

FORECASTING THE FUTURE OF UTILITY SAFETY:

10 PREDICTIONS FOR 2026 AND

BEYOND

Technology will become increasingly vital to industry safety and sustainability efforts over the next decade.

BY SHAWN M. GALLOWAY

As we stand on the precipice of a new era in the utility sector, it is clear the future holds transformative potential driven by relentless technological progress.

We are already seeing not just small changes but a complete overhaul. The horizon is replete with innovations aimed at redefining safety protocols and operational efficiency. Predicted advancements — ranging from connected monitoring systems to augmented reality (AR) training to robotics — point to a not-so-far-off future in which advanced technologies will be essential to everyday utility operations.

In the remainder of this article, I offer 10 predictions about the technologies that, in my professional opinion, will become commonplace in the utility sector over the next decade. These technologies are not just glimpses of what might be possible; they represent a significant portion of the foundation upon which future safety standards will likely be built.

01. Smart Grid Technologies

These digital monitors, equipped with sensors and real-time analytics, are already transforming how we track and control electrical grids. Pacific Gas and Electric Co. and other utilities are deploying systems that quickly detect faults and other hazards, a proactive strategy that aids in ensuring reliability and improving operational efficiency.

Timeline: Many utilities have already started integrating smart grid systems. Wider adoption is expected over the next five to 10 years as infrastructure upgrades progress and costs fall.

02. Drones for Infrastructure Inspection

Operators can guide drones — equipped with precision cameras and thermal imaging capabilities — into otherwise difficult-to-access areas, reducing safety risks. PSEG, for example, uses drones to navigate power lines and substations, conducting accurate asset assessments without endangering human lives.

Timeline: Drone technology is rapidly being adopted and could become standard within the next five years, especially within larger utilities that have resources to invest in these unmanned aircraft systems.

03. Augmented Reality

This training approach changes how utility workers prepare for field challenges. Currently, Southern Co. uses AR headsets that simulate real-world scenarios, providing immersive training that enhances trainees' hazard recognition and emergency response skills.

Timeline: AR is increasingly being integrated into training programs. It could become a standard tool for utility workers within the next five to seven years as software advances and hardware becomes more affordable.

04. Internet of Things

IoT is a network of connected objects and devices that share information with each other. In the context of utility safety, organizations can integrate IoT to immediately detect system anomalies. DTE >>

FUTURE COMMON PRACTICES

01



Smart Grid
Technologies

02



Drones for
Infrastructure
Inspection

03



Augmented
Reality
(AR)

04



Internet
of Things
(IoT)

05



Advanced
Personal Protective
Equipment (PPE)

06



Robotics for
Hazardous
Tasks

07



Data Analytics
for Safety
Management

08



Fortified
Cybersecurity
Measures
for Critical Infrastructure

09



Public
Engagement &
Communication

10



Environmental
Safety &
Sustainability

Graphic: ProAct Safety

Energy, for instance, deploys IoT sensors to monitor underground cables for early fault signals, enabling the utility to perform preventive maintenance and/or repairs. This proactive approach greatly reduces downtime and incident risks.

Timeline: IoT integration in utilities is already progressing and expected to become widespread in the next five to 10 years as the technology becomes more accessible.

05. Advanced Personal Protective Equipment

Today's PPE advancements combine technology with traditional safety gear to boost user protection, resulting in innovations like smart helmets that provide real-time data and electronic hearing protectors to aid communication in noisy environments.

Timeline: Smart PPE could become standard in high-risk settings within the next five years as technology costs decrease and companies — whether driven by altruism or public pressure — increasingly prioritize worker safety.

06. Robotics for Hazardous Tasks

Set to emerge as essential partners in high-risk tasks, these machines can carry out complex inspections and repairs in hazardous environments, offering protection to human workers even in the most extreme conditions.

Timeline: Although the machines are being used now, full robotics adoption across all utilities could take 10 to 15 years, depending on technological advancements and economic factors.

07. Data Analytics for Safety Management

Duke Energy and numerous other utility companies foster a culture of continuous safety by analyzing past incidents, identifying and addressing patterns to prevent recurrences. In a 2018 industry-wide benchmarking project for public utilities conducted by ProAct Safety, we found that advanced data analytics were already in use at that time.

Timeline: Analytics applications are expected to become more sophisticated over the next three to five years as utilities leverage increasing numbers of data-driven insights to enhance employee and public safety.

08. Fortified Cybersecurity Measures for Critical Infrastructure

Protection against cyberthreats is essential as utility systems become more interconnected. The U.S. Department of Energy's initiatives — such as the Cybersecurity Capability Maturity Model (see www.energy.gov/ceser/cybersecurity-capability-maturity-model-c2m2) — provide key frameworks to defend against such threats.

Timeline: As digital integration grows, improved infrastructure cybersecurity is a must-have that will likely become widespread among utility organizations in the next five years.

09. Public Engagement and Communication

Through mobile apps and other platforms, communities receive real-time alerts during crises, strengthening the connection between utilities and the public via informed communication.

Timeline: Real-time communication is becoming standard and will likely be fully integrated by utilities within the next five to seven years as part of customer service enhancements.

Now is the
right time for
industry leaders
and policymakers
to actively
embrace these
innovations.

10. Environmental Safety and Sustainability

Arkansas-based Montrose Environmental Group is a leader in this field, incorporating comprehensive environmental safety protocols into their operations with advanced monitoring systems that track pollutants and emissions in real time. The company's use of innovative technologies, which also include IoT and data analytics, allows for precise identification and mitigation of environmental hazards before they escalate. Utility companies can look to Montrose's practices when adopting sustainable technologies like renewable energy sources, waste reduction methods and advanced environmental monitoring tools.

Timeline: Comprehensive environmental safety tools are expected to become standard across most U.S. utility organizations in the next 10 years.

Conclusion

As I noted toward the beginning of this article, the 10 predictions presented above are based on my professional insights combined with current utility industry trends. Adoption of these technologies will vary among organizations and regions, but one thing is for sure: technology will become increasingly vital to utility safety and sustainability efforts in 2026 and beyond.

Now is the right time for industry leaders and policymakers to actively embrace these innovations. Investing in modern safety solutions today both prepares your organization for the future and demonstrates your commitment to protecting workers, local communities and the environment. •

About the Author: Shawn M. Galloway is CEO of ProAct Safety (<https://proactsafety.com>) and an author of several bestselling books. An award-winning consultant, trusted adviser, expert witness, leadership coach and keynote speaker, he has helped hundreds of organizations within every primary industry improve safety systems, strategy, culture, leadership and engagement. Galloway also hosts the highly acclaimed weekly podcast series "Safety Culture Excellence."