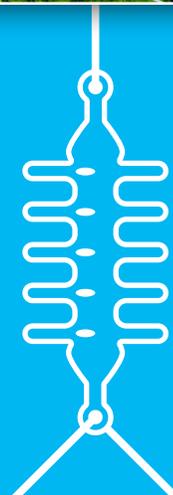




USING MOBILITY TO TRANSFORM UTILITY OPERATIONS & MAINTENANCE

Utilities customers want more reliable service and, more than ever before, expect dependable and detailed responses when outages occur. To meet this demand and increase general operational efficiency, utility companies are turning to advanced technologies and deploying mobile computing devices to monitor supply lines, transmission resources and in-plant assets.



Key benefits

Mobile technologies are already improving utilities operations information exchange.

Smart solutions lead to safer work sites through faster, more accurate data.

Mobile-enabled OMS/WMS predicts and minimizes outage restoration times.

Rugged mobile solutions improve productivity in critical scenarios.

Rugged mobile devices are a solid investment for utility companies.

Mobile devices help enhance in-plant maintenance, safety and compliance.

With mobility, the utility industry is better poised to respond to and repair outages quickly, meet federal reliability requirements and face increasing energy demands. At the same time, utilities are optimizing customer responsiveness and improving customer satisfaction.

This white paper provides you with information to better understand how mobile solutions can help utility companies achieve operational excellence by transforming the way workers communicate, monitor and respond in the field, as well as enhancing in-plant operations/predictive maintenance.

Utilities trends

A widening gap exists between infrastructure investment vs. demands for reliable energy.

It is estimated there will be a \$208 billion shortfall by 2029 and a \$338 billion shortfall by 2039 in generation and transmission needed for demand.¹

Different types of demands are on the rise.

The number of electric vehicle (EV) charging stations within the United States has grown from 6,900 chargers in 2012 to more than 61,000 in 2021.

18.7 million electric vehicles are expected to be on the road in the United States by 2030.²

New kinds of power generation sources require new transmission capabilities.

Electricity generation from renewable energy sources rose from 18% in 2019 to 20% in 2020 and is expected to rise to 22% in 2021.²

INFRASTRUCTURE VS. INVESTMENTS



ELECTRIC TRANSPORTATION



RENEWABLE ENERGY TRANSMISSION REQUIREMENTS



1. "Failure to Act: Electric Infrastructure Investment Gaps in a Rapidly Changing Environment," American Society of Civil Engineers (ASCE), 2020.
 2. "Smarter Energy Infrastructure: The Critical Role and Value of Electric Transmission," Edison Electric Institute, 2019.

Mobile technologies are already improving the outage information exchange.

Information is central to a utility company's ability to quickly recognize, respond to and resolve grid problems, especially in an outage scenario. While the smart grid framework incorporates multiple lines of communication to gather this information from and share this information with participants in the electrical flow—bulk generation, transmission, distribution and the customer—mobile technologies are adding a new path for information collecting and sharing.

Customers have started using their smartphones to take photographs of downed wires, poles, and

other safety and outage issues and are sharing them with their utility companies. This is helping the operations team quickly visualize the situation without sending workers out to the site to make initial assessments, which helps aid technicians' ability to fix/repair in one site visit.

Utility companies are also starting to look at new technologies, such as drones, smart tablets and augmented reality (AR), that can safely provide field workers with a more in-depth view of the situation while maintaining a safe distance.



RESILIENCE NEEDED

\$28 BILLION → **\$169** BILLION

The distribution system accounts for 92% of all electric service interruptions, a result of aging infrastructure, severe weather events and vandalism. Power outages are costing the U.S. economy \$28 billion to \$169 billion annually.¹

1. 2021 Infrastructure Report Card. <https://infrastructurereportcard.org/wp-content/uploads/2020/12/Energy-2021.pdf>

Examples of new technologies



Artificial intelligence

Artificial intelligence (AI) and machine learning are helping utilities manage assets. With AI's ability to analyze massive databases, utilities can develop greater and more granular maps of generation and transmission resources and use advanced solutions to monitor assets in near real time.



Drones

Drones assist with inspections, allowing workers to safely view and assess damage. Using drones can reduce the need for multiple bucket trucks and allow the utility company to gather video feed information for additional analysis that can be used to optimize repairs.



Smart tablets

Smart tablets allow onsite repair crews to gather more information during assessment that can speed up repairs. Crews can use tablets to view a digital overlay of the pre-damaged site to see what the actual damage is and what replacement components may be needed. They can query about and request inventory in real time, and enhance productivity by ensuring the right employees are onsite with the right tools in hand.



Augmented reality

Augmented reality (AR) will enable repair crews to gather information by looking at the damaged site with a set of AR glasses. AR is still in the experimental stage, but researchers like the Duke Emerging Technology Office foresee AR helping repair crews gather detailed information from feeder maps and substations, sending pictures to the outage management system (OMS), using image recognition to draw in what's missing due to damage and requesting missing parts from the nearest warehouse.



The internet of things

The Internet of Things (IoT) and the rise of big data, advanced analytics and smart sensors allow utilities/energy companies to capture and share real-time analytics across their mobile workforce to ensure efficient, effective decision-making in tough conditions. As utilities transform into more connected and distributed grids, their mobile workforces must transform as well. Conversations around the IoT and Smart Cities often focus on machine-to-machine (M2M) communications, but we also need to consider how these efforts will better connect utility mobile workforces.



CASE STUDY

SeekOps pinpoints gas leaks with space-age tech and Panasonic rugged tablets.



SeekOps, a leak-detection service provider for the energy industry based in Pasadena, CA, successfully set out to transition NASA's miniature methane sensor technology from a proven prototype to a commercial service—based on technology that was first demonstrated while mounted to a drone used for oil production surveys and gas-utility safety inspections. The SeekOps solution can detect leaks faster than traditional manual inspections and provides significantly more high-quality data than other methods, which translates to more effective, accurate and sensitive leak detection and localization.

The founders of SeekOps paired their methane detection drone with a Panasonic TOUGHPAD®

FZ-G1 tablet, a purpose-built, rugged device for energy professionals—from oil rig technicians to utility workers. The 10" form factor, daylight readable screen, long battery life and rugged durability can provide natural-gas field teams with immediately actionable information.

A three-person SeekOps team—a drone pilot, safety observer and ground control operator armed with the TOUGHPAD FZ-G1—can set up and begin inspecting a wellpad in less than 15 minutes. With a real-time view of streaming data from the drone, the team can detect a problem, pinpoint its exact location and assign a severity grade—providing a faster, cheaper and smarter way to reduce methane gas leaks.



“There’s really nothing on the market that could contend with these devices, and we knew when we took it out into the field, that we had made the right hardware choice.”

—Andrew Aubrey, CEO,
SeekOps

[FULL CASE STUDY](#)[MORE CASE STUDIES](#)

Mobility for in-plant operations

Mobile technology is only expanding as grid modernization, connected devices and wireless data impact the energy industry.

Mobile utility management plays a significant role in that tech transformation—affecting asset inspection, maintenance, staff scheduling, data capture and transmission, compliance, and grid operations.

With the right mobile devices, plant operators in charge of large plants or many different sites can better manage maintenance rounds, quickly identifying assets that will need to be inspected and ensuring personnel schedules are planned effectively.

Using mobility also helps reduce labor-intensive manual data capture. Workers can use their device to take and send pictures of assets, transmit information quickly to or see asset history from a central database, and gauge next steps while they're still on their shift.

This helps reduce data errors and improves compliance while empowering employees to proactively make maintenance decisions that could extend equipment life.

Reducing back-office costs through mobility allows utilities to focus on enhancing safety and plant efficiency. Mobile dashboards and reports offer real-time metrics on work orders, improved documentation, more robust compliance, and better visibility into expenses, as well.

Efficient operations mean plants spend more time meeting customer demands for power and boosting their bottom line. Integrating mobility is a step toward improving utility plant management.

Utility companies in the United States are expected to spend about \$500 billion through 2025 to improve infrastructure.



2025
\$500
Billion

While having the right devices in the field is crucial, mobile technology can help manage in-plant operations more efficiently as well.

Mobile-enabled OMS/WMS predicts and minimizes restoration times.

Utility companies face multiple operational challenges, including unpredictable outages and interrupted service that impacts millions of people annually. With mobile-enabled OMS and work management systems (WMS), they can help predict and minimize restoration times, which can be communicated to the customer.

Despite the drive to prevent outages, the unpredictability of severe weather—the top cause of outages—means service interruptions will continue to happen.

Utilities can use mobile-enabled OMS/WMS to improve customer satisfaction during these challenging times by staying connected with the customer.

Even when dealing with outages caused by other means, such as natural disasters, physical attacks including sabotage and vandalism, fuel supply deficiencies or other transmission disruptions, it's critical that field crew share easy access to up-to-the-minute information and can capture and transmit accurate data efficiently and safely.



Mobile devices are critical to overall productivity, as well as ongoing reliability improvements, better outage responsiveness and customer satisfaction.



Rugged mobile solutions improve productivity in critical field scenarios.



SEVERE STORMS



EXTREME HEAT



FLOODS



HURRICANES



FIRES



CYBERATTACKS

Utility personnel often work in harsh environments, making them ideal candidates for mobile solutions that use rugged devices, which are typically built to meet military standards for toughness.

As non-field personnel move to mobile notebooks, tablets and handhelds rather than remaining at a stationary workstation, rugged computing devices are being used to improve productivity by better connecting and servicing utilities customers.

A consumer-grade mobile device can't stand up to day-after-day conditions that utility field workers experience. If something goes wrong with a consumer-grade laptop in the field, it's not easy to fix.

Putting unreliable or delicate consumer-grade computing equipment in the field can potentially risk:

- Ongoing business operations
- Productivity, both for the workers in the field and the IT technicians
- Increased operational costs, including device repair and employee downtime
- The safety of workers
- Prolonged customer service outages

Rugged features include:

- ✓ **FIELD READY**—Fully loaded and tested prior to reaching workers, including Wi-Fi and GPS with immediate connectivity
- ✓ **BUILT TOUGH**—Not only to withstand harsh conditions like drops, spills, dirt, temperature changes and constant motion, but also engineered with enterprise-grade security
- ✓ **RELIABLE AND SECURE**—Manufactured for exceptional connectivity, reliability and reach, built with robust computing power and added enterprise security
- ✓ **ROCK SOLID**—Including access to support/software updates, warranties, exchange and repair service, and more
- ✓ **POWERED**—Powered to keep running, with extended battery life and options to swap the battery without turning off the device
- ✓ **RESILIENT**—Designed to work night and day in extreme conditions, including conditions requiring gloves, high-glare situations, potentially explosive environments, and wet/dusty settings

Rugged mobile technology: A smart investment

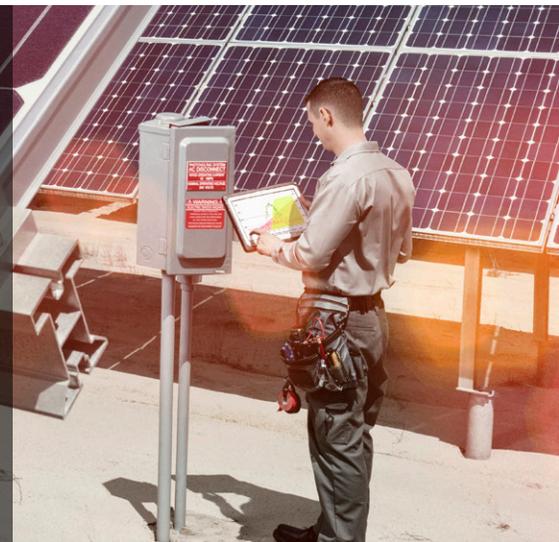
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Adopting reliable, rugged technology helps protect your mobile investments and can save you money over time, reduce downtime in utility maintenance and increase productivity. In addition, even though rugged technology may have a higher cost up front, it can pay for itself over a relatively short period of time, especially since the devices stay in the field longer

WHEN TECHNOLOGY FAILS, IT COSTS TIME AND MONEY.

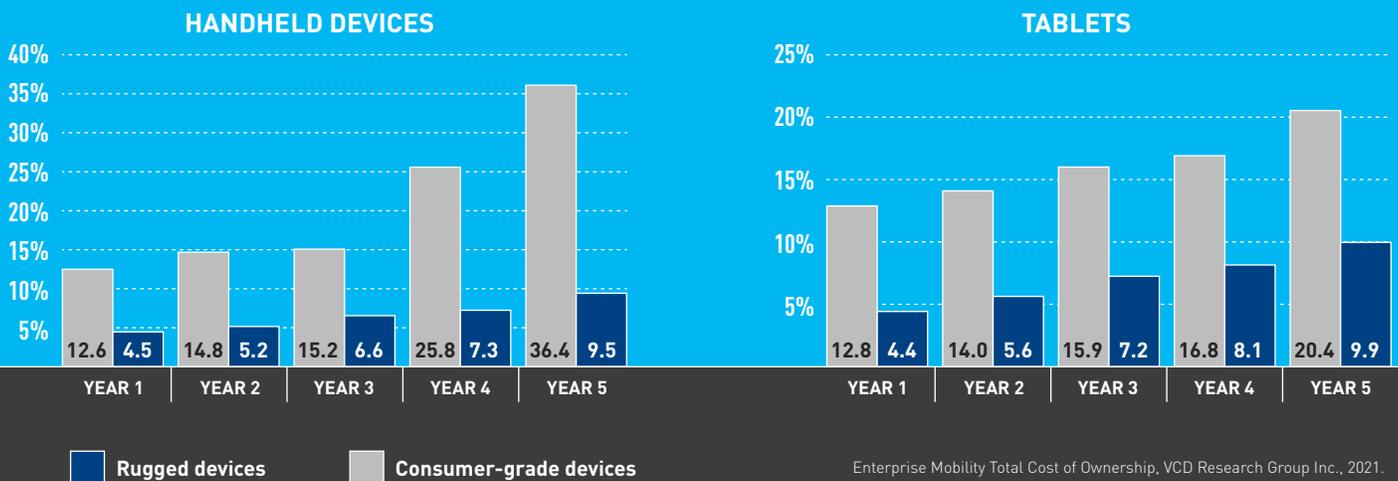
20% higher service ticket volume for organizations using consumer-grade devices as their frontline mobile solution, compared to organizations with rugged mobile devices

74 minutes of lost productivity for frontline workers with each mobile device issue



WHEN FAILURE IS NOT AN OPTION: RUGGED DEVICES OUTPERFORM CONSUMER-GRADE MOBILE DEVICES.

Average failure rate among smartphones and tablets vs. rugged handhelds and tablets over five years



Enterprise Mobility Total Cost of Ownership, VCD Research Group Inc., 2021.

Choosing the right rugged device

With the right rugged devices, utilities gain both business efficiency and customer service benefits. Panasonic devices last longer in the field, offering greater reliability, stronger battery resilience and a lower total cost of ownership.

Consider these benefits of Panasonic rugged devices:

- ✓ Lower computer failure rates means higher worker productivity.
- ✓ Enterprise-grade security protects data and network.
- ✓ Software and deployment solutions help deliver real-time data and analytics and automate manual processes.
- ✓ Backwards-compatible vehicle docking solutions improve driver safety and optimize usage, lowering cost of ownership and future-proofing purchases.
- ✓ Reliable connectivity and support for multimodal communications, such as Wi-Fi, Bluetooth®, 4G LTE Advanced and optional GPS, provides flexibility to access data.
- ✓ When paired with AR technology, Panasonic rugged devices improve the ability to locate and monitor assets in the field, identify outages, provide repairs, and locate and track mobile workforce teams, helping to improve operational efficiency and worker safety.



FOR MORE INFORMATION ABOUT PANASONIC MOBILITY ▶

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