



**Connected Communities**

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# Guidebook

APRIL 2023

# Acknowledgments

The Connected Communities Guidebook was developed by the Tennessee Valley Authority (TVA), in collaboration with numerous representatives of community-based organizations and institutions. The steering committee and working groups provided guidance and insights that set the vision for Connected Communities in our region.

TVA would like to thank the following organizations for their leadership in working toward a connected TVA service region that provides broadband and digital literacy, empowers its people and businesses, promotes energy and environmental justice for everyone and supports resilient communities.

- AgLaunch
- Alerting Elders to Air Quality Health Risks Pilot Project Team
- Appalachian Voices
- Base Camp Coding Academy
- CDE Lightband
- Central Labor Council of Nashville and Middle Tennessee
- Centro Hispano de East Tennessee
- City of Chattanooga, TN
- City of Cookeville, TN
- City of Florence - Utilities, AL
- City of Florence, AL
- City of Mayfield, KY
- City of Knoxville, TN
- City of Memphis, TN
- City of Tupelo, MS
- Duck River Electric
- Economic Solutions Through Solar Innovation Pilot Project Team
- Electric Power Board (EPB)
- Electric Power Research Institute (EPRI)
- Enterprise Center
- green|spaces Chattanooga
- Kentucky Energy and Environment Cabinet
- Knox County
- Knoxville Chamber
- Knoxville Utilities Board
- Nashville State Community College
- Oak Ridge National Laboratories
- Residential Demand Response Through Connected Murfreesboro Housing Authority Pilot Project Team
- Sierra Club
- Southeast Sustainability Directors Network
- Southern Connected Communities Project
- Southwestern Kentucky Economic Development Council
- Tallahatchie Valley Electric Power Association
- Tennessee Department of Economic and Community Development
- Tennessee Department of Environment and Conservation
- Three3, Inc.
- United Cleanup Oak Ridge
- University of Tennessee
- Urban Green Lab
- Urban League of Middle Tennessee
- Warren RECC

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SECTION 1

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# Introduction

**INCLUDES:**

- ✓ Defining Connected Communities
- ✓ Using The Guidebook
- ✓ Creating Impact



# Introduction

## Defining Connected Communities

Connected Communities use technology and share information to enable equitable access to existing, new or improved services for all people.

Towns, cities and regions can move closer to addressing the critical needs of their communities by leveraging information, technology and partnerships with organizations. The Tennessee Valley Authority (TVA) Connected Communities Guidebook (“Guidebook”) is a resource to aid communities as they pursue solutions and grow into Connected Communities.

You may have heard of a “Smart City”, and while there are similarities, the TVA service region is more than cities. We consist of large and small communities: metropolitan, micropolitan and rural. To better represent the needs of our region, we’ve evolved the term “Smart Cities” to “Connected Communities.”



**Connected Community solutions address the challenges you or your constituents may be facing.**

### BENEFITS

Connected Community solutions deliver meaningful benefits, such as:



#### Better Access and Quality Services

Education, healthcare, safety, transportation, government, job training and more.



#### Infrastructure Upgrades

Monitoring and identification of opportunities.



#### Resource Optimization

Supporting a growing population and ensuring availability to communities in need.



#### Sustainability and Decarbonization

Setting and making progress toward goals.



#### Reduced Energy Costs

Minimizing energy burden and reliability challenges.



#### Skills for the 21<sup>st</sup> Century Economy

Enhanced and modern workforce development programs.



# Introduction

## The TVA Connected Communities Initiative

TVA is partnering with stakeholders across our service area to create Connected Communities that provide broadband and digital literacy, deliver economic empowerment for people and businesses, promote energy and environmental justice for everyone and work to enhance community resiliency in the face of adverse events.

TVA has developed resources and funded projects to equitably improve our communities through innovative solutions with a wide range of opportunities and applicability.

### The Connected Communities initiative aims to support communities through:

- 1 Partnerships and Pathfinding**  
 Providing tools to support planning and project implementation and bringing together stakeholders with common interests who can help each other address challenges.
- 2 Community Resources**  
 Providing easy access to tools that can help assess needs, set goals and successfully pursue “good fit” opportunities.
- 3 Pilot Projects**  
 Provide communities with resources to help them test innovative ideas, build local expertise and leverage lessons learned to scale models for success. Read more about the Connected Communities Pilot Projects [here](#).

### FOCUS AREAS

The Connected Communities Initiative aims to make progress across four focus areas:



#### Broadband and Digital Literacy

Elevates digital equity and inclusion for everyone by supporting broadband expansion and access to modern technologies.



#### Economic Empowerment

Supports economic security so the people in TVA’s service region can contribute, to the best of their abilities, to the modern economy.



#### Energy and Environmental Justice

Promotes access to healthy natural and built environments and reliable, affordable, clean energy for everyone in the TVA service region.



#### Enhanced Community Resiliency

Enhances community resiliency through plans and resources that help communities minimize impacts, effectively endure evolving challenges and strengthen recovery strategies for the future.

# Introduction

## Community Resources

The Connected Communities Initiative has developed a portfolio of Community Resources to assist communities in their journey of becoming more connected.

### RESOURCES INCLUDE



#### Resource Database

Discover examples of other projects and concepts from across the nation as well as technology solutions and funding resources. Reference the database at any point in your project to learn more.

[Learn more](#)



#### Implementation Guides

These booklets provide information and examples of how communities can pursue specific types of Connected Communities solutions.

- [Broadband Solutions](#)
- [Workforce Development](#)
- [Grid-Interactive Efficient Buildings](#)



#### Broadband Assessment Report

This report summarizes the current state of broadband offerings in TVA's service region and offers a deep dive into opportunities for TVA to help improve equitable access to broadband and digital literacy. [Learn more](#)



#### Emerging Technologies Report

This report provides high-level summary information about technologies available to help increase connectivity in communities across TVA's service area. By exploring these technologies and the ways they are applied in various settings, communities can determine the best-fit solutions for their unique needs. [Learn more](#)



#### Mapping Key Data

This resource provides a collection of regional maps displaying data points across the Connected Communities focus areas. The data presented in these maps can help inform current state assessments as well as resource planning. [Learn more](#)



#### Funding Opportunities Database and Search Tool

This user-friendly search tool provides in-depth information regarding new funding opportunities for topics like broadband, economic development, job training and more. [Learn more](#)



#### Funding Access Barriers Assessment

This assessment highlights barriers to funding that many of TVA's local communities face, as well as potential solutions. It summarizes funding opportunities as of November, 2022.

[Learn more](#)



#### Community Conversations

This resource summarizes findings from conversations with community representatives from across TVA's service area that took place during 2022. The findings provide a window into communities' current conditions and needs. [Learn more](#)



#### Community Readiness Baseline and Best Practices Assessment

This report provides a snapshot of TVA communities' readiness to pursue projects related to the Connected Communities focus areas and how conditions in TVA's service area compare to other parts of the country. [Learn more](#)



#### Broadband Funding Guide

This resource outlines federal and state funding opportunities available to communities within the TVA service region in addition to giving an overview of region-specific challenges and factors affecting adoption. [Learn more](#)



## Using the Guidebook

The Guidebook highlights processes, considerations and resources that can help your community become more ‘connected.’

Developed by TVA, the Guidebook reflects input from a steering committee of community-based organizations and institutions in the TVA service region.

The Guidebook is organized around the process your community can follow to become a Connected Community. We hope it will serve as a valuable reference and supplement to your community’s existing planning resources.

### THE GUIDEBOOK IS FOR ORGANIZATIONS SUCH AS:



**Local governments**



**Local power companies (LPCs)**



**Community-based organizations (CBOs)**

## What does the process of becoming a Connected Community look like?

1

### Where You May Be Now

You may be considering implementing new technologies or policies in your community for a variety of topic areas. Maybe you are looking to improve maintenance for essential infrastructure like roads, water and sewer systems. Perhaps you are experiencing skilled workers leaving the community in pursuit of jobs. Maybe you have goals but are not sure how to get the funding or stakeholder buy-in to implement them, or maybe you are interested in change but are uncertain whether it will be a worthwhile time investment.

2

### Overcoming Challenges and Preparing to Prosper

Funding, stakeholder buy-in, staffing, planning and implementation support needs are all barriers a community may face on the path to implementing solutions.

The Connected Communities initiative aims to help communities identify and connect with resources that fit their specific needs. The Connected Communities resources offer information on the current conditions in the TVA service region, research on potential projects and technologies to pursue and support to communities looking to become more connected. This Guidebook aims to help users develop and implement a Connected Community strategy by providing a framework to think through your community’s goals and what steps are necessary to achieve them.

3

### Achieving the Future Vision

After overcoming these challenges, your community can experience a wide variety of benefits such as improved health economic growth and energy savings, some of which are discussed in the Creating Impact section on page 16. The Connected Communities initiative is here to support you on your journey, whether this is your first project or not!

## What you will find in the sections ahead.

The Guidebook will walk you through the process of identifying your community's needs, developing a strategy and finally, implementing that strategy.



SECTION 2

### Success Factors: Planning, Infrastructure, Funding and People

Reviews the foundational success factors that communities need to pursue solutions: planning, infrastructure, funding and people.



SECTION 3

### Developing Strategies

Provides an approach to developing a Connected Community strategy, identifying and prioritizing opportunities and establishing collaboration and governance to pursue those opportunities.



SECTION 4

### Implementing Strategies

Provides a general approach to implementing your solutions by collaborating with the community, exploring opportunities, deploying the right solutions and reporting your results.

## Becoming a Connected Community addresses the most critical needs across the TVA service region.

With information, technology and collaboration, communities across the TVA service region can make better informed decisions and identify new opportunities to meet their most critical needs. Communities of varying needs and sizes can address challenges across sectors, from rural mobility solutions to predictive maintenance for streets and power lines.

Connected Community solutions utilize enablers like broadband internet access, affordable housing and people empowered with technical skills to deliver and use information and technology-based solutions.



**As technology advances and information and services become more digital, communities will have more and more opportunities to create positive impacts and solve challenges.**



## Creating Impact

### What can Connected Communities projects do for your community?

When conducting a project, it is important to highlight the potential benefits to justify time and resources spent on the project, gain funding support and garner stakeholder buy-in. Potential benefits of Connected Communities projects are outlined in this section.

| POTENTIAL BENEFITS  | EXAMPLE PROJECTS  |
|---|---|
| <p><b>Financial</b></p> <p>Affordability of housing with reduced energy costs; an increase in higher paying jobs with availability of job training opportunities; and startup and local business support.</p>                             | <p>Projects that reduce energy consumption, improve access to training for higher-wage jobs, or minimize infrastructure damage and downtime during natural disasters.</p>   |
| <p><b>Social</b></p> <p>Improved quality of life, health, social justice and equity, public safety and ability to respond to natural disasters; availability of mobility solutions and backup power generation; and grid reliability.</p> | <p>Projects targeting access to services such as internet and affordable housing, air and water quality improvements, community engagement, emergency response systems, natural disaster preparation, cybersecurity and clean and connected transportation.</p> |

#### POTENTIAL BENEFITS

#### EXAMPLE PROJECTS

##### Workforce Preparedness

Improved awareness and participation in workforce preparedness programs; increased placement of individuals from low-income backgrounds into high-paying jobs; and improved ability to attract business and industry with a skilled workforce available, thus improving ability to retain talent in the area.

Projects offering workforce development programs, training for technology-related jobs, increased access to quality and affordable education, support for businesses and industry in the area, or improved awareness of career and educational programs.

##### Broadband Accessibility/ Digital Equity

Economic growth, workforce flexibility and access to online services including banking, telehealth and education.

Projects that extend fiber infrastructure to rural areas, reduce the cost of internet subscriptions or teach community members how to use devices to access online services such as banking, telehealth, and education.

##### Energy and Environmental

Energy savings, carbon reduction and air and water quality improvements.

Projects focusing on energy efficiency improvements, electric vehicle support or air and water quality mitigation and protection.





SECTION 2

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# Success Factors for a Connected Community

**INCLUDES:**

- ✓ Assets and Infrastructure
- ✓ Skilled and Engaged Communities
- ✓ Vision, Governance and Community Planning Efforts
- ✓ Funding and Resource Access



## To achieve positive impacts, communities need to be prepared to pursue solutions.

Communities that are most successful at pursuing Connected Communities solutions share some common attributes. As communities develop these success factors, they increase their ability to create and access new or improved services.

No matter where your town or city is in its Connected Community journey, you can start here to evaluate what you have, find and address the gaps and help support the components already in place.

A [study of leading communities](#) identified these factors as common characteristics enabling success across the Connected Communities focus areas.



**For topics throughout Sections 2-4 of this Guidebook, there are links to further readings provided in Section 5: Resources.**

THIS SECTION REVIEWS THESE CONNECTED COMMUNITIES SUCCESS FACTORS:



### 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.



### Skilled and Engaged Community

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.



### Vision, Governance and Community Planning Efforts

Communities have relevant documents, policies and partnerships that aid a community in setting and achieving goals.



### Funding and Resource Access

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

# Success Factors

## Assets and Infrastructure

### Assets and infrastructure enable communities to make progress across focus areas.

There is a diverse array of systems, materials and technical elements required to be successful across the Connected Communities focus areas. To create a community that is ready to thrive, both the basic infrastructure needs and more advanced technological assets must be in place. Assets and infrastructure is a broad category, which can include a variety of elements from roads to smart meters. Additional examples of asset and infrastructure systems necessary to developing a Connected Community are described in this section.

#### COMMON THEMES AMONG SUCCESSFUL COMMUNITIES

- 1 Development of smart grids/meters
- 2 Incorporation of new technology
- 3 Goal of increasing renewable energy from the baseline to somewhere between 50%-100%
- 4 Public access to broadband
- 5 Digital equity programs

## Digital Connectivity

Community resources and services increasingly rely on high-speed internet access. Lack of access to broadband limits access to healthcare, education, workforce opportunities, mobility or municipal services. This can be addressed through a variety of connectivity solutions, such as satellite internet, wireless networks or fiber networks, each with unique advantages and challenges. In the TVA service region, rural areas often have limited or no broadband access or must rely on available satellite internet options, according to the [FCC](#).<sup>1</sup>

## Sensors and Devices

There is a growing use of sensors and devices in communities across the United States. Sensors may track traffic flow, air and water quality or infrastructure health, for example. Property assets like rights-of-way, streetlight poles, government buildings and vehicles can be used to deploy sensors. Devices may include EV chargers, drones or hardware enabling two-way power flow for energy optimization capabilities. The specific sensors and devices needed by a community depends on the challenges it is trying to solve.

## Quality Affordable Housing

Affordable housing is housing in which the resident pays 30% or less of their income on rent and utilities, and affordable housing is critical for preparing a community to pursue Connected Communities solutions. The availability of quality affordable housing is a necessary foundation for a community to have in place before pursuing more advanced solutions. When residents have access to quality affordable housing, they are better prepared to learn new skills and excel at school or work, pursue career advancement and participate as active members of their community.

A community can improve affordable housing through policies, funding and zoning. There are many resources supporting affordable housing offered by the [U.S. Department of Housing and Urban Development](#) and through the Connected Communities website.



# Success Factors

## Skilled and Engaged Community

**Communities benefit from skilled and engaged citizens who can collaborate, provide input on plans and bring solutions to life.**

As digital resources become more common and necessary for providing services to a community, so does the importance of having a network of people in place—advocates, leaders, innovators and solution providers. Collaboration between individuals and organizations is key to success for a Connected Community. Sharing ideas, skills and experiences helps a community foster innovative solutions that may not be possible otherwise.

### COMMON THEMES AMONG SUCCESSFUL COMMUNITIES

- 1 High level of community engagement including through volunteerism and participation at public meetings
- 2 Active presence of community and non-profit organizations
- 3 Community survey to assess resident opinions
- 4 Residents receive resources and services from their local government
- 5 Community boards are active in promoting and leading projects

## Digital Literacy

To help people make the most of digital resources, communities should provide opportunities for education and training on basic computer and digital skills. Community members must have the digital literacy to access and use resources. Digital literacy training and access also prepare the community workforce and address skills gaps.

### BENEFITS OF A DIGITALLY SKILLED COMMUNITY



**Personal  
Use Benefits**



**Employment  
Opportunities**



**Adaptation  
of Existing  
Businesses**



**Information  
and Technology-  
Enabled Solutions**



**See Section 3: Convene Stakeholders  
for further reading.**

# Success Factors

## Opportunities for Workforce

Local governments, LPCs and other solution providers draw on skilled workers to identify and develop solutions that use information and technology.

In addition to enabling Connected Community solutions, investments in workers skilled in technology boost the local economy. Workforce development programs can offer numerous benefits to communities as they seek to leverage technology and data-driven solutions in the form of increased human capital, lower unemployment rates and increased access to living wages for community residents. As communities look to attract small or large businesses, one of the key aspects in their pitch is the availability of human capital. Programs that provide training in high-demand and high-paying jobs can transform a community or provide it with the edge it needs to become or remain an attractive location for a potential employer.

Nationally for 2021, [the tech industry ranked 3<sup>rd</sup> in projected job growth](#)<sup>2</sup> compared to other sectors, according to CompTIA's Cyberstates report. While the tech industry was a top 3 sector for job growth from 2019-2020 in the TVA service region, the 2021 year-over-year projection for the region was lower, varying by state between 3<sup>rd</sup> and 10<sup>th</sup> compared to other sectors. Additionally, the tech industry growth rate is greater than the available workforce in the country.



**The tech industry projected job growth is within**

THE TOP

10

**across the TVA service region.**



**Median wages in the tech industry are**

MORE THAN

2X

**higher than other industries in the TVA service region.**

Focusing on workforce development programs and higher education, the region can address the demand gap for workers in tech. Important skills include data science, cybersecurity, networking, IT support, software development, GIS, digital innovation and entrepreneurship.

Ultimately, a skilled, technical workforce in the TVA service region requires commitment and support at the federal, state and local levels in the form of policies, funding mechanisms and effective programs to drive the advanced, data-based solutions and strategies that workers can support.



### Resource Database

To explore examples of Workforce Development programs in the TVA service region, see the Connected Communities [Resource Database!](#)



# Success Factors

## Vision, Governance and Community Planning Efforts

A comprehensive plan (also called a “general plan” or “master plan”) allows a community to develop, document and share a vision for the future of the community.

Communities don’t end up with thriving downtowns, walkable and bikable neighborhoods and large areas of protected open space by accident. These community characteristics result from a clear vision, thoughtful planning, effective staffing and management of key roles, consistent implementation, and efforts to secure and allocate resources to priority investments over time. Vision, governance and planning strategies can vary from simple to complex depending on community size and priorities. However, if a community lacks these elements altogether, it has no tools in place to help shape and maintain its character, limit unwanted outcomes, or provide a clear path toward improved quality of life and prosperity. For communities seeking to become leaders in technology-related opportunities and to be well positioned to receive funding, it is essential to ensure that community policy documents, regulations (e.g., zoning and building codes) and strategic plans all align with their technology-focused vision.



**Vision, governance and planning strategies can vary from simple to complex depending on community size and priorities.**

### COMMON THEMES AMONG SUCCESSFUL COMMUNITIES

- 1 Comprehensive plans cover key topics related to Connected Communities and are updated regularly
- 2 Comprehensive plans or strategic plans include measurable objectives
- 3 Comprehensive plans, strategic plans and regulations align to reflect the community’s vision
- 4 Cybersecurity privacy policy is in place (often limited to medium and large cities)
- 5 City/county departments and funding support sustainability
- 6 The natural environment has protection and conservation efforts
- 7 There is a relationship between environmental and local economic drivers
- 8 Environmental and scientific data is available to inform decision making



# Success Factors

## What is a Comprehensive Plan?

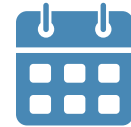
A local, comprehensive plan, sometimes referred to as the general plan or master plan, is a foundational policy document for local governments that provides a framework to guide decisions about future growth, preservation and change within a municipality or county over a 20- to 30-year time horizon.

### What it Should Include

A comprehensive plan covers topics that are central to establishing and achieving a community's vision. They traditionally focus on physical development, but communities are increasingly using these documents to address broader topics including economic, environmental and social topics that affect the sustainability of a community.

### The Value

A strong comprehensive plan can be an effective tool in helping to attract and retain residents and businesses and laying the groundwork for making investments and securing funding in key areas like broadband, workforce development, clean energy and resilience. Comprehensive planning is valuable for all communities, particularly those looking to make investments in Connected Communities-related technology solutions. The Connected Communities strategy you develop based on the information in this Guidebook will have the greatest impact if it is incorporated into existing planning documents in your community.



**Time horizons for comprehensive plans typically span**

**ACROSS**

**15-20**  
**years.**



## How to Develop Your Plan

The first step toward developing a comprehensive plan is to engage residents and businesses to assess the priorities and needs of the community. Collaborating with other municipalities can be a valuable strategy to overcome limited resource availability for planning activities. After creating a comprehensive plan, the work is not finished. It is important to periodically review and update the plan to ensure the goals and vision still align with the communities' evolving circumstances. Finally, communities must put policies and procedures in place to help ensure outcomes that will align with their community's vision.



# Success Factors

## Funding and Resource Access

**Funding and staff resources are critical to create and implement effective plans and drive progress toward goals.**

A key success factor in communities' ability to become "connected" is to have access to funding to support development of related infrastructure and programs. In securing funding from federal, state and local sources, communities may face barriers including challenges identifying and planning for funding opportunities, limitations with staff capacity and experience and difficulty navigating funding requirements. Applicants for funding opportunities must identify relevant needs, gaps and potential opportunities for advancing solutions.

### COMMON THEMES AMONG SUCCESSFUL COMMUNITIES

- 1 Talent acquisition, small business development, business zones, economic diversification and job training/workforce development programs
- 2 Active economic development organizations
- 3 Utilization of state or federal grants for economic and social programs
- 4 Job training partnerships with community and local colleges
- 5 Access to community foundations

## Other Resources

In addition to funding, other resources such as staffing and access to local systems are necessary to develop and implement your strategy. You can help ensure access to staffing resources by ensuring your community's planning and regulatory documents align with its technology-related vision and goals. With alignment across these governing documents, your community will establish a resource framework to support its goals. Furthermore, funding agencies often look to a community's governing documents for evidence of commitment and capabilities to deliver on vision and goals. A strong vision and community planning can also open doors to more funding opportunities.



**See Section 4: Explore Funding and Solutions for further reading.**



**Funding agencies often look to a community's governing documents for evidence of commitment and capabilities to deliver on vision and goals.**



### Broadband Funding Guide

Please see the [Broadband Funding Guide](#) that outlines federal and state funding opportunities and an overview of region-specific challenges and factors affecting adoption.





SECTION 3

# Developing Your Connected Community Strategy

INCLUDES:

- ✓ Convene Stakeholders
- ✓ Create a Vision for the Future
- ✓ Assess Current State
- ✓ Define Goals
- ✓ Prioritize Goals
- ✓ Roles, Responsibilities and Action Planning



## A Connected Community strategy guides collaboration, solution prioritization and implementation.

Developing a clear strategy maximizes the impacts of your investments and ensures that the local government, key stakeholders, solutions providers and others have a clear path forward to address the community's needs and achieve target outcomes.

This section provides a framework for identifying needs, documenting a vision, setting and prioritizing goals and establishing roles and responsibilities to effectively implement the strategy.

Many communities already have some vision or guiding language in place, potentially through the mayor's office or their general or comprehensive plan. You may choose to integrate your Connected Communities planning into one of these existing planning processes or documents, potentially initiating an update to those documents. Alternatively, the existing planning documents could serve as a reference point for developing a separate vision statement for your Connected Communities-related efforts. The approach of integrating your Connected Communities planning into existing processes may be preferable because those existing planning documents are already embedded in the community's policy, and decision-making processes are more likely to lead to resource allocation.



**Throughout this section, you'll find questions and considerations to discuss with your stakeholder group as you develop your strategy.**

### THIS SECTION REVIEWS THE FOLLOWING TOPICS:



#### Convene Stakeholders

Identify and engage with your community.



#### Create a Vision for the Future

Set a mission, vision and focus areas to guide your work.



#### Assess Current State

Create a holistic view of your community.



#### Define Goals

Translate your opportunities into goals.



#### Prioritize Goals

Determine where and how to allocate resources.



#### Roles, Responsibilities and Action Planning

Lead with clear roles and responsibilities.



# Strategy Development

## Convene Stakeholders

**Connected Community solutions impact and involve a wide range of community stakeholders.**

Connected Communities tackle big challenges and considerations for the community's infrastructure, economy and education. Technology and digital resources affect how businesses interact with their customers. They also impact how community members interact with and access their utilities, government and other services.

Defining a strategy requires input and collaboration between community representatives and service providers. Consider what stakeholders' perspectives are needed to effectively represent community members' needs and priorities and build trust and buy-in for the solution. Also include stakeholders who represent the entities and service providers involved in the effort and can address their capabilities.

## Develop Clear Roles

The roles that stakeholders play in developing a Connected Community strategy may differ. Consider and define what roles stakeholders should have for decision-making, so everyone has clear expectations for the process. Be clear about the promise to each participant and maintain transparency at all levels.

Consider what role different participants in this process are best positioned to play. For example, you may consult broadband providers and installers but ultimately not include them as decision makers. In contrast, community-based organizations have historically been limited to consulting instead of collaborating roles, which risks not fully understanding or addressing community needs and priorities. You can find more information on the types of roles that stakeholders can play on the next page.

## Benefits

Engaging a variety of organizations and stakeholders provides valuable insight into the community's needs and establishes an important framework for incorporating social justice and equity. Stakeholder engagement helps ensure equitable outcomes that reflect common ground among a range of perspectives. Additionally, engaging stakeholders helps create community buy-in and support for associated decisions about resource allocation.



**See Section 4:  
Partnerships Case Study**

**for more information on  
the benefits of equitable  
stakeholder engagement.**

## Challenges

Common challenges in attempting to convene stakeholders include the lack of time, funding or resources available to organizations. Additionally, some organizations may have competing interests, making it necessary to find common ground that parties can agree on to gain support. Resistance to change is a normal part of stakeholder engagement, but reframing competing interests to be complementary can be an effective method of creating agreement. To overcome these challenges, it will be important to create a strong and relevant business case to convince stakeholders to get involved.



**See Section 1:  
Creating Impact**

**for more information on  
highlighting the benefits of  
Connected Communities.**

# Strategy Development

## EXAMPLES OF KEY STAKEHOLDERS TO ENGAGE AND ROLES THEY CAN PLAY

These stakeholders can support both the development and execution of a Connected Communities strategy, and can play a variety of roles.

### City/Town Governments

(e.g., council representatives, IT, public safety, city planners, public works, parks and recreation, emergency services, sustainability)

- Set priorities and a timeline for completing goals and objectives

### County Governments

- Determine strategies to meet goals and objectives

### Chambers of Commerce/Economic Development Agencies

- Identify issues and needs within the community

### K-12 Education Providers

- Workforce development
- Educate students and families on issues

### Healthcare Providers

- Inform community needs and challenges

### Local Transit Agencies

- Implement transportation projects
- Understand community movements and motivations
- Provide data on underrepresented communities reliant on public transportation

### Local Power and Water Companies

- Be a program administrator
- Identify communities that could benefit from support
- Build partnerships and engage with communities to plan and facilitate projects
- Provide access to data and information

### Local Colleges, Universities and Research Institutions

- Evaluate program success
- Provide subject matter expertise and research capabilities
- Serve as a potential source of interns to support projects

### Local Environmental Justice Groups

- Identify community issues and needs

### Community-Based Organizations

(e.g., community development groups, non-profits serving disadvantaged populations, neighborhood associations, community action agencies)

- Be a program administrator
- Partner in sharing information with constituents
- Set goals and identify action steps
- Foster partnerships with businesses
- Bring strategic partners to the table
- Share understanding of community needs

### Faith-Based Organizations

- Identify issues and needs within the community
- Incorporate information about Connected Communities solutions and opportunities into existing service offerings

### Cultural Affinity Groups, Such as those Representing Non-Native English Speakers

- Identify issues and needs within the community
- Share information about how community members can tap into resources and solutions
- Help ensure utilities and service providers are offering materials in the languages spoken by members of the community

### Major Employers

- Involved in decision-making process through public events to inform what projects will succeed
- Participate in programs
- Engage in their own planning efforts

### Small/Medium Local Businesses

- Involved in decision-making process through public events to inform what projects will succeed
- Participate in programs
- Engage in their own planning efforts

### Existing Information and Technology Providers

- Help implement program
- Bring information and ideas and success stories from other areas
- Serve as subject matter experts
- Provide technical assistance to communities

### Potential Technology Providers and Installers

(e.g., telecom, intelligent transportation systems)

- Help implement programs



# Strategy Development

## Regional Development Districts

Each state in TVA's service region has a framework for development planning at a regional level. These agencies, which may be called Development Districts, Regional Commissions or Regional Councils, provide support to local governments, businesses and individuals. For example, the Area Development Districts (ADDs) in Kentucky serve as a hub of resources and often offer GIS services, conduct studies, generate plans and strategies, offer loans to businesses and support housing and food availability. These regional development districts are overseen by a state-wide organization, as listed below.

### Tennessee

- [Tennessee Development District Association](#)

### Kentucky

- [Kentucky Council of Area Development Districts](#)

### Virginia

- [Virginia Association of Planning District Commissions](#)

### North Carolina

- [North Carolina Association of Regional Councils of Government](#)

### Georgia

- [Georgia Association of Regional Commissions](#)

### Alabama

- [Alabama Association of Regional Councils](#)

### Mississippi

- [Mississippi Association of Planning and Development Districts](#)

## Economic Development Administration (EDA) University Centers

Get to know your local university! Many colleges and universities have centers that do research, offer technical support and have resources for economic and business development.

### Tennessee

- [The University of Tennessee's Center for Industrial Services](#)

### Kentucky

- [University of Kentucky's Advanced Science and Technology Commercialization Center](#)

### Virginia

- [Virginia Tech's Center for Economic and Community Engagement](#)

### North Carolina

- [University of North Carolina at Chapel Hill's NC Growth](#)
- [Fayetteville State University's EDA University Center](#)
- [Western Carolina University's Rapid Center](#)

### Georgia

- [Georgia Tech's Enterprise Innovation Institute](#)

### Alabama

- [Auburn University's Government and Economic Development Institute](#)

### Mississippi

- [Mississippi State University's Technology Resource Institute](#)



### Resource Database

To explore other programs and organizations that may be relevant to connect with, refer to the [Connected Communities Resource Database](#).

## Create an Inclusive Team

When gathering input and making decisions, community members' needs, priorities and ideas must be integral to the process, and integrated early in order for the input to be most effective. Connected Community efforts affect what services are available and how funds are spent. These decisions can have large impacts. When people who will experience the impacts of a decision most directly are actively involved in the process it helps ensure alignment of priorities and needs, and result in more successful outcomes.

Engage community-based organizations that represent community members more directly. Consider what historically under-resourced groups are present in your community and be sure that all have a voice in discussions. Avoid simply seeking support of already-developed plans in place of active and complete involvement.

You can involve the broader community in discussions and decision-making with methods such as:

- Proactively seek participation by community organizations and members of the community representing diverse perspectives (see strategies on opposite page)
- Community surveys
- Town halls/public meetings
- Open door roundtable discussions
- Online comment forms



**It is important to maintain transparency. Work to have a clear understanding of the expectations from the community and around participation.**

## Ensure Accessibility

A key consideration for diversity, equity and inclusion strategies is accessibility. For example, meeting times and locations, prerequisite knowledge or materials, availability of childcare, language or meeting style can impact the ability of marginalized populations to participate in the process. Review what barriers to participation may exist for different members of your community.

In addition, work to ensure sufficient awareness among community groups about the opportunity to participate and engage. Consider how best to inform underrepresented or disadvantaged groups. You may also explore incentives for participation, such as food or participation stipends.



**When preparing to engage the community, factor in diversity, equity and inclusion strategies for the best results.**



**See Section 5: Resources for further reading.**



# Strategy Development

## Create a Vision for the Future

A clear vision frames the role that information and technology will play in the future of the community.

Starting with a vision for the future enables and guides stakeholders to work toward the same end goal. The following is a framework for gathering perspectives and defining a long-term vision for the role technology and information will play in the community's future. The framework includes a place to document some detail about the specific types of projects and characteristics stakeholders envision for the future state of the community. It also includes a place to record high-level practical considerations that may help stakeholders better understand each others' perspectives and potential implications of the vision the community articulates.

## Envision the Future

Work with your stakeholder group to gather perspectives and identify common themes for what you want your community to look like 15 or 20 years into the future. The questions on the next page provide examples for how to frame this discussion.



When developing a vision for your community,

ENVISION

# 15-20

years in the future.

### FRAMEWORK SUMMARY

#### Vision

Develop a brief summary of the desired long-term target state the community seeks to achieve related to the Connected Communities focus areas.

#### Topic Focus

Note specific examples of the characteristics, attributes and types of projects the community envisions for achieving the desired target state. For example, note whether a particular Connected Communities focus area(s) is of greater importance than others. These may change over time as specific needs and resources change.

#### Considerations and Resource Needs

Note the type and magnitude of resource needs anticipated to achieve the vision.

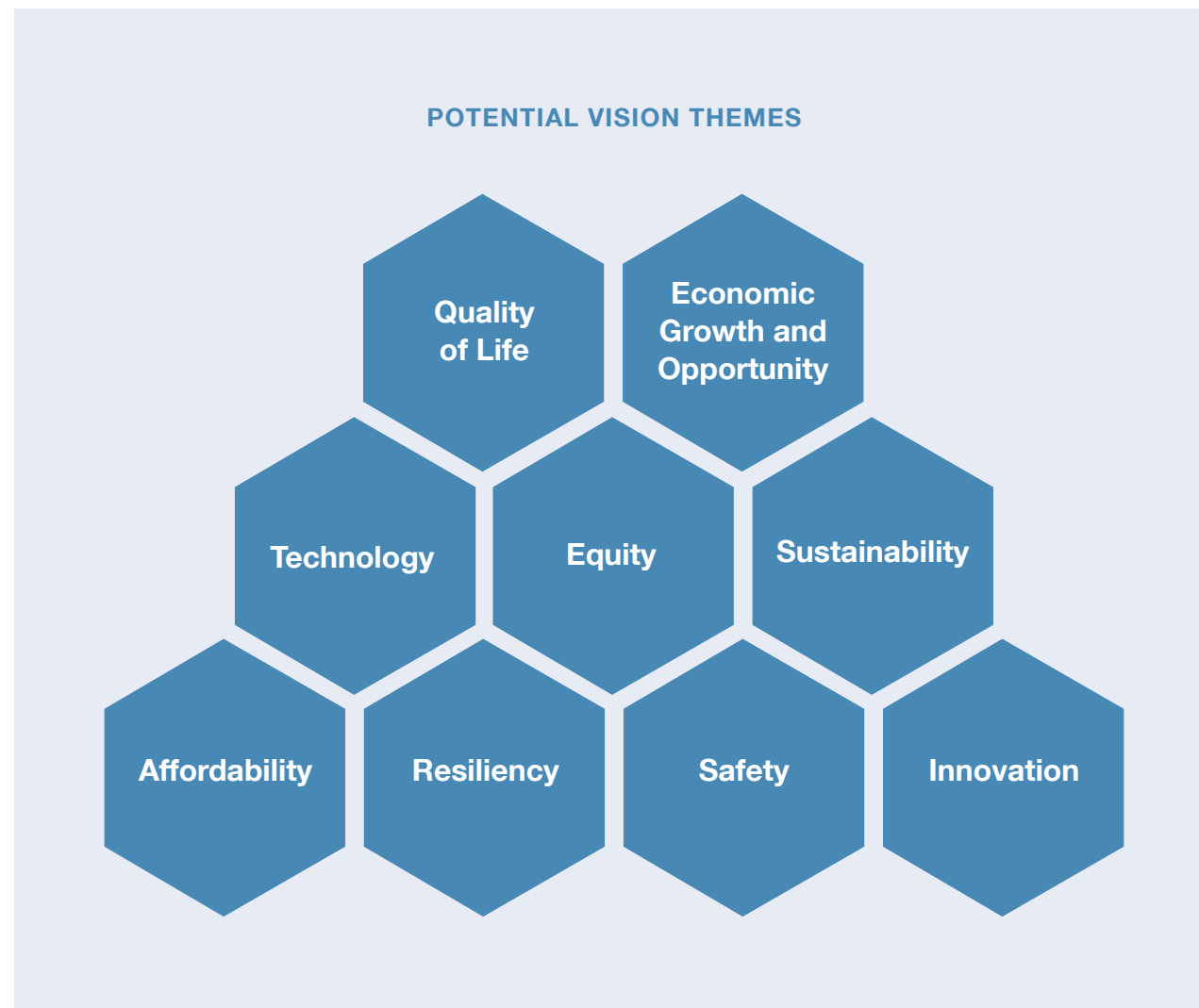
### EXAMPLE QUESTIONS TO GUIDE DISCUSSION

- Thinking in terms of the Connected Communities focus areas (digital services, economic empowerment, a clean environment and affordable energy and resiliency), what are the defining elements of your community in 15 - 20 years?
  - What are you aiming to accomplish?
  - What is the ideal future state you want to work toward?
  - What would a Connected Community look like to you?
- What impacts would you like to see in your community?
  - Is your community aiming to be a leader in a Connected Communities focus area (e.g., Broadband and Digital Literacy, Economic Empowerment, Energy and Environmental Justice and Enhanced Community Resiliency)? Which focus area aligns best with your community's challenges and needs?
  - What types of projects do you anticipate completing to achieve your vision?
- What skills or assets are needed for your community to achieve its future vision (e.g., planning, infrastructure, funding, people)?
  - What competing priorities or other factors do you need to consider?

# Strategy Development

## Gather the Central Themes

What key themes emerged from the stakeholder discussion? Where were there areas of alignment or common ground across stakeholder perspectives?



See Section 5: Resources for examples of vision building.

## Outline Your Vision

Use the template provided to create a framework for documenting your community vision. Use the outcomes of the stakeholder discussion to populate this outline.

### Vision

### Topic Focus 1

Defined as:


### Topic Focus 2

(e.g., clean energy)

Defined as:


### Topic Focus 3

(e.g., broadband access)

Defined as:


### Considerations and Resource Needs

(e.g., broadband access, digitally proficient constituents and workforce and advanced metering infrastructure/smart grid)

# Strategy Development

## Assess Current State

To determine action steps needed to achieve your Connected Community vision, stakeholders must understand the current state of the community.

Stakeholders may have a limited view of their community and may not even realize it. With a baseline or current state assessment, you can validate or expand your understanding of the community's needs and opportunities and create a foundation for measuring and benchmarking progress in the future.

### To begin:

- Survey, gather input from and listen to community members and organizations
- Leverage public datasets
- Leverage information from collaborating community stakeholders
- Review any other existing landscape assessments done for your community for other efforts



### A CLOSER LOOK AT

## Surveys

“Garbage in, Garbage Out” is an adage used to say that with data the quality of the input or question will affect the quality of the output. The same can be said for survey data.

Community surveys can be a powerful tool to get a more detailed understanding of needs. Many best practices exist on how to create an effective survey, such as question writing, to avoid response bias (skewed results due to the structure or wording of the survey), as well as implementation tactics to overcome selection bias (skewed results due to the segment of people who provided responses).

### For each area in your assessment, consider:

- Does available data only show averages that may not represent varying needs within a community?
- Can those reviewing this sufficiently identify a need, or is further input required from community members?
- How can I minimize bias in the information I'm collecting and processing?

### ASSESS OPPORTUNITIES ACROSS SIX CATEGORIES<sup>3</sup>



Mobility



Economy



Environment



Living



People



Government



# Strategy Development

## Key Indicators for Measuring Progress

In assessing your community's current conditions it may be helpful to consider what progress your community has already made across a variety of topics that relate to the Connected Communities focus areas. Some examples of topics to consider are outlined below. We invite you to use these pages to take notes as you reflect on your community's current state.

### BROADBAND AND DIGITAL LITERACY

**Region-Wide Goal:** Everyone in the TVA service region has access to services through broadband and modern technology and the knowledge and empowerment to use them.

| Community-Level Progress Indicator        | Questions to Consider  | Your Current State |
|---|--|--------------------|
| <b>Broadband Internet Access</b>          | How much of your community has internet access? Is it affordable and reliable?   |                    |
| <b>Urban-Rural Internet Access Divide</b> | Is there a difference in the availability of internet between rural and urban areas? Is there a difference in the cost or reliability? |                    |
| <b>Public Wi-Fi Availability</b>          | Are there public locations where people can access Wi-Fi? Are these locations limited by hours or cost of entry?                       |                    |
| <b>Internet Device Ownership</b>          | What percent of households own devices such as smartphones or computers?   |                    |
| <b>Digital Education</b>                  | Are there programs that offer education and training for technology? How is the awareness of and participation in these programs?      |                    |

### ECONOMIC EMPOWERMENT

**Region-Wide 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.

| Community-Level Progress Indicator                                 | Questions to Consider   | Your Current State |
|--|---|--------------------|
| <b>High School Education</b>                                       | What percentage of the local population has a high school diploma? Are there differences in graduation rates in disadvantaged communities?  |                    |
| <b>Low Income Population</b>                                       | What percentage of the local population is low income? Are there differences in income in disadvantaged communities?  |                    |
| <b>Unemployment</b>  | What percentage of the local population is unemployed? Are there differences in employment in disadvantaged communities?  |                    |
| <b>Minority, Female, Low-Income Owned Business Contract Awards</b> | Are contracts awarded to diverse businesses? Is there a system to track supplier diversity?   |                    |
| <b>Economic Empowerment and Tech-Related Job Training Programs</b> | Are there programs that offer workforce development training to prepare individuals for employment opportunities? Are there programs that offer training for technology jobs specifically? How is the awareness of and participation in these programs? |                    |
| <b>Community Engagement with Federal Funding Opportunities</b>     | Is your community prepared to pursue federal funding opportunities? Has your community identified resources for applying to federal funding opportunities?  |                    |
| <b>Affordable Housing Availability</b>                             | Is there support for affordable housing? How much of the local population is housing burdened (i.e. paying 30% or more of their income on housing)?   |                    |

# Strategy Development

## ENERGY AND ENVIRONMENTAL JUSTICE

**Region-Wide Goal:** Everyone in the TVA service region has access to a healthy environment (natural and built) and reliable, affordable and clean energy.

| Community-Level Progress Indicator                                       | Questions to Consider  | Your Current State |
|--|--|--------------------|
| <b>Energy Poverty and Burden</b>   | What percentage of household income is spent on energy costs? Are there differences in disadvantaged communities?  |                    |
| <b>Solar Installations</b>   | How much non-utility owned solar is present in your community? Is rooftop solar affordable, and are residents aware of rooftop solar options?  |                    |
| <b>Community Plans Addressing Clean Energy and Environmental Justice</b> | Does your community have strategies, plans or policies in place to improve sustainability?   |                    |
| <b>Energy Efficiency, Clean Energy and Demand Response Programs</b>      | Are individuals in your community aware of energy efficiency programs? Does your local power company offer energy efficiency programs? Are participants in those programs satisfied with their experience?                       |                    |
| <b>Public Electric Vehicle Programs</b>                                  | Is there an electric vehicle program in your community, such as an electric bus or ride sharing program? Is the community aware of electric vehicle programs?  |                    |
| <b>Information Access in Multiple Languages</b>                          | Do your power company and other public institutions in your area offer information in multiple languages? Are any public documents offered in multiple languages? Which languages would be the most relevant for your community? |                    |

## ENHANCED COMMUNITY RESILIENCY

**Region-Wide Goal:** Communities in the TVA service region have plans and resources to minimize the impacts of shocks and stressors like natural disasters and cyberthreats, to endure them safely and to recover quickly.

| Community-Level Progress Indicator                        | Questions to Consider  | Your Current State |
|---|--|--------------------|
| <b>System and Customer Outages</b>                        | How frequent and long are power outages? Are there particular areas in the community that experience more frequent and longer power outages?                   |                    |
| <b>Cybersecurity Trainings and Certifications</b>         | Do local power companies and utilities have response plans and trainings in place for cybersecurity?   |                    |
| <b>Disaster Preparedness, Response and Recovery Plans</b> | Does your community have a disaster preparedness, response and recovery plan in place? Are there emergency communication systems in place?                     |                    |
| <b>Standby Generation for Vital Operations</b>            | Does your community have backup power generation for vital operations? Do emergency response teams have standby generation for critical infrastructure assets? |                    |
| <b>Microgrids</b>   | Are there any microgrids in your region? Is there critical infrastructure that would benefit from a microgrid?   |                    |



# Strategy Development

## Success Factors

As described in [Section 2](#), success factors provide a solid foundation for achieving progress in implementing Connected Community solutions. As with your assessment of key indicators related to the four Connected Communities focus areas, consider the current state of your community's resources today so that you are able to evaluate what gaps and opportunities may exist to better enable solutions.

| Community-Level Progress Indicator                       | Questions to Consider  | Your Current State |
|--|--|--------------------|
| <b>Assets and Infrastructure</b>                         | What assets are available in your community, such as fiber supporting internet access, smart meters for energy tracking, emergency response staff, renewable energy systems, access to quality local solar installers, etc.? Are there any gaps in infrastructure that need to be addressed? |                    |
| <b>Skilled and Engaged Community</b>                     | Are community organizations, nonprofits and community foundations active in your community and positioned to support projects? Is there community engagement with residents and businesses to inform community planning decisions?   |                    |
| <b>Vision, Governance and Community Planning Efforts</b> | Does your community have a "comprehensive plan" or "general plan" that has been updated within the last 10 years? Does the plan establish goals for any topics related to Connected Communities? Are there policies in place to support the comprehensive plan?                              |                    |
| <b>Funding and Resource Access</b>                       | Within the last five years, has your community applied for grants focused on social, health, infrastructure, environment, resilience or economic development topics? Does your community have the staff to support community planning and access to resources to support grant writing?      |                    |





# Strategy Development

## Define Goals

Stakeholders can set goals after defining a vision and identifying gaps between that vision and their current conditions.

In developing your community's goals, consider:

- What are the specific impacts that you want to achieve to ensure you fulfill your vision?
- Can you close all gaps identified? If not, what amount of change is achievable in each topic area?

Discussing these questions can help narrow in on what actions to focus on and prioritize. Aim to make these goals as specific as possible with your current information. Revisit and refine your goals as your community gathers more information on feasibility, funding and available solutions for specific projects.

The figure on the following page demonstrates how you can document your identified gaps and use those as a reference point for establishing goals.



### SMARTIE Goals

If smart technology makes data smarter, SMARTIE goals make goals smarter.

- ✓ **Specific**
- ✓ **Measurable**
- ✓ **Achievable**
- ✓ **Realistic**
- ✓ **Timebound**
- ✓ **Inclusive**
- ✓ **Equitable**

#### EXAMPLE

### Gaps/Opportunities

Average customer minutes of interruption is higher than the state average.



Reduce customer minutes of interruption by X% year-over-year until the value is below state average.

Emergency communications and operations plans do not sufficiently address extreme weather risks.



Develop a contingency plan for extreme weather that provides backup communications within Y minutes.

Energy technology and IT industries are forecast to grow over the next five years, but the pipeline in your community is lacking.



Expand advanced energy technology and IT job training opportunities in your area to decrease unemployment by X% and increase average household income by Y% by 2025.

Emissions reduction is a part of your vision; benchmarking data shows that your government buildings could have a smaller footprint, but this will not solve the problem completely.



Reduce greenhouse gas emissions by X% over 2005 standards by 2024 by reducing emissions from transportation and government buildings.

Community surveys show a significant lack of access to broadband for rural community members.



Increase rural residential broadband availability by X% in 2022, enabling download speeds of 25 Mbps and costs of no more than \$Y/month

# Strategy Development

## Prioritize Goals

After identifying goals, prioritize them to inform resource allocation.

Outline your community's different goals and begin to prioritize them with your stakeholders. Review how different goals may interact, whether through demand for funding, owner resources, direct dependencies or co-benefits.

**Other considerations for prioritizing goals include:**

- What do community members and community organizations see as priorities?
- Which opportunities have the most buy-in from the community?
- Are there time-sensitive funding opportunities for addressing certain needs?



### FURTHER READING

See [Section 4: Engage Stakeholders](#)

**for more information on stakeholder management.**

| PRIORITIZATION   |  |
|--|--|
| <b>Goal</b><br><i>e.g., smart traffic management</i>               |  |
| <b>Focus Area</b><br><i>e.g., mobility</i>                         |  |
| <b>Objective(s)</b><br><i>e.g., reduced commute times</i>          |  |
| <b>Portion of Community Impacted</b><br><i>e.g., XYZ district</i>  |  |
| <b>Other Benefits</b><br><i>e.g., reduced GHG emissions</i>        |  |
| <b>Timeframe</b><br><i>e.g., years, near/long term</i>             |  |
| <b>Barriers/Dependencies</b><br><i>e.g., funding, policy</i>       |  |
| <b>Owner</b><br><i>e.g., Dept. of Transportation</i>               |  |
| <b>Key Stakeholders</b><br><i>e.g., CBO, local university</i>      |  |
| <b>Potential Funding Channels</b><br><i>e.g., government funds</i> |  |

# Strategy Development

## Consider Technology Solutions

This graphic highlights examples of technologies that can support a Connected Community. Based on your community's specific goals and priorities, some of these technologies could help enable your Connected Communities strategy.

### Analytics

#### Water

- Smart Water Management
- Smart Wastewater Management

#### Energy

- Energy Load Disaggregation
- Building Energy Modeling

#### Municipal

- Digital Twin Modeling

### Community Energy

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

### Building Energy

- Grid-Interactive Efficient Buildings
- BTM Battery Storage
- Connected Lighting
- Smart Heating
- Building Thermal Storage
- Smart Ventilation
- Smart Windows and Glass

### Agriculture

- Agrivoltaics
- IoT for Farming

### Economic Development

- Virtual Reality for Workforce Development

### Connectivity

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

### Transportation

- 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





# Strategy Development



## Plan for Feasibility

As you get closer to selecting a solution to pursue, you must consider feasibility and risks. What barriers do you face for the solution technologies or approaches you are considering? Where risks do exist, consider the likelihood and anticipated impact if risks are realized and identify potential mitigation strategies.

### RISK ASSESSMENT

|                    |   |
|--------------------|---|
| <b>Regulatory</b>  | <ul style="list-style-type: none"> <li>• Are there current or anticipated regulatory barriers to this solution?</li> <li>• Is there political will for the solution?</li> </ul>   |
| <b>Financial</b>   | <ul style="list-style-type: none"> <li>• Are project economics well understood?</li> <li>• Is there sufficient funding available?</li> </ul>  |
| <b>Schedule</b>    | <ul style="list-style-type: none"> <li>• Can this solution deliver the needed results in the needed timeframe?</li> </ul>   |
| <b>Technical</b>   | <ul style="list-style-type: none"> <li>• Is the solution technically feasible in the community given geography, project complexity, technological capabilities, etc.?</li> </ul>  |
| <b>Legal</b>       | <ul style="list-style-type: none"> <li>• Are there current or anticipated legal barriers to this solution?</li> </ul>   |
| <b>Operational</b> | <ul style="list-style-type: none"> <li>• How will this solution fit into existing operations?</li> <li>• Are there staffing skill or capacity needs to operate the solution?</li> <li>• Is there a champion or leadership buy-in within the implementing organization(s) to move the effort forward?</li> </ul> |

# Strategy Development

## Roles, Responsibilities and Action Planning

After prioritizing goals it is time to clarify resources, activities, roles and responsibilities to drive progress.

Achieving your Connected Community vision requires clear definition of what activities are needed, who will lead them and with what resources and how to structure roles within and across organizations to drive progress toward goals.



**Communities that have successfully implemented similar programs or projects may be a great resource as your community starts project execution.**

## Defining Activities and Resource Needs

Think through the specific activities and types of projects and investments needed to achieve prioritized goals. Look around for examples of communities that have achieved success in your goal areas, and explore what actions have led to that success. Then consider what resources are needed to implement those activities. This may require consulting experts or reaching out to contacts from communities that have already achieved success in these areas. Our [Resource Database](#) is a tool that can help you explore project success stories and case studies.

## Roles and Responsibilities

Advancing your strategy requires a leader to drive progress and convene stakeholders, often from the local government or a dedicated nonprofit. The lead entity could be one organization or a coalition of multiple organizations. Establish the roles and responsibilities of team members, such as leading, tracking or supporting a certain focus area or activity. Set recurring meetings (e.g., monthly, quarterly) with the team and potentially a wider stakeholder group to confirm your objectives and drive your community forward.



**Clear roles and responsibilities are part of every successful project.**

## Collaboration

Within many communities, challenges are tackled separately—by different organizations, departments or through limited partnerships between groups. With this approach, projects may miss opportunities to coordinate, collaborate and effectively serve the community.

Connected Community solutions may require interoperable technology and platforms that span between organizations, common data governance and privacy standards and shared resources and knowledge. Consider how you can have clear leadership for enacting your Connected Community strategy while promoting collaboration. Collaboration may mean new rounds of convening stakeholders, enabling information sharing within and between communities and considering how limited resources (e.g., funding, time, labor) can be used best.

# Strategy Development

## Example Leadership Structures for a Connected Community

- A mayor's office initiative that regularly seeks input from the community to identify and address needs, create partnerships and foster collaboration to work toward the community's vision
- A coalition of community organizations from different sectors that meets regularly to identify, prioritize and address community needs, collaborate on projects and share information and learnings  
e.g., [Chattanooga Smart Community Collaborative](#)<sup>4</sup>
- Nonprofits that each lead different aspects of community's advancement  
e.g., [Cyber Huntsville](#)<sup>5</sup> and [GEO Huntsville](#)<sup>6</sup>

### CHATTANOOGA SMART COMMUNITY COLLABORATIVE STRUCTURE

#### Convener

The Enterprise Center

#### Participating Members

Includes local university, fiber optics provider, city and county government, transportation authority, healthcare institutions and startup accelerator.

FOCUS AREA #1

Health

FOCUS AREA #2

Energy

FOCUS AREA #3

Mobility

## Regional Partnerships

Communities can also look to form or leverage broader collaborative relationships, such as with neighboring communities or counties.

With this type of regional partnership, communities across the TVA service region can share knowledge and information, use regional resources and enabling assets, and leverage economies of scale when possible.

With a vision, strategy and near-term opportunities laid out, your community can move forward to execute on the strategy and pursue its goals by implementing and deploying a Connected Communities project.



**TVA's service region includes seven states, over 150 Local Power Companies (LPCs), 201 counties and many cities and towns of all sizes.**

## Planning Alignment

Incorporate your Connected Communities strategy into an official planning document and the formal planning process in your community. Plugging into existing planning processes may increase your ability to access resources, such as people, time and community spaces.



# Strategy Development

## Smart Region Enabling Assets to Consider for Your Project

There may be regional resources for you to use when implementing your Connected Community strategy.

- Regional infrastructure, e.g., broadband expansion using economies of scale and common middle-mile infrastructure; smart grid efforts led by LPCs
- Regional nonprofits, research institutions, venture development companies providing workforce development, landscape assessments, funding opportunities and stakeholder engagement
- Regional data governance practices and data privacy principles used to allow further collaboration through data and data management
- Recurring regional collaboration touchpoints that create shared knowledge, best practices, peer support and benchmarking



**Regional resources may provide helpful insights into region-specific challenges you are hoping to address.**







## SECTION 4

# Implementing Your Connected Community Strategy

### INCLUDES:

- ✓ Implementation Framework
- ✓ Engage Stakeholders
- ✓ Explore Funding and Solutions
- ✓ Deploy and Operate
- ✓ Report Results



**While every Connected Community solution or project will have specific considerations, there are some steps and questions to address regardless of the community at hand.**

This section highlights the steps, considerations and leading practices communities can reference as they pursue Connected Community solutions for the goals identified in [Section 3](#).



**Throughout this section, you'll find questions and considerations to discuss with your stakeholder group as you pursue your strategy.**

THIS SECTION REVIEWS THE FOLLOWING TOPICS:



### **Engage Stakeholders**

Collaborate to confirm and assess opportunities and need.



### **Explore Funding and Solutions**

Factor in ownership, funding, feasibility and risk.



### **Deploy and Operate**

Roll out your solution and track metrics of success.



### **Report Results**

Report out to shape other Connected Communities.



# Strategy Implementation

## Implementation Framework

Use this section of the Guidebook to highlight some key steps associated with implementing the outcomes of the earlier stages.

### IMPLEMENTATION STEPS MIGHT INCLUDE:

#### Technical Support

Researching / hiring technical support resources to run a cost-benefit analysis of pursuing a particular project

#### Research Success Stories

Identifying examples of where the solution has been successfully implemented and learning more about the elements that led to that success

#### Partnerships

Building partnerships with other organizations that possess key resources needed for success

#### Leadership Coordination

Coordinating with proper leadership within the community to incorporate prioritized projects into department budgets or planning cycles

#### Public Support

Gathering statements of support or interest to build the case for resource allocation

#### Funding Research

Researching and applying for funding sources that align with project goals

## Confirm Need

Before deploying a solution, you should confirm the community's challenge or need that you are trying to solve. Similar to when you developed your Connected Community strategy, there are several approaches to better understand and assess your community:

- Survey, gather input from and listen to community members and organizations
- Leverage public datasets
- Leverage information from collaborating community stakeholders
- Review any existing landscape assessments done for your community for other efforts

### As you gather information, consider:

- Can those reviewing this information sufficiently assess need, or is further input from community members required?
- How can I minimize bias in the information I'm collecting and processing?



### ADDITIONAL RESOURCES

[See Section 3: Convene Stakeholders](#)

**for more resources on stakeholder engagement.**

[See Section 3: Assess Current State](#)

**for more discussion of including community members in decision-making.**

# Strategy Implementation

## Engage Stakeholders

Identifying and engaging relevant stakeholders is critical to implementing a Connected Community solution.

When pursuing a specific solution, your new, key stakeholders may be a subset of those originally involved in developing your Connected Community strategy. They may also include specific local organizations, technology providers and implementers, government departments or organizations that deal with the opportunity at hand.

**Whenever stakeholders are engaged, you must consider some key questions:**

- How would they benefit from this project?
- How could they contribute towards implementing this project?
- How does this project align with their own priorities?
- How will you engage them?



**Consider what role each stakeholder will play when making decisions to implement the solution.**

## Determining Priorities and Motivators

To engage specific types of stakeholders in your Connected Communities project, consider what their biggest priorities and motivators may be.



### Small Town Mayor

To engage the mayor of your small town, consider any limitations they may have with staffing and time. Appeal to potential cost savings and improvements in quality of life for citizens.



### Nonprofit Organization

To engage nonprofit organizations, you could promote how your Connected Communities project could help them reach sustainability or other targets and increase awareness and publicity of the organization.



### Businesses

To engage businesses in your Connected Communities project, highlight any potential profit that may arise. Demonstrate that the investment in the community will improve their access to internet, skilled workforce to hire from or another concrete benefit they may see.



### Government Official

To engage government stakeholders, consider reaching out to officials whose platform aligns with your goals and have been advocates of the type of work you are looking to pursue.

# Strategy Implementation

## Explore Funding and Solutions

To implement a successful Connected Community solution, you need to evaluate your options and confirm the specific path you plan to take.

Your stakeholders and community need to consider funding opportunities, ownership structure, feasibility and risk when deciding on what specific solution technology or approach to ultimately pursue.

### When exploring your options for solutions, consider:

- What solutions have others with similar needs pursued?
- Is there another TVA service region community that you can connect with to learn more?
- How can this solution fit into your community's Connected Community vision and goals?
- How quickly can a particular solution be implemented? Would an intermediary solution also be necessary?
- How can a solution support equity and inclusion in addressing your community's challenge?



**Knowing in advance what Key Performance Indicators (KPIs) are most important to track and how you will measure your success can help you plan and operationalize a comprehensive solution.**

## Identify Ownership

Communities should consider three potential ownership models to determine what funding and approaches are feasible. Consider your community's resources and challenges when exploring ownership options.

| Public  | Public-Private   | Private   |
|---|--|---|
| Government or government institution owns and operates solution.  | Government and private business partnership with some distribution of owning or operating the solution.  | Private industry or business owns and operates solution.  |
| <p><b>PROS</b></p> <ul style="list-style-type: none"> <li>• Prioritizes the needs of the local community.</li> <li>• Potentially better workforce access to support (e.g., transportation, childcare).</li> </ul>   | <ul style="list-style-type: none"> <li>• Shared cost for programs and aligned resources.</li> <li>• Benefits from both industry and business knowledge and public access to support.</li> </ul>        | <ul style="list-style-type: none"> <li>• No direct public cost.</li> </ul>  |
| <p><b>CONS</b></p> <ul style="list-style-type: none"> <li>• Potentially slower response to rapidly changing industry needs.</li> <li>• Potential lack of in-house expertise.</li> <li>• Programs and resources may be spread thin as demand increases.</li> <li>• Limited funding.</li> </ul> | <ul style="list-style-type: none"> <li>• Difficulty keeping stakeholders organized and engaged.</li> <li>• Complexity in the division of roles, responsibilities, funding, incentives, etc.</li> </ul> | <ul style="list-style-type: none"> <li>• Community needs may not provide the market incentive for private entities to act independently or to deploy a solution that best matches those needs.</li> </ul> |



# Strategy Implementation

## Identify Funding and Secure Resources

There are a variety of different funding, revenue and savings sources that can support a Connected Community solution for both public and private entities.

Pilots, initial costs or one-time capital improvements may rely on limited funding sources such as grants and public or private investments. Many grants, however, also require fund matching from the recipient in financial or in-kind contributions. Ultimately, a solution must pursue sufficient benefits for upfront investments, and the capability for sustainable operations over time through revenue, savings and/or a direct, tangible benefit to the community and residents. Additionally, you should identify other necessary resources needed to move projects forward, such as staff, technical expertise and suppliers. In order to secure these resources, you will need to make a strong business case for your proposed solution.

### WHEN BUILDING THE CASE FOR AN INVESTMENT, CONSIDER:

- **Identifying all benefits:** Who are all potential beneficiaries of this effort (e.g., residents, government operations, private business), and how can benefits for each be measured/monetized? Could these beneficiaries serve as financial supporters or support the case for funding?
- **Are there difficult to monetize benefits**, such as societal benefits, that align with an investor's goals (e.g., public health and safety, emissions reduction, employee productivity)?
- **Expanding benefits with shared costs:** Can you utilize part of your physical or digital infrastructure for more than one solution (e.g., expanding sensor installations on poles to include both air quality monitors and traffic monitors) and identify funding, revenue or savings streams across the multiple uses?

## Funding

Funding is key when identifying and implementing solutions for your community's challenges. High-level considerations around funding are helpful for developing your community's Connected Community strategy.

- Does pursuing a certain funding mechanism for one project impact feasibility of funding another?
- How can the community best leverage public funding sources (municipal general funds; federal, state and local grants)?
- How can solutions leverage various funding channels in order to maximize the opportunities a community can pursue?

While exact funding sources are project-specific, by understanding the potential funding channels to pursue solutions, communities can:

- Maximize the opportunities they can pursue
- Best allocate limited funding resources
- Leverage revenue sources when possible

### Explore Funding Databases

- [Grants.gov](#) database of federal grants available
- [USDA Rural Development Federal Funding Opportunities](#) search tool

### Explore Funding Application Support

- There are various resources available to support applying for funding such as:
- [Bipartisan Infrastructure Law Rural Playbook](#)
- [USDA Guide to Funding Resources](#)



## Are you a rural community?

You may qualify for grants specific to rural areas. The [USDA Rural Development Federal Funding Opportunities](#) resource may be of particular interest to you in identifying funding opportunities. If you struggle navigating resources, [reach out](#) to the Connected Communities team for help understanding how to use resources.

# Strategy Implementation

## FUNDING SOURCES

|                                    | SOURCE                        | CONSIDERATIONS  |
|------------------------------------|-------------------------------|---|
| Common sources                     | <b>Government budgets</b>     | Standard budget constraints apply, but projects are fully under public control; could provide ongoing funding.  |
|                                    | <b>Federal grants</b>         | Many grants related to broadband, resiliency and green energy are available.  |
|                                    | <b>State grants</b>           | When projects align with state goals, there may be state funding available.   |
|                                    | <b>Tax credits/incentives</b> | Can encourage private party development with limited oversight needed.  |
| Public/private partnership sources | <b>Research partnerships</b>  | Research potential with pilot projects can bring university or research institution partners and funding on board.  |
| Other sources                      | <b>Bonds</b>                  | Not suitable for ongoing efforts but can be used for initial capital investments.   |
|                                    | <b>Philanthropic grants</b>   | Useful for start up costs or pilot projects rather than continual efforts due to inconsistent availability.   |
|                                    | <b>Third-party financing</b>  | Mechanisms like Property Assessed Clean Energy (PACE) and the Pathway Lending Energy Efficiency Loan Program can provide low-cost financing options (read more in <a href="#">Section 5: Resources</a> ). |

## REVENUE/SAVINGS SOURCES

|                                    | SOURCE                         | CONSIDERATIONS   |
|------------------------------------|--------------------------------|--|
| Common sources                     | <b>Cost-reducing solutions</b> | Requires upfront funds but leads to overall savings to support the project business case.            |
| Public/private partnership sources | <b>Advertisements</b>          | Can fund operating costs for kiosks or EV chargers but may annoy users.                              |
|                                    | <b>Leasing assets</b>          | Leasing public land for sensor mounting can create a new revenue stream for the community.           |
|                                    | <b>Performance contracts</b>   | Upfront effort required to select contract winner but provides ongoing incentive to perform well.    |
| Other sources                      | <b>Vendor financing</b>        | Reduces control over a project but allows for progress without additional resources needed.          |
|                                    | <b>User fees</b>               | Subscription and pay-per-use fee structures help projects be self sustaining through their lifetime. |
|                                    | <b>Data monetization</b>       | Data on consumer behavior and preferences is valuable but must be handled carefully.                 |



### Funding Opportunities Database

The [Connected Communities Funding Database](#) is an online search tool that allows users to filter through a database of federal, state and local funding opportunities from sources including the American Rescue Plan Act, the Bipartisan Infrastructure Law and the Inflation Reduction Act. This database has over \$100 billion of funding opportunities listed.



# Strategy Implementation

## Funding Case Study

Different funding sources can come together to help fund a project. Incorporating funding from the federal government, state and local organizations can help increase the amount of funds available to support a project.

### PILOT PROJECT

## Economic Solutions Through Solar Innovation

The Cheatham County School District (CCSD) in Pleasant View, Tennessee, will construct a 50kW solar array with a Tesla Powerwall backup battery. The technology demonstration will allow the school district to save in annual energy costs, extend the operation of critical facility functions with battery storage and provide Career and Technical Education (CTE) for students to excel in post-secondary careers. Read more about the project [here](#).

The Solar Innovation project received funding from TVA as one of the Connected Communities pilot projects and incorporated funds from both a private donor and the Tennessee Department of Education's Innovative School Models Grant. Chris Cooper, the Cheatham County School District's CTE (Career and Technical Education) and STEAM (science, technology, engineering, arts and mathematics) coordinator, shared the team's experience with tying in funding from various sources.

For others who are looking for advice on putting together a grant application, Cooper's advice is that:

- **Research matters.** Take time to think about your idea and do research. The vision for the project must be "based on well-thought and researched ideas and plans matters. It takes time."
- **Making connections** is a good foundation to become aware of partnerships and funding available.
- **Good publicity** is also a major influence in being able to attract private donors. Having a good working relationship with your local community and knowing the community well improves access to grants and donors.
- **Find individuals in your community** who are champions of what you are trying to achieve and get directed to those who may be looking to get involved in that space to build a network. It is important to be well researched so that when you talk with others, you can speak on the subject knowledgeably, and so that your grant application shows this.

Once the vision is built, Cooper emphasizes the importance of being able to show that your project has longevity. "For any grant application, you have to show sustainability" of the project, demonstrating that it can be continued on after the scope of the grant. Build funding needed to support long-term success into the grant contract so that you are prepared down the line.





# Strategy Implementation

## Deploy and Operate

Deploying a Connected Community solution requires coordination of engagement, establishment of methodology and nurturing of partnerships.

After factoring all previous considerations into your selection, it is time to deploy your solution. Begin by engaging the delivery team, community partners and the broader public so they can support success.



**Solution deployment will require teamwork among the various partners working together to implement a Connected Communities project.**



### Connected Communities Pilot Projects

Check out the TVA Connected Communities pilot projects [website](#) to learn about the various pilot projects addressing the four focus areas.

## Communicating Solutions Across Stakeholders

### Engagement

- Inform the public prior to deployment with dedicated outreach to impacted stakeholders. This may involve advertising (e.g., digital or print), local news spots or city/town hall discussions.
- Prepare specific impacted stakeholders to meet broader objectives. This may involve community outreach programs, key community institutions, etc.

### Preparation

- Ensure equitable access regarding deployment footprint and customer price.
- Develop internal teams/capabilities. The community may need to develop skills within local organizations to successfully deliver the solution.
- Establish methods and deploy technology to collect data securely and actively monitor operations. This may involve surveying the community's accessibility, providing technologies and working with providers to gather data and maintain data security.
- Change management to prepare for upcoming shifts in responsibilities and roles.

### Partnerships

- Manage and drive partnerships with public, private and nonprofit organizations to continue long-term investment and involvement. This may involve reaching out to review proposals, coordinating deployments steps and tracking the agreements and grants.



# Strategy Implementation

## Partnerships Case Study

One of the first steps to deploying a Connected Community strategy is to build a team. Foundational relationships can be leveraged to build a project team, and utilizing your network is useful to bring people into projects. Bringing in partners from various organizations is a necessity to engage the community and stakeholders equitably.

### PILOT PROJECT

## Alerting Elders to Air Quality Health Risks

To improve the health and wellness of under-resourced elders, Three3, Inc. is implementing strategies to improve resiliency to indoor and outdoor environmental health risks. This pilot project aims to create a new alert system for historically under-resourced communities of color in the Knoxville area providing valuable insights into the benefits of alerting elders to negative air-quality

concerns. The pilot project will also install smart thermostats with alerts that will enable elderly residents to know if and when their power has been interrupted. Read more about the project [here](#).

Three3, Inc. is partnering with Social Equal Energy Efficiency Development (SEED), University of Tennessee, Knoxville (UTK), Slipstream Inc. and Nexxus Insight Advisors for this

project. Bruce Tonn, cofounder and president of Three3, Inc., shared that this team came together by building upon existing relationships and uniting around a common interest to pursue this project as partners. For this team, their existing relationships were formed at industry events, specifically a conference held by TVA.

The Alerting Elders team is a champion of equitable community engagement. “The community is the expert,” says Stan Johnson, executive director and founder of SEED. Stan also shares that bringing the community in on the front-end of the project was important to build trust and that communicating with the community well is what has allowed the team to succeed. Laurel Bowen, chief

financial officer of SEED, states that having relationships in the community has been useful in gathering feedback and conducting focus groups, as the community is tightknit and knows SEED and their work well. She notes that it takes time to build relationships and that having strong public relations has allowed organizations to come to them. Erin Rose, cofounder and vice president of Social Equity of Three3, Inc. emphasizes the need to “be intentional about disrupting historical patterns” by allotting more budget in projects for those who are often left out. The team has been purposeful in doing focus groups with the community and continues to challenge themselves to do better in order to provide for and protect their partners.





# Strategy Implementation

## Launch Operations

After all the implementation preparation is complete, it's time to launch your solution. Ensure your solution is successful by tracking metrics and managing operations as needed.

- Track and monitor KPIs of how the solution is delivering on the proposed goals.
- Maintain operational excellence to ensure the solution works as intended.
- Manage solution delivery partnerships and the delivery of services. Effective partnerships ensure continued funding, access and success of the solution.
- Maintain recurring check-ins with partners to coordinate future expansions, ongoing efforts and cross-organizational reporting.
- Continue to engage with stakeholders to build interest in developing new solutions and meet broader objectives.
- Manage local, regional and national partnerships to share best practices, and leverage the successes of others.
- Work with the stakeholders of your community's plan to keep your Connected Community strategy up-to-date and relevant.



**Check in regularly on your ongoing solutions to make sure new barriers have not emerged and that your Connected Community efforts are still serving your community well.**



### Implementation Guides

Check out the TVA Connected Communities Implementation Booklets with information on implementing specific solutions including [Broadband](#), [Workforce Development](#) and [Grid-Efficient Buildings](#).





# Strategy Implementation



## Project Deployment Case Study

One Connected Communities pilot project currently in progress is the Residential Demand Response Through Connected MHA project, which is a partnership between TVA, Middle Tennessee Electric (MTE), Murfreesboro Housing Authority (MHA), Oak Ridge National Lab (ORNL), SmartMark Communications LLC (SmartMark) and ACE IoT Solutions (ACE IoT). This pilot project aims to connect the electric distribution system of MTE, the local power company, with residential customers through smarter home controls and a free, open-source software platform and mobile app. Read more about the project [here](#).

### PILOT PROJECT

## Open Home Energy Management System (HEMS)

### PHASE 1

#### Open HEMS Platform, App Development & Yarnell House Demonstration

Prior to the launch of the current pilot project and recognizing the need to foster smart and Connected Communities, researchers at ORNL joined with the Electric Power Research Institute (EPRI) and ACE IoT in 2019 to create an open-source implementation of an open HEMS platform. Open HEMS started with core programming that allowed multiple electric

devices in a home to connect with other homes and utilities to create resilient and increasingly efficient communities. In 2021, TVA's Connected Communities initiative selected ACE IoT to complete a pilot project that would enhance the Open HEMS technology to meet the needs of TVA's Local Power Companies (LPCs) across its seven-state service region. ACE IoT developed a mobile app that residential customers can use to engage with the Open HEMS technology. In May 2022, TVA, ORNL and ACE IoT demonstrated the functionality of the enhanced Open HEMS platform and newly developed open-source mobile app at ORNL's Yarnell research house in Tennessee.



# Strategy Implementation

## PHASE 2

## Providing Wi-Fi Access and Education in New Affordable Housing Projects



By providing free internet access and energy education to limited-income residents, the pilot project team is working to improve quality of life through access to new services and opportunities to save energy and money.

Affordable housing has many benefits for limited-income residents, like stability and access to resources for success. However, one resource that is typically not provided is internet access, which can be a burdensome cost for residents. The last few years has proven its increasing importance too – whether for remote work, telehealth visits or school assignments.

To address this, Murfreesboro Housing Authority (MHA) will install fiber internet at three new affordable-housing complexes (Oakland I, II and III) and will work with SmartMark to create a digital literacy campaign to accompany the newly available Wi-Fi. Access to this resource

will not only help improve residents' quality of life, but potentially lower their energy bills, especially when coupled with the tailored energy educational information. Connectivity will also enable homes to be “smart home” capable, so residents could benefit in the future from new in-home technologies that automate energy reduction and make it easier to save.

As the three participating MHA complexes are currently under construction, the fiber capable installation can happen without interrupting residents' lives. Additionally, by installing the fiber during construction, residents will have access to this necessary resource the very first day they move in. United Communication, a subsidiary of MTE, is installing the Wi-Fi and providing three years of free service to residents.

## PHASE 3

## Connecting MHA

This pilot project combines IoT technology with fiber availability and energy education to connect MTE's electricity distribution system with residential customers through smarter home controls and a free, open-source software platform and mobile app.

In this phase of the pilot project, select residents will have the opportunity to participate in an incentive-based demand response (DR) program and agree to have their energy managed during periods of peak demand through the IoT gateway in their home. The Open HEMS system will

work with new, energy efficiency water heaters and smart thermostats. Participants will receive a \$15 monthly reward for participation, and will retain the ability to override events should they feel discomfort.

The TVA Customer Analytics group and ORNL will provide technical support and statistical analysis for the data collected. Three user groups are defined to enable the analysis of the pilot project's impact on energy consumption patterns (see table below). Extensive analysis of advanced metering infrastructure (AMI) data and survey results will help demonstrate the value of Open HEMS and resident education in saving energy and managing peak demand and the potential for scaling Open HEMS across TVA's service region.





# Strategy Implementation

## Report Results

Whether your Connected Community solutions have been immediately impactful or painstakingly challenging, one thing is certain—your experience can be a valuable case study for other communities.

As TVA continues to serve as an accelerator of our region’s connected solutions, we would like to know about your journey and experience. Whether sharing lessons learned with other communities in the TVA service region, continuing to develop and update resources like this Guidebook or funding new pilot opportunities—we are here to help.

With your continued partnership, we can all move closer to addressing the critical needs and opportunities for our people, our neighborhoods, our towns, our cities, our businesses and our region.

Thank you for your vision and your leadership, and we look forward to seeing the many creative ways your community can use technology and share information to enable equitable access to new, improved and existing services for all people.



### We want to hear your questions!

If you have any questions, please feel free to reach out to us at [connectedcommunities@tva.gov](mailto:connectedcommunities@tva.gov)



### Please continue to engage with us.

Become a member of the [Connected Communities Network](#) to receive monthly updates on the initiative with information regarding new resources, opportunities for engagement and more!







SECTION 5

# Resources

**INCLUDES LINKS AND REFERENCES FOR:**

- ✓ TVA Connected Communities
- ✓ Section 1: Introduction
- ✓ Section 2: Success Factors
- ✓ Section 3: Strategy Development
- ✓ Section 4: Strategy Implementation



## TVA Connected Communities

### Connected Communities Website and Network Communications Subscription

- Connected Communities Website  
<https://www.tva.com/connectedcommunities>
- Connected Communities Network Communications Subscription  
<https://tva.us2.list-manage.com/subscribe?u=4fc6ba2398cde9db12b61f171&id=efc1d5ec59>

### Community Resources

- Resource Database  
<https://www.tva.com/connectedcommunities/connected-communities-toolkit>
- Mapping Key Data  
<https://www.tva.com/energy/technology-innovation/connected-communities/mapping-key-data-for-connected-communities-focus-areas>
- Emerging Technologies Report  
<https://www.tva.com/connectedcommunities/emerging-technologies-report>
- Funding Opportunities Database and Search Tool  
<https://www.tva.com/connectedcommunities/funding-opportunities-database>
- Broadband Solutions Implementation Guide  
<https://www.tva.com/connectedcommunities/broadband-solutions-implementation-guide>
- Workforce Development Implementation Guide  
<https://www.tva.com/connectedcommunities/workforce-development-implementation-guide>

- Grid-Interactive Efficient Buildings Implementation Guide  
<https://www.tva.com/connectedcommunities/grid-interactive-efficient-buildings-implementation-guide>
- Broadband Assessment Report  
<https://www.tva.com/connectedcommunities/broadband-assessment-report>
- Funding Access Barriers Assessment  
<https://www.tva.com/connectedcommunities/funding-access-barriers-assessment>
- Community Conversations  
<https://www.tva.com/connectedcommunities/community-conversations>
- Community Readiness Baseline and Best Practices Assessment  
<https://www.tva.com/connectedcommunities/community-readiness-baseline-and-best-practices-assessment>
- Broadband Funding Guide  
<https://www.tva.com/connectedcommunities/broadband-funding-guide>

### TVA Energy Right®

TVA's EnergyRight program offers a variety of resources that may be of interest to communities, businesses and individuals interested in learning more about the benefits of energy efficiency. Some programs include **School Uplift**, which offers energy efficiency training and grants to public schools, and the **Community Centered Growth** program, which supports small businesses with energy-related upgrades and resources.

## SECTION 1

## Introduction

### More Sustainable and Resilient Energy and Water Use

#### Data-Driven Energy Efficiency Efforts

- American Electric Power. (n.d.). Energy management. <http://www.aepsustainability.com/energy/management/>
- Duke Energy. (n.d.). Your home energy report. <https://www.duke-energy.com/home/products/your-home-energy-report>
- Georgia Power. (n.d.). My power usage. <https://www.georgiapower.com/residential/manage-your-account/my-power-usage.html>
- New York Power Authority. (n.d.). NY Energy Manager. <https://services.nypa.gov/en/Services/Clean-Energy-Solutions/NY-Energy-Manager>

#### Integrated Distributed Energy Resources (DER)

- Portland General Electric. (n.d.). Connected water heaters. <https://portlandgeneral.com/property-managers/connected-water-heaters>
- Tennessee Valley Authority. (n.d.). Regional Grid Transformation. <https://www.tva.com/energy/technology-innovation/microgrids>

#### Smart Irrigation

- Smart Irrigation. (n.d.). About Smart Irrigation. <https://www.smartirrigationgeorgia.com/>

### Better Informed Safety and Health Services

#### Improved 911 Response

- City of Memphis. (n.d.). 911 answer time. <https://data.memphistn.gov/stories/s/r963-45je>

#### Text Alerts for Severe Weather

- City of Cookeville. (n.d.). Alert center. <https://www.cookeville-tn.gov/AlertCenter.aspx>
- City of Warsaw. (n.d.). Subscribe to city alerts. <https://www.warsaw.in.gov/781/Subscribe-to-City-Alerts>
- ONSOLVE. (n.d.). Onsolve code red. <https://public.coderedweb.com/CNE/en-US/475298CC15BA>

#### Inter- and Intra-Hospital Telehealth Resource Sharing

- North Mississippi Health Services. (2020, October). NMHS upgrades wired, wireless networks to enhance COVID-19 care. <https://www.nmhs.net/for-media/press-releases/2020/nmhs-upgrades-wired-wireless-networks-to-enhance-covid-19-care/>

### Easier, Cleaner and More Connected Transportation

#### Rural Mobility Solutions

- Tennessee Tech. (n.d.). Developing an EV demonstration testbed in the upper Cumberland region of Tennessee, an economy distressed rural region. <https://www.tntech.edu/engineering/research/ev-demo-testbed.php>

#### Smart Corridor to Promote Roadway Safety

- Carnegie Mellon University. (2019, August). Carnegie Mellon leads DOE team improving rural mobility. <https://www.cmu.edu/cee/news/news-archive/2019/08-2019-carnegie-mellon-leads-doe-learn-improving-rural-mobility.html>

#### Ridesharing Platforms

- CommuteSmart. (n.d.). Quick intro. <https://www.commutessmart.org/quickintro>
- Earth Rides. (n.d.). About us. <https://www.earthrideshare.com/about-us/>

#### EV Charging

- Downtown Traverse City. (n.d.). Electric vehicle charging. <https://parking.downtowntc.com/services/electric-vehicle-charging/>



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## 21<sup>st</sup> Century Education and Job Training

### Clean Energy Workforce Training

- Green Spaces. (n.d.). Build it green.  
<http://www.greenspaceschattanooga.org/build-it-green-amerikorps-oysi>

### Digital Literacy Program

- Tech Goes Home Chattanooga. (n.d.). Home. <https://www.techgoeshomecha.org/>

### Career Advising

- Highlands Economic Partnership. (n.d.). Upper Cumberland TN reconnect.  
<https://highlandsoftn.com/upper-cumberland-tn-reconnect>

### K-12 Digital Education

- Marcilla, M. (2020, December). Louisa County High School prepares for cybersecurity course after it receives \$100,000 award. NBC 29.  
<https://www.nbc29.com/2020/12/18/louisa-county-high-school-prepares-cybersecurity-course-after-it-receives-award/>

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## Modernized and More Efficient Government Services

### E-Permitting and Online Fee Payments

- City of Nashville. (n.d.). Codes and building safety e-permits system for contractors.  
<https://www.nashville.gov/Codes-Administration/Construction-and-Permits/E-Permits-System.aspx>
- City of Celina. (n.d.). Online utility & fee payments.  
<https://www.ci.celina.oh.us/city-government/online-utility-fee-payments/>

### Online 311 Request Submission

- City of Knoxville. (n.d.). 3-1-1.  
[https://knoxvilletn.gov/government/city\\_departments\\_offices/311](https://knoxvilletn.gov/government/city_departments_offices/311)
- City of Cookeville. (n.d.). Citizen request tracker.  
<https://www.cookeville-tn.gov/RequestTracker.aspx>

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## More Productive, Innovative and Connected Economy

### Job-Matching Program

- Hometown Opportunity. (n.d.). Home. <https://hometownopportunity.com>
- Macon-Bibb Work Source. (n.d.). About us.  
<https://worksourcemaconbibb.org/about-us/>

### Venture Development, Startup Support

- City Tech Collaborative. (n.d.). About city tech. <https://www.citytech.org/about>
- Innovation Works. (n.d.). Programs.  
<https://www.innovationworks.org/programs/overview/>
- Jumpstart. (n.d.). About us. <https://www.jumpstartinc.org/about/>
- TAEBC. (n.d.). Energy mentor network.  
<https://tnadvancedenergy.com/energy-mentor-network/>

### Energy Innovation Program

- Dominion Energy Innovation Center. (n.d.). Our story.  
<http://www.dominnovation.com/about>

### University-Supported Research

- University of South Dakota Discover District. (n.d.). Vision & Mission.  
<http://www.usddiscovery.com/about-us/mission/>

### Business Online Presence Support

- Tupelo Spirit. (n.d.). Tupelo Spirit Toolbox. <https://www.tupelospirit.com/spirit-toolbox>

## SECTION 2

## Success Factors of a Connected Community

### Digital Connectivity

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- Federal Reserve Bank of Dallas. (2016, July). Closing the digital device: A framework for meeting CRA obligations. <https://www.dallasfed.org/cd/pubs/digitaldivide.aspx>

### Opportunities for Workforce

- <sup>2</sup> The Computing Technology Industry Association. (n.d.). Home. <https://www.cyberstates.org/>

### Data Analytics

- City of Memphis. (n.d.). Your city at work. <https://data.memphistn.gov/>
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- Imagine Boston. (n.d.). Imagine Boston 2030 metrics dashboard. <https://analytics.boston.gov/app/imagine-boston>
- City of San Jose. (n.d.). Crime stats & maps. <https://www.sjpd.org/records/crime-stats-maps>
- City of Sioux Falls. (n.d.). City of Sioux Falls Coronavirus resources. <https://coronavirus-cityofsfgis.hub.arcgis.com/>

### Open Data Examples

- Data.Nashville.gov. (n.d.). Nashville open data portal. <https://data.nashville.gov/>
- City of Memphis. (n.d.). Your city at work. <https://data.memphistn.gov/>
- City of Knoxville. (n.d.). Open data. <https://knoxvilletn.gov/government/opendata>
- Chicago Data Portal. (n.d.). Home. <https://data.cityofchicago.org/>
- City of San Jose. (n.d.). San Jose CA open data portal. <https://data.sanjoseca.gov/>
- City & County of Honolulu. (n.d.). Open data Honolulu. <https://data.honolulu.gov/>
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## SECTION 3

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## Developing a Connected Community Strategy

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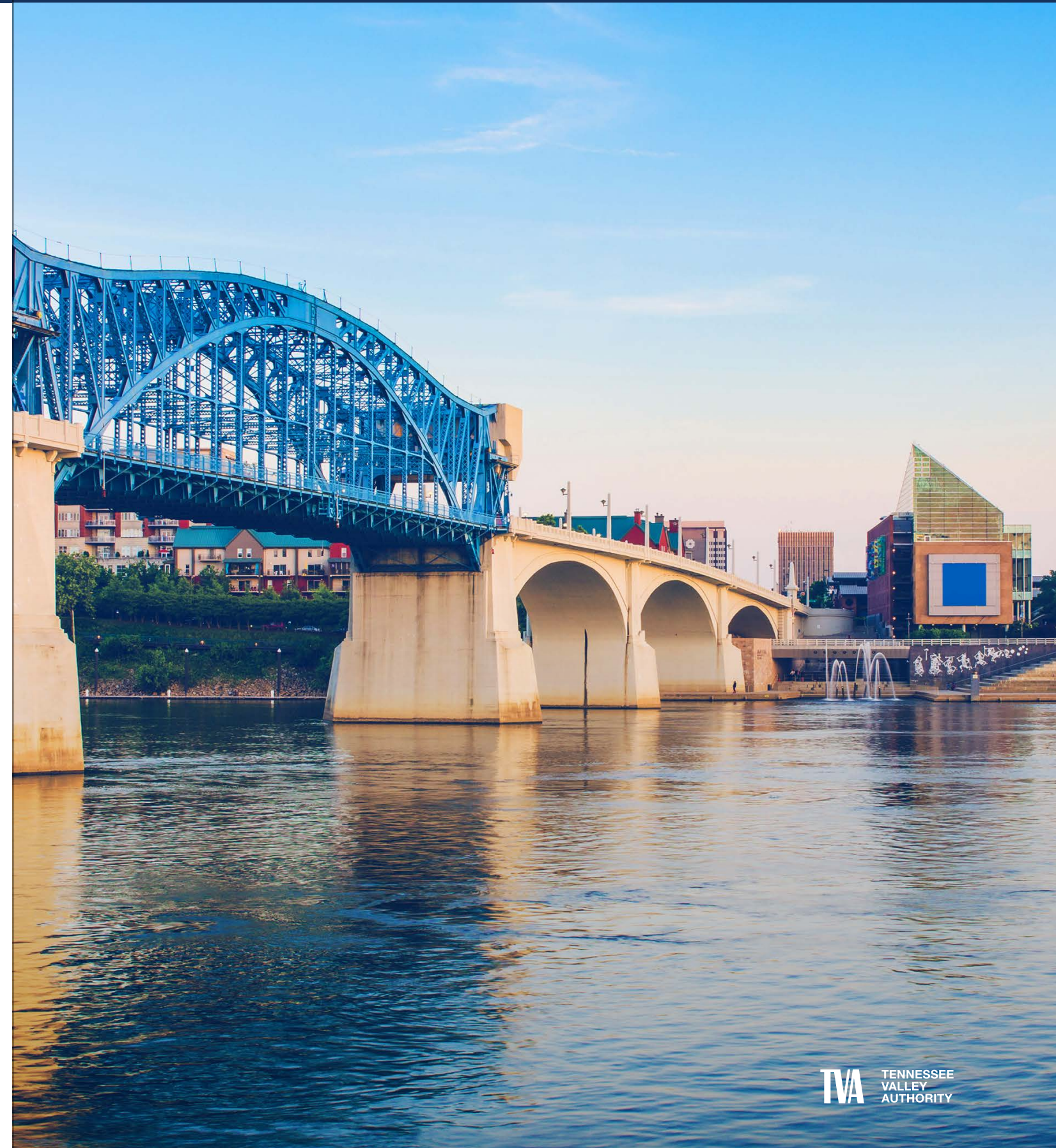


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