Preparing governments for future shocks

Building community-based resilience

Emergency preparedness and response case studies

In collaboration with

National Academy of Public Administration

IBM Center for The Business of Government

IBM

How IBM can help

IBM is committed to serving governments and citizens around the globe—across all government segments including social services, government health, tax management, critical infrastructure, education, and national security. We work with stewards in federal as well as state and local agencies, building on decades of experience and trust. Built on a foundation of security and automation, our AI and hybrid cloud solutions help governments improve the citizen experience, optimize operations, and modernize infrastructure.

Visit us at https://www.ibm.com/thought-leadership/institute-business-value/en-us/industry/government

To learn more about the IBM Future Shocks initiative for governments visit https://www.ibm.com/thought-leadership/institute-business-value/en-us/specialinterests/futureshocks

Foreword

Disruptive, shock-level events are increasing in frequency, magnitude, and complexity. In recent years, governments worldwide have faced overlapping floods, wildfires, severe storms, infrastructure failures, and humanitarian emergencies. These events have arrived with little warning and have often cascaded across systems and borders, revealing the limits of traditional and centralized response models.

In this environment, resilience depends on building a broad-based capacity that is empowered to act in communities with support from other levels of government. The ability to safeguard lives, sustain essential services, and accelerate recovery rests on ensuring that decision-making authority, critical resources, and actionable information are placed closest to the point of impact. This approach avoids bottlenecks, boosts resilience, and supports decisive responses to an unfolding crisis.

This is the third in a series of reports that highlight how governments can adopt new approaches to emergency preparedness and response. These cases show that embedded local capacity, free flows of information, and pre-disaster partnerships allow communities to adapt faster, coordinate more effectively, and reduce the human and economic toll of high-impact events.

The accompanying leadership action and readiness guide distills these lessons into four practical imperatives. Together, they encourage decision makers to rethink governance models, invest in interoperable systems, and commit to forward-looking planning. These actions can help ensure that the ability to protect people and sustain services is not concentrated in the hands of a few but embedded wherever it is needed.

We thank the authors and organizations whose work informs this report. We hope these insights inspire public sector leaders and their partners to act with urgency, distribute capacity wisely, and institutionalize practices that strengthen readiness, well before the next crisis arrives. It is incumbent upon governments and the citizens they serve to anticipate predictable crises and meet these events with effective and proactive preparedness.

Cristina Caballe Fuguet
Vice President
Global Public Sector, IBM
linkedin.com/in/cristina-caballe-77516938

Daniel Chenok
Executive Director
IBM Center for The Business of Government
linkedin.com/in/chenokdan

Joseph P. Mitchell, III
Director of Strategic Initiatives &
International Programs
National Academy of Public Administration
linkedin.com/in/joseph-mitchell-441381b/

Contents

Introduction

Governments, public sector leaders, and their communities face an increasing number of high-impact events. Severe storms, wildfires, flooding, power outages, and large-scale infrastructure disruptions are growing problems that test the readiness of institutions and the adaptability of communities.

The lessons of recent years make one reality clear: the ability to anticipate and prepare for disruptions before they occur is just as critical as the capacity to respond and recover afterward. This report offers new perspectives from real-world examples of how distributed capacity, integrated networks, and forward-thinking planning can transform preparedness and response to benefit communities everywhere.

The four case studies in this report highlight innovative approaches that position decision-making, resources, and information closer to the front lines:

- **California's Community Brigades** demonstrate how training and equipping neighborhood-based teams can extend official firefighting capacity and strengthen public trust in emergency operations.
- **Florida's Department of Transportation (DOT) Resilience Action Plan** uses statewide scenario planning tools and standardized data to help local agencies anticipate and mitigate infrastructure risks before they escalate.
- **Texas's BeforeDuringAfter.com** consolidates more than 10,000 local resources into a single platform to give small businesses and local governments clear, actionable guidance in the face of disruption.
- **Great Britain's Emergency Services Network** integrates secure, resilient communications across police, fire, ambulance, and other responders, helping to ensure coordination when it matters most.

These examples demonstrate that resilience is not a passive trait but a deliberate strategy. By proactively embedding capability at multiple levels, investing in accessible information systems, and formalizing cross-sector partnerships, governments can have a greater likelihood of effectively managing uncertainty and addressing future events.

In addition to these inspiring and innovative case studies, the report concludes with an action guide with four imperatives and self-check questions that leaders can use to assess their own readiness to act. These actions are designed to be practical, thought-provoking, and adaptable to different contexts, providing a clear path to building a safer, more prepared future.

The lessons of recent years make one reality clear: the ability to anticipate and prepare for disruptions before they occur is just as critical as the capacity to respond and recover afterward.

Case study

Community Brigades

Living with recurring fire threat in California

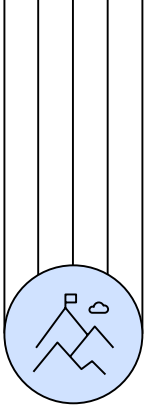
Shirley Feldmann-Jensen DPPD, MPH
California State University, Long Beach

Steven Jensen, DPPD
California State University, Long Beach

Brent Woodworth, CEO
Los Angeles Emergency
Preparedness Foundation

Sara O'Connor, Ph.D.
California State University, Long Beach

Juliet Musso, Ph.D.
University of Southern California



The challenge

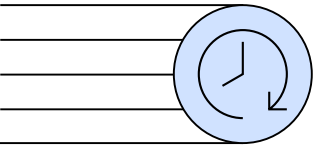
Increasing fire risk where developed communities meet wildland

For years, peak California fire season was in the summer and fall. But now, fires can strike at any time of the year.[1] In November 2018, the Woolsey Fire burned almost 97,000 acres in the region and destroyed at least 670 structures in Malibu alone.[2] And in January 2025, fires in the Los Angeles region burned nearly 37,000 acres and destroyed more than 16,000 structures.[3]

These fires exemplified the resource challenges faced when multiple fires burn at the same time. Additional complications arise from the fact that one out of three California homes are in the wildland-urban interface (WUI)—the zone where human development meets or intermingles with undeveloped wildland or vegetative fuels. Unique challenges for WUI firefighting include geographic terrain, wide-ranging population densities, and overlapping jurisdictions jurisdictions and responsibilities.[4] When mutual aid responders arrive on scene, unfamiliarity with the terrain and topography impedes efforts. And as firefighting resources become strained, public trust can be diminished.

In the aftermath of the Woolsey Fire in Malibu, our research revealed that some citizens preferred to remain at home where they could defend their properties and help their neighbors. When interviewed, select residents said they understood the impacts recurring firestorms have on their community—and they intended to stay to defend their properties against fire damage. This finding provided impetus to create a safer and more proactive approach for joint action to build fire resilience.

One out of three California homes are located in the wildland-urban interface where human development meets undeveloped wildland or vegetative fuels.



The response

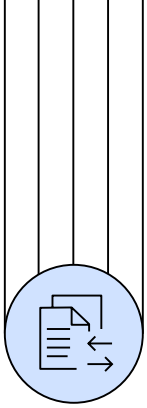
Adapting to the realities of living in a high-risk fire zone

For Malibu residents to continue living in the area, adapting their lives and activities to the realities of unpredictable and recurring fires is important. Based on lessons learned from the Woolsey Fire, our research team worked with the Los Angeles Emergency Preparedness Foundation (LAEPF) and the community to develop a "Roadmap to Resilience" framework. A cornerstone initiative coming out of this framework was the Community Brigades, a pilot program with the Los Angeles County Fire Department (LACoFD).

The pilot program leveraged the interest and capabilities of public and private sectors to establish the structure, standards, policies, legal frameworks, and training requirements. Six Malibu neighborhoods established a pilot Community Brigade including Malibu West, Point Dume, Corral Canyon, Big Rock, Hidden Hills, Topanga Canyon, and County Line. The Brigades' preparedness role centers on home ignition zones and structural hardening; their response role includes evacuation and ember control; and the recovery role is to be stewards of collective recovery.

In contrast with traditional volunteers, the Community Brigades include community members networked with the official response system through a local nonprofit entity. They also receive training from official response system actors. These partnerships help the Brigades improve communication networks, empower local action, inform residents about effective fire risk reduction, and develop citizen-based resources that can be activated when large fires strike.

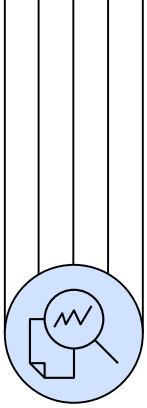
Meticulous groundwork and broad partnerships led to official approvals from the Los Angeles County Fire Department and the Los Angeles County Board of Supervisors. Community Brigades are now in place to build trust and coordinate action between community members and official responders before, during, and after a fire event.



Outcomes and benefits realized

The journey from the 2018 Woolsey Fire to official approval of the Community Brigades took six years. Once established, the Brigades were quickly put to the test. First came the Broad Fire in November 2024, followed by the Franklin Fire in December 2024, and then the Palisades Fire in January 2025. Amid the complexity of the fires, the interconnected nature of the Brigades' relationships contributed to improved cognition between responders and citizens. Cognition is the triggering insight of emerging risk that initiates the emergency response system.[5] Cognition also connects the components of the system with a clear understanding of the emerging threat and a common operating picture. Key benefits included:

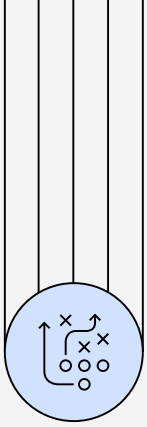
- **Bridging information silos.** A Brigade member established "Beacon Boxes" near the entry point of each neighborhood with maps marking the location of houses, water access, and swimming pools. Several Brigade members reported evacuating residents who were not aware of the existing danger or were worried about leaving.
- **Fostering greater trust between citizens and public officials.** Having Brigade members integrated into the official response increased public trust. Community members relied on the Brigades for tasks they wouldn't trust other response officers with, such as retrieving valuables from homes. As a result, community members were able to recover property from homes and evacuate neighbors, and official responders could concentrate on firefighting.
- **Widening fire risk cognition.** The Deputy Fire Chief confirmed that the Brigades expanded the incident command's situational reach and understanding. The Office of the Mayor observed that the Brigades were an information bridge amid the complexity of the fire, and people were more responsive with greater capacity for safety. The County Board of Supervisor's Office noted that trust increased as the Brigades became a conduit between the fire department and the community.
- **Promoting fire risk ownership.** During the Franklin Fire, a Brigade group helped to save a neighborhood church, producing greater trust and community commitment to fire risk action. And after fighting three fires, Brigade members noted that community members expressed a greater acceptance and ownership of fire risks and resulting outcomes of fire events.



Lessons learned and critical success factors

- **Empowering community action.** The power of communities is in the development of social capital, trust networks, and resources that support collective adaptation. Working from a shared vision and trust, coordinated community involvement can affect fire outcomes.[6]
- **Improving cognition.** Collaboration improves cognition for all stakeholders and deepens trust between the community and responding organizations. Coordinated interaction between people, local government entities, and the environment supports the growth of adaptive capacity.
- **Strengthening fire risk ownership.** Building greater adaptive capacity includes contributions from the community, LACoFD, LAEPF, academia, and other organizations. Teams self-organize and support each other, with an appropriate mix of core competencies for Brigade work.
- **Building a model for local adaptive capacity.** The Brigades demonstrate the capability to organize and act collectively, the flexibility to change strategies, and the ability to recognize and respond to changing conditions. They also serve as a catalyst for broader change across the community, which requires long-term commitment for building relationships between institutions and individual citizens.[7]

> The power of communities lies in the development of social capital, trust networks, and resources that support collective adaptation to fires and other threats.[8]



What’s next

One of the advantages of the Community Brigades model is that it can be scaled quickly and adapted locally. Tested under fire, the Community Brigades pilot program in Malibu is expanding, with 500 additional residents seeking membership. Other California communities at risk for fires, such as Altadena in Los Angeles County and Orange County, are also forming their own brigade organizations. A tool kit is under development to help other WUI communities organize similar groups.

As involvement grows, the scope of the Community Brigades model is widening from fire mitigation and response to encompass a wider range of potential hazards. With this mindset, community members take on more mitigation measures and demonstrate risk ownership. Threats of recurring disasters motivate an ongoing response and create a network dynamic for community-based risk management. This collective awakening will be essential to respond to and recover from fires and other shock-level events that lie ahead.

> “After the Palisades Fire, there was great connectivity because Brigade members know the people that live in the area. They helped tell the story from firsthand experience, the complementary story about what the Fire Department was doing, and what the Community Brigade was doing as a sanctioned county fire component but also a resident in the area.”

Andrew Smith
Assistant Fire Chief
Los Angeles County Fire Department

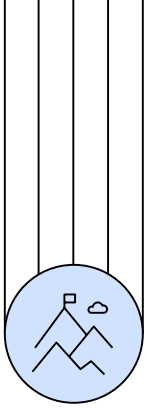
Case study

BeforeDuringAfter.com

Disaster management for small businesses in Texas

Rebecca Davio
Director (retired)
Institute for Government Innovation
Texas State University

Matthew Pantuso
Senior Grant Coordinator
Institute for Government Innovation
Texas State University

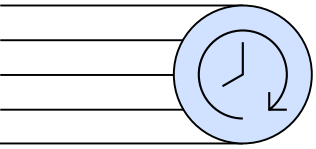


The challenge

Information gaps put small businesses and communities at risk

Small businesses are the economic backbone of Texas, representing 99% of all businesses and employing almost half the state's workforce. When disaster strikes, many businesses are forced to close—and of those, 25% never reopen. Despite their economic importance, there is a lack of clear, accessible guidance to help small businesses prepare for, respond to, and recover from emergencies. Information is scattered across numerous agencies, websites, and formats, making it difficult to find timely, consistent, and authoritative support. This fragmentation leaves small businesses vulnerable, threatening the resilience of entire communities and the health of the state's economy.

Moreover, disaster resilience is not one-size-fits-all. Each Texas community has its own unique mix of risks and resources. Whether it's a rural town or an urban center, truly resilient solutions must be adaptable to stay relevant and effective, whenever and wherever disaster strikes.



The response

Turning fragmentation into focus with tailored, trusted, and timely guidance

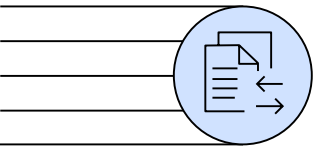
Organized around three phases—before, during, and after a disaster event—BeforeDuringAfter.com officially launched in June 2024, just in time to help Texas small businesses prepare for hurricane season. The platform provides a free, centralized web hub to help small businesses with preparation, response, and recovery.

Each component provides important information:

- **"Before"** offers planning tools, simplifies local emergency alert signups, and encourages community engagement.
- **"During"** features real-time, localized updates from government agencies, and information about weather, utilities, transportation, and assistance.
- **"After"** guides businesses through a structured recovery timeline, outlining both urgent and long-term steps for getting back to business.

The website includes more than 10,000 authoritative sources, but uniquely, it breaks these resources down by geography—so users only see the information that is relevant for their specific community. The majority of these sources are social media links, including embedded feeds, creating a one-stop shop for disaster information.

Critically, BeforeDuringAfter.com was not built in isolation. A broad coalition of partners—including experts from higher education, emergency response, insurance, philanthropy, economic research, banking, and local business networks—came together to address the challenge. This diverse coalition combines technical capacity and on-the-ground insights to address the real needs of Texas businesses and communities.



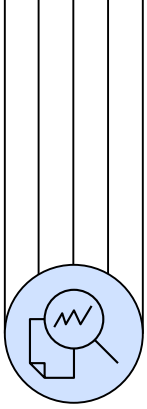
Outcomes and benefits realized

- **Consolidating resources.** BeforeDuringAfter.com has filled a critical need by consolidating previously fragmented resources, making it easier for business owners to access trusted, authoritative information when it's needed most.
- **Improving access.** One of the most common ways for governments to get information out is through social media, but not everyone uses social media or follows local government accounts. BeforeDuringAfter.com allows anyone, business owners and community members alike, to see recent posts without accessing specific social media sites.
- **Adopted by local governments.** The platform's credibility and value have been recognized by local governments. Wise County and the City of Decatur are leading the way by signing memoranda of understanding designating BeforeDuringAfter.com as their official business preparedness platform. Working with local governments builds credibility and community reach. For local officials, offering a trusted preparedness resource demonstrates proactive leadership, strengthens public trust, and builds stronger, more resilient communities.
- **Learning from disaster.** During the July 2025 flooding disaster in Central Texas, BeforeDuringAfter.com participated in real-time regional and state volunteer meetings to identify trusted, local resources and donation links to share on the platform. Broad-based participation led to valuable connections with important state volunteer leaders and provided key insights into the recovery process. Additionally, the value of BeforeDuringAfter.com was acknowledged by an invitation from the Governor's Office to attend a Kerrville Small Business Disaster Recovery Fair.

– **Community outreach.** Through seminars, conference presentations, and podcast appearances, the BeforeDuringAfter.com team has directly engaged with over 500 Texans—including small business owners and local emergency managers.

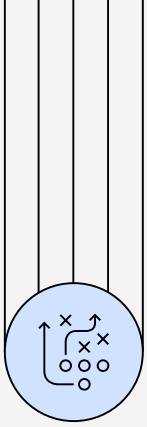
– **Platform analytics.** Google Analytics shows that more than 12,000 unique users have accessed the platform, generating over 40,000 page views since launch. This strong digital engagement underscores the real demand for practical, centralized preparedness and recovery guidance.

– **Social media and mailing list growth.** The presence of BeforeDuringAfter.com on LinkedIn, Facebook, and Instagram has steadily expanded, and content shared through these channels has generated more than five million impressions, reflecting growing awareness and resonance statewide. The mailing list has surpassed 100 subscribers, furthering direct audience engagement.



Lessons learned and critical success factors

- **Trusted resources are critical.** In emergencies, people turn first to sources they trust. Providing guidance and updates from authoritative, verified organizations is essential to help business owners act with confidence. BeforeDuringAfter.com adopts a systematic approach to vetting every resource, drawing from official government agencies, reputable nonprofits, and proven local partners.
- **All disasters are local.** Disasters begin and end at the community level. The value of information depends on its relevance to what is happening here, right now. Recognizing that different communities often turn to different spokespeople or organizations as their primary source of emergency updates, BeforeDuringAfter.com delivers highly localized content so users see the alerts, contacts, and support services specific to their city or county.
- **Cutting through the chatter focuses attention.** Information overload can be as dangerous as scarcity, especially during crises. Social media and web searches may surface incomplete, outdated, or even misleading posts—while critical updates may be buried by algorithms or drowned out in comments. Platform design is intentionally streamlined without immediately visible comments, viral chatter, or distracting noise.
- **Trusted partners are necessary.** Responsiveness and credibility are built on relationships. Emergency managers remain the trusted bridge between public agencies and the local businesses, while volunteer groups play key roles in both response and long-term recovery. Active engagement with these frontline leaders helps ensure that the platform's resources are shaped by—and continuously aligned with—the real needs and voices of the community.
- **Every disaster is unique.** The mix of threats, needs, and available resources can vary widely among hurricanes, fires, floods, or utility outages—and even from one community to the next. Flexibility is critical at every stage. BeforeDuringAfter.com is built to adapt rapidly. As new information, services, or donation channels become available, the platform can be quickly updated.



What's next

The BeforeDuringAfter.com team is committed to continuous improvement, both in the breadth of resources offered and in the depth of support provided to small businesses in Texas and beyond.

- **Expanding practical tools and guidance.** Building on user feedback, the platform will soon release checklists for preparedness and response—giving business owners step-by-step guidance to assess risks, secure operations, and protect employees before disaster strikes. At the same time, more recovery resources are being added, linking businesses to financial assistance, legal help, mental health support, and the latest state and federal disaster recovery programs.
- **Building leadership resources.** In December 2024, BeforeDuringAfter.com welcomed Justen Noakes as Executive Director. With more than 20 years of experience in emergency management, Justen brings a depth of expertise and crucial relationships throughout the state.
- **Growing coalition and community partnerships.** The BeforeDuringAfter.com founding coalition continues to grow. New partners bring fresh perspectives, regional networks, and specialized knowledge, helping to ensure that the platform remains both relevant and trusted within local communities.
- **Accelerating statewide impact.** BeforeDuringAfter.com is gaining traction as both a digital resource and valued partner for businesses and local governments. As platform features are expanded and leadership deepens, the program is well-positioned to support even more small businesses, accelerating statewide resilience in the face of disasters and other unpredictable events.

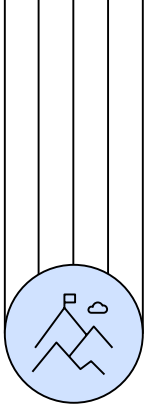
> "Everyone in Texas should bookmark this app. It helps you before/during/after a disaster—it has all the counties in Texas and all the links you need. I love this app! And it is free and free is good."
>
> ***Janice Jucker***
> *Three Brothers Bakery*
> *Houston, TX*

Case study

Florida DOT's online data viewers

Scenario planning tools for building transportation resilience

Meiqing Li, Ph.D., AICP
Assistant Professor
School of Public Administration
University of Central Florida



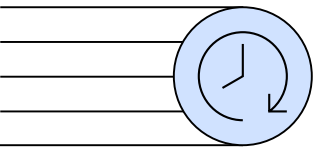
The challenge

Climate-related risks to critical transportation infrastructure

As recent history illustrates, Florida's transportation system is vulnerable to extreme weather events such as hurricanes, floods, and rising sea levels. In 2023, a record 25-inch rainfall flooded Fort Lauderdale streets and Hurricane Idalia severely damaged roads and bridges in northern Florida. In 2022, Hurricane Ian inflicted extensive damage to transportation infrastructure along Florida's southwest coast. The scale and complexity of Florida's highway system—spanning over 12,000 centerline miles of state-maintained roads and 7,000 bridges—compounds exposure to climate risks.

Climate-related hazards, combined with a growing population and increasing highway traffic, underscore the urgency to boost the resilience of Florida's transportation system—a critical asset for moving people and freight, supporting safety, maintaining quality of life and economic prosperity, and preserving environmental quality.

Federal and state mandates have reinforced this priority for the Florida Department of Transportation (FDOT) to integrate resilience into long-range planning. The Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation (PROTECT) Program, launched by the US Department of Transportation, incentivizes states to develop resilience improvement plans. Florida Statutes also require FDOT to develop a Resilience Action Plan, with the Florida Department of Environmental Protection (FDEP) Resilient Florida Program and provide funds for resilience planning and implementation.



The response

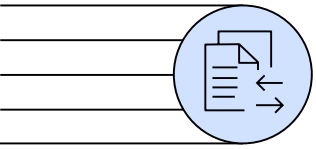
A statewide Resilience Action Plan and online scenario planning tools

FDOT developed its Resilience Action Plan (RAP) in June 2023, outlining strategies to improve the resilience of the State Highway System (SHS). The RAP assessed vulnerability to four water-related hazards: rainfall flooding, storm surge, sea level rise, and tidal flooding. The vulnerability assessment identified potential impacts, developed prioritization tiers, and compiled a project list.

The assessment process leverages the University of Florida's online Sea Level Scenario Sketch Planning Tool. This integrates datasets from the Federal Emergency Management Agency (FEMA) and the National Oceanic and Atmospheric Administration (NOAA) to model hazard exposure under three scenarios: a 100-year floodplain, a storm surge for a Category 3 hurricane, and a sea level rise of two feet. Geographic areas with greater exposure to hazards were assigned to higher vulnerability tiers.

FDOT then identified planned SHS projects that are located within high- and medium-priority geographic areas. The list includes total cost estimates for each project that incorporate resilience into project development, design, construction, operations, and maintenance activities.

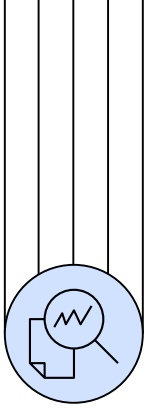
Using the vulnerability assessment data, FDOT developed a statewide geographical information system (GIS) database integrated with the RAP data viewer, the area of interest (AOI) tool, and the resilience report in the environmental screening tool. These online mapping and visualization tools display and summarize analysis of current and future flood exposure for a user-specified AOI in Florida.



Outcomes and benefits realized

The statewide database and public data viewer have transformed FDOT's resilience planning workflow, allowing staff and other users to systematically plug in different hazard scenarios and evaluate their potential impacts. These include:

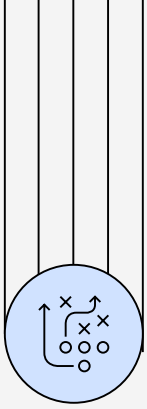
- **Rapid analysis.** With the AOI tool, a user can draw on the map their desired area for analysis and request a resilience report. It takes approximately one to three minutes to run the automated spatial overlays in the AOI. Once completed, the tool displays a report link.
- **Standardization.** Standardized data processing facilitates resilience planning for project development and environment (PDE) and design of all FDOT projects, while streamlining coordination with metropolitan planning organizations (MPOs), counties, and coastal cities.
- **Funding readiness.** The grant-ready project list helps develop a prioritization pipeline to pursue federal and state resilience funding opportunities.



Lessons learned and critical success factors

Collaboration with community stakeholders is essential. FDOT continues to develop partnerships and provide technical assistance to local government entities for developing and enhancing resilience tools.

- **Transparent and repeatable analysis.** The standardized visualization scenario planning tools increase the transparency and accuracy of vulnerability assessments, helping to build trust and capability for scaling the resilience planning to MPOs and local governments across the state.
- **Forward-looking scenarios.** Instead of focusing on historical events, the vulnerability tiers and thresholds for the assessment are based on predictions of hazards and long-range transportation planning horizons.
- **Community collaboration.** FDOT actively sought and considered input from community stakeholders throughout the resilience action planning process. It continues to develop partnerships and provide technical assistance to MPOs and local governments for developing and enhancing resilience tools, including databases, visualization, and reporting tools.
- **Interagency coordination.** FDOT coordinates with state agencies including the Florida Department of Environmental Protection (FDEP) and the Florida Department of Economic Opportunity (FDOE). FDOT also joins efforts with research institutions including the University of Florida and the University of South Florida to compile a standardized statewide database.



What's next

FDOT is enhancing its statewide database by adding other data sources. These include historical records of flooding, damage or repairs, road elevation data for all roads and bridges, as well as records for other shocks and stress events such as extreme heat, wildfires, sinkholes, and tornadoes. New information, including tidal and storm surge flooding, rainfall, and compound flooding datasets will be added to the statewide database as it becomes available.

In addition to enhancing the database, FDOT is also developing and enhancing the AOI tool, cost-benefit analysis tools, and prioritization tools that evaluate potential impacts of hazards on transportation infrastructure, as well as the costs and benefits of transportation resilience strategies. FDOT is also regularly updating transportation system vulnerability assessments based on best available data, and consistent standards and methods to incorporate risk management and decision-making frameworks into all project phases.

Open-source data models and replicable methodologies can be adopted by other jurisdictions. The Florida experience also suggests that, very early in the process, state and local governments need to coordinate with community stakeholders and academic and agency partners to address data gaps and align outputs with state and federal funding opportunities.

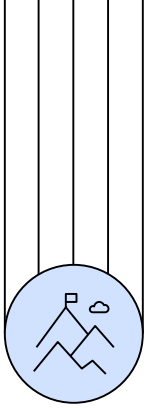
Florida's scenario planning tools, especially the Sea Level Scenario Sketch Planning Tool, are informing other states' resilience efforts. DOTs in California, Washington, Maryland, Massachusetts, and Tennessee have adopted similar approaches using GIS-based platforms for climate vulnerability assessment and transportation resilience scenario planning.

Case study

Great Britain’s Emergency Services Network

Providing the first responder community with faster access to more life-saving data

Imtiaz Mufti
Senior External Communications Lead
IBM



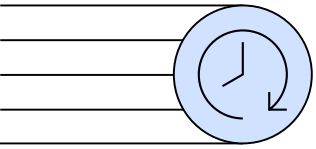
The challenge

A legacy emergency communication system reaches the end of its lifespan

For over 20 years, more than 300,000 UK police, fire, and ambulance personnel have relied on the Airwave system for emergency communication. Covering England, Scotland, and Wales, Airwave includes thousands of handheld devices and units in vehicles, aircraft, and control rooms.

While the system continues to work as intended, it is aging and expensive to operate. It also doesn't have the capacity to support voice, video, and data communications across modern telecom networks. This impacts the network's ability to share high-definition images, video, and precise location data in real time, which can limit access to crucial information during quickly evolving emergencies.

In life-threatening situations where every second counts, bringing more advanced communication capabilities to first responders will redefine how emergency services will be delivered in Great Britain.



The response

Harnessing advanced technology for mission-critical emergency communications

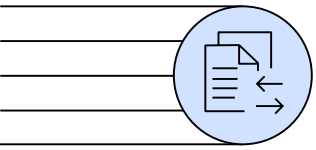
To take advantage of advanced mobile technology and benefit from lower costs by sharing a commercial 4G network, the UK Home Office is replacing the Airwave network with the Emergency Services Network (ESN). ESN will be delivered through the Emergency Services Mobile Communications Programme (ESMCP) in collaboration with a consortium of partners including IBM, Ericsson, Samsung Electronics, Frequentis, Exponential-e, and Palo Alto Networks.

ESN is designed to deliver:

- Secure and resilient mission-critical communications to the UK emergency services and first responder communities.
- A common voice and data platform to help first responders access and share data more effectively.

– An application that runs on handsets or fixed vehicle devices and incorporates user feedback for continuous improvement.

– A total of 20,840 new and upgraded cell sites to facilitate coverage across Great Britain, including 19,795 existing sites which have been updated, the construction of 1,045 new 4G sites, including 292 sites to provide high-speed network coverage in some of Great Britain's most rural and remote regions.

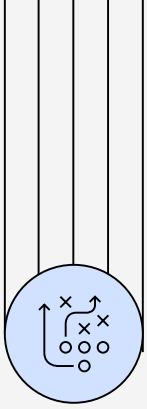


Outcomes and benefits realized

ESN's mobile technology will make it possible for emergency service communications to take priority over other network traffic, even during peak times. It will enable first responders to share vital data, information, and expertise quickly and securely from the frontline when and where it is needed most.

As mobile communication technology evolves, ESN will give emergency services personnel access to up-to-date products and applications. They will have the flexibility to choose from available tools and technologies to meet specific operational requirements.

Investment in ESN infrastructure will also deliver improvements to mobile network coverage. This is already enabling up to 1,000 calls to be made from any 4G enabled mobile phone, even in remote regions where connectivity has often been inconsistent. Finally, ESN is expected to yield significant reductions in operational costs by using commercial networks and consolidating user communications and devices, with the goal of providing long-term value to taxpayers.



What’s next

The transition from Airwave to ESN will follow a rigorous testing and trial process, working in collaboration with the frontline people who will use the system. This will help ensure that ESN delivers the public safety features and functions required by the emergency services and first responder community.

Rather than waiting for every network element to be completed, the focus will be on developing and testing elements as they become available. This will enable continuous improvement to meet the changing needs of first responders and support secure and resilient communications well into the future.

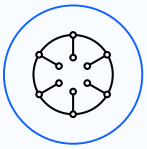
“Every day our brave emergency services help members of the public facing life-or-death situations. We must do everything we can to maximize the chances of successful outcomes, and communications between frontline staff is critical to ensuring this…IBM will be an important part of bringing the Emergency Services Network online.”[9]

Dame Diana Johnson
UK Minister for Policing,
Fire and Crime Prevention

December 2024

Leadership action and readiness guide

The most effective leaders know that resilience is not built in the moment of crisis—it is the result of deliberate choices made long before disaster strikes. The following four imperatives distill lessons from real-world responses into practical steps leaders can take to strengthen readiness, speed recovery, and protect lives. Each action is paired with self-check questions designed to spark candid assessment and reveal gaps that could determine success or failure.



Distribute operational capacity to the point of impact.
The first minutes and hours of any crisis can determine its trajectory and impact. Excessive centralized approval, resources, or direction requirements can turn what could be a contained incident into a cascading disaster. Leaders must design systems where the people on the ground—local agencies, trained community groups, and infrastructure operators—are equipped and authorized to act decisively without delay. This means pre-positioning assets, decentralizing decision authority, and helping to ensure redundancies so that a single failure does not paralyze the entire response. True resilience is built when capability is not concentrated at the top, but embedded at every layer, ready to activate the moment conditions change.

Leader's self-check:

- Do our local teams and partners have both the authority and the resources to act independently in the first critical hours?
- Have we clearly identified the capabilities that must be available at the local or regional level to avoid bottlenecks?
- Do I have the ability to quickly and flexibly deploy or allocate the resources most needed in the first 24 to 48 hours?

Leaders must commit to building systems where every responder—whether a public agency, private partner, or community volunteer—can access the same real-time, location-specific intelligence.

Make actionable information universally accessible.
In a fast-moving emergency, outdated, incomplete, or siloed information can be as dangerous as having none. Leaders must commit to building systems where every responder—whether a public agency, private partner, or community volunteer—can access the same real-time, location-specific intelligence. This requires interoperable data platforms, open dashboards, and eliminating proprietary bottlenecks that slow the flow of vital information. Accessible data isn't just about transparency; it's about speed, trust, and coordination under pressure. If the right people can't see the right information at the right moment, critical opportunities will be lost, and lives will be put at risk.

Leader's self-check:

- Do I have lines of communication open with local leaders in my jurisdiction—do I understand their strengths and weaknesses?
- Can every relevant responder, regardless of role or affiliation, access the same critical information in real time?
- Are our data systems designed for interoperability, or do they create silos that impede decision-making?

Build integrated networks that function under stress.
Resilient systems must be maintained through constant connection and testing. The strongest emergency networks are not improvised in the heat of a crisis; they are forged in advance through formal agreements, joint exercises, and clear technical standards. Leaders must cultivate partnerships across government, industry, and community sectors that can adapt and scale when the unexpected happens. These networks must be "always on" with established trust, shared objectives, and the ability to function even if traditional command structures are disrupted. When environments turn chaotic, the strength of preexisting bonds will determine how fast and effectively the whole system can move.

Leader's self-check:

- Have we tested our networks under realistic, high-stress scenarios to confirm they work as intended?
- Are relationships and protocols robust enough to help ensure that coordination will hold—even when normal command structures are disrupted?

Institutionalize forward-looking, data-driven planning.
Long-term resilience depends on the ability to anticipate risks before they materialize. Leaders must embed predictive modeling, standardized hazard data, and resilience criteria into the earliest stages of planning, budgeting, and design. This means moving beyond only historical data and adopting future-oriented scenarios that capture emerging risks, such as new hazard patterns or infrastructure vulnerabilities. Integrating this approach into normal operations helps ensure that every major decision—whether on capital projects, land use, or public services—strengthens the system against future shocks, avoids locking in current vulnerabilities, and considers the lifecycle costs of major investments.

Leader's self-check:

- Are future risk scenarios factored into planning, procurement, and funding decisions?
- Do we have standardized, accessible data frameworks that enable all agencies and partners to work from the same future-focused assumptions?

IBM Center for The Business of Government

The IBM Center for The Business of Government connects research to practice, applying scholarship to real-world issues and decisions for government. The Center stimulates research and facilitates discussion of new approaches to improving the effectiveness of government at the federal, state, local, and international levels. Our intent is to spark creativity in addressing pressing public sector challenges—crafting new ways of improving government by identifying trends, ideas, and best practices in public management that can help government leaders respond more effectively to their mission and management priorities.

National Academy of Public Administration

The National Academy of Public Administration is an independent, nonprofit, and nonpartisan organization established in 1967 and chartered by Congress in 1984.

It provides expert advice to government leaders in building more effective, efficient, accountable, and transparent organizations. To carry out this mission, the Academy draws on the knowledge and experience of its over 950 Fellows—including former cabinet officers, members of Congress, governors, mayors, and state legislators, as well as prominent scholars, career public administrators, and nonprofit and business executives.

The Academy helps public institutions address their most critical governance and management challenges through in-depth studies and analyses, advisory services and technical assistance, congressional testimony, forums and conferences, and online stakeholder engagement. Learn more about the Academy and its work at https://www.NAPAwash.org.

Case study approach and methodology

The IBM Institute for Business Value, in collaboration with the IBM Center for The Business of Government and the National Academy of Public Administration, issued a call for proposals to learn about real-world examples of how government organizations implemented strategies and capabilities that strengthened mission resilience at the community level, boosted future readiness, and increased local capacity to respond to disruptive events.

Five key domain areas were identified for case study development, including emergency preparedness and response, cybersecurity, supply chain, climate sustainability, and workforce development. The case studies could be from anywhere in the world and apply to any level of government. Examples should have been piloted or implemented between 2022 and 2024. Submissions were evaluated for suitability to the challenge theme and across evaluation criteria including recency, replicability, transferability, and innovation. Case studies included in this report were selected based on the quality and impact of their solution.

Case study authors

Community Brigades

Living with recurring fire threat in California

Shirley Feldmann-Jensen DPPD, MPH

Lecturer and Program Coordinator, Emergency Services Administration MS Program
California State University, Long Beach
linkedin.com/in/dr-shirley-feldmann-jensen-09b43261/

Sara O'Connor, Ph.D.

Associate Director, Geo-SpACE Lab and Geography Department Lecturer
California State University, Long Beach
linkedin.com/in/sara-o-connor-55761422/

Steven Jensen, DPPD

Professor, Emergency Response Services
California State University, Long Beach
researchgate.net/profile/Steven-Jensen-2

Juliet Musso, Ph.D.

Associate Professor of Public Policy and Management
University of Southern California
linkedin.com/in/juliet-musso-30b7793/

Brent Woodworth, CEO

Los Angeles Emergency Preparedness Foundation
linkedin.com/in/brent-woodworth/

Florida DOT's online data viewers

Scenario planning tools for building transportation resilience

Meiqing Li, Ph.D., AICP

Assistant Professor, School of Public Administration
University of Central Florida
linkedin.com/in/meiqingli/

BeforeDuringAfter.com

Disaster management for small businesses in Texas

Rebecca Davio

Director (retired)
Institute for Government Innovation
Texas State University
linkedin.com/in/rebecca-davio/

Matthew Pantuso

Senior Grant Coordinator
Institute for Government Innovation
Texas State University
linkedin.com/in/matthew-pantuso-47b0b17/

Emergency Services Network

Providing Great Britain's first responders with faster access to more life-saving data

Imtiaz Mufti

Senior External Communications Lead
IBM
linkedin.com/in/imtiaz1981/

Acknowledgments

We extend our sincere gratitude to the Future Shocks Core Team for their leadership, insight, and unwavering commitment to bringing these important stories of community-based resilience to light. Their contributions have been instrumental in shaping this initiative and amplifying real-world examples of government innovation and preparedness. This initiative and report would not have been possible without their dedication and collaboration.

Cristina Caballe Fuguet
Vice President
Global Public Sector, IBM

Daniel Chenok
Executive Director
IBM Center for The Business of Government

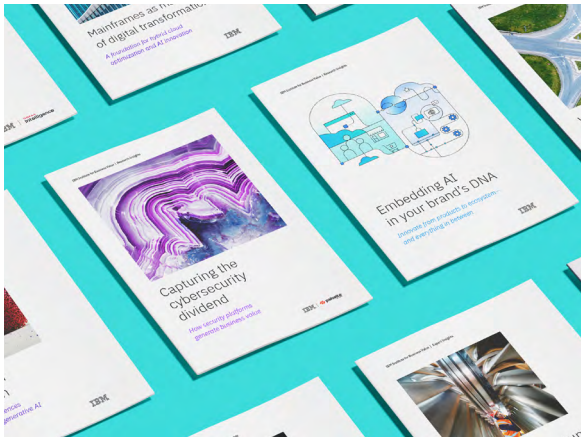
Ruth Gordon
Operations Manager
IBM Center for The Business of Government

James Higgins
Research Analyst
National Academy of Public Administration

Joseph P. Mitchell, III
Director of Strategic Initiatives &
International Programs
National Academy of Public Administration

Kee Won Song
Government Research Leader
IBM Institute for Business Value

Dave Zaharchuk
Research Director
IBM Institute for Business Value



Subscribe to our IdeaWatch newsletter

Just the insights. At your fingertips. Delivered monthly.

Brought to you by the IBM Institute for Business Value, ranked #1 in thought leadership quality by Source Global Research for the second consecutive year.

Research-based thought leadership insights, data, and analysis to help you make smarter business decisions and more informed technology investments.

Subscribe now: ibm.co/ideawatch

Notes and sources

1 Cart, Julie. "California infernos in January? Why wildfire season keeps getting longer and more devastating." Stateline. January 9, 2025. https://stateline.org/2025/01/09/california-infernos-in-january-why-wildfire-season-keeps-getting-longer-and-more-devastating/

2 Stiles, Matt, and Jon Schleuss. *LA Times*. December 3, 2018. https://www.latimes.com/projects/la-me-malibu-woolsey-destruction-map/

3 Hoffman, Riley, Leah Sarnoff, Mary Kekatos, and William Mansell. *ABC News*. March 7, 2025. "LA fires aftermath: How people are rebuilding after losing almost everything." https://abcnews.go.com/US/la-wildfires-aftermath-insurance-housing-rebuild-update/story?id=119209482

4 S.J. Jensen, S. Feldman-Jensen, and B. Woodworth. "The 2018 Woolsey Fire: A Catalyst for Change." Los Angeles Emergency Preparedness Foundation. December 2019. https://laepf.org/woolsey-fire

5 Comfort, Louise K. "Crisis Management in Hindsight: Cognition, Communication, Coordination, and Control." *Public Administration Review*. December 2007. https://www.jstor.org/stable/4624696

6 Agrawal, S., and M.C. Monroe. "Using and improving social capital to increase community preparedness for wildfire." In McCaffrey, S.M., tech. ed. "The public and wildland fire management: social science findings for managers." Gen. Tech. Rep. NRS-1. US Department of Agriculture, Forest Service, Northern Research Station: 163-167.

7 Cinner, J.E., W.N. Adger, E.H. Allison, M.L. Barnes, K. Brown, P.J. Cohen, S. Gelcich, C.C. Hicks, T.P. Hughes, J. Lau, N.A. Marshall, and T.H. Morrison. "Building adaptive capacity to climate change in tropical coastal communities." Nature Climate Change. January 2018. https://doi.org/10.1038/s41558-017-0065-x

8 Agrawal, S., and M.C. Monroe. "Using and improving social capital to increase community preparedness for wildfire." In McCaffrey, S.M., tech. ed. "The public and wildland fire management: social science findings for managers." Gen. Tech. Rep. NRS-1. US Department of Agriculture, Forest Service, Northern Research Station: 163-167.

9 "Home Office and IBM to Partner on Emergency Services Network." IBM News Release. January 15, 2025. https://uk.newsroom.ibm.com/Emergency-Services-Network-announcement

IBM Corporation
New Orchard Road
Armonk, NY 10504

Produced in the United States of America | November 2025

This document is current as of the initial date of publication and may be changed by IBM at any time. Not all offerings are available in every country in which IBM operates.

THE INFORMATION IN THIS DOCUMENT IS PROVIDED “AS IS” WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, INCLUDING WITHOUT ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND ANY WARRANTY OR CONDITION OF NON-INFRINGEMENT. IBM products are warranted according to the terms and conditions of the agreements under which they are provided.

This report is intended for general guidance only. It is not intended to be a substitute for detailed research or the exercise of professional judgment. IBM shall not be responsible for any loss whatsoever sustained by any organization or person who relies on this publication.

Examples presented are illustrative only. Actual results will vary based on client configurations and conditions and, therefore, generally expected results cannot be provided.

https://ibm.biz/community-resilience

IBM