

# Rebuilding Resilient Communications Infrastructure

## Initiative Summary Statement:

Diversify and harden communication infrastructure to enable continued operations, address gaps in communication capabilities, and identify economic areas in need of technology and connectivity advancements to increase resilience. Partner with technology industry experts to implement best practices.

## Initiative Description:

**Objective:** This Initiative promotes rebuilding resilient communications infrastructure in Lee County by diversifying, hardening, protecting, and upgrading infrastructure to enable continued operations and address gaps in communication capabilities before, during, and after disasters using updated technology and connectivity advancements to increase resilience. Understanding how infrastructure resilience contributes to community resilience is a key component to whole community recovery. Evaluating the effectiveness of current emergency communication systems throughout the Lee County region is prudent as recovery planning continues.

The objective of this Initiative is to mitigate impacts to communication operations across the County, regarding immediate post-disaster first responder efforts in particular. This begins with designing communication towers that are able to withstand extreme weather conditions through County ownership and incentivizing partner providers to adhere to the same structural standards. Additionally, this Initiative champions innovation through various advancements such as integrating low earth orbit technologies, developing improved and streamlined information sharing platforms, exploring solar power advancements, and cultivating pre-established partnerships amongst all stakeholders.

**Need:** Communication services were disrupted throughout Lee County following Hurricane Ian and are critical to response and recovery efforts. Damages posed immediate challenges to first responder operations regarding life safety.

- Communication provider tower infrastructure was damaged compromising cellular capabilities. County owned towers are hardened to withstand extreme weather conditions but that is not always the case within the private sector.
- 911 systems were inundated with calls from Lee and neighboring counties who experienced system failures and were diverted to Lee County systems.
- Private partner restoration efforts were not effectively coordinated among interdependent stakeholders providing the County with little oversight to operations

and provider priorities. Power restoration efforts need to be coordinated directly in step with communication restoration operations.

- Damage assessments were delayed due to debris removal efforts needed to access communication infrastructure.

This disruption also exposed a gap in the availability and reliability of affordable high-speed internet for all County residents, especially for the public and the economic sector. Many residents and community members struggled to find real-time information and ways to communicate with others. Accessible internet and ongoing technology training can contribute to strengthening the workforce and growing the local economy. Increasing cybersecurity can protect the Lee County community from online threats. Reliable and resilient internet service is also becoming more important as retail and commercial systems move to the County or require connectivity for real-time payment processing.

**Regional Approach:** Resilient communication improvement projects within the region and coordination between jurisdictions will address challenges experienced during Hurricane Ian; specific activities should include integrating new communication technologies, completing a broadband gap analysis, increasing cybersecurity defenses, and cultivating partnerships to improve communication. Identified strategies include:

Stakeholders recommend performing a study on how to best leverage Low Earth Orbit (LEO) communications technology. Various technologies exist and should be explored to increase the County posture when redundant services are needed. Studies should include system capacity projections accounting for population growth and increased personal use of satellite technologies.

Sector leaders should consider strategic alignment of resources and efforts in cross industry recovery operations. This includes co-locating cell and radio towers in optimal locations with access to restoration resources by conducting scenario-driven impact modeling and convening strategic recovery and response partners to develop coordination planning. Debris removal, energy restoration, and communication infrastructure repairs are interdependent and should be effectively coordinated.

Improving the current 911 system capabilities can help increase partnerships with neighboring counties within the region. While the 911 system did not fail during and after Hurricane Ian, call capacities were overloaded, and call routing was complicated by impacts to the cellular networks. This was a particular challenge when surrounding counties began relying on Lee County services after their systems failed. Developing pre-scripted messages for additional means of support or guidance on what to do next can also help limit confusion amongst callers. System advancements can also leverage new technologies

that record needed information through automation to track calls and ensure residents in need receive required assistance.

As previously noted, damage assessments were difficult to conduct in immediate response operations. Implementing a drone reconnaissance program can help determine and assess structural damage to communications infrastructure post disaster. This strategy should include the formation of a partner group for mission management and information sharing in real time to expedite service restoration operations. Partners should include but are not limited to communication service providers, energy providers, transportation partners, and public safety officials. Predeveloping these relationships can help streamline recovery operations by simplifying the communication/notification chain. This program could be done in coordination with the State Emergency Support Function 2, through the purchase and ownership of County drones, or through predetermined partnerships with private entities.

Private sector partners can also be leveraged to explore the incorporation of solar technologies in County communication towers to serve as a redundant power source in the event of outages.

In addition, carriers, emergency managers, and planners should work together to plan and conduct testing for innovative approaches to telecommunications could help build resilience. Coordinating with state legislators to initiate a call to action that engages carriers to cooperate with fixing communications issues would further enable everyone to work together in an organized fashion.

Developing an information sharing and restoration progress platform accessible by both public and private sector partners can help effectively coordinate efforts and prioritize immediate needs. There are existing platforms and portals that can be enhanced with these features to maintain consistency in previous efforts.

Connecting 911 system software tracking wellness requests with data logged by partners in the field to reduce the influx of calls to 911 systems can also address challenges faced during past response and recovery operation. This approach combines data collected from damage assessors and others who come in contact with impacted community members to avoid duplications of efforts and provide loved ones with accurate and timely information. This initiative would be further improved with integration with the State's anticipated launch of a missing and safe persons registry for use during disasters.

A broadband gap analysis would provide the region with a plan to undertake capital improvements and specifically assist underserved communities in determining immediate needs.

Cybersecurity for utilities and other infrastructure systems is crucial to maintaining communication for the community and the workforce following disasters. Cybersecurity improvements can also protect government and non-government entities against or mitigate the negative impact of cyber-attacks and data breaches. This regional approach will better equip the community with a plan of action to augment communication infrastructure that will support all members of the community. Strengthening communications infrastructure across the County would decrease service disruptions and contribute to the more rapid resumption of services when issues occur.

**Impact:** Implementing these strategies and tactics will help the County protect lives, enhance recovery progress, and mitigate overall disruptions to communications. Stakeholder collaboration and coordination will help the County better withstand impacts from future disasters. In short:

- Physical communication infrastructure will be more resistant to impacts;
- First responders will benefit from additional redundancies for their communication capabilities;
- 911 systems will be able to better manage the influx of calls; and
- Providers and other stakeholders will be able to communicate and better coordinate restoration efforts with improved County visibility.

#### **Key Considerations:**

- Perform a study on how to best leverage Low Earth Orbit (LEO) communications technology.
- Conduct periodic system testing to ensure all services are operational and no additional maintenance is needed.
- Identify strengths and gaps within the current capabilities considering capabilities such as equipment, technology, networks, policies, procedures, and staff.
- Keep the community engaged and up to date on what to expect in the event of an emergency, allow the community to provide feedback, and adjust as needed to account for the needs of the community.
- Perform regular maintenance and critical updates so equipment will not fail.
- Perform a broadband gap analysis. Once complete, execute recommendations for high-speed internet availability to all residents, determine if existing affordability programs with internet providers are sufficient or if gaps remain, develop auxiliary programs, and determine cybersecurity gaps and vulnerabilities as outlined by best practices.
- Create digital literacy programs that focus on areas where internet access was previously limited.
- Initiate a proof-of-concept project for solar powered cell towers.

- Co-locate cell and radio towers in optimal locations with access to restoration resources by conducting scenario-driven impact modeling and convening strategic recovery and response partners to develop coordination planning.
- Improve the 911 system capabilities and increase partnerships with neighboring counties.
- Develop software to reconcile wellness check inquiries.
- Implement a drone reconnaissance program (formation of partner group for mission management and information sharing).

## Co-Sponsoring Branches:

Infrastructure, Economic Recovery, Planning & Capacity

## Stakeholders:

- Municipal departmental experts on technology, transportation, communication, economic development, and public safety.
- Communications Providers
- Local Police Departments/911 operators
- County departmental experts on technology, transportation, communication, economic development, and public safety.
- Utilities and power providers
- Florida Division of Emergency Management (FDEM) Emergency Support Function (ESF2) and other state partners

## Potential Funding Sources:

- United States Department of Homeland Security
- United States Department of State
- National Rural Telecommunications Cooperative – Florida Broadband Opportunity Grant Program
- Cybersecurity and Infrastructure Security Agency
- United States Department of Energy
- National Telecommunications and Information Administration
- National Institute of Standards and Technology
- United States Department of Agriculture
- Federal Communications Commission
- Resilient Cities Network – Resilient Community Impact Funds
- Internet For All
- Florida Commerce – Broadband Opportunity Program

- Florida Digital Service
- Florida State Broadband Office

## Resources:

- [Evaluating Local Broadband Capabilities \(leegov.com\)](https://www.leegov.com/leegov/evaluating-local-broadband-capabilities)

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