



Utility Private Wireless Communications: A Perfect Solution for DOE's Grid Resilience & Innovation Partnerships Program

The transformation of the electric grid through the integration of clean distributed energy resources requires an infrastructure foundation built upon utility-owned private wireless broadband communications.

The United States has embarked on a generational investment program targeting the transformation of the electric grid over the next 5 years. The Bipartisan Infrastructure Law's **Grid Resilience and Innovation Partnerships (GRIP)** Program is designed to enhance the US competitiveness, drive job growth, tackle climate change, and promote energy equity in disadvantaged communities.

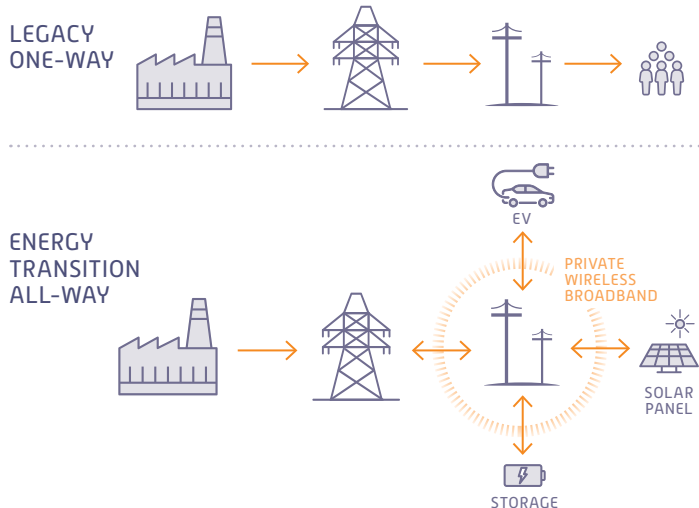
Specifically, the proliferation of new distributed clean energy technologies such as electric vehicles, solar, wind, and battery storage will become more wide scale. This mass deployment will require a robust, secure and scalable wireless communications platform that is standards based to manage all the grid applications and devices in real time.

Utilities nationwide are investing their time in developing wireless connectivity strategies, to enhance their grid resilience and transformation programs, specifically with private LTE. Anterix is supporting many of these utilities today. Anterix has already made significant strides in driving innovation, with its 900 MHz spectrum for broadband, founding the Utility Broadband Alliance and creating the Anterix Active Ecosystem. These are strategic building blocks, providing the energy sector a foundation that will serve industry initiatives.

Anterix's 900 MHz spectrum is a transformational strategic asset available to the energy sector that will serve as the foundation to wireless communications. Enhanced by Anterix's ecosystem members, 900 MHz spectrum will enable improved customer value, safety, affordability, cybersecurity and resiliency of the electric grid.

In addition, a private wireless communications network could assist with utility goals of engaging more closely with their customers across all classes (residential, commercial and industrial); while also helping to broaden the reach of clean energy technologies to disadvantaged communities (DACs).

PRIVATE WIRELESS AS THE FOUNDATION FOR GRID TRANSFORMATION:



FOCUSED VALUE

Positioning your grid transformation program for success depends on selecting the right foundational private wireless broadband network characteristics.



Private Wireless Broadband Networks

Utilities now have access to low-band spectrum for utility owned wireless broadband networks across the nation, inclusive of DACs regions. This was made possible by the 900MHz FCC rulemaking in 2020.



Clean Energy Transformation

The number of devices on the clean energy electric grid will most likely be in the hundreds of millions. The network coverage and interoperable technologies should be embedded and ready for immediate connection.



Security & Control

The electric grid has unique components that require utility visibility and control. Private LTE provides a particularly robust set of features that allow utilities with oversight and implementation capabilities to impact reliability, resilience, and security.

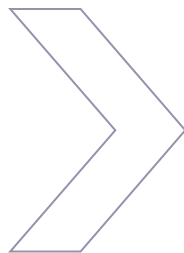


Equity & Community Benefits

Anterix's 900 MHz spectrum is a solution that is available in disadvantaged communities across the United States.



MESSAGE FROM INDUSTRY LEADERS



The clean energy transition benefiting all utility customers will be built upon private wireless broadband network investments.

The energy delivery platform of tomorrow will have vastly dispersed and interconnected assets with varying energy loads through mass adoption of EVs and distributed renewable energy. This large-scale asset connectivity will require new forms of electricity dynamics which can benefit from robust, secure, and dedicated private wireless broadband.

Equity, lower costs, and consumer enablement will also be at the center of deployments. Utility customers and industry thought leaders have begun to lay the foundation of this upcoming transformation through the deployment of wireless broadband in their service territories.

"Xcel Energy is focused on delivering reliable, affordable and sustainable energy to the states, the communities and the customers we serve. Our commitment to a clean energy future requires a modern grid capable of integrating a significant influx of distributed, renewable energy resources. Secure, robust broadband communications is a critical element of the modern grid."

– **Tim Peterson**, SVP, Chief Technology Officer
Xcel Energy

"Over the next several decades, this private LTE network will advance the reliability and security of the electric grid through a range of broadband-enabled applications and services, including the integration of distributed energy resources to help us meet our net-zero carbon emissions goal by 2050."

– **Bhavani Amirthaligam**, SVP, Chief Digital Information Officer,
Ameren

"Smart grid technologies have a growing importance for our grid modernization efforts as we continue to transform our operations to a focus on clean, safe and reliable energy. Today's agreement with Anterix provides a key component of the communications foundation required to help advance these initiatives, which are not only important for increased safety and efficiency, but are also crucial to maintain a resilient grid in the future."

– **Kevin Bryant**, Executive Vice President and Chief Operating Officer,
Energys

"Southern Company has believed in this Private Broadband network for a long time. I would tell you the value of it has increased over that time - [in terms of] resiliency, security and quite frankly a more economic option for us, if you think about the communities and customers we serve."

– **Stan Connally**, EVP Operations,
Southern Company

GRIP PRIORITIES

The DOE has outlined 3 encompassing strategic goals for the GRIP program overlaying 3 different program initiatives.

Anterix solutions map to these requirements and will provide unique value for each specific GRIP program.

GRIP OBJECTIVE	ANTERIX VALUE
Transform regional and national resilience with focus on the shift to DER	<ul style="list-style-type: none"> • Low-band wireless spectrum provides exclusive dedicated communication for territory-wide DER device connectivity • Utility-to-utility network communication enables stronger regional coordination and potential for controlled data sharing • Private networks enable the utility to have control and focused levels of security dedicated to the grid • Enhances utility mutual assistance during catastrophic events
Leverage private sector for development and innovation	<ul style="list-style-type: none"> • Globally standardized cellular integration for use in embedded devices • Anterix Active Ecosystem with over 100 members fully ready for integration • Funding for 900 MHz private LTE utilizes the ecosystem to support a broader utility grid strategy
Advance community benefits <ul style="list-style-type: none"> • Justice40 Initiative • Diversity-Inclusion • Workforce Development 	<ul style="list-style-type: none"> • Disadvantaged Communities (DACs) are a priority of focus for DOE with Anterix spectrum available in communities identified as disadvantaged • Wireless communications solutions are a fast way to provide energy equity to DACs • Opportunity for labor and workforce upskilling/reskilling

GRIP PROGRAMS

There are 3 specific GRIP programs which have various requirements and entity eligibility. Below are the specific sections as outlined in the BIL. Anterix connects to all of them in unique ways.

40101(c)
GRID RESILIENCE GRANTS

Increase grid resiliency with far reaching private wireless broadband to allow for data informed decision making

- Private wireless broadband is a comprehensive solution to accelerate adoption of smart controls to help prevent disruptive grid events
- Automated controls of DERs to enhance system adaptive capacity
- Real time grid awareness into assets to inform maintenance prior to equipment failure, quick restoration, and visibility in remote/hard to reach communities
- Intelligent sensors on transmission and distribution to de-energize preventing wildfires and other catastrophic events

40107
SMART GRID GRANTS

Private wireless broadband aids smart tech across the grid with low latency, high throughput, and prioritization

- Grid enhancing technologies along T+D lines are private wireless broadband enabled to quickly de-energize or communicate potential failure
- Anterix in collaboration with Schweiter Engineering can provide falling conductor innovations powered by private LTE to prevent hazardous conditions
- Deployed 900MHz PLTE devices are part of a global ecosystem that is a pathway to wider market adoption that will help facilitate the development of a smart grid

40103 (b)
GRID INNOVATION PROGRAM

Standards-based communications fosters innovation for grid interconnection and reliability

- Interoperable, and regional coordination amongst utility private networks allows for intelligent dispatch of electric load across multiple geographies and enhance mutual aid
- Broad coverage of transmission line segments enable surveillance and line sensors to adequately detect and optimize power flow
- Use of specific line sensors in real-time to enhance the power flow and maximize efficiency/capacity of electric lines in various conditions

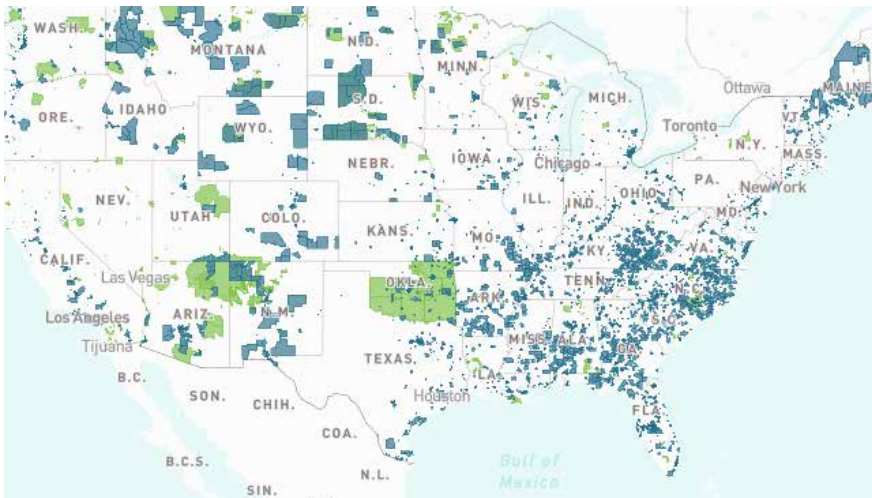
DISADVANTAGED COMMUNITIES (DACs) ARE A PRIORITY

The DOE is focused on improving the electric grid and access to resilience technologies within disadvantaged communities.

Private wireless broadband networks enable DOE priorities in this area by:

- Having greenfield spectrum readied for deployment in DACs
- Enabling full coverage for foundational projects at a lower total cost due to less infrastructure required in DACs
- Enhancing grid flexibility, increasing reliability through the deployment of smart technologies, and assisting in diversifying the energy resource mix in DACs by facilitating the access and integration of more renewable energy generation and energy storage

ANTERIX SPECTRUM IS AVAILABLE IN THE DOE-IDENTIFIED DACs



This map is sourced from energyjustice.egs.anl.gov and represents census tracts that the DOE has categorized as Disadvantaged Communities.



Anterix Inc. delivers game-changing connectivity for critical infrastructure, including next generation communications platforms to support utilities' grid modernization and cybersecurity strategies. We partner with utilities and ecosystem vendors to build secure, reliable, cost effective, and customized LTE solutions on our 900 MHz licensed nationwide spectrum. [Anterix.com](https://www.anterix.com)

EXAMPLE USE-CASES

Private wireless scales new use-cases, solves industry problems, and enhances community outcomes. Below are 3 applied examples.

Wildfire Mitigation

In 2020 alone, 59,000 wildfires burned over 10.1 million acres in the US causing \$16.5B in damage and at least 43 deaths.¹ Enhancing the electric grid with ubiquitous wireless connectivity to prevent causation of these fires is one of the highest priorities.

Customer Use Cases

- Falling conductor protection system to de-energize the power line before it hits the ground preventing fires
- Fault isolation system to quickly restore power to customers
- Mobile workforce, EVs, DERs, and meter connectivity

Distributed Energy Resources Integration

Whether it's a recloser, line sensor, EV charging station, solar inverter, battery storage container, or other grid asset, it's critical to have a globally standardized and integrated wireless communication for instant connectivity.

- Anterix 900 MHz spectrum is licensed and immediately ready for connectivity
- Anterix Active EcoSystem has over 100 partners fully ready for integration
- PLTE networks can help utilities orchestrate demand response efforts and flexible load, keeping the grid in balance and reducing the likelihood of a disruption

Nationwide Utility Network

The electric grid is based on a grouping of smaller regional grids that all interconnect. These regional networks have various controls and management layers. Anterix is enabling utility-to-utility networks to securely communicate with each other.

- Maintains private control within each utility (including dedicated spectrum)
- Facilitates inter-utility network asset integration for load control and secure visibility

¹ <https://yaleclimateconnections.org/2021/01/reviewing-the-horrid-global-2020-wildfire-season/>