Proactive Asset Protection with Precision Lightning Intelligence

Leveraging analytics to identify potential risks

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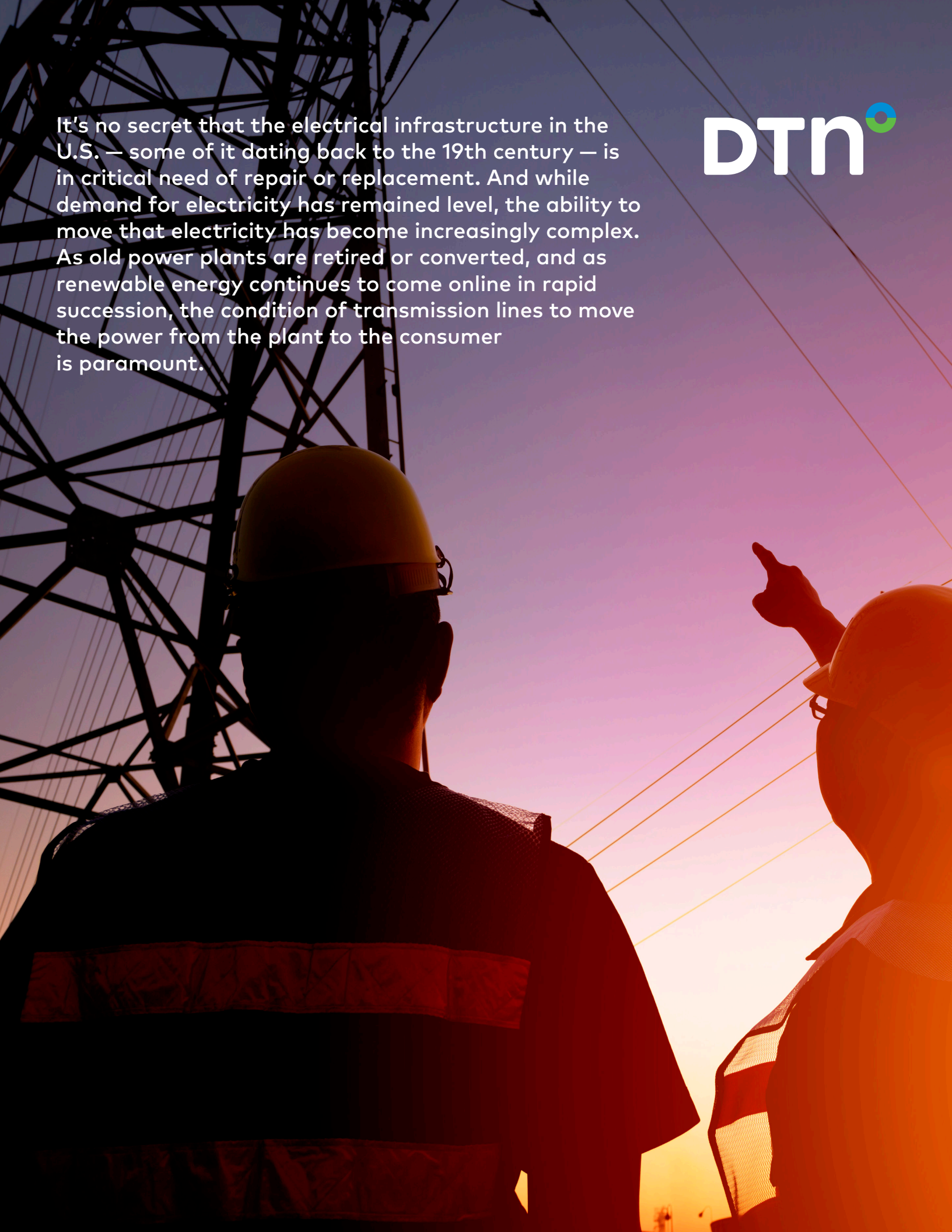


It's no secret that the electrical infrastructure in the U.S. — some of it dating back to the 19th century — is in critical need of repair or replacement. And while demand for electricity has remained level, the ability to move that electricity has become increasingly complex. As old power plants are retired or converted, and as renewable energy continues to come online in rapid succession, the condition of transmission lines to move the power from the plant to the consumer is paramount.

Investment in power transmission has increased in the last 10 years, yet there has been a rise in the number of power failures and interruptions, according to the American Society of Civil Engineers. In their most recent report on the state of U.S. energy infrastructure, the organization noted:

"America's power grid is at full capacity… Without greater attention to aging equipment, capacity bottlenecks, and increased demand, as well as increasing storm and climate impacts, Americans will likely experience longer and more frequent power interruptions."

Weather — notably lightning — is one of the major culprits when it comes to power outages, and the condition of your assets plays a role in the extensiveness of the damage. In fact, one-third of all powerline outages are lightning related, whether directly or indirectly.

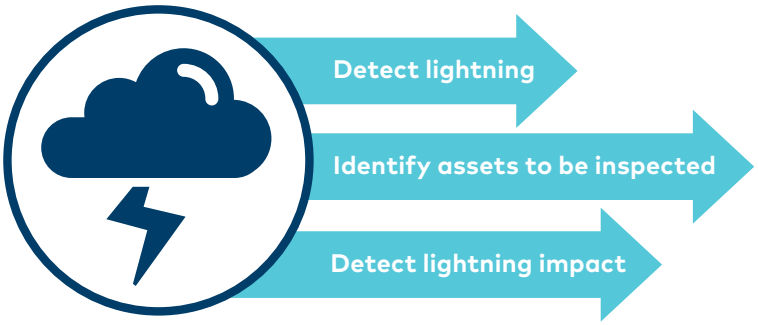
- Direct effects include a burnout or explosion of electrical power and distribution equipment
- Indirect effects are caused by increases in ground voltage when lightning hits the earth; this includes voltage and current surges in an area's electric power, which in turn burns out electrical equipment

Lightning damage is especially difficult to mitigate because strikes can happen near cables or other nondescript parts, causing equipment to fail days or even weeks later and mask the source of the outage. As a result, you may have to spend significant money and resources to carry out a patrol exercise for inspecting your assets and finding the source of the damage.

Emerging best practice: A proactive asset inspection program

While all aging assets can't be fixed overnight, utilities are adopting new but proven weather technologies to better help identify, manage, and fix outages. Leading-edge weather intelligence has the ability to correlate the location of a lightning strike and an asset, such as a transmission tower or substation. This gives forward-thinking utilities one of the most efficient ways to track down a failed or damaged asset.

The program's central tenet is accurate, real-time weather intelligence that provides automatic notifications and alerts for assets to inspect based on weather conditions. With an understanding of the potential risk of lightning strikes to assets in your service territory, you can schedule asset inspection as part of your daily operations and, most importantly, respond to the damage more efficiently — or take preventative measures accordingly.



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Impacts to your bottom line

With a proactive asset inspection program, utilities and transmission companies can monitor the weather-related risks to their assets (including transmission towers, substations, feeders, poles, and others), promptly detect lightning damage, and discharge repair crews more quickly, resulting in significantly reduced outage time and faster power restoration.

By leveraging accurate, real-time, and ground-based weather intelligence, you can proactively protect your assets, your reliability, and your bottom line.

Reduce repair and replacement costs by managing potential threats before they become significant, as well as attending to outages more quickly and efficiently.

- Identify lightning risks to assets in real time, including direct and indirect effects
- Identify non-descript damage before it becomes more costly to fix later on
- Prioritize and schedule asset inspection and maintenance more efficiently

Reduce power disruptions and maximize output by knowing the when, where, and how of the damage to your asset.

- Dispatch crews more quickly and accurately
- Make faster, better-informed decisions about mutual assistance
- Minimize outage time by reducing asset down-time due to inefficient maintenance practices
- Strengthen service reliability by prioritizing at-risk assets and avoiding excessive shutdowns

Improve documentation and compliance with clear records of events and an accessible history of past occurrences.

- Continuously track the health of your assets
- Maintain lightning strike damage evidence for warranty or insurance purposes
- Analyze patterns by retrieving historical lightning strike reports
- Determine where to best invest in additional lightning protection

Know more than just the "what"

Knowing the "what" — that there was a lightning strike in your service territory — is helpful. But knowing the "how" — the lightning's characteristics, its exact location in relation to your assets — is invaluable because it is actionable.

A weather intelligence solution will automatically correlate the lightning strikes of the past 24 hours with the location of your assets and deliver a standard, daily report from which to coordinate your maintenance and inspection tasks. Often referred to as a Utilities Asset Inspection Report, the data in it is immediately actionable and does not require manual calculations or comparisons.

Key features of a daily report typically include:

- Identification of all assets that have had lightning activity in close proximity
- Lightning strike date, time, amplitude, and exact location to help you prioritize inspections
- Immediate access to previous lightning strike reports with filters such as specific data ranges, strengths of lightning, historical proximity of strikes, damage to assets, etc.
- A probability radius that identifies nearby assets that may have been impacted
- Polarity of the strike, as positive flashes typically cause greater damage than negative ones

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This data informs your decisions for a proper response based on the prompts from the solution, including:

- No action, **continue to monitor**
- Repair when convenient, **repair**
- Shut down immediately, **repair**

In addition to daily inspection reports the solution also provides inspection alerts which deploy as lightning occurs. Immediate notification ensures that any asset can receive a faster inspection.

A rich, real-time, and accessible weather intelligence solution will give you the actionable data you need to protect your assets, your customers, and your reliability.

Cutting-edge weather decision support for utility operations

As the rate of volatile and extreme weather events continues to increase, utilities will need every tool available to identify potential risks and mitigate them accordingly. With real-time weather intelligence that compares lightning strikes with the location of your specific assets, you receive precise, actionable data to help protect your assets and your service more efficiently than ever before.

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