

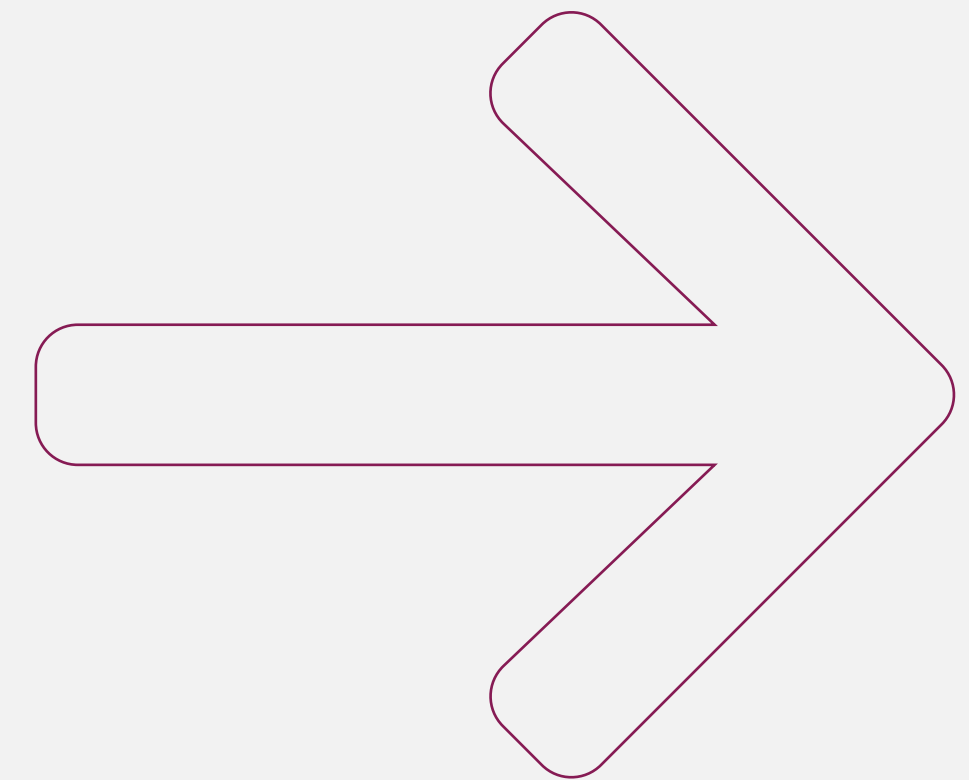
T-Mobile Emergency Response Team

Emergency communications planning,
response, and recovery

 T-MOBILE
FOR GOVERNMENT

 EMERGENCY
MANAGEMENT





01 Introduction

Globally, natural disasters occur four times as often as they did in 1970.¹

In the United States, the number of billion-dollar weather and climate disasters rose from three in 1980, when the federal government began keeping statistics, to a record-setting 22 in 2020.²

During the 1980s, these events cost the United States an average of \$17.8 billion a year. The average annual cost soared to \$78.1 billion during the last three years. In 2020, disasters cost the nation \$95 billion.²

Financial pressures, political pressures, and an increasing global threat demand require an integrated approach to a resilient and secure nation.

The critical role of emergency planning and preparedness

As the frequency, complexity, and cost of man-made and natural events increase, emergency planning and preparedness have become even more important for first responders. Simultaneously, emergency personnel must have the ability to overcome unplanned communication system failures that prevent efficient response coordination.



In the United States, the number of billion-dollar weather and climate disasters rose to a record 22 incidents in 2020. In the last three years, the average annual cost of these disasters soared to \$78.1 billion. The cost in 2020 alone was \$95 billion.

Source: National Oceanic and Atmospheric Administration

¹ <https://www.weforum.org/agenda/2020/01/natural-disasters-resilience-relief-artificial-intelligence-ai-mckinsey>

² <https://www.ncdc.noaa.gov/billions/overview>

T-Mobile's Emergency Response Team (ERT) is dedicated to serving first responders. The team—comprised of experienced and knowledgeable specialists available 24/7/365—helps organizations:

- Plan and train for emergencies
- Identify and implement mitigation strategies
- Coordinate communication resources for disaster response
- Help facilitate situational awareness and information sharing
- Foster partnerships across government and industry

Backed by the nationwide T-Mobile network, including robust 5G capabilities, our ERT personnel have helped the nation's first responders react to thousands of emergency situations during the last 20 years. Our team provided support for almost every significant man-made and natural disaster and national special security event since 2001.

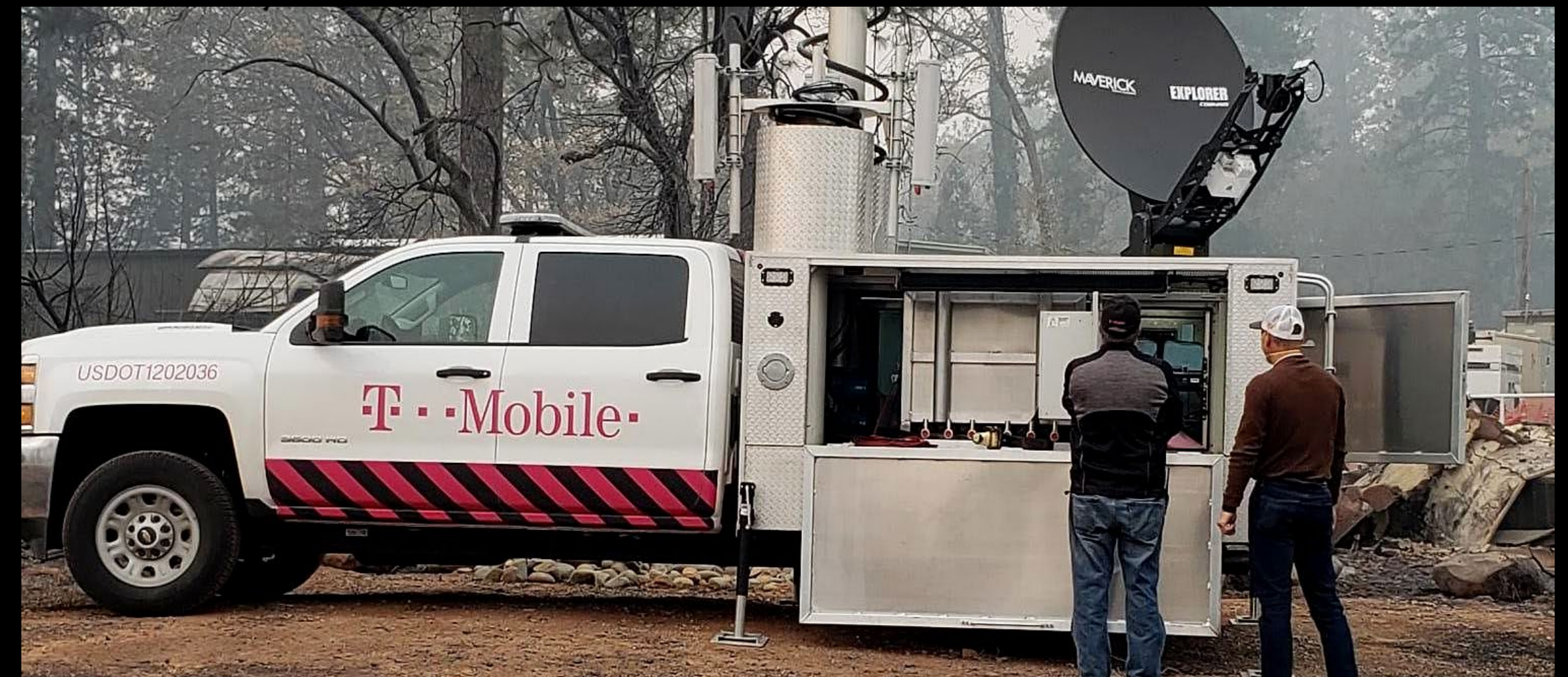
Ready 24/7/365

Whatever the challenge, T-Mobile's ERT specialists are ready to partner with agencies as they respond to the critical emergencies that threaten life and property. Our team understands that agency budgets are stretched thin and we know how to collaborate with public and private emergency response personnel to develop solutions that provide real value and help first responders regain control of situations in the field.

Here, we offer guidance to emergency response personnel on how best to use communications technology to plan for and coordinate emergency responses in natural and situational disasters.

What the T-Mobile ERT brings to a partnership

- A dedicated team of experts available 24/7/365 to consult on and coordinate technology resources needed to plan for, mitigate against, respond to, and recover from all-hazards events
- Nearly 20 years of experience **#ServingThoseWhoServe** with rapid-deployable networks, mobile devices, and professional expertise to help ensure reliable and robust communications.
- Solutions tailored to solve specific situational needs within the budgetary constraints imposed on agencies today.



02 Planning: The key to emergency response

To handle the growing array of emergencies confronting communities today, agencies must make comprehensive plans that anticipate and mitigate risks and manage a coordinated response. A complete emergency response plan requires three elements.

1. All-hazards planning

An all-hazards plan documents the known hazards and threats within a community, assesses their potential impact, and determines the capabilities needed to respond. Planners typically apply the Threat, Hazard Identification, and Risk Assessment (THIRA) process to mitigate risk and develop contingency plans.³

The information compiled is useful in local emergency planning and also within the framework of the National Incident Management System.⁴ This research is vital to emergency responders because it focuses planning on the most likely potential threats. While all-hazards planning may not anticipate all emergencies that could confront a community, it helps planners prepare for the most likely ones.

2. Incident action planning

Incident action planning assigns responsibilities for an emergency response to different personnel within an agency, or to various agencies that must work together in response to an emergency. The goal is to make sure the different resources collaborate seamlessly to achieve defined objectives.⁵ For example, an incident action plan may assign responsibilities for search and rescue operations during a snowstorm, define roles for performing emergency extractions, or set guidelines for establishing a temporary joint operations center for specific emergencies, such as an active shooter incident or a severe weather event.



³ <https://www.fema.gov/sites/default/files/2020-04/CPG201Final20180525.pdf>

⁴ https://www.fema.gov/sites/default/files/2020-07/fema_nims_doctrine-2017.pdf

⁵ https://www.fema.gov/sites/default/files/2020-07/Incident_Action_Planning_Guide_Revision1_august2015.pdf

3. The communications plan

To be effective, emergency communications planning must focus on both operational needs and messaging. The operational side ensures that first responders have enough capacity in their communication capabilities to coordinate an emergency response.⁶ It should effectively line up resources to support communications, including:

- Equipment, such as dedicated phones, secure remote servers, and equipment to stand up command, plus contact and information centers to handle communication with responders and the public.
- Access to mission-critical applications such as dispatch and Push-to-Talk, command and control systems, records management applications, situational awareness and GIS visualtion tools, and virtual communications and coordination platforms.
- Technology to reliably stand up networks-on-demand, whether extending the range of existing wireless communications, providing stand-alone networks, or augmenting existing network capacities.

One common and effective approach to communications planning is PACE. PACE is a common military approach for communications contingency planning and is growing in importance in the field of emergency planning.

- **P**rimary
- **A**lternate
- **C**ontingency
- **E**mergency

At its core, PACE adopts a “failover” strategy to ensure any element requiring connectivity can do so regardless of loss or degradation of communications. Good practitioners of the PACE plan will, to the degree financially and technologically feasible, inject diversity and redundancy at each level of the PACE plan.

The messaging side of communications planning must anticipate information releases to support emergency response efforts and identify ways to share the information. To that end, it should:

- Define a list of audiences affected by emergency events, with corresponding contact information. The list may include community officials, media, and business leaders, among others.
- Develop communication templates that teams can quickly adapt to a specific emergency to update stakeholder audiences. Templates should anticipate a full array of potential communiques, from evacuation announcements to incident updates. Communication flow is critical to preventing public panic.

⁶ <https://www.fema.gov/about/offices/field-operations/disaster-emergency-communications>

T-Mobile ERT works with communities to expand emergency response planning

Our emergency response team can help agencies prepare for mass-impact events by fueling more “blue sky” planning that encourages consideration of less obvious potential disasters.

A “blue sky” approach to planning can pay big dividends. For example, North Carolina-based emergency responders would typically focus on hurricanes or coastal flooding. But T-Mobile’s experience with the 2016 Great Smoky Mountains wildfires near Gatlinburg, Tennessee, just across the state line from North Carolina, provided a fresh threat perspective for communities surrounded by forest lands, even those where fires are rare.

T-Mobile’s approach to “blue sky” planning is built on collaboration with clients and uses the perspectives of other agencies we work with as well as our own experiences with thousands of emergency situations. The combined knowledge and insights enable us to help clients conduct risk assessment exercises to weigh unexpected threats, training sessions to “stress test” their emergency response plans, and consult on the development and improvement of emergency response frameworks.



03 Response: Navigating the unexpected

Good planning is essential to responding effectively to a disaster situation. But unanticipated problems can disrupt even the best-designed emergency response. Here are some common scenarios, along with solutions we've developed.





Challenge #1: Damaged network

When a natural disaster tests the limits of your emergency response plan, it may be necessary to mobilize unexpected resources.

In 2019, Hurricane Michael crippled wireless and wired networks across the Florida Panhandle. Even as telecom crews and utility operators began repairing damaged infrastructure, T-Mobile's ERT executed its plan deploying a fleet of Satellite Cell on Light Trucks (SatCOLTs), portable satellite systems, local area network (LAN) infrastructure, and other communications equipment. Its mission was to ensure emergency response efforts throughout the region proceeded unimpaired by the storm's devastation, including medical transport, search and rescue, security, joint field operations, and disaster recovery.

As a Category 5 hurricane, Michael created unique challenges, completely destroying much of the overhead communications infrastructure.

The loss of the fiber backbone impacted wired communications services (such as last-mile connectivity to fixed facilities) and wireless communications services required to support mobile, public safety operations.

ERT personnel solved the problem by deploying Satellite Fly Away Antenna Systems at county government data centers, public safety dispatch facilities, and staging/logistics sites.

For field operations, such as medical transport, ERT staged SatCOLTs across the Florida Panhandle, providing the necessary LTE connectivity to support Push-to-Talk, computer aided dispatch (CAD), mobile broadband, and traditional voice calling services.



Challenge #2: Insufficient interoperability

Even when emergency responders focus on a common goal, progress—and coordination—can stall if their communication systems lack interoperability.

After a homicide in the rural mountains of the eastern U.S., authorities faced the challenges brought on by searching across two counties. For three days, more than 200 officers from local police departments, federal and state law enforcement agencies, and other jurisdictions collaborated in the massive investigation.

The issue was that the two-county Land Mobile Radio (LMR) networks spanning the area weren't connected and the radio equipment used by responding agencies didn't let them talk to each other. The communication challenges were compounded because authorities created a command post at a local church, far from terrestrial or wireless broadband.

The T-Mobile ERT helped overcome the problem by deploying a SatCOLT, which provided much-needed

connectivity across the mountainous terrain. Then the team eliminated the communication barrier by distributing more than 300 Push-to-Talk enabled handsets to law enforcement personnel from the different agencies. Operating just like an LMR system, the handsets and SatCOLT offered command staff secure, one-on-one communications while allowing task force leaders to communicate within and across units to track the suspect.

At the command post, T-Mobile ERT personnel engineered and deployed secure Local Area Networks connected to a global IP backbone via satellite.

The combined solution allowed law enforcement personnel to focus on coordinating the search versus troubleshooting communications challenges.



Challenge 3: Little or no network coverage

Some parts of the U.S. are much better connected than others. Yet incidents often occur in locales where public safety and commercial networks either don't exist or can't support the demand of emergency response operations.

This was the challenge emergency personnel faced when they responded to the 2010 Upper Big Branch Mine Disaster in West Virginia,⁷ one of the nation's worst mining disasters. A massive explosion immediately killed 25 miners, and emergency teams spent five days searching for four missing men.

During those five days, emergency teams quickly discovered that the hilly topography of rural West Virginia coal country severely limited communication. Coverage for cellular and LMR was insufficient to connect first responders.

In such cases, deployable infrastructure is often the only solution. T-Mobile provided SatCOLTs, which offer a 3- to 5-mile bubble of LTE and cellular coverage, to address connectivity issues. Ruggedized communications equipment, such as Push-to-Talk smartphones, helped

keep teams in communication amid wind, rain, smoke, and dust. T-Mobile teams used similar infrastructure and solutions during the California wildfires in 2020, working to keep first responders and communities connected, while offering unlimited talk, text, and data for customers in impacted areas.

T-Mobile ERT can help overcome unexpected challenges

T-Mobile's ERT has deep experience overcoming challenging communications barriers during planned and unplanned events, whether emergency or not. The dedicated ERT staff has equipment positioned strategically across the nation, ready to be deployed to emergencies within hours. To supplement their response, ERT staff can call on the resources of T-Mobile's National Emergency Management Team, which expands the team's ability to make cellular communications services available and reliable in even the most challenging environments.

⁷ <https://www.msha.gov/data-reports/fatality-reports/2010/fatality-3-through-31-april-5-2010/final-report>

Service above and beyond

In 2020, T-Mobile's ERT received a request to provide internet and cellular service to McKenzie Bridge, Oregon, even though the nearest T-Mobile coverage zone was 27 miles away.

Serving a community of 2,700 located about 50 miles east of Eugene, McKenzie Bridge's telecommunication backbone had been destroyed by the Holiday Farm fire that devastated nearly 180,000 acres of forest in the Pacific Northwest. The town became cut off from the world, as were the first responders assigned to protect it.

T-Mobile ERT responded by deploying a cellular/Wi-Fi solution that supported a local medical center, school, first responders, and community residents. To link McKenzie Bridge to the outside community quickly,

T-Mobile moved a SatCOLT truck into a strategically located parking lot. The truck brought cell service to the immediate area. Then the ERT expanded the reach of service by deploying commercial-grade Wi-Fi to allow consumers, first responders, and students to connect via whatever device they had.

The solution not only supported emergency personnel, it also helped the community by enabling children to return to classes and allowing the medical center to triage and treat the injured.



04 Recovery: Transforming systems

When an emergency ends, it's tempting to head home, wash down the trucks, and put up your feet. But to make sure everyone is ready for the next disaster, it's crucial to perform an after-action analysis and assess what worked well and what needs improvement.

Planning is a continual process. Most state and federal agencies review their total emergency plans every year or two, although some situations require more frequent examination. Reviews should revisit emergency scenarios and related communications needs, as both may evolve.

While changes to emergency response plans will mostly be incremental, the world of telecommunications technology is evolving quickly. These changes promise to transform emergency response nationwide.



5G, UAVs, and IoT

Revolutionary 5G technology is dramatically improving the quality of life for first responders.

5G's lower latency and higher capacity and throughput make possible more connectivity than ever imagined. As a result, 5G may soon allow command staff to remotely monitor responders' vital signs and body temperatures and track their movements to determine if they're moving freely or lying prone. This capability offers a level of personal security that has never been available to responders working in isolated areas, including smokejumpers who often work in remote forests surrounded by dangerous and fast-changing conditions.

5G will also support the transmission of large amounts of data from unmanned aerial vehicles (UAVs) or drones, as well as connected devices, commonly called the Internet of Things (IoT). These technologies are game-changing because:

- UAVs make it possible for dispatchers to get a bird's-eye view of incidents like building fires, which provide important information to responding crews. Thanks to the capacity of 5G, UAVs' cameras and sensors can provide more data than previously possible to help assess an emergency.
- Embedded IoT technology, such as sensors and other components built into a building's "smart" HVAC system, can communicate where temperatures are rising fastest within a structure. This can help a battalion commander pinpoint hotspots where firefighters' intervention can control a blaze before it consumes the entire building.
- Attachable IoT sensors placed on crucial infrastructure, such as roads and bridges, can deliver enormous amounts of data, thanks to 5G technology. That data, collected remotely, can help planners understand road and weather conditions during emergencies.
- Robotics offer new ways to intervene and dismantle threats while protecting the lives of those who serve. 5G paves the way for total remote control and enhanced situational awareness, placing machines instead of human lives in harms way.





Get expert help on communication planning

It's hard to keep abreast of all the communication technology changes taking place. So when you revisit your emergency plans, consider consulting the T-Mobile ERT.

The T-Mobile ERT addresses the needs of specific types of organizations, including government and public safety entities, humanitarian organizations, local school districts, law enforcement, and fire rescue.

In 2020 alone, the T-Mobile ERT deployed more than 50 times in response to wildfires, tornadoes, and hurricanes.

5G may turn emergency vehicles into emergency rooms

Mariana Beckham, an experienced emergency medical technician (EMT) in Washington state, believes that 5G technology will help save lives.

She expects 5G connectivity will allow first responders to transmit more patient data from their ambulances well before arriving at the hospital, which will enable responders to provide more life-saving treatment en route. Plus, she envisions 5G will streamline the process of transporting those patients.

“Imagine if, instead of just using lights and sirens, a connected ambulance could push out alerts to individual vehicles that it’s approaching, even before a driver can see or hear it, and even communicate to streetlights, crosswalks, and the roads. Other vehicles will make way sooner, improving safety and response times. 5G will help us save time, which in turn will help us save lives.” -Beckham



05 Next Steps: Planning today saves lives tomorrow.

Emergency responders know that managing disasters—whether natural or human-made—is a continuous cycle.⁸ The four phases include:

- **Mitigation:** designed to prevent disasters or reduce the impact of emergency incidents. Effective mitigation requires a whole community approach to capacity building, including the integration of both traditional and non-traditional partners, as well as creating regulatory and legislative action.
- **Preparation:** involves planning and training for emergency events that cannot be mitigated. The preparation process requires ongoing vigilance and continual plan revision.

- **Response:** the time when emergency crews and equipment are deployed to manage a disaster. Response is also when emergency personnel must address inevitable challenges and effectively regain control of a situation.
- **Recovery:** the phase in which emergency managers restore normalcy, rebuild infrastructure or restore services, and undertake efforts to reduce future vulnerability.

The key to success through all these phases is communication, the backbone of any successful emergency response cycle. Through all phases, effective communication makes the difference between siloed efforts and coordinated action.



⁸ https://training.fema.gov/emiweb/downloads/is111_unit_4.pdf



Serving those who serve

The process of planning for and managing emergencies is complicated. But T-Mobile ERT stands ready to help guide you through the challenges.

With nearly 20 years of serving those who serve, T-Mobile's ERT specialists provide the technical expertise, network connectivity, mobile devices, solutions, and a deep pool of partners that first responders need.

Our dedicated team is available 24/7/365 and can be accessed through your account management team, directly through the **National Deployment Management team**, via the **ERT Dedicated Hotline at 888-639-0020**. ERT deploys based on need and resource availability.

For additional information, please contact **T-Mobile's ERT at ERTrequests@t-mobile.com**.



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