



# FY 2020 Sustainability Report

Providing a  
Better Future  
for the People  
of the Valley

**TVA** TENNESSEE  
VALLEY  
AUTHORITY



PROVIDING A BETTER FUTURE FOR THE PEOPLE OF THE VALLEY



## FORWARD-LOOKING STATEMENTS

This document contains forward-looking statements relating to future events and future performance. All statements other than those that are purely historical may be forward-looking statements. In certain cases, forward-looking statements can be identified by the use of words such as “may,” “will,” “should,” “expect,” “anticipate,” “believe,” “intend,” “project,” “plan,” “predict,” “assume,” “forecast,” “estimate,” “objective,” “possible,” “probably,” “likely,” “potential,” “speculate,” or other similar expressions. TVA believes that the assumptions underlying the forward-looking statements are reasonable. Numerous factors could cause actual results to differ materially from those in the forward-looking statements. For a discussion of these factors, please see the annual, quarterly and periodic reports that TVA files with the Securities and Exchange Commission. New factors emerge from time to time, and it is not possible for management to predict all such factors or to assess the extent to which any factor or combination of factors may impact TVA’s business or cause results to differ materially from those contained in any forward-looking statement. TVA undertakes no obligation to update any forward-looking statement to reflect developments that occur after the statement is made. Reporting: All references to years in this annual Sustainability Report refer to TVA’s fiscal years ending September 30, unless specifically identified as calendar years. All financial data is reported in U.S. dollars. This report contains key measures of the progress being made and describes our strategies for the future. TVA is committed to continual improvement in reducing environmental impact and modernizing the electricity grid to support new technologies.

Publication Date: May 6, 2021

Reporting Period: October 1, 2019 to September 30, 2020

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# FY 2020

## Sustainability Report

# Providing a Better Future for the People of the Valley

## Contents

<b>Message from Jeff Lyash to Our Stakeholders</b> .....	2
<b>Message from Rebecca Tolene</b> .....	3
<b>Aspirations to Make Life Better for the People of the Valley</b> .....	4
<b>Sustainability Strategy, Governance and Reporting Framework</b> .....	6
<b>Economic Impact: Powering the Valley's Economy of the Future</b> .....	10
<b>Environmental Impact: Stewards of the Environment</b> .....	20
<b>Social Impact: Serving People and Communities Across the Valley</b> .....	32
<b>Appendix A - Global Reporting Initiative Metrics</b> .....	42
<b>Appendix B - Disclosure Initiatives</b> .....	46
<b>Appendix C - Guidance Documents</b> .....	47
<b>Appendix D - Regulation G Reconciliations</b> .....	47
<b>Appendix E - TVA Alignment with Global Reporting Initiative Criteria</b> .....	48
<b>Appendix F - Acronyms List</b> .....	49



# Making Life Better for the People of the Valley

## Message from Jeff Lyash to Our Stakeholders

Since our founding, TVA has been there to help make life better for the people of the Tennessee Valley. We have seen our economy and communities change and grow, face new challenges and come back stronger. Sustainability is at the heart of our mission to deliver reliable, low-cost energy, steward our environment and secure economic prosperity today and for generations to come.

As we all felt the impact of COVID-19, I am proud of how our people worked to operate safely and provide pandemic relief. TVA's financial strength provided funds to communities and credits to local power company (LPC) partners, customers and businesses impacted by the pandemic. Our economic development efforts continued to attract and retain much needed investment and job opportunities.

TVA's system is one of the nation's cleanest and we firmly believe that low-carbon, low-cost energy combined with high reliability creates an incredible competitive advantage for the Valley. TVA is powering the ambitious strategies and climate goals of large and small businesses and attracting innovative industries and jobs to support the Tennessee Valley's economy.

Electrification will be a key to driving innovation and decarbonization across major industries. Electricity as a percentage of final energy was 3% in the economy of 1950, while in 2020 it was 21% and studies predict this could rise to over 40% by 2050. We can see the future for electric transportation

manufacturing and consumer adoption. TVA is partnering with LPCs, automakers, the state of Tennessee and other stakeholders to reach a goal of 200,000 electric vehicles on Valley roads.

We aspire to achieve net-zero carbon emissions and to support broader national efforts to decarbonize the economy. TVA is making the investments to enable a 24-fold capacity increase in solar power by 2035, a large portion driven by customer demand, create the resilient grid of tomorrow, achieve top-ranked nuclear fleet performance and develop advanced nuclear technologies and utility-scale battery storage to enable increased use of renewables.

TVA ranked No. 2 on Forbes' list of "America's Best Employers for the State of Tennessee." We are building a culture of innovation, continuous improvement and diversity and inclusion – recognizing that our People Advantage strategic priority is essential for attaining our sustainability goals for the people of the Valley.

I am excited about the opportunities for delivering on our sustainability objectives to support people and communities, steward our environment and power the Valley's economy of the future.

**Jeff Lyash**  
President & CEO  
TENNESSEE VALLEY AUTHORITY



# Leading the Way to a Sustainable Future

## Message from Rebecca Tolene

TVA's unique, long-standing mission of service drives and inspires us daily to pursue new ideas and innovative solutions that improve our service to you. This Sustainability Report provides a comprehensive view of our performance and our future aspirations.

We aspire to reach net-zero carbon emissions by 2050 while maintaining power reliability and affordable rates, requiring rapid development of cost-effective technologies. With partnerships, we see a path to an approximately 80% carbon reduction by 2035 and continue to identify the most viable technologies that will address the final 20% needed to achieve our aspiration of a net-zero carbon energy future.

Changing weather patterns, extreme weather conditions and other events such as flooding, droughts, wildfires and snow or ice storms can all impact our system in terms of operability, customer demand and the health of regional economies.

We will continue to monitor and take steps to mitigate risks, maintain reliability and maintain low energy costs. In early 2020, TVA and its LPC partners helped communities in Middle Tennessee, Chattanooga and Mississippi face the unexpected challenge of devastating tornadoes, and in addition, TVA helped prevent \$1 billion in potential flood damage during the wettest year on record.

TVA's environmental stewardship mission includes the management of approximately 11,000 miles of shoreline and 293,000 acres of public lands along the Tennessee River and its tributaries. TVA continues its work to support the ecological diversity and wildlife habitats in the region. We implemented 56

sustainable recreation projects to support the crucial value that lakes, fishing spots, trails and campsites bring to the communities around us, including the estimated 130,000 jobs and \$12 billion in economic activity they generate annually.

We are committed to supporting social justice through partnerships to help reduce barriers that affect lower-income individuals and to deliver broad and inclusive economic impact through programs such as TVA Home Uplift, our community volunteer work, consideration of environmental justice in our decisions and our supply chain partnerships. TVA was recognized as the Southern Region Minority Supplier Development Council's "Regional Corporation of the Year" for efforts advocating on behalf of minority suppliers and outstanding leadership in supplier diversity.

As the pace of change accelerates, we are committed to partnering with communities to create the sustainable energy system of the future while protecting our natural resources and serving as a catalyst for the growing clean energy economy. The 2020 Sustainability Report reflects our accomplishments and challenges over the past year. As we look to move forward, viewing our mission of service today through the lens of tomorrow, we welcome your input in building a sustainable future for those we are honored to serve.



**Rebecca Tolene**  
Chief Sustainability Officer  
Vice President, Environment  
TENNESSEE VALLEY AUTHORITY





PROVIDING A BETTER FUTURE FOR THE PEOPLE OF THE VALLEY

# Aspirations to Make Life Better for the People of the Valley

Sustainability is a critical part of TVA's mission to make life better for the Tennessee Valley's 10 million people and businesses with low-cost, reliable and increasingly cleaner energy, a healthy environment and a prosperous economy today and for future generations. This Sustainability Report provides a comprehensive view of our performance and our future aspirations.



## RELIABLE, LOW-COST ENERGY

- Maintain 99.999% Reliability While Innovating for a Changing Utility Sector
- Continue Delivering Low-Cost Electricity Rates in Best-Quartile Nationally
- Lower Consumer Energy Costs Through Energy Efficient Homes in Valley Communities

## DECARBONIZATION

- Aspire to Net-Zero Carbon Energy by 2050 While Maintaining Low Costs and Reliability
- Reduce Carbon Emissions 70% by 2030, with Path to approximately 80% by 2035
- Add 10,000 MW of Solar by 2035, Including Solar Driven by Local Power Companies and Customers Participating Through Green Invest Program

## INNOVATION

- Pave the Way for over 200,000 Electric Vehicles on Valley Roads by 2028
- Innovate Utility-Scale Battery Storage for Renewable Energy
- Develop and Deploy a Small Modular Reactor through Federal Partnership

## RESILIENCE

- Become the Nation's Top-Performing Nuclear Fleet by 2025
- Build the Integrated and Reliable Grid of Tomorrow
- Maintain "Best in the Nation" Status on Flood Management
- Enhance Climate Adaptation to Improve Overall Resiliency for the Valley

## ECONOMIC DEVELOPMENT

- Continue to Attract and Grow Investments and Jobs That Power the Valley's Economy
- Strengthen Partnerships with Local Power Companies and Directly Served Customers
- Enhance Supplier Diversity Program Support for Women-Owned, Minority-Owned and Veteran-Owned Businesses
- Maintain "Top 10" Ranking for Military-Friendly Supplier Diversity Program

## ENVIRONMENTAL STEWARDSHIP

- Improve Integrated Environmental Footprint (Air, Water, Waste, Land, Biodiversity)
- Protect the Tennessee River System's Natural Habitats and Biodiversity
- Support \$12 Billion in Sustainable Recreational Activities on Public Lands and Waters
- Partner with Communities and Conservation Partners to Plant 1 Million Trees

## PEOPLE AND PARTNERSHIP

- Enhance Safety and Well-Being of TVA Employees and the People of the Valley
- Strengthen Partnerships and Volunteer in Valley Communities as Part of Our Mission
- Prioritize Environmental Justice for Impacted Communities
- Create a Talent-Focused Organization That Delivers Performance and Service
- Accelerate Impact of Inclusion with Diversity Within TVA and the Communities We Serve
- Create a Culture That Lives Up to Our Values and a Positive Employee Experience

# Sustainability Strategy, Governance and Reporting Framework

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Sustainability for TVA means ensuring our ability to provide the region with low-cost and reliable electricity, a healthy environment and a prosperous economy, now and for future generations.

As a publicly-owned utility, we operate with a different set of expectations and responsibilities. Sustainability lives at the heart of TVA's mission and values and drives our strategic purpose and plan. This Sustainability Report provides a transparent and comprehensive view of TVA's progress. Our three-year business plan, 10-year financial plan and 20-year integrated resource plan are each aligned to our mission, strategic priorities and objectives.





# TVA Mission and Values

Our focus on sustainability strengthens our ability to safely provide reliable, low-cost and increasingly cleaner energy; to engage in proactive stewardship of the Tennessee River system and natural resources; and to support sustainable economic growth. TVA's mission has remained constant since our inception and focuses on three key areas:

## Energy

We deliver safe, low-cost, reliable power.

## Environment

We provide responsible stewardship by caring for the region's natural resources.

## Economic Development

We create sustainable economic growth.

TVA's Values are the principles and behaviors that guide our daily actions, choices and priorities.



## Safety

We are uncompromising in our commitment to the safety and well-being of our teammates and the communities we serve.



## Integrity

We are honest and straightforward, always doing the right thing with integrity.



## Inclusion

We treat everyone with dignity and respect, emphasizing inclusion by welcoming each person's individuality so we can reach our potential.



## Service

We are proud to be of service in the communities in which we live, work and play.



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## Driving Accountability and Progress Through Good Governance

Our governance structure is critical to driving sustainability performance. It is also unique. As a government-owned corporation, our mission of service is fundamentally different from that of publicly traded companies. We have built a governance structure within the company that provides the oversight and outside perspective capable of driving progress.

TVA is self-sustaining and self-funded and receives no public tax dollars. TVA has oversight similar to other utilities, such as a Board of Directors, Securities Exchange Commission (SEC) and Sarbanes-Oxley Act requirements. In addition, TVA has oversight from Congress, the Government Accountability Office (GAO), Office of Management and Budget (OMB), the U.S. Treasury and an independent Office of the Inspector General (OIG).

TVA's CEO-led Enterprise Leadership Team drives business strategy, including decisions relating to sustainability and risk management. TVA appointed an executive leader as Chief Sustainability Officer (CSO), who oversees a TVA-wide Environmental Executive Council, a Sustainability Steering Committee and a Sustainability Working Group, which together are responsible for the governance of sustainability at TVA. TVA has also appointed an executive leader as Chief Risk Officer (CRO). Both the CSO and the CRO are members of the Risk Management Steering Committee (RMSC) and report to Enterprise Risk Council (ERC), which is responsible for the highest level of risk oversight at TVA and for communicating enterprise-wide risks with policy implications to the TVA Board or a designated TVA Board committee.

Enterprise Risk Management (ERM) is a strategic business function that provides TVA with a comprehensive risk perspective to more effectively identify and manage risks, capitalize on opportunities, and improve risk management behaviors. The ERC oversees TVA's management of enterprise risks and establishes an appropriate tone for a risk management culture throughout TVA. The Chief Risk Officer heads TVA's Enterprise Risk Management business unit, with responsibilities that include establishing enterprise risk management policies and guidelines as well as performing frequent risk assessments across all TVA business units.

In addition, the TVA Board established two separate advisory councils, the Regional Resource Stewardship Council (RRSC, initiated in 2000) and the Regional Energy Resource Council (RERC, initiated in 2013), which were formed under the Federal Advisory Committee Act (FACA) to advise TVA on our stewardship activities and energy resource decisions in the Tennessee Valley region.

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## Sustainability Priorities and Commitments

As a public power provider, it is critical that we understand and are accountable for performance on the sustainability issues most important to our stakeholders. One of the ways we do this is by following best-in-class standards like the Global Reporting Initiative (GRI), a recognized international framework for economic, environmental and social performance disclosure. We also engage with industry, federal and customer-oriented disclosure initiatives from CDP (formerly the Carbon Disclosure Project), Edison Electric Institute (EEI), Electric Power Research Institute (EPRI), The White House Council for Environmental Quality (CEQ), OMB and the Task Force on Climate-Related Financial Disclosures (TCFD).

This report aligns with GRI standards, including the goal to include information in the report which (1) reflects the organization's significant economic, environmental and social impacts; or (2) substantively influences the assessments and decisions of stakeholders.

Based on GRI standards and consultation with employees, communities, investors and other stakeholders, we established a core set of sustainability priorities that reflect shared interests of our business and society. For each of these priorities we have defined our commitments and identified and tracked our progress against key performance measures. Performance highlights are presented throughout this report. To see our year-on-year progress on these performance indicators and GRI alignment information, please see Appendix E. For our full data disclosure against the GRI framework, including GRI's Electric Utilities Sector Disclosures, please see Appendix A.

Sustainability Priority	Commitment
<b>ECONOMIC</b>	
Financial Strength	TVA's financial strength helps us continue to invest in the asset base while maintaining a sustainable debt level. This keeps rates low and reduces risks to local power companies and to the people of the Valley. TVA's power bonds receive credit ratings of AAA/Aaa/AA+.
Reliability and Resiliency	TVA is working to further strengthen resiliency and reliability, including in our physical and cyber security operations.
Transparency	TVA's commitment to transparency includes disclosure through TVA FACA councils, TVA Board of Directors meetings, SEC filings, customer relations and stakeholder engagement. TVA's website is disclosed for public consumption. For business purposes, TVA discloses sustainability performance to federal entities, investors, counterparties, customers and the public.
<b>ENVIRONMENT AND ENERGY</b>	
Air Emissions	TVA is in the top quartile of its regional peers for clean energy generation, and we continue to strive to improve air quality.
Assets and Operations	TVA is evolving its fleet, reducing greenhouse gas emissions and building out an integrated energy network, while maintaining flat rates and continuing to provide consistent, reliable service.
CCR	TVA is committed to safe, long-term management of the coal combustion residuals (CCR) generated by its operations.
Climate Change	TVA is a leader in CO <sub>2</sub> emission reductions and is continuing to transition to cleaner energy while keeping rates flat and service reliable.
Environmental Compliance	We are committed to sustainability, continuous improvement, proactive stewardship in managing our natural resources and reducing our environmental footprint, and compliance with all applicable environmental regulations.
Habitat and Biodiversity	TVA's mission of environmental stewardship includes protecting and enhancing public lands and waters for both conservation and recreation purposes.
Internal Energy Management	TVA seeks to identify and achieve internal energy goals using Federal Energy Management Program best practices. We are continuing to implement new technologies and invest in efficiency improvements in order to reduce our facility energy use.
Nuclear Waste Management	We are committed to safe, long-term management of the radioactive waste generated by our nuclear operations.
Waste	We aim to reduce waste and improve efficiency, both internally and in the communities we serve.
Water	We are committed to working with other agencies to ensure a clean and sustainable water supply. TVA manages the Tennessee River, its tributaries and certain shorelines to provide year-round navigation, flood control, recreation and low-cost, reliable electricity.
<b>SOCIAL</b>	
Community Vitality	With the signing of the original TVA Act in 1933, Congress charged TVA with improving the economic, environmental, social and physical well-being of the people of the Tennessee Valley. TVA continues this mission of service today.
Diversity and Inclusion	At TVA, we are powered by people—and we are enriched by the diversity of a talented, highly skilled workforce made up of people from every sort of background. We draw strength from diversity and cultivate an atmosphere of active inclusion.
Education and Career Development	TVA invests in employees through training plans and performance improvement. Our approach to development consists of 70% on-the-job experience, 20% informal learning and 10% formal training.
Electricity Affordability	The TVA Act requires TVA to ensure that rates will always remain as low as feasible and that power produced by TVA is distributed throughout the Valley. Low rates and access for all are fundamental to TVA's operations.
Health and Safety	Safety is one of TVA's core values. We strive to ensure our facilities are safe for our employees and for the communities we serve.
Supply Chain	Local, small and diverse suppliers bring great value to TVA while creating jobs and opportunities in the communities we serve. We will continue to seek their partnership as we work to make life better for the people of the Tennessee Valley.

# Economic Impact: Powering the Valley's Economy of the Future

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TVA delivers low-carbon, low-cost, reliable energy that powers the ambitious strategies and climate goals of large and small businesses and attracts industries and jobs to support the Valley's economic growth and future prosperity.

TVA is a national leader in low-carbon energy, and we aspire to achieve a net-zero carbon energy future by 2050. Our efforts to build a robust, diverse power generation mix have led to a 63% reduction in total mass carbon emissions since 2005. Current plans put TVA on a trajectory to achieve a 70% reduction by 2030 and approximately 80% by 2035. We are committed to achieving our carbon reduction goals while delivering low-cost energy and maintaining our track record of 99.999% reliability since 2000.



## Economic Impact Snapshot

SUSTAINABILITY PRIORITIES	METRIC	FY 2018	FY 2019	FY 2020	2020 HIGHLIGHTS
Community Vitality	Number of jobs created or retained (# jobs)	65,423	66,572	<b>67,431</b>	Recognized as "Top 10 Utility for Economic Development" by Site Selection Magazine for the 15th consecutive year.
Financial Strength	Operating Revenues (\$ million):	\$11,233	\$11,318	<b>\$10,249</b>	Reduced total financing obligations to \$21.4 billion, the lowest level in 30 years.
	Operating Cash Flow (\$ million):	\$3,938	\$3,720	<b>\$3,636</b>	Operating expenses 11% lower than 2019. Interest expense 5% lower than 2019.
	Total Financing Obligations (\$ billion):	\$24.3*	\$22.8*	<b>\$21.4*</b>	Returned \$163M in bill credits to local power companies participating in long-term partnership agreements in 2020.
	Net income (\$ million):	\$1,119	\$1,417	<b>\$1,352</b>	
Reliability and Resiliency	Transmission System Reliability Rating:	99.999 %	99.999 %	<b>99.999 %</b>	TVA assesses and improves transmission assets regularly to maintain reliability and resiliency.
Transparency	Federal Sustainability Report Disclosure:	SR&IP and AEMR	SR&IP and AEMR	<b>SR&amp;IP and AEMR</b>	Reporting to Congress, CEQ and DOE. SR&IP and AEMR submitted annually over the last decade.
	Investor Sustainability Report Disclosure:	EEI-ESG Industry Pilot	EEI-ESG Industry Template	<b>EEI-ESG Industry Template</b>	Released TVA's second Edison Electric Institute Environment Social Governance (EEI-ESG) Report.
	Customer Carbon Accounting Disclosure:	Annual Customer Carbon Accounting	Annual Customer Carbon Accounting	<b>Annual Customer Carbon Accounting</b>	Carbon Accounting drives two TVA-sponsored awards for directly served customers and LPC-served businesses.

\*Please see Appendix D for Regulation G Reconciliations



We firmly believe that low-carbon, low-cost power combined with high reliability creates a powerful competitive advantage for the Valley's economic future. Our Green Invest program helps attract companies looking for competitively priced renewable energy to the region, bringing investments and jobs. This program uniquely leverages business demand for renewable energy to bring additional economic benefits to the communities where these new, large-scale facilities are developed.

During the past five years, TVA has attracted and retained approximately **341,000 jobs and more than \$45.4 billion in direct investment**. Even in 2020 during COVID-19, TVA helped to attract and retain approximately 67,000 jobs and \$8.6 billion in capital invested. Our ability to decrease carbon emissions is helping our customers and end-use consumers compete in the marketplace—and helping us attract and retain businesses, jobs and investment.

That is true of global tech companies that require vast data centers and computing power. Facebook and Google have built major operations across our seven-state region partly because we can meet their ambitious environmental goals. General Motors, Nissan and Volkswagen are putting electric vehicles (EVs) and net-zero emissions commitments at the core of their strategies and are building the next generation of EVs right here in the Valley. And we are working with our LPC partners to help thousands of local businesses and communities to build a thriving economy, green jobs and innovations that make life better.

TVA is committed to providing all customers with stable wholesale rates. Living in the region, we enjoy **electric rates lower than 70% of the nation's largest utilities and industrial rates lower than 90% of other large utilities**. TVA's strong financial and operational performance in recent years has allowed us to maintain stable effective wholesale rates from fiscal year (FY) 2013 through FY 2020.

**A cleaner fleet has meant lower costs.** A core TVA strength is our generating portfolio—one of the most diverse in the industry. TVA's efforts to modernize its generating portfolio have allowed us to reduce annual fuel and purchased power expenses by more than \$1 billion. Optimal resource planning around robust, diverse power generation and efforts to improve nuclear fleet performance will assist TVA in further reducing fuel costs and meeting our commitment to keep rates stable for the next decade.

**“This investment in electric vehicle charging infrastructure is a monumental step forward, and I’m proud that Tennessee is leading in this important effort. With TVA’s partnership, we will be able to continue our work to protect our environment and improve our transportation infrastructure.”**

*-Tennessee Governor Bill Lee*

**Top 10 ranking for  
Green Power Sales**  
by NREL for 7th year



# Putting 200,000 Electric Vehicles on Valley Roads

Transportation is a leading source of CO<sub>2</sub> emissions and is our nation's largest electrification opportunity. As major automotive companies commit to increasing the variety of EV models, electrifying transportation now can spur the same innovative transformation that electrifying the Tennessee Valley did when TVA was founded. Our public power model means TVA and our LPC partners are best positioned to take the lead in reducing or removing the major barriers to electric transportation. As a mission-driven organization, we have the ability to work and invest today for the benefit of all our residents tomorrow. Together with LPCs, we are forging powerful partnerships, investing our resources and supporting policies that help reduce or remove the barriers to adoption of electric transportation, so our residents and the communities we serve can reap the benefits of going electric.

TVA's EV Initiative anticipates increasing the number of EVs across its seven-state service area from approximately 16,000 today to well over 200,000 by 2028, which will result in:

- \$120 Million reinvested in the local economy per year from electric refueling
- \$200 Million in consumer fuel savings per year
- Almost 1 Million Metric Tons of CO<sub>2</sub> saved per year (or the equivalent of the carbon sequestered by 1 million acres of U.S. forests in one year)

EVs already play a large role in the Valley's clean energy economy. The region is home to three major automakers in Tennessee currently producing or planning to produce EVs: the Nissan Leaf, in Smyrna; the Volkswagen ID-4 (crossover SUV), in

Chattanooga; and the new Cadillac Lyriq (crossover SUV), as part of GM's recent \$2 billion expansion in Spring Hill. As these EV manufacturers prosper, so will the people who work in and around these plants, or supply parts for them.

As part of the EV Initiative, TVA outlined programs aimed at removing major barriers to EV adoption, including consumer awareness, EV charging rates and availability of charging infrastructure.

- TVA is spurring investments in charging infrastructure through supportive and innovative policies. In November 2020, the TVA Board approved the development of new EV policies for LPCs, including a new EV electricity rate option for local businesses building fast charging stations across the region.
- TVA is collaborating with the Tennessee Department of Environment and Conservation to support and fund a network of fast charging stations every 50 miles along Tennessee's interstates and major highways. We are working with other state agencies to expand this fast-charging network across the service region.
- To increase consumer awareness of EVs, TVA launched [energyright.com/ev](https://energyright.com/ev) to help consumers make informed decisions and is releasing a video series called In Charge: Life with an Electric Vehicle to educate and entertain consumers interested in EVs.
- TVA's active support for the electrification of transportation also multiplies our own carbon reduction efforts and moves the entire region toward greater sustainability and economic opportunity in the future.



## TVA's Decarbonization Journey

TVA has one of the largest, most diverse and cleanest energy-generating systems in the nation. We are investing in our assets, reducing our reliance on coal, modernizing the transmission system and adding new renewable energy resources to ensure safe, reliable and cleaner energy for decades to come.

We aspire to achieve net-zero carbon emissions by 2050 and to support broader national efforts to decarbonize the economy. As we make progress toward achieving these goals, it's important that we continue to balance high reliability and low energy costs. As one of the nation's largest electricity providers, we are committed to being part of the solution and to working with others to solve this important challenge.

TVA is an industry leader in carbon reduction. We accomplished this by incorporating renewable energy assets, replacing aging plants and expanding our nuclear energy program. We have a firm plan to achieve 70% reduction by 2030. Our path to an approximately 80% reduction by 2035 includes leveraging existing technologies, and utilizing innovations and federal support for early steps into small modular reactors and longer duration storage to allow us to maintain low cost and reliable power. As we seek to go beyond 80% carbon reduction, new, cost-effective technologies must be developed. Progress toward net-zero emissions will require continued investment in new, cost-effective technologies in addition to nuclear, solar, wind and hydro.

Comprehensive information on TVA's Decarbonization Journey is available in TVA's Carbon Report, "Leadership and Innovation on a Path to Net-Zero," at [tva.com/carbon](http://tva.com/carbon).

TVA's portfolio has evolved significantly over the past decade and a half, and we have seen a substantial reduction in carbon footprint. In 2020, nearly 60% of electric power in

**Carbon Reduction Goals**

**63%**  
Accomplished

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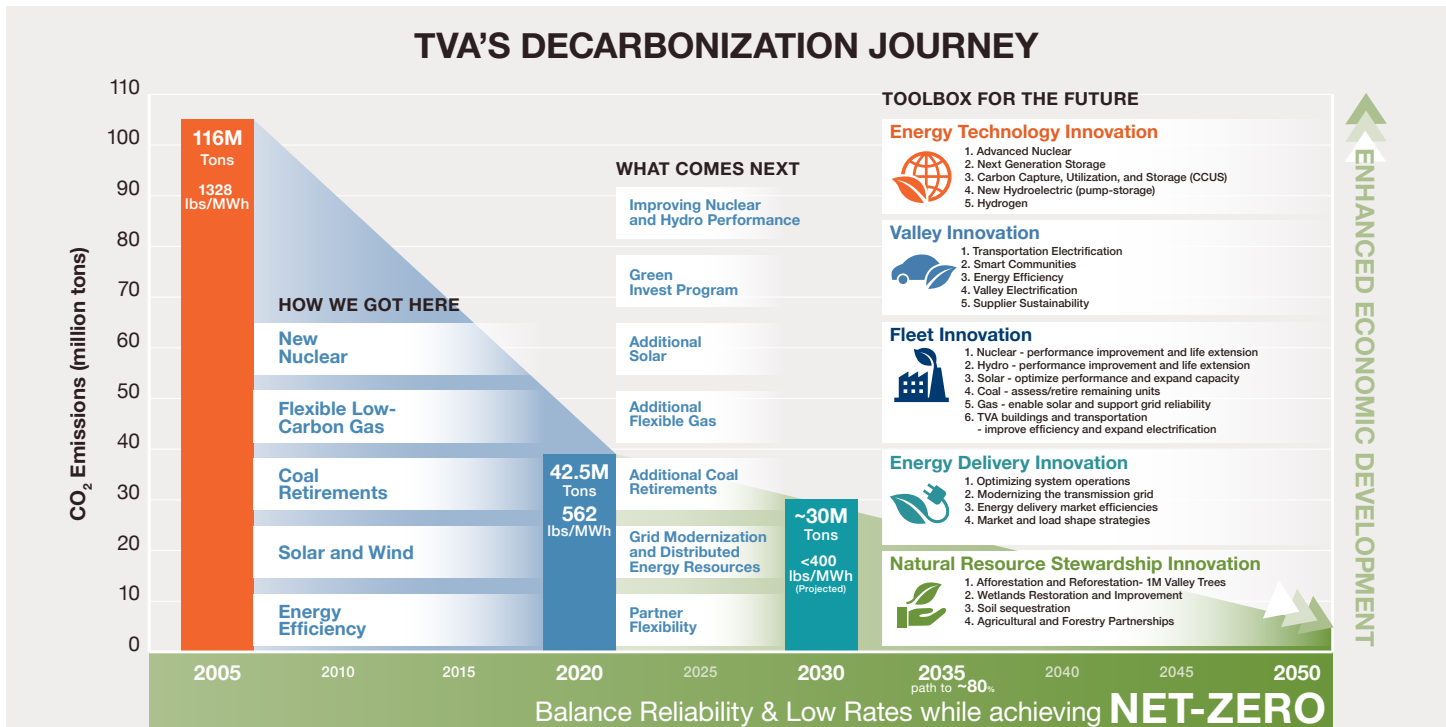
**Our Plan**  
**70%**  
by 2030

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**Our Path**  
**~80%**  
by 2035

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**Our Aspiration**  
**Net-Zero**  
by 2050





TVA's service territory came from carbon-free sources. Changes to our generation mix since 2005 have resulted in a 63% reduction in overall carbon emissions (tons).

TVA's 2019 Integrated Resource Plan (IRP) results indicated an average of 70% reduction in carbon emissions by 2038 and up to 80% in some cases, from 2005 levels. The IRP identifies a Target Power Supply Mix and potential environmental impacts with guideline ranges for potential resource additions or retirements over the next 20 years to help us inform our near-term actions.

As the energy landscape evolves, consumer demand for access to diverse products and services is increasing, thus creating opportunities for growth in emerging technologies. TVA is currently evaluating its generating asset strategy. As a part of this strategy, we are evaluating over 30 "levers," or actions, that could lead to deeper carbon reductions. We are excited about the next decade and beyond. Technology and program innovation will help us increase our use of cleaner energy resources and renewable options.

## Fleet Modernization

Since 2005, TVA has retired or announced retirements for almost 60% of our coal generation. We will continue to evaluate the impact of retiring the balance of the coal-fired fleet by 2035, and that evaluation includes environmental review, public input and Board approval.

TVA's planned investments in its generating portfolio allow us to maintain competitive Valley electric rates, high reliability and continued leadership in carbon emissions. We have added the 21st century's first new nuclear generation at Watts Bar and uprated our existing Browns Ferry units to generate more low-cost, reliable and carbon-free energy. As we rely less on coal, we continue to evaluate adding flexible lower carbon-emitting gas plants, including our newest additions of the Allen

and Paradise Combined Cycle plants. We see gas as a bridging strategy to maintain reliability—a way to continue to add renewables and support the needs of the system while new technologies are developed. As additional coal plants reach end of life, TVA plans to add a mixture of solar, gas and storage resources in the 2020s, while emerging technologies will play a role in the 2030s and beyond.

## Grid of Tomorrow

TVA's Grid of Tomorrow initiative will increase grid flexibility to enable greater use of renewable resources such as solar, wind and other forms of distributed generation. This supports TVA's decarbonization goals while ensuring we continue to deliver reliable power at the lowest feasible rate to attract and retain jobs and investments in the Tennessee Valley.

Sound investments in a modernized grid will enable enhanced monitoring and control of TVA's transmission and generation portfolio. In addition to a new System Operations Center (SOC) and state-of-the-art Energy Management System, TVA is working on projects with universities, EPRI and others to enable a dynamic and multi-directional grid. Some of the projects include deploying sensors for asset health and monitoring, developing an Asset Performance Center (APC) to monitor its health and developing a robot for remote substation inspection.

TVA is also working with our LPC partners to modernize their distribution systems by developing a shared vision and roadmap for transforming the Valley's transmission and distribution systems into an integrated regional grid. Together these efforts will improve system reliability, enable further optimization, lower energy costs and accommodate higher levels of distributed energy resources from renewables.

**Top 100  
Green  
Utilities in  
the World**  
by Energy Intelligence



**TVA Green is a suite of renewable energy programs for residential and business customers. Green Invest is a proven, award-winning model that offers business and industry an effective, timely and cost competitive solution to meet sustainability goals with new, utility scale solar.**

Green Flex enables businesses with high energy consumption to quickly meet their sustainability goals at a lower cost through bulk purchase of renewable energy. Green Switch provides the easiest solution for customers to power their homes or businesses through 100% renewable energy. For as low as \$2 per month, customers can match some or all of their current electricity use with a mix of solar, wind and biomass generation sources located in the Valley. Green Connect matches homeowners with qualified solar installers to ensure safe and reliable solar installations. [Learn more at tvagreen.com.](http://tvagreen.com)

## Renewable Energy

TVA defines renewable energy as energy production that is sustainable and often naturally replenished, such as solar, wind, biomass, geothermal and hydroelectric. We continue to expand our renewable energy portfolio while retiring high carbon-emitting assets, improving existing assets and securing purchased power agreements for solar generation. New utility-scale solar is increasing dramatically, in part, driven by customers' demand via TVA's Green Invest Program.

Renewable energy has played a growing role through continued investment in our existing hydro fleet and through purchased power agreements for out-of-Valley wind and in-Valley solar. We continue to develop and offer these solutions aligned with least-cost planning and TVA's mandate to provide power at the lowest feasible rate.

Hydroelectric power is the original renewable energy in the Tennessee Valley. We have spent about \$500 million over the past decade to modernize our hydro fleet and are evaluating opportunities to continue that effort. We are also analyzing assets for pumpback capability (similar to Raccoon Mountain, where water is stored and used for generation on demand). Looking ahead, TVA is planning to invest up to \$1.5 billion over the next decade to improve and upkeep our hydro facilities.

For FY 2020, TVA's commitment to renewable energy generation was showcased through more than 7,000 MW of contracted and operating renewable energy capacity, including more than 4,160 MW of hydropower, nearly 1,600 MW of solar, more than 1,240 MW of wind and 49 MW of biomass. We are continuing to grow solar in FY 2021 with the addition of 964 MW of new-to-the-world, utility-scale solar and 130 MW of battery storage committed this fiscal year.

TVA tracks renewable energy commitments and claims, in part, through renewable energy certificates (RECs). A REC is a tradeable, non-tangible commodity that represents the property rights to the environmental, social and other non-power attributes associated with one MWh of electricity that was generated and delivered to the electricity grid from a renewable energy source. This mechanism allows businesses and individuals to purchase RECs through TVA Green programs (offered in conjunction with LPCs) to meet their renewable energy and sustainability goals.





Photo of Muscle Shoals Solar Project shared by Orsted.

## Major Opportunity in Solar Power

As of FY 2020, TVA had contracted 1,178 MW of solar to meet sustainability goals of directly served institutions, LPCs and end-use customers. Through the second quarter of 2021, TVA signed solar commitments for an additional 964 MW of solar, pending environmental review. TVA's current operating solar capacity is 416 MW. As of the second quarter of 2021, TVA has solar commitments for over 2,300 MW, pending environmental review. Including these projects, TVA anticipates adding 10,000 MW of solar by 2035, a large portion driven by customer demand, which would represent a 24-fold capacity increase from today. Additionally, through Generation Flexibility, TVA is supporting our long-term LPC partners in the deployment of up to 2,000 MW of distributed solar to provide clean, local generation.

Storage is essential for integrating solar power into the TVA system. Changes in weather and limited hours of daylight reduce the reliability of solar power, but battery storage can enable solar power to meet the reliability demands of our customers. TVA has procured 50 MW of utility-scale battery storage in conjunction with solar projects as of September 2020, and we are piloting broader efforts to create utility-scale energy storage.

**TVA is a lead sponsor of the Low Carbon Resources Initiative, a five-year effort across the energy industry that will focus on maturing low- and zero-carbon energy technologies to fill "last mile" gaps.**

**Recently surpassing \$100 million of pledged funding from sponsors, this groundbreaking partnership between TVA, the Electric Power Research Institute, Gas Technology Institute and other utilities across the country will advance clean power and decarbonization technologies for large-scale deployment to 2030 and beyond. Read more at [tva.com/carboninvest](https://tva.com/carboninvest).**

The Knoxville Utilities Board (KUB) has taken a national leadership role in renewable energy, leveraging TVA's Green Invest program to support solar deployment in the region. Their investment in new solar installations will provide clean, renewable power to the electric grid at a cost-competitive rate, attract and retain business customers and support economic growth.

**"KUB is proud to be the first TVA distributor to demonstrate our commitment to clean energy through the purchase of 502 megawatts of solar power. Our Green Invest partnership is an important part of our work to support Knoxville's emissions reduction goals and build on KUB's legacy of environmental stewardship."**

*-Gabe Bolas, KUB President and CEO*

## Future Innovation Opportunities

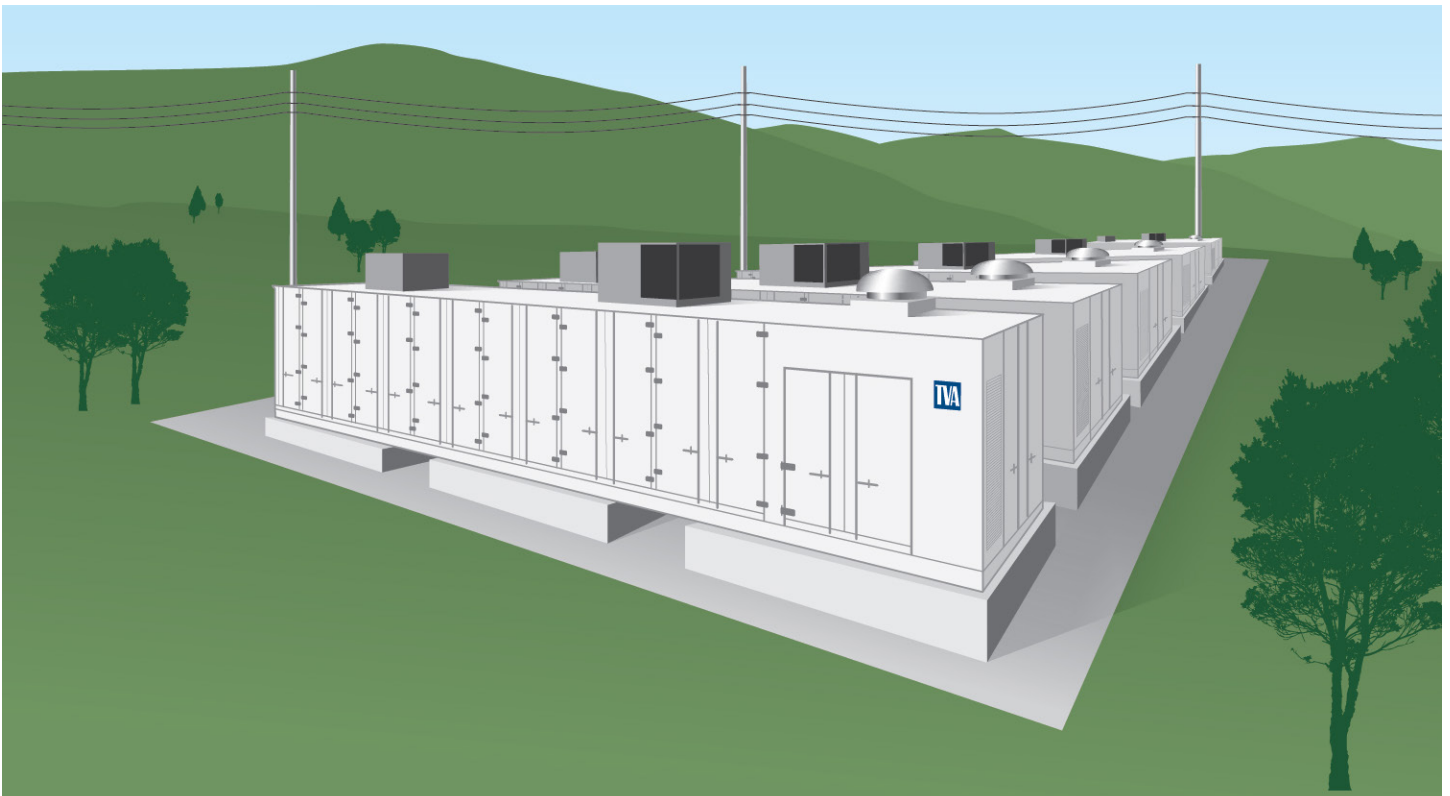
In order to achieve our aspiration and path to a net-zero carbon energy future, TVA is investing in a stream of innovation and research focused on decarbonization options. In addition to EV, energy storage and grid transformation efforts, decarbonization will focus on electrification of industrial processes and converting some parts of the regional economy to use of carbon-free fuels such as hydrogen. TVA's innovation framework is designed to encourage inside-out innovation through partnerships with many startups, LPCs, research labs and universities.

With recent technological advances, energy storage systems are becoming more cost-competitive, yet the practical use of integrating these technologies over short, intermediate and long timescales remains challenging. TVA is engaging in industry research designed to make storage technologies more technically and economically practical in the future, whether owned and operated by utilities or by individuals.

One example is TVA's first owned and operated grid-scale project, the Vonore Battery Energy Storage System. Vonore will use lithium-ion batteries to store 40 MWh of energy—enough electricity to power 11,000 homes for three hours. The project will test the effectiveness of batteries in supporting the transmission system as an alternative to fossil fuels to provide frequency regulation and voltage support.

## Green Power Market Development Award

Center for Resource  
Solutions





## Nuclear Performance and Advanced Technologies

TVA operates the nation's third-largest nuclear fleet. Nuclear provides more than 40% of TVA's total system energy and is by far the largest source of carbon-free generation. Nuclear energy will play a critical role in our nation's path to a net-zero carbon future, which is why improved nuclear performance is a major focus for TVA. We are investing in our existing nuclear fleet with a goal to achieve top quartile or better nuclear fleet performance by the end of 2025.

TVA is also evaluating both light water small modular reactors and non-light water nuclear technologies. These advanced nuclear reactor technologies are expected to be reliable and flexible and to integrate well with other carbon-free, renewable sources such as solar, wind and hydro for a cleaner energy future. In addition, they are expected to reduce economic, technical and regulatory barriers while providing security and safety to accelerate establishment of the next generation of nuclear power in the United States.

TVA will continue to evaluate advanced nuclear technologies as part of our future asset strategy aimed at developing the energy system of the future. TVA's goal is to license and potentially deploy a commercially viable, safe and reliable small modular reactor facility at TVA's Clinch River Nuclear Site in Oak Ridge, Roane County, Tennessee. In 2019, TVA became the first site in the nation to successfully obtain approval from the U.S. Nuclear Regulatory Commission (NRC) for an early site permit that approves the Clinch River Nuclear Site as a suitable site for future demonstration of the construction and operation of two or more small modular reactors (SMRs). The permit is valid through 2039, giving TVA long-term planning flexibility.

In 2020, TVA also established partnerships to explore the economic feasibility of SMR technology with the University of Tennessee-Knoxville and Oak Ridge National Laboratory. Further, in early 2021, TVA initiated its environmental review of the Site in accordance with the National Environmental Policy Act to address the potential environmental effects associated with the construction, operation and decommissioning of multiple advanced nuclear reactors at the Clinch River Nuclear Site.

## Nuclear safety

Our nuclear plants have multiple safety systems in place to keep our workforce and the communities we serve safe. Safety systems include physical barriers that protect against radiation release and layer upon layer of redundant and diverse back-up power systems to keep reactors sufficiently cooled—even in extreme or unlikely events. Our plants operate with oversight by the U.S. NRC, which has inspectors physically stationed at each site. After the event at Fukushima in Japan, the NRC required all nuclear plants to install additional backup safety equipment, known as FLEX, to protect plants from even more extreme events, including "stacked" events during which one disaster follows another. TVA also utilizes industry resources, like the national response centers in Memphis, Tennessee, and Phoenix, Arizona, which were opened in 2014 and can deliver additional safety equipment and resources to any U.S. nuclear power plant within 24 hours.

# Environmental Impact: Stewards of the Environment

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TVA is a steward of the region's waterways and surrounding public lands, and we are dedicated to preserving the Valley's cultural and natural resources and maintaining a healthy climate for future generations.



## Environmental Impact Snapshot

SUSTAINABILITY PRIORITIES	METRIC	FY 2018	FY 2019	FY 2020	2020 HIGHLIGHTS
Air Emissions	SO <sub>2</sub> (metric tons) (CY):	26,744	26,972	<b>17,082</b>	99% below 1977 peak level.
	NO <sub>x</sub> (metric tons) (CY):	21,451	19,430	<b>12,577</b>	97% below 1995 peak level.
Assets and Operations	Coal generation (GWh):	31,471	27,934	<b>19,825</b>	TVA produces a higher percentage of its energy from hydro and nuclear resources than its regional peers.
	Hydroelectric generation (GWh):	13,736	16,058	<b>16,003</b>	
	Natural gas generation (GWh):	32,104	31,704	<b>33,635</b>	
	Nuclear generation (GWh):	64,194	63,433	<b>64,832</b>	
CCR	Percent of Coal Combustion Products Beneficially Used:	38%	45%	<b>87%</b>	TVA continues to recycle coal combustion residuals into building products to reduce landfill storage and protect the environment.
Climate Change	Power from carbon-free sources delivered (%):	52%	54%	<b>57%</b>	TVA carbon emissions are on track to be reduced 70% from 2005 levels by the end of 2030. Top-quartile ranking amongst industry peers in clean energy generation. 57% Carbon-free sources per CY 2020.
	CO <sub>2</sub> Emissions rate (lb/MWh):	825.09	741.66	<b>561.92</b>	
Environmental Compliance	Compliance: Notice of Violations (#):	1	4	<b>6</b>	TVA is committed to improvement in environmental compliance through employee training and education, continuous improvement and preventive measures.
Habitat and Biodiversity	Total acres of habitat protected, enhanced, or restored that supports natural habitat and biodiversity:	247,706	247,706	<b>247,104</b>	TVA ranked best among peers based on industry benchmarks. TVA updated and expanded its Public Land Protection Policy and Natural Resource Plan to support habitat and biodiversity protection on TVA public lands.
Internal Energy Management Program	Building Energy Intensity (% reduction) (EO 13834):	62.6%	64.3 %	<b>69.3%</b>	In FY 2020, TVA invested \$3.31 million on improvements resulting in \$321,634 in annual savings and 3,520 megawatt hours in energy consumption savings. Since 2008, TVA has reduced energy usage by nearly 836 GWhs, enough energy to power 57,000 average homes for a year. TVA's CO <sub>2</sub> emissions savings from these improvements was 591,500 metric tons of CO <sub>2</sub> e, equivalent to reducing emissions from 127,800 passenger vehicles driven for one year.
	Building Potable Water Intensity (% reduction) (EO 13834):	31.6 %	36.9 %	<b>48.0%</b>	
Nuclear Waste Management	Low-level radioactive waste disposal Rate (ft <sup>3</sup> /MWh):	0.00252	0.003366	<b>0.00197</b>	Spent fuel stored in accordance with NRC regulations.
Waste	Amount of hazardous waste manifested for disposal (metric tons):	52.44	93.67	<b>93.13</b>	TVA is committed to proper management of hazardous wastes.
Water	Freshwater consumption (billions of liters/Net MWh):	0.0000007	0.0000006	<b>0.0000008</b>	TVA returns 99.2% of the water it withdraws for thermoelectric power production back into the Tennessee River. Second quartile industry ranking for freshwater consumption.
	Total Water Withdrawal-Non Consumptive (Billions of Liters/Net MWh) (CY):	0.0000978	0.0001116	<b>0.0000823</b>	
	Flood Management: Avoided Flood Damage (\$ million):	\$260	\$1,600	<b>\$1,000</b>	



## 2020 TVA Environmental Policy

**TVA improves quality of life and the environment in the Tennessee Valley by providing reliable, affordable and increasingly clean energy; engaging in proactive stewardship of the Tennessee River system and public lands; and supporting sustainable economic growth.**

We comply with applicable environmental laws, regulations and commitments. We maintain an Environmental Management System (EMS) that fosters continuous improvement in our proactive stewardship and in reducing our environmental footprint.



### TVA's Environmental Management System

Sustainability is at the heart of TVA's strategy and work. To support our Environmental Stewardship mission, TVA focuses on a number of sustainability priorities noted in the table above.

TVA began an EMS Roadmap initiative in FY 2019 that lays out a three-year action plan to drive environmental performance improvements throughout the company. In 2020, TVA implemented several actions and processes as part of a robust performance improvement program:

- Developed additional carbon reduction strategies, including a carbon accounting framework for LPCs to measure and report their carbon footprint.
- Improved integration of environmental objectives into TVA's business planning process by documenting environmental initiatives within each operational business unit.
- Established internal environmental audit program improvements to better evaluate environmental performance.
- Improved internal process of tracking and communicating environmental performance information.

### Air Emissions

We aspire to achieve net-zero carbon emissions by 2050 and to support broader national efforts to decarbonize the economy, and we are collaborating to develop the robust roadmap and technologies to achieve it.

As we work toward deep carbon reductions over the next several decades, we will continue to monitor and take steps to mitigate risks along the way. Changing weather patterns, extreme weather conditions and other events such as flooding, droughts, wildfires and snow or ice storms can impact our system in terms of system operability, customer demand and the health of regional economies.

TVA improves regional air quality through emission controls on existing generation and through adopting cleaner energy options. From 1970 to 2020, TVA has spent approximately \$6.8 billion on clean air controls to reduce emissions from its power plants.

Comprehensive information on TVA's Decarbonization Journey is available in TVA's Carbon Report, "Leadership and Innovation on a Path to Net-Zero," at [tva.com/carbon](http://tva.com/carbon).

## Emissions reduced from historic peaks

# 97.4%

Reduction in nitrogen oxide (NO<sub>x</sub>) below CY 1995 levels through CY 2020 from TVA owned and operated generation

# 99.2%

Reduction in sulfur dioxide (SO<sub>2</sub>) below CY 1977 levels through CY 2020 from TVA owned and operated generation

# 63%

Reduction in total carbon dioxide (CO<sub>2</sub>) below CY 2005 levels through CY 2020 from TVA owned and operated generation, and purchased power



## National Climate Assessment and Resiliency Planning

TVA's Climate Change Adaptation Plan ([tva.com/sustainability](https://tva.com/sustainability)) enables TVA to identify possible impacts to achieving our mission, assess potential consequences and our ability to mitigate climate change, develop adaptation planning actions, ensure resources are invested wisely and support the federal government's leadership role in sustainability.

TVA continues to ensure that climate change adaptation is consistent with the current National Climate Assessment (NCA) and that it is integrated into both agency-wide and regional planning efforts in coordination with other federal agencies, state and local partners, tribal governments and stakeholders. The NCA data will be sampled and modeled to adjust TVA's long-term temperature and precipitation records to appropriately reflect the potential future climate. The river system will be modeled to better understand how TVA will continue providing reliable river operations for the Valley around flood risk reduction, river navigation, hydroelectric power production, water supply, water quality and recreation.

In addition, TVA is one of 18 electric utilities participating in the Department of Energy's (DOE) Partnership for Energy Sector Climate Resilience. This partnership is an initiative to enhance U.S. energy security by improving the resilience of energy infrastructure to extreme weather and climate change impacts. TVA has updated our existing High Level Vulnerability Assessment and Resiliency and Adaptation Plan to meet DOE partnership industry guidance.

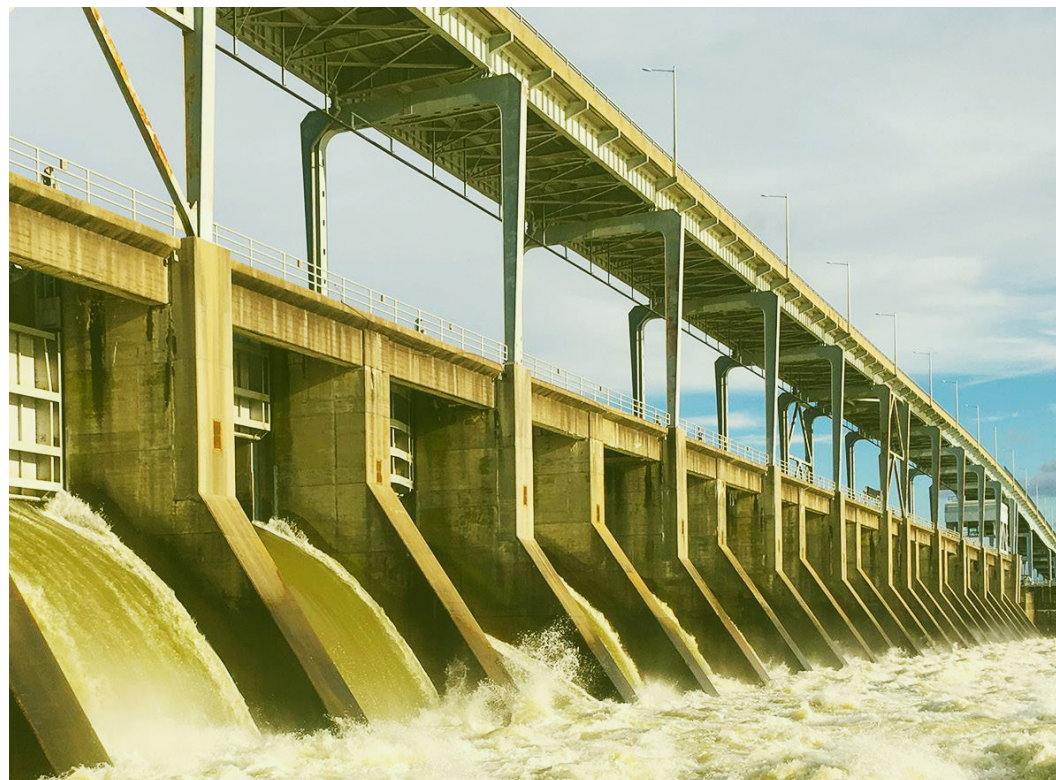
## Drought and Flood Resilience Planning

TVA is testing the resilience of our reservoir system in the face of extreme droughts. In 2020, TVA completed a joint research study with the University of Tennessee to create an approximately 600-year reconstruction of rainfall within our watershed based on tree-ring (dendrochronology) analysis and observed hydrological data. The work completed in 2020 will aid TVA in understanding and preparing for extreme droughts within the river system and how we can work with our communities to build resilience for extreme droughts.

In addition to studying droughts, TVA is also studying extreme floods to help us make better decisions on dam safety investments. TVA uses a state-of-the-art stochastic flood event model to create thousands of realistic extreme flood scenarios, which are routed through TVA's reservoir operation model to determine the effect they might have on TVA's infrastructure as well as other infrastructure built near the river. Statistical techniques built into the software allow us to understand the likelihood and magnitude of these events.

We are also using paleoflood reconstructions to validate and improve the results from the stochastic system. This work utilized data collected in 2020 from several paleoflood deposits throughout the Valley, which record the elevation of floods that occurred prior to modern recordkeeping.

TVA is also partnering with the Oak Ridge National Laboratory (ORNL) to utilize the best climate science to better understand the potential effects of climate change on the river system. A combination of the advanced flood modeling and climate reconstructions will be used in future climate change analysis planned to start in 2021.





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**87%**  
of TVA's coal  
combustion residuals  
were recycled in 2020

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## Modeling and Monitoring the Effects of Rising Temperatures and Climate Change

TVA has conducted load forecasting with a climate change scenario analysis to model the effects of increasing temperatures. The modeled assumption from the Representative Concentration Pathway (RCP) 8.5, the most extreme of the International Panel on Climate Change's scenarios, used data acquired through partnership with Oak Ridge National Laboratory's Climate Change Science Institute.

Under the RCP 8.5 scenario, TVA's region would see more warming at nighttime and in the winter. These increased temperatures would translate to about 1% higher annual energy and about 2% lower winter peaks. Additionally, the models estimate the effects of climate change on precipitation, estimating wetter springs but drier summers.

Further, we are continuing our Sentinel Monitoring program, which collects biological, chemical and physical data in each of the five predominant eco-regions in the Tennessee Valley. The goal of the program is to assess potential biological, ecological and hydrological responses of aquatic ecosystems related to climate change. In 2020, monitoring was completed at five locations, and data was shared with project partners through an EPA-led regional monitoring network.

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## Waste and Chemical Management

TVA is dedicated to ensuring safe, long-term storage and sustainable management of the waste produced by our operations. Our teams manage environmental operating permits for solid waste, landfills and other waste management activities. Additionally, we coordinate and support environmental compliance activities associated with hazardous and solid waste, polychlorinated biphenyls (PCBs), asbestos and other waste for all operating facilities and sites in a manner that protects health and the environment.

TVA responsibly disposed of its last PCB transformers and has now switched over completely to non-PCB containing transformers.

TVA is also an industry leader in the safe, secure monitoring and management of coal combustion residuals (CCR), which is a non-hazardous byproduct of burning coal for electricity. TVA has fully implemented its program to convert CCR storage from wet impoundments to dry systems (lined landfills). This conversion program provides for closure of all wet coal ash handling units. TVA also maintains a robust groundwater monitoring program with a network of more than 450 monitoring wells at its CCR sites to protect natural resources.



## River and Public Land Management

TVA's unique public service mission includes the management of approximately 11,000 miles of shoreline and 293,000 acres of public lands along the Tennessee River and its tributaries for cultural and natural resource protection. TVA's management of the river system also supports recreation, public and industrial water supply needs, aquatic habitat protection, flood risk reduction, hydroelectric power production and cooling water for TVA's generation units. In 2020, TVA updated its long-range Natural Resource Plan (NRP), which guides the direction of TVA's resource stewardship on TVA public lands and throughout the region. This past year, TVA collaborated with more than 160 partnership organizations to implement 245 projects aligned with NRP goals. Learn more at [tva.gov/hrp](http://tva.gov/hrp).

In addition, TVA's flexible river management operating policy allows us to schedule the river system to meet our responsibilities within a wide range of possible weather scenarios and optimize for hydroelectric generation and cooling waters for other generation facilities. Last year was the wettest year on record, and TVA helped prevent an estimated \$1 billion in flood damage.

# The Tennessee River system and adjacent public lands generate about

# \$12 billion

a year in economic activity to the region

# 130,000

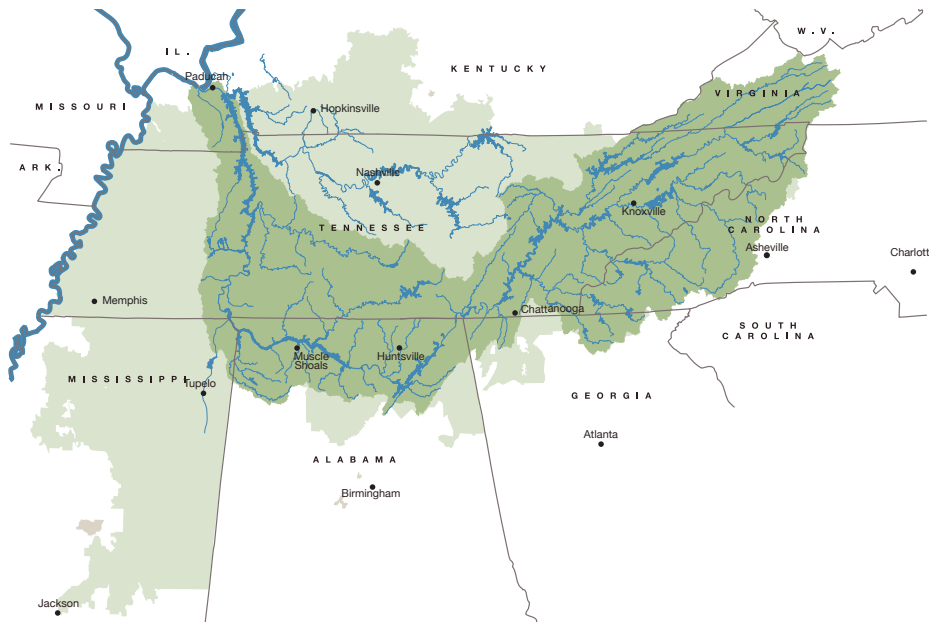
jobs each year

# 56 projects

implemented to support sustainable recreation on public lands, balancing land use and resource stewardship

Learn more at: [tva.com/environment/recreation](http://tva.com/environment/recreation)

## Tennessee Valley Watershed



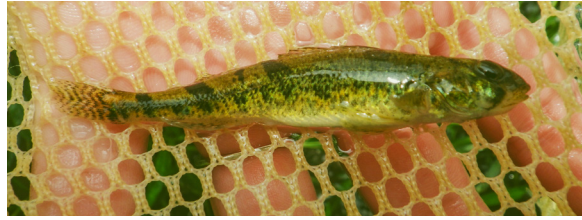
## Water Supply and Quality

Population growth in the Tennessee River Watershed is expected to add 1.1 million more residents to the existing 5.1 million by 2040. Additionally, growth in urban areas around the region—some of which are already facing water-supply challenges—will put increased pressure on the TVA region's water resources.

TVA is working with other federal agencies, state and local governments, and communities across the TVA region to meet these challenges. The goal is to ensure adequate, sustainable supplies of water to support the region's continued growth by working together. TVA promotes the wise use, conservation and development of the region's water resources and it issues permits for proposed water intake structures along the Tennessee River and its tributaries.

The Tennessee River watershed is one of the most biologically diverse watersheds in North America, and it is home to over 300 fish species and 80 species of mussels. TVA monitors ecological conditions at 69 sites on 31 reservoirs on the Tennessee River system to provide information on the health or integrity of Tennessee Valley reservoirs. TVA also monitors approximately 500 stream sites and TVA generation facilities to stay informed of water quality conditions. Learn more about TVA's water quality work at [tva.com/waterquality](https://tva.com/waterquality).

Additionally, as part of TVA's continued efforts to protect aquatic habitat and support the fisheries in the river system, TVA completed dissolved oxygen system upgrades at Cherokee Reservoir, and upgrades at the Fort Loudoun, Douglas, Tims Ford and South Holston reservoirs are planned to be complete in 2021.



### RESTORING FISH POPULATION

TVA has played a significant role in protecting and improving aquatic life in the Tennessee River watershed. For example, the snail darter was threatened by the completion of the Tellico Dam in 1979 and was placed on the endangered species list. TVA has taken significant actions to improve minimum flows and dissolved oxygen concentrations in tailwaters downstream of tributary and mainstem Tennessee River dams. TVA has also worked with federal, state and local agencies and organizations to reduce excess sediment and nutrients from entering streams and improve aquatic habitats. As a result, the snail darter and many other aquatic species have been able to recolonize large portions of the Tennessee River and its tributaries. During 2020, TVA biologists collected snail darters in Watts Bar Reservoir for the first time since 1980.

### DAM SAFETY

TVA Dam Safety teams protect lives and property by helping to ensure that our dams are designed, constructed, operated and maintained for safety and reliability. TVA operates river dams at 49 projects and generates hydroelectric power with 29 conventional hydro plants and one pumped storage plant. But the Dam Safety responsibility goes well beyond these traditional river dams to include 103 structures in all. Of these, 91 are listed on the National Inventory of Dams.

TVA has invested more than \$800 million in dam safety projects since 2010. The initial phase of the Pickwick Dam project to address seismic stability was completed in 2020 and the final phase of the project is scheduled to be completed in 2022. Dam Safety work continued throughout the year on the significant Boone Dam project to address internal erosion, and the crest restoration project is scheduled to start in the summer of 2021. TVA also provides lake level and generation release information through its Lake Info App ([tva.com/lakelevel](https://tva.com/lakelevel)).





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**\$800**  
Million  
invested in dam  
safety projects  
since 2010

## Environmental Reviews

The Tennessee River watershed is one of the most biologically diverse regions in North America. As an environmental steward, TVA monitors and protects species and habitats across the Valley through sensitive resource data management within the TVA Natural Heritage database. The regional biological database contains an inventory of rare plants, animals, natural communities, conservation sites and other sensitive natural resource features for the entire TVA region. This extensive database also includes champion trees, colonial bird roosting sites and areas managed by other local, state and federal entities.

TVA conducts environmental reviews in accordance with the National Environmental Policy Act (NEPA), which typically include compliance assessments, such as those under the National Historic Preservation Act (NHPA) and the Endangered Species Act (ESA).

## BIOLOGICAL COMPLIANCE

TVA supplies biological data and recommendations to help guide effective conservation and land planning activities, and to ensure TVA's compliance with NEPA, the ESA, wetland regulations under the Clean Water Act, Executive Orders and other federal and state legislation.

## NHPA SECTION 106 COMPLIANCE

In accordance with Section 106 of NHPA, any project, permit, license or other TVA approval is reviewed for effects to cultural resources and, when necessary, mitigated through a consultation process. Executed in February 2020, TVA's System Wide Programmatic Agreement (PA) establishes a program alternative for Section 106 compliance. The PA was signed by the Advisory Council on Historic Preservation, seven State Historic Preservation Officers and 12 federally recognized Indian Tribes.

## Rights of Indigenous Peoples

**Over 20 Tribes have a religious and cultural connection to ancestral homelands in the Tennessee Valley and play a vital role in the management of cultural resources on TVA land. Tribes possess traditional knowledge and a special expertise regarding both natural and cultural resources.**

## Cultural Resource Management

TVA is responsible for protecting more than 12,500 archaeological sites on more than 293,000 acres of public land along the Tennessee River and its tributaries and 470,000 acres of inundated land. Laws such as the Archaeological Resources Protection Act (ARPA), Native American Graves Protection and Repatriation Act (NAGPRA), and NHPA, among others, require TVA to interact and consult with federally recognized Indian tribes on a government-to-government basis.

In 2020, TVA continued working on its NAGPRA inventory for sites excavated as part of TVA reservoir construction. TVA also collaborated on a Native American Removal Route research project to document the locations and routes on TVA land and waterways and within the power service area. Other cultural resource protection work included stabilizing approximately 8,100 linear feet of shoreline on Watts Bar, Chickamauga, Wheeler, Pickwick and Kentucky reservoirs, and partnering with the Florence Mound Museum in Florence, Alabama, to host a Thousand Eyes Volunteer Site Stewardship Training workshop and the Shoals Archaeological Stewardship Speakers series.





## Highlights

In 2020, we collaborated with the Tribes on these efforts.

- Tribal representatives participated in an archaeological field school in conjunction with a TVA survey.
- Four tribal representatives participated in TVA outreach efforts by talking to TVA employees and the public about Native American culture and the importance of protecting Native American resources in the Tennessee Valley.
- TVA partnered with Tribes to complete repatriations for 29 archaeological sites and dispositions for two archaeological sites.
- TVA and Tribes executed a comprehensive agreement for post-1990 inadvertent discoveries of human remains and executed a memorandum of agreement that outlines TVA's commitment to provide land for the purposes of reburial of NAGPRA cultural items from TVA land.
- TVA and Tribes met to discuss TVA's ARPA program and ways to collaborate to combat looting on TVA land.
- Due to the COVID-19 pandemic, TVA paused Section 106 consultations and worked with Tribes to develop a path forward until regular Section 106 reviews were able to resume.



PROVIDING A BETTER FUTURE FOR THE PEOPLE OF THE VALLEY

## Stewardship Projects

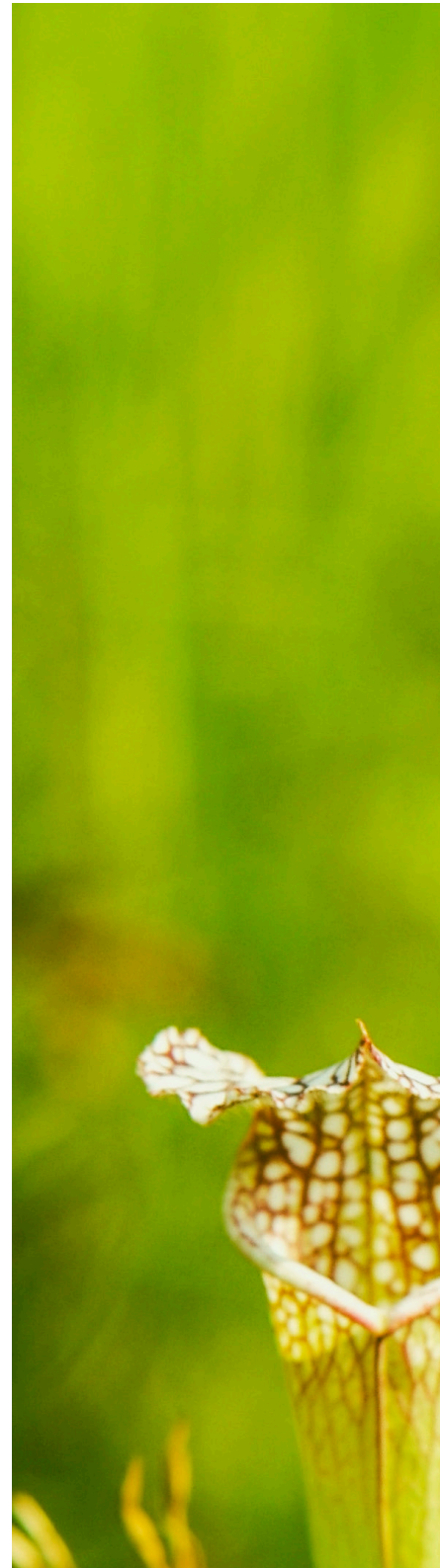
Protecting, preserving and improving the Tennessee Valley River system and its public lands are at the core of TVA's stewardship mission. With the long-term Natural Resources Plan to guide us, TVA's stewardship projects focus on protecting cultural resources, supporting the precious biodiversity in the Valley and providing recreational opportunities on TVA lands and waterways for everyone to enjoy. Learn more at [tva.com/environmentalprojects](https://tva.com/environmentalprojects).

In 2020, we  
conducted  
more than

245

stewardship  
projects

to enhance and protect  
natural resources and  
promote ecotourism.





A close-up photograph of a Common Harebell flower, which has a white, bell-shaped corolla with a prominent red or pinkish-red network of veins. A small black bee is perched on the upper part of the flower. The background is a soft-focus green, suggesting a natural, outdoor setting.

# Stewardship Highlights

- Conducted studies documenting a rare plant, the Common Harebell, and tracked active use of artificial bat roost habitat on public lands.
- Established more than 65 acres of pollinator habitat, planted 60,000 trees and removed invasive plants on 1,300 acres of TVA managed lands.
- Continued to grow TVA's 'Adopt a Trail' and 'Adopt a Spot' volunteer programs with volunteers logging nearly 200 hours.
- Began final review of the Watts Bar Reservoir Lands Plan, a long-range plan for this reservoir that will be completed in 2021. To learn more, please visit [tva.com/landplans](https://tva.com/landplans).
- Continued work with Virginia Tech and Virginia Highlands Community College to protect salamander populations near the South Holston Dam Reservation in East Tennessee.
- Partnered with Mainspring Conservation Trust to establish over 4,300 feet of stream-side buffers along the Little Tennessee River in North Carolina. Vegetation buffers bring numerous benefits to bodies of water and the aquatic life in them.
- Partnered with the Alabama Center for Biodiversity to propagate native freshwater mussels.
- Collaborated with organizations that led 1,382 volunteers to remove 106.4 tons of trash from the Tennessee River and its tributaries.



# Social Impact: Serving People and Communities Across the Valley

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At TVA, our unique, long-standing mission of service drives and inspires us every day to support the 10 million people we are privileged to serve. TVA delivers vital services across the region to assist families, communities, businesses and industries—and help the Tennessee Valley recover and grow.

TVA collaborates with communities and customers to improve quality of life in the Tennessee Valley.

We carry out this mission of service through these partnerships—serving communities with work in land and river management, charitable giving and volunteerism. Our values are always at the forefront, and we keep the power of our public service mission at the center of everything we do.



# Social Impact Snapshot

SUSTAINABILITY PRIORITIES	METRIC	FY 2018	FY 2019	FY 2020	2020 HIGHLIGHTS
Community Vitality	Capital Investment in the Valley (\$ billion)	\$11.3	\$8.9	<b>\$8.6</b>	Returned \$163 million in bill credits to local power companies participating in Long-Term Partnership Agreements in 2020. Supported rural communities with nearly half of TVA economic development projects focused to meet rural community needs.
	Environmental & Community Engagement (# Children participating)	11,650	10,325	<b>2,615</b>	Due to the pandemic, TVA increased its web-based offerings for environmental and STEM education, including virtual hikes and bio blitzes.
	Environmental & Community Engagement (# Group activities)	598	805	<b>307</b>	During the pandemic, TVA and our partners sustained levels of safe engagement.
	Annual Tax Equivalent Payments (excluding impacts from tax equivalents related to fuel cost adjustments) (\$ million)	\$524	\$548	<b>\$552</b>	Contributed nearly \$552 million in tax equivalent payments to states and local governments in 2020 (excluding impacts from tax equivalents related to fuel cost adjustments).
	Community Care Fund	New for 2020	New for 2020	<b>\$2,563,651</b>	Partnered with local power companies through the Community Care Fund to support local initiatives that address hardships created by COVID-19 pandemic.
	Back-to-Business Credit Program	New for 2020	New for 2020	<b>\$9,887,500</b>	TVA created the Back-to-Business Credit Program to enable TVA and LPCs to provide relief to certain large customers affected by the COVID-19 pandemic by providing certain credits when returning to operations. Also in 2020, approved a Pandemic Relief Credit that will be effective as a monthly base rate credit in 2021 to TVA's LPCs, their large commercial and industrial customers, and TVA directly served customers.
Diversity, Equity and Inclusion	Military Share of Workforce (%)	18.32 %	18.10 %	<b>18.50%</b>	Top-quartile ranking amongst peers.
	People of Color Share of Workforce (%)	11.31 %	11.80 %	<b>11.0%</b> <sup>2</sup>	People of Color (PoC) hiring increased in 2020 but was outpaced by PoC attrition, including retirements.
	Women Share of Workforce (%)	20.12 %	20.10 %	<b>19.50%</b>	
Education and Career Development	Training for Career Advancement (hours/employee)	77.71	73.70	<b>64.02</b>	TVA ranked best among peers based on industry benchmarks.
	Continuing Education Contributions (\$)	\$498,041	\$443,789	<b>\$567,715</b>	TVA offers tuition reimbursement to all full-time, annual employees with a minimum of two years of service.
Electricity Affordability	Retail Rate Average (cents/KWh)	9.15	9.33	<b>9.14</b>	As TVA has reconfigured its generation portfolio, TVA in partnership with local power companies has maintained rates lower than 70% of the 100 largest electricity providers in the U.S. (based on EIA data).
	Non-Fuel Delivered Cost of Power Average (cents/kWh)	3.18	3.46	<b>2.93</b>	
Health and Safety	Safe Workplace - Recordable Incident Rate	0.34	0.46 <sup>1</sup>	<b>0.34<sup>1</sup></b>	TVA ranked best among peers for safety based on industry benchmarks. Top-decile performance in 2020 for both TVA's Serious Injury Rate and Recordable Injury Rate.
	Lost-time Case Rate	0.12	0.07	<b>0.10</b>	
	Days Away, Restricted, and Transferred (DART) rate	0.25	0.22	<b>0.17</b>	
	Serious Injury Incident Rate (SIIR)	0.05	0.07 <sup>1</sup>	<b>0.03</b>	
Supply Chain	Total Small Business Spend (\$ million)	\$822	\$766	<b>\$844</b>	Top-quartile ranking amongst peers for % spend with local suppliers. TVA's Supplier Code of Conduct applies to all individuals and organizations that supply services or materials to TVA.
	Total Diverse Business Spend (\$ million) (% reduction) (EO 13834):	\$445.0	\$395.0	<b>\$388.5</b>	
	Total Valley Business Spend (\$ billion)	\$2.2	\$2.0	<b>\$1.8</b>	

<sup>1</sup> Revised due to reclassifications

<sup>2</sup> The FY20 reported data for the People of Color Share of Workforce (%) was changed on August 2021 to correct a reporting error.

## Helping Our Neighbors Through COVID Relief

Our nation and world experienced unprecedented hardship this year with the COVID-19 pandemic. The Tennessee Valley was no exception, and our neighbors and communities felt the impact. Throughout the pandemic, TVA carried out its mission of service by continuing to safely and reliably generate power for hospitals, essential businesses and the 10 million people we serve.

TVA partnered with federal, state and local agencies that have stewardship over public lands to help ensure that the public could stay safe and healthy while enjoying the 200,000 acres of undeveloped lands we hold. We worked to power and preserve daily life for our neighbors, communities and businesses—and to implement ways we can support.

- **Community Care Fund:** TVA took additional steps to support the financial stability of our communities. We partnered with LPCs to create the COVID-19 Community Care Fund, which provided \$2.5 million in local contributions and TVA matching funds to non-profit organizations addressing hardships created by the pandemic. The Fund leverages the strength of the Tennessee Valley Public Power Model to serve communities in need. An additional \$2 million is being offered through September 15, 2021, or until the funds are depleted.
- **Pandemic Relief Credit:** In August 2020, the TVA Board approved a 2.5 percent monthly base-rate credit, approximating \$200 million for Pandemic Relief Credit, implemented in FY 2021 for LPCs, their large commercial and industrial customers, and TVA's directly served customers. This temporary wholesale rate reduction allows each customer to apply the savings in the best way possible to invest in their communities and support those they serve.
- **Back-to-Business Program:** To aid large business and industry customers (greater than 5 MW load) impacted by COVID-19, the Back-to-Business Program was established in April 2020 to provide relief when operating at significantly reduced levels and ease the return to normal operations when safe. At the end of September 2020, credits of \$9.9 million had been distributed, supporting approximately 92,000 jobs across the Valley. The program offering will extend into 2021 to help businesses recover from operations that continue to be impacted by the pandemic.

## Supporting Communities During COVID-19

- Made \$1 billion of credit support available as an option to Valley LPCs through the deferral of wholesale power payments based on their individual needs.
- The first utility in the Southeast to launch virtual home-energy evaluations, enabling residents across the seven-state service region to benefit from money-saving energy advice while staying safe and healthy during the pandemic.
- Worked with LPCs to offer financial incentives for the installation of UV-C technology, supporting improved air quality in schools and offices as they reopened to the public.
- Offered the Employee Relief Fund, an avenue for employees to support other employees experiencing financial hardship due to the pandemic.
- Supported our communities and employees through the Special Opportunity Community Telework Technology Grant—established to provide technological equipment to our most economically distressed communities as they adapted to the telework environment. Through September 2020, TVA provided more than \$192,000 to 63 communities across the Tennessee Valley.
- Provided COVID-19 relief funding totaling \$1.22 million to 102 economic development organizations, including chambers of commerce, regional industrial development associations and local co-working spaces through the Back-to-Business Credit.



## Storm Response

In early 2020, TVA and its LPC partners in Middle Tennessee, Chattanooga and Mississippi faced the unexpected challenge of devastating tornadoes ripping through communities. As soon as the tornadoes struck, TVA and LPCs dispatched crews that worked hand-in-hand to help those in need. Together, we identified priorities, helped ensure the safety of our residents and restored power as quickly as possible. TVA, LPC line crews and other employees worked countless hours in adverse conditions in service to Valley residents and businesses.

Recognizing that impacted communities had needs beyond the restoration of transmission lines, TVA also contributed \$130,000 to non-profit organizations working to provide relief in the most severely affected areas of Middle Tennessee.



## Advantages of Customer Relationships

TVA works in partnership with LPCs and directly served customers to benefit the people of the region. Our actions are guided by what is best for the Valley as a whole. Throughout our 88-year history, we have worked together to make our communities sustainable and resilient.

- The Tennessee Valley has the largest concentration of electric intensive, high-load factor industries anywhere in the U.S. TVA serves a total of 49 large, energy-intensive industrial customers who count on us for a reliable stream of low-cost power, as do eight federal installations, including U.S. DOE facilities and military installations.
- TVA collaborates with customer associations to further engage TVA's customers in decision making and to influence outcomes, including Associated Valley Industries, Tennessee Electric Cooperative Association, Tennessee Municipal Electric Power Association, Tennessee Valley Public Power Association and Tennessee Valley Industrial Committee.
- TVA provides convenient, personalized, face-to-face service to the regions we serve. Individuals familiar with each region's diverse and unique LPC needs and expectations serve as local, single points of contacts to simplify interactions for our customers and provide quick responses to customer issues.
- TVA shares information with our LPC partners and leverages this relationship to gain critical insight and input from these long-term partners. These additional discussions help develop a mutual understanding of the needs and challenges we face and how we can address them together. This insight is used to guide various business decisions that have the potential to impact the LPC partners' core services to their customers.



## Supplier Diversity and Sustainability

An important part of TVA's mission of service is maintaining a competitive, diverse supplier base that is reflective of our region. We seek to do business with firms that offer exceptional products and services at competitive prices, and we welcome businesses of all types—small, minority-owned, woman-owned, veteran-owned, service-disabled veteran-owned and those located in historically underutilized business areas, among others. In 2020, TVA spent \$844 million with small businesses and \$388.5 million with diverse businesses.

In 2020, special emphasis was placed on identifying small, diverse and Valley businesses that could assist in providing high-demand items in short supply, such as personal protective equipment and sanitizing and cleaning supplies. For example, we worked with a small Valley textile supplier to make reusable cloth masks; local diverse businesses to supply disposable masks and cleaning supplies; and a distillery to supply bulk hand sanitizer.

TVA tracks Supplier Diversity performance using key indicators detailing total small business spending, total diverse business spending (minority-owned, woman-owned, veteran-owned, etc.) and total Valley business spending, all measured in both dollar amount and percent of total spending.

TVA suppliers go through a set of specific criteria to qualify to become a potential supplier for TVA. The criteria, which include environment-oriented aspects, are established within a standard process. TVA also practices sustainable acquisition through our green procurement program. We are committed to buying products that fall under designations exemplifying commitment to sustainable practices, including certified energy-efficient products and practices, water efficient products and environmentally preferable products.

## Supplier Diversity Highlights

- Selected as the Southern Region Minority Supplier Development Council's "2020 Regional Corporation Of The Year" for efforts advocating on behalf of minority suppliers and outstanding leadership in supplier diversity.
- Recognized as a "2020 Top 10 Military Friendly® Supplier Diversity Program" for demonstrating commitment to including veteran-owned businesses in its supplier diversity program.

## Valley Sustainable Communities Program

Environmental sustainability continues to be one of the most important factors when a company chooses to invest in or relocate to a community. TVA's mission is to serve Valley communities by helping them showcase their strengths, including their sustainability efforts. TVA introduced the Valley Sustainable Communities program in 2013 to recognize communities that link local sustainability efforts with economic development opportunities. Staff work closely with cities, towns and counties throughout the region to successfully help them commit to long-term economic development. Nearly 40 communities across the Valley are engaged and participating at the Platinum, Gold or Silver level.





## Enhance our Role as a Community Leader and Dedicated Partner

TVA engages diverse stakeholders to leverage partnerships, enhance decision making, drive innovation, improve public transparency and demonstrate TVA's mission of service in the Valley through strategic partnership with utility associations, universities, national labs and other industry partners that bring external expertise and technologies.

- **Electric Power Research Institute (EPRI):** A key partner, TVA collaborates with EPRI in nuclear, power delivery and utilization, generation and environment research areas.
- **University Partnerships:** TVA partners with universities where valuable research contributes to addressing important issues. For example, TVA is a partner in the CURENT Engineering Center led by the University of Tennessee, Knoxville, and supported by both the National Science Foundation and the DOE.
- **Department of Energy and National Labs:** TVA has several projects ongoing with Oak Ridge National Laboratory and the DOE.

## TVA Community Energy Management Programs

TVA has a rich history of helping people use energy wisely. TVA is working to adapt our products and services to answer consumer demands in a changing energy market and support the economic development mission by improving manufacturing productivity and quality. Consumers are increasingly more concerned with how products are made and want to make product decisions that support companies that are conscious of their footprint—from the sustainability of their materials to the environmental impact of the energy they use.

The [energyright.com](https://energyright.com) suite of programs, in partnership with our LPCs, ensure end-use customers have the right tools and information to feel confident in their energy decisions even through a global pandemic. TVA EnergyRight provides products and services that best meet the needs of the Valley through:

- **Business and Industry:** This year, as COVID-19 created different needs for businesses in the Valley, EnergyRight pivoted to focus on electrification projects that helped combat COVID-19 risks for employees and customers, such as improving indoor air quality through increased ventilation or the installation of ultraviolet germicidal irradiation equipment.
- **Strategic Energy Management (SEM) for Schools:** With a focus on engagement and training of staff, SEM for Schools helps schools optimize their building operations by identifying behavioral energy saving opportunities and establishing energy management programs. TVA anticipates nearly 40,000 students and teachers will be positively impacted by SEM for Schools in 2021.
- **Home Uplift:** Funded by TVA, LPCs and other strategic partners, this program benefits high-energy-burden residents and consists of free energy upgrades that increase a home's energy efficiency, lower the homeowner's monthly energy bills and improve the overall health of the homeowner while improving their home comfort.
- **Residential Services:** With the onset of COVID-19, EnergyRight residential programs quickly adapted to virtual offerings for most programs that enable homeowners to continue to access expert knowledge and services that help them better manage their home energy use.
- **Demand Response:** Demand Response programs enhance reliability, help reduce energy costs and offer an alternative to building additional power plants to meet occasional peak energy requirements. In 2020, more than 1,450 MW of capacity was offset through Demand Response programs.

## Customer Partnerships and Community Benefits

Each and every day, our employees are focused on making life better in the Valley. We are committed to social and environmental justice through community partnerships. TVA is proud to serve our communities through charitable donations and partnerships with community groups. We partner with LPCs in the communities they serve to perform energy efficiency workshops, provide information on our renewable programs and offer educational events reviewing effective energy use and electricity safety. TVA sponsors various customer organization meetings, hosts workshops at LPCs and supports the LPCs' Power Play Scholarship Program and the Youth Education program.

Our employees believe strongly in working to support safe, vibrant communities. Our Team TVA volunteer program connects employees' passion for volunteering with tangible public and community service efforts. Our employees logged more than 4,400 volunteer hours in 2020, participating in programs of their choice and those that TVA plans, organizes and sanctions. Employees also serve communities in partnership with LPCs, such as volunteering in local food banks, local schools and other activities.

Through the Generating Justice pro bono program, TVA's Office of the General Counsel attorneys and other professionals—outside private law firm and legal aid organization pro bono partners—donate legal knowledge and skills to help lower barriers that affect lower-income individuals, especially during the COVID-19 pandemic. In FY 2020, it produced estimated total client savings of up to \$110,000—a significant amount even without factoring in the value of resulting housing, financial and personal benefits.



## ENVIRONMENTAL AND STEM OUTREACH

Focusing on science, technology, engineering and mathematics (STEM) and robotics inspires the future workforce and builds a pipeline of future employees for the region. TVA collaborates with communities to support environmental education and (STEM)-related opportunities ([tvastem.com](http://tvastem.com)).

TVA worked with educators to bring hands-on learning experiences to the classroom or provide opportunities in outdoor settings, reaching 2,479 students. When in-person activities came to a halt due to COVID safety and public health concerns, we retooled some of our programs and created virtual learning activities, including virtual hikes on TVA trails and virtual BioBlitzes. The citizen science BioBlitz partnership with Discover Life in America uses expert naturalists and biologists to train volunteer participants to conduct biological inventories and learn about plants and animals on TVA public lands. TVA and TVA retiree group,

Bicentennial Volunteers Incorporated (BVI), also sponsored more than 200 robotic competitions and 350 teams in the 2020 fiscal year. In FY 2020, TVA and BVI invested more than \$1.1 million in grants for STEM and robotics activities.

## VEX ROBOTICS PARTNERSHIP

Through TVA's robotics partnership with VEX Robotics, employees at TVA's Cumberland Fossil Plant in Cumberland City, Tennessee, launched a robotics program in the Stewart County School System. Robotics teams were created at Stewart County's high school, middle school and two elementary schools, providing students with opportunities to hone their engineering abilities as well as life skills such as team-building and critical thinking. TVA provided robotics kits and teacher training while plant employees mentored these students, who represent the next generation of engineers, scientists and leaders in the community.





## Our People: Human Capital Management

The strength of TVA is our people. TVA employs nearly 10,000 people in the Tennessee Valley and is dedicated to keeping them inspired and empowered toward achieving our primary mission of service. We are committed to a culture of innovation, continuous improvement and inclusion and creating a workforce that matches the diversity of the communities we serve. Over the past year, TVA has worked to evolve its strategic direction to place an intentional focus on its people.

Our employees share common core values, whether they work in nuclear engineering, transmission, communication, river operations, information technology, hydroelectric power, or other fields, and TVA's values are the fundamental beliefs that guide our actions, behaviors and decisions as a company.

Competencies are the corresponding behaviors expected of all TVA employees. TVA's core competencies are accountability and driving for results, continuous improvement, leveraging diversity, adaptability and effective communication. Employee competencies are observable, measurable and coachable behaviors that are expected of all TVA employees.

## Employee Support

The pandemic presented many opportunities for TVA to support our employees in response to an increasingly challenging environment. In March 2020, we established a maximum telework posture to protect our employees and maintain business continuity. In addition, we virtually on-boarded 300 new hires. Starting a new job can be both exciting and daunting in any environment, but starting a new job virtually presented additional challenges. To assist our new employees with the transition, we introduced the Integration Partner Program to pair new hires with TVA employees with more experience to welcome them warmly and provide an inside view into TVA's culture and values.

For our current employees, we offer the Employee Relief Fund, an avenue for employees to support other employees experiencing financial hardship due to the pandemic. In FY 2020, the Employee Relief Fund served 14 employees and distributed \$53,025 in funds. Additionally, TVA provided a \$500 tax-free well-being stipend to all non-executive employees to help support our employees' well-being by helping offset costs stemming from the pandemic. In FY 2020, TVA distributed \$4,810,000 to employees for the well-being stipend.

To support our employees as they navigate these challenges, TVA has provided unlimited counseling services via the Employee Assistance Program and offered free telemedicine visits for employees and their families. Additionally, we introduced a new benefit for working parents—on-demand tutoring from The Princeton Review.

**#2 Utility**  
in Forbes list of "America's  
Top Large Employers"

**#2 Employer**  
in the "Best-In-State  
of Tennessee"

**Learning Elite  
Gold Award**  
for third straight year by Chief  
Learning Officer magazine, which  
recognizes best-in-class learning  
and development organizations

**Top 10 Military  
Friendly Employer**  
for the past six years by  
GI Jobs magazine

**60% Union  
Represented  
Workforce**  
and a total of 17 unions  
represent TVA employees  
and contractors



In 2021, we will increase our focus on Diversity and Inclusion through the creation of an Inclusion with Diversity Council comprised of top-level leaders to ensure inclusion with diversity is at the forefront of everything TVA does.

2020 Diversity Impact Top 10 Enterprise-Wide ERG Award by the Association of ERGs & Councils

Leading Disability Employer the last two years by the National Organization on Disability

## Diversity and Inclusion

TVA is committed to building a culture of inclusion. We believe that success over the long term requires the full and active engagement of all our employees, whose diverse perspectives will generate creative solutions to the challenges we face. Our commitment includes creating an inclusive and diverse workforce and focusing on inclusion and diversity in TVA's outreach to our stakeholders and business partners.

At TVA, we have intentionally prioritized inclusion as one of our core values. We view Inclusion as the lever that turns diversity into results. It creates an environment where differences are accepted, where we are open-minded and curious about other perspectives and ideas that can drive innovation. Because of this, we use the term Inclusion with Diversity to emphasize our focus in this area. Inclusion with diversity is about shaping a work environment that values all voices and that recognizes and sustains diversity as a company imperative. We are building and nurturing an inclusive culture where employees show up knowing their contributions matter, understand the value of their work to the 10 million people we serve and are supported by engaged leaders and co-workers. TVA has Employee Resource Groups (ERG) that support and empower employees based on their personal association to the diverse internal cultures present at TVA. The groups include ABLED, ACTION, African American Voices, IGNITE, New Employee Network, Spectrum, TVA & Amigos, TVA-Veterans Association, and Women Empowered. To learn more, visit [tva.com/ergs](http://tva.com/ergs).

We actively recruit employees of all races, sexual orientations, ethnicities, genders, abilities, religions and ages. TVA continues to work to improve People of Color (PoC) and women workforce representation through intentional and accelerated efforts designed to build a better, more inclusive culture at TVA. We are proud to maintain our status as best in industry for the military veterans.

In 2020, TVA appointed Diversity and Inclusion leaders to support the acceleration and elevation of inclusion with diversity throughout the organization. The Diversity and Inclusion team will collaborate across the enterprise and will champion the fair and equitable application of our policies and practices for all employees at every level. Racism and discrimination have no place in our society. In recent years, and in the past year especially, we have intensified our efforts to address social injustice and racial inequality. During the summer we hosted a series of virtual, small discussion groups focused on discrimination, racism and social justice within TVA, underscoring TVA's compassion and commitment to respect, diversity, inclusion and simple acts of caring for each other on the job every day.

Additionally, in FY 2020 TVA partnered with the Tennessee Urban League Affiliates in Nashville, Knoxville, Memphis and Chattanooga to introduce the Building Futures Minority Contractor Training Program. This program works with minority contractors in the Valley to provide training and mentoring, with the goal to recruit, train and retain skilled minority workers.

## Health and Safety

Safety is one of TVA's core values and a key part of our culture. TVA remains committed to ensuring our employees can perform work safely in an environment free from recognized hazards. At TVA, we have a professional and personal commitment to protect our employees, our contractors, our customers and those in the communities that we serve. To ensure community safety, we are working to further strengthen fleet resiliency and reliability in both our physical and cyber security operations.

The strength of our people has been tested as never before in delivering impressive performance gains and safety improvements. Last year was one of TVA's safest years on record with recordable injury rates and serious injury rates among the lowest in the industry nationwide.

TVA's comprehensive safety program has allowed us to develop the tools necessary to ensure employees and contractors go home safe to their families. One popular tool TVA launched in January of 2020 is our Safe Work Mobile App, which allows workers to easily access procedures, safety messages and other safety related items regardless of their location, whether or not a computer or Wi-Fi is readily available.



## CUSTOMER DATA PRIVACY AND PROTECTION

TVA employs software programs to monitor network traffic to identify unauthorized attempts to upload or change information, or otherwise cause disruption or damage. Except for authorized law enforcement investigations, no other attempts are made to identify individual users or their usage habits. Electronic communications with TVA may be scanned by government-owned or contractor equipment to look for network traffic indicating known or suspected malicious cyber activity, including malicious content or communications. A discussion of TVA's significant risks is presented in TVA's 10-K, Item 1A, Risk Factors. Learn more: [tva.com/privacy](https://tva.com/privacy).

## REGULATORY AND CONSUMER PROTECTION

TVA's regulatory objectives are to help achieve low rates and ensure ratepayers are treated in a non-discriminatory manner. TVA's wholesale power contract with LPCs support these key objectives by prohibiting the use of electric system revenues and assets for non-electric purposes and ensuring that ratepayers are treated fairly and consistently. TVA is unique in that we set wholesale electric rates and regulate the retail rates most of our LPC partners charge their customers. TVA achieves regulatory oversight of LPCs through a balanced approach of engagement and flexibility with LPCs. Additionally, TVA's complaint resolution process provides an opportunity for TVA to work with LPCs and their customers to resolve regulatory issues.



## Appendix A - Global Reporting Initiative Metrics

In consideration of the TVA sustainability priorities that support GRI reporting principles, we have provided a detailed response to the GRI indicators in the form of the following GRI Metric Alignment Matrix.

CATEGORY	TOPIC	KEY PERFORMANCE METRIC NAME	FY 2018	FY 2019	FY 2020
102	General Disclosures	Total Number of Board of Director Members	8	9	5
102	General Disclosures	Total Number of Female Board of Director Members	1	1	0
102	General Disclosures	Total Number of Minority Board of Director Members	1	1	0
102	General Disclosures	Total Number of Employees	10,023	10,009	9,989
102	General Disclosures	Winning Performance Payout (%)	130%	116%	137%
102	General Disclosures	Total Owned Summer Net Capability at the End of Year (MW) <sup>1,10</sup>	33,526	33,727	32,750
102	General Disclosures	Owned Coal Summer Net Capability at the End of Year (MW)	7,886	7,886	6,915
102	General Disclosures	Owned Natural Gas Summer Net Capability at the End of Year (MW) <sup>1,10</sup>	12,509	12,509	12,509
102	General Disclosures	Owned Nuclear Summer Net Capability at the End of Year (MW)	7,723	7,922	7,922
102	General Disclosures	Owned Petroleum (Diesel) Summer Net Capability at the End of Year (MW)	9	9	9
102	General Disclosures	Owned Total Renewable Energy Resources Summer Net Capability at the End of Year (MW)	5,399	5,401	5,395
102	General Disclosures	Owned Biomass/Biogas Summer Net Capability at the End of Year (MW)	0	0	0
102	General Disclosures	Owned Geothermal Summer Net Capability at the End of Year (MW)	0	0	0
102	General Disclosures	Owned Hydroelectric Summer Net Capability at the End of Year (MW)	5,398	5,400	5,394
102	General Disclosures	Owned Solar Summer Net Capability at the End of Year (MW)	1	1	1
102	General Disclosures	Owned Wind Summer Net Capability at the End of Year (MW)	0	0	0
102	General Disclosures	Owned Other Summer Net Capability at the End of Year (MW)	0	0	0
102	General Disclosures	Total Owned Net Generation (GWh) <sup>10</sup>	141,505	139,129	134,295
102	General Disclosures	Nuclear Generation (GWh)	64,194	63,433	64,832
102	General Disclosures	Natural Gas and/or Oil Fired Generation (GWh)	32,104	31,704	33,635
102	General Disclosures	Coal-fired Generation (GWh) <sup>10</sup>	31,471	27,934	19,825
102	General Disclosures	Hydroelectric Generation (GWh)	13,736	16,058	16,003
102	General Disclosures	Petroleum Generation (GWh)	0	0	0
102	General Disclosures	Total Renewable Energy Resources Generation (GWh)	13,736	16,058	16,003
102	General Disclosures	Total Purchased Power Generation (GWh) <sup>1</sup>	21,428	21,945	19,526
102	General Disclosures	Purchased Power Renewable Generation (GWh)	7,245	7,840	7,934
102	General Disclosures	Federal Sustainability Report Disclosure	SR&IP and AEMR	SR&IP and AEMR	SR&IP and AEMR
102	General Disclosures	Investor Sustainability Report Disclosure	EEl-ESG Industry Pilot	EEl-ESG Industry Template	EEl-ESG Industry Template
102	General Disclosures	Customer Carbon Accounting Disclosure	Annual Customer Carbon Accounting	Annual Customer Carbon Accounting	Annual Customer Carbon Accounting

CATEGORY	TOPIC	KEY PERFORMANCE METRIC NAME	FY 2018	FY 2019	FY 2020
201	Economic Performance	Operating Revenues (\$M)	\$11,233	\$11,318	\$10,249
201	Economic Performance	O & M Expense (\$M)	\$2,598	\$3,090	\$2,720
201	Economic Performance	Non-Fuel Delivered Cost of Power Rate (cents/kWh)	3.18	3.46	2.93
201	Economic Performance	Retail Rate Average (cents/kWh)	9.15	9.33	9.14
201	Economic Performance	Incremental Annual Electricity Savings from EE (MWh)(CY)	228,202	32,377	101,138
201	Economic Performance	Incremental Annual Investment in EE Programs (\$)(CY)	\$36,213,000	\$21,406,000	\$15,660,000
201	Economic Performance	Operating Cash Flow (\$M)	\$3,938	\$3,720	\$3,636
201	Economic Performance	Net Income (\$M)	\$1,119	\$1,417	\$1,352
201	Economic Performance	Total Spend (\$M)	\$4,353	\$4,467	\$4,441
201	Economic Performance	Total Financing Obligations (\$B) <sup>2</sup>	24.3 <sup>2</sup>	22.8 <sup>2</sup>	21.4 <sup>2</sup>
201	Economic Performance	Nuclear Unit Capability Factor (UCF)(%) <sup>11</sup>	91.3% (UCF-C, excludes WBN2)	89.8% (UCF-C)	90.0% (UCF-A)
201	Economic Performance	Load Not Served (System Minutes)	3.3	3.7	2.7
201	Economic Performance	Reliability Rating (Transmission System) (%)	99.999%	99.999%	99.999%
201	Economic Performance	Inventory Value - Materials and Supplies Inventory (\$M)	725	742	770
201	Economic Performance	External Nuclear Performance Indicators Index	95.7%	80.4%	85.1%
201	Economic Performance	Total Annual Capital Expenditures (\$M)	\$1,759 <sup>12</sup>	\$1,700 <sup>12</sup>	\$1,643 <sup>12</sup>
201	Economic Performance	Coal Equivalent Availability Factor (EAF)	61.90%	65.20%	79.40%
201	Economic Performance	Combined Cycle Equivalent Availability Factor (EAF)	80.10%	78.90%	84.00%
201	Economic Performance	Economic Development - Capital Investment in the Valley (\$B)	11.3	8.9	8.6
202	Market Presence	Commercial Retail Electric Customer Count (at end of CY) <sup>3</sup>	18	17	17
202	Market Presence	Industrial Retail Electric Customer Count (at end of CY) <sup>3</sup>	43	43	43
202	Market Presence	Residential Retail Electric Customer Count (at end of CY) <sup>3</sup>	0	0	0
203	Indirect Economic Impacts	Jobs Created or Retained (#)	65,423	66,572	67,431
203	Indirect Economic Impacts	Flood Management: Avoided Flood Damage (\$M)	\$260	\$1,600	\$1,000
204	Procurement Practices	Supplier Diversity: Total Diverse Business Spend (\$M)	\$445.0	\$395.0	\$388.5
204	Procurement Practices	Supplier Diversity: Diverse Business Utilization (%)	15.10%	13.70%	14.20%
204	Procurement Practices	Supplier Diversity: Total Small Business Spend (\$M)	\$822	\$766	\$844
204	Procurement Practices	Supplier Diversity: Small Business Utilization (%)	27.80%	26.60%	32.30%
204	Procurement Practices	Supplier Diversity: Total Valley Business Spend (\$B)	\$2.2	\$2.0	\$1.8
204	Procurement Practices	Valley Spend Utilization (%)	74.30%	68.80%	65.20%
301	Materials	Waste: Coal Combustion Products Beneficially Used (%) (CY)	38.00%	45.00%	87.00%
302	Energy	Performance Contracting - Investment Value (\$M)	5.4	4.91	3.3



CATEGORY	TOPIC	KEY PERFORMANCE METRIC NAME	FY 2018	FY 2019	FY 2020
302	Energy	Sustainable Buildings Progress (% reduction from baseline: GSF)	5.10%	22.00%	22.00%
302	Energy	Building Energy Intensity Progress (% reduction from FY2003: Btu/GSF) (EO 13834)	62.60%	64.30%	69.30%
302	Energy	Building Renewable Energy Use (% renewable sources) (EO 13834)	18.00%	18.30%	18.70%
303	Water and Effluents	Building Potable Water Intensity Progress (% reduction from FY2007: Gal/GSF) (EO 13834)	31.60%	36.90%	48.00%
303	Water and Effluents	Water Supply: Freshwater Consumption Rate (All Generation) (Billions of Liters/Net MWh)(CY)	0.0000007	0.0000006	0.0000008
303	Water and Effluents	Water: Total Water Withdrawal-Non Consumptive (Billions of Liters/Net MWh) (CY)	0.0000978	0.0001116	0.0000823
304	Biodiversity	Total Acres of Habitat Protected (# acres)	247,706	247,706	247,104
305	Emissions	Clean Energy (Power from carbon-free sources delivered) (%)	52.00%	54.00%	57.00%
305	Emissions	Scope 1 and 2 GHG Emissions (% reduction from FY2008)	41.00%	41.60%	51.00%
305	Emissions	Scope 3 GHG Emissions (% reduction) <sup>9</sup>	29.60%	31.97%	54.80%
305	Emissions	CLIMATE: TVA CO2 Tons from Owned Generation (metric tons) reported in CY	47,521,550	43,090,822	34,237,908
305	Emissions	CLIMATE: TVA Emissions (Owned CO2 Tons/GWh)	360	307	288
305	Emissions	CLIMATE: TVA Emissions (Owned CO2 Metric Tons/ Net MWh)(CY/FY)	0.338	0.310	0.255
305	Emissions	CLIMATE: Purchased Generation CO2 Emissions (metric tons) reported in CY	13,049,225	13,543,114	6,521,407
305	Emissions	CLIMATE: Purchased Generation Emissions (Purchased CO2 Metric Tons/ Net MWh)(CY/FY)	0.609	0.617	0.334
305	Emissions	CLIMATE: CO2 Emissions rate - System TVA Scope 2 CO2 Emissions Rate (Owned and Purchased lbs/MWh) reported in CY	825.09	741.66	561.92
305	Emissions	CLIMATE: Owned and Purchased Generation CO2 Emissions (metric tons) reported in CY	60,570,775	56,633,937	40,759,315
305	Emissions	CLIMATE: Owned and Purchased Generation Emissions (Owned and Purchased CO2 Metric Tons/ Net MWh)(CY/FY)	0.372	0.352	0.265
305	Emissions	CLIMATE: TVA CO2e Scope 1 Emissions (metric tons) (CY)	47,720,320	43,696,845	34,762,588
305	Emissions	CLIMATE: TVA CO2e Scope 2 Emissions (metric tons) (CY)	208,159	200,153	170,039
305	Emissions	CLIMATE: TVA CO2e Scope 3 Emissions (metric tons) (CY) <sup>4</sup>	72,096	73,994	66,967
305	Emissions	Air: TVA SO2 Emissions (metric tons) (CY)	26,744	26,972	17,082
305	Emissions	Air: TVA NOx Emissions (metric tons) (CY)	21,451	19,430	12,577
305	Emissions	Non-Generation Fugitive CO2e Emissions: Sulfur Hexafluoride (metric tons) (CY) <sup>5</sup>	117,863	324,988	35,541
305	Emissions	Air: TVA Mercury Emissions (kg) (CY)	67.7	50.1	17.5
306	Effluents and Waste	Non-hazardous Municipal Solid Waste Diversion (% diverted / recycled) <sup>6</sup>	5.42%	4.53%	3.90%
306	Effluents and Waste	Waste: Low-level radioactive waste disposal rate (ft3/MWh) (CY)	0.0025205	0.0033666	0.00197
306	Effluents and Waste	Waste: Amount of Hazardous Waste Disposed (MT) (CY)	52.44	93.67	93.13

CATEGORY	TOPIC	KEY PERFORMANCE METRIC NAME	FY 2018	FY 2019	FY 2020
307	Environmental Compliance	Compliance: Notice of Violations (NOV)	1	4	6
403	Occupational Health and Safety	Safe Workplace (RIR)	0.34	0.46 <sup>7</sup>	0.34 <sup>7</sup>
403	Occupational Health and Safety	Lost Time Case Rate (OSHA)	0.12	0.07	0.10
403	Occupational Health and Safety	Days Away, Restricted and Transfer (DART) rate (OSHA)	0.25	0.22	0.17
403	Occupational Health and Safety	Serious Injury Incident Rate (SIIR)	0.05	0.07 <sup>7</sup>	0.03
403	Occupational Health and Safety	Work-Related Fatalities	0	0	0
404	Training and Education	Training for Career Advancement (hours/employee)	77.71	73.70	64.02
404	Training and Education	Continuing Education Contributions (\$)	\$498,041	\$443,789	\$567,715
405	Diversity and Equal Opportunity	Military Share of Workforce (%)	18.32%	18.10%	18.50%
405	Diversity and Equal Opportunity	People of Color Share of Workforce (%)	11.31%	11.80%	11.0% <sup>13</sup>
405	Diversity and Equal Opportunity	Women Share of Workforce (%)	20.12%	20.10%	19.50%
411	Rights of Indigenous Peoples	Tribal Engagement	23	51	36
413	Local Communities	Environmental & Community Engagement (# Group activities)	598	805	307
413	Local Communities	Environmental & Community Engagement (# Children participating)	11,650	10,325	2,615
413	Local Communities	Annual Tax Equivalent Payments (without Fuel Cost Adjustment) (\$M)	524	548	552
413	Local Communities	Back-to-Business Credit Program (\$)	New for 2020	New for 2020	\$9,887,500
413	Local Communities	Community Care Fund (\$)	New for 2020	New for 2020	\$2,563,651
413	Local Communities	Employee Hours Volunteered (Hours)	3,011	2,550	4,400
413	Local Communities	Stakeholder Survey (%) <sup>8</sup>	81%	80%	78%
413	Local Communities	Customer Loyalty (VOC Survey Results) <sup>8</sup>	72.0%	71.3%	70.7%
413	Local Communities	Media Tone (Positive and Neutral) <sup>8</sup>	90.3%	89.3%	85.3%
414	Supplier Social Assessment	Sustainable Acquisition Progress – Obligations in Dollars containing Statutory Environmental Requirements (% of contract dollars with environmental clauses)	68.5%	93.7%	89.3%

\*Please see Appendix D for Regulation G Reconciliations

<sup>1</sup>Caledonia Combined Cycle Plant is currently a leased facility operated by TVA.

<sup>2</sup>See Appendix D for Regulation G Reconciliations

<sup>3</sup>Customer count is based on meters in accordance with the definition on Form EIA-861 Annual Electric Power Industry Report.

<sup>4</sup>These are partial Scope 3 CO<sub>2</sub>e rates

<sup>5</sup>2019 value include historical emissions that were not previously captured.

<sup>6</sup>Does not include construction and demolition waste

<sup>7</sup>Revised due to reclassifications

<sup>8</sup>Three-year average, not annual rate

<sup>9</sup>This is a partial scope 3 value.

<sup>10</sup>Includes natural gas facilities operated by TVA, subject to leaseback and long-term lease arrangements.

<sup>11</sup>Nuclear Unit Capability Factor for 2018 and 2019 values based on cycle performance. 2020 value based on annualized performance.

<sup>12</sup>Construction Expenditures based on Statement of Cash Flows

<sup>13</sup>The FY20 reported data for the People of Color Share of Workforce (%) was changed on August 2021 to correct a reporting error.



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## Appendix B - Disclosure Initiatives

As a federal agency, TVA is required to submit several Federal Energy and Sustainability reports annually in order to achieve goals in Executive Orders 14008 and 13834, Energy and Policy Act of 2005, National Energy Conservation Policy Act of 1978 and Energy Independence and Security Act of 2007.

TVA engages in the following Industry, federal and customer-oriented disclosure initiatives that support the GRI framework.

**CDP (formerly known as Carbon Disclosure Project)** - CDP is an international, not-for-profit organization providing a global reporting platform for companies and cities to measure, disclose, manage and share vital environmental information to stakeholders and investors. TVA continues to monitor and evaluate CDP's annual scoring methodologies on its carbon, water and supply chain questionnaires as a means to continuously improve and demonstrate sustainability performance.

**Edison Electric Institute - Environmental, Social, and Governance (ESG) Reporting Template** - TVA participates in the Edison Electric Institute (EEI) and American Gas Association (AGA) environmental, social and governance (ESG) reporting template initiative. This initiative includes a stakeholder working group composed of electric companies and financial industry specialists in asset management, sustainability, investment banking, and buy-side and sell-side analysts to develop industry-focused and investor-driven sustainability reporting practices. The effort encourages voluntary reporting of sustainability information in both quantitative and qualitative formats and is the first and only industry-focused and investor-driven ESG reporting framework.

The EEI ESG report template provides information in a measurable and consistent format for investors and customers to accurately assess long-term sustainability progress. Within the quantitative section, companies report sector-specific information, including data on a company's generation portfolio, emissions, capital expenditures and resources. The use of these universal metrics provides comparable data. The qualitative section provides an opportunity for companies to share additional information and context about their sustainability governance and strategy.

TVA's 2019 EEI ESG report (<https://tva.q4ir.com/esg/>) highlights the company's emission reductions and clean energy strategy, which is focused on modernizing the power grid, expanding renewable energy resources, and delivering cost-effective, reliable energy to our customers.

**Electric Power Research Institute (EPRI)** - The electric power industry continues to evolve in its effort to integrate sustainability into strategic planning and operations. TVA actively participates in EPRI's sustainability metric assessment and benchmarking supplemental collaborative projects. 2020 marked the seventh year of EPRI's focused research on metrics to measure performance on priority sustainability issues for the electric power industry.

**National Environmental Policy Act (NEPA)** - As a federal agency, TVA must also comply with the National Environmental Policy Act. NEPA establishes the process of identifying, considering and disclosing environmental impacts of major federal actions. The NEPA process is intended to help agency officials make better decisions that protect, restore and enhance the human environment. TVA's NEPA procedures outline how TVA conducts these environmental reviews. Read more about TVA's NEPA procedures online at: [tva.com/nepa](http://tva.com/nepa).

**Office of Management and Budget Scorecard** - Executive Order (EO) 13834, "Efficient Federal Operations," states that the OMB and the Council on Environmental Quality will coordinate scorecard metrics and reporting instructions to measure agency progress. TVA's Federal Sustainability Report and Implementation Plan addresses key aspects of our federal objectives and targets. We integrate our federal goals into our existing business operations, align with specific federal goals and metrics, and report on our progress. The Executive Order does not include the parts of TVA that directly produce electricity for resale. The Sustainability Report and Implementation Plan (along with an Annual Energy Management Report) are updated annually to report progress on the EO 13834 goals. Learn more about TVA's Annual Federal Sustainability Plans: [tva.com/sustainability](http://tva.com/sustainability).

**Task Force on Climate-Related Financial Disclosures (TCFD)** - The TCFD is an organization formed by the Financial Stability Board (FSB) with the goal of developing a set of voluntary climate-related financial risk disclosures to inform investors, lenders and insurance underwriters as well as other members of the public about the risk companies face related to climate change. TCFD's efforts are ongoing and TVA continues to monitor, evaluate and incorporate TCFD recommendations into its public disclosure documents. Read more about TVA's TCFD online at [fsb-tcfid.org](http://fsb-tcfid.org).



## Appendix C - Guidance Documents

In addition to the disclosures mentioned throughout the document, TVA also develops and updates on a periodic basis the following plans. The following disclosures support the GRI framework.

**Climate Change Adaptation Action Plan** - TVA maintains our Climate Change Adaptation Action Plan as a cohesive part of our major planning processes, which also include our IRP and NRP. Executive Order 14008, "Tackling the Climate Crisis at Home and Abroad," has been instituted per President Biden. TVA is following the guidelines within this executive order. Climate change adaptation planning allows TVA to identify possible impacts to mission achievement, assess potential consequences and ability to mitigate climate change, develop adaptation planning actions, ensure resources are invested wisely and support the federal government's leadership role in sustainability. TVA's 2020 Climate Change Adaptation Action Plan is available online at: [tva.com/sustainability](https://tva.com/sustainability). TVA's 2021 Climate Adaptation Action Plan is planned to be available online this summer per Executive Order 14008.

**Environmental Policy** - This synergistic and forward-thinking Board Policy lays forth TVA's plan for environmental stewardship and compliance, technology innovation and a growing renewable energy portfolio. The goal is to provide cleaner, reliable and affordable energy to support sustainable growth in the Tennessee Valley and to engage in environmental stewardship in a balanced and ecologically sound manner. Read more about TVA's Environmental Policy online at: [tva.com/environmentalpolicy](https://tva.com/environmentalpolicy).

**Integrated Resource Plan (IRP)** - Building on TVA's service commitment, the IRP provides a roadmap for making decisions about how TVA can meet future demand for power in new and innovative ways. Considering costs, environmental factors, reliability, regulations and energy efficiency, the plan helps determine how TVA's energy portfolio will look in the future. Read more about TVA's Integrated Resource Plan online at: [tva.com/irp](https://tva.com/irp).

**Natural Resource Plan (NRP)** - TVA is unique among power generators in that it was created to enhance the economic aspects of its service region, and to fulfill the responsibilities associated with being a good steward of the lands and resources that are entrusted to TVA. The NRP is a strategic level document that, over the next 20 years, will guide the direction of TVA's natural resource stewardship. The NRP creates a sound framework for balancing land use, human activity and conservation. As always, the goal is to find the optimal public benefit of each action TVA takes. Read more about the Natural Resource Plan online at: [tva.com/nrp](https://tva.com/nrp).

## Appendix D - Regulation G Reconciliations

	September 30, 2018	September 30, 2019	SEPTEMBER 30, 2020
<b>Total outstanding debt</b>	<b>\$23,639</b>	<b>\$22,197</b>	<b>\$20,889</b>
Exchange gain	147	191	153
Unamortized discounts, premiums, issue costs and other	154	139	131
Notes payable	(69)	(23)	
Debt of variable interest entities	1,175	(1,137)	(1,098)
<b>Bonds and Notes, Gross</b>	<b>\$22,696</b>	<b>\$21,367</b>	<b>\$20,075</b>
Energy prepayment obligations	10		
Notes payable	69	23	
Leaseback obligations	301	263	223
Membership interests of variable interest entity subject to mandatory redemption	30	28	25
Debt of variable interest entities	1,175	1,137	1,098
<b>Total Debt and Other Financing Obligations, Gross ("TFO")</b>	<b>\$24,281</b>	<b>\$22,818</b>	<b>\$21,421</b>
Cash and Cash Equivalents	(299)	(299)	(500)
<b>Total Debt and Other Financing Obligations, Gross ("TFO"), net of Cash and Cash Equivalents</b>	<b>\$23,982</b>	<b>\$22,519</b>	<b>\$20,921</b>



## Appendix E - TVA Alignment with Global Reporting Initiative Criteria

TVA Alignment							
Global Reporting Initiative criteria addressed [Includes G4 for electric utilities]							
GRI CATEGORY INFORMATION		SUSTAINABILITY FOCUS AREA				CSR REPORT	
GRI Category	GRI Criteria Description	Economic	Environmental	Social	Governance	Section Title	Page Number
101	Foundation	✓	✓	✓	✓	Aspirations to Make Life Better for the People of the Valley; Sustainability Strategy, Governance and Reporting Framework	8-13
102	General Disclosures	✓	✓	✓	✓	Key Sustainability Performance Metrics	15, 25, 37, 46, 47, 48, 49
103	Management Approach				✓	Sustainability Strategy, Governance and Reporting Framework	10, 11, 12, 13
201	Economic Performance	✓				Economic Impact, Environmental Impact	13, 15, 16, 22, 30, 37, 38, 39, 41, 42
202	Market Presence	✓				Economic Impact, Environmental Impact, Social Impact	16, 17, 19, 20, 21, 36 - 45
203	Indirect economic impacts	✓				Economic Impact, Environmental Impact, Social Impact	13, 15, 16, 22, 30, 37, 38, 39, 40, 42
204	Procurement practices	✓			✓	Social Impact	37, 40
205	Anti-corruption			✓	✓	About TVA (Ethics)	tva.com
206	Anti-competitive behavior			✓	✓	About TVA	tva.com
301	Materials		✓			Environmental Impact, Social Impact	21, 41, 46 - 49
302	Energy		✓			Economic Impact, Environmental Impact, Social Impact	15 - 23, 41, 46 - 49,
303	Water and Effluents		✓			Environmental Impact	27, 29-31
304	Biodiversity		✓			Environmental Impact	25, 26, 32, 34, 35
305	Emissions		✓			Economic Impact, Environmental Impact	9, 18, 19, 25, 26,
306	Waste and Effluents		✓			Environmental Impact, Social Impact	25, 28, 48
307	Environmental Compliance		✓			Environmental Impact	26, 28, 33
308	Supplier Environmental Assessment		✓	✓	✓	Environmental Impact, Social Impact	32, 40
401	Employment			✓	✓	Social Impact	38 , 43-45
402	Labor/Management Relations			✓	✓	Social Impact	43, 44
403	Occupational health and safety			✓	✓	Social Impact	38, 45
404	Training and Education			✓	✓	Social Impact	37
405	Diversity and equal opportunity			✓	✓	Social Impact	37, 40, 43, 45
406	Non-Discrimination			✓	✓	Social Impact	40, 44
407	Freedom of Association and Collective Bargaining			✓	✓	Social Impact	43
408	Child Labor			✓	✓	Social Impact	tva.com
409	Forced or compulsory labor			✓	✓	Social Impact	tva.com
410	Security Practices			✓	✓	Economic Impact, Environmental Impact, Social Impact	12, 19, 23, 27, 45
411	Rights of Indigenous Peoples	✓		✓	✓	Environmental Impact	33, 34
412	Human Rights Assessment			✓	✓	Social Impact	tva.com
413	Local Communities			✓	✓	Economic Impact, Social Impact	20, 36-42, 45
414	Supplier Social Assessment			✓	✓	Environmental Impact, Social Impact	32, 40
415	Public Policy	✓		✓	✓	Sustainability Strategy, Governance and Reporting Framework	8-13
416	Customer health and safety	✓		✓	✓	Economic Impact, Environmental Impact, Social Impact	23, 27, 28, 30, 39, 42, 45
417	Marketing and Labeling	✓		✓	✓	Environmental Impact, Social Impact	29, 30, 32, 33, 35, 36-45
418	Customer Privacy	✓		✓	✓	Social Impact	45
419	Socioeconomic compliance	✓		✓	✓	Economic Impact, Social Impact	15-22, 40

Note: ✓= primary emphasis ✓= secondary emphasis

## Appendix F - Acronyms List

<b>AGA:</b> American Gas Association	<b>KUB:</b> Knoxville Utilities Board
<b>APC:</b> Asset Performance Center	<b>LPC:</b> Local Power Company
<b>ARPA:</b> Archaeological Resources Protection Act	<b>MW:</b> Megawatt
<b>BVI:</b> Bicentennial Volunteers Incorporated	<b>MWh:</b> Megawatt Hours
<b>CCR:</b> Coal Combustion Residuals	<b>NAGPRA:</b> Native American Graves Protection and Repatriation Act
<b>CDP:</b> Carbon Disclosure Project	<b>NCA:</b> National Climate Assessment
<b>CEO:</b> Chief Executive Officer	<b>NEPA:</b> National Environmental Policy Act
<b>CEQ:</b> Council for Environmental Quality	<b>NHPA:</b> National Historic Preservation Act
<b>CO<sub>2</sub>:</b> Carbon Dioxide	<b>NOX:</b> Nitrogen oxide
<b>CRO:</b> Chief Risk Officer	<b>NRC:</b> Nuclear Regulatory Commission
<b>CSO:</b> Chief Sustainability Officer	<b>NRP:</b> Natural Resource Plan
<b>CY:</b> Calendar Year	<b>OIG:</b> Office of the Inspector General
<b>DOE:</b> Department of Energy	<b>OMB:</b> Office of Management and Budget
<b>EEl:</b> Edison Electric Institute	<b>ORNL:</b> Oak Ridge National Laboratory
<b>EEl-ESG:</b> Edison Electric Institute Environment Social Governance	<b>PA:</b> Programmatic Agreement
<b>EMS:</b> Environmental Management System	<b>PCB:</b> Polychlorinated Biphenyls
<b>EO:</b> Executive Order	<b>POC:</b> People of Color
<b>EPA:</b> Environmental Protection Agency	<b>RCP:</b> Representative Concentration Pathway
<b>EPRI:</b> Electric Power Research Institute	<b>REC:</b> Renewable Energy Certificate
<b>ERC:</b> Enterprise Risk Council	<b>RERC:</b> Regional Energy Resource Council
<b>ERG:</b> Employee Resource Group	<b>RRSC:</b> Regional Resource Stewardship Council
<b>ESA:</b> Endangered Species Act	<b>SEC:</b> Securities and Exchange Commission
<b>ESG:</b> Environmental, Social, and Governance	<b>SEM:</b> Strategic Energy Management
<b>EV:</b> Electric Vehicles	<b>SIIR:</b> Serious Injury Incident Rate
<b>FACA:</b> Federal Advisory Committee Act	<b>SMR:</b> Small Modular Reactors
<b>FSB:</b> Financial Stability Board	<b>SO<sub>2</sub>:</b> Sulfur dioxide
<b>FY:</b> Financial Year	<b>SOC:</b> System Operations Center
<b>GAO:</b> Government Accountability Office	<b>STEM:</b> Science, Technology, Engineering and Mathematics
<b>GRI:</b> Global Reporting Initiative	<b>TCFD:</b> Task Force on Climate-Related Financial Disclosures
<b>GWh:</b> Gigawatt Hours	<b>TVA:</b> Tennessee Valley Authority
<b>IRP:</b> Integrated Resource Plan	<b>UFC:</b> Unit Capability Factor



FY 2020 Sustainability Report  
[tva.com/sustainabilityreport](https://tva.com/sustainabilityreport)