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2026 State of Grid Resilience

Navigating the Resilience Gap



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| Key Findings

Results from a survey of utility and energy industry professionals across North America

48%

THE MEASUREMENT GAP

About half say current metrics capture major events

Only 48% agree current reliability metrics adequately capture performance during major disruptive events.

61%

THE AFFORDABILITY GAP

Investment is expected to rise, but affordability is the top barrier

Affordability and customer rate pressure are the top barrier for 61%, even as 78% expect resilience investment to rise.

12%

THE INVESTMENT GAP

Distribution technology leads on return but lags in deployment

Only 12% have fully deployed self-healing distribution automation, though FLISR, protective devices, and automation rank highest for resilience return.

THE OPERATING ENVIRONMENT

75%

say operational risk is higher than five years ago

58%

say most customer outages originate on the distribution grid

82%

expect data centers and AI to drive load growth

Navigating the Resilience Gap

How utilities are responding to rising risk, affordability constraints, and accelerating load growth

Executive summary

Utilities are operating in a tougher environment. Three in four respondents say operational risk is higher than it was five years ago, and more than half expect load growth over the next decade to be very or extremely significant, led by data centers and AI.

The survey also reveals a resilience gap:

The measurement gap. Utilities distinguish reliability, whether the power is on, from resilience, whether it stays on or comes back quickly during a disruption. Yet investment decisions still rest mainly on reliability metrics such as SAIDI, and only 48% agree those metrics adequately capture performance during major events.

The affordability gap. Most respondents (78%) expect resilience investment to increase, and 87% justify that investment through better service for customers. At the same time, 61% say affordability and customer rate pressure are the biggest barrier to moving faster.

The investment gap. Respondents point to the distribution grid as the source of most customer outages and the greatest opportunity to improve them. Distribution technologies such as FLISR and automation rank highest for resilience return, yet full deployment remains limited.



Introduction

The 2026 State of Grid Resilience is based on research conducted by Zpryme on behalf of S&C Electric Company. Its goal is to give utility leaders, regulators, and others across the energy industry a clear, data-based view of how utilities are approaching resilience and where gaps remain.

It examines resilience as operating conditions become more demanding, covering operational risk, performance measurement, affordability, distribution investment, and future load growth.

Findings are based on a survey of 141 utility and energy industry professionals across North America.¹ Respondents include investor-owned utilities, municipal utilities, electric cooperatives, and other organizations across the industry.

Taken together, the results describe a gap between the resilience outcomes utilities want to achieve and the measurement, financial, and investment realities that shape how quickly they can act.

**Utilities are committed to
resilience. The gap lies in how it is
measured, funded, and deployed.**

¹ See Methodology and Demographics following the Conclusion. Unless otherwise noted, all data in this report are from the 2026 State of Grid Resilience survey, conducted by Zpryme on behalf of S&C Electric Company.

A Tougher Operating Environment

Utilities have long understood that resilience matters, and extreme weather, aging infrastructure, and rising demand have raised the stakes. Respondents describe an operating environment that is more challenging than it was five years ago, and one that is about to carry more load.



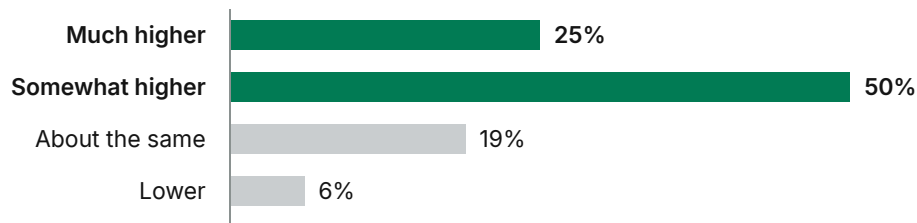
Operational risk is rising

Three in four respondents (75%) say operational risk is higher than it was five years ago, including 25% who say it is much higher. Only 6% say it has decreased.

FIGURE 1

Three in four say operational risk has risen over the past five years

Compared with five years ago, operational risk to your system is...



n=101.

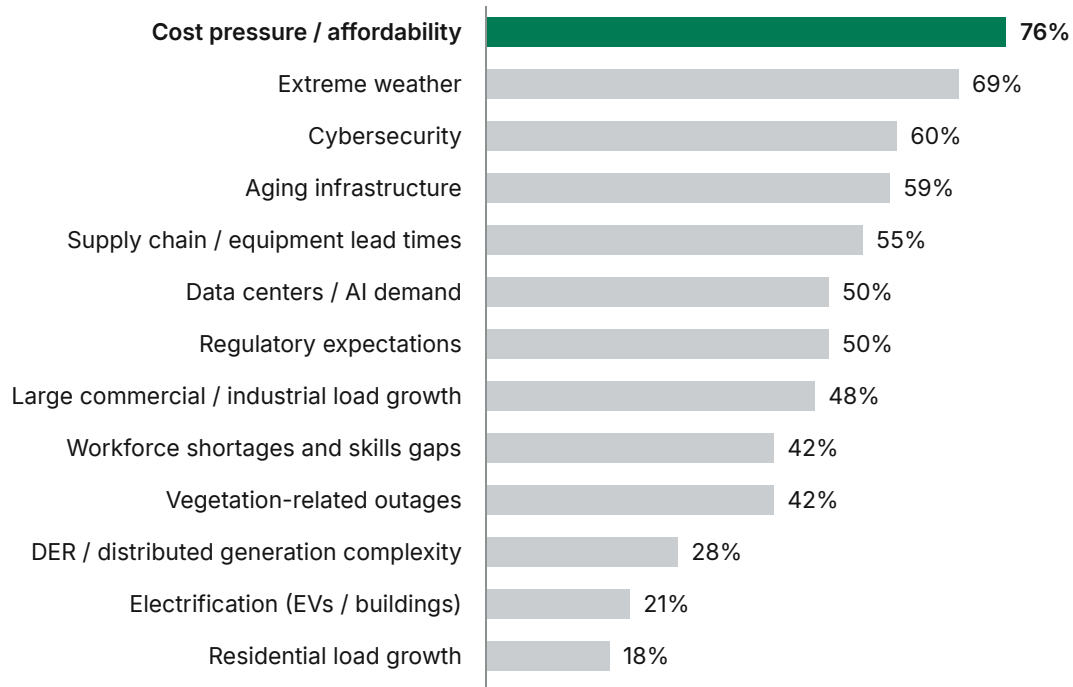
Cost pressure tops the list of challenges

Asked to rate the challenges facing their distribution systems today, respondents ranked cost pressure and affordability highest. Three in four (76%) rate it a significant challenge, ahead of extreme weather (69%), cybersecurity (60%), and aging infrastructure (59%).

FIGURE 2

Cost pressure is the most significant challenge facing distribution systems

How significant are the following challenges for your distribution system today?



Share rating each challenge 4 or 5 on a scale of 1 (not significant at all) to 5 (very significant). n=100-101.



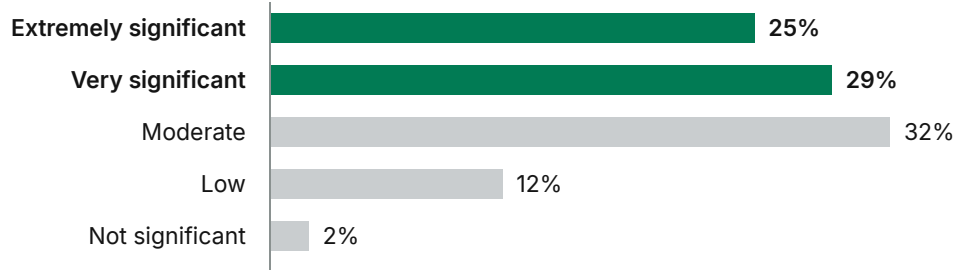
Load growth raises the stakes

More than half of respondents (54%) say projected load growth will be very or extremely significant for their distribution systems over the next decade.

FIGURE 3

More than half expect very or extremely significant load growth

How significant is projected load growth on your distribution system over the next decade?



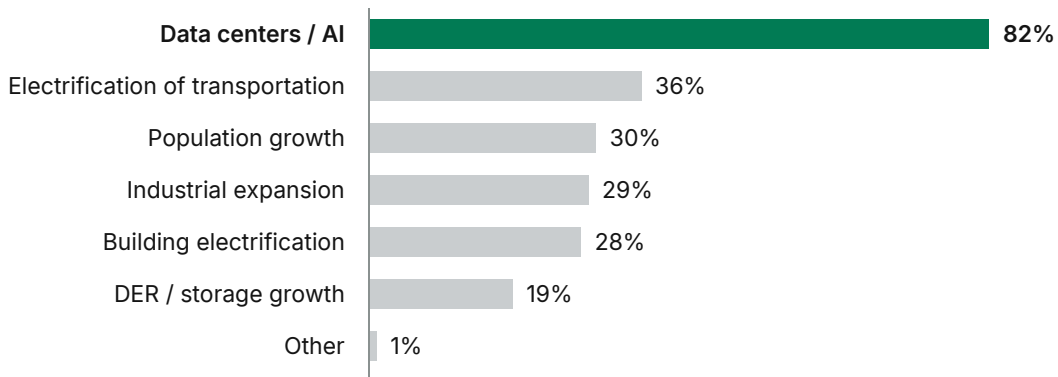
n=97.

Across the grid, data centers and AI are the most-cited driver of load growth (82%). Large data centers often connect at the transmission level, while transportation electrification (36%), population growth (30%), and building electrification (28%) add demand directly to distribution systems.

FIGURE 4

Data centers and AI dominate expected load growth

What do you expect to be the biggest drivers of load growth over the next decade?



Respondents selected all that apply. n=101.

These loads may raise both system demand and the consequences of an interruption. Respondents' top concerns about future load growth are distribution capacity constraints (28%) and capital requirements (27%).

The Measurement Gap

Respondents draw a clear line between reliability and resilience. Nearly half define reliability as day-to-day operational performance and resilience as performance under disruption.

The metrics that guide investment have not caught up. Utilities still rely mainly on reliability measures, and respondents are divided on whether those measures capture what happens during major events.

48%

agree that current reliability metrics adequately capture performance during major disruptive events

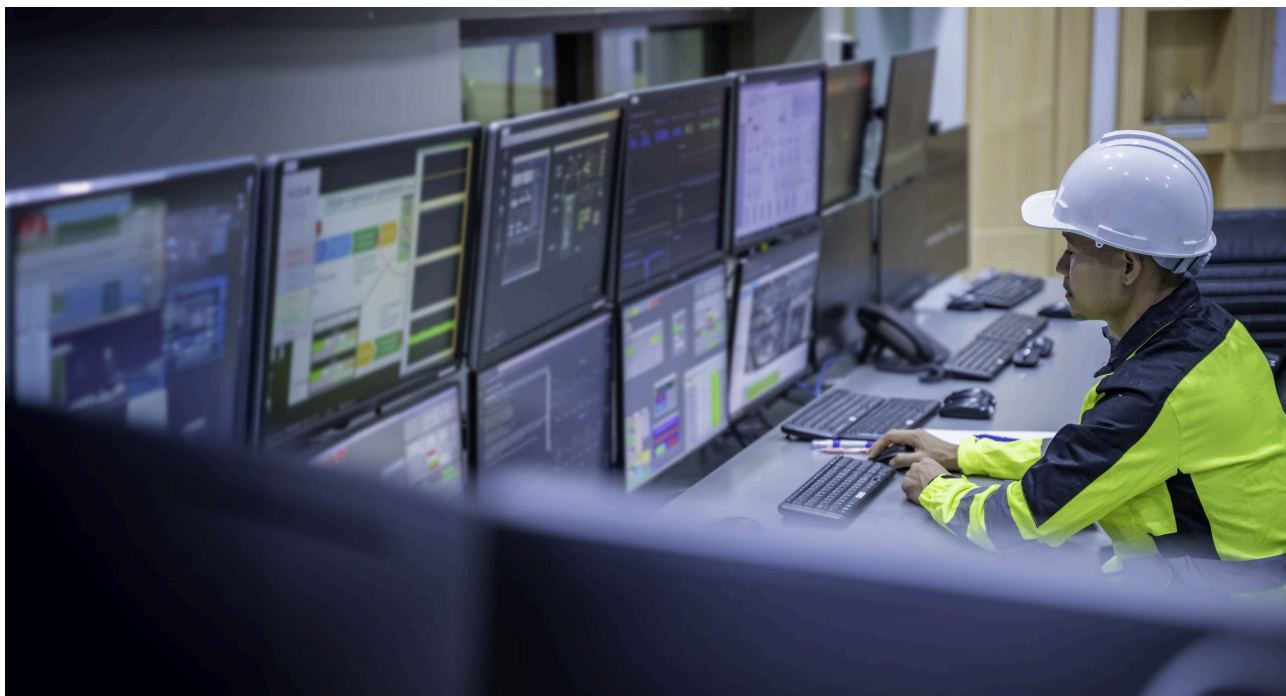
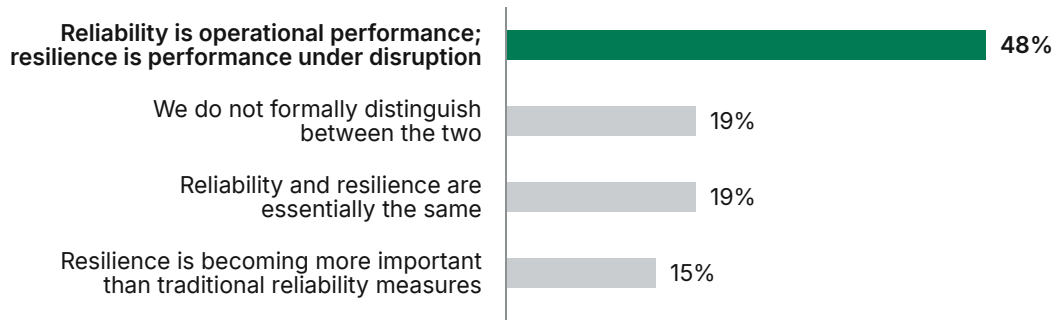


FIGURE 5

Nearly half define resilience as performance under disruption

Which statement best reflects your organization's view?



n=101.

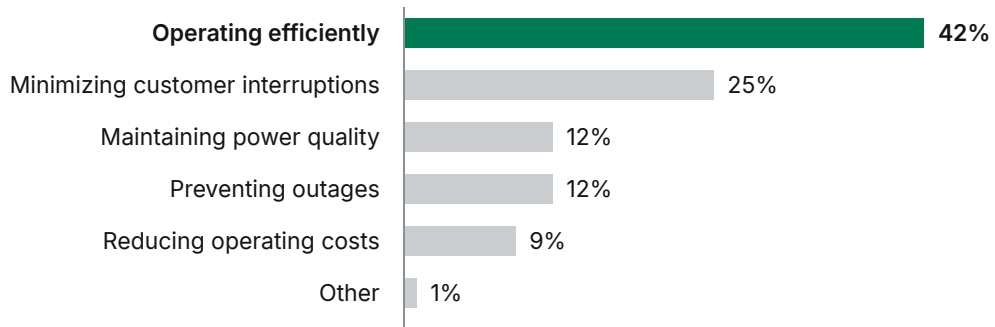
Different days, different goals

Respondents judge the grid by different standards depending on conditions. On a typical blue-sky day, the most important outcome is operating efficiently (42%). During a major storm, restoring service as quickly as possible dominates (53%).

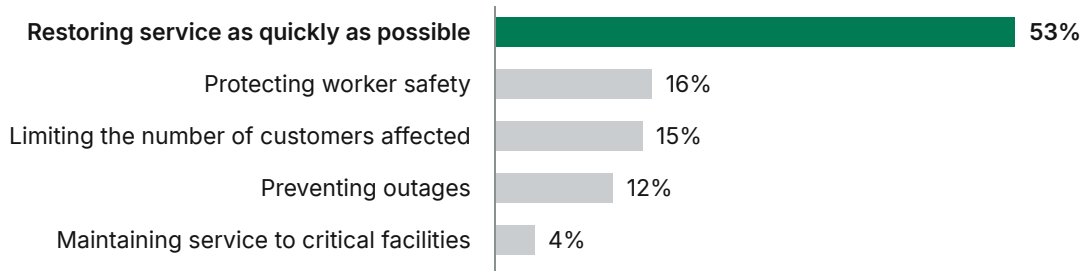
FIGURE 6

On blue-sky days the priority is efficiency; in a storm it is restoration

On a typical blue-sky day, which outcome is most important?



During a major storm or disruptive event, which outcome is most important?



n=100-101.

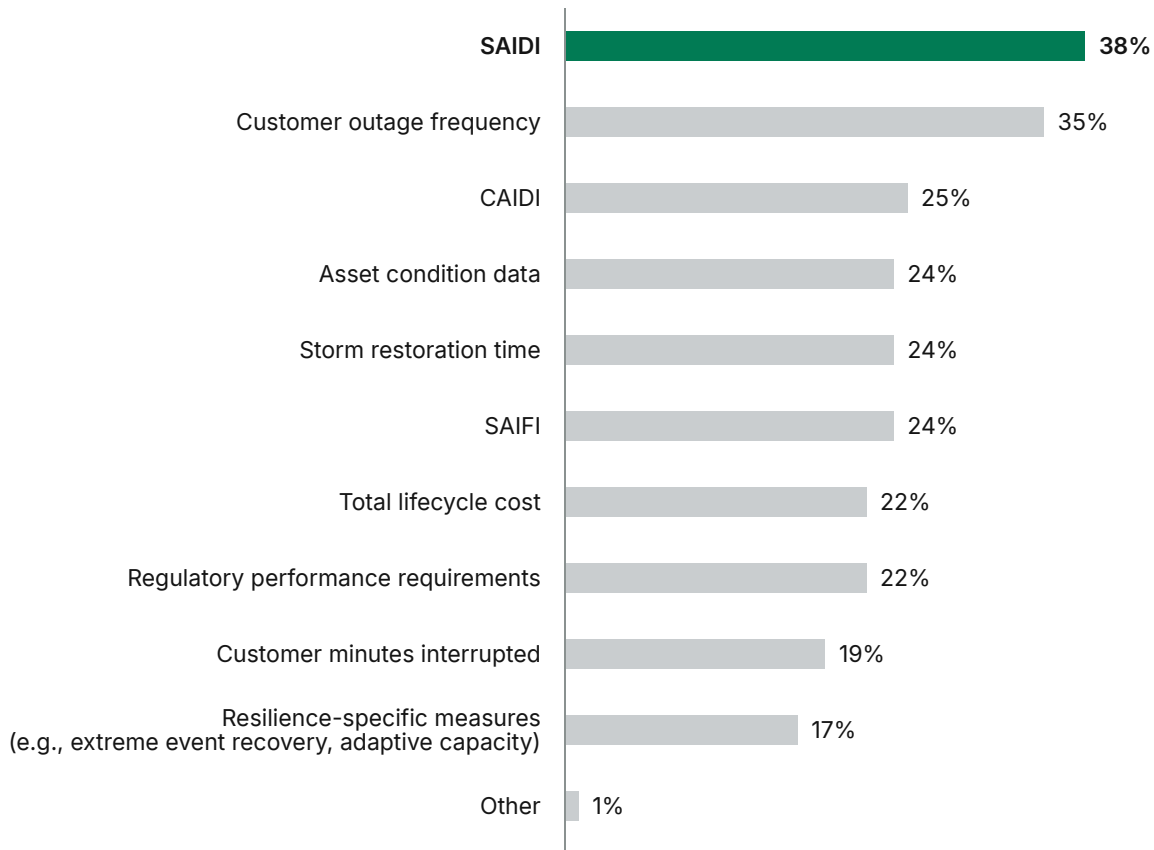
Investment metrics favor reliability

SAIDI (38%) and customer outage frequency (35%) are the metrics that most influence investment decisions. Resilience-specific measures, such as extreme event recovery and adaptive capacity, were cited by 17%.

FIGURE 7

Reliability metrics drive investment; resilience measures trail

Which metrics most influence investment decisions today?



Respondents selected up to three. n=102.

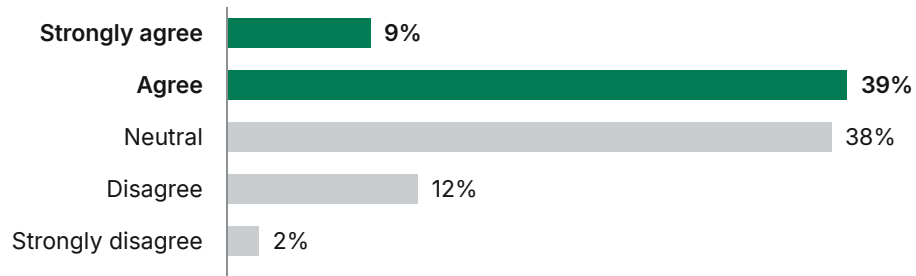
Reliability indices such as SAIDI, SAIFI, and CAIDI are commonly calculated under IEEE Standard 1366.² The standard allows utilities to separate out Major Event Days so that severe events do not distort day-to-day performance trends. That approach is sound for tracking reliability. It also means the metrics most used to guide investment can leave out the days when resilience matters most to customers.

² IEEE Std 1366, IEEE Guide for Electric Power Distribution Reliability Indices.

FIGURE 8

Only about half say current metrics capture performance during major events

Current utility reliability metrics adequately capture performance during major disruptive events.



n=100.

Only 48% agree that current reliability metrics adequately capture performance during major disruptive events. More than a third (38%) are neutral, and 14% disagree.

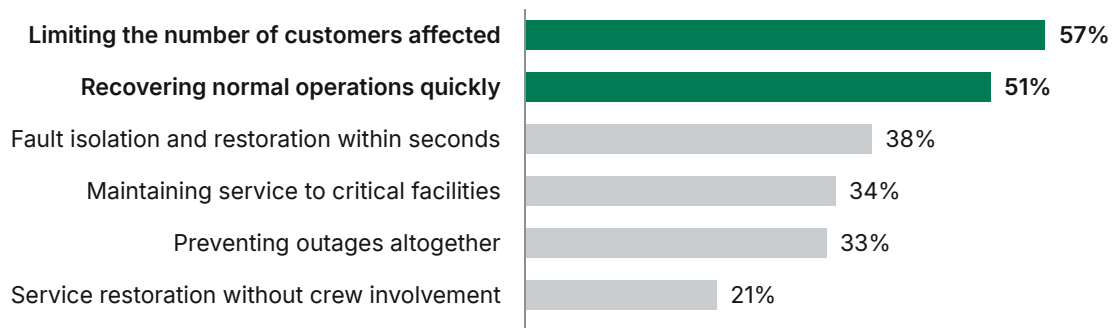
Customer experience defines resilience

Asked what best demonstrates a resilient grid during a major disruption, respondents chose limiting the number of customers affected (57%) and recovering normal operations quickly (51%). Both reflect what customers experience during major events, which traditional reliability metrics can exclude.

FIGURE 9

Limiting customer impact and restoring quickly define a resilient grid

Which of the following best demonstrates a resilient grid during a major disruptive event?



Respondents selected up to three. n=102.

The Affordability Gap

Utilities expect to invest more in resilience, and they justify that investment through better service for customers. At the same time, they face strong pressure to keep rates affordable.

Nearly four in five respondents (78%) expect resilience-related investment to increase over the next five years, while 61% name affordability and customer rate pressure as the single biggest barrier to accelerating it.

6 in 10

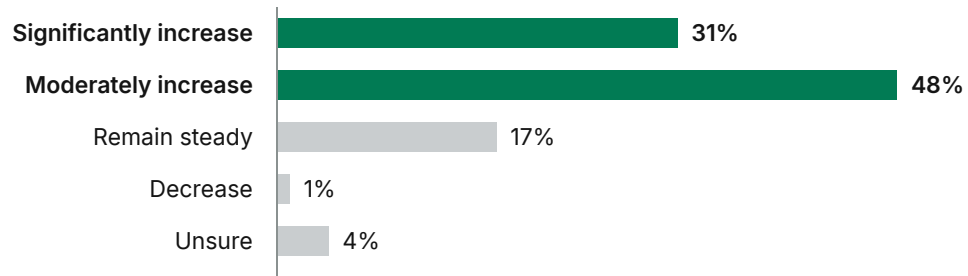
name affordability and customer rate pressure as the top barrier to resilience investment



FIGURE 10

Nearly four in five expect resilience investment to grow

How do you expect your utility's resilience-related investment levels to change over the next five years?

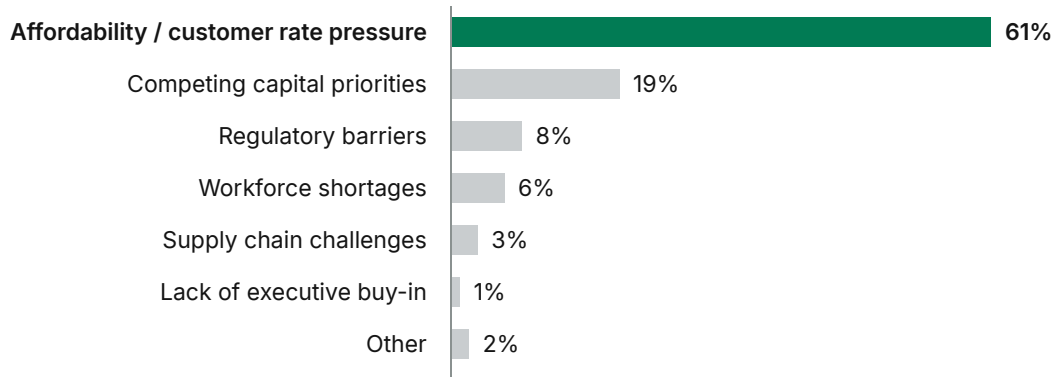


n=101.

FIGURE 11

Affordability outranks all other barriers combined

What is the most significant barrier to accelerating grid resilience investment?



n=101.

Affordability was cited more than three times as often as the next barrier, competing capital priorities (19%). Regulatory barriers, workforce shortages, and supply chain challenges each drew less than 10%.

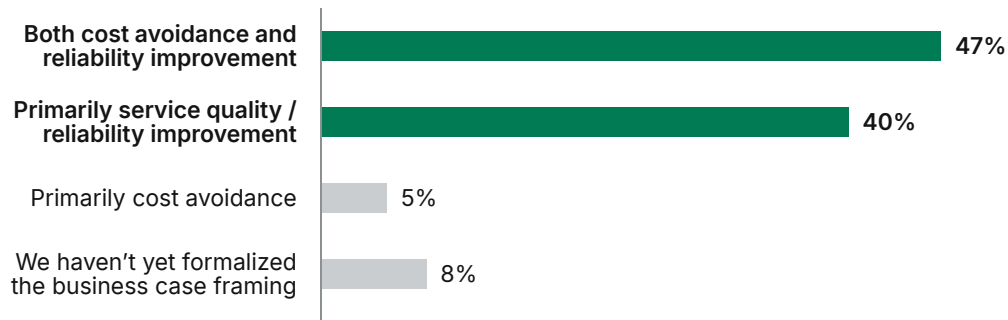
Customers anchor the business case

Nearly nine in ten respondents (87%) justify resilience investment through service quality and reliability, either alone (40%) or combined with cost avoidance (47%). Only 5% lead with cost avoidance.

FIGURE 12

Nearly nine in ten build the case on reliability and service quality

How does your utility justify resilience investments to regulators and customers?



n=100.

This is the center of the affordability gap. Resilience investment is made for customers, and it must be defended to customers and regulators on cost.

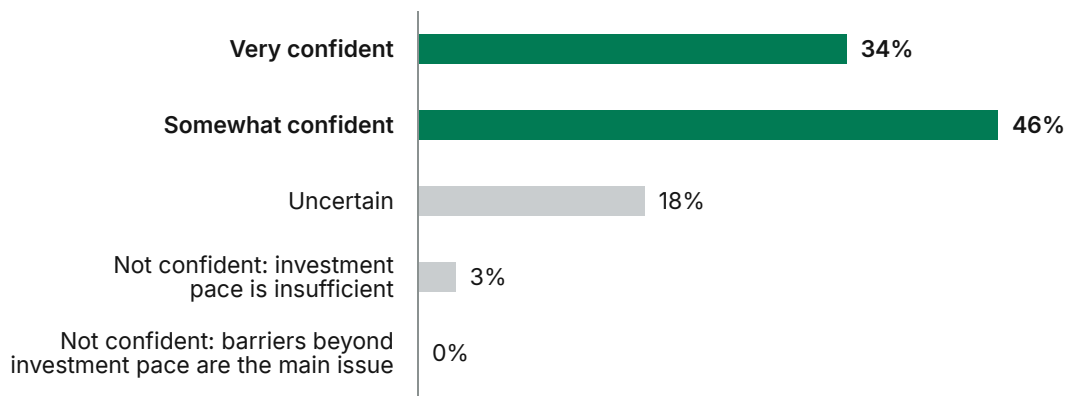
Confidence remains high

Despite the constraint, 79% are somewhat or very confident their current investment trajectory will meaningfully improve resilience within five years. Only 3% are not confident.

FIGURE 13

Nearly four in five are confident current investment will improve resilience

How confident are you that your utility's current investment trajectory will meaningfully improve resilience outcomes within the next five years?



n=101.

The Investment Gap

Respondents consistently place both the problem and the opportunity on the distribution grid, where most customer-impacting outages begin. That matches federal research: the U.S. Department of Energy reports that more than 90% of electric power interruptions originate on the distribution system.³

The technologies they see delivering the greatest resilience return are distribution technologies: fault location, isolation, and service restoration (FLISR), protective devices and sectionalizing, and distribution automation. Full deployment of those technologies remains limited, and cost is the main obstacle.

6 in 10

say most customer-impacting outages originate on the distribution grid

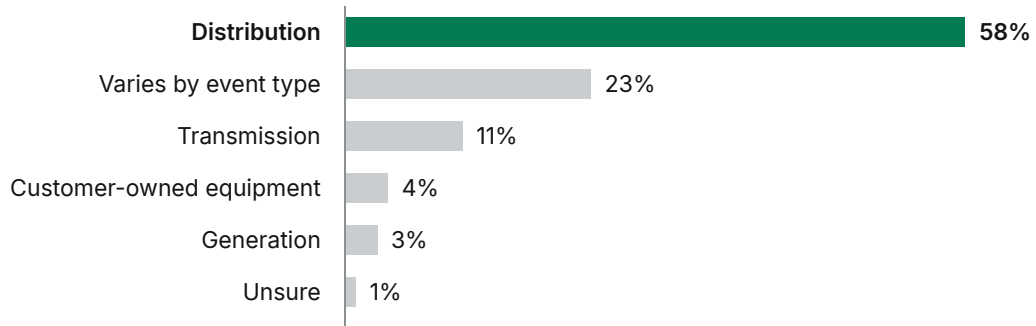


³ U.S. Department of Energy, Quadrennial Energy Review, Second Installment, Chapter IV (January 2017).

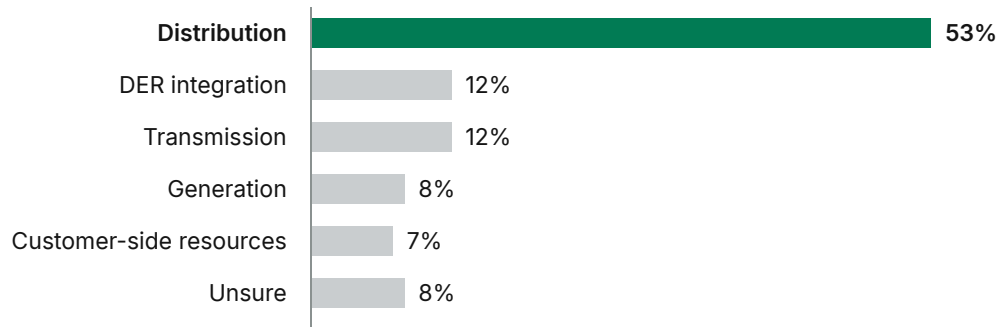
FIGURE 14

Distribution ranks first on outage origin, opportunity, and impact

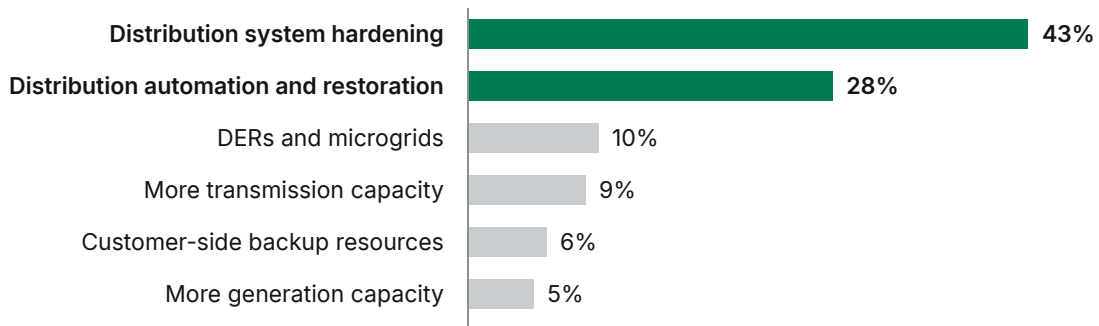
Where do the majority of customer-impacting outages originate?



Which part of the grid offers the greatest opportunity to improve customer outage outcomes over the next decade?



Which of the following would have the greatest impact on resilience during major disruptive events?



n=101.

Distribution ranked first on all three questions. Hardening and automation of the distribution system together account for 70% of responses on what would most improve resilience during major events.

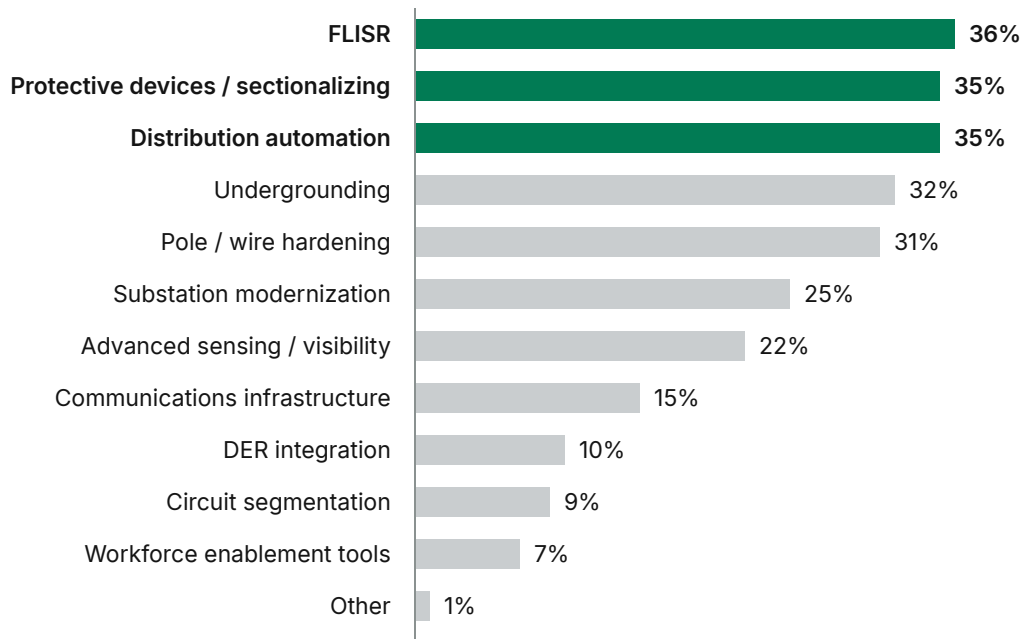
Distribution technologies lead on resilience return

Asked which investments deliver the greatest resilience return, respondents ranked FLISR (36%), protective devices and sectionalizing (35%), and distribution automation (35%) highest, ahead of undergrounding (32%) and pole and wire hardening (31%).

FIGURE 15

FLISR, protective devices, and automation rank highest for resilience return

Which investments deliver the greatest resilience return on investment?



Respondents selected up to three. n=102.

Physical hardening still rates as the most important resilience pillar today, with an average importance of 4.0 on a five-point scale, just ahead of cybersecurity (3.9) and grid automation (3.8). Much of that hardening also happens on the distribution grid. The results suggest the technologies respondents see as delivering the greatest resilience return have not yet become the top priority.

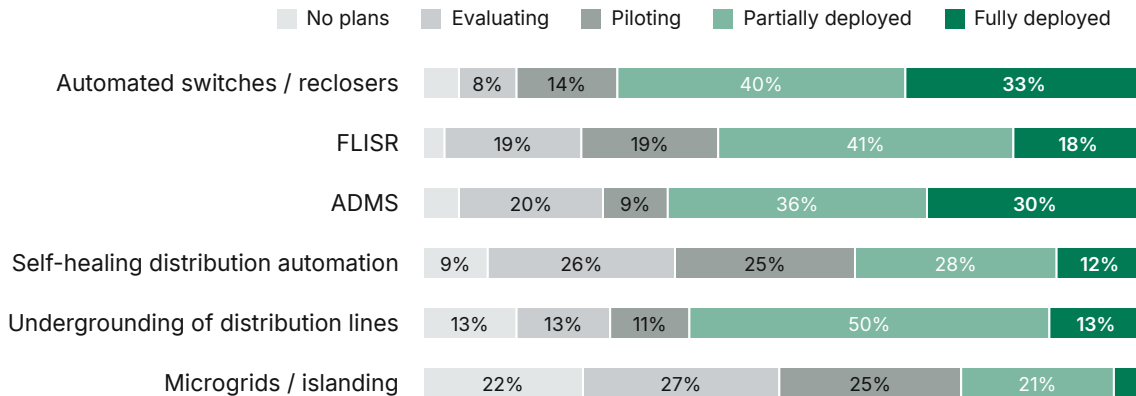
Deployment is still partial

Automated switches and reclosers are the most widely deployed of these technologies, fully deployed at 33% of respondents' utilities. Full deployment falls to 18% for FLISR and 12% for self-healing distribution automation. Only 19% describe their distribution system as highly automated.

FIGURE 16

Most distribution technologies are only partially deployed

What is the current deployment status of each technology at your utility?



n=99-100.

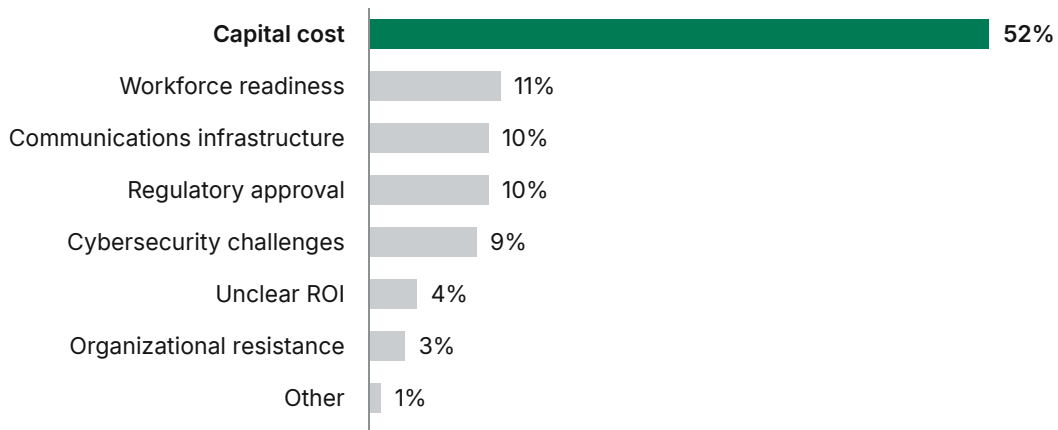
Cost is the main obstacle

Capital cost is the biggest barrier to broader automation, cited by 52%, far ahead of workforce readiness (11%), communications infrastructure (10%), and regulatory approval (10%).

FIGURE 17

Capital cost is the biggest barrier to broader automation

What is the biggest barrier to broader automation?



n=101.

Automation competes for limited capital, and respondents say its greatest operational value is faster restoration (32%) and fewer customers affected (31%). Restoring service quickly is also what respondents rank as most important during a major storm (53%), the conditions traditional reliability metrics may not fully capture.

Current reliability metrics may not fully capture the value of technologies designed to limit customer impact during major events.

Where investment is headed

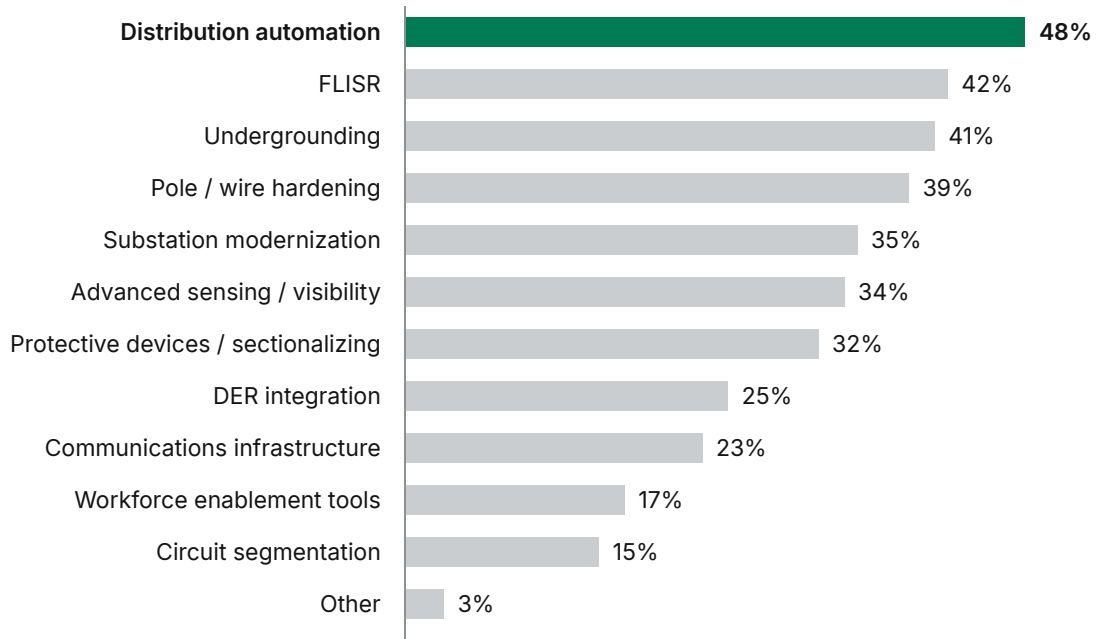
Over the next five years, respondents expect distribution investment to grow most in distribution automation (48%), FLISR (42%), undergrounding (41%), and pole and wire hardening (39%).



FIGURE 18

Automation and FLISR lead expected distribution investment

Over the next five years, where do you expect to see the greatest increase in distribution investment?



Respondents selected their top five. n=102.

Visibility is the restoration bottleneck

During major outage events, damage assessment is the greatest restoration challenge, cited by 54%, ahead of crew access (37%) and workforce capacity (33%). The results suggest that determining the location and extent of damage is a greater challenge than executing repairs.

54%

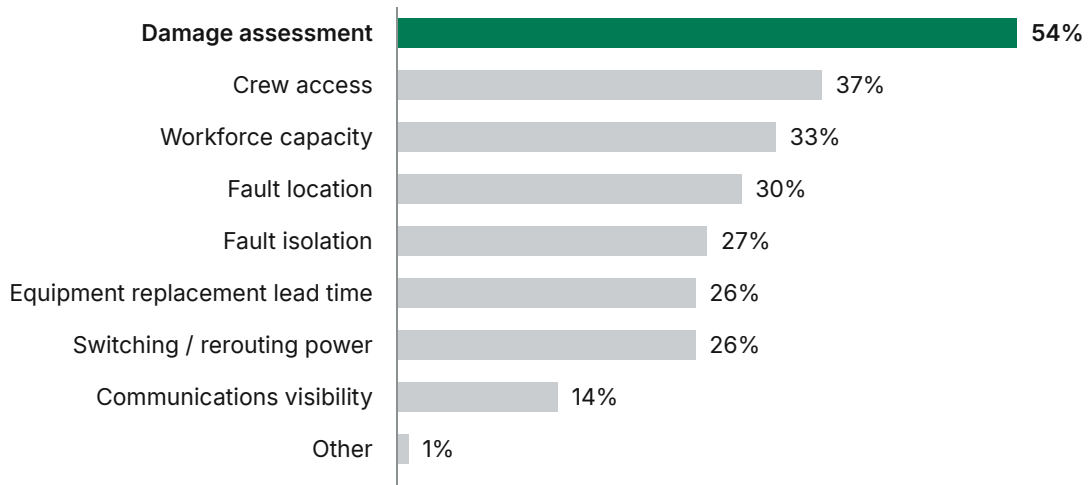
say damage assessment is their greatest challenge during major outage events



FIGURE 19

Damage assessment is the biggest restoration challenge

During major outage events, what creates the greatest restoration challenge?



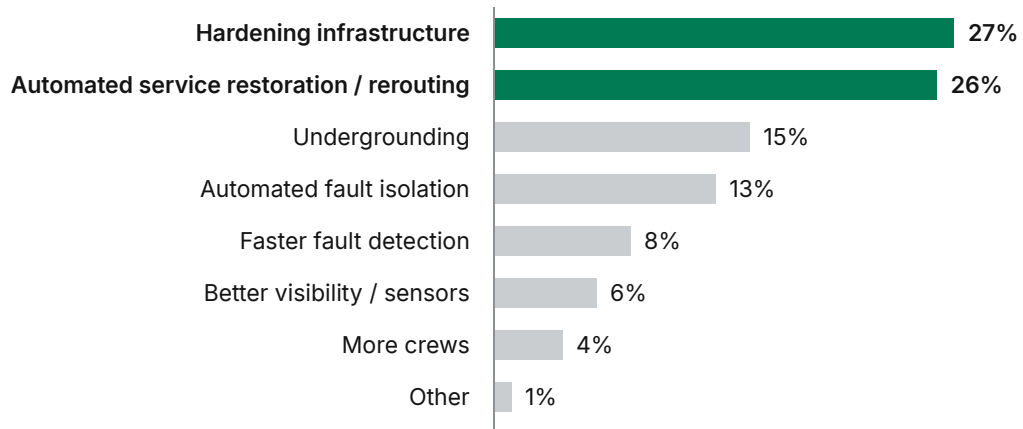
Respondents selected up to three. n=102.

Respondents see hardening infrastructure (27%) and automated service restoration (26%) as the approaches with the greatest ability to reduce outage duration.

FIGURE 20

Hardening and automated restoration are the biggest levers on outage duration

Which approach has the greatest ability to reduce customer outage duration?



n=102.

Closing the Gap

The findings point to five priorities for utilities, regulators, and others working to strengthen the grid.

1. Measure what customers experience during disruptions

Reliability metrics remain essential for tracking day-to-day performance. Adding resilience measures, such as restoration time and customers affected during major events, could better capture the value of investments designed for the worst days.

Many of these investments also improve everyday reliability. The U.S. Department of Energy found that FLISR can cut both customers affected and customer minutes of interruption by half during a feeder outage.⁴

2. Make the affordability case with customer experience

With rate pressure the top barrier, resilience investment needs a clear link to fewer customers affected and faster restoration. Measuring that experience makes the case easier to present to regulators and customers.

3. Limit how many customers each outage affects

Respondents most often define a resilient grid by limiting the number of customers affected during a major event (57%). They rank FLISR, protective devices, and distribution automation highest for resilience return, yet full deployment remains limited. Because major events are hard to predict, technologies that isolate faults and restore service automatically can limit customer impact wherever an outage occurs.

4. Harden and automate to shorten outages

Respondents see hardening infrastructure (27%) and automated service restoration (26%) as the approaches most able to reduce outage duration, and distribution hardening (43%) and automation (28%) as having the greatest impact during major events. Better sensing and fault location support both by speeding damage assessment, the most-cited restoration challenge (54%).

5. Plan for load growth and resilience together

More than half of respondents expect very or extremely significant load growth on their distribution systems. Data centers and AI are the most-cited driver overall (82%), but large data centers often connect at the transmission level, while electrification and population growth add demand directly to the distribution grid. Distribution capacity is respondents' top concern, and evaluating capacity and resilience needs together can help utilities plan for both.

⁴ U.S. Department of Energy, Smart Grid Investment Grant Program Final Report (2016).

Conclusion

Utilities face rising operational risk, growing electricity demand, and persistent pressure to keep rates affordable. The 2026 State of Grid Resilience finds that utilities are committed to resilience, and that three gaps shape how quickly they can deliver it.

Utilities distinguish resilience from reliability but still measure investment mainly through reliability metrics. They expect to invest more to improve service for customers, while affordability remains the biggest barrier. And they see the greatest resilience return in distribution technologies that remain only partly deployed.

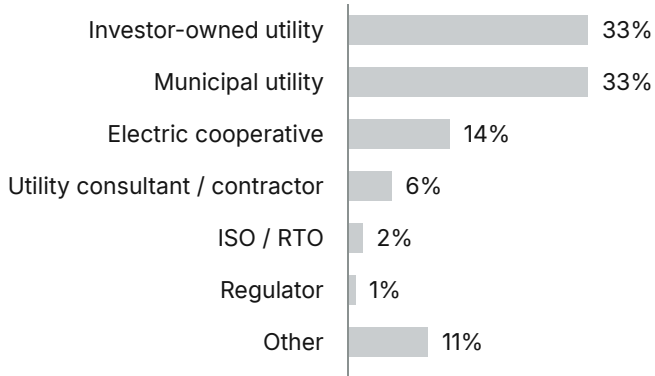
The gaps are connected. Metrics that capture performance during major events could help make the affordability case for resilience, and a clearer case could support investment in the distribution technologies that limit customer impact and speed restoration.

Future editions of **State of Grid Resilience** will track how these gaps evolve as operating conditions, investment priorities, and customer expectations change, including how hardening and automation affect restoration costs.

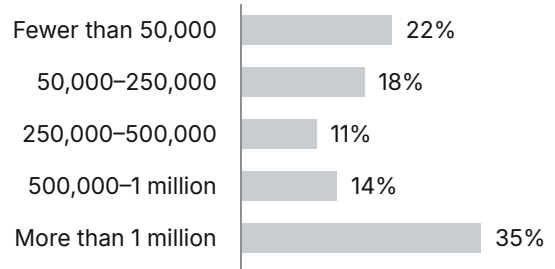
Methodology and Demographics

Unless otherwise noted, all data in this report are from the 2026 State of Grid Resilience survey, conducted by Zpryme on behalf of S&C Electric Company. Zpryme surveyed 141 utility and energy industry professionals from June to August 2026. Not every respondent answered every question; the number of responses is shown as “n” with each figure. With about 100 responses to most questions, results carry a margin of error of about ± 10 percentage points at a 95% confidence level. Percentages are rounded, so totals may not equal 100, and some questions allowed more than one response.

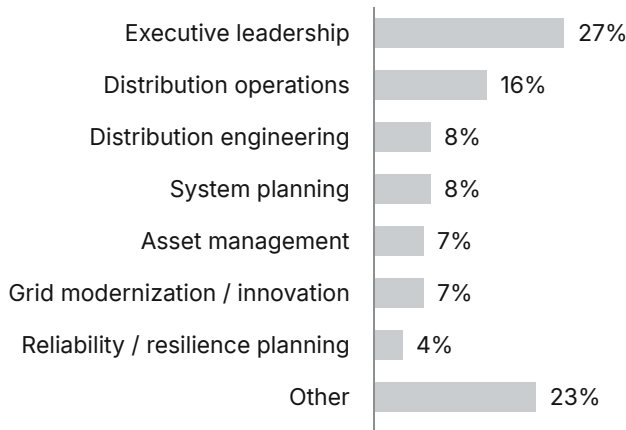
Organization type



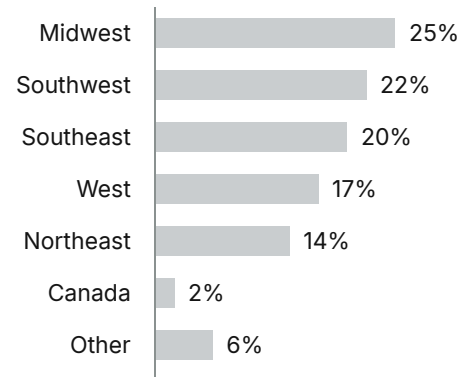
Utility size (customer accounts)



Primary role



Regions served



Respondents could select more than one region.



2026 State of Grid Resilience

Navigating the Resilience Gap

About the research

The 2026 State of Grid Resilience is based on a survey of 141 utility and energy industry professionals across North America, conducted by Zpryme on behalf of S&C Electric Company from June to August 2026.

About Zpryme

Born in Austin, Texas, Zpryme has proudly grown within the energy industry we love. Since 2007, we've stood alongside the people who keep our world powered — utilities, first responders, engineers, and innovators whose dedication lights homes, restores hope, and drives progress every day. Our work lives at the intersection of creativity and purpose, helping the industry see its journey through a more human lens. Through films, events, and experiences, we highlight the stories behind the clean energy transition — from control rooms to communities. www.zpryme.com

About S&C Electric Company

For more than a century, S&C has helped transform electricity distribution, from pioneering the Liquid Power Fuse to advancing intelligent grid automation. Powered by team member expertise and precision engineering, S&C delivers field-proven technologies that strengthen resilience, enhance reliability, and provide greater visibility and control across the distribution grid. With solutions that keep the power on for utilities, critical power operators, and the communities they serve, S&C empowers people to transform the grid. Learn more at www.sandc.com.