



Why extreme weather is now an enterprise risk for utilities



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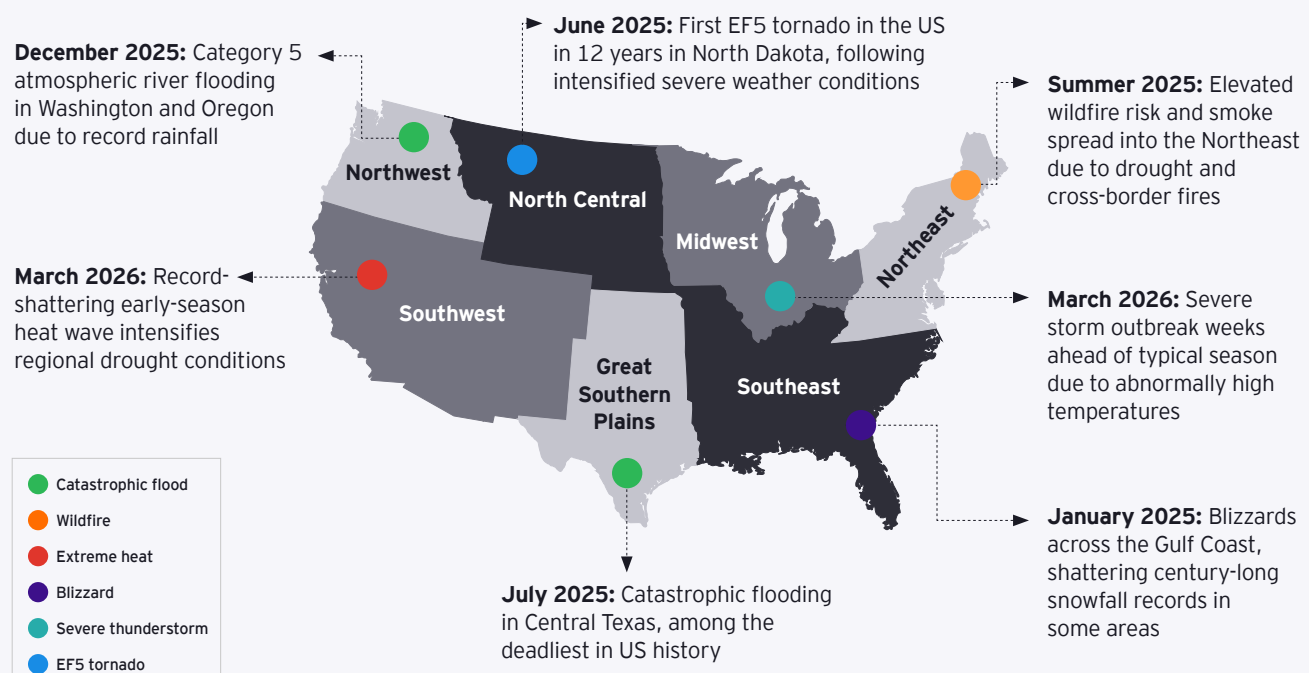
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In [Part 1 of this series](#), we explored the changing risk-driven landscape for utilities and the need to evolve to new enterprise risk management (ERM) capabilities that truly support executives and management. Building on that foundation, this second installment focuses on risk management, exploring how utilities can mitigate the emerging external risk of extreme weather threats by translating insights into action and shifting from reactive response to a more proactive, anticipatory approach.

Challenges from emerging extreme weather threats

Extreme weather is creating unprecedented challenges for utilities across the country, including hurricanes, floods, freezing temperatures and wildfires.

Key extreme weather threats by region



Sources:

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Extreme weather is rapidly reshaping the risk profile of utilities, creating enterprise-wide challenges that extend far beyond individual events. As weather-driven disruptions become more frequent and interconnected, utilities face growing exposure across operations, infrastructure, financial performance, regulatory oversight and public safety. Addressing this evolving risk landscape requires more than improved preparedness; it demands an integrated approach that connects extreme weather insight, governance and decision-making at the enterprise level.

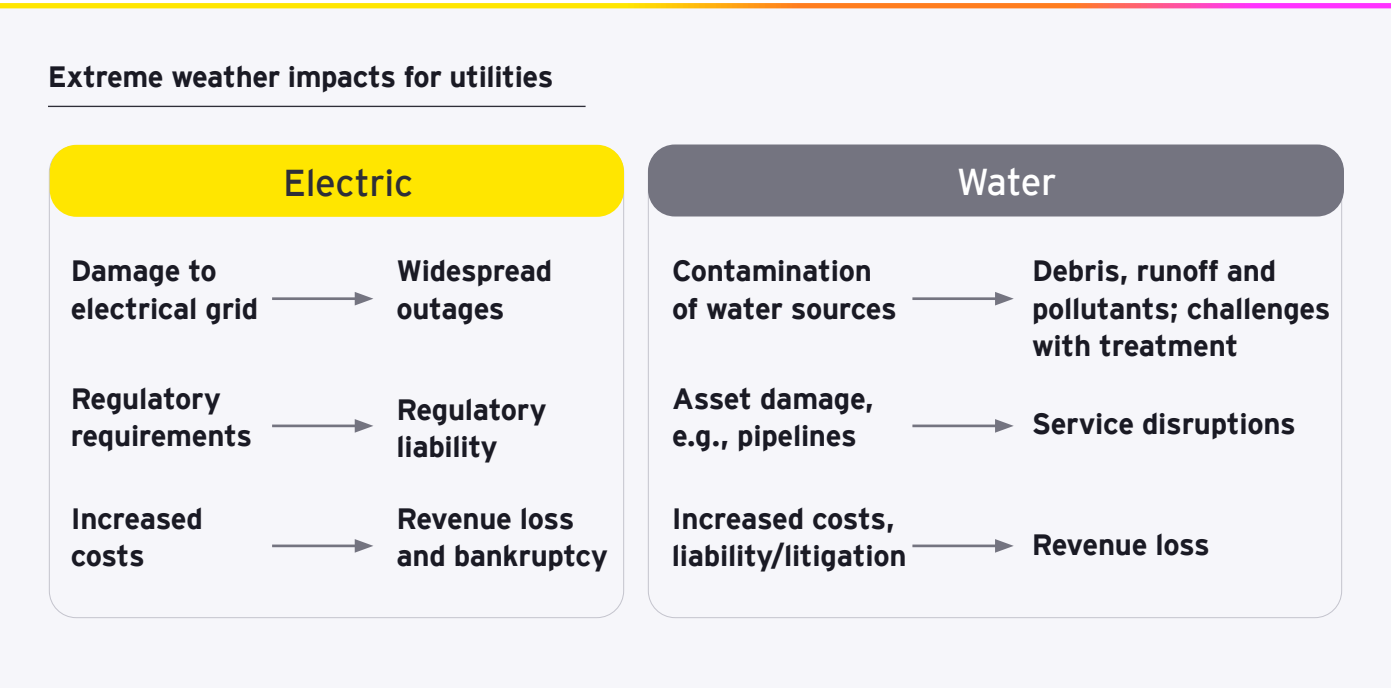
Extreme weather is not just an operational issue

Utilities have made meaningful progress over the past decade in identifying climate-related risks. In more mature organizations, this work has included assessing vulnerabilities across assets and service territories, often in response to regulatory and disclosure requirements. These efforts have strengthened preparedness and improved visibility into exposure. The challenge now is shifting from risk identification to embedding those insights into enterprise-level prioritization, so that mitigation efforts focus on the greatest threats to business performance, resilience and public safety.

Extreme weather is no longer an episodic or regionally contained risk for utilities. Increasingly, it is a systemic, enterprise-wide risk, defined by the growing frequency, severity and geographic dispersion of events. These events also trigger compounding effects for infrastructure, operations, customers and communities.

While wildfires have been among the most visible examples of this shift, utilities in regions not historically exposed are now having to consider them alongside other hazards such as heat waves, drought, floods, hurricanes and winter storms. These events rarely occur in isolation. For instance, high winds may coincide with prolonged drought, extreme heat can strain generation and transmission assets while also increasing demand, and flooding can disrupt substations, supply chains and workforce availability simultaneously. The result is a cascade of risks that extend well beyond physical damage to assets

For utilities, these cascading impacts can drive operational disruption, financial exposure, regulatory scrutiny, reputational risk and, most critically, public safety consequences. As extreme weather events intensify, responding to them only after they occur, through retroactive recovery efforts, is no longer sufficient. This approach often leaves critical gaps across climate data, asset-level decision-making, emergency response and enterprise risk management oversight.



The resulting shift toward an ERM-informed approach underscores a central reality for utilities leaders: managing extreme weather risk is no longer just a matter of preparedness and response. Rather, it now requires a coordinated, enterprise wide approach that integrates climate insights, strategy and planning, design standards, operational controls, key decision-making, financial optimization, risk management and governance structures. This effort enables faster, more informed decisions before, during and after events.

Challenges utilities face in managing extreme weather impacts as an enterprise risk

1

Fragmented structures that impact visibility, decision-making and governance. As extreme weather risks intensify, many utilities have made measurable progress strengthening their preparedness and response capabilities. Yet in practice, risk exposure often persists because critical capabilities remain fragmented across the enterprise. These gaps typically emerge at the intersection of data, decision-making and governance, which is precisely where extreme weather risks are most difficult to manage.

2

Data access. Limited access to real-time data also remains a common challenge, often because many utilities lack the infrastructure needed to continuously collect and analyze environmental and operational data at scale. Without timely, location-specific insight into evolving conditions, leaders may struggle to make informed decisions during fast-moving weather events, resulting in uneven preparedness and response across service areas.

3

Limited or underdeveloped predictive analysis and models. In addition, utilities' predictive capabilities are often underdeveloped for these types of risks. While historical analysis and scenario planning remain important, existing models may not fully account for the range of climate scenarios utilities are increasingly facing. Organizations that have not invested in advanced analytics and forward-looking modeling capabilities may find themselves reacting to events rather than anticipating how extreme weather risks will unfold and where intervention is most critical. In many organizations, forward-looking climate scenarios exist in pockets but are not consistently embedded into planning, design standards or investment decisions.

4

Impacts treated as functional or operational issue vs. an enterprise-wide strategic imperative. Integrating key insights into the business is another persistent constraint in this environment. For many utilities, extreme weather risk is not yet fully embedded into enterprise risk management, operational planning or capital allocation processes. When extreme weather events are treated as stand-alone operational concerns rather than holistic enterprise risks, efforts to assess and mitigate can become fragmented, ultimately limiting opportunities to invest in related ERM efforts in a coordinated, strategic way.

5

Existing business continuity management (BCM) programs that are reactive and focused on response and recovery. Additionally, utilities that bring a reactive mindset to extreme weather risk often focus primarily on responding after events have already occurred. As a result, these organizations often face increased safety, financial and regulatory exposure. For these reasons, shifting toward a culture of resilience where preparedness, prevention and continuous improvement are embedded into day-to-day operations is key.

6

Insufficient stakeholder engagement and planning. Ineffective [customer and community engagement](#) is often another missed opportunity for utilities as extreme weather risks grow in scale and complexity. In this context, clear and timely communication before, during and after events is critical to protecting public safety and maintaining trust. While some utilities have established strong engagement programs, others continue to develop these capabilities amid evolving expectations from regulators and stakeholders.

7

Challenges in quantifying and prioritizing resilience value: While resilience investments can reduce long-term risk, their value is often framed qualitatively or tied to compliance rather than measured and tracked like other enterprise assets. As a result, resilience benefits may be deprioritized amid affordability pressures or competing capital demands.

Extreme weather planning today vs. proactive planning for tomorrow's risk

Today

- **Planning and design:** Historical weather assumptions; hazard studies episodic; standards updated periodically
- **Operations and restoration:** Strong storm response muscle; event playbooks; mutual aid; restoration execution; optimized for response
- **Investment and portfolio:** Projects justified one by one, benefits framed as reliability or compliance; resilience value hard to monetize
- **Data, metrics and governance:** Reliability metrics dominate; resilience metrics inconsistent; ownership fragmented
- **Climate risk analysis:** Historically has been focused on identifying risks and vulnerabilities in order to comply with regulations; limited work so far to translate this into metrics the business can use

What prevents proactive measurable resilience

1

Forward-looking climate scenarios aren't embedded.

They exist in pockets but are not consistently used as the basis for planning, design or investment decisions.

2

Resilience value isn't measured like an asset.

Value is not consistently quantified, tracked or tied to top-level KPIs. Affordability pressure means qualitative arguments get deprioritized.

3

Governance and incentives are misaligned.

Responsibility spans functions and stakeholders, but decision rights accountability and incentives do not line up.

4

Analysis isn't decision-ready.

Climate/weather analysis isn't translated into consistent, decision-grade metrics that planners, operators and finance teams can use to compare options and make trade-offs.

5

There is a lack of system-wide optimization.

Resilience is too often delivered project by project; investments aren't routinely optimized as a portfolio to maximize risk reduction per dollar across the system.

Taken together, these challenges highlight a broader opportunity for utilities leaders to move beyond siloed approaches and treat extreme weather risk as an enterprise issue that requires data integration, aligned governance and proactive decision-making. While addressing these areas won't eliminate risk entirely, building these capabilities can empower utility leaders to manage extreme weather events more effectively amid increasing uncertainty.

An integrated framework for managing extreme weather events across the enterprise

Recognizing extreme weather as a major enterprise risk is a critical first step, but this insight alone won't reduce exposure. To move from understanding risk to managing it

with greater confidence, utilities must engage in coordinated action across the organization, aligning enterprise risk management, strategy and planning, operations and crisis preparedness teams.

With this in mind, leading utilities are increasingly adopting an end-to-end approach that connects risk assessment, prioritization and mitigation planning as part of a single, continuous process. Rather than treating extreme weather as a series of singular events, this approach enables organizations to evaluate inherent exposure, identify vulnerabilities, and determine where controls and investments will have the greatest impact.

A systematic approach to enterprise resilience

Pre-disruption (proactive readiness)

The ability to better sense and resist material threats. This includes refining capabilities to scan internal and external environments, spot emerging trends, identify points of vulnerability, and take proactive measures to improve resiliency levels.

During disruptions (recovery speed)

The ability to recognize and respond in an agile manner to sudden events that threaten the organization; leverage nonroutine leadership capabilities to mobilize agile responses which minimize impacts, adapt to new realities and pursue new opportunities.

Post-disruption (agile modernization)

The capability to absorb shocks while continuing to achieve strategic goals; adapt the existing business model and reshape the operating environment.

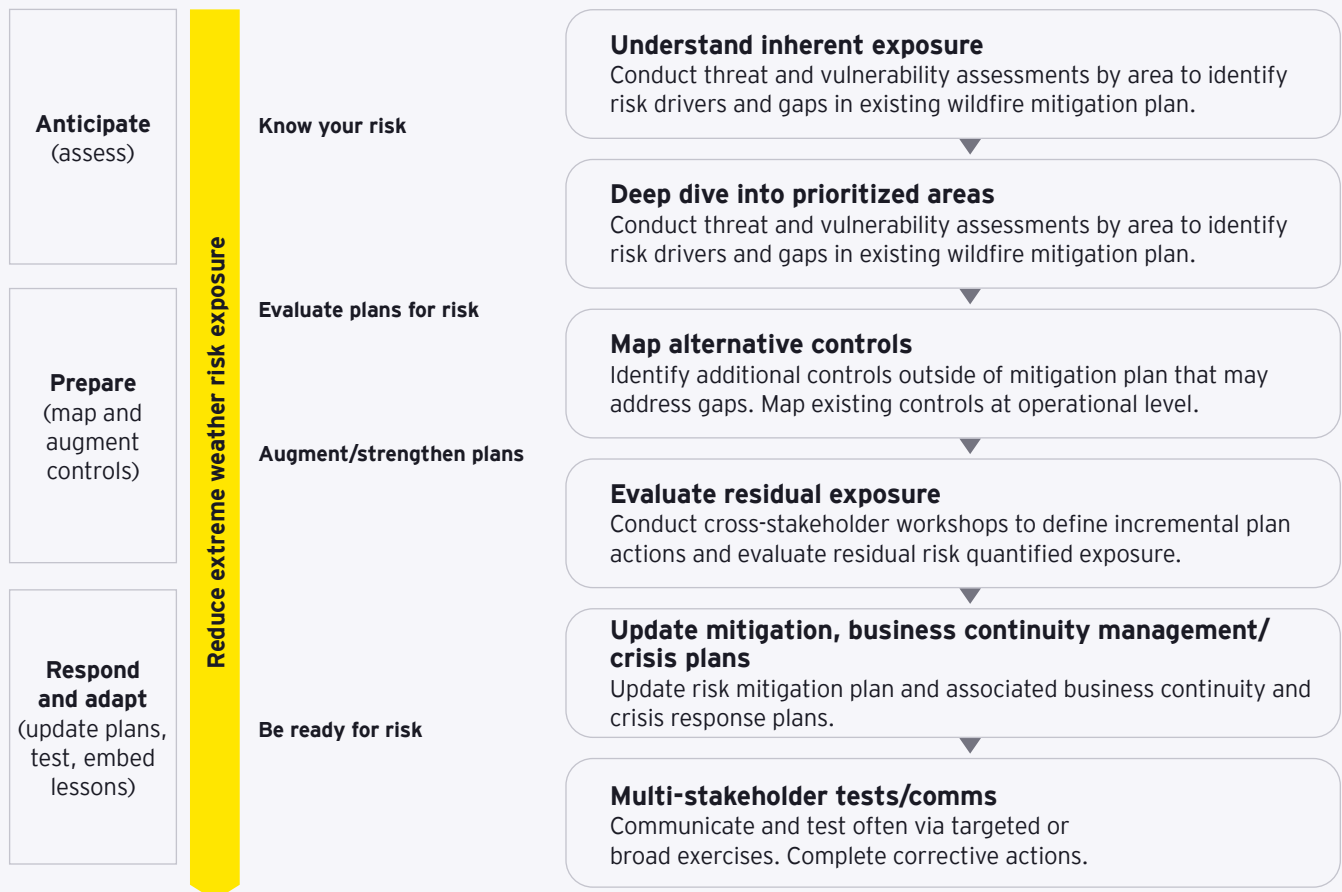


At the front end, this effort involves anticipating the event by developing a clear view of inherent exposure – where are we vulnerable, and can we use data to quantify how extreme weather hazards intersect with assets, operations and service territories in a range of plausible scenarios? From there, leadership can prioritize areas of heightened risk, assessing both physical vulnerabilities and operational dependencies that can drive greater impacts during extreme events.

Utilities that are focused on enhancing resilience use these insights to effectively prepare by evaluating the effectiveness of existing controls, identifying gaps and considering alternative or enhanced mitigation strategies across the enterprise. Cross-functional collaboration plays a central role here, enabling risk, operations, engineering and emergency management teams to align on priorities and trade-offs.

From there, utilities can then assess residual exposure and update business continuity, crisis response and communication plans accordingly as a means of strengthening response capabilities in preparation for both the singular extreme weather event and any knock-on impacts that may result in a cascade of secondary risks. The nature of these events, as aforementioned, is such that the knock-on impacts can be just as significant for the utility. A growing number of utilities are pursuing a coordinated response across internal and external groups that includes testing, simulation and exercises across a broad group of stakeholders with communications and mitigation responsibilities defined and clearly understood. Test often and test broadly both for the event and for a cascade of risks. This iterative process supports continuous improvement so that the organization can adapt, reshape and harden lessons learned from events, exercises and near-misses, and systematically incorporate into future planning.

Integrated assessment framework for extreme weather risk

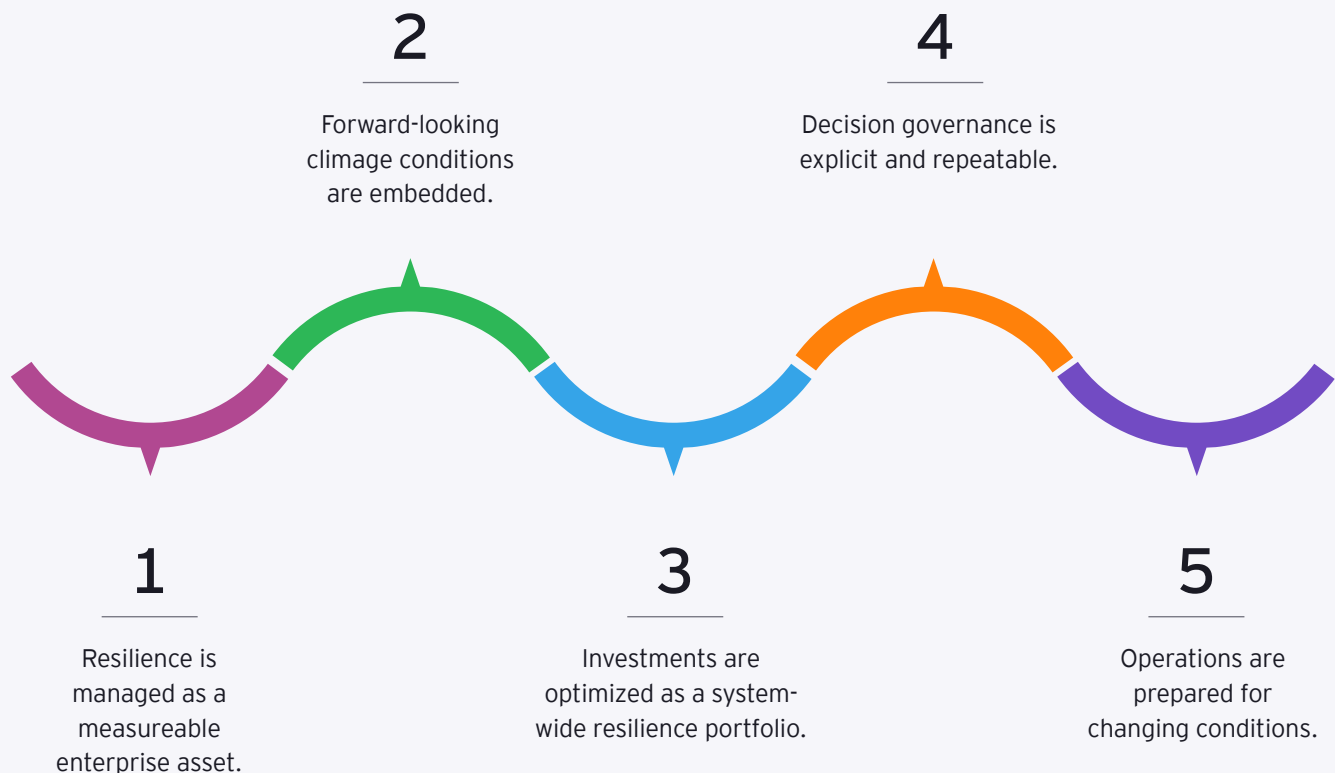


Assessing risk to drive resilience investment response planning

For utilities, advancing enterprise-level extreme weather risk management means making resilience a material, investable priority for leadership. Physical risk assessments help quantify exposure across assets, operations and service territories under a range of plausible future conditions. When paired with predictive monitoring and supported by clear governance, these insights enable executives to prioritize mitigation actions, assess value at risk, and build early alignment on where investment is most critical.

This information only creates value when it directly informs how utilities prepare for and respond to extreme weather risk. Gaining insight into extreme weather risk is only the beginning. To reduce exposure and improve outcomes, utilities must validate that key findings inform preparedness and response decisions where real-time judgment, coordination and escalation matter most. This translation remains a common challenge, as insights are often generated separately from the planning and response processes that govern how organizations act during events. Addressing that disconnect helps utilities move more decisively from awareness to action, improving coordination and decision-making when conditions change rapidly.

Five shifts needed to manage extreme weather risk



The extreme weather imperative for utilities leaders

As extreme weather risks continue to evolve, utilities leaders face a fundamental shift in how risk must be understood and managed. The challenge is no longer limited to responding effectively once events occur. Instead, organizations need to build the holistic capability to anticipate, absorb and adapt in an often precarious operating environment.

Several considerations stand out for leaders who are seeking to move forward more confidently:

1 Treat extreme weather risk as an enterprise issue, not an isolated functional operational concern.

This shift requires integrating climate and weather insights into ERM, capital planning, operational decision-making and crisis preparedness models so that risk ownership, escalation and accountability are clearly defined across the organization.

2 Manage resilience as a measurable enterprise asset.

Utilities leaders also need to define resilience outcomes that are tied to enterprise KPIs and evaluate investments as a portfolio to maximize risk reduction per dollar. This approach clarifies where these investments can most effectively protect affordability, reliability and long-term growth, rather than assessing resilience benefits on a project-by-project basis.

3 Leverage data and analytics that support strategic, forward-looking decision-making.

While physical climate models and scenario analyses provide valuable insight, their impact depends on how effectively they are translated into actionable priorities. Utilities that succeed in this area focus on linking location-specific risk insights directly to asset strategies, mitigation options and investment decisions.

4 Continuously strengthen preparedness and response capabilities instead of viewing them as static plans.

Embedding lessons learned from extreme weather events, near-misses and exercises into governance and operations enables utilities to adapt as conditions change. This continuous feedback loop is critical to sustaining resilience.

5 Keep community trust and stakeholder confidence at the center of preparedness efforts.

Transparent communication, clear expectations and coordinated response efforts are essential to protecting public safety and maintaining credibility with regulators, customers and communities, especially during high-impact events.

Together, these considerations point to a common theme: utilities that align enterprise risk management, operational execution and extreme weather insight are better positioned to navigate uncertainty and make more confident decisions under pressure.

Conclusion

Extreme weather is reshaping the risk landscape for utilities, creating more frequent and interconnected challenges across operations, infrastructure and public trust. Building on the ERM foundations outlined in Part 1 of this series, utilities can strengthen resilience by treating extreme weather risk as an enterprise issue and integrating climate insights, governance and operational decision-making. When these elements are aligned, leaders are better positioned to anticipate disruption, respond decisively and protect enterprise value as conditions continue to evolve.

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