

# Vegetation Visibility and Management

## Distribution Transformer Monitoring Reduces Risks and Costs

According to the Federal Energy Regulatory Commission (FERC), vegetation issues, particularly trees falling into overhead powerlines, are the largest cause of outages.

# 23%

of U.S. power outages are related to vegetation.  
*College of Nature Resources*

Trees are responsible for **90%**  
of outages in heavily forested areas during  
storms with strong winds or snow in NE U.S.  
*MDPI 2021 research paper*

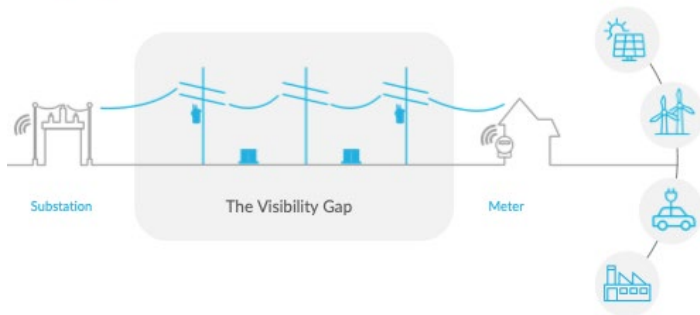
Utilities spend an estimated  
**\$6-8 billion**  
on vegetation management.  
*Accenture*

The annual cost of U.S.  
power outage is estimated at  
**\$150 billion**  
*U.S Department of Energy (DOE)*

### Vegetation Management Needs Visibility

Distribution infrastructure visibility is vital to vegetation management since this is where 92% of outages occur. *2021 Infrastructure Report Card*

Significant Blind Spot  
Visibility Gap Between the Meter and the Substation



The lack of visibility and a proactive system for detecting and identifying vegetation encroachment forces utilities to rely on inefficient and costly visual inspections on entire lines and fixed trimming schedules.

### Ideal management includes:

**Situational Awareness:** Alerts to momentaries that may be tree or branch strikes.

**Analytics:** Spot voltage sags and anomalies that can indicate vegetation encroachment.

**GPS-based Mapping:** Pinpoint faults and tree or branch strikes.

**Risk-based Management:** Use data and analytics to locate problem areas versus costly fixed trim cycles.

**Realtime Asset Management:** Maintain an accurate and up-to-date location of vegetation problem areas and impact on infrastructure.

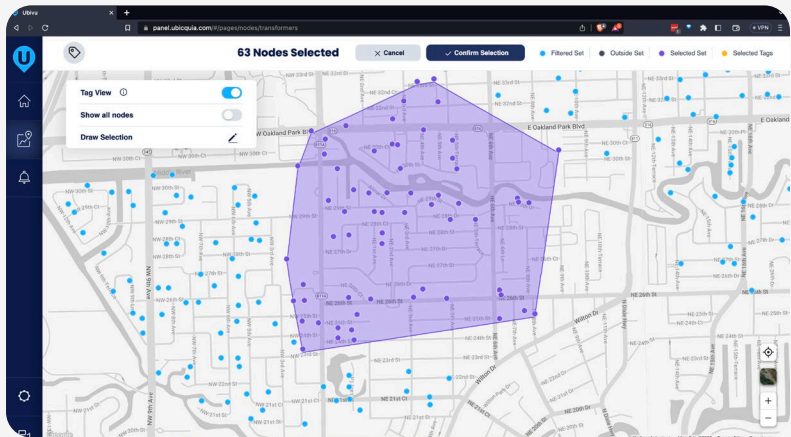
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## UbiGrid® DTM+ Closes the Visibility Gap

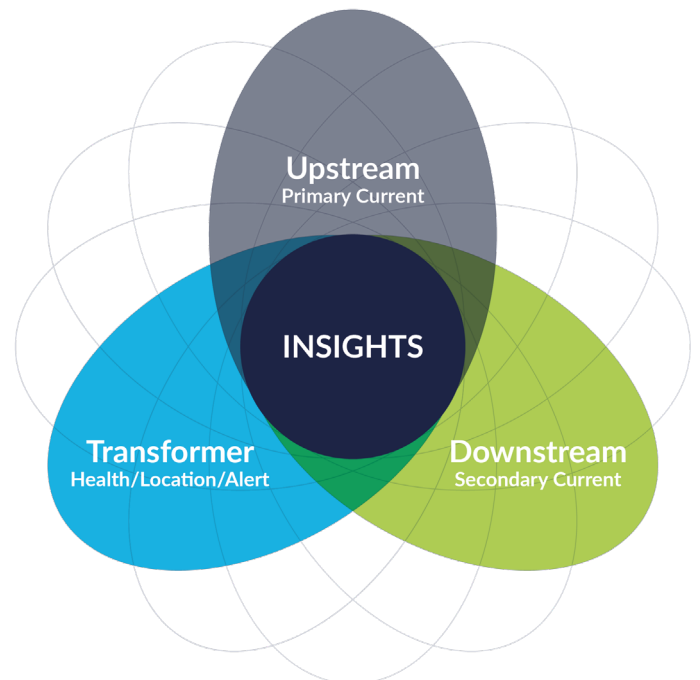


UbiGrid DTM+ harnesses the power of communications and data science

- Installs on single/3 phase pole or pad mount transformers in minutes and sends data instantly.
- Collects and sends transformer and grid data over LTE to UbiVu®, our cloud-based asset management system.
- UbiVu uses predictive analytics, reporting, and visualization to eliminate the visibility gap and spot problems before they become outages.
- Open APIs enable integration with existing grid operations and OSS systems.



Insights from the substation to the meter

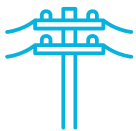
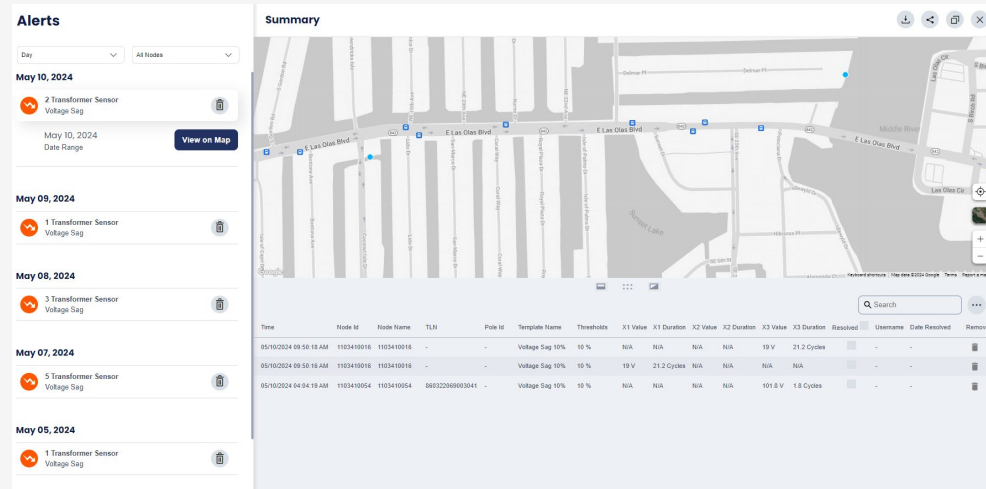


# Vegetation Visibility and Management

## UbiGrid DTM+ Enables a Proactive Approach

The UbiGrid Distribution Transformer Monitor (DTM+) makes existing infrastructure smarter and more visible.

The UbiGrid DTM+ improves vegetation management with a [five-step process](#) using predictive analytics. This enables utilities to detect and address minor issues faster and cost-effectively before they become critical.



### 1. Strike

A branch or limb bounces off the powerline causing an event.



### 2. Detect

UbiGrid DTM+ reads voltage at 130 times per cycle, 7800 times per second, and can identify sags and swells as shorts as 10ms.



### 3. Alert

When the UbiGrid DTM+ sees an event, it monitors it and sends an alert through UbiVu with the exact event time, the lowest voltage on each phase, and the number of cycles the event lasted on each phase.



### 4. Compare

Compare the event times to SCADA and AMI data to rule out capacitor banks, reclosures, or other known issues. With sufficient data, the cause can be quickly identified based on event duration and voltage drop level specific to the utility.



### 5. Respond

Upon identifying a likely vegetation-related event cause, send a team to the locations nearest to the unit experiencing the greatest voltage dip and longest event duration, as these are most likely closest to the source of the problem.