



Connected Communities Roadmap 2.0



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Roadmap Key Elements

Indicators, Current Conditions and Milestones

This section presents the indicators selected to monitor TVA service region progress toward achieving the Connected Communities vision, categorizing indicators according to the four Connected Communities focus areas. It includes metrics that capture the current conditions for each indicator. It also presents near-term (2025) and long-term (2035) milestones for each indicator. Milestones are intended to provide aspirational target outcomes that highlight the types of actions that can spur progress and to provide a framework for measuring progress. The Roadmap includes both Reference and Progress Indicators. Milestones are associated with Progress Indicators, those for which Connected Communities activities will seek to cause measurable change.

Key Activities to Achieve Milestones

This section identifies and characterizes the types of activities needed to achieve outcomes in the target timeframe.

Stakeholder Roles in Implementing Roadmap 2.0

This section identifies to the types of stakeholders that are best positioned to lead and support the types of activities needed to achieve milestones.

Connected Communities Overview

Offers resources and helps communities make progress in key areas to address challenges and prepare for a modern energy system.



Connected Communities Initiative Focus Areas



Broadband and Digital Literacy

TVA SERVICE REGION GOAL

Everyone in the TVA service region has access to services through broadband, modern technology and the knowledge and empowerment to use it.



Economic Empowerment

TVA SERVICE REGION GOAL

Everyone in the TVA service region is economically secure and can contribute to a modern, 21st century economy to the best of their ability.



Energy and Environmental Justice

TVA SERVICE REGION GOAL

Everyone in the TVA service region has access to a healthy environment (natural and built) and reliable, affordable and clean energy.



Enhanced Community Resiliency

TVA SERVICE REGION GOAL

Communities in the TVA service region have plans and resources to minimize the impacts of events like natural disasters and cyberthreats, to endure them safely and to recover quickly.

Helping Communities Pursue Opportunities

Community Energy

- Virtual Power Plant
- Community Solar
- Microgrids
- Smart Energy Community
- Distributed Solar

Building Energy

- Grid-Interactive Efficient Buildings
- Behind-The-Meter (BTM) Battery Storage
- Connected Lighting
- Smart Heating
- Building Thermal Storage
- Smart Ventilation
- Smart Windows and Glass

Agriculture

- Agrivoltaics
- Internet of Things (IoT) for Farming

Economic Development

- Virtual Reality For Workforce Development



Connectivity

- 5G
- Wi-Fi 6
- Public Wi-Fi Kiosks
- Smart Poles
- Edge Computing

Transportation

- Electric Vehicle (EV) Charging
- EV Public Transit
- Roadway Electrification
- Advanced Shared Mobility

Resiliency*

- Plans and Training for Natural Disasters and Cybersecurity
- Communication and Emergency Response Systems
- Emission-Free Generation with Storage
- Resilience Hubs



Analytics

Water

- Smart Water Management
- Smart Wastewater Management

Energy

- Energy Load Disaggregation
- Building Energy Modeling

Municipal

- Digital Twin Modeling



MISSION

Foster community-driven solutions using information and technology to identify and address community needs to improve the quality of life in the TVA service region.

VISION

A connected TVA service region that provides broadband and digital literacy, empowers its people and businesses and promotes energy and environmental justice for everyone.

Roadmap 2.0 Purpose, Background and Approach

Purpose

Roadmap 2.0 is a TVA service region guide for stakeholder activity. It provides clarity and direction for Connected Communities efforts.



Compass to Guide Action and Resource Allocation

Sets out aspirational milestones and identifies pathways to achieve them. It identifies which types of stakeholders are best suited to lead actions and collaborate as well as timeframes for progress.



Tool for Tracking Progress

Provides a framework for tracking progress and identifying where course corrections may be warranted in the years ahead. It can be adapted to reflect evolving conditions.



Input to Inform Collaboration with Other Initiatives

Present clarity on what TVA-wide Connected Communities efforts are driving toward. This provides input to inform collaboration and the work of other initiatives, like Valley Vision 2035.

Background

STARTING POINT



Roadmap 1.0 provided a foundation and vision for what Connected Communities can be in the TVA service region.



PROGRESS AND ACTION



Experience and research helped identify community priorities to inform target setting and planning and demonstrated additional factors that drive community success in the four focus areas.



OUTCOME

Roadmap 2.0 builds on the foundation of Roadmap 1.0, providing direction to guide stakeholder action going forward.

A Framework for Guiding Progress

Roadmap 1.0 set a foundation and vision for Connected Communities, laying out building blocks and capability areas for each focus area. Research and early experience supplemented the guidance in Roadmap 1.0, highlighting success factors to help communities become more “connected.” These factors share similarities with the Building Blocks identified in Roadmap 1.0. Roadmap 2.0 expands upon content from Roadmap 1.0, specifying target outcomes, activities and stakeholders to drive action and addresses a fourth focus area (Enhanced Community Resilience). The success factors and capability areas provide a framework for defining milestones for Roadmap 2.0.

Building Blocks *(Roadmap 1.0)*

Universal Elements / Building Blocks of a Connected Community



Success Factors *(Roadmap 2.0)*

Success Factors for Communities on a Journey to Become “Connected”



Success Factors: Preparing Communities to Prosper

Looking across the country, communities succeeding in clean and affordable energy, economic empowerment, broadband and digital literacy and community resilience have strengths in these areas:



Vision, Governance and Community Planning

- Communities have relevant documents, policies and partnerships that aid in setting and achieving milestones.



Assets and Infrastructure

- Systems and materials are in place that enable communities to make progress in other areas. These assets may include affordable housing, smart meters, broadband and solar, among others.



Funding and Resource Access

- Funding and other resources to support action are available and accessible.



Skilled and Engaged Communities

- There is an active network of stakeholders to inform and support activities. Skilled people are available to support projects and foster a culture of locally sourced innovation.

TVA's Connected Communities initiative helps communities address challenges and build capacity in these areas so they have a solid foundation in place and are better prepared to pursue progress in Connected Communities focus areas.

Connected Community Stakeholders

Active engagement by key stakeholder groups is essential to achieve Roadmap 2.0 milestones.



Capability Area Framing

Focus Area

We help communities figure out how to:

In these capability areas:



Broadband and Digital Literacy

- Increase widespread, equitable access to fast, reliable internet and devices
- Increase knowledge to use technologies

Broadband Subscription

Digital Literacy



Economic Empowerment

- Decrease poverty rate and increase average household income by empowering technology/energy employment

Career Path Education

Workforce Development

Job Pipeline Growth



Energy and Environmental Justice

- Decrease energy burden
- Improve air quality
- Decrease carbon footprint

Energy and Environmental Data Analytics

Behind-The-Meter Distributed Energy Resource Adoption

Community Distributed Energy Resource



Enhanced Community Resiliency

- Improve community resilience/disaster response preparedness for cybersecurity, communication and energy infrastructure

Digital Resilience

Communications Resilience

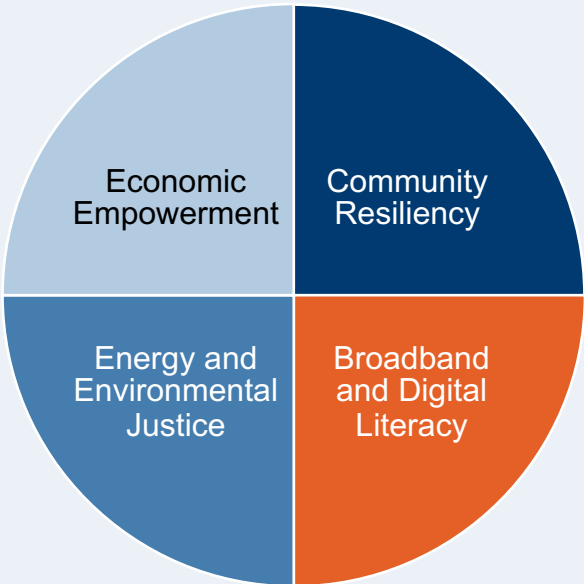
Energy Resilience

Approach

How does this TVA service region Roadmap guide community-level action?

TVA SERVICE REGION-LEVEL: ROADMAP






Current Conditions and Target Milestones for the TVA Service Region



SCALED TO COMMUNITY-LEVEL

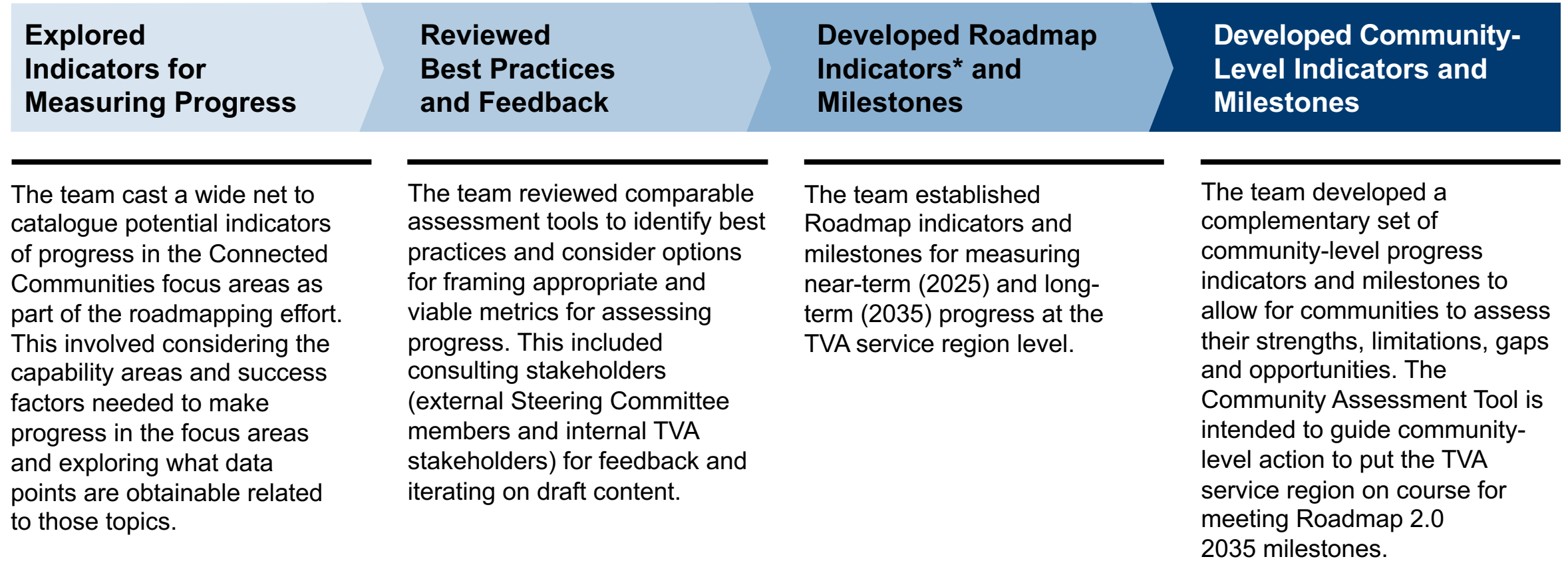
COMMUNITY-LEVEL: ASSESSMENT TOOL

Current Conditions and Benchmark Milestones for Communities

				
Broadband and Digital Literacy	Economic Empowerment	Energy and Environmental Justice	Enhanced Community Resiliency	Success Factors
10 POINTS	10 POINTS	10 POINTS	10 POINTS	10 POINTS
TOTAL SCORE: 50 POINTS				

Many communities working to achieve **community-level benchmark milestones** drives progress toward **TVA service region milestones**.

Roadmap and Assessment Tool Development



* Sources for Indicators: U.S. Census Bureau, TVA Program Data, Community Conversations, Steering Committee, TVA Internal Strategy Team, Roadmap Focus Area Working Groups, Best Management Practices, Literature. Factors considered in selecting indicators: a) Information can be used to understand current conditions and/or measure progress toward milestones, b) Data are available or could be reasonably obtained through future coordination and planning, c) List of indicators is a manageable size to measure and track on an ongoing basis. See Review of Roadmap and Assessment Tool Development for further detail.

Current State Snapshot

Current Conditions, Indicators, Milestones, Activities and Stakeholder Drivers

Summary of the Current State

Across the four Connected Community Focus Areas, the TVA service region lags national averages.



Broadband and Digital Literacy

There is a significant urban-rural divide in broadband availability and personal device ownership.



Economic Empowerment

The urban-rural divide is seen with rural areas falling behind in average education levels, job access and median income.



Energy and Environmental Justice

There are many urban and rural Justice40 Disadvantaged Communities (DACs) throughout the TVA service region.



Enhanced Community Resiliency

A majority of the TVA service region faces significant climate and cybersecurity risks without adequate disaster plans in place.

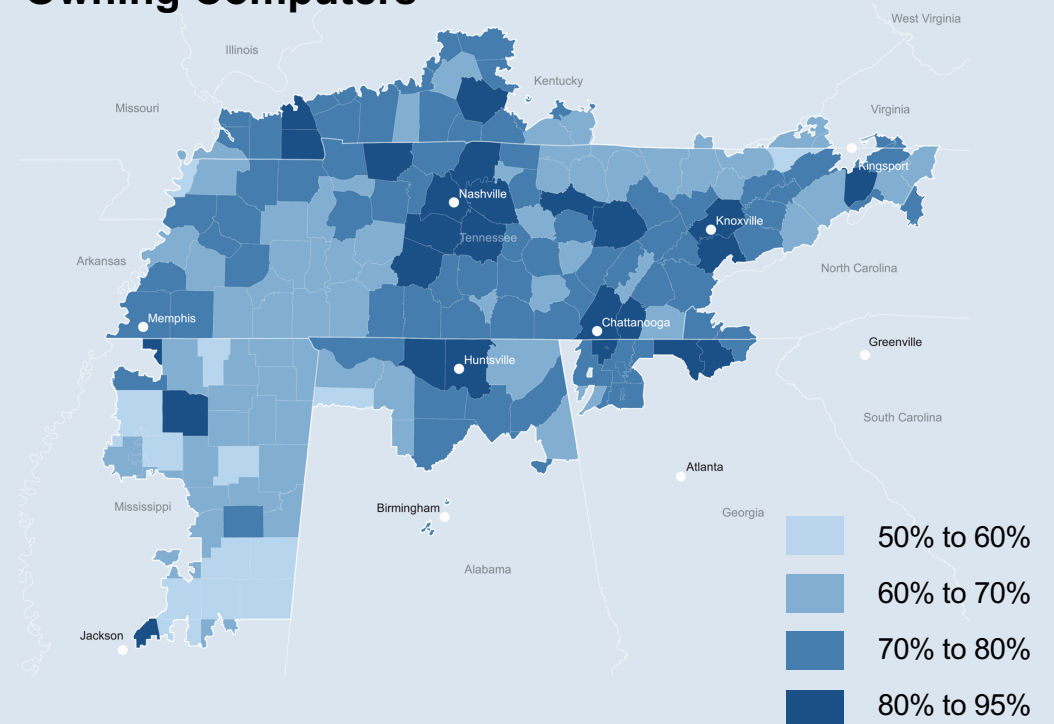
Broadband and Digital Literacy



Indicators at a Glance

- 15% of TVA households do not have a broadband subscription, compared to the national level of 9%.
- Of households with incomes below \$20,000 in the TVA service region, 44% do not have a broadband subscription.
- 22% of households in rural areas do not have a broadband subscription, compared to 16% in urban areas.

Percentage of Households Owning Computers



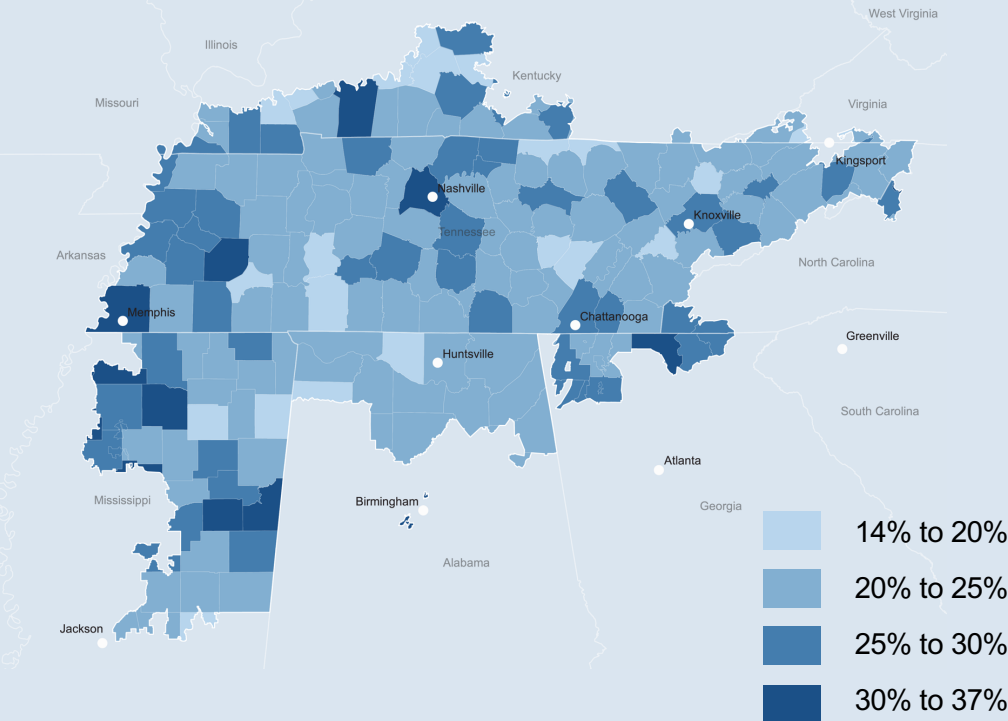
Economic Empowerment



Indicators at a Glance

- 13% of the TVA service region residents aged 25+ do not have a high school degree, compared to the national average of 11.5%.
- Of 23 communities researched, 15 had job training programs available.
- Median income for the TVA service region is \$49,800, compared to the national average of \$64,994.

Housing Burden



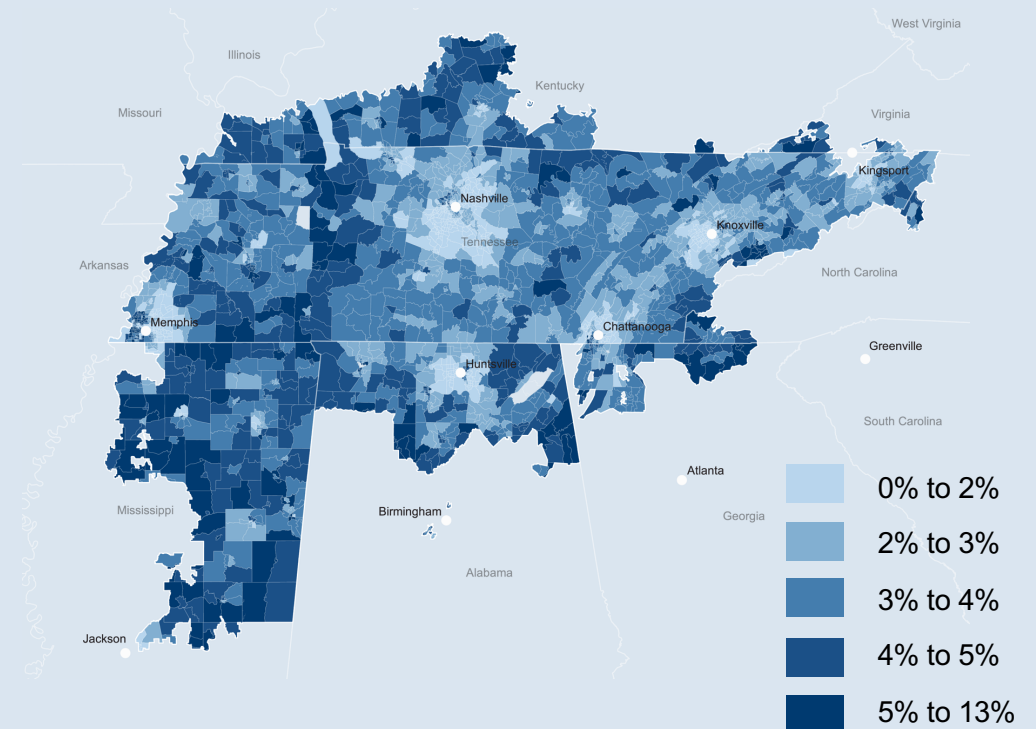
Energy and Environmental Justice



Indicators at a Glance

- In each of the seven states served by TVA, solar on average represents 3.3% of total generation, compared to 4.8% in each state nationally.
- There is an average of 3.4 registered electric vehicles (EVs) per 1,000 people in each of the seven states served by TVA, compared to the national average of 5.2 EVs per 1,000 people.
- There is an average of 1.2 public EV charging stations per 10,000 people in each of the seven states served by TVA, compared to the national average of 1.9 public EV charging stations per 10,000 people.
- The energy burden in the TVA service region is 19% higher than the national average.

Energy Burden



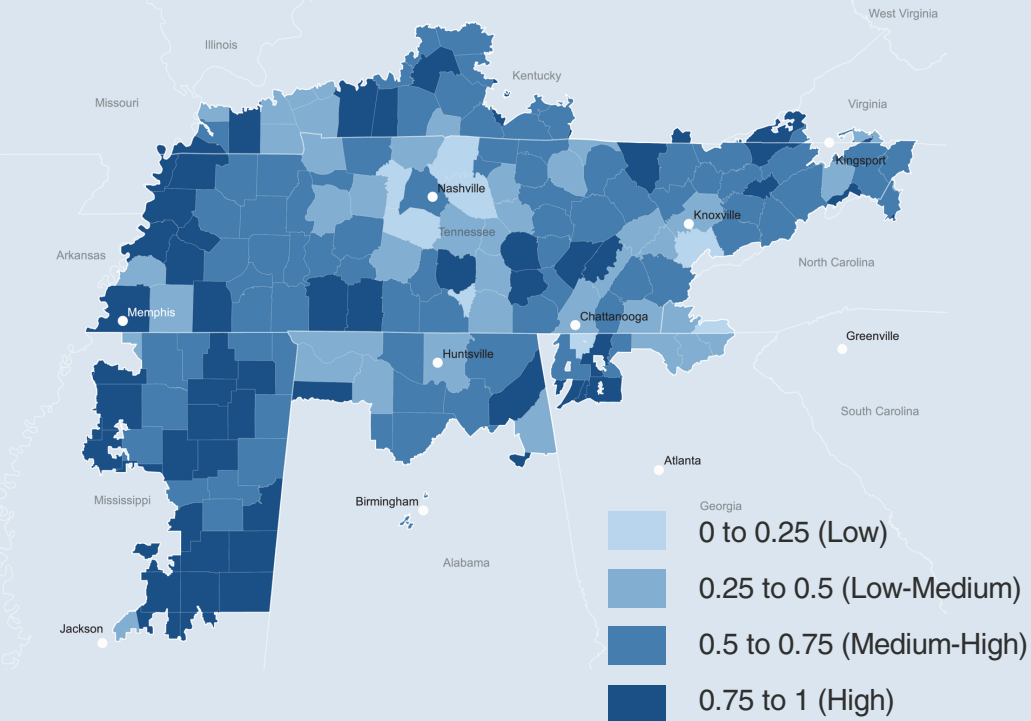
Enhanced Community Resiliency



Indicators at a Glance

- A significant portion of the TVA service region is at medium-high or high risk for extreme heat days.
- A majority of the TVA service region is currently at medium drought risk.

Social Vulnerability Index



Broadband and Digital Literacy | Milestones

INDICATOR	CURRENT STATE	2025 MILESTONES	2035 MILESTONES
Broadband Subscriptions	There are significant inequities in broadband subscriptions in the TVA service region between disadvantaged communities and non-disadvantaged communities.	Increase household broadband subscriptions	Community broadband subscription parity
Urban-Rural Broadband Subscription Divide	There is a significant urban-rural divide in broadband subscriptions .	Increase urban-rural broadband subscription parity	Urban-rural parity in broadband subscriptions
Public Wi-Fi Availability	There is a perception of community dispersion of public Wi-Fi locations as inconsistent , and the quantity of locations is low .	Increase public Wi-Fi	Readily available public Wi-Fi
Internet Device Ownership	Less than 70% of residents in the TVA service region own a connected device (one that connects to the internet).	Increase internet device ownership	Parity with national internet device ownership levels
Digital Education	There is no current tracking program for digital education nationally or within the TVA service region.	Establish digital education measurement program	Digital literacy across service region

Broadband and Digital Literacy | Primary Drivers

ACTIVITY	TVA	Local Power Companies (LPCs)	Government Entities	NGOs* and Community Partners	Business and Innovation Partners
Provide Funding	✓		✓		
Build and Maintain Information Hub	✓	✓	✓		
Technical Support and Success Coaching	✓			✓	
Incentivize and Set Policy	✓		✓	✓	
Coordinate In-Ground Work		✓			
Team With Innovation Partners				✓	✓
Needs and Gaps Analysis	✓	✓			
Pursue Funding to Improve Internet Access		✓		✓	
Program Development		✓	✓	✓	
Community Plans and Policies			✓	✓	
Develop and Deliver Digital Literacy Training	✓		✓	✓	
Cost/Benefit Analysis	✓	✓			
Deploy Solutions		✓			

Economic Empowerment | Milestones

INDICATOR	CURRENT STATE	2025 MILESTONES	2035 MILESTONES
High School Education	There are high school graduation rate disparities between the TVA service region as a whole and its disadvantaged communities.	Increase high school graduation rates	Community graduation parity
Low-Income Population	There are income disparities between the TVA service region as a whole and its disadvantaged communities.	Reduce percentage of population classified as low income	National average parity
Unemployment	There are unemployment disparities between the TVA service region as a whole and its disadvantaged communities.	Decrease unemployment	National average parity
Diverse Business Contract Awards	There is room for improvement in TVA and local power company (LPC) tracking of supplier diversity.	Establish contract award tracking system	Increase contract awards to diverse businesses
Economic Empowerment Program Prevalence	Economic empowerment programs are not available to all in TVA service region.	Increase program prevalence	Complete service region coverage
Tech-Related Job Training Program Availability	Tech-related job training program locations are inconsistent , and the quantity is low.	Increase training program availability	Complete service region coverage
Community Engagement with Federal Funding Opportunities	Communities remain unaware or are not engaging with U.S. federal funding opportunities.	Increase community federal funding applications	Increase community federal funding applications
Affordable Housing Availability	22% of TVA households are housing burdened.	Increase housing partnerships, coordination and pilot projects	Increase affordable housing opportunities in each TVA service region

Economic Empowerment | Primary Drivers

ACTIVITY	TVA	Local Power Companies (LPCs)	Government Entities	NGOs* and Community Partners	Business and Innovation Partners
Incentivize and Set Policy to Support Workforce Development			✓		
Recruit Large, Clean Technology Manufacturing Firms to Provide Workforce Opportunities			✓		
Provide Funding	✓				
Build and Maintain Information Hub	✓	✓	✓		
Technical Support and Success Coaching	✓			✓	
Team With Innovation Partners					✓
Technology-Related Job Training			✓		
Create Demonstration Opportunities		✓			
Foster Startup Culture				✓	✓
Skilled Labor Availability			✓	✓	
Locally Source Innovation			✓	✓	

Energy and Environmental Justice | Milestones

INDICATOR	CURRENT STATE	2025 MILESTONES	2035 MILESTONES
Energy Poverty and Burden	There are disparities in energy poverty and access across the TVA service region, with disadvantaged communities experiencing the greatest challenges.	Decrease energy burden and energy poverty	Energy burden and access equity
Solar Installations by Region and Capacity	There are disparities in solar adoption based on geography and market segment among the four TVA regions.	Increase non-utility owned solar and ownership options	Increase solar power market penetration and non-utility owned solar
Community Plans Addressing Clean Energy and Environmental Justice	Community plans do not always address all Connected Communities focus area topics and goals.	Enhance community plans to further address Connected Communities focus areas	Complete service region coverage
Energy Efficiency, Clean Energy and Demand Response Program Participation	TVA and local power company (LPC) energy efficiency program offerings are varied with wide-ranging outcomes .	Increase energy efficiency program participation	Very high energy efficiency program participation

Energy and Environmental Justice | Milestones (CONTINUED)

INDICATOR	CURRENT STATE	2025 MILESTONES	2035 MILESTONES
Local Power Companies (LPCs) Offering Time of Use (TOU) Rates	TVA and LPCs have limited offerings of TOU rates .	Increase TOU rates and programming	Comprehensive rates and programming
Public Electric Vehicle (EV) Program Access and Participation	EV programs vary by state across the TVA service region.	Increase EV access, charging stations and programming	Ready access to affordable EV opportunities
Distributed Energy Project Financing Access	Distributed energy project financing access is not tracked by TVA and LPCs.	Establish financing tracking program	Promote greater financing options
Change in Air Quality	There are disparities in air quality across the TVA service region, with disadvantaged communities experiencing the greatest challenges.	Improve air quality	Air quality community parity
Termination of Service, Planned, Unplanned and Disconnections	TVA and LPCs do not track service disconnections patterns .	Establish service disconnection task force	Decrease service disconnections
Information Access in Multiple Languages	TVA and LPCs language offerings currently vary by region and by organization	Increase language offerings	Increase language offerings and public speaking options
Disadvantaged Community Status	The TVA service region currently has 396 “disadvantaged communities” as defined by U.S. Department of Energy	Develop disadvantaged community engagement and reduction plan	Further reduce number of communities classified as “disadvantaged”

Energy and Environmental Justice | Primary Drivers

ACTIVITY	TVA	Local Power Companies (LPCs)	Government Entities	NGOs* and Community Partners	Business and Innovation Partners
Provide Funding				✓	
Build and Maintain Information Hub	✓	✓	✓		
Technical Support and Success Coaching	✓			✓	
Incentivize and Set Policy	✓		✓	✓	
Team With Innovation Partners					✓
Communities Create and Update Community Plans and Policies that Reflect Best Practices			✓	✓	
Apply for Funds				✓	
Use Funds				✓	
Needs and Gaps Analysis	✓	✓		✓	

Enhanced Community Resiliency | Milestones

INDICATOR	CURRENT STATE	2025 MILESTONES	2035 MILESTONES
System and Customer Outages	System Average Interruption Frequency Index (SAIFI) and Customer Average Interruption Duration Index (CAIDI) performance varies by local power company (LPC) across the TVA service region.	Improve electric system reliability	National system reliability parity
LPCs with Cybersecurity Trainings and Certifications	Not all LPCs have cybersecurity trainings, response teams, certifications or system design standards.	LPCs develop cybersecurity programs	LPC cybersecurity programs achieve high performance
Disaster Preparedness, Response and Recovery Plan Prevalence	Community plan development quality and evaluation frequency varies throughout TVA service region.	Communities develop robust disaster plans	Communities integrate advanced solutions for dynamic disaster planning
Communities with Standby Generation for Vital Operations	TVA communities have some situational awareness of their standby generation needs.	Identify and increase standby generation	Standby generation converted to clean energy sources
Microgrid Availability	Some TVA communities have microgrids and/or have conducted microgrid studies.	Identify community microgrid needs	Implement microgrid plans where technically feasible
Resilient Communications System Availability	Communication capabilities are inconsistent, vary substantially and are lacking in many rural areas.	Initiate pilot project in each TVA region	Deploy communications systems in every county

Enhanced Community Resiliency | Primary Drivers

ACTIVITY	TVA	Local Power Companies (LPCs)	Government Entities	NGOs* and Community Partners	Business and Innovation Partners
Provide Funding			✓		
Build and Maintain Information Hub	✓	✓	✓		
Technical Support and Success Coaching	✓				
Incentivize and Set Policy	✓		✓	✓	
Team With Innovation Partners					✓
Define Priorities			✓	✓	
Offer Programs			✓		
Create Demonstration Opportunities	✓	✓			
Deploy Solutions		✓	✓	✓	✓

Indicators, Current Conditions and Milestones

Measuring Progress Toward 2025 and 2035 Milestones: Identifying Key Indicators for Success

Indicators and Milestones

Indicators measure progress toward focus area milestones. Milestones provide a signal to know the vision for Connected Communities has been met.

Indicator selection included:

- Identifying the key capabilities needed to drive progress in each focus area
- Gauging what data are available (or could reasonably be obtained) that can provide important context and/or serve as a sign of progress
- Working with stakeholders to refine and prioritize indicators and metrics for measuring progress related to the four focus areas

For each indicator, we identified a **current state** value as well as **2025 and 2035 milestones**, providing short- and long-range targets for the Connected Communities initiative.

2025 milestones guide action to ensure systems are in place and activities underway to drive progress toward 2035 target outcomes.



Broadband and Digital Literacy



How to know we've achieved the vision for Connected Communities?

Indicator	Current State ¹	2025 Milestone	2035 Milestone
Broadband Subscriptions	<ul style="list-style-type: none"> TVA service region: 85% with broadband subscriptions TVA disadvantaged communities (DACs): 70% with broadband subscriptions 44% of households with less than \$20,000 income lack internet subscriptions 	<p>Increase household broadband subscriptions</p> <ul style="list-style-type: none"> TVA service region: 90% with broadband subscriptions TVA DACs: 79% with broadband subscriptions Local power companies (LPCs) are made aware of TVA resources outlining potential pathways for increasing broadband subscriptions 	<p>Parity in household broadband subscriptions between disadvantaged and non-disadvantaged communities</p> <ul style="list-style-type: none"> TVA service region: 95% with broadband subscriptions TVA DACs: 95% with broadband subscriptions TVA communicates methods for communities to engage with LPC resources for broadband subscriptions
Urban-Rural Broadband Subscription Divide	<ul style="list-style-type: none"> Rural households: 76% with broadband subscriptions Urban households: 84% with broadband subscriptions 	<p>Increase urban-rural broadband subscription parity</p> <ul style="list-style-type: none"> Rural Households: 78% with broadband subscriptions Urban Households: 85% with broadband subscriptions Local LPC has been made aware of potential broadband business models approaches 	<p>Parity in household broadband subscriptions between urban and rural areas</p> <ul style="list-style-type: none"> Rural households: 95% with broadband subscriptions Urban households: 95% with broadband subscriptions A variety of broadband business model approaches are offered throughout each TVA region
Public Wi-Fi Availability	<ul style="list-style-type: none"> Inconsistent dispersion and low quantity of public Wi-Fi locations 	<p>Increase public Wi-Fi</p> <ul style="list-style-type: none"> Identify relevant sites for public Wi-Fi locations and establish a development plan 	<p>Readily available public Wi-Fi</p> <ul style="list-style-type: none"> At least one full-time public Wi-Fi location in each community, funded by public resources
Internet Device Ownership	<ul style="list-style-type: none"> Less than 70% of residents in the TVA service region own an internet-connected device Limited connected device rental programs 	<p>Increase internet device ownership</p> <ul style="list-style-type: none"> 70% or higher internet device ownership in the TVA service region Internet device rental programs available in a majority of counties in each state 	<p>Parity with national internet device ownership levels</p> <ul style="list-style-type: none"> 90% or higher internet device ownership in the TVA service region Internet device rental programs available in all counties in each state
Digital Education	<ul style="list-style-type: none"> No current tracking program for digital education No national metrics for tracking digital education 	<p>Establish digital education measurement program</p> <ul style="list-style-type: none"> Establish a digital education tracking program and identify existing programs 	<p>Digital literacy across service region</p> <ul style="list-style-type: none"> At least one digital education program provided in all TVA service region counties

Economic Empowerment



How to know we've achieved the vision for Connected Communities?

Indicator	Current State	2025 Milestone	2035 Milestone
High School Education	<ul style="list-style-type: none"> TVA service region: 14% lack a high school diploma TVA disadvantaged communities (DACs): 19% lack a high school diploma 	Increase high school graduation rates <ul style="list-style-type: none"> Conduct research into technology-related strategies to increase graduation rates and disseminate findings 	Parity in graduation rates across disadvantaged and non-disadvantaged communities <ul style="list-style-type: none"> Implement strategies to increase graduation rates
Low-Income Population	<ul style="list-style-type: none"> TVA service region: 38% TVA DACs: 53% 	Reduce percentage of population classified as low income <ul style="list-style-type: none"> Conduct research into technology-related strategies to decrease low-income population rates and disseminate findings 	Parity in low-income population rates across disadvantaged and non-disadvantaged communities <ul style="list-style-type: none"> Implement strategies to decrease low-income population rates
Unemployment	<ul style="list-style-type: none"> TVA service region: 5.83% TVA DACs: 9.01% 	Decrease unemployment <ul style="list-style-type: none"> Conduct research into technology-related strategies to decrease unemployment rates and disseminate findings 	Parity with national unemployment rate <ul style="list-style-type: none"> Implement strategies to decrease unemployment rates
Diverse Business Contract Awards*	<ul style="list-style-type: none"> Contract spend tracking by TVA 	Establish contract award tracking system <ul style="list-style-type: none"> 16% of total annual TVA purchasing spend with diverse suppliers 	Increase contract awards to diverse businesses <ul style="list-style-type: none"> 16% of total annual TVA purchasing spend with diverse suppliers

Economic Empowerment (CONTINUED)



How to know we've achieved the vision for Connected Communities?

Indicator	Current State	2025 Milestone	2035 Milestone
Economic Empowerment Program Prevalence	<ul style="list-style-type: none"> Limited availability of economic empowerment programs 	Increase program prevalence <ul style="list-style-type: none"> Expanded employment opportunities with established program leaders Increase in trainings and programs for workforce to develop skills and enhance opportunities for entrepreneurship, small business incubation, innovation districts, and higher wages Identify priority sectors for advanced technologies (Artificial Intelligence, renewables, etc.) and develop a pursuit plan 	Complete economic empowerment program availability across service region <ul style="list-style-type: none"> 100% of communities have access to programs related to these topics 100% of communities have access to advanced technologies related to these topics Support local start-ups and companies to drive entrepreneurship in this sector
Tech-Related Job Training Program Availability	<ul style="list-style-type: none"> Inconsistent locations, accessibility issues and low quantity of tech-related job training programs 	Increase training program availability <ul style="list-style-type: none"> 50% of communities have tech-related training programs 50% of communities identify and address training opportunity gaps All local power companies (LPCs) include diversity, equity and inclusion (DEI) programs in hiring 	Complete service region training program coverage <ul style="list-style-type: none"> All communities have access to tech-related job training programs (virtual or transportation support)
Community Engagement with Federal Funding Opportunities	<ul style="list-style-type: none"> Communities remain unaware or do not engage with U.S. federal funding opportunities 	Increase community federal funding applications <ul style="list-style-type: none"> All communities identify staff capacity for applying for federal funding Rural communities in all four TVA regions regularly access resources Communities in all four TVA regions access Justice40-qualifying funds 	Increase federal funding applications from communities across the service area <ul style="list-style-type: none"> All communities apply for federal funding to reduce financial gaps in programming 50% of disadvantaged communities (DACs) included in successful federal projects
Affordable Housing Availability	<ul style="list-style-type: none"> 22% of TVA households are housing burdened 	Increase housing partnerships, coordination and pilot projects <ul style="list-style-type: none"> Emphasize linkages with affordable housing communities and build partnerships with housing providers Support multiple affordable housing initiatives through Connected Communities Beta Test round 2 pilot projects 	Increase affordable housing opportunities in each TVA region <ul style="list-style-type: none"> Greater than 10 Connected Community success stories or models involving affordable housing communities in each TVA region

Energy and Environmental Justice



How to know we've achieved the vision for Connected Communities?

Indicator	Current State	2025 Milestone	2025 Milestone
Energy Poverty and Burden	<ul style="list-style-type: none"> TVA service region: 3.73% energy burden TVA disadvantaged communities (DACs): 4.75% energy burden Varied levels of energy access throughout the TVA service region Reduce energy expenses in underserved communities by \$200M by 2026 	Decrease energy burden and energy poverty <ul style="list-style-type: none"> Decrease energy burden: TVA service region to 3.5%, TVA DACs to 4% Increased access to renewables Identification of difficult-to-weatherize buildings Outreach to community action agencies and other community organizations throughout the TVA region about Home Uplift program availability, strategies to address challenges in making energy improvements in low- and moderate-income homes 	Parity in energy poverty and burden across disadvantaged and non-disadvantaged communities <ul style="list-style-type: none"> Energy burden and poverty equity: TVA service region and DACs both at 3.22% energy burden Equitable access to renewables Greater than 75% building weatherization
Solar Installations by Region and Capacity	Solar megawatts (MW) by TVA region by scale: <ul style="list-style-type: none"> TVA North: 670 MW, 94% utility-scale TVA East: 76 MW, 0% utility-scale TVA South: 532 MW, 94% utility-scale TVA West: 1,568 MW, 87% utility-scale 	Increase non-utility owned solar and ownership options <ul style="list-style-type: none"> Increase non-utility-scale capacity to 10% of total service region capacity Affordable rooftop solar ownership or lease options are readily available with strong awareness Increase solar storage options 	Increase solar power market penetration and non-utility owned solar <ul style="list-style-type: none"> TVA service region aggregate 10,000 MW solar capacity Increase non-utility-scale solar capacity to 25% of total potential Increase solar storage options
Community Plans Addressing Clean Energy and Environmental Justice	<ul style="list-style-type: none"> Community conversations conducted in 2023 found that communities do not always address clean energy and environmental justice in their comprehensive or general plans 	Enhance community plans to further address Connected Communities focus areas <ul style="list-style-type: none"> Deploy templated strategies to provide communities support to improve plans Six communities in each TVA region are leveraging Connected Communities resources to develop and improve plans 	Complete coverage of community plans addressing clean energy and environmental justice across the service region <ul style="list-style-type: none"> All communities have updated plans and policies (updated within the last 8-10 years) All communities have conducted gap analysis, and they can access resources to develop/improve plans

Energy and Environmental Justice (CONTINUED)



How to know we've achieved the vision for Connected Communities?

Indicator	Current State	2025 Milestone	2035 Milestone
Energy Efficiency, Clean Energy and Demand Response Program Participation	<p>Local power companies' (LPCs') energy program offerings are varied with wide-ranging outcomes:</p> <ul style="list-style-type: none"> • Program participants report very high satisfaction with energy efficiency programing, greater than 85% • 142 of 153 of LPCs participate with at least one TVA energy efficiency program 	<p>Increase energy efficiency program participation</p> <ul style="list-style-type: none"> • More than 25% awareness of program availability among all residents and businesses • Maintain more than 85% participants report high satisfaction with program experience 	<p>Very high energy efficiency program participation</p> <ul style="list-style-type: none"> • More than 50% awareness of program availability among all residents and businesses • Maintain more than 85% participants report high satisfaction with program experience
LPCs Offering Time of Use (TOU) Rates	<ul style="list-style-type: none"> • TVA and LPCs have limited offerings of TOU rates 	<p>Increase TOU rates and programming</p> <ul style="list-style-type: none"> • Continue to introduce TOU rates to more than five LPCs in each TVA region • Growing community awareness of benefits and opportunities of TOU rates 	<p>Comprehensive rates and programming offered by LPCs</p> <ul style="list-style-type: none"> • TOU rates offered by >50% of LPCs
Public Electric Vehicle (EV) Program Access and Participation	<ul style="list-style-type: none"> • EV programs vary by state across TVA service region and include various levels of EV charging, ride-sharing and public transit options 	<p>Increase EV access, charging stations and programming</p> <ul style="list-style-type: none"> • Drive Electric Tennessee milestones are completed • Similar programs in other states started • Increased awareness, highlight business models 	<p>Ready access to affordable EV opportunities</p> <ul style="list-style-type: none"> • 2035 Drive Electric Tennessee program milestones are completed • Other states served by TVA have equivalent programs started • Vehicle-to-everything (V2X) and Vehicle-to-grid (V2G) program started across TVA service region • 200,000 EVs in TVA service region
Distributed Energy Project Financing Access	<ul style="list-style-type: none"> • Financing access for distributed energy projects is not tracked consistently by TVA and LPCs 	<p>Establish financing tracking program</p> <ul style="list-style-type: none"> • Activities are underway to track financing program availability 	<p>Promote greater distributed energy financing options</p> <ul style="list-style-type: none"> • Creation of no-interest payment offerings, elimination of credit score requirements and subsidization for those that qualify

Energy and Environmental Justice (CONTINUED)



How to know we've achieved the vision for Connected Communities?

Indicator	Current State	2025 Milestone	2035 Milestone
Change in Air Quality	<p>Particulate matter (PM) 2.5 (Environmental Justice Index (EJI) for PM 2.5 toxics)</p> <ul style="list-style-type: none"> TVA service region: 24.93 TVA disadvantaged communities (DACs): 32.14 	<p>Improve air quality PM 2.5 (EJI for PM 2.5 toxics)</p> <ul style="list-style-type: none"> TVA service region: 24.93 TVA DACs: 24.93 Guidance developed for community air monitor placement and increase in placement of air monitors in DAC communities 	<p>Parity in air quality across disadvantaged and non-disadvantaged communities PM 2.5 (EJI for PM 2.5 toxics)</p> <ul style="list-style-type: none"> TVA service region: 24.93 TVA DACs: 24.93 Placement of at least one air monitor in each DAC
Termination of Service, Planned, Unplanned and Disconnections	<ul style="list-style-type: none"> TVA and local power companies (LPCs) track planned, unplanned and termination of service connections inconsistently between organizations 	<p>Establish Service Disconnection Task Force that will:</p> <ul style="list-style-type: none"> Include TVA, LPC and community stakeholders and develop a tracking method for service disconnection shutoffs related to planned, unplanned and termination of service from nonpayment Conduct root cause analysis for service disconnections, including stressors Develop a preventative service disconnection plan for service region 	<p>Decrease service disconnections</p> <ul style="list-style-type: none"> Coordinate implementation of preventative service disconnection plan for service region in coordination with LPCs, communities and other identified stakeholders based on community engagement Organize LPC consortium for better service disconnection practices
Information Access in Multiple Languages	<ul style="list-style-type: none"> TVA and LPCs language offerings currently vary by region and by organization 	<p>Increase language offerings</p> <ul style="list-style-type: none"> TVA and LPCs offer digital and hard copy materials in non-English languages at parity TVA and LPCs conduct analysis on potential different language offerings 	<p>Increase language offerings and public speaking options</p> <ul style="list-style-type: none"> Region's most prevalent languages are represented in digital and hard copy materials from TVA and LPCs TVA and LPCs provide public meetings in multiple languages
Disadvantaged Community Status	<ul style="list-style-type: none"> The TVA service region currently has 396 DACs as classified by the Department of Energy 	<p>Develop DAC engagement and reduction plan</p> <ul style="list-style-type: none"> A plan is developed to thoughtfully engage and reduce the number of DACs by 2035 	<p>Further reduce the number of communities designated as "disadvantaged"</p> <ul style="list-style-type: none"> 25% reduction in DACs relative to the 2022 baseline

Enhanced Community Resiliency



How to know we've achieved the vision for Connected Communities?

Indicator	Current State	2025 Milestone	2035 Milestone
System and Customer Outages	<ul style="list-style-type: none"> System Average Interruption Frequency Index (SAIFI) and Customer Average Interruption Duration Index (CAIDI) performance varies by local power company (LPC) across the TVA service region 	Improve electric system reliability <ul style="list-style-type: none"> TVA service region CAIDI and SAIFI average 10% improvement to 2021 national average Load shedding programs identified and implemented 	System reliability parity with national averages <ul style="list-style-type: none"> TVA service region CAIDI and SAIFI averages align with the 2021 U.S. national average
LPCs with Cybersecurity Trainings and Certifications	<ul style="list-style-type: none"> Not all LPCs have cybersecurity trainings, response teams, certifications or system design standards 	LPCs develop cybersecurity programs <ul style="list-style-type: none"> All LPCs have incident response plans for cybersecurity updated on an annual basis All control systems patch upon release from the federal government Cybersecurity training program implemented at all LPCs 	LPC Cybersecurity programs achieve high performance <ul style="list-style-type: none"> Zero staff cybersecurity incidents All staff meet training requirements
Disaster Preparedness, Response and Recovery Plan Prevalence	<ul style="list-style-type: none"> Community plan quality and update frequency varies throughout TVA service region 	Communities develop robust disaster plans <ul style="list-style-type: none"> All communities have access to information and resources to develop a disaster preparedness plan and/or to compare their plans with best practices in the TVA service region Implement strategies to provide tools and resources needed to develop / maintain disaster preparedness and communication plans where gaps exist 	Communities integrate advanced solutions for dynamic disaster planning <ul style="list-style-type: none"> Communities have access to a geographic information system (GIS), tracking and data mechanism for wide-ranging opportunities All counties have plans filed with Federal Emergency Management Agency (FEMA)
Communities with Standby Generation for Vital Operations	<ul style="list-style-type: none"> TVA communities have varied awareness of their standby generation assets and needs 	Identify and increase standby generation <ul style="list-style-type: none"> Emergency response personnel have standby generation plans for all critical infrastructure assets 90% of communities have standby generation for vital operations All communities have information available to consider viability of using clean energy for standby generation 	Standby generation converted to clean energy sources <ul style="list-style-type: none"> Convert to clean energy standby generation (e.g., renewable energy with storage) for 100% of critical load where technically feasible

Enhanced Community Resiliency (CONTINUED)



How to know we've achieved the vision for Connected Communities?

Indicator	Current State	2025 Milestone	2035 Milestone
Microgrid Availability	<ul style="list-style-type: none"> Some TVA communities have microgrids or have conducted microgrid studies 	Identify community microgrid needs <ul style="list-style-type: none"> Existing critical infrastructure microgrids are identified and catalogued Perform gap analysis on critical infrastructure that would benefit from microgrids 	Implement microgrid plans where technically feasible <ul style="list-style-type: none"> 100% of critical infrastructure identified in 2025 has microgrid where technically feasible
Resilient Communications System Availability	<ul style="list-style-type: none"> Communication capabilities are inconsistent, vary substantially and are lacking in many rural areas 	Initiate pilot project in each TVA region <ul style="list-style-type: none"> Initiate a pilot project in each TVA region to explore communications technology and strategies that will improve community preparedness for a natural disaster 	Deploy communications systems in every county <ul style="list-style-type: none"> Assessment completed of the current deployment of resilient communication systems in each TVA region Deployment of communications systems in every county to ensure outage-resilient communication system availability

Key Activities to Achieve Milestones

Navigating the Path to a Bright Future: Communities Identify Key Steps for Success

Developing Key Activities for Roadmap 2.0



Activities Gathered Through Stakeholder Input



Activities Identified by Focus Area



Activities Designed for Program Structure

Broadband and Digital Literacy | Activities



Activity	Description
Provide Funding	Funding is provided to select communities to help overcome barriers, test ideas, identify project success models and develop local expertise.
Build and Maintain Information Hub	Source of information on funding opportunities, case studies, indicators and data.
Technical Support and Success Coaching	Provide communities with the tools to be successful.
Incentivize and Set Policy	Explore and develop policies and incentives that will create a more favorable framework for investment in internet access and system development for environmental justice (EJ) communities.
Coordinate In-Ground Work	Coordinate utility upgrades to maximize cost efficiencies of underground work.
Team With Innovation Partners	Innovation partners are key to success by bringing in additional resources, funding, knowledge and skillsets. Innovation partners include Oak Ridge National Laboratory (ORNL), other research labs, universities, industry groups, venture capital, tech companies and large corporations.
Needs and Gaps Analysis	Perform to identify community-specific approaches.
Funding Application Internet Access	Apply for federal funds to create internet access program.
Program Development	Use funds to develop internet access programs in identified areas of development.
Community Plans and Policies	Communities create and regularly update community plans/policies that address service access.
Develop and Deliver Digital Literacy Training	Develop digital literacy education programming.
Cost/Benefit Analysis	Perform cost-benefit analysis on internet solutions.
Deploy Solutions	Deploy applicable solutions (satellite or fiber).

Economic Empowerment | Activities



Activity	Description
Incentivize and Set Policy to Support Workforce Development	Explore and develop policies and incentives that will create a more favorable framework for investment in workforce development.
Attract Business With Stable Power	Provide reliable, high-quality power which is attractive to large, clean tech manufacturing.
Recruit Large, Clean Tech Manufacturing Firms to Provide Workforce Opportunities	Recruit large, clean tech manufacturing firms to provide workforce opportunities.
Provide Funding	Funding is provided to select communities to help overcome barriers, test ideas, identify project success models and develop local expertise.
Build and Maintain Information Hub	This is a source of information on funding opportunities, case studies, indicators and data.
Connected Communities Network and Outreach	Connected Communities Network is a source of events and information sharing.
Technical Support and Success Coaching	Provide communities with the tools to be successful.

Economic Empowerment | Activities (CONTINUED)



Activity	Description
Policy Collaboration	Stakeholders work together to identify and support priority policy changes at the state and TVA service region levels.
Team With Innovation Partners	Innovation partners are key to success by bringing in additional resources, funding, knowledge and skillsets. Innovation partners include Oak Ridge National Laboratory (ORNL), other research labs, universities, industry groups, venture capital, tech companies and large corporations.
Apply for Funds	Apply to funding for job-training programs in identified areas of development.
Leverage Funding	Leverage funds to plan job-training programs in identified areas of development.
Tech-Related Job Training	Tech-related job training programs available, matched to local businesses (K-12, tech schools, universities).
Create Demonstration Opportunities	Create demonstration opportunities.
Foster Start-Up Culture	Foster start-up culture, make workshops and competitions available and encourage winning teams to partner with companies for implementation.
Skilled Labor Availability	Manufacturing companies source workforce locally due to the availability of a trained workforce.
Locally Source Innovation	Locally source manufacturing companies in this sector and hire locally.

Energy and Environmental Justice | Activities



Activity	Description
Provide Funding	Funding is provided to select communities to help overcome barriers, test ideas, identify project success models and develop local expertise.
Build and Maintain Information Hub	This is a source of information on funding opportunities, case studies, indicators and data.
Connected Communities Network	Connected Communities Network is a source of events and information sharing.
Technical Support and Success Coaching	Provide communities with the tools to be successful.
Incentivize and Set Policy	Explore and develop policies and incentives that will create a more favorable framework for investment in renewable energy development, clean grid management and alternative energy delivery business models.
Team with Innovation Partners	Innovation partners are key to success by bringing in additional resources, funding, knowledge and skillsets. Innovation partners include Oak Ridge National Laboratory (ORNL), other research labs, universities, industry groups, venture capital, tech companies and large corporations.
Communities Create and Update Community Plans and Policies that Reflect Best Practices	Communities create and update community plans/policies (i.e., comprehensive/general plans and topic-focused plans) that address sustainability, resilience, economic empowerment, broadband and technology infrastructure, affordability and other topics related to the Connected Communities focus areas. These plans include setting internal priorities (e.g., for areas of development and expansion).

Energy and Environmental Justice | Activities (CONTINUED)



Activity	Description
Apply for Funds	Apply for funds to create energy and environmental justice programs that focus on clean energy. Additionally, financing programs exist for disadvantaged communities (DACs) that include energy efficiency and electric vehicle (EV) battery replacement.
Use Funds	Use acquired funds to plan energy and environmental justice programs.
Energy Efficiency and Renewable Energy programs	Local power companies (LPCs) provide energy efficiency assistance programs and net metering.
Communities Participate	Communities lead participation of activities on energy and climate change. For example, energy efficiency and renewable energy assistance programs and net metering to reduce energy burden.
Residences Participate	Residents participate in residential programs. For example, residents participate in EnergyRight and/or Home Uplift.
Build EV Infrastructure	Utilities build EV infrastructure to support the TVA service region.
Energy Codes	Communities and governments develop energy codes aligned with energy and environmental programs.
Builders	Builders construct energy efficient homes, especially affordable housing for reduced energy burden.
Alternative Energy Providers	Alternative energy providers provide installation, maintenance and hire locally.
Needs and Gaps Analysis	Performed to identify community specific approaches to energy poverty, energy burden, bill payment and energy disconnections.

Enhanced Community Resiliency | Activities



Activity	Description
Provide Funding	Funding is provided to select communities to help overcome barriers, test ideas, identify project success models and develop local expertise.
Build and Maintain Information Hub	This is a source of information on funding opportunities, case studies, indicators and data.
Connected Community Network	Connected Communities Network is a source of events and information sharing.
Technical Support and Success Coaching	Provide communities with the tools to be successful.
Incentivize and Set Policy	Explore and develop policies and incentives that will create a more favorable framework for investment in community resiliency.
Team With Innovation Partners	Innovation partners are key to success by bringing in additional resources, funding, knowledge and skillsets. Innovation partners include Oak Ridge National Laboratory (ORNL), other research labs, universities, industry groups, venture capital, tech companies and large corporations.
Define Priorities	Communities identify targeted areas for infrastructure improvement.
Apply for Funds	Apply for funds (federal, state, local) to create economic development programs. Use funding database to find the best-fit opportunities.
Plan Programs	Use funds to plan job-training programs in identified areas of development.
Offer Programs	Tech-related job training programs available, matched to local businesses (K-12, tech schools, universities).
Create Demonstration Opportunities	Create demonstration opportunities (example Chattanooga micro-grid).
Deploy Solutions	Implement projects.

Stakeholder Roles in Implementing Roadmap 2.0

Community Stakeholders Identify Roles to Achieve Future Milestones

Defining Stakeholder Roles

The Connected Communities team developed the following framework to identify appropriate roles* for stakeholders that can drive and support implementation of Roadmap 2.0.



Driver (D)

Owens initiative,
responsible for driving
/ executing
programmatic work



Partner (P)

Serves as partner to
driver, coordinating
on tasks subordinate
to the larger initiative



Convener (C)

Serves a coordinating
role for stakeholders,
providing information
and bringing together
key stakeholders



Informed (I)

Stakeholder is
informed of initiatives
and can serve as an
information hub for
downstream
organizations /
consumers

Broadband and Digital Literacy



Aligning Activities to Anticipated Stakeholder Roles*

Activity	TVA	Local Power Companies (LPCs)	Government Entities	NGOs** and Community Partners	Business and Innovation Partners
Provide Funding	D / C	P	D	I	I
Build and Maintain Information Hub	D / C	D	D	P	P
Technical Support and Success Coaching	D / C	P	P	P	I
Incentivize and Set Policy	D / C	P	D	D / P	P
Coordinate In-Ground Work	C	D	P	I	I
Team with Innovation Partners	C	I	P	D / P	D
Needs and Gaps Analysis	D / C	D	I	P	P
Funding Application Internet Access	C	D	P	D	I
Program Development	C	D	D	D	P
Community Plans and Policies	C	P	D	D	P
Develop and Deliver Digital Literacy Training	P	I	D	D / C	P
Cost/Benefit Analysis	D / C	D	P	I	I
Deploy Solutions	C	D	P	I	I

* Note: A stakeholder may have multiple roles, but this analysis focuses on stakeholders' primary roles.

** Non-Governmental Organizations (NGOs)

Driver (D)

Partner (P)

Convener (C)

Informed (I)

Economic Empowerment



Aligning Activities to Anticipated Stakeholder Roles*

Activity	TVA	Local Power Companies (LPCs)	Government Entities	NGOs** and Community Partners	Business and Innovation Partners
Incentivize and Set Policy to Support Workforce Development	P / C	I	D	P	P
Recruit Large, Clean Technology Manufacturing Firms to Provide Workforce Opportunities	C	I	D	C / P	P
Provide Funding	D	P	P	C / P	I
Build and Maintain Information Hub	D / C	D	D	P	P
Technical Support and Success Coaching	D / C	P	P	D	I
Team with Innovation Partners	C	I	P	P	D
Technology-Related Job Training	C	I	D	D / P	P
Create Demonstration Opportunities	D / C	D	P	I	P
Foster Startup Culture	C	I	P	D	D
Skilled Labor Availability	C	P	D	D	P
Locally Source Innovation	C	P	D	D	P

* Note: A stakeholder may have multiple roles, but this analysis focuses on stakeholders' primary roles.

** Non-Governmental Organizations (NGOs)

Driver (D)

Partner (P)

Convener (C)

Informed (I)

Energy and Environmental Justice



Aligning Activities to Anticipated Stakeholder Roles*

Activity	TVA	Local Power Companies (LPCs)	Government Entities	NGOs** and Community Partners	Business and Innovation Partners
Provide Funding	P / C	P	P	D	P
Build and Maintain Information Hub	D / C	D	D	P	P
Technical Support and Success Coaching	D / C	P	P	P	P
Incentivize and Set Policy	D / C	I	D	D / P	P
Team With Innovation Partners	C	P	P	P	D
Communities Create and Update Community Plans and Policies that Reflect Best Practices	C	P	D	D	P
Apply for Funds	C	P	P	D	D
Use Funds	D / C	P	D	D	P

* Note: A stakeholder may have multiple roles, but this analysis focuses on stakeholders' primary roles.

** Non-Governmental Organizations (NGOs)

Driver (D)

Partner (P)

Convener (C)

Informed (I)

Enhanced Community Resiliency



Aligning Activities to Anticipated Stakeholder Roles*

Activity	TVA	Local Power Companies (LPCs)	Government Entities	NGOs** and Community Partners	Business and Innovation Partners
Provide Funding	P / C	P	D	P	I
Build and Maintain Information Hub	D / C	D	D	P	P
Technical Support and Success Coaching	D / C	P	P	P	P
Incentivize and Set Policy	D / C	P	D	D / P	P
Team With Innovation Partners	C	P	P	P	D
Define Priorities	C	C	D	D	I
Offer Programs	C	I	D	P	P
Create Demonstration Opportunities	D / C	D	P	P	P
Deploy Solutions	C	D	D	D	D

Measuring Progress and Refining to Meet Changing Conditions

Strengthening Communities Through Connection: A Roadmap for Collaboration

Measuring Progress and Adapting to Change

- Connected Communities stakeholders can use Roadmap 2.0 to monitor progress and identify areas needing additional attention and resources.
- The Connected Communities team will reevaluate activities, review the timeline, address new challenges and report on accomplishments. This will help ensure communities in the TVA service region continue to make progress, receiving the support they may need to expand upon and sustain progress.
- The Connected Communities initiative is expected to undergo changes between now and 2035 as markets, industry and community needs change and evolve. The Connected Communities team will conduct periodic reviews and refinements to the Roadmap to ensure it remains relevant and effective and adapts to address the evolving needs of the TVA service region. This process will include engagement with stakeholders through workshops, forums and webinars.
- The indicators outlined in the Connected Communities Roadmap 2.0 were developed in collaboration with external stakeholder groups. While these indicators provide valuable guidance for TVA and its stakeholders, it is important to note that they are not legally binding. As such, they should be considered as recommendations rather than mandatory requirements.

Appendix

Acronyms

Acronym	Term	Definition
BTM	Behind-the-Meter	“Behind-the-meter” refers to an energy system’s position in relation to your electric meter, often the energy production and storage systems that directly supply the facility with power.
CAIDI	Customer Average Interruption Duration Index	CAIDI means the ‘Customer Average Interruption Duration Index’ which is the average time taken for supply to be restored to a customer when an unplanned interruption has occurred, calculated as the sum of the duration of each customer interruption (in minutes), divided by the total number of customer interruptions (System Average Interruption Duration Index (SAIDI) divided by System Average Interruption Frequency Index (SAIFI)), unless, otherwise, stated CAIDI excludes momentary interruptions.
DAC	Disadvantaged Communities	A disadvantaged community under the Department of Energy (DOE) definition, a census tract must rank in or above the 80th percentile of the cumulative sum of the 36 Justice40 burden indicators for its state and have at least 30 percent of households classified as low-income.
DEI	Diversity, Equity and Inclusion	Diversity, equity and inclusion is a framework that promotes fair and full participation of all people.
EJ or EEJ	Environmental Justice or Energy and Environmental Justice	Environmental justice is a social movement to address the unfair exposure of poor and marginalized communities to harms associated with resource extraction, hazardous waste and other land uses.
EJI	Environmental Justice Index	The EJI ranks the cumulative impacts of environmental injustice on health for every census tract.*
EV	Electric Vehicle	Electric vehicles use batteries and electricity as fuel instead of gasoline, diesel or other liquid gases.
FEMA	Federal Emergency Management Agency	FEMA is an agency of the U.S. Department of Homeland Security (DHS) whose primary purpose is to coordinate the response to a disaster that has occurred in the U.S. and that overwhelms the resources of local and state authorities.

Acronyms (CONTINUED)

Acronym	Term	Definition
GIS	Geographic Information System	A geographic information system is a type of database containing geographic data, combined with software tools for managing, analyzing and visualizing those data.
IoT	Internet of Things	Internet of things is a network of physical objects that can connect and exchange data.
LPC	Local Power Company	A local utility that owns or operates the utility equipment within the TVA service region.
MW	Megawatt	A unit of power equal to one million watts, especially as a measure of the output of a power station.
NGO	Non-Governmental Organization	A non-governmental organization or non-governmental organization is an organization that generally is formed independent from government.
PM	Particulate Matter	The term fine particles, or particulate matter 2.5, refers to tiny particles or droplets in the air that are two- and one-half microns or less in width. Like inches, meters and miles, a micron is a unit of measurement for distance.
SAIDI and SAIFI	System Average Interruption Duration Index and System Average Interruption Frequency Index	SAIDI is a metric used to measure the reliability of U.S. electric utilities. It measures the total time an average customer experiences a non-momentary power interruption in a one-year period. For utilities that report SAIDI metrics using Institute of Electrical and Electronics Engineers (IEEE) standards, non-momentary interruptions are those lasting longer than five minutes. SAIDI is often paired with the SAIFI, an index that measures the frequency of interruptions.*
TOU	Time of Use	TOU rates mean that electricity is more expensive during certain times of the day and less expensive during other times of the day.
TVA	Tennessee Valley Authority	The Tennessee Valley Authority is a federally-owned electric utility corporation in the U.S. TVA's service region covers all of Tennessee, portions of Alabama, Mississippi, and Kentucky and small areas of Georgia, North Carolina and Virginia.
V2G and V2X	Vehicle-to-Grid and Vehicle-to-Everything	Vehicle-to-grid (or vehicle-to-everything) is a technology that allows for energy stored within the battery of an electric vehicle (EV) to be pushed back to the grid (or something else).

Glossary

Access	The ability to make use of resources because they are available, affordable and not restricted by practical or logistical barriers (i.e., in the context of broadband access, it is not just about having the option to use one provider but the availability of multiple providers, affordable rates, ease of adoption, etc. In the context of electric vehicle (EV) access, those living in low- or moderate-income neighborhoods have access to affordable EV ride-sharing, transit and ownership opportunities, and experience the air quality benefits of a high penetration of electric commercial vehicles).
Connected Community	Communities using technology and sharing information to enable equitable access to new, improved and existing services for all people.
Connected Communities Initiative	Through the Connected Communities initiative TVA works collaboratively to help communities unlock opportunities to prosper and improve quality of life by making progress in four focus areas: broadband and digital literacy, economic empowerment, energy and environmental justice and enhanced community resiliency. A Steering Committee of external stakeholders identified these focus areas as important in addressing community challenges while preparing for a modern energy system.
Data Analytics	Leveraging and analyzing data across different areas of the community to provide actionable insights.
Data Management	Managing data with privacy practices, governance and cybersecurity.
Diverse Business	TVA defines a diverse business as one that is minority-owned, woman-owned, small disadvantaged-owned, veteran-owned, service-disabled veteran-owned or located in a historically underutilized business (HUB) zone.
Disadvantaged Community	A disadvantaged community is a group of people who have been subject to systemic disadvantage, oppression or discrimination. As a result of these disadvantages, members of a disadvantaged community may face challenges in accessing opportunities and resources that are readily available to others.
Economic Empowerment Program	The extent to which a community is equipped with the resources, skills and opportunities to achieve economic self-sufficiency and self-determination.

Glossary (CONTINUED)

Energy Burden	The percentage of gross household income spent on energy costs. According to the Department of Energy’s (DOE’s) Low-Income Energy Affordability Data (LEAD) Tool, the national average energy burden for low-income households is 8.%, three times higher than for non-low-income households which is estimated at 3% (<i>Energy.gov</i>).
Energy Poverty	The lack of access to or inability to afford sufficient quantities of energy to meet basic needs (Residential Microgrids and Rural Electrifications, 2022).
Roadmap 1.0	Developed during the initial stages of connected communities, focused on vision and did not establish target outcomes and strategies.
Roadmap 2.0	Sets specific 2025 and 2035 Valley-wide target outcomes and pathways for achieving them.
Rural	The Census Bureau delineates urban areas after each decennial census by applying specified criteria to the decennial census and other data. “Rural” encompasses all population, housing and territory not included within an urban area (<i>census.gov</i>).
Success Factors	Presented in Roadmap 2.0, necessary components to achieve vision and milestones.
Smart City	Cities that use connected technology and data to (1) improve the efficiency of city service delivery (2) enhance quality of life for all (3) increase equity and prosperity for residents and businesses. (<i>SmartCityConnect.org</i>).
Universal Elements	Presented in Roadmap 1.0, necessary components to achieve vision.
Urban Area	For the 2020 Census, an urban area will comprise a densely settled core of census blocks that meet minimum housing unit density and/or population density requirements. This includes adjacent territory containing non-residential urban land uses. To qualify as an urban area, the territory identified according to criteria must encompass at least 2,000 housing units or a population of at least 5,000 (<i>census.gov</i>).

Data Sources

Indicator	Source
Broadband Internet Access	https://broadbandusa.ntia.doc.gov/resources/data-and-mapping
Urban-Rural Internet Access Divide	https://broadbandusa.ntia.doc.gov/resources/data-and-mapping
Public Wi-Fi Availability	Connected Communities Community Conversations Report
Internet Device Ownership	https://www.census.gov/programs-surveys/acs
Digital Education	Does not exist on a national scale
High School Education	https://www.census.gov/programs-surveys/acs
Low-Income Population	https://www.census.gov/programs-surveys/acs
Unemployment	https://www.census.gov/programs-surveys/acs
Diverse Business Contract Awards	TVA Supplier Diversity Business Unit
Economic Empowerment Program Prevalence	Varies: Dependent on online availability

Data Sources (CONTINUED)

Indicator	Source
Tech-Related Job Training Program Availability	Varies: Dependent on online availability
Community Engagement with Federal Funding Opportunities	Future TVA Economic Development Research
Affordable Housing Availability	https://www.policymap.com/newmaps#/
Energy Poverty and Burden	https://www.energy.gov/eere/slsc/maps/lead-tool
Solar Installations by Region and Capacity	TVA Solar Data
Community Plans Addressing Clean Energy and Environmental Justice	Connected Communities Community Readiness Assessment
Energy Efficiency, Clean Energy and Demand Response Program Participation	EnergyRight Highlights Report
Local Power Companies (LPCs) Offering Time of Use (TOU) Rates	Varies: Dependent on online availability
Public Electric Vehicle (EV) Program Access and Participation	Varies: Dependent on online availability
Distributed Energy Project Financing Access	Varies: Dependent on online availability

Data Sources (CONTINUED)

Indicator	Source
Change in Air Quality	https://gaftp.epa.gov/EJSCREEN/
Termination of Service, Planned, Unplanned and Disconnections	Metric does not currently exist
Information Access in Multiple Languages	Varies: Dependent on online availability
Disadvantaged Community Status	Energy Justice Dashboard (anl.gov)
System and Customer Outages	Varies: Dependent on LPC availability
Local Power Companies (LPCs) with Cybersecurity Trainings and Certifications	https://www.osti.gov/servlets/purl/1367499#:~:text=Grid%20resilience%20metrics%20should%20be,and%20planning%20and%20investment%20efforts.
Disaster Preparedness, Response and Recovery Plan Prevalence	Varies: Dependent on Information availability
Communities with Standby Generation for Vital Operations	Varies: Dependent on Information availability
Microgrid Availability	Varies: Dependent on Information availability
Resilient Communications System Availability	Varies: Dependent on Information availability

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