census Tract 9750; Rhea County; Tennessee	3,949	32,909	15.3
Census Tract 717; Carter County; Tennessee	2,794	29,273	15.4
Census Tract 104.01; Davidson County; Tennessee	4,620	29,237	15.4
Census Tract 173; Davidson County; Tennessee	2,428	28,185	15.4
Census Tract 602.01; Dickson County; Tennessee	2,857	26,002	15.4
Census Tract 9640.01; Dyer County; Tennessee	3,828	25,211	15.4
Census Tract 9609; Lawrence County; Tennessee	1,704	22,947	15.4
Census Tract 1016; Montgomery County; Tennessee	4,747	29,928	15.4
Census Tract 9650; Obion County; Tennessee	3,427	31,491	15.4
Census Tract 401.05; Rutherford County; Tennessee	3,282	28,142	15.4
Census Tract 9703.01; Cumberland County; Tennessee	3,009	27,955	15.5
Census Tract 137.02; Davidson County; Tennessee	3,326	36,226	15.5
Census Tract 908; Greene County; Tennessee	3,957	25,633	15.5
Census Tract 1304; Humphreys County; Tennessee	2,059	28,540	15.5
Census Tract 23; Knox County; Tennessee	2,854	28,926	15.5
Census Tract 9555; Marshall County; Tennessee	3,968	31,081	15.5
Census Tract 133; Davidson County; Tennessee	4,315	55,214	15.6
Census Tract 608; Fayette County; Tennessee	1,784	29,463	15.6
Census Tract 18; Hamilton County; Tennessee	2,244	33,762	15.6
Census Tract 9552; Marshall County; Tennessee	5,247	36,519	15.6
Census Tract 9708.01; Coffee County; Tennessee	3,141	30,124	15.7
Census Tract 9504; Hardeman County; Tennessee	4,129	25,919	15.7
Census Tract 9505; Hardeman County; Tennessee	3,360	25,002	15.7
Census Tract 9503; Wayne County; Tennessee	2,772	24,870	15.7

Geography	Population 16 Years and Over	Per Capita Income ($)	Poverty (%)
Census Tract 9301; McNairy County; Tennessee	3,284	24,362	15.8
Census Tract 427.03; Sullivan County; Tennessee	2,011	22,273	15.8
Census Tract 9252; Van Buren County; Tennessee	2,690	22,989	15.8
Census Tract 183.03; Davidson County; Tennessee	3,970	48,048	15.9
Census Tract 9606; Lawrence County; Tennessee	1,721	26,865	15.9
Census Tract 9654; Obion County; Tennessee	3,571	35,593	15.9
Census Tract 9754.02; Rhea County; Tennessee	2,759	29,379	15.9
Census Tract 206.58; Shelby County; Tennessee	4,673	26,325	15.9
Census Tract 156.29; Davidson County; Tennessee	4,294	25,898	16.0
Census Tract 157; Davidson County; Tennessee	1,382	34,213	16.0
Census Tract 31; Hamilton County; Tennessee	1,918	66,209	16.0
Census Tract 110.01; Hamilton County; Tennessee	1,697	26,607	16.0
Census Tract 9753; Rhea County; Tennessee	5,232	24,987	16.0
Census Tract 418; Rutherford County; Tennessee	3,912	29,568	16.0
Census Tract 9686; Weakley County; Tennessee	3,150	26,911	16.0
Census Tract 9506; Bedford County; Tennessee	6,049	24,473	16.1
Census Tract 715; Carter County; Tennessee	1,861	37,200	16.1
Census Tract 113; Davidson County; Tennessee	4,601	35,948	16.1
Census Tract 103.02; Davidson County; Tennessee	1,334	46,533	16.2
Census Tract 9201.01; DeKalb County; Tennessee	2,547	36,348	16.2
Census Tract 21; Knox County; Tennessee	2,253	23,253	16.2
Census Tract 9756.01; Lincoln County; Tennessee	5,076	27,943	16.2
Census Tract 420; Sullivan County; Tennessee	2,965	27,240	16.2
Census Tract 505.04; Williamson County; Tennessee	3,739	34,635	16.2
Census Tract 9503; Bedford County; Tennessee	2,804	30,836	16.3
Census Tract 103.01; Blount County; Tennessee	5,233	31,082	16.3
Census Tract 9704.01; Cumberland County; Tennessee	3,944	20,878	16.3
Census Tract 422; Rutherford County; Tennessee	4,011	29,445	16.3
Census Tract 407; Sullivan County; Tennessee	2,199	37,691	16.3
Census Tract 9507.01; Campbell County; Tennessee	1,732	27,913	16.4
Census Tract 605.02; Dickson County; Tennessee	2,789	35,426	16.4
Census Tract 62.08; Knox County; Tennessee	4,072	32,812	16.4
Census Tract 9707; McMinn County; Tennessee	3,809	33,344	16.4
Census Tract 804.01; Sevier County; Tennessee	2,577	36,038	16.4
Census Tract 16; Shelby County; Tennessee	2,961	43,312	16.4
Census Tract 431; Sullivan County; Tennessee	2,564	27,407	16.4
Census Tract 9506; Hardeman County; Tennessee	2,052	22,177	16.5
Census Tract 501; Hawkins County; Tennessee	3,543	24,938	16.5
Census Tract 75; Shelby County; Tennessee	922	34,999	16.5
Census Tract 711; Carter County; Tennessee	1,735	28,586	16.6
Census Tract 156.19; Davidson County; Tennessee	4,294	32,914	16.6
Census Tract 9202.02; DeKalb County; Tennessee	1,566	24,612	16.6
Census Tract 503.01; Hawkins County; Tennessee	3,939	27,118	16.6
Census Tract 602.03; Loudon County; Tennessee	2,505	19,981	16.6
Census Tract 9302; McNairy County; Tennessee	2,085	27,051	16.6
Census Tract 3; Madison County; Tennessee	3,606	33,415	16.6
Census Tract 9254.02; Monroe County; Tennessee	4,234	26,200	16.6
Census Tract 210.02; Anderson County; Tennessee	2,960	24,131	16.7
Census Tract 9205.02; Cocke County; Tennessee	4,120	27,768	16.7
Census Tract 9203; Hardin County; Tennessee	3,350	25,732	16.7
Census Tract 46.08; Knox County; Tennessee	2,354	33,632	16.7
Census Tract 9255.01; Monroe County; Tennessee	2,637	25,945	16.7
Census Tract 9753; Smith County; Tennessee	1,738	24,194	16.7
Census Tract 9302.02; Warren County; Tennessee	3,147	29,316	16.7
Census Tract 9208; Giles County; Tennessee	2,588	29,027	16.8
Census Tract 606; Loudon County; Tennessee	3,926	31,168	16.8
Census Tract 210.23; Shelby County; Tennessee	6,193	54,822	16.8
Census Tract 9302.01; Warren County; Tennessee	2,610	29,971	16.8
Census Tract 112.04; Hamilton County; Tennessee	4,510	37,769	16.9

Geography	Population 16 Years and Over	Per Capita Income ($)	Poverty (%)
Census Tract 9201; Hardin County; Tennessee	3,263	33,482	16.9
Census Tract 32; Knox County; Tennessee	2,679	23,962	16.9
Census Tract 103; Bradley County; Tennessee	2,939	22,171	17.0
Census Tract 9706; Claiborne County; Tennessee	4,058	31,787	17.0
Census Tract 161; Davidson County; Tennessee	2,038	46,981	17.0
Census Tract 9754; Lincoln County; Tennessee	3,549	28,590	17.0
Census Tract 3.03; Putnam County; Tennessee	1,723	22,497	17.0
Census Tract 305; Roane County; Tennessee	3,919	30,860	17.0
Census Tract 9755; Henderson County; Tennessee	3,197	24,722	17.1
Census Tract 9602; Lawrence County; Tennessee	2,282	23,612	17.1
Census Tract 102.05; Maury County; Tennessee	1,196	41,314	17.1
Census Tract 404.04; Rutherford County; Tennessee	2,416	31,782	17.1
Census Tract 205.11; Shelby County; Tennessee	1,992	36,989	17.1
Census Tract 201.01; Sumner County; Tennessee	2,829	26,746	17.1
Census Tract 9681.01; Weakley County; Tennessee	2,969	27,588	17.1
Census Tract 225; Shelby County; Tennessee	3,497	23,292	17.2
Census Tract 406.01; Tipton County; Tennessee	3,887	25,545	17.2
Census Tract 9508; Campbell County; Tennessee	2,106	28,899	17.3
Census Tract 164; Davidson County; Tennessee	4,381	24,509	17.3
Census Tract 9202; Giles County; Tennessee	3,936	27,924	17.3
Census Tract 9503.02; Hickman County; Tennessee	3,587	35,818	17.3
Census Tract 418; Sullivan County; Tennessee	3,569	30,132	17.3
Census Tract 430; Sullivan County; Tennessee	3,806	33,077	17.3
Census Tract 9630; Benton County; Tennessee	2,735	27,761	17.4
Census Tract 101; Bradley County; Tennessee	4,091	33,113	17.4
Census Tract 101.04; Hamilton County; Tennessee	3,188	30,634	17.4
Census Tract 108; Hamilton County; Tennessee	3,441	39,260	17.4
Census Tract 404.05; Rutherford County; Tennessee	3,366	32,517	17.4
Census Tract 427.02; Sullivan County; Tennessee	1,947	35,259	17.4
Census Tract 128.02; Davidson County; Tennessee	3,435	24,695	17.5
Census Tract 35.01; Knox County; Tennessee	2,446	45,391	17.5
Census Tract 505.03; Lauderdale County; Tennessee	1,856	27,791	17.5
Census Tract 406; Rutherford County; Tennessee	4,353	29,632	17.5
Census Tract 201; Anderson County; Tennessee	2,364	25,664	17.6
Census Tract 508; Hawkins County; Tennessee	4,094	28,382	17.6
Census Tract 410; Tipton County; Tennessee	2,306	24,999	17.6
Census Tract 9685; Weakley County; Tennessee	3,548	24,136	17.6
Census Tract 9664; Gibson County; Tennessee	3,860	20,986	17.7
Census Tract 9251.01; Pickett County; Tennessee	2,405	31,904	17.7
Census Tract 211.22; Shelby County; Tennessee	4,243	25,009	17.7
Census Tract 416; Sullivan County; Tennessee	2,199	31,234	17.7
Census Tract 217.52; Shelby County; Tennessee	4,172	29,606	17.8
Census Tract 103.03; Davidson County; Tennessee	4,180	31,647	17.9
Census Tract 9551.02; Decatur County; Tennessee	2,481	27,910	17.9
Census Tract 1005; Hamblen County; Tennessee	2,658	38,428	17.9
Census Tract 113.26; Hamilton County; Tennessee	5,114	43,527	17.9
Census Tract 504; Hawkins County; Tennessee	4,872	25,364	17.9
Census Tract 9253.02; Monroe County; Tennessee	2,788	22,229	17.9
Census Tract 1102; Morgan County; Tennessee	3,232	31,662	17.9
Census Tract 72; Shelby County; Tennessee	2,586	64,075	17.9
Census Tract 217.54; Shelby County; Tennessee	3,515	29,314	17.9
Census Tract 9703; Claiborne County; Tennessee	3,904	23,031	18.0
Census Tract 9709; Claiborne County; Tennessee	3,803	25,840	18.0
Census Tract 1017.01; Montgomery County; Tennessee	2,339	32,018	18.0
Census Tract 5004.02; Grainger County; Tennessee	4,237	28,071	18.1
Census Tract 9504; Hickman County; Tennessee	1,617	26,648	18.1
Census Tract 54.02; Knox County; Tennessee	2,698	30,211	18.1
Census Tract 108.20; Shelby County; Tennessee	3,210	25,731	18.1
Census Tract 9351; White County; Tennessee	4,923	28,934	18.1

Geography	Population 16 Years and Over	Per Capita Income ($)	Poverty (%)
Census Tract 9551; Clay County; Tennessee	2,064	25,975	18.2
Census Tract 9307; McNairy County; Tennessee	2,578	27,300	18.3
Census Tract 9301; Perry County; Tennessee	2,700	30,633	18.3
Census Tract 9250; Van Buren County; Tennessee	2,466	25,260	18.3
Census Tract 9354; White County; Tennessee	3,044	22,046	18.3
Census Tract 9552; Grundy County; Tennessee	3,476	20,009	18.4
Census Tract 308.02; Roane County; Tennessee	2,865	24,999	18.4
Census Tract 9502; Wayne County; Tennessee	4,405	27,147	18.4
Census Tract 703; Carter County; Tennessee	4,981	25,279	18.5
Census Tract 156.37; Davidson County; Tennessee	3,174	35,813	18.5
Census Tract 914; Greene County; Tennessee	2,316	25,173	18.5
Census Tract 1010.01; Montgomery County; Tennessee	3,342	23,660	18.5
Census Tract 118; Shelby County; Tennessee	4,639	31,953	18.5
Census Tract 910.01; Greene County; Tennessee	3,530	26,154	18.6
Census Tract 701.02; Jefferson County; Tennessee	4,436	32,847	18.6
Census Tract 503.01; Marion County; Tennessee	4,506	26,316	18.6
Census Tract 98; Shelby County; Tennessee	1,947	24,971	18.6
Census Tract 902; Trousdale County; Tennessee	2,438	26,165	18.6
Census Tract 9625; Carroll County; Tennessee	2,160	24,347	18.7
Census Tract 9705; Claiborne County; Tennessee	2,103	24,422	18.7
Census Tract 46.09; Knox County; Tennessee	4,015	30,021	18.7
Census Tract 9504; Campbell County; Tennessee	3,631	26,323	18.8
Census Tract 606.01; Dickson County; Tennessee	2,956	28,385	18.8
Census Tract 9305.02; McNairy County; Tennessee	4,154	23,299	18.8
Census Tract 402.01; Union County; Tennessee	3,200	24,396	18.8
Census Tract 9501; Campbell County; Tennessee	2,457	19,862	18.9
Census Tract 9602.01; Cannon County; Tennessee	1,907	26,194	18.9
Census Tract 1; Knox County; Tennessee	2,492	58,958	18.9
Census Tract 1019.06; Montgomery County; Tennessee	4,638	32,020	18.9
Census Tract 811.01; Sevier County; Tennessee	1,124	30,846	18.9
Census Tract 1107; Stewart County; Tennessee	3,723	30,345	18.9
Census Tract 9667.01; Gibson County; Tennessee	1,649	21,625	19.0
Census Tract 30; Hamilton County; Tennessee	1,664	23,888	19.0
Census Tract 502; Lauderdale County; Tennessee	2,568	28,386	19.0
Census Tract 703; Jefferson County; Tennessee	6,430	27,921	19.1
Census Tract 9252; Monroe County; Tennessee	4,207	32,330	19.1
Census Tract 9253.01; Monroe County; Tennessee	3,129	20,027	19.1
Census Tract 156.23; Davidson County; Tennessee	4,342	33,836	19.2
Census Tract 114.44; Hamilton County; Tennessee	3,068	22,882	19.2
Census Tract 9503; Hardeman County; Tennessee	3,323	26,060	19.2
Census Tract 1302; Humphreys County; Tennessee	1,708	22,361	19.2
Census Tract 217.21; Shelby County; Tennessee	3,312	22,789	19.2
Census Tract 9681.02; Weakley County; Tennessee	1,463	27,439	19.2
Census Tract 9708; Claiborne County; Tennessee	3,047	25,227	19.3
Census Tract 40; Knox County; Tennessee	3,937	27,506	19.3
Census Tract 46.15; Knox County; Tennessee	3,502	29,056	19.3
Census Tract 9506; Overton County; Tennessee	2,347	32,004	19.3
Census Tract 401.06; Rutherford County; Tennessee	3,520	22,571	19.3
Census Tract 605.01; Fayette County; Tennessee	3,602	30,687	19.4
Census Tract 9601; Franklin County; Tennessee	2,958	28,534	19.4
Census Tract 5001; Grainger County; Tennessee	3,840	20,195	19.4
Census Tract 903; Greene County; Tennessee	4,966	32,230	19.4
Census Tract 30; Knox County; Tennessee	4,070	27,360	19.4
Census Tract 59.11; Knox County; Tennessee	2,352	32,929	19.4
Census Tract 428.02; Sullivan County; Tennessee	3,540	21,143	19.4
Census Tract 911; Greene County; Tennessee	2,816	32,639	19.5
Census Tract 18; Knox County; Tennessee	2,122	30,531	19.5
Census Tract 106.02; Davidson County; Tennessee	2,914	28,182	19.6
Census Tract 107; Maury County; Tennessee	3,919	22,950	19.6

Geography	Population 16 Years and Over	Per Capita Income ($)	Poverty (%)
Census Tract 32; Hamilton County; Tennessee	2,886	31,946	19.7
Census Tract 220.24; Shelby County; Tennessee	2,464	23,190	19.7
Census Tract 9305; Warren County; Tennessee	4,106	22,136	19.7
Census Tract 9352; White County; Tennessee	3,471	27,365	19.7
Census Tract 901; Greene County; Tennessee	4,999	21,761	19.8
Census Tract 9202; Hardin County; Tennessee	4,025	27,491	19.8
Census Tract 3.05; Putnam County; Tennessee	2,460	27,676	19.8
Census Tract 9754.01; Rhea County; Tennessee	5,870	20,303	19.8
Census Tract 210.20; Shelby County; Tennessee	5,007	61,188	19.8
Census Tract 212.02; Anderson County; Tennessee	4,140	25,683	19.9
Census Tract 9509; Campbell County; Tennessee	2,401	30,628	19.9
Census Tract 9550.04; Decatur County; Tennessee	1,967	33,915	19.9
Census Tract 9705; McMinn County; Tennessee	3,353	25,315	19.9
Census Tract 156.34; Davidson County; Tennessee	8,893	29,465	20.0
Census Tract 23; Hamilton County; Tennessee	1,099	18,967	20.0
Census Tract 9504; Overton County; Tennessee	1,826	25,908	20.0
Census Tract 801; Unicoi County; Tennessee	2,025	27,468	20.0
Census Tract 210.01; Anderson County; Tennessee	2,093	25,812	20.1
Census Tract 9620; Carroll County; Tennessee	3,449	26,755	20.1
Census Tract 109; Maury County; Tennessee	2,720	29,092	20.1
Census Tract 9624; Carroll County; Tennessee	2,046	23,452	20.2
Census Tract 158.04; Davidson County; Tennessee	4,005	28,653	20.2
Census Tract 28; Knox County; Tennessee	3,386	21,691	20.2
Census Tract 37; Knox County; Tennessee	2,526	44,866	20.2
Census Tract 9750; Scott County; Tennessee	3,247	24,382	20.2
Census Tract 602; Sequatchie County; Tennessee	3,876	29,818	20.2
Census Tract 206.10; Shelby County; Tennessee	3,199	25,473	20.2
Census Tract 403; Sullivan County; Tennessee	2,131	30,279	20.2
Census Tract 402.02; Union County; Tennessee	4,941	25,848	20.2
Census Tract 9602.02; Cannon County; Tennessee	3,435	30,144	20.3
Census Tract 502.03; Marion County; Tennessee	2,275	22,391	20.3
Census Tract 104.02; Maury County; Tennessee	1,990	27,543	20.3
Census Tract 9659; Obion County; Tennessee	1,149	23,850	20.3
Census Tract 303.01; Roane County; Tennessee	2,708	42,957	20.3
Census Tract 9701; Claiborne County; Tennessee	2,118	21,493	20.4
Census Tract 9707; Claiborne County; Tennessee	4,734	22,643	20.4
Census Tract 402; Tipton County; Tennessee	1,683	23,734	20.4
Census Tract 9255.04; Monroe County; Tennessee	1,606	27,982	20.5
Census Tract 223.22; Shelby County; Tennessee	3,044	24,869	20.5
Census Tract 9704; Claiborne County; Tennessee	575	20,598	20.6
Census Tract 5004.01; Grainger County; Tennessee	2,256	20,075	20.6
Census Tract 602.01; Loudon County; Tennessee	3,734	27,123	20.6
Census Tract 9614; Crockett County; Tennessee	2,910	32,501	20.7
Census Tract 205.42; Shelby County; Tennessee	4,458	18,529	20.7
Census Tract 9306; Warren County; Tennessee	2,927	27,929	20.7
Census Tract 109.02; Hamilton County; Tennessee	620	34,290	20.8
Census Tract 222.10; Shelby County; Tennessee	3,592	23,054	20.8
Census Tract 223.21; Shelby County; Tennessee	2,760	20,528	20.8
Census Tract 804; Unicoi County; Tennessee	3,514	26,044	20.8
Census Tract 9621.02; Carroll County; Tennessee	2,851	30,192	20.9
Census Tract 158.06; Davidson County; Tennessee	3,348	22,332	20.9
Census Tract 9550.01; Decatur County; Tennessee	1,523	29,706	20.9
Census Tract 1017.02; Montgomery County; Tennessee	4,520	30,859	20.9
Census Tract 9612; Crockett County; Tennessee	1,401	32,182	21.0
Census Tract 174.02; Davidson County; Tennessee	4,831	37,292	21.0
Census Tract 9203; DeKalb County; Tennessee	4,301	29,347	21.0
Census Tract 1004; Hamblen County; Tennessee	5,487	25,751	21.0
Census Tract 505.01; Hawkins County; Tennessee	3,300	28,792	21.0
Census Tract 9502.01; Hickman County; Tennessee	3,363	27,360	21.0

Geography	Population 16 Years and Over	Per Capita Income ($)	Poverty (%)
Census Tract 9505.01; Overton County; Tennessee	3,557	32,282	21.0
Census Tract 714; Carter County; Tennessee	2,592	27,901	21.1
Census Tract 9702.01; Coffee County; Tennessee	3,132	26,160	21.1
Census Tract 156.28; Davidson County; Tennessee	2,972	26,964	21.1
Census Tract 49; Knox County; Tennessee	4,712	32,086	21.1
Census Tract 16.05; Madison County; Tennessee	2,877	32,418	21.1
Census Tract 201.01; Shelby County; Tennessee	2,675	24,292	21.1
Census Tract 9682.01; Weakley County; Tennessee	3,247	32,278	21.1
Census Tract 9650; Fentress County; Tennessee	3,012	24,756	21.2
Census Tract 15; Knox County; Tennessee	2,952	33,119	21.2
Census Tract 16.07; Madison County; Tennessee	4,218	31,161	21.2
Census Tract 110.04; Maury County; Tennessee	3,178	31,567	21.2
Census Tract 1021; Montgomery County; Tennessee	3,939	32,581	21.2
Census Tract 414.01; Rutherford County; Tennessee	5,385	39,640	21.2
Census Tract 81.20; Shelby County; Tennessee	4,366	22,526	21.2
Census Tract 619.04; Washington County; Tennessee	3,163	28,068	21.2
Census Tract 9631; Benton County; Tennessee	2,684	30,759	21.3
Census Tract 9503.01; Overton County; Tennessee	4,000	27,191	21.3
Census Tract 601.04; Sequatchie County; Tennessee	3,782	22,159	21.3
Census Tract 804.02; Sevier County; Tennessee	2,835	24,637	21.3
Census Tract 9643; Dyer County; Tennessee	4,429	27,727	21.4
Census Tract 9665.02; Gibson County; Tennessee	2,582	31,681	21.4
Census Tract 1104; Morgan County; Tennessee	3,210	37,306	21.4
Census Tract 428.01; Sullivan County; Tennessee	2,071	29,795	21.4
Census Tract 5003.01; Grainger County; Tennessee	2,657	26,577	21.5
Census Tract 9702; Lewis County; Tennessee	6,227	26,903	21.5
Census Tract 13; Madison County; Tennessee	4,848	24,390	21.5
Census Tract 7; Putnam County; Tennessee	2,842	22,975	21.5
Census Tract 806.01; Sevier County; Tennessee	3,488	31,546	21.5
Census Tract 9752; Smith County; Tennessee	4,772	29,787	21.5
Census Tract 9355; White County; Tennessee	2,985	22,246	21.5
Census Tract 304.02; Wilson County; Tennessee	3,504	26,960	21.5
Census Tract 9704.02; Coffee County; Tennessee	4,362	23,781	21.6
Census Tract 905.02; Greene County; Tennessee	1,313	41,538	21.6
Census Tract 1003; Montgomery County; Tennessee	4,625	30,274	21.7
Census Tract 417; Sullivan County; Tennessee	2,930	33,372	21.7
Census Tract 608; Washington County; Tennessee	2,264	34,133	21.7
Census Tract 9662; Gibson County; Tennessee	2,761	22,360	21.8
Census Tract 1011.02; Montgomery County; Tennessee	6,764	22,175	21.8
Census Tract 9501; Wayne County; Tennessee	3,859	20,247	21.8
Census Tract 9703.01; Chester County; Tennessee	1,247	25,584	21.9
Census Tract 9705.01; Cumberland County; Tennessee	2,520	26,631	21.9
Census Tract 9606; Franklin County; Tennessee	3,742	24,887	21.9
Census Tract 9551; Grundy County; Tennessee	1,424	26,993	21.9
Census Tract 202.02; Anderson County; Tennessee	3,828	36,502	22.0
Census Tract 15.01; Madison County; Tennessee	4,055	28,874	22.0
Census Tract 803.02; Robertson County; Tennessee	2,532	22,171	22.0
Census Tract 79; Shelby County; Tennessee	3,841	21,454	22.0
Census Tract 9502; Campbell County; Tennessee	1,844	26,047	22.1
Census Tract 144; Davidson County; Tennessee	2,553	40,562	22.1
Census Tract 416.02; Rutherford County; Tennessee	2,333	38,853	22.1
Census Tract 93; Shelby County; Tennessee	3,312	45,132	22.1
Census Tract 217.55; Shelby County; Tennessee	1,233	30,819	22.1
Census Tract 712; Carter County; Tennessee	3,050	24,141	22.2
Census Tract 709; Carter County; Tennessee	3,313	25,527	22.3
Census Tract 158.05; Davidson County; Tennessee	2,183	25,958	22.4
Census Tract 9604.01; Lawrence County; Tennessee	4,348	35,350	22.4
Census Tract 421.02; Rutherford County; Tennessee	3,458	21,024	22.4
Census Tract 88; Shelby County; Tennessee	4,913	16,186	22.4

Geography	Population 16 Years and Over	Per Capita Income ($)	Poverty (%)
Census Tract 9702; Chester County; Tennessee	4,355	17,993	22.6
Census Tract 9754; Henderson County; Tennessee	3,738	23,697	22.6
Census Tract 9603; Lawrence County; Tennessee	4,200	21,667	22.6
Census Tract 602.04; Loudon County; Tennessee	4,270	25,936	22.6
Census Tract 804.01; Robertson County; Tennessee	4,228	27,105	22.6
Census Tract 9753; Scott County; Tennessee	1,940	25,511	22.6
Census Tract 15; Shelby County; Tennessee	1,553	25,337	22.6
Census Tract 804.02; Robertson County; Tennessee	3,998	26,770	22.7
Census Tract 9203.01; Giles County; Tennessee	3,830	29,079	22.8
Census Tract 1008; Hamblen County; Tennessee	2,238	25,267	22.8
Census Tract 9205.02; Hardin County; Tennessee	1,272	20,101	22.8
Census Tract 913; Greene County; Tennessee	3,746	25,016	22.9
Census Tract 166; Davidson County; Tennessee	3,395	50,299	23.0
Census Tract 73; Shelby County; Tennessee	3,817	28,706	23.0
Census Tract 205.31; Shelby County; Tennessee	3,799	18,174	23.0
Census Tract 9510; Campbell County; Tennessee	1,828	21,738	23.1
Census Tract 9707; Coffee County; Tennessee	3,853	27,568	23.1
Census Tract 9602; Jackson County; Tennessee	1,912	26,602	23.1
Census Tract 9703; McMinn County; Tennessee	3,126	27,702	23.1
Census Tract 9304; McNairy County; Tennessee	1,728	24,073	23.1
Census Tract 227; Shelby County; Tennessee	6,148	18,465	23.1
Census Tract 407; Tipton County; Tennessee	3,931	23,847	23.1
Census Tract 9530; Bledsoe County; Tennessee	3,664	24,107	23.2
Census Tract 9701; Coffee County; Tennessee	2,965	26,010	23.2
Census Tract 9303.01; Haywood County; Tennessee	3,415	27,168	23.3
Census Tract 9251.01; Monroe County; Tennessee	3,708	24,157	23.3
Census Tract 1012.01; Montgomery County; Tennessee	1,778	26,771	23.3
Census Tract 308; Wilson County; Tennessee	5,602	27,710	23.3
Census Tract 189.05; Davidson County; Tennessee	2,440	36,854	23.4
Census Tract 9646; Dyer County; Tennessee	2,046	29,916	23.4
Census Tract 9563; Johnson County; Tennessee	4,812	24,511	23.4
Census Tract 505.04; Lauderdale County; Tennessee	1,945	22,637	23.5
Census Tract 60; Shelby County; Tennessee	1,487	18,912	23.5
Census Tract 9309; Warren County; Tennessee	1,730	24,342	23.5
Census Tract 419; Sullivan County; Tennessee	2,959	29,519	23.6
Census Tract 605.01; Washington County; Tennessee	3,804	23,341	23.6
Census Tract 9652.02; Fentress County; Tennessee	2,503	25,374	23.7
Census Tract 217.58; Shelby County; Tennessee	2,463	22,457	23.7
Census Tract 221.21; Shelby County; Tennessee	3,648	28,223	23.7
Census Tract 127.02; Davidson County; Tennessee	2,317	29,411	23.8
Census Tract 9205.01; Hardin County; Tennessee	3,179	23,951	23.8
Census Tract 9561; Johnson County; Tennessee	3,557	20,270	23.8
Census Tract 2; Madison County; Tennessee	4,602	27,771	23.8
Census Tract 9602; Meigs County; Tennessee	4,067	23,982	23.8
Census Tract 9703.01; Macon County; Tennessee	3,352	18,446	23.9
Census Tract 221.22; Shelby County; Tennessee	3,302	25,085	23.9
Census Tract 614.04; Washington County; Tennessee	2,983	60,045	23.9
Census Tract 156.13; Davidson County; Tennessee	4,123	20,478	24.0
Census Tract 182.04; Davidson County; Tennessee	2,578	36,894	24.0
Census Tract 124; Hamilton County; Tennessee	5,937	25,835	24.0
Census Tract 503.02; Marion County; Tennessee	2,569	35,518	24.0
Census Tract 9504; Wayne County; Tennessee	2,770	36,132	24.0
Census Tract 1103; Morgan County; Tennessee	4,770	15,948	24.1
Census Tract 9506.01; Campbell County; Tennessee	1,844	20,297	24.2
Census Tract 104.03; Davidson County; Tennessee	3,223	18,791	24.2
Census Tract 502.01; Marion County; Tennessee	3,311	26,700	24.2
Census Tract 205.32; Shelby County; Tennessee	4,990	27,384	24.2
Census Tract 408; Sullivan County; Tennessee	3,050	27,525	24.2
Census Tract 9550; Clay County; Tennessee	4,144	21,440	24.3

Geography	Population 16 Years and Over	Per Capita Income ($)	Poverty (%)
Census Tract 143; Davidson County; Tennessee	1,353	27,164	24.3
Census Tract 9302; Haywood County; Tennessee	1,198	31,407	24.3
Census Tract 39.02; Knox County; Tennessee	2,646	18,941	24.3
Census Tract 67; Knox County; Tennessee	2,182	29,416	24.3
Census Tract 414.07; Rutherford County; Tennessee	4,583	48,250	24.3
Census Tract 11; Shelby County; Tennessee	2,067	14,947	24.3
Census Tract 211.11; Shelby County; Tennessee	2,963	21,892	24.3
Census Tract 113.02; Bradley County; Tennessee	2,012	32,392	24.4
Census Tract 9694; Henry County; Tennessee	1,539	30,518	24.4
Census Tract 204; Anderson County; Tennessee	3,406	31,312	24.5
Census Tract 205; Anderson County; Tennessee	3,146	24,072	24.5
Census Tract 24; Knox County; Tennessee	3,619	22,536	24.5
Census Tract 409; Sullivan County; Tennessee	2,832	44,349	24.5
Census Tract 9698; Henry County; Tennessee	1,911	22,876	24.6
Census Tract 9305.01; McNairy County; Tennessee	1,869	21,683	24.6
Census Tract 421.01; Rutherford County; Tennessee	4,248	22,893	24.6
Census Tract 195.01; Davidson County; Tennessee	2,540	73,440	24.7
Census Tract 9551.01; Decatur County; Tennessee	1,512	22,554	24.7
Census Tract 9605; Franklin County; Tennessee	3,427	31,366	24.8
Census Tract 116; Hamilton County; Tennessee	5,401	27,237	24.8
Census Tract 123; Hamilton County; Tennessee	3,142	24,547	24.8
Census Tract 221.30; Shelby County; Tennessee	4,059	26,726	24.8
Census Tract 203; Sumner County; Tennessee	4,220	25,249	24.8
Census Tract 710; Carter County; Tennessee	2,115	24,374	24.9
Census Tract 507; Hawkins County; Tennessee	2,973	24,409	25.0
Census Tract 9670.02; Gibson County; Tennessee	2,739	23,301	25.1
Census Tract 221.32; Shelby County; Tennessee	2,038	28,668	25.1
Census Tract 9667.02; Gibson County; Tennessee	2,467	19,779	25.2
Census Tract 9692; Henry County; Tennessee	1,571	23,221	25.2
Census Tract 9251.02; Pickett County; Tennessee	1,796	21,491	25.2
Census Tract 803.01; Robertson County; Tennessee	2,132	24,451	25.2
Census Tract 221.11; Shelby County; Tennessee	4,003	30,131	25.2
Census Tract 156.20; Davidson County; Tennessee	5,152	26,205	25.3
Census Tract 165; Davidson County; Tennessee	4,551	15,784	25.4
Census Tract 9550; Grundy County; Tennessee	2,070	28,734	25.4
Census Tract 107; Bradley County; Tennessee	3,801	18,045	25.5
Census Tract 807.02; Sevier County; Tennessee	4,491	20,352	25.5
Census Tract 46; Shelby County; Tennessee	1,088	22,490	25.6
Census Tract 606.01; Washington County; Tennessee	3,032	35,196	25.6
Census Tract 610; Washington County; Tennessee	1,875	22,921	25.6
Census Tract 107.02; Davidson County; Tennessee	2,689	31,152	25.7
Census Tract 9564; Johnson County; Tennessee	4,034	25,082	25.7
Census Tract 609.02; Washington County; Tennessee	2,439	18,698	25.7
Census Tract 9304; Haywood County; Tennessee	2,745	22,045	25.8
Census Tract 27; Shelby County; Tennessee	1,433	35,397	25.8
Census Tract 66; Knox County; Tennessee	2,913	50,648	25.9
Census Tract 6; Madison County; Tennessee	1,506	30,598	25.9
Census Tract 9705.02; Cumberland County; Tennessee	3,315	21,774	26.0
Census Tract 156.18; Davidson County; Tennessee	5,673	29,926	26.0
Census Tract 427.04; Sullivan County; Tennessee	1,924	23,695	26.0
Census Tract 208; Anderson County; Tennessee	3,815	28,234	26.1
Census Tract 190.08; Davidson County; Tennessee	3,891	23,136	26.2
Census Tract 109.04; Hamilton County; Tennessee	2,497	41,663	26.2
Census Tract 226; Shelby County; Tennessee	2,940	19,152	26.2
Census Tract 19; Knox County; Tennessee	1,163	21,404	26.3
Census Tract 9751; Henderson County; Tennessee	3,137	22,473	26.4
Census Tract 118; Davidson County; Tennessee	2,239	47,881	26.5
Census Tract 190.03; Davidson County; Tennessee	2,878	20,475	26.5
Census Tract 9605; Hancock County; Tennessee	2,083	29,388	26.5

Geography	Population 16 Years and Over	Per Capita Income ($)	Poverty (%)
Census Tract 102.20; Shelby County; Tennessee	5,112	20,638	26.5
Census Tract 612; Washington County; Tennessee	3,244	31,372	26.5
Census Tract 9710.01; Coffee County; Tennessee	1,018	43,787	26.6
Census Tract 509; Hawkins County; Tennessee	2,602	22,219	26.6
Census Tract 9701; Macon County; Tennessee	3,807	21,842	26.6
Census Tract 1; Putnam County; Tennessee	4,217	23,045	26.6
Census Tract 613.01; Washington County; Tennessee	2,592	30,255	26.6
Census Tract 190.04; Davidson County; Tennessee	2,990	18,934	26.8
Census Tract 9753.02; Henderson County; Tennessee	3,036	22,694	26.8
Census Tract 25; Shelby County; Tennessee	2,362	29,235	26.8
Census Tract 1001; Hamblen County; Tennessee	4,735	20,317	26.9
Census Tract 102.10; Shelby County; Tennessee	4,119	19,730	27.0
Census Tract 9205.01; Cocke County; Tennessee	5,065	24,546	27.1
Census Tract 505.05; Lauderdale County; Tennessee	2,787	22,087	27.1
Census Tract 100.02; Shelby County; Tennessee	2,312	19,656	27.1
Census Tract 9307; Warren County; Tennessee	3,810	26,388	27.1
Census Tract 9604; Jackson County; Tennessee	1,622	24,492	27.2
Census Tract 308.01; Roane County; Tennessee	1,501	25,204	27.2
Census Tract 36; Shelby County; Tennessee	1,470	42,436	27.2
Census Tract 80; Shelby County; Tennessee	3,451	22,863	27.2
Census Tract 9504.02; Bedford County; Tennessee	5,137	20,946	27.3
Census Tract 9632; Benton County; Tennessee	1,669	27,014	27.3
Census Tract 181.01; Davidson County; Tennessee	3,630	41,748	27.3
Census Tract 912; Greene County; Tennessee	2,886	23,101	27.3
Census Tract 156.32; Davidson County; Tennessee	3,250	37,911	27.5
Census Tract 9602; Lake County; Tennessee	1,799	20,249	27.6
Census Tract 9501; Polk County; Tennessee	1,244	27,744	27.6
Census Tract 20; Shelby County; Tennessee	1,136	22,107	27.6
Census Tract 217.56; Shelby County; Tennessee	1,613	31,405	27.7
Census Tract 9503; Campbell County; Tennessee	1,578	21,828	27.8
Census Tract 9644.01; Dyer County; Tennessee	2,193	24,017	27.8
Census Tract 9693; Henry County; Tennessee	2,274	23,795	27.8
Census Tract 24; Shelby County; Tennessee	1,426	23,218	28.1
Census Tract 110.10; Shelby County; Tennessee	2,427	20,913	28.1
Census Tract 213.04; Anderson County; Tennessee	2,764	25,852	28.2
Census Tract 503.02; Hawkins County; Tennessee	3,203	24,213	28.2
Census Tract 9601; Lake County; Tennessee	4,219	19,402	28.3
Census Tract 701; Carter County; Tennessee	1,745	25,405	28.4
Census Tract 119; Davidson County; Tennessee	2,264	36,753	28.6
Census Tract 506; Lauderdale County; Tennessee	1,935	18,358	28.6
Census Tract 8; Putnam County; Tennessee	5,702	14,534	28.6
Census Tract 808.01; Sevier County; Tennessee	2,166	19,888	28.6
Census Tract 9532; Bledsoe County; Tennessee	3,966	21,455	28.8
Census Tract 1; Madison County; Tennessee	3,068	31,128	28.8
Census Tract 19; Hamilton County; Tennessee	2,550	22,501	28.9
Census Tract 46.10; Knox County; Tennessee	3,608	27,262	28.9
Census Tract 9702.02; McMinn County; Tennessee	2,942	22,841	28.9
Census Tract 9751.02; Scott County; Tennessee	3,347	24,424	28.9
Census Tract 20; Knox County; Tennessee	2,311	19,753	29.0
Census Tract 421; Sullivan County; Tennessee	4,456	34,168	29.0
Census Tract 9695.02; Henry County; Tennessee	3,121	25,273	29.1
Census Tract 403.05; Rutherford County; Tennessee	2,039	19,313	29.1
Census Tract 97; Shelby County; Tennessee	1,796	18,210	29.1
Census Tract 107.10; Shelby County; Tennessee	3,101	20,239	29.2
Census Tract 13; Hamilton County; Tennessee	1,685	29,051	29.3
Census Tract 107.20; Shelby County; Tennessee	2,394	23,132	29.3
Census Tract 1101; Morgan County; Tennessee	2,392	24,905	29.4
Census Tract 109.04; Davidson County; Tennessee	2,363	23,270	29.5
Census Tract 419; Rutherford County; Tennessee	3,354	22,885	29.5

Geography	Population 16 Years and Over	Per Capita Income ($)	Poverty (%)
Census Tract 62; Shelby County; Tennessee	1,462	19,566	29.6
Census Tract 68; Shelby County; Tennessee	1,422	18,801	29.6
Census Tract 220.23; Shelby County; Tennessee	1,552	22,180	29.7
Census Tract 34; Hamilton County; Tennessee	3,309	26,368	29.8
Census Tract 10; Madison County; Tennessee	1,674	17,872	29.9
Census Tract 3; Shelby County; Tennessee	530	13,353	29.9
Census Tract 405; Sullivan County; Tennessee	3,768	20,186	30.0
Census Tract 29; Hamilton County; Tennessee	2,254	31,649	30.1
Census Tract 136; Davidson County; Tennessee	4,860	19,266	30.2
Census Tract 21; Shelby County; Tennessee	1,022	19,187	30.2
Census Tract 105; Maury County; Tennessee	3,444	23,310	30.3
Census Tract 56; Shelby County; Tennessee	3,191	19,814	30.3
Census Tract 601.03; Sequatchie County; Tennessee	3,459	22,114	30.4
Census Tract 102.02; Bradley County; Tennessee	2,130	39,023	30.5
Census Tract 1002; Hamblen County; Tennessee	4,676	19,008	30.5
Census Tract 414.06; Rutherford County; Tennessee	4,206	33,643	30.5
Census Tract 9752; Scott County; Tennessee	4,896	18,174	30.6
Census Tract 12; Shelby County; Tennessee	2,417	19,700	30.6
Census Tract 156.14; Davidson County; Tennessee	3,098	29,985	30.8
Census Tract 9680; Weakley County; Tennessee	913	24,253	30.8
Census Tract 156.15; Davidson County; Tennessee	4,268	16,747	31.0
Census Tract 108; Blount County; Tennessee	2,398	25,994	31.1
Census Tract 108; Bradley County; Tennessee	2,530	18,159	31.1
Census Tract 706; Carter County; Tennessee	2,153	25,710	31.1
Census Tract 9601; Jackson County; Tennessee	1,650	24,725	31.1
Census Tract 57; Shelby County; Tennessee	1,942	16,175	31.1
Census Tract 220.26; Shelby County; Tennessee	1,268	18,132	31.1
Census Tract 402; Sullivan County; Tennessee	1,872	25,726	31.1
Census Tract 194.01; Davidson County; Tennessee	2,772	58,752	31.2
Census Tract 67; Shelby County; Tennessee	2,794	19,059	31.2
Census Tract 191.08; Davidson County; Tennessee	2,249	19,373	31.3
Census Tract 9303.02; Haywood County; Tennessee	2,384	19,697	31.7
Census Tract 620; Washington County; Tennessee	3,860	24,103	31.8
Census Tract 9202.01; DeKalb County; Tennessee	4,099	19,561	31.9
Census Tract 138; Davidson County; Tennessee	1,368	23,519	32.0
Census Tract 113; Shelby County; Tennessee	1,042	29,949	32.1
Census Tract 9656; Obion County; Tennessee	2,931	19,717	32.2
Census Tract 128.01; Davidson County; Tennessee	4,099	28,048	32.3
Census Tract 9651; Fentress County; Tennessee	3,575	19,006	32.3
Census Tract 304.01; Roane County; Tennessee	2,231	23,599	32.3
Census Tract 9531.02; Bledsoe County; Tennessee	3,562	23,061	32.4
Census Tract 24; Hamilton County; Tennessee	3,224	21,650	32.4
Census Tract 9702.01; McMinn County; Tennessee	1,768	20,531	32.4
Census Tract 112; Shelby County; Tennessee	782	16,666	32.4
Census Tract 9682.03; Weakley County; Tennessee	2,689	23,562	32.4
Census Tract 103; Shelby County; Tennessee	955	15,050	32.6
Census Tract 7; Madison County; Tennessee	2,590	22,257	32.7
Census Tract 9507.02; Campbell County; Tennessee	2,205	23,340	32.8
Census Tract 704; Carter County; Tennessee	1,528	20,303	33.1
Census Tract 606.02; Washington County; Tennessee	3,680	28,106	33.3
Census Tract 11; Hamilton County; Tennessee	1,572	28,786	33.4
Census Tract 9506.02; Campbell County; Tennessee	1,724	27,882	33.8
Census Tract 1002; Montgomery County; Tennessee	1,235	22,032	33.8
Census Tract 106.20; Shelby County; Tennessee	2,365	16,387	33.8
Census Tract 14; Knox County; Tennessee	1,738	13,696	34.0
Census Tract 65; Shelby County; Tennessee	1,634	20,655	34.0
Census Tract 109.03; Davidson County; Tennessee	5,092	25,130	34.1
Census Tract 27; Knox County; Tennessee	1,640	16,796	34.1
Census Tract 810.02; Sevier County; Tennessee	2,205	25,039	34.1

Geography	Population 16 Years and Over	Per Capita Income ($)	Poverty (%)
Census Tract 4; Madison County; Tennessee	2,418	19,834	34.2
Census Tract 9605.01; Lawrence County; Tennessee	3,788	19,126	34.5
Census Tract 601; Washington County; Tennessee	3,359	26,482	34.5
Census Tract 191.05; Davidson County; Tennessee	3,829	24,817	34.6
Census Tract 7; Shelby County; Tennessee	3,322	22,528	34.6
Census Tract 9644.02; Dyer County; Tennessee	2,154	23,733	34.7
Census Tract 106.10; Shelby County; Tennessee	4,156	21,545	34.7
Census Tract 30; Shelby County; Tennessee	2,266	41,440	34.8
Census Tract 9204.02; Hardin County; Tennessee	2,288	19,654	35.0
Census Tract 53; Shelby County; Tennessee	2,413	15,723	35.3
Census Tract 205.21; Shelby County; Tennessee	1,912	14,595	35.3
Census Tract 205.43; Shelby County; Tennessee	2,295	20,499	35.3
Census Tract 26; Hamilton County; Tennessee	1,697	21,012	35.5
Census Tract 108.10; Shelby County; Tennessee	4,477	19,703	35.5
Census Tract 8; Knox County; Tennessee	4,268	40,799	35.8
Census Tract 13; Shelby County; Tennessee	1,810	19,440	35.9
Census Tract 406; Sullivan County; Tennessee	2,600	20,362	36.0
Census Tract 207; Anderson County; Tennessee	1,226	21,596	36.1
Census Tract 9606; Hancock County; Tennessee	3,334	20,765	36.1
Census Tract 122; Hamilton County; Tennessee	1,665	16,348	36.2
Census Tract 110.20; Shelby County; Tennessee	952	31,532	36.4
Census Tract 26; Knox County; Tennessee	1,927	15,852	36.5
Census Tract 89; Shelby County; Tennessee	3,023	18,128	36.6
Census Tract 205.44; Shelby County; Tennessee	1,921	22,371	37.0
Census Tract 12; Hamilton County; Tennessee	2,620	21,234	37.1
Census Tract 9; Shelby County; Tennessee	1,916	22,379	37.2
Census Tract 69; Shelby County; Tennessee	1,933	21,809	37.3
Census Tract 159; Davidson County; Tennessee	2,820	22,859	37.4
Census Tract 203.02; Shelby County; Tennessee	2,360	21,910	37.4
Census Tract 9709; Coffee County; Tennessee	3,541	21,319	37.6
Census Tract 9553; Marshall County; Tennessee	3,288	15,089	37.6
Census Tract 37; Shelby County; Tennessee	1,058	26,028	38.0
Census Tract 87; Shelby County; Tennessee	3,604	20,969	38.0
Census Tract 4; Hamilton County; Tennessee	2,409	16,234	38.1
Census Tract 127.01; Davidson County; Tennessee	4,747	21,953	38.4
Census Tract 16; Hamilton County; Tennessee	2,191	30,424	38.6
Census Tract 217.31; Shelby County; Tennessee	1,970	13,602	38.8
Census Tract 70; Knox County; Tennessee	2,152	18,930	39.0
Census Tract 9202; Cocke County; Tennessee	4,466	19,192	39.2
Census Tract 100.01; Shelby County; Tennessee	2,610	18,618	39.3
Census Tract 609.01; Washington County; Tennessee	2,369	17,765	39.3
Census Tract 307; Wilson County; Tennessee	3,082	20,455	39.6
Census Tract 9751.01; Scott County; Tennessee	1,813	25,237	39.8
Census Tract 78.21; Shelby County; Tennessee	3,995	26,214	39.8
Census Tract 208; Sumner County; Tennessee	5,417	16,542	39.8
Census Tract 38; Shelby County; Tennessee	634	21,035	39.9
Census Tract 74; Shelby County; Tennessee	2,849	21,617	39.9
Census Tract 82; Shelby County; Tennessee	3,726	12,265	40.7
Census Tract 14; Shelby County; Tennessee	1,080	17,866	40.8
Census Tract 1009; Montgomery County; Tennessee	2,214	17,108	41.2
Census Tract 217.10; Shelby County; Tennessee	1,555	18,557	41.2
Census Tract 8; Madison County; Tennessee	1,299	16,570	41.9
Census Tract 81.10; Shelby County; Tennessee	1,513	15,163	41.9
Census Tract 78.22; Shelby County; Tennessee	1,154	22,923	42.4
Census Tract 4; Shelby County; Tennessee	1,046	17,382	42.7
Census Tract 78.10; Shelby County; Tennessee	1,609	16,613	42.8
Census Tract 29; Knox County; Tennessee	2,476	17,597	42.9
Census Tract 39; Shelby County; Tennessee	1,454	26,710	43.0
Census Tract 105; Shelby County; Tennessee	1,897	14,883	43.0

Geography	Population 16 Years and Over	Per Capita Income ($)	Poverty (%)
Census Tract 221.31; Shelby County; Tennessee	2,087	25,483	43.1
Census Tract 223.30; Shelby County; Tennessee	3,774	18,390	43.1
Census Tract 2; Shelby County; Tennessee	880	12,578	43.5
Census Tract 99.01; Shelby County; Tennessee	2,315	16,136	43.6
Census Tract 139; Davidson County; Tennessee	1,380	24,762	44.1
Census Tract 19; Shelby County; Tennessee	1,102	17,840	44.2
Census Tract 114.01; Shelby County; Tennessee	900	14,179	44.2
Census Tract 115; Shelby County; Tennessee	1,612	12,796	44.7
Census Tract 91; Shelby County; Tennessee	2,173	15,531	45.3
Census Tract 70; Shelby County; Tennessee	2,420	21,286	45.5
Census Tract 1003; Hamblen County; Tennessee	2,320	13,728	46.6
Census Tract 9; Madison County; Tennessee	1,600	15,483	46.6
Census Tract 3.04; Putnam County; Tennessee	3,778	16,143	46.7
Census Tract 68; Knox County; Tennessee	3,817	18,619	46.8
Census Tract 223.10; Shelby County; Tennessee	4,086	14,373	46.8
Census Tract 106.30; Shelby County; Tennessee	2,417	13,584	46.9
Census Tract 8; Shelby County; Tennessee	1,475	21,765	47.0
Census Tract 6; Shelby County; Tennessee	1,206	15,557	47.3
Census Tract 1008; Montgomery County; Tennessee	2,399	11,901	47.9
Census Tract 101.21; Shelby County; Tennessee	1,682	17,148	48.0
Census Tract 117; Shelby County; Tennessee	813	19,803	48.0
Census Tract 104; Bradley County; Tennessee	2,264	14,230	48.2
Census Tract 160; Davidson County; Tennessee	2,018	27,708	49.4
Census Tract 101.22; Shelby County; Tennessee	2,352	14,516	49.4
Census Tract 162; Davidson County; Tennessee	2,497	45,142	49.8
Census Tract 55; Shelby County; Tennessee	1,588	13,398	49.8
Census Tract 25; Hamilton County; Tennessee	3,431	18,188	49.9
Census Tract 28; Shelby County; Tennessee	2,231	16,995	49.9
Census Tract 217.57; Shelby County; Tennessee	1,717	18,833	50.5
Census Tract 205.23; Shelby County; Tennessee	2,164	13,096	51.1
Census Tract 222.20; Shelby County; Tennessee	3,887	17,307	51.4
Census Tract 111; Shelby County; Tennessee	1,291	18,765	51.9
Census Tract 114.02; Shelby County; Tennessee	3,348	16,102	52.4
Census Tract 142; Davidson County; Tennessee	1,928	12,426	52.7
Census Tract 1001; Montgomery County; Tennessee	1,350	13,975	52.8
Census Tract 5; Madison County; Tennessee	3,061	10,536	52.9
Census Tract 58; Shelby County; Tennessee	692	10,646	54.0
Census Tract 35.02; Knox County; Tennessee	2,080	25,565	55.0
Census Tract 193; Davidson County; Tennessee	3,018	22,695	57.5
Census Tract 11; Madison County; Tennessee	832	11,081	57.5
Census Tract 101.20; Shelby County; Tennessee	2,780	12,050	57.9
Census Tract 116; Shelby County; Tennessee	1,767	12,615	58.0
Census Tract 220.25; Shelby County; Tennessee	2,393	13,136	58.6
Census Tract 99.02; Shelby County; Tennessee	1,482	15,731	59.3
Census Tract 50; Shelby County; Tennessee	659	8,737	64.4
Census Tract 59; Shelby County; Tennessee	1,418	14,355	68.8
Census Tract 45; Shelby County; Tennessee	539	11,371	69.6
Census Tract 69.01; Knox County; Tennessee	4,124	10,996	69.7
Census Tract 69.02; Knox County; Tennessee	3,034	9,266	72.4
Census Tract 148; Davidson County; Tennessee	1,037	6,434	77.9
Census Tract 69.03; Knox County; Tennessee	2,227	9,761	79.0
Census Tract 9682.02; Weakley County; Tennessee	2,069	8,229	82.6
Census Tract 9.02; Knox County; Tennessee	3,061	4,852	96.1
Census Tract 109; Washington County; Virginia	3,808	26,902	15.0
Census Tract 9310; Wise County; Virginia	1,573	26,736	15.4
Census Tract 306; Scott County; Virginia	3,358	25,001	15.5
Census Tract 101.01; Washington County; Virginia	2,754	32,527	15.9
Census Tract 304; Scott County; Virginia	3,038	28,322	16.2
Census Tract 9309; Wise County; Virginia	3,482	26,812	19.9

Geography	Population 16 Years and Over	Per Capita Income ($)	Poverty (%)
Census Tract 302; Scott County; Virginia	3,428	21,052	20.3
Census Tract 103.01; Washington County; Virginia	2,514	26,229	20.3
Census Tract 9307; Wise County; Virginia	2,712	19,897	21.9
Census Tract 9315; Wise County; Virginia	2,918	20,610	22.0
Census Tract 105.02; Washington County; Virginia	3,920	39,896	22.2
Census Tract 9504; Lee County; Virginia	2,092	25,950	22.4
Census Tract 9316; Wise County; Virginia	1,963	27,112	23.0
Census Tract 203; Bristol city; Virginia	1,938	20,437	23.9
Census Tract 9314; Wise County; Virginia	4,401	23,582	24.3
Census Tract 9503.02; Lee County; Virginia	2,579	12,921	26.2
Census Tract 201; Bristol city; Virginia	2,952	21,899	26.6
Census Tract 9501; Lee County; Virginia	2,224	19,173	27.4
Census Tract 9317; Wise County; Virginia	1,333	23,738	28.9
Census Tract 9601; Norton city; Virginia	3,138	27,666	29.1
Census Tract 303; Scott County; Virginia	2,509	23,050	30.4
Census Tract 9311; Wise County; Virginia	1,959	18,176	32.8
Census Tract 9505; Lee County; Virginia	3,878	21,393	36.0
Census Tract 202.01; Bristol city; Virginia	1,849	19,257	46.1
Census Tract 9503.01; Lee County; Virginia	1,528	19,876	50.4

Source: USCB 2023h

D.4 Minority Populations in the TVA PSA

Geography	2022 Population	% White Alone	% Minority Population	% Black or African American	% American Indian and Alaska Native	% Asian	% Native Hawaiian and Other Pacific Islander	% Some Other Race	% Two or More Races	% Hispanic or Latino
Blount County, Alabama	59,077	85.7	14.3	1.2	0.1	0.2	0.2	0.1	2.8	9.7
Cherokee County, Alabama	25,069	90.7	9.3	4.0	0.5	0.1	0.0	0.1	2.8	1.9
Colbert County, Alabama	57,270	77.7	22.3	16.0	0.3	0.4	0.1	0.1	2.2	3.2
Cullman County, Alabama	88,284	90.8	9.2	1.1	0.3	0.3	0.0	0.1	2.8	4.6
DeKalb County, Alabama	71,680	79.1	20.9	1.5	0.5	0.1	0.0	0.5	2.9	15.4
Etowah County, Alabama	103,348	77.1	22.9	15.0	0.1	0.7	0.0	0.4	2.3	4.4
Franklin County, Alabama	32,011	75.2	24.8	4.2	0.2	0.1	0.0	0.2	1.5	18.4
Jackson County, Alabama	52,618	88.8	11.2	3.2	0.8	0.4	0.0	0.1	3.5	3.2
Lauderdale County, Alabama	94,329	83.4	16.6	9.7	0.2	0.6	0.1	0.1	2.8	3.0
Lawrence County, Alabama	33,116	76.3	23.7	10.2	5.0	0.3	0.1	0.0	5.6	2.5
Limestone County, Alabama	104,199	74.7	25.3	13.0	0.4	1.8	0.1	0.1	3.6	6.3
Madison County, Alabama	389,781	63.5	36.5	24.3	0.4	2.4	0.0	0.3	3.8	5.3
Marshall County, Alabama	97,923	79.1	20.9	2.7	0.1	0.6	0.1	0.2	2.1	15.1
Morgan County, Alabama	123,102	74.3	25.7	12.9	0.2	0.5	0.0	0.3	3.0	8.8
Winston County, Alabama	23,655	92.3	7.7	1.1	0.2	0.4	0.0	0.0	2.7	3.2
Catoosa County, Georgia	68,052	89.0	11.0	2.2	0.1	1.5	0.1	0.6	3.3	3.4
Chattooga County, Georgia	24,902	82.0	18.0	9.5	0.1	0.1	0.0	0.0	2.7	5.7
Dade County, Georgia	16,239	92.2	7.8	1.0	0.0	0.8	0.0	0.3	3.1	2.6
Fannin County, Georgia	25,436	93.1	6.9	0.3	0.0	0.5	0.0	0.4	3.0	2.8
Gilmer County, Georgia	31,519	84.3	15.7	0.5	0.2	0.4	0.0	0.1	2.1	12.4
Gordon County, Georgia	57,785	76.0	24.0	3.3	0.1	1.1	0.1	0.2	2.4	16.8
Murray County, Georgia	40,063	80.2	19.8	0.4	0.1	0.8	0.0	0.4	2.2	15.9
Towns County, Georgia	12,546	93.6	6.4	1.3	0.1	0.2	0.0	0.1	1.8	2.9
Union County, Georgia	24,880	92.9	7.1	0.6	0.2	0.2	0.0	0.0	2.4	3.8
Walker County, Georgia	68,065	89.9	10.1	3.9	0.2	0.6	0.0	0.1	2.8	2.7
Whitfield County, Georgia	103,033	56.6	43.4	3.2	0.1	1.5	0.0	0.1	1.8	36.8
Allen County, Kentucky	20,773	94.1	5.9	0.8	0.0	0.0	0.0	0.3	2.3	2.4
Butler County, Kentucky	12,365	93.7	6.3	0.4	0.1	0.7	0.0	0.0	1.4	3.8
Calloway County, Kentucky	37,345	88.7	11.3	3.4	0.2	1.6	0.3	0.4	2.7	2.8
Carlisle County, Kentucky	4,782	92.3	7.7	1.2	0.3	0.5	0.1	0.1	3.0	2.5
Christian County, Kentucky	72,766	64.7	35.3	19.7	0.1	1.2	0.3	0.4	5.1	8.4
Cumberland County, Kentucky	5,974	93.0	7.0	2.7	0.3	0.8	0.0	0.0	1.5	1.8
Edmonson County, Kentucky	12,179	95.2	4.8	0.8	0.1	0.0	0.0	0.0	2.3	1.6
Fulton County, Kentucky	6,480	69.8	30.2	23.6	0.4	0.0	0.9	0.0	3.8	1.5
Graves County, Kentucky	36,701	85.0	15.0	4.0	0.0	0.4	0.0	0.3	2.9	7.4
Grayson County, Kentucky	26,465	95.1	4.9	0.5	0.0	0.3	0.0	0.2	2.3	1.5
Hickman County, Kentucky	4,491	86.1	13.9	9.4	0.1	0.0	0.0	0.0	2.1	2.2
Livingston County, Kentucky	8,980	94.5	5.5	0.3	0.0	0.0	0.0	0.0	2.6	2.6

Geography	2022 Population	% White Alone	% Minority Population	% Black or African American	% American Indian and Alaska Native	% Asian	% Native Hawaiian and Other Pacific Islander	% Some Other Race	% Two or More Races	% Hispanic or Latino
Logan County, Kentucky	27,498	88.1	11.9	5.8	0.0	0.4	0.0	0.2	2.3	3.1
Lyon County, Kentucky	8,721	87.9	12.1	6.5	0.5	0.7	0.1	0.3	1.6	2.5
Marshall County, Kentucky	31,706	96.0	4.0	0.6	0.3	0.2	0.0	0.0	1.0	1.8
Monroe County, Kentucky	11,331	93.2	6.8	2.6	0.1	0.2	0.0	0.0	0.8	3.2
Muhlenberg County, Kentucky	30,735	92.5	7.5	1.9	0.2	1.1	0.0	0.0	2.4	1.7
Simpson County, Kentucky	19,574	84.9	15.1	9.3	0.0	0.4	0.0	0.1	2.6	2.8
Todd County, Kentucky	12,281	85.1	14.9	8.0	0.0	0.1	0.0	0.4	1.6	4.8
Trigg County, Kentucky	14,154	87.1	12.9	6.3	0.0	0.3	0.0	0.4	3.3	2.5
Warren County, Kentucky	135,307	76.6	23.4	8.6	0.1	4.9	0.5	0.1	3.5	5.7
Avery County, North Carolina	17,679	87.5	12.5	3.6	0.8	0.5	0.0	0.0	2.4	5.1
Cherokee County, North Carolina	28,868	90.1	9.9	1.5	1.6	0.5	0.0	0.1	2.5	3.7
Clay County, North Carolina	11,186	91.7	8.3	1.0	1.1	1.1	0.1	0.0	1.1	3.9
Watauga County, North Carolina	54,540	91.1	8.9	1.7	0.3	1.4	0.0	0.1	1.5	4.0
Lee County, Virginia	22,287	92.1	7.9	4.0	0.1	0.3	0.0	0.0	1.4	2.1
Scott County, Virginia	21,536	96.1	3.9	1.2	0.1	0.1	0.2	0.1	0.8	1.5
Washington County, Virginia	53,985	94.8	5.2	1.7	0.1	0.5	0.0	0.1	1.3	1.6
Wise County, Virginia	36,105	90.8	9.2	4.6	0.1	1.1	0.0	0.2	1.9	1.3
Bristol city, Virginia	17,036	86.6	13.4	6.3	0.0	0.3	0.0	0.7	3.6	2.6
Norton city, Virginia	3,668	94.4	5.6	2.0	0.0	0.1	0.0	0.0	3.5	0.0
Alcorn County, Mississippi	34,717	80.8	19.2	9.4	0.1	0.4	0.1	0.1	5.6	3.5
Attala County, Mississippi	17,842	52.6	47.4	42.2	0.1	0.3	0.0	0.0	2.6	2.2
Benton County, Mississippi	7,637	60.1	39.9	32.9	0.0	0.4	0.1	0.0	3.3	3.1
Calhoun County, Mississippi	13,193	63.8	36.2	28.4	0.0	0.0	0.0	0.1	1.3	6.5
Chickasaw County, Mississippi	17,024	49.1	50.9	43.7	0.0	0.2	0.0	0.0	1.9	5.1
Choctaw County, Mississippi	8,208	67.0	33.0	29.2	0.1	0.4	0.0	0.2	1.3	1.8
Clay County, Mississippi	18,598	38.0	62.0	60.0	0.0	0.0	0.0	0.0	1.8	0.2
DeSoto County, Mississippi	186,214	59.8	40.2	30.8	0.1	1.3	0.0	0.2	2.7	5.2
Itawamba County, Mississippi	23,888	88.8	11.2	6.0	0.4	0.2	0.0	0.2	2.6	1.8
Kemper County, Mississippi	8,980	33.4	66.6	61.8	3.8	0.0	0.0	0.0	0.2	0.8
Lafayette County, Mississippi	56,172	69.9	30.1	23.3	0.1	2.3	0.0	0.1	1.6	2.6
Leake County, Mississippi	21,335	47.7	52.3	39.8	5.7	0.4	0.0	0.0	1.4	5.1
Lee County, Mississippi	83,343	63.7	36.3	29.7	0.1	1.0	0.2	0.5	1.8	3.0
Lowndes County, Mississippi	58,547	50.0	50.0	44.5	0.1	1.1	0.0	0.4	1.5	2.4
Marshall County, Mississippi	33,980	47.1	52.9	45.5	0.0	0.1	0.0	0.5	2.4	4.3
Monroe County, Mississippi	34,168	66.7	33.3	30.2	0.0	0.3	0.0	0.0	1.3	1.5
Neshoba County, Mississippi	28,970	57.7	42.3	22.8	16.0	0.6	0.1	0.7	1.9	0.2
Noxubee County, Mississippi	10,261	25.6	74.4	73.6	0.4	0.0	0.0	0.0	0.2	0.3
Oktibbeha County, Mississippi	51,388	56.0	44.0	36.6	0.1	3.1	0.1	0.1	2.3	1.8
Panola County, Mississippi	33,157	46.9	53.1	49.6	0.1	0.3	0.4	0.1	1.9	0.6
Pontotoc County, Mississippi	31,202	75.1	24.9	14.4	0.2	0.0	0.0	0.1	2.8	7.5

Geography	2022 Population	% White Alone	% Minority Population	% Black or African American	% American Indian and Alaska Native	% Asian	% Native Hawaiian and Other Pacific Islander	% Some Other Race	% Two or More Races	% Hispanic or Latino
Prentiss County, Mississippi	24,945	79.9	20.1	10.7	0.1	2.5	0.0	1.0	4.3	1.5
Scott County, Mississippi	27,943	48.7	51.3	35.6	0.1	0.1	0.0	0.2	3.5	11.8
Tallahatchie County, Mississippi	12,621	34.9	65.1	61.4	0.0	0.1	0.0	0.2	1.5	1.9
Tate County, Mississippi	28,094	64.2	35.8	30.4	0.0	0.0	0.1	0.0	1.8	3.4
Tippah County, Mississippi	21,769	77.1	22.9	14.5	0.0	0.0	0.0	0.4	3.2	4.7
Tishomingo County, Mississippi	18,837	91.0	9.0	1.3	0.4	0.6	0.0	0.4	2.7	3.5
Union County, Mississippi	27,880	77.2	22.8	15.7	0.2	0.2	0.0	0.6	1.6	4.6
Webster County, Mississippi	9,942	78.2	21.8	18.5	0.1	0.8	0.0	0.1	0.8	1.6
Winston County, Mississippi	17,741	49.6	50.4	46.7	0.5	0.1	0.0	0.0	1.6	1.5
Yalobusha County, Mississippi	12,499	57.8	42.2	38.3	0.2	0.1	0.0	0.0	1.0	2.6
Anderson County, Tennessee	77,337	87.6	12.4	3.2	0.3	1.3	0.1	0.6	3.6	3.4
Bedford County, Tennessee	50,533	75.2	24.8	6.5	0.3	0.3	0.0	0.5	3.7	13.6
Benton County, Tennessee	15,933	91.4	8.6	1.9	0.1	1.1	0.8	0.0	2.9	1.8
Bledsoe County, Tennessee	14,816	87.3	12.7	5.7	0.3	0.1	0.0	0.2	3.3	3.0
Blount County, Tennessee	135,951	89.9	10.1	2.6	0.1	0.7	0.0	0.2	2.6	3.8
Bradley County, Tennessee	108,859	83.9	16.1	4.6	0.2	1.0	0.0	1.0	2.5	6.9
Campbell County, Tennessee	39,397	95.9	4.1	0.3	0.0	0.4	0.0	0.0	1.6	1.7
Cannon County, Tennessee	14,481	92.9	7.1	2.5	0.1	0.0	0.0	0.0	1.7	2.7
Carroll County, Tennessee	28,381	84.0	16.0	8.8	0.1	0.3	0.0	0.0	3.6	3.1
Carter County, Tennessee	56,315	92.9	7.1	2.2	0.1	0.5	0.0	0.0	1.6	2.7
Cheatham County, Tennessee	41,184	90.2	9.8	1.9	0.2	0.5	0.0	0.7	2.5	3.8
Chester County, Tennessee	17,392	84.6	15.4	10.3	0.0	0.2	0.0	0.6	1.4	2.9
Claiborne County, Tennessee	32,092	94.7	5.3	0.8	0.1	0.8	0.0	0.0	2.1	1.5
Clay County, Tennessee	7,592	93.9	6.1	0.7	0.4	0.6	0.0	0.0	1.7	2.8
Cocke County, Tennessee	36,186	92.5	7.5	1.2	0.5	0.5	0.1	0.0	2.4	2.8
Coffee County, Tennessee	58,080	86.7	13.3	3.8	0.0	1.3	0.2	0.4	2.3	5.2
Crockett County, Tennessee	13,955	72.0	28.0	11.0	0.6	0.5	0.1	0.0	4.3	11.5
Cumberland County, Tennessee	61,552	93.8	6.2	0.8	0.2	0.3	0.0	0.1	1.7	3.2
Davidson County, Tennessee	709,786	55.6	44.4	26.0	0.1	3.6	0.1	0.5	3.6	10.6
Decatur County, Tennessee	11,483	91.0	9.0	2.4	0.0	0.1	0.0	0.0	2.9	3.6
DeKalb County, Tennessee	20,209	87.0	13.0	1.6	0.3	0.4	0.0	0.1	2.1	8.4
Dickson County, Tennessee	54,563	88.2	11.8	3.6	0.2	0.1	0.0	0.4	3.3	4.2
Dyer County, Tennessee	36,818	78.3	21.7	13.3	0.1	0.5	0.0	0.0	4.1	3.8
Fayette County, Tennessee	42,228	66.7	33.3	26.9	0.0	0.7	0.0	0.2	2.2	3.2
Fentress County, Tennessee	18,642	95.3	4.7	0.3	0.0	0.3	0.1	0.0	2.1	1.8
Franklin County, Tennessee	42,980	87.7	12.3	4.8	0.0	0.6	0.1	0.2	2.8	3.8
Gibson County, Tennessee	50,455	75.9	24.1	16.0	0.2	0.3	0.0	0.1	4.5	3.0
Giles County, Tennessee	30,317	82.7	17.3	8.8	0.1	0.1	0.0	0.4	4.6	3.3
Grainger County, Tennessee	23,648	93.0	7.0	0.9	0.2	0.1	0.3	0.1	1.7	3.6
Greene County, Tennessee	70,399	92.0	8.0	1.7	0.1	0.5	0.0	0.2	2.3	3.3
Grundy County, Tennessee	13,550	94.8	5.2	0.4	0.2	0.3	0.0	0.0	2.7	1.6

Geography	2022 Population	% White Alone	% Minority Population	% Black or African American	% American Indian and Alaska Native	% Asian	% Native Hawaiian and Other Pacific Islander	% Some Other Race	% Two or More Races	% Hispanic or Latino
Hamblen County, Tennessee	64,531	80.3	19.7	3.1	0.2	0.9	0.4	0.3	2.6	12.3
Hamilton County, Tennessee	367,193	70.1	29.9	17.7	0.1	1.9	0.0	0.4	3.6	6.2
Hancock County, Tennessee	6,726	96.2	3.8	0.6	0.0	0.5	0.0	0.1	1.9	0.7
Hardeman County, Tennessee	25,519	53.9	46.1	39.4	0.6	0.4	0.0	0.1	3.6	2.0
Hardin County, Tennessee	26,824	90.9	9.1	3.4	0.3	0.1	0.0	0.1	2.7	2.6
Hawkins County, Tennessee	57,107	94.1	5.9	1.0	0.1	0.5	0.1	0.1	2.3	1.8
Haywood County, Tennessee	17,806	43.7	56.3	50.0	0.0	0.1	0.0	0.4	1.4	4.3
Henderson County, Tennessee	27,845	86.5	13.5	8.2	0.1	0.1	0.1	0.1	2.2	2.7
Henry County, Tennessee	32,305	86.4	13.6	7.4	0.5	0.4	0.0	0.0	2.5	2.8
Hickman County, Tennessee	24,996	89.6	10.4	3.4	0.5	0.9	0.0	0.2	2.5	2.9
Houston County, Tennessee	8,253	91.0	9.0	3.4	0.3	0.3	0.2	0.0	1.9	2.8
Humphreys County, Tennessee	19,032	90.4	9.6	1.2	0.2	0.8	0.0	0.9	3.7	2.7
Jackson County, Tennessee	11,730	93.3	6.7	0.7	0.1	0.0	0.1	0.0	3.4	2.4
Jefferson County, Tennessee	55,017	91.0	9.0	1.7	0.1	0.6	0.0	0.4	2.4	3.9
Johnson County, Tennessee	17,982	90.4	9.6	3.6	0.6	0.2	0.0	0.3	2.7	2.3
Knox County, Tennessee	481,406	81.1	18.9	8.2	0.1	2.3	0.1	0.4	3.2	4.8
Lake County, Tennessee	6,898	65.8	34.2	25.5	0.7	0.2	0.1	0.0	4.7	2.9
Lauderdale County, Tennessee	25,171	58.8	41.2	34.4	0.4	0.2	0.0	0.3	3.2	2.9
Lawrence County, Tennessee	44,377	92.2	7.8	1.4	0.0	0.4	0.1	0.4	2.9	2.5
Lewis County, Tennessee	12,637	92.1	7.9	1.2	0.0	1.1	0.0	0.0	3.0	2.6
Lincoln County, Tennessee	35,365	85.4	14.6	6.2	0.1	0.7	0.0	0.1	3.6	3.9
Loudon County, Tennessee	55,507	86.3	13.7	1.2	0.1	1.0	0.0	0.4	1.4	9.6
McMinn County, Tennessee	53,532	87.1	12.9	3.4	0.1	0.8	0.0	0.1	4.1	4.5
McNairy County, Tennessee	25,895	89.1	10.9	5.9	0.3	0.6	0.0	0.1	1.7	2.4
Macon County, Tennessee	25,365	90.3	9.7	0.6	0.1	0.4	0.0	0.0	3.3	5.3
Madison County, Tennessee	98,644	54.5	45.5	37.1	0.1	1.0	0.1	0.5	2.5	4.3
Marion County, Tennessee	28,852	90.9	9.1	2.9	0.1	0.5	0.0	0.1	3.5	2.1
Marshall County, Tennessee	34,567	84.4	15.6	4.7	0.3	0.6	0.0	0.6	3.4	6.0
Maury County, Tennessee	102,002	78.0	22.0	10.8	0.2	0.9	0.0	0.1	3.3	6.6
Meigs County, Tennessee	12,839	90.4	9.6	2.4	0.0	0.5	0.0	0.4	5.1	1.2
Monroe County, Tennessee	46,489	88.0	12.0	1.8	0.1	0.4	0.0	0.2	4.9	4.6
Montgomery County, Tennessee	222,305	60.9	39.1	19.6	0.2	2.3	0.3	0.6	5.3	10.7
Moore County, Tennessee	6,558	92.3	7.7	3.7	0.5	0.9	0.0	0.0	2.1	0.5
Morgan County, Tennessee	21,124	90.5	9.5	4.7	0.3	0.2	0.0	0.0	2.7	1.6
Obion County, Tennessee	30,670	80.1	19.9	10.5	0.1	0.2	0.1	0.2	3.7	5.1
Overton County, Tennessee	22,576	95.5	4.5	1.3	0.1	0.3	0.0	0.0	1.0	1.9
Perry County, Tennessee	8,432	90.9	9.1	0.4	0.5	2.2	0.0	0.0	5.0	1.0
Pickett County, Tennessee	5,042	95.2	4.8	0.3	0.0	0.0	0.0	0.0	2.3	2.2
Polk County, Tennessee	17,620	90.6	9.4	0.4	0.3	0.2	0.0	0.2	6.0	2.2
Putnam County, Tennessee	80,157	87.2	12.8	2.1	0.1	1.0	0.0	0.0	2.8	6.7
Rhea County, Tennessee	33,031	88.0	12.0	1.7	0.1	0.5	0.0	0.3	3.9	5.5

Geography	2022 Population	% White Alone	% Minority Population	% Black or African American	% American Indian and Alaska Native	% Asian	% Native Hawaiian and Other Pacific Islander	% Some Other Race	% Two or More Races	% Hispanic or Latino
Roane County, Tennessee	53,777	91.2	8.8	2.7	0.2	0.6	0.0	0.1	2.8	2.2
Robertson County, Tennessee	73,297	81.4	18.6	7.1	0.1	0.7	0.0	0.6	2.5	7.7
Rutherford County, Tennessee	343,727	67.5	32.5	15.0	0.1	3.6	0.0	0.3	4.3	9.1
Scott County, Tennessee	21,917	96.8	3.2	0.3	0.2	0.4	0.0	0.3	1.8	0.2
Sequatchie County, Tennessee	16,065	92.3	7.7	0.5	0.4	0.3	0.1	0.3	2.2	4.0
Sevier County, Tennessee	98,455	88.4	11.6	0.9	0.2	1.2	0.0	0.3	2.1	6.9
Shelby County, Tennessee	926,440	34.5	65.5	53.6	0.1	2.9	0.0	0.3	1.9	6.8
Smith County, Tennessee	20,034	90.5	9.5	1.7	0.1	0.4	0.0	0.3	3.8	3.2
Stewart County, Tennessee	13,724	90.1	9.9	0.7	0.1	0.5	0.8	0.0	4.2	3.6
Sullivan County, Tennessee	158,722	92.4	7.6	1.9	0.1	0.8	0.0	0.3	2.3	2.2
Sumner County, Tennessee	196,845	81.1	18.9	8.2	0.1	1.6	0.0	0.3	2.9	5.7
Tipton County, Tennessee	61,116	74.5	25.5	18.5	0.1	0.6	0.0	0.7	2.7	2.9
Trousdale County, Tennessee	11,596	81.9	18.1	11.8	0.4	0.2	0.0	0.0	2.8	2.9
Unicoi County, Tennessee	17,845	91.3	8.7	0.3	0.4	0.2	0.0	0.0	2.0	5.9
Union County, Tennessee	19,860	95.1	4.9	0.5	0.0	0.0	0.0	0.1	2.3	2.0
Van Buren County, Tennessee	6,182	95.1	4.9	0.1	0.4	0.2	0.0	0.0	3.2	0.9
Warren County, Tennessee	41,163	84.1	15.9	2.6	0.2	0.4	0.1	0.0	3.0	9.5
Washington County, Tennessee	133,282	87.4	12.6	3.7	0.1	1.5	0.0	0.1	3.4	3.9
Wayne County, Tennessee	16,325	88.9	11.1	4.8	0.1	0.1	0.1	0.1	3.5	2.4
Weakley County, Tennessee	32,946	85.5	14.5	7.9	0.2	1.2	0.1	0.3	1.9	3.0
White County, Tennessee	27,420	92.7	7.3	1.8	0.1	0.3	0.2	0.0	2.0	2.9
Williamson County, Tennessee	248,897	82.7	17.3	3.9	0.0	5.1	0.0	0.4	2.8	5.1
Wilson County, Tennessee	149,096	82.1	17.9	6.9	0.1	1.9	0.0	1.0	3.1	5.0

Source: USCB 2022b

County has a minority population greater than the TVA PSA average of 26.7%

County has a minority population greater than 50%

Appendix E – Public Comments and Responses

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Comment-Response Appendix
TENNESSEE VALLEY AUTHORITY RESILIENCE 360° PROGRAM
COMMENTS ON DRAFT PROGRAMATIC ENVIRONMENTAL ASSESSMENT

The Draft PEA was posted to TVA's website and a media advisory was issued on March 18, 2025 for a 30-day comment period. TVA also notified interested federal, state, and local agencies of the availability of the Draft PEA. Fourteen public comment submittals were received from individuals, businesses, non-profits (including the Center for Biological Diversity, the Southern Environmental Law Center, CleanUpTVA, Sierra Club, and Appalachian Voices), and governmental agencies (including the Virginia Department of Environmental Quality and Tennessee Department of Environmental Conservation). Individual comments focused on alternatives considered, best management practices, the Environmental Screening Checklist (Appendix A), resource areas, as well as implementation and support.

Alternatives

1. **Renew-O-Gen – Jason Ware.** I would like to inquire if the program is open to alternative technologies—such as hydrokinetic and hybrid renewable systems—or if it is limited exclusively to natural gas and battery energy storage systems.

   Ricky Pickett – Individual. I have 20 acres on Wilson lake of the Tennessee river. There could be a dam made to create backup water reservoir. A solar grid could pump water up into the reservoir, during times of less demand, then the potential energy could be released, during peak demand.

   Response: While the current plan for the Resilience 360° program only considers natural gas and BESS, under future phases of the Resilience 360° program, other generation options may be considered consistent with TVA's Integrated Resource Plan.

2. **Cliff Bahlinger – Individual.** If you propose letting businesses to generate power, then let homeowners generate power and increase the rate of net metering. Please be open minded. Home solar, and home battery storage is the answer to our energy needs. TVA should allow "Base Power" to operate in their service area. Base Power installs batteries to homeowners, and buys the power at peak demand. Batteries are recharged at night or by solar in the day. Let's do it! This is good for TVA, customers, and our environment. We do not need jet engine power generation because it is not efficient and dirty. Who wants a jet engine running 24/7 near their home?

   Response: Part of the purpose and need for the Resilience 360 Program is to provide "Commercial Resiliency" for businesses. TVA has a variety of energy efficiency programs for residential purposes such as the Dispersed Power Production program which addresses excess solar generation buyback. See https://energyright.com/residential/.

3. **Center for Biological Diversity – Gaby Sarri-Tobar**
   - We commend TVA for proposing a program to enhance grid and energy resilience; however, TVA makes a grave error in considering backup fossil gas generation as a qualifying resilience project. Fossil gas generation is not only unreliable, but it produces harmful greenhouse gas emissions that endanger communities, species, and the climate. We urge TVA to consider a project alternative that prioritizes non-fossil fuel backup generation, including distributed energy resources ("DERs") such as rooftop and community-solar with battery energy storage systems ("BESS").

     As a threshold matter, the climate emergency and growing energy inequity in the Tennessee Valley demands an expedited phasing out of fossil fuels. However, in TVA's attempt to promote resilience the utility is carelessly encouraging vendors and TVA customers to invest in technologies that would pump more planet-warming emissions into the atmosphere which contribute to climate change that is intensifying the very disasters putting TVA's grid and communities at risk. If TVA is serious about building a more resilient energy system and supporting communities whose health and safety and access to life-saving power is threatened by extreme weather events, the utility should avoid cementing the region's dependence on fossil fuels.

     Furthermore, TVA has failed to propose any other reasonable action alternatives that would not involve the construction of new polluting resources. The Final PEA must therefore fully and fairly consider alternatives for resilient distributed renewable energy, battery storage, and demand response, in order to comply with the National Environmental Policy Act ("NEPA"), 42 U.S.C. § 4321, et seq. Importantly, such an alternative would help put TVA on track with addressing the most pressing issue today: the urgent need for a rapid transition away from all fossil fuels toward a renewable energy economy to avoid the worst impacts of the climate crisis and address the disproportionate harm experienced by communities from the fossil fuel economy.

   - TVA Must Examine Fossil Fuel-Free Alternatives to Comply with NEPA and The TVA Act and Achieve Rapid Greenhouse Gas Reductions That Are Critical To Addressing The Climate Emergency and Saving Lives.

   - Furthermore, TVA should be ensuring all steps are taken to protect the environment and communities who will be most impacted by this program. In line with this, it is reckless for TVA to only examine new fossil gas generation that would add to the region's already alarming air quality crisis, and not focus on other alternatives [...]

   - TVA must properly define the purpose and need for the proposed program and consider additional alternatives.

   - TVA's Final PEA Must Analyze Distributed, Renewable Energy Alternatives That Would Advance Energy Justice, Lower Costs, and Improve Resilience in The Region.

   - The impacts of the climate crisis and worsening energy injustice for the communities that TVA serves are concrete, palpable, and are projected to worsen — and will certainly do so should TVA fail to consider and pursue non-fossil fuel alternatives. TVA's inclusion of on-site modular fossil gas units in the Resilience 360 program is out of step with climate science, community

demands, and the TVA Act. TVA has an opportunity to improve the quality of life of people in the region, and that starts with completing a PEA that examines DERs, and energy efficiency in addition to BESS instead of expanding fossil gas operations.

Response: The proposed Resilience 360° program already includes BESS in addition to natural gas options. Eventually under future phases of the program, TVA's Resilience 360° options could be expanded to include other generation sources that are consistent with TVA's Integrated Resource Plan. The current program focuses on natural gas and BESS energy resources to fulfill the purpose and need: to improve and enhance commercial resiliency during events that challenge the transmission of power on the grid [e.g., extreme weather, and minor incidences of cyber-attack or domestic terrorism] and to periodically support demand on the TVA system. Dispatchable generation is necessary, and other generation options do not provide the same capabilities as natural gas and BESS to meet this purpose. For example, solar is not a reliable generation source to provide power during weather emergencies.

4. **Joe and Sally Schiller - Brokenpoint Farm.** My wife and I are retired professors of biology now farming in Montgomery County, TN. We have lived in an off-grid solar home in Montgomery County Tennessee since 1996. We have acquired considerable firsthand experience with solar energy and storage systems and confidence in their capabilities. Thus, we find it odd that the proposed TVA 360 deg. Resilience Program seems to target only distributed methane gas generation and no other energy sources such as solar and storage as a resilience strategy. There are numerous problems with such a strategy.

   One problem is that if these systems are to be reliable they will have to be run briefly at regular intervals to be sure they are functioning when they are really needed. This means the owner will incur some cost and impacts even when the system is not needed for resilience. Another problem is these systems will generate emissions whenever they run, but TVA's assumption that these systems will not create significant emissions impacts because they will be widely distributed overlooks the local impacts on the employees of the business operating them and any employees of nearby businesses. Having worked for an institution that required backup power for critical materials preservation I can attest to the fact that when these backup systems run, they have noticeable adverse effects on the local environment.

   Solar combined with storage, by contrast, is not only affordable and reliable it offers ongoing benefits to businesses that install it. It can reliably provide resilience during grid emergencies but can also offset purchased energy and provide other benefits on an ongoing basis 365 days a year. This can be an especially compelling economic incentive for businesses that are subject to regular capacity pricing costs. The battery components of such solar and storage systems also provide continuous grid services such as capacity, load shifting, and frequency regulation. Taken together the bundle of services provided by solar and storage offer a much more attractive business case to the host business while providing grid resilience TVA seeks—not just during grid emergencies, but 365 days a year!

   We sincerely hope TVA will reconsider the narrow focus on fossil methane gas the draft Programmatic EA considers and expands it to evaluate a range of distributed energy technologies. We believe a more technology agnostic strategy that compares costs and impacts of a variety of distributed generation technologies that meet a specified set of resilience criteria

will provide more affordable, more effective, and less harmful solutions to the resilience goals TVA seeks.

Response: See responses to Comments #2, #3, and #14.

5. **Southern Environmental Law Center, Sierra Club, and Appalachian Voices (collectively, "Conservation Groups") - Amanda Garcia.**
TVA should consider and pursue an alternative based on renewable energy and storage.

   To improve resilience without increasing pollution, TVA should consider an alternative program that pairs renewable energy with storage solutions. NEPA requires agencies to consider a "reasonable range of alternatives to the proposed agency action." Yet TVA has not meaningfully considered a single alternative to its proposal. Instead, TVA proposes a single program design: allowing end-use customers to host methane gas turbines or battery storage systems.

   The programmatic EA itself acknowledges obvious alternatives, recognizing that the program "could be expanded to include other generation sources in the future (including but not limited to biofuels, solar, thermal storage, and advanced nuclear)." Renewable solutions like wind and solar are available now to support system resilience.

   [...] TVA fails to acknowledge that distributed methane gas turbines are inconsistent with the 2019 IRP. Accordingly, TVA does not have a reasonable basis to conclude that distributed gas turbines help TVA provide electricity at the lowest system cost. Instead, TVA should consider an alternative design that better aligns with its definition of DER and the low-cost "Promote DER" strategy in the 2019 IRP. [...]

   To maximize these benefits and avoid the unnecessary pollution of methane gas, Conservation Groups encourage TVA to consider an alternative Resilience 360° Program design that relies on renewable energy and storage solutions, as outlined in the Energy Innovation report hereby incorporated.

   Response: See responses to Comments #2 and #3. Energy parks such as those described in the Energy Innovation report are more traditionally tailored to meet the power demands of nearby large consumers, though the paper notes that such parks could also be integrated into the grid to meet overall demand. TVA acknowledges the advantages of such energy parks with diverse generation facilities; however, due to the scale, those projects would require separate NEPA reviews and such parks fall outside the scope of the Resilience 360° Program review.

6. **Conservation Groups.** Conservation Groups encourage TVA to consider an alternative program that relies on renewable energy and storage and to analyze the site-specific impacts of any proposed methane gas turbines.

   Response: See responses to Comments #2 and #3.

   This PEA establishes general siting and environmental criteria to ensure that construction and operation of the Resilience 360° units at specific host sites do not cause greater impacts than those addressed in this PEA. The natural gas units could run on a variety of gas mixes including

methane. The specific gas would be determined on a site-specific basis based on the unit and available gas at each host site. As described in Section 3.3.2, cooling water would not be required, as all systems evaluated in this PEA are closed-loop cooling systems. TVA would review the submitted site-specific Environmental Screening Checklist (Appendix A) with regard to impacts to all resources including air quality and health and safety for each proposed host site and the surrounding area. If the potential impacts of the proposed project are not bounded by the evaluation in the PEA, additional review would be required.

7. **CleanUpTVA - Leah McCord**. The CleanUpTVA Coalition submits these comments regarding the Tennessee Valley Authority's Draft Programmatic Environmental Assessment (PEA) for TVA's Resilience 360° Program. While the organizations within our coalition believe strongly in the potential benefits of distributed energy resources (DERs), we have grave concerns about a proposal that intends to incentivize methane gas facilities in an already burdened region.

   The members of the CleanUpTVA coalition have long supported a system that incorporates more DERs to increase reliability and flexibility. The 2019 IRP, as well as the 2025 draft IRP, showed that DERs are a cost effective, low risk way to address load demand increases and seasonal power demand fluctuations.

   The PEA for the Resilience 360° Program states that TVA "would not consider generation resources that are inconsistent with its Integrated Resource Plan," but it does exactly that by specifically choosing methane gas turbines as one of two options under the program. The 2019 IRP includes "solar, storage, combined heat and power, energy efficiency, and demand response" as sources of DER; it did not include methane gas turbines as DERs. [...] The Resilience 360° Program should remove the methane gas turbines in the proposal and replace them with solar, storage, and non-fossil fuel based combined heat and power. In this way, TVA can quickly bring critically needed clean energy online, in alignment with the Board's current strategic direction, benefiting everyone in the Tennessee Valley.

   Response: See responses to Comments #2 and #3.

Best Management Practices

8. **Virginia Department of Environmental Quality (DEQ) – Bettina Rayfield.**
   Effective siting, planning, and on-site BMPs will help to ensure that environmental impacts are minimized. DEQ has several pollution prevention recommendations that may be helpful as future projects are considered:
   - Consider development of an effective Environmental Management System (EMS) to ensure that the proposed facility is committed to complying with environmental regulations, reducing risk, minimizing environmental impacts, setting environmental goals, and achieving improvements in its environmental performance.
   - Consider environmental attributes when purchasing materials.
   - Consider energy efficiency when choosing materials and products.
   - Consider contractors' commitment to the environment when choosing contractors.
   - Choose sustainable materials and practices for building construction and design.

- Integrate pollution prevention techniques into the facility maintenance and operation. Maintenance facilities should have sufficient and suitable space to allow for effective inventory control and preventive maintenance.

Response: Resilience 360° vendors would adhere to best management practices such as those outlined in the PEA (Section 2.3). These include both standard and routine measures as well as non-routine measures which could result from TVA's review of the Environmental Screening Checklist (Appendix A). Section 2.3.2 of the PEA has been updated to include reference to the BMPs described above. Further integration of DEQ's suggested pollution prevention measures would be addressed as appropriate for each participant in TVA's proposed resiliency network as well as on a site-specific or unit basis.

9. **Virginia DEQ.** In general, when pesticides or herbicides must be used, their use should be strictly in accordance with manufacturers' recommendations. In addition, DEQ recommends that the responsible agent use the least toxic pesticides or herbicides effective in controlling the target species.

   Response: Participants in the Resilience 360° program would be expected to comply with all applicable federal, state, and local regulations regarding use of pesticides and herbicides. Any herbicides or pesticides used during construction would be used according to manufacturer instructions. Selection of pesticides or herbicides would be evaluated on a site-specific or unit basis by the vendor or host site as applicable. TVA will share the recommendation to use the least toxic methods with the vendors and host sites.

10. **Virginia DEQ**
    - The following requirements may be applicable:
      - During land-disturbing activities, fugitive dust must be kept to a minimum by using control methods.
      - If project activities change to include open burning or the use of special incineration devices are employed in the disposal of land-clearing debris during demolition and construction, these activities must meet the requirements for open burning. The applicant should contact the locality to determine what local requirements, if any, exist.
      - The installation of fuel-burning equipment (e.g. boilers and generators) may require permitting from DEQ prior to beginning construction of the facility.
      - Stationary air emissions sources constructed at this location may be subject to 9 VAC 5-80-1120. The regulation requires obtaining an air permit before starting actual construction of, or operation of any new stationary source.

    - Permanent and temporary impacts, including conversion of wetlands from one Cowardin class to another, to surface waters or wetlands may require prior approval by DEQ's VWPP and/or the U.S. Army Corps of Engineers.

    - VMRC states that projects may encroach over jurisdictional areas and may require a permit. When site-specific plans are developed, this determination may change.
      - It is recommended that the Applicant coordinate with VMRC when site-specific projects are proposed to determine potential impacts to jurisdictional areas.
      - If any portion of the subject project involves any encroachments channel ward of ordinary high water along non-tidal, natural rivers and streams with a drainage area greater than

5-square miles, a permit may be required from VMRC or DEQ. Any jurisdictional impacts will be reviewed by the VMRC during the JPA process.

- There is a possible need for Erosion and Sediment Control and Stormwater Management Plans, as well as General Permit for Stormwater Discharges from Construction Activities.

- Each local floodplain ordinance must comply with the minimum standards of the NFIP. […] For federal projects, the applicant/developer is encouraged to contact the local floodplain administrator and comply with the community's local floodplain ordinance. DCR's comments indicate that the following may be applicable:
  - All development within a SFHA, as shown on the locality's FIRM, must be permitted and comply with the requirements of the local floodplain ordinance.
  - Projects conducted by federal agencies within the SFHA must comply with federal EO 11988.
  - The applicant/developer must contact the local floodplain administrator for an official floodplain determination and comply with the community's local floodplain ordinance, including receiving a local permit. Failure to comply with the local floodplain ordinance could result in enforcement action from the locality.

Response: Participants in the TVA Resilience 360° program would be expected to comply with all applicable federal, state, and local regulations, permits, requirements, and best management practices in regard to natural resources, including air quality, water quality, wetlands, surface water, erosion, solid and hazardous waste, biological resources, floodplain management, public drinking water, pollution prevention, and pesticides and herbicides. TVA would review site-specific requirements and provide guidance and recommendations as needed during review of the Environmental Screening Checklists for each host site.

11. **Virginia DEQ.** DEQ encourages all projects to implement pollution prevention principles, including (1) the reduction, reuse and recycling of all solid wastes generated; and (2) the minimization and proper handling of generated hazardous wastes. The following requirements may apply to future projects:
    - The project manager is reminded that if any solid or hazardous waste is generated/encountered during construction, the project manager would follow applicable federal, state, and local regulations for their disposal.
    - The removal, relocation or closure or installation/operation of any regulated petroleum storage tanks, aboveground storage tank (AST) or underground storage tank (UST), must be conducted in accordance with the requirements of the Virginia Tank Regulations. Submit appropriate documentation to DEQ.
    - Test and dispose of any soil/sediment that is suspected of contamination or wastes that are generated during construction-related activities in accordance with applicable federal, state, and local laws and regulations.
    - Any future site activities involving excavation or disturbance of formerly petroleum contaminated soils and or groundwater must be reported to DEQ.
    - Petroleum-contaminated soils and ground water generated during implementation of this project must be properly characterized and disposed of properly.
    - All construction and demolition waste, including any excess soil, must be characterized in accordance with the Virginia Hazardous Waste Management Regulations and disposed of at an appropriate facility as applicable.

- If evidence of a petroleum release is discovered during implementation of this project, it must be reported to DEQ.

Response: Participants in the TVA Resilience 360° program would be expected to comply with all applicable federal, state, and local regulations, permits, requirements, and best management practices in regard to management, disposal, and handling of solid and hazardous wastes.

12. **Virginia DEQ.** The DEQ DLPR recommends a search (>200-ft radius) of any land-based project areas using designated Virginia and/or US Agency Online solid and hazardous waste databases to identify waste sites (including petroleum releases) in close proximity to those project areas.

    Response: Participants in the Resilience 360° Program would be expected to comply with all applicable federal, state, and local regulations in regard to solid and hazardous waste management. A proximity search to identify any waste sites would take place during the siting process for given unit. The siting Environmental Screening Checklist has been modified to include a verification of previous waste storage and/or contamination in the vicinity of the site (Appendix A).

13. **Tennessee Department of Environmental Conservation (TDEC)**
    - Several actions could negatively impact air quality on a short-term basis. TDEC recommends that TVA evaluate such potential impacts prior to any clearing, demolition, or construction. Such impacts may include, but are not limited to, air pollution from construction equipment, open burning associated with land clearing activities, and fugitive dust. Local air quality conditions are available online at https://www.airnow.gov/.

    - Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NNSR): PSD applies to new major sources or major modifications at existing sources for pollutants where the area the source is located is in attainment or unclassifiable with the National Ambient Air Quality Standards (NAAQS). PSD requires installation of Best Available Control Technology (BACT), an air quality analysis, an additional impacts analysis, and public participation in the permitting process. NNSR applies to new major sources or major modifications at existing sources for pollutants where the area the source is located is not in attainment with the NAAQS. NNSR requirements are customized for the nonattainment area, but all NNSR permits require the installation of the lowest achievable emission rate (LAER) controls, emission offsets, and public participation in the permitting process. Compliance with applicable PSD or NNSR regulations would be the responsibility of the site owner/operator, but TDEC recommends that TVA consider the applicability of the preconstruction programs in the siting of any new or modified emission source.

    - New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP): Certain source categories, including combustion turbines, are subject to federal NSPS and NESHAP standards, which are codified at 40 CFR Part 60 and 40 CFR Part 63, respectively. Compliance with applicable NSPS or NESHAP regulations would be the responsibility of the site owner/operator, but TDEC recommends that TVA consider the applicability of these standards in the siting of any new or modified emission source.

    - Truck traffic associated with construction projects generate emissions of PM, CO, NO2, SO2, VOC, and CO2, and TDEC recommends the operation of trucks with up-to-date emission

control technologies and proper maintenance to minimize vehicle and equipment emissions. The Department also recommends the adoption of best practices to minimize vehicle idling to minimize the impact of mobile source emissions on ambient air quality.

- If disposal of trees or vegetation is necessary during construction, TDEC recommends the evaluation of alternatives to open burning. Tennessee's open burning regulations can be found at https://publications.tnsosfiles.com/rules/1200/1200-03/1200-03-04.pdf.

- If fugitive dust will be generated from construction activities, TDEC recommends the use of wet suppression or other measures to minimize the generation of fugitive dust.

- For air contaminant sources not subject to PSD or NNSR, the Tennessee Air Pollution Control Regulations require certain sources to obtain permits prior to commencing construction or operation. Additional information is available online at https://www.tn.gov/content/tn/environment/permit-permits/air-permits/construction.html.

- Battery storage facilities would presumably operate with no emissions during normal operation, but lithium-ion battery fires, such as the recent Moss Landing fire in California, may generate substantial quantities of criteria pollutants, HAPs, or other pollutants. TDEC recommends that TVA consider these impacts, as well as appropriate hazard mitigation, if siting of battery storage units is required.

Response: Participants in the Resilience 360° program would be expected to comply with all applicable federal, state, and local regulations, permits, requirements, and best management practices in regard to air quality. Most Resilience 360° projects would occur on previously developed areas such as recently graded land, sites situated on fill material, parking lots, and other similar low-impact areas, TVA would conduct site-specific reviews for each completed Environmental Screening Checklist and would integrate TDEC's best management practice suggestions to the extent possible for applicable sites.

Resource Areas

14. **Center for Biological Diversity.** Further reliance on fossil fuels will harm public health and safety and pump more greenhouse gas emissions into the atmosphere that fuel climate risk and undermine resilience. [...] Despite being smaller in size, on-site modular gas units still spew harmful greenhouse gas emissions that dirty the air and harm public health, which contradicts TVA's policy to "improve quality of life and the environment in the Tennessee Valley by providing reliable, affordable, and increasingly clean energy." [...] The harms associated with back-up fossil gas generation are on full display in South Memphis, where the new xAI "Colossus" facility is running on 35 un-permitted portable gas generators. These units are pumping hazardous chemicals, including formaldehyde, that worsen air pollution, especially ground level ozone, which contributes to serious health harms like cancer. Given these impacts, it is concerning that TVA suggests that air permits would not be necessary for the on-site modular gas units. Draft PEA at 1-5. This is a major oversight that could allow gas plant operators to take advantage of relaxed requirements in much the same way that xAI has. Even if TVA anticipates that these gas units will

not operate for more than 400 hours per year, and that emissions would be “temporary and small,” these units are spewing harmful chemicals, nonetheless. Draft PEA at 3-41. Memphis is already out of compliance with the Clean Air Act’s air quality standards, in large part due to xAI’s on-site gas turbines.

Response: TVA would evaluate site-specific impacts and requirements based on the Environmental Screening Checklist (Appendix A) which includes a review of air quality. Each installation would be evaluated on a case-by-case basis for air quality parameters, and all applicable federal, state and local guidance, requirements and permits would be adhered to by the Participants in the Resilience 360° Program.

15. **Conservation Groups.** TVA acknowledges that the proposed methane gas turbines emit CO, CO2, NOx, SO2, hazardous air pollutants, and volatile organic compounds. TVA concludes that these emissions “would result in minor impacts,” without analyzing key information, including how much pollution the methane gas turbines would emit, how many there might be, or where they would be. TVA states that “the geographic separation between sites would minimize the project’s contribution to regional air quality conditions,” but TVA does not provide a basis for that key assumption. Large energy users—potential hosts of Resilience 360° projects—often concentrate into industrialized areas. That concentration can produce air toxics hotspots [...].

    Response. The PEA presents a bounding analysis for air quality impacts but that does not represent the end of TVA's environmental review. Vendors would submit an Environmental Screening Checklist for each site proposed for the program. TVA would conduct a site-specific review for all resource areas on each Checklist including air quality.

16. **CleanUpTVA.** TVA’s assertions that “the geographic separation between sites would minimize the project’s contribution to regional air quality conditions” cannot be validated without site-specific environmental impact assessments. Redesigning the program to promote renewable DERs, however, would greatly reduce the potential environmental impacts and would not raise concerns over close siting in existing industrialized areas.

    Response. TVA would be evaluating specific sites based on the Environmental Screening Checklist (Appendix A) which includes a review of air quality parameters. Each proposed project location will be evaluated on regional air quality impacts on a case-by-case basis, and all federal, state and local guidance, requirements and permits would be adhered to.

17. **TDEC.** Hazardous Air Pollutants: Page 3-41 of the draft PEA identifies methane and carbon dioxide as hazardous air pollutants (HAPs), but neither pollutant is a HAP

    Response. Designation of HAPs has been corrected in the Final PEA.

18. **Virginia DEQ.** DCR supports TVA utilizing state-specific resources in the site-specific screening process to determine the potential effects to state-listed species. Several of DCR’s Virginia State Natural Area Preserves (https://www.dcr.virginia.gov/natural-heritage/natural-area-preserves/) are also located within the service area in Virginia. DCR has the following recommendations:
    - As specific projects are developed under Alternative B - Proposed Action, DCR recommends coordination with the DCR Division of Natural Heritage for updated natural heritage information and determination of potential impacts to natural heritage resources

from BESS or gas installation projects including construction, operation and decommissioning.
    - DCR supports the siting of proposed projects away from sensitive areas on previously disturbed land such as brownfields and coal mine reclamation sites to minimize impacts to natural heritage resources and large contiguous tracts of forestland that support these resources.
    - Due to the decline in pollinators, DCR recommends the planting of native pollinator plants in the buffer areas of the planned activities, which bloom throughout the growing season as well as the development of an invasive species management plan for these projects.
    - Contact the DCR DNH and resubmit project information and a map if the scope of the project changes and/or six months has passed before it is utilized.

Response. Participants in the Resilience 360 program would be expected to comply with all applicable federal, state, and local regulations in regard to natural heritage resources. This includes coordination with the appropriate agencies and adherence to timely evaluations. Siting concerns will be partially addressed via the Environmental Screening Checklist (Appendix A).

Units would be installed primarily in areas that have already been disturbed or developed and are adjacent to existing facilities, decreasing the likelihood that federally or state-listed terrestrial animals would be present in these areas. Each site would also be analyzed using the USFWS Information for Planning and Consultation tool in addition to the Environmental Screening Checklist. TVA would coordinate with DCR staff as appropriate during review of projects located in Virginia. By reviewing the site-specific Environmental Screening Checklists, TVA would independently determine if a prospective project associated with the proposed Resilience 360° program would adversely affect protected species.

For those projects with the potential to cause adverse effects to listed species, further review would be warranted and mitigation measures to eliminate the potential for any significant impacts to listed terrestrial species would be developed and implemented. Post-construction, re-planting of an area may take place for various reasons including to restore native plant communities to be revegetated with native and/or non-invasive vegetation consistent with EO 13112 (Invasive Species). With the implementation of these measures, no significant effects on listed terrestrial species are expected.

19. **Virginia DEQ.** The VDH ODW has no comments to submit at this time. Potential impacts to public water distribution systems or sanitary sewage collection systems must be verified by the local utility.

    Response. Comment noted. As the project would not require connection to public water distribution or sanitary sewage collection systems, no impacts to such systems are expected. However, the vendor would coordinate with the local utility as appropriate to ensure impacts are avoided.

20. **Conservation Groups.**
    - **TVA must analyze site-specific pollution from methane gas plants**.
      [...] TVA must analyze the site-specific impacts of any Resilience 360° project that uses methane gas. The Draft Programmatic EA does not disclose localized impacts to air quality, water resources, or other impacts relevant to site-adjacent communities. TVA states that

"[d]irect impacts to regulated water resources would be avoided by project design," without disclosing whether the methane gas turbines would use cooling water and, if so, how much. Accordingly, TVA does not disclose enough information for the public to understand the potential impacts to local surface water and groundwater resources.

- TVA must analyze potential impacts to communities like Southwest Memphis, where a low-wealth, majority Black community has already borne a disproportionate burden of environmental pollution. TVA has not satisfied its NEPA obligations to consider inherently site-specific impacts of air pollution, water resources, and community health impacts. TVA's "bounding analysis," combined with its failure to consider a single alternative to its proposed action, obscures the impacts of the proposed methane gas turbines. TVA must analyze these site-specific impacts for any Resilience 360° project that uses methane gas turbines.

Response: This PEA establishes general siting and environmental criteria to ensure that construction and operation of the Resilience 360° units do not cause greater impacts than those addressed in this PEA. The natural gas units could run on a variety of gas mixes including methane and the specific gas would be determined on a site-specific basis based on the unit and available gas at each specific location. As described in Section 3.3.2, cooling water would not be required, as all systems evaluated in this PEA are closed-loop cooling systems. TVA would review the site-specific Environmental Screening Checklist (Appendix A) with regard to impacts to all resources including air quality and health and safety for each site and the surrounding area.

Environmental Screening Checklist

21. **Renew-O-Gen - Jason Ware.** Additionally, I would appreciate clarification on the administrative approval process for participating sites, and whether third-party developers working with TVA customers may also submit Environmental Screening Checklists for consideration under this program. I am eager to explore how our systems, designed to function both independently and within the grid to provide clean, dispatchable energy, might align with TVA's vision for Resilience 360°.

    Response: Resilience 360° is open to commercial and industrial entities located within the TVA PSA and to all customers including the 153 local power companies and direct serve customers. Any customer or entity is welcome to submit a site for consideration to be screened for its viability. TVA would help facilitate potential sites with available vendors. TVA has developed requirements that potential Qualified Resilience Network vendors must meet to be included in the Resilience 360° program. Third-party vendors that are actively working with customers are also welcome to submit sites to be screened under this program. Ultimately, the vendors would complete the Environmental Screening Checklist for all prospective sites and submit the Checklist to TVA for review and consideration prior to a site being accepted into the program.

22. **Brenton Montgomery - Nashville Electric Service.** I reviewed pages 98-105 briefly. They seem quite detailed, maybe too detailed. You'll likely get the best feedback from the first few applicants on how difficult or time consuming it was to complete the Checklist. We don't want this to be a barrier to participation. Most people are used to submitting applications, plans, and prints with electrical loads, but the other requirements might be new to end users.

Response: The Environmental Screening Checklist (Appendix A) has been revised in response to input received during the public comment period.

23. **Virginia DEQ.** DCR has the following recommendations regarding the Resilience 360-Environmental Screening Checklist (Appendix A):
    1) DCR recommends avoidance of C1 and C2 ecological cores as identified in the Virginia Natural Landscape Assessment (https://www.dcr.virginia.gov/naturalheritage/vaconvisvnla) during the siting of proposed projects in Virginia. Mapped cores in the project area can be viewed via the Virginia Natural Heritage Data Explorer, available here: http://vanhde.org/content/map.
    2) In addition to determining if there are any visible caves, rock ledges, overhangs, sinkholes in view of the host site, DCR also recommends determining if there are large springs in the project vicinity.
    3) In addition, to generating a list from IPaC of federally listed species within the proposed project vicinity, DCR recommends the use of the updated TVA Regional Natural Heritage Database to generate a list of natural heritage resources and attaching it to the checklist also.

    Response: During review of the site-specific Environmental Screening Checklists, TVA will review the proximity of the proposed sites to C1 and C2 ecological cores as identified in the Virginia Natural Landscape Assessment. Additionally, TVA will review the presence of local springs in proximity to the site. A TVA Natural Heritage Database review would be conducted for each site-specific review and saved with the project record. Section 4.4 of the Checklist has been updated per recommendation 2 above regarding large springs in the project vicinity.

24. **Enchanted Rock - Taylor Puskar.** Environmental Checklist Section 2.0 Labeled pictures showing the proposed project location and surrounding environment including: … interconnection point to nearest existing gas supply – What is the procedure for if gas supply does not currently exist from an environmental perspective?

    Response: The Environmental Screening Checklist (Appendix A) has been revised to specify that the interconnection point to the nearest existing gas supply should be identified. If gas supply does not currently exist, the vendor can approach TVA for discussion about options. One option could be a more detailed site-specific review.

25. **Enchanted Rock – Taylor Puskar**. Environmental Checklist Section 3.0
    - Anticipated facilities included (e.g. buildings, tanks, storage, parking, new utility poles, etc.); (C) Maximum height of facilities (including any new utility poles) – Erock's assumption is TVA will advise proposed utility facilities information.
    - Foundation characteristics (style- Pad, piers, piles, etc), depth of foundation – Erock's assumption is that best known information being provided is sufficient, however is subject to change dependent on geotechnical findings/civil engineering completion.
    - New Transmission line requirements – Erock's assumption is TVA will advise transmission line requirements.
    - Anticipated types of construction equipment (particularly consider whether pile drivers or other higher decibel equipment may be needed) – Erock's assumption is that best known information being provided is sufficient, however is subject to change dependent on geotechnical findings/civil engineering completion.

- Shound there be a field to capture expected construction and operational waste streams?

Response: The Environmental Screening Checklist was updated to clarify questions in Section 3.0 Project Characteristics to those the vendor should be able to answer directly. The vendor can consult with TVA as needed during the checklist process. Section 3.0 of the Checklist has also been modified to clarify that the project characteristics portion of the checklist should include identification of all anticipated new build facilities/structures. It is expected the vendor will identify all required facilities and equipment that will need to be constructed to support the generation units. The vendor should inform TVA if that information changes at a future date so that change can be documented. Additional reviews may be required if there were a significant change in information such as selection of a different location, identification of an unknown resource, etc. A field to capture expected construction and operational waste streams has also been added to Section 3.0 of the Checklist.

26. **Enchanted Rock - Taylor Puskar.** Environmental Checklist Section 4.0
    - Will drilling, blasting, or pile driving be required? If yes, describe the planned actions including anticipated duration. Will offsite borrow material be required? If yes, what is the maximum that would be needed and from where will this material be procured.– Erock's assumption is that best known information being provided is sufficient, however is subject to change dependent on geotechnical findings/civil engineering completion.
    - Land Use, Water Resources, Floodplains, Ecological Resources, Cultural Resources – Erock's assumption is that Erock and TVA collaborate on these sections.

    Response: Yes, the vendor should provide best known information at the time of application. The vendor should inform TVA if that information changes at a future date so that change can be documented. Additional reviews may be required if there were a significant change in information such as selection of a different location, identification of an unknown resource, etc. Section 4.0 of the Environmental Screening Checklist has been streamlined to focus on project specific details that should be available to the vendor and would not require TVA input to complete. The vendor can reach out to TVA for assistance if needed. TVA SMEs will conduct site-specific reviews after receipt of the Checklist. The outcomes of those reviews will be attached as part of Section 5.0.

27. **Enchanted Rock - Taylor Puskar.** Environmental Checklist Section 4.0 – Air Quality and Climate and Waste
    - Should there be a question regarding if emissions from construction or operations lead to any concentrations of pollutants exceeding NAAQS?
    - Should there be a question regarding if noise emissions exceed OSHA or local limits?
    - Should there be a question regarding if federally hazardous waste be generated from construction or operations?

    Response: An additional question was added in Section 4.1of the Environmental Screening Checklist regarding noise emissions and OSHA limits. TVA's bounding assumption is that there would be no exceedances of NAAQS. Section 4.6 of the Checklist has been modified to include this question and an additional question asking if an air permit will be required for the site. Rows to submit information regarding waste streams were added in Section 3.0 of the Checklist.

28. **Enchanted Rock - Taylor Puskar.** Environmental Checklist Section 4.0 – Signature, Program Participant Representative – Please confirm if Erock or host customer is the program participant representative

Response: The vendor is the Program Participant Representative. Clarification added in Section 1.0 and in Section 4.0 of the Environmental Screening Checklist.

Other Comments

29. **Jason Ware - Renew-O-Gen.** I am writing to submit comments on the Draft Programmatic Environmental Assessment (PEA) for the Tennessee Valley Authority's proposed Resilience 360° Program. First, I commend TVA for taking proactive steps to enhance grid resiliency and mitigate the effects of weather events and other disruptions. The concept of creating a qualified resiliency network through partnerships with vendors and customers is a critical step toward strengthening our region's energy infrastructure. As the founder of a renewable energy initiative currently preparing to issue secured corporate bonds to fund modular, self-recharging hydroelectric units with 1 GWh capacity per unit, I am particularly interested in how TVA intends to integrate innovative, scalable energy solutions into the proposed network.

    Response: TVA has prepared this PEA to develop new guidance, including an Environmental Screening Checklist and a bounding analysis, to facilitate implementation of the Resilience 360° program. The PEA analyzes the expected impacts of deploying up to 25 MW of natural gas or BESS generation from the proposed Resilience 360° units at various locations across the TVA Power Service Area. This programmatic approach allows TVA to adequately address most of the site-specific activities that would occur under the PPA with the respective vendors, thereby streamlining the implementation of the Resilience 360° program. It is possible that in the future the program could be expanded to include other technologies. Additional environmental review would be necessary to expand the program.

30. **Center for Biological Diversity.** It is TVA's responsibility, under NEPA, to analyze and address any "reasonably foreseeable environmental effects of the proposed agency action." [...] TVA must address the foreseeable environmental harms that will come from this choice.

    Response: The impact analysis for each resource area includes evaluation of reasonably foreseeable environmental impacts. An Environmental Screening Checklist would be completed for each specific proposed project which would look at the site-specific impacts at respective host sites within the Resilience 360° program.

31. **Volta Grid - Mohsen Raissy.** We are pleased to participate in the public comment about your 360 Resiliency Program. VoltaGrid is an Energy as a service provider. We utilize all Natural Gas, Hydrogen ready assets. We have modular designs that can deploy quickly. We provide all necessary assets for generation, synchronization, controls and distribution and protection. We own and operate and maintain the assets. Where gas may not be available, VoltaGrid has a Compressed Natural Gas (CNG) business which can deliver gas to the sites. Our assets are all generating at 15KV and are available in 2.5MW, 3.5MW and 4.5MW units all having a very low heat rate of about 7.9MMBtu/MWHr. We also have some gas turbines 25MW each, We would like to offer TVA a set of assets to be strategically located on the system for support of the program. Although we have not specifically selected a site for attached questionnaire, we are sensitive to the compliance requirements. We would love the opportunity to present our capabilities for your consideration

Response: Comment noted. TVA will provide information on the program to all interested vendors and parties.

32. **New Millennium – Matthew Jones.** We would love to be apart of this opportunity. We are exploring adding a backup generator to our operational plant as we speak.

    Response: Comment noted. TVA will provide information on the program to all interested vendors and parties.

33. **Jack B. McPherson – Individual.** Our family owns the oil and gas rights underneath 281.75 acres in Muhlenberg County, Kentucky. I understand the Tennessee Valley Authority is inviting public comments with regard to its Grid Resiliency Effort and although I am not directly involved in the production of electricity generated by TVA, our family's oil and gas rights are located within the service area of the Paradise Combined Cycle Plant which derives its fuel from natural gas and is an integral link within the TVA grid system. Although we have not, thus far, received any offers to purchase our rights it appears likely that our natural gas will eventually be included within the TVA supply chain.

    I understand that TVA generates and sells energy at wholesale prices to a wide range of power companies within its grid system who then sell the power at retail prices to the general public. During times of heavy demand the grid system can be stressed beyond its limits requiring TVA or its affiliates to purchase power from outside sources. In order to alleviate that problem a proposal has been made allowing TVA to partner with qualified vendors who will build, own and operate on site modular gas units or battery energy storage systems that will generate between 500 kilowatts and 25 megawatts of electric power. The environmental review process will establish siting and environmental criteria.

    This proposal has great merit. It will improve the self-reliance of the TVA grid system by eliminating dependency upon outside sources in times of excess demand. Moreover, these subordinate units will be subject to the regulatory and environmental authority of TVA which will allocate the distribution of the power generated through their operations.

    As an aside, this proposal is similar to the plan whereby small, factory built modular nuclear reactors are shipped to the site and assembled there. This arrangement reduces cost and construction time while concurrently increasing flexibility when compared to traditional nuclear power plants. The generation and distribution of electric power by subordinate modular units is the wave of the future. Accordingly, I am pleased to submit this letter in support of the proposal.

    Response: Comment noted.