



A BUYING GUIDE FOR
UTILITIES

Conquering Today's Power Utility Challenges with Weather Services & Alert Solutions

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Introduction

At AEM, our goal is to empower organizations to survive—and thrive—in the face of escalating environmental risks. For energy utilities, that means maximizing operational continuity and safety, even as changing weather patterns make providing continuous, reliable, and profitable service more challenging than ever.

We have built our reputation as a trusted advisor to forward-looking energy providers who recognize that profitability, resilience, and reputation increasingly depend on daily decisions influenced by weather. As climate variability intensifies, the ability to anticipate impacts, respond decisively, and plan with confidence becomes a defining operational advantage.

This guide illustrates how AEM helps energy utilities increase weather readiness by addressing the most pressing operational challenges facing the industry today.

If you have questions about the content of this guide or would like to explore solutions tailored to your organization, we invite you to connect with an AEM utility specialist.



Challenge 1: Infrastructure Protection

Understanding the challenge:

THE GRID IS UNDER ATTACK FROM THE WEATHER

Much of today's utility infrastructure was engineered to withstand historical extremes. In many regions, climate variability is increasing the intensity, frequency, and duration of those extremes—exposing assets to greater stresses than they were originally designed to withstand. Protecting equipment and maintaining grid reliability in this environment requires a more deliberate approach to weather resilience.

INCREASING WEATHER IMPACT AWARENESS

To guard grid infrastructure as effectively as possible, utilities need a clearer understanding of how ground-level weather conditions translate into strain on generation, transmission, and delivery equipment—and, ultimately, into outages. That means tracking the interplay between weather and critical assets to improve service-area awareness, prioritize maintenance, and support more proactive risk management.

What a solution looks like:

- 1 Purpose-built weather and ice sensors capture ground-level conditions in key locations. 
- 2 Real-time telemetry integrates observations into your environmental intelligence system. 
- 3 Your team receives automated weather alerts aligned with your operational policies. 
- 4 Field and operations teams execute a coordinated, data-driven response. 
- 5 Infrastructure lasts longer with less reactive maintenance. 



How AEM does it:

AEM equips utilities with the environmental intelligence needed to understand how evolving weather conditions impact critical infrastructure. By combining ground-level measurement, lightning awareness, and real-time storm tracking, utilities gain clearer visibility into asset exposure and the ability to act before strain escalates into outages.



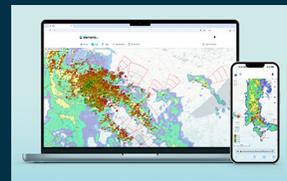
Ascend weather stations to track ground-level asset exposure



Earth Networks Total Lightning Network to monitor lightning exposure



Ice Load Sensor for real-time structural stress visibility



AEM Elements 360 for storm tracking and infrastructure decision support



Automated alerting aligned with asset protection protocols

Challenge 2: Wildfire Mitigation

Understanding the challenge:

DETECTING FIRES IN YOUR SERVICE AREA

Wildfires are a growing threat to utilities—impacting grid reliability, public safety, and community trust. In several regions, utilities have faced significant liability exposure when infrastructure has been linked to ignition events. As fire seasons lengthen and conditions become more volatile, this threat continues to grow.

SUPPORTING DEFENSIBLE RISK MANAGEMENT DECISIONS

Energy providers must take a proactive approach to understanding when and where wildfire risk is elevated—and act decisively to reduce exposure. This may include preventive operational measures, such as Public Safety Power Shutoffs (PSPS). Rapid identification of emerging fires is equally critical to limiting escalation and associated liability. A clear, data-driven foundation enables timely, defensible decisions that prioritize safety while minimizing unnecessary disruption and regulatory exposure.

What a solution looks like:

- 1 Ground-based weather stations and localized fuel intelligence track wildfire conditions in real time. 
- 2 Visual monitoring and multi-source detection enable fast ignition confirmation. 
- 3 Environmental data, lightning activity, and ignition signals are integrated into a single system view. 
- 4 Your team receives automated alerts supporting both preventive action and rapid response. 
- 5 Utilities act decisively to reduce ignition risk, limit escalation, and support defensible decisions. 

Our wildfire customers say...



The ease of working with AEM was very attractive to us... Getting our network up and operational was a very quick process... The way that AEM is working to add additional technologies to their camera network and always looking to bring more things to the table is key for us.

— Pam Feuerstein,
COO
CORE Electric Cooperative



How AEM does it:

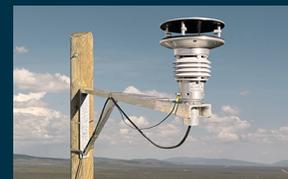
We help utilities become wildfire readiness leaders within their communities by providing the intelligence and data they need to understand fire risk day to day and identify small threats before they grow into major wildfires.



Wildfire Fuels Data as a Service for localized fuel risk insight



Earth Networks Total Lightning Network to monitor lightning-related ignition risk



Ascend weather stations to assess weather risks and guide PSPS decisions



Multi-Source Ignition Detection, including cameras, for rapid fire identification



AEM Elements 360 for unified wildfire situational awareness and decision support

Challenge 3: Field Crew Coordination

Understanding the challenge:

TRANSLATING WEATHER INTELLIGENCE INTO FIELD ACTION

Utilities may have accurate forecasts and real-time monitoring at headquarters, but risk is ultimately realized (and dealt with) in the field. If critical weather information does not reach crews quickly and clearly, response slows, safety risks increase, and operational continuity suffers. Effective coordination requires delivering location-specific alerts to the right personnel at the right moment—before conditions escalate.

ALIGNING ALERTS WITH CLEAR OPERATING PROTOCOLS

Information alone does not protect crews. Weather alerts must be tied directly to established safety thresholds and operating procedures so that employees know exactly how to respond. When guidance is clear and repeatable, crews can pause work when conditions become unsafe, reposition as needed, and resume operations with confidence—reducing downtime while protecting both people and infrastructure.

What a solution looks like:

- 1** On-site and network-based monitoring track real-time conditions. 
- 2** You establish alerting limits for lightning proximity, wind speed, and other hazards. 
- 3** Employees receive automated text alerts and all-clear signals in line with your protocols. 
- 4** Visible strobes and audible horns make alerts unmissable. 
- 5** Crews pause and resume work with confidence, reducing risk and unnecessary disruption. 



How AEM does it:

AEM equips utilities to translate weather intelligence into coordinated field action by connecting forecast insight, real-time detection, and alerts within a centralized operational view. Crews receive timely, location-specific guidance aligned with operational protocols to support safety while minimizing unnecessary disruption.



Hyperlocal weather forecasts to anticipate hazardous field conditions



Earth Networks Total Lightning Network for real-time lightning detection



Mobile alerting via text, email, and in-app notifications



Outdoor Alerting Systems with visible strobes and audible horns



AEM Elements 360 for situational awareness and field coordination

Challenge 4: Demand Planning

Understanding the challenge:

ANTICIPATING WEATHER-DRIVEN ENERGY DEMAND SURGES

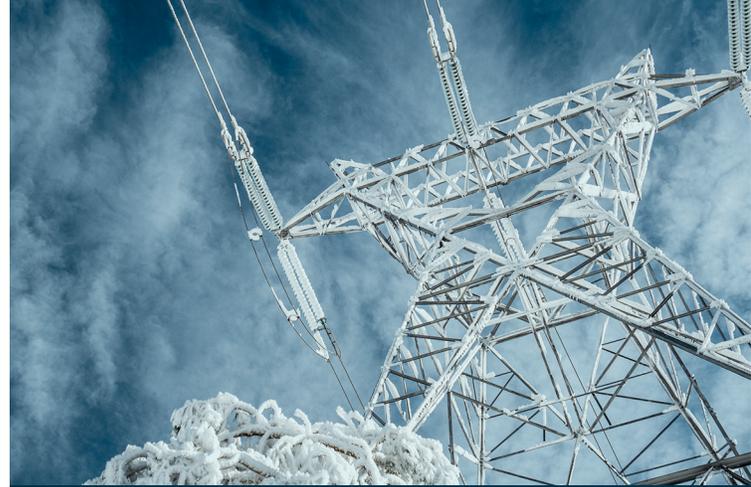
Extreme heat and cold are among the most powerful drivers of short-term energy demand. When temperatures move beyond normal ranges, demand can rise quickly—placing immediate strain on energy generation and distribution infrastructure. Utilities must anticipate and prepare for these surges before they stress assets or disrupt service.

PREPARING THE SYSTEM FOR PEAK CONDITIONS

Effective demand planning depends on accurate, timely weather intelligence in the days and hours leading up to extreme events. Because impacts vary across a service territory, hyperlocal visibility—down to the substation level—helps utilities anticipate where demand stress will concentrate and position resources accordingly. This clarity supports system stability and operational continuity during elevated demand.

What a solution looks like:

- 1** Historical weather data informs and strengthens your demand models. 
- 2** Location-specific forecasts anticipate conditions that drive short-term demand shifts. 
- 3** Real-time weather intelligence tracks evolving weather conditions. 
- 4** Integrated insights and alerting support operational decisions to efficiently manage volatile demand. 
- 5** Generation and distribution resources are positioned to maintain service reliability during elevated demand. 



How AEM does it:

AEM equips utilities with the weather intelligence needed to anticipate demand volatility and respond with confidence. Historical data, real-time monitoring, and proactive alerting work together to support resource positioning and operational continuity when conditions shift rapidly.



20+ years of hyperlocal historical weather data to strengthen demand planning



On-site and network-based monitoring to support forecasting and alerting



Multi-source forecast and observation alerting for proactive demand management



AEM Elements 360 for centralized weather visibility and coordination



24/7 meteorological expertise for critical event interpretation

Challenge 5: Infrastructure Monitoring & Planning

Understanding the challenge:

PLANNING INFRASTRUCTURE WITH GREATER CONFIDENCE

As utilities expand renewable generation and modernize critical assets, infrastructure decisions must be grounded in reliable environmental intelligence. Long-term, location-specific weather information strengthens site studies and design—helping utilities evaluate wind, temperature extremes, lightning, icing, and other environmental risks before committing capital.

MONITORING INFRASTRUCTURE PERFORMANCE IN REAL TIME

Once assets are deployed, continuous monitoring supports performance and long-term maintenance. Solar and wind farms, transmission structures, and other infrastructure face ongoing exposure to wind, temperature extremes, lightning, and ice. Purpose-built monitoring tools provide real-time visibility, enabling utilities to detect emerging stress and prioritize proactive maintenance.

What a solution looks like:

- 1 Location-specific monitoring and historical data support confident site studies and design. 
- 2 Hazards like wind, extreme temperatures, lightning, and ice are understood before capital is committed. 
- 3 Renewable and conventional assets are aligned with expected conditions. 
- 4 Ongoing monitoring provides visibility into real-world exposure and strain. 
- 5 Infrastructure investments are protected through better situational awareness and planning. 



How AEM does it:

AEM supports infrastructure planning and long-term oversight through integrated environmental intelligence that combines historical analysis, field-based monitoring, and centralized visibility. Utilities gain greater confidence in where they deploy and how they maintain infrastructure.



20+ years of hyperlocal historical weather data



Ascend weather stations for on-site monitoring



Ice Load Sensor for structural stress visibility



Earth Networks Total Lightning Network for lightning risk visibility



AEM Elements 360 for integrated environmental intelligence



Integrated environmental intelligence for energy utilities

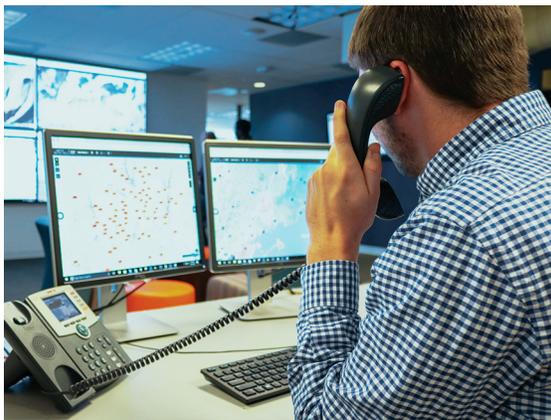
Energy providers face a broad spectrum of weather-driven risks—from severe storms and flooding to wildfire conditions and temperature extremes. As this guide has outlined, these forces impact infrastructure resilience, field safety, energy demand, and long-term planning decisions across the enterprise.

AEM eliminates the gaps between environmental signal and operational action by designing and deploying purpose-built monitoring networks, integrated telemetry, decision-support software, alerting systems, and dedicated meteorological expertise into a single operating framework.

Rather than relying on fragmented tools or disconnected data streams, utilities gain an integrated environmental intelligence framework designed specifically for generation, transmission, distribution, and renewable assets. The result is clearer visibility, stronger defensibility, and more confident operational decision-making across the lifecycle of your infrastructure.

Backed by more than 25 years of experience building environmental intelligence networks for the energy sector, AEM partners with utilities of every scale—from rural cooperatives to investor-owned providers—to strengthen resilience, improve efficiency, and support reliable service in an increasingly variable environment. Our integrated framework can be deployed to address a focused operational need or implemented across the enterprise to standardize environmental intelligence system-wide.

To explore how AEM can support your operational priorities, connect with an AEM utility specialist to schedule a weather readiness consultation tailored to your organization.



[Schedule a Weather Audit](#)

More Resources for Utilities



HOW CORE ELECTRIC COOP IS BUILDING A WEATHER-READY COMMUNITY

- Hear directly from an AEM utility customer
- Learn how CORE has strengthened weather & wildfire risk management
- See the advantage of working with AEM



INCREASING WEATHER FORECASTING CAPACITY & SEVERE WEATHER RESILIENCE WITH HISTORIC DATA

- Explore how historical data helps utilities boost weather resilience
- See how lightning data can guide the placement of critical safety equipment
- Identify optimal sources for historical weather data



ASCEND WEATHER STATION FOR ENERGY UTILITIES

- Capture environmental conditions tied to wildfire risk
- Feed utility risk models with current, accurate data
- Accelerate site-specific PSPS decisions



ASCEND WEATHER STATION FOR SOLAR FARMS

- Monitor real-time, hyper-local weather conditions
- Customize alerts for your operational needs
- Optimize the performance of photovoltaic systems



2025 U.S. LIGHTNING REPORT

- See the power and potential of AEM's proprietary lightning network
- Get state- and county-level insights into lightning counts and density.
- Connect with insights from our lightning research and development team

ADDRESS

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CONTACT US

Talk to a utilities specialist here

