



TENNESSEE  
VALLEY  
AUTHORITY

# Board Meeting

May 6, 2021  
Knoxville, Tennessee



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# President's Report

Jeff Lyash  
President and CEO

May 6, 2021





TENNESSEE  
VALLEY  
AUTHORITY

# Board Meeting

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Knoxville, Tennessee



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# People and Performance Committee

Kenny Allen, Chair

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# Winter Event Review

Aaron Melda  
Senior Vice President  
Transmission and Power Supply

May 6, 2021

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# Background

TVA and its neighboring territories experienced strong to extreme winter weather in February 2021.

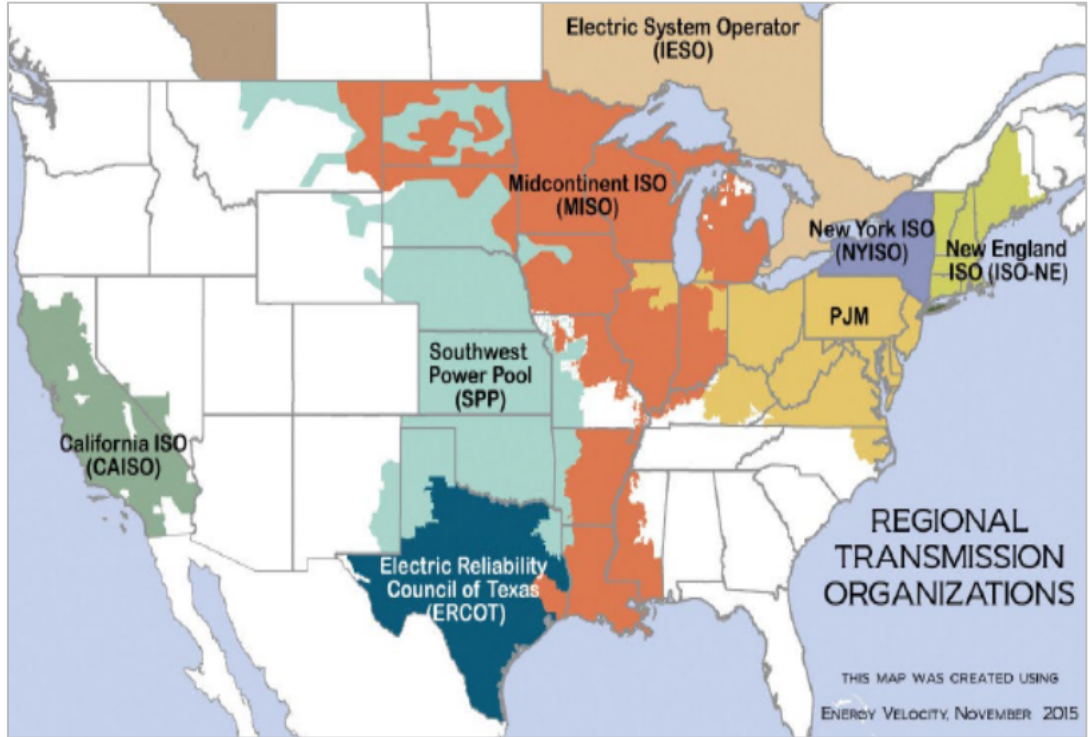
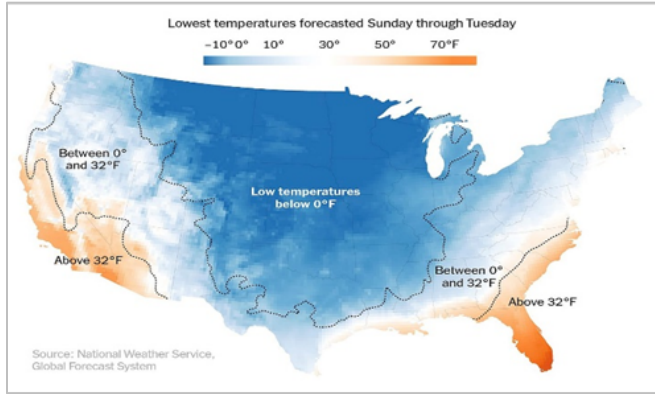
TVA reliably delivered power to its customers during this event. Several other power systems suffered large scale failures that caused loss of life, in addition to reputational and economic damages.

TVA's employees overcame multiple challenges and identified several risks during the event.

We are carefully assessing what we saw to identify areas for continuous improvement to ensure that TVA's recent success is repeatable.



# What Happened at TVA?



# How Is TVA Different From the Electric Reliability Council of Texas (ERCOT)?

## TVA

Reserve margin process ensures summer and winter confidence

Integrated resource planning process ensures a diverse fleet

Strong winterization program is a requirement

Strong and numerous connections to other utilities

TVA Public Power model ensures reliability



**Kept the Lights  
On and  
Rates Stable**

**Proved the Value  
of Our Model**

## ERCOT

Reserve confidence relies on pricing strategy

Market-based incentives drive investments

Market structure tried to provide incentive to winterize

Minimal connections to hedge power system risks

Deregulated market model relies on profit driven competition to incentivize reliability



**\$50 Billion in  
Estimated  
Economic  
Losses**

**Entire Model  
in Question**

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# People and Performance Committee

Kenny Allen, Chair

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# External Relations Committee

Beth Harwell, Chair



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# Economic Development Highlights

Jeannette Mills  
Executive Vice President &  
Chief External Relations Officer

May 6, 2021

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# Purpose and Background

**Purpose:** Celebrate economic development announcements since the beginning of fiscal year 2021, focusing on historical jobs and capital investment numbers and electric vehicle (EV) companies in alignment with TVA's strategic EV plan

**Background:** TVA's Economic Development (ED) mission is to improve the quality of life in the Tennessee Valley by serving as a catalyst for job creation and capital investment. ED's work aligns with TVA's strategic priorities through attracting industries of the future to the region, engaging with existing businesses and industries, and serving with our partners to help communities prepare for economic growth.

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# Economic Development: Jobs & Investments

Fiscal Year To Date

**45,200 Jobs**

created & retained

**\$3.9 Billion**

capital investment

# Economic Development: EV Announcements

## EV Manufacturers



Electric Vehicle manufacturer  
Spring Hill, TN  
4,200 retained jobs  
\$1.7B capital investment



Electric Vehicle manufacturer  
Memphis, TN  
430 new jobs  
\$360M capital investment

## EV Batteries



General Motors and LG Chem Solution joint  
venture Electric Vehicle battery manufacturer  
Spring Hill, TN  
1,300 jobs  
\$2.3B capital investment



Electric Vehicle battery manufacturer  
Clarksville, TN  
300 new jobs  
\$220M capital investment

## EV Suppliers



Automotive supplier to Volkswagen  
Electric Vehicle  
Chattanooga, TN  
240 new jobs  
\$42M capital investment



**Metalsa**

Automotive supplier for combustion engine,  
hybrid and battery Electric Vehicles  
Hopkinsville, KY  
97 new jobs



# Economic Development: Notable Announcements



Pet food manufacturer  
Lebanon, TN  
90 jobs  
\$200M



Ecommerce and cloud  
computing distribution center  
Alcoa, TN  
800 jobs



Heavy-duty power tools  
manufacturer  
Grenada, MS  
800 jobs  
\$60M capital investment



Aluminum products  
manufacturer  
Franklin, KY  
60 jobs  
\$53M capital investment



Off-road and luxury camper  
manufacturer  
Hohenwald, TN  
115 jobs  
\$1.7M

# Economic Development: Historical Announcements

**Most Jobs in TVA History:  
8,500**

**ORACLE**

Computer technology  
corporation  
Nashville, TN  
**8,500 jobs**  
**\$1.2B**

**Largest Capital Investment in  
TVA History: \$2.3 Billion**

**ultium  cells**

General Motors and LG Chem  
Solution  
Electric Vehicle battery  
manufacturer  
Spring Hill, TN  
1,300 jobs  
**\$2.3B capital investment**

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# External Relations Committee

Beth Harwell, Chair

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# Sustainability Framework at TVA

Rebecca Tolene  
Vice President, Environment  
Chief Sustainability Officer

May 6, 2021



# TVA Sustainability



# What is Sustainability at TVA?

## Energy

- Provide reliable, affordable electricity at rates as low as feasible

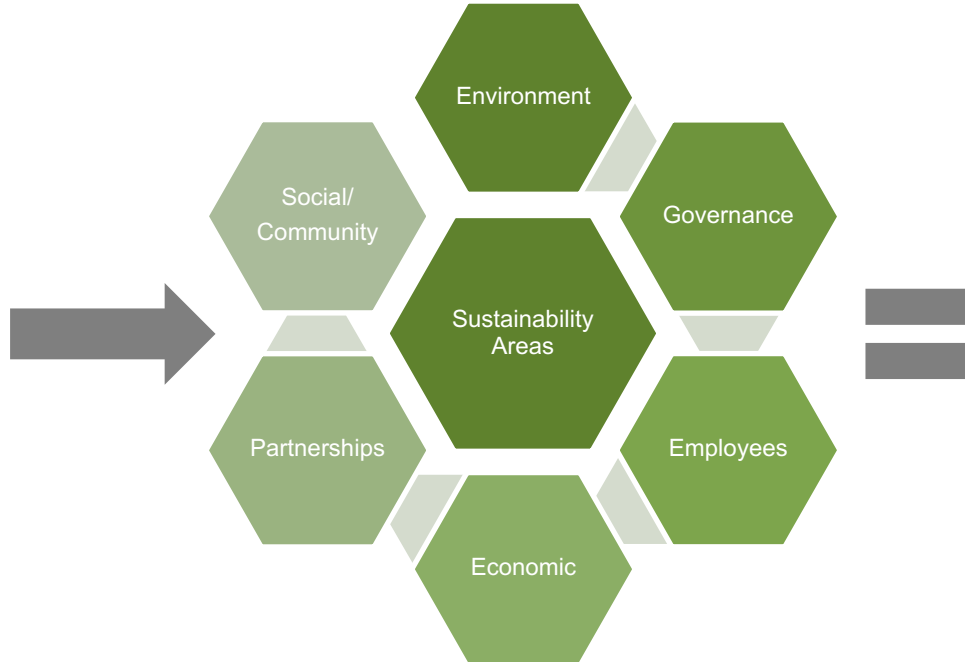
## Economic Development

- Serve as a catalyst for sustainable economic development

## Environment

- Act as steward of the Valley's natural resources

**What We Do**



**TVA**  
Sustainability

Focusing on TVA's performance of our mission through the lenses of Sustainability enables us to sustain our business model today and for future generations.

**Impact Lenses**

# Sustainability Areas



## Environment

- Greenhouse Gas Emissions
- Air Quality
- Water quality and availability
- Waste Management
- Habitat and Biodiversity Protection

## Economic

- Energy Affordability
- Reliability & Resiliency
- Jobs Created/Retained
- Flood Management
- Business Model

## Governance

- Transparency
- Board and Executive Diversity
- Systemic Risk Management
- Ethics
- Cyber and Physical Security

## Employees

- Safety
- Diversity and Inclusion
- Labor Relations
- Recruitment, Development, and Retention
- Skilled Workforce Availability

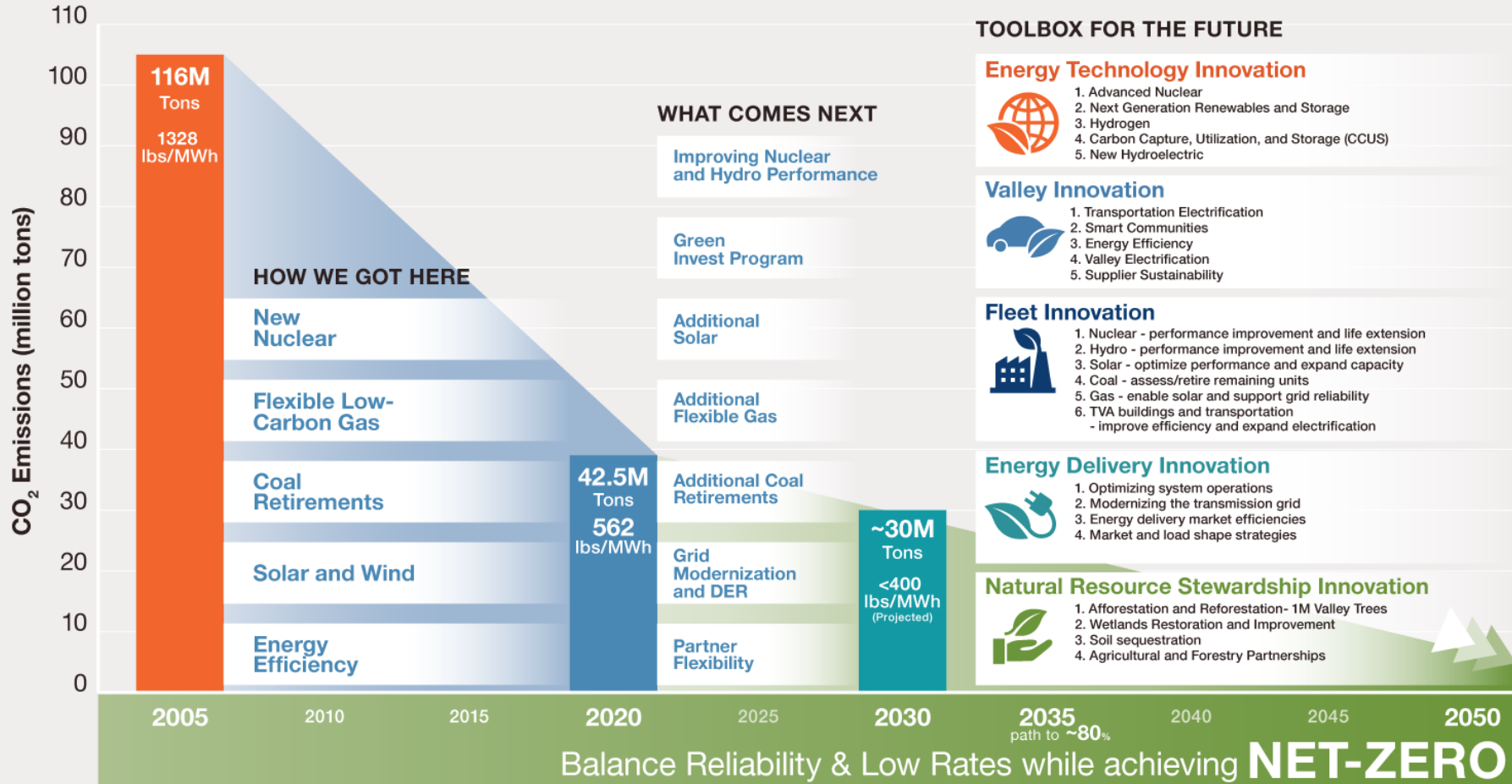
## Social/Community

- Public Health and Safety
- Environmental Justice
- Community Vitality and Engagement
- Reservoir and Stewardship Benefits

## Partnerships

- Partnership Health
- Investor Relations
- Supplier Partners
- Public Policy Relations

# TVA'S DECARBONIZATION JOURNEY

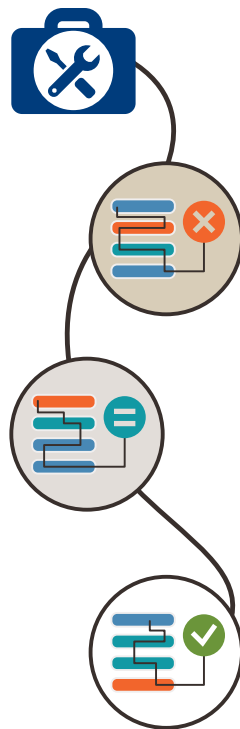


↑ ENHANCED ECONOMIC DEVELOPMENT

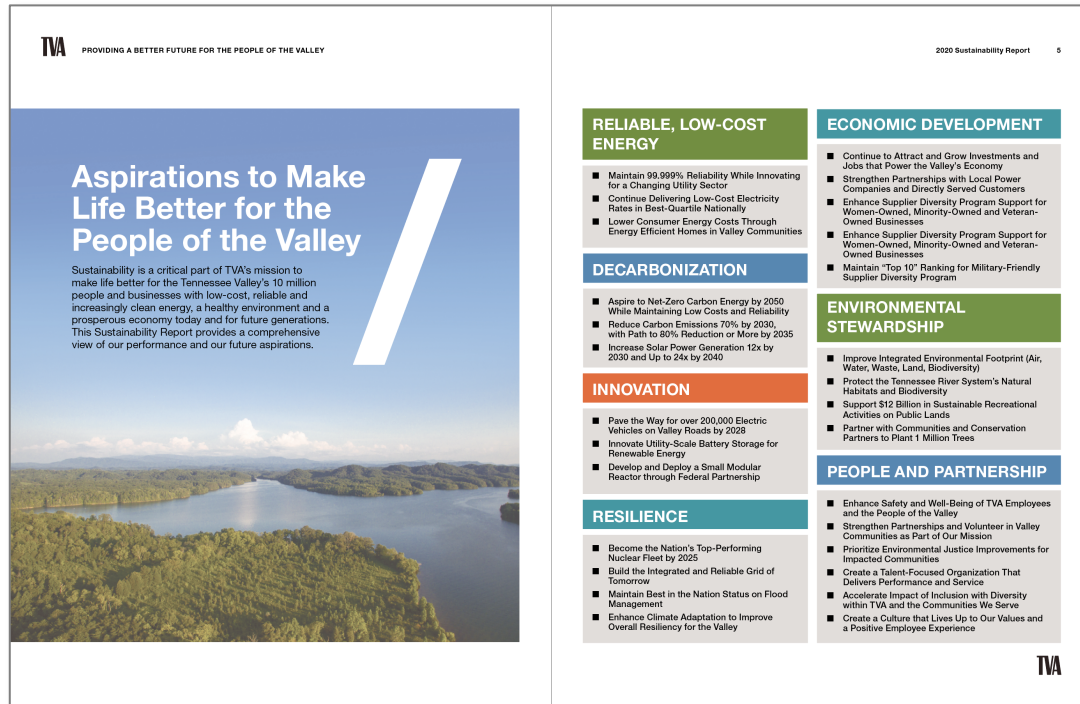
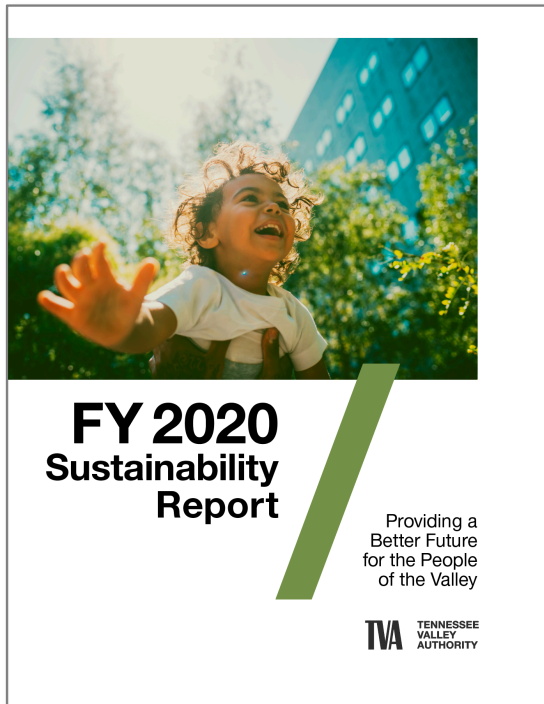
# Guiding Principles

There is not a single solution to decarbonization, but we have identified guiding principles that we know will be part of any path forward. TVA will:

- Prioritize the needs of Valley stakeholders- maintain **RELIABILITY AND AFFORDABILITY**
- Use best available science and support **RESEARCH**
- Partner with customers and communities on economy-wide **ELECTRIFICATION**
- **NUCLEAR and HYDRO generation and a strong TRANSMISSION GRID** are crucial
- Be **TRANSPARENT** in measuring and sharing our progress
- Adapt and be willing to **CHANGE** as technology advances



# TVA Sustainability Report



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# External Relations Committee

Beth Harwell, Chair



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# Audit, Risk, and Regulation Committee

Bill Kilbride, Chair

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# Nuclear Oversight Committee

Jeff Smith, Chair

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# Finance, Rates, and Portfolio Committee

A.D. Frazier, Chair

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# Financial Update

John Thomas  
Executive Vice President  
Financial Services

May 6, 2021

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## Q2 Fiscal Year 2021

Net Income of \$640M was \$261M favorable to budget

Base Revenue of \$3.7B was \$140M favorable to budget

Total Financing Obligations (TFO) was \$509M favorable to budget

# Q2 Summary Income Statement

\$ millions	FYTD21			FYTD20	
	Actual	Budget	Variance Fav/(Unfav)	Actual	'21 v '20 Fav/(Unfav)
Base Revenue	\$ 3,653	\$ 3,513	\$ 140	\$ 3,775	\$ (122)
Fuel Revenue	1,150	1,135	15	1,246	(96)
Other Revenue	73	72	1	78	(5)
<b>Total Operating Revenue</b>	<b>\$ 4,876</b>	<b>\$ 4,720</b>	<b>\$ 156</b>	<b>\$ 5,099</b>	<b>\$ (223)</b>
<b>Fuel &amp; Purchased Power</b>	<b>1,213</b>	<b>1,216</b>	<b>3</b>	<b>1,323</b>	<b>110</b>
<b>Total O&amp;M</b>	<b>1,359</b>	<b>1,433</b>	<b>74</b>	<b>1,333</b>	<b>(26)</b>
<b>Taxes, Depreciation, Other</b>	<b>1,107</b>	<b>1,132</b>	<b>25</b>	<b>1,420</b>	<b>313</b>
<b>Interest</b>	<b>557</b>	<b>560</b>	<b>3</b>	<b>576</b>	<b>19</b>
<b>Net Income (Loss)</b>	<b>\$ 640</b>	<b>\$ 379</b>	<b>\$ 261</b>	<b>\$ 447</b>	<b>\$ 193</b>

## Q2 Summary Cash Flow Statement

\$ millions

	FYTD21			FYTD20	
	Actual	Budget	Variance	Actual	'21 v '20
<b>Net Cash Provided by / (Used in)</b>					
Operating Activities	\$ 1,570	\$ 1,351	\$ 219	\$ 1,870	\$ (300)
Investing Activities	(1,092)	(1,316)	224	(1,010)	(82)
Financing Activities	(480)	(35)	(445)	(324)	(156)
<b>Net Change in Cash</b>	<b>\$ (2)</b>	<b>\$ -</b>	<b>\$ (2)</b>	<b>\$ 536</b>	<b>\$ (538)</b>
<b>Beginning Total Financing Obligations</b>	<b>\$ 21,421</b>	<b>\$ 21,475</b>	<b>\$ 54</b>	<b>\$ 22,818</b>	<b>\$ 1,397</b>
Change in Debt and Financing Obligations	(474)	(19)	455	(327)	147
<b>Ending Total Financing Obligations</b>	<b>\$ 20,947</b>	<b>\$ 21,456</b>	<b>\$ 509</b>	<b>\$ 22,491</b>	<b>\$ 1,544</b>

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# Recap of Financial Results

For six months ended March 31, 2021 – comparison to prior year

Minimal COVID-19 impacts

Lowest effective rates in over a decade

Lower fuel and purchased power expense

Continuing to benefit from lower debt



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# Finance, Rates, and Portfolio Committee

A.D. Frazier, Chair

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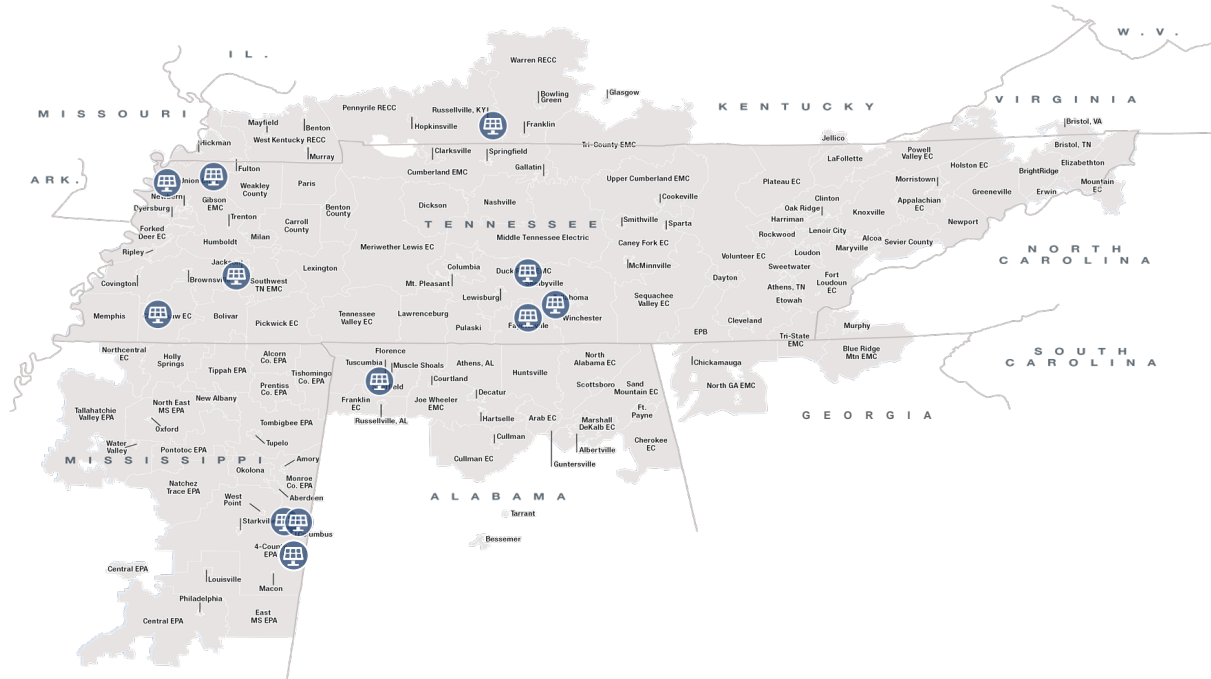
# Commercial Program Highlights

Doug Perry  
Senior Vice President  
Commercial Energy Solutions

May 6, 2021

# Renewable Energy

Intersecting the core elements of the Valley Public Power mission



Solar project locations are approximate for illustrative purposes

## Energy



low-cost and reliable electricity

## Environmental Stewardship



a healthy environment

## Economic Development



a prosperous economy

# Green Invest

Creating a competitive advantage to bring greater prosperity in the Valley

Strengthen Partnerships

Demonstrate Leadership

Drive Innovation

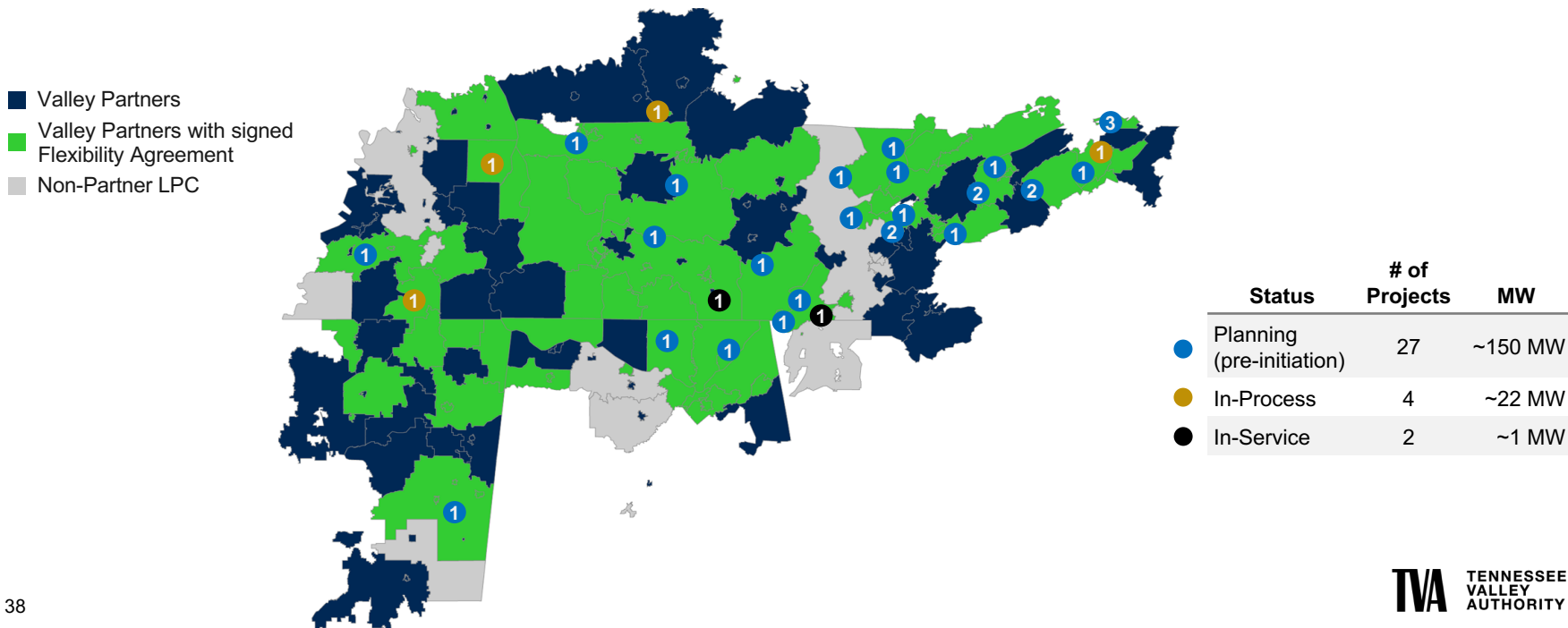
Spur Economic Development



The Green Invest program has seen over 2,000 MW of customer commitments since 2018, including roughly 1,000 MW of commitments in the last 12 months

# Generation Flexibility Update

All 142 Partners have accepted the provisions of the Generation Flexibility Program since the June 22, 2020 launch;  
71 (50%) have signed the Flexibility Agreement, representing approximately 47% of total Flexibility MWs available



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# Finance, Rates, and Portfolio Committee

A.D. Frazier, Chair





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The image features a silhouette of a person wearing a hard hat and holding a laptop, standing in profile against a bright, hazy sky at sunset or sunrise. In the background, a large, complex metal lattice structure of a high-voltage power transmission tower is visible, with power lines extending from it. The overall scene suggests a connection between modern technology and traditional energy infrastructure.

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# Energy System of the Future

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# Strategic Accomplishments

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# Strategic Accomplishments

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## **\$15 Billion**

Invested to Modernize Assets

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## **\$1 Billion**

Fuel & Purchased Power Expense

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## **\$800 Million**

O&M Savings

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## **\$7 Billion**

Debt Reduction

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## **Pension Plan Support**

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# Long-Term Partnerships

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## 93% of LPCs

Long-Term Partners

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## 20-year Commitments

To Plan and Work Together

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## 3.1% Credit

On Monthly Wholesale Bills

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## \$90 Million

In First Half of 2021

# Delivering on Our Mission to You

Energy | Environment | Economic Development



**Provide low-cost, reliable,  
and clean Energy**



**Deliver jobs and  
capital investment**



**Protect our natural  
resources – land,  
water, and air**

# Core Values



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## Safety

Uncompromising in our commitment to safety and well-being of employees and those we serve.



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## Integrity

Straightforward and transparent; doing what we say.



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## Inclusion

Key to TVA's success in the long-term, with every individual valued every day.



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## Service

Central to all we do; drives team to pursue new ideas and innovative solutions.

# Strategic Priorities



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## People Advantage

Working to be the destination for those who want to make a difference in our service to others.



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## Operational Excellence

Building on TVA's best-in-class reputation and performance.



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## Financial Strength

Carrying out TVA's mission of service today and investing in future.



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## Powerful Partnerships

Working hand-in-hand with customers, communities, stakeholders; promoting progress through shared success.



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## Igniting Innovation

Developing innovative solutions; building energy system of the future.

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# Commitments

**Serving Valley communities**

**Continued investments in our clean, diverse portfolio**

**Being a leader in innovation and decarbonization solutions**

**Inclusion with diversity**

**Being a leader in low-carbon energy**

**Financial strength and stability**



# Guiding Principles

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01

Prioritize the needs of Valley stakeholders as we work to achieve our goals by maintaining low rates and high reliability, and stimulating new jobs in the Valley.

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02

Use best-available science and support research and policies that further carbon-free dispatchable technologies.

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03

Partner with our long-term local power company customers and other customers and communities to support economy-wide decarbonization efforts and the strategic electrification of other sectors, such as transportation.

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04

Maintain nuclear generation, hydro generation and a robust, reliable transmission grid as key enabling assets.

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05

Be transparent and open in measuring and sharing our progress with the Valley.

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06

Adapt to new technologies and changing policies, and be willing and open to change our plans and projects to achieve deep carbon reduction.

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07

Listen to and work effectively with our range of stakeholders to understand their priorities and needs.



# People Advantage



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## People Advantage

Working to be the destination for those who want to make a difference in our service to others.

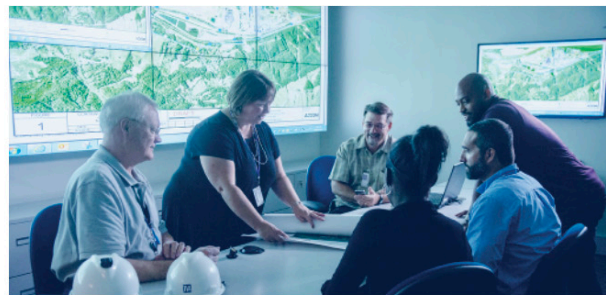
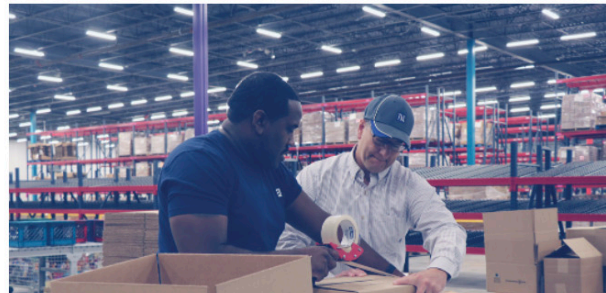
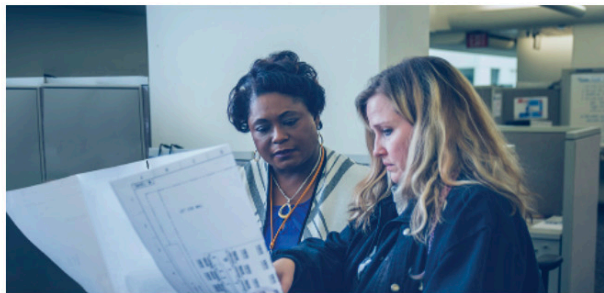


# People Advantage

**10,000**  
Employees

**14,000**  
Contractors

- Almost 20% Veterans
- 60% Represented by 17 Unions







# Operational Excellence



## Operational Excellence

Building on TVA's best-in-class  
reputation and performance.



# Nuclear Leadership

Our nearly 8,000-megawatt nuclear fleet – the nation's third-largest – is the backbone of our clean generation portfolio. In FY20, our nuclear fleet generated 43% of the electricity delivered to our customers.

**Browns Ferry Nuclear Plant**



**Sequoyah Nuclear Plant**

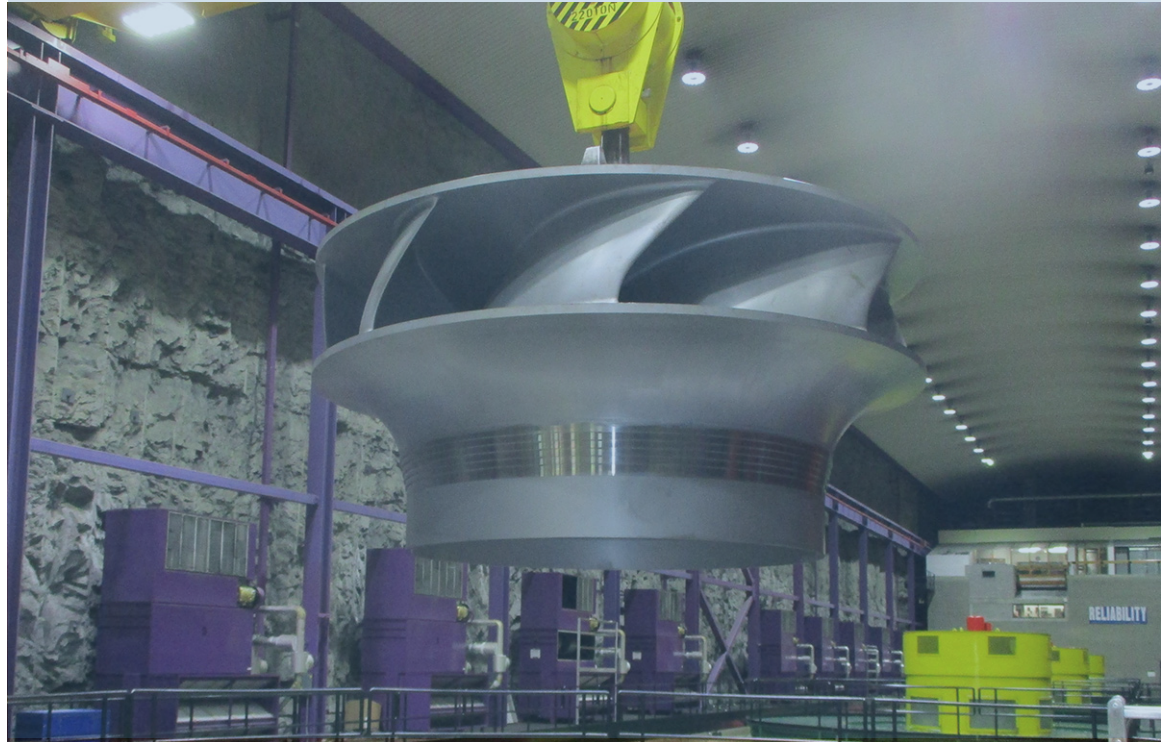


**Watts Bar Nuclear Plant**




# Hydro Fleet

Comprehensive refurbishing of units at the 29 hydroelectric dams to maximize the performance of these low-cost, reliable and dispatchable carbon-free resources







# Solar Generation Expansion

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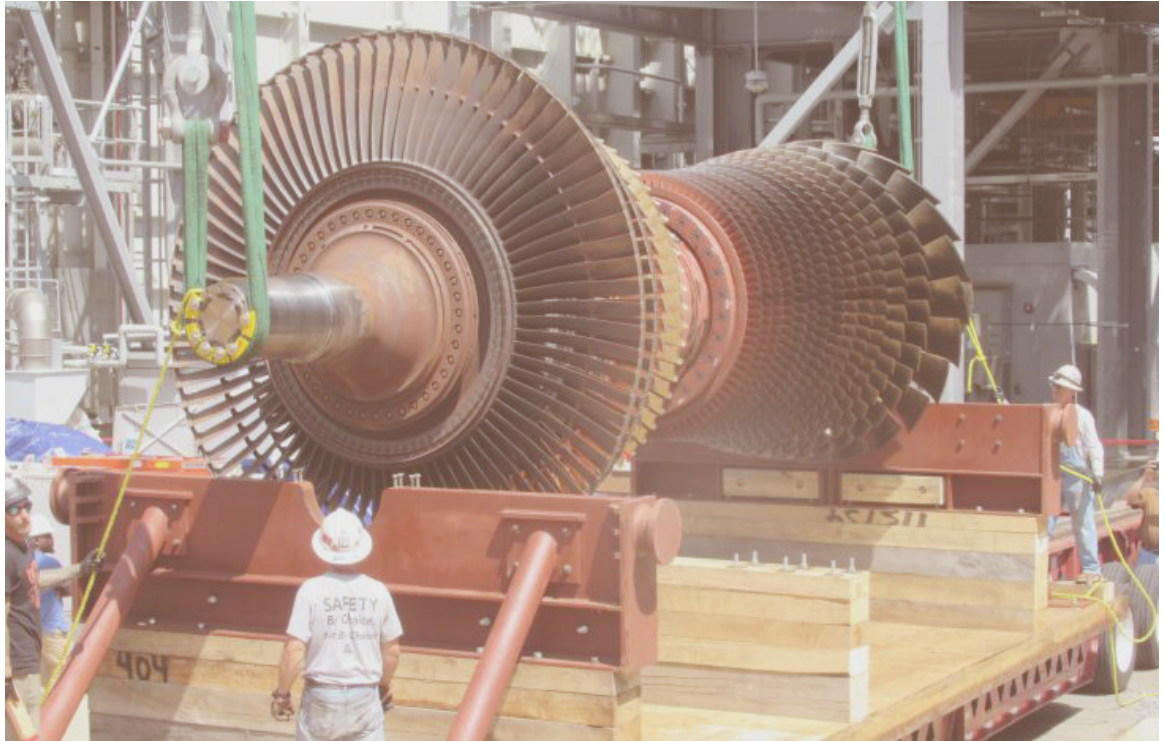
Targeting  
**10,000 MW**  
by 2035



# Gas Fleet

Combustion-turbine natural  
gas plant upgrades

Natural gas generation is also  
necessary to support  
reliability as we expand our  
renewable energy supply





# Natural Gas as a Bridge

- Reduces energy derived from coal
- Enables solar energy expansion
- Maintains system reliability and resiliency
- Enhances decarbonization strategy



# Coal Fleet Retirement

**Established planning assumptions related to the retirement of all remaining coal by 2035**

Orderly workforce transition

Economic development in impacted communities

Planning for resources needed to fill the energy void that will be created

# Carbon Reduction Leadership

TVA is a national leader in carbon reduction





# Carbon Reduction Leadership

TVA is a national leader in carbon reduction

63%

*Accomplished*

70%

Plan by 2030

~80%

Path by 2035

Net-Zero

Aspiration by 2050



# Igniting Innovation



## Igniting Innovation

Developing innovative solutions;  
building energy system of the future.

# Signature Technologies



**Energy Storage Integration**



**Electric Vehicle Evolution**



**Decarbonization Options**



**Connected Communities**



**Regional Grid Transformation**



**Advanced Nuclear Solutions**



An aerial photograph of a rural landscape featuring a winding river, green fields, and a wooded area. A small building and a road are visible in the center-left. The text 'Nuclear Innovation' is overlaid in large white letters in the top left corner.

# Nuclear Innovation

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Clinch River Site  
Nation's First

Early Site Permit  
Small Modular Reactor



# Electric Vehicle Partnership

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Electrification is a key tool the region is using to grow a clean energy economy and reduce carbon emissions and TVA is preparing to meet these growing energy needs with carbon-free resources.



TENNESSEE  
VALLEY  
AUTHORITY



Department of  
Environment &  
Conservation



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# 200,000

**Electric Vehicles**  
in the Valley  
Estimated by 2028

**\$1,000 Annual Fuel Savings**

**\$200 Million Consumer Savings**

**\$120 Million Impact to Economy**

**Saving Almost 1 Million Metric  
Tons of CO<sub>2</sub>**

# Powerful Partnerships



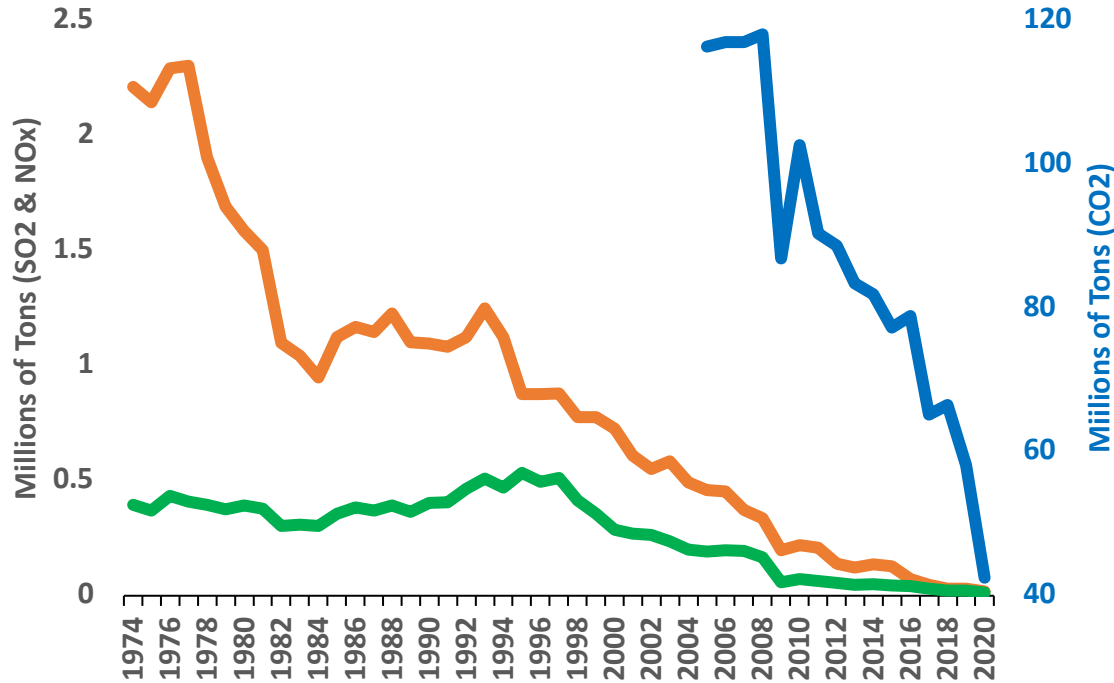
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## Powerful Partnerships

Working hand-in-hand with  
customers, communities,  
stakeholders; promoting progress  
through shared success.



# Leadership in Reducing Emissions



CO<sub>2</sub>

63%  
from 2005

SO<sub>2</sub>

99%  
from 1977  
peak

NO<sub>x</sub>

97%  
from 1995  
peak

\*CO<sub>2</sub> figures represent TVA system-wide emissions, SO<sub>2</sub> and NO<sub>x</sub> figures are for TVA-owned and operated units.

# Economic Development Advantage

## Over Past Five Years

Attracted or retained

**341,000 Jobs**

and over

**\$45.5 Billion**

in capital investment





# Economic Development Advantage





# Ultium Cells

A joint venture of GM & LG Energy Solution, will invest \$2.3 billion to build a battery cell plant in Spring Hill, TN, creating 1300 jobs.



A wide-angle photograph of the Nashville skyline at sunset. The sky is a mix of orange, yellow, and blue, with scattered clouds. The city's skyline is dominated by the sharp, blue-glass spire of the AT&T Building. Other prominent buildings include the RCA Building and the Nashville Convention Center. The foreground shows the Nashville River with a few boats and a grassy area along the waterfront.

# Oracle

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Investing \$1.2 billion in a  
Nashville campus creating  
creating 8,500 jobs.



# Financial Strength



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## Financial Strength

Carrying out TVA's  
mission of service today  
and investing in future.





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# President's Report

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President and CEO

May 6, 2021



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