How one
Fortune 500 utility
uses vegetation analytics to support wildfire
mitigation efforts

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Overview

A large investor-owned utility working with Overstory has tens of thousands of miles of transmission and distribution lines spanning both rural and urban areas. Much of their region is susceptible to wildfires.

As the threat of wildfire in the wildland-urban interface (WUI) grows, their team is enhancing situational awareness to reduce the risk of potential fires among their community. Mapping hazards and vulnerabilities for more strategic mitigation activities is key.

Tasked with managing an enormous territory, this team had historically used aerial and foot patrol assessments to plan their vegetation work.

But with their new wildfire mitigation plan in the works and employment shortages in the tree management industry, they needed a comprehensive approach that could scale and evolve with their changing needs and help them to make more informed budgeting decisions.

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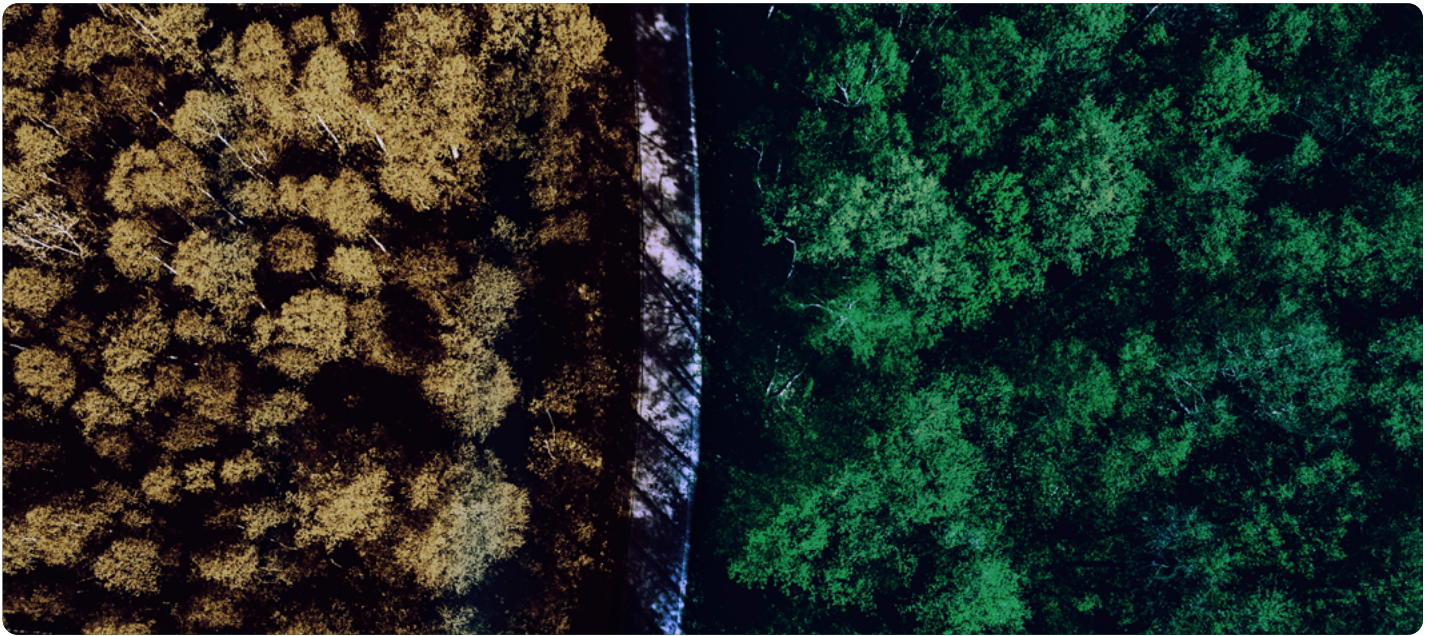
Finding a solution that scales

That's why this IOU turned to satellite vegetation intelligence. They wanted a partner who would collaborate to incorporate their territory expertise and specific business needs into the platform. That would empower the team to put the intelligence to work right away.

Overstory's configurable risk frameworks gave this IOU the opportunity to turn their years of experience and expertise into a standard definition of risk. And, using satellites to collect the data across the territory at once, they could objectively analyze that risk across their network for the first time ever.

Configuring the risk framework

Unless a utility has flown LiDAR throughout its entire system, pole and line locations are almost always inaccurate by a few feet at minimum, which invariably impedes high-quality risk analysis.

To ensure accurate analysis, the Overstory team started by adjusting the pole and line data.

Aided by satellite imagery, Overstory methodically located poles to align the location of the pole with the satellite image. This pinpointing of poles and lines is essential for the accuracy of all vegetation measurements and risk assessments.

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After pole and line adjustments, the teams configured the Overstory risk frameworks considering proximity of the vegetation to line, then incorporated data on tree health and terrain.

The utility provided key inputs on forest health, priority areas, trimming standards, historical outages, wildfire risk zones, and wildland urban interfaces (WUI), which enabled two critical pieces: vegetation metrics as well as vegetation-related reliability and wildfire insights.

With these custom-tailored frameworks, Overstory could perform detailed imagery analysis across single-and three-phase distribution lines as well as transmission lines.

Meeting key business objectives

The vegetation risks were then turned into a reliability forecast, offering insights into the SAIDI impacts of outages on particular circuits. They put this analysis to work for smarter hotspot and circuit trimming plans, supporting the utility's key business goals.

A publicly-available wildfire risk map was incorporated as well, ultimately giving the team a view not just into areas prone to wildfire, but also into specific vegetation threats within those areas. With this information, the utility can make strategic decisions and prioritize work based on the biggest risks to the community and system.

And because Overstory data isn't limited to use within the Overstory platform, the utility has the flexibility to bring the information into their GIS, work planning software, and other systems across the company. Ultimately, this empowers their team to access the data wherever they need it, and minimizes the change management necessary to start seeing improvements.

Verified, outstanding accuracy

Third-party verification

The utility has long contracted planners to walk their lines before a trimming contractor comes out and performs the work. These planners are certified arborists who know the system and trimming standards comprehensively; they are also the perfect people to verify the accuracy of Overstory's risk analysis.

Comparing the planners' estimates and Overstory's risk analysis—informed by customer inputs and judgment—the utility confirmed that the vegetation analysis offered a highly accurate picture of where trimming work was needed across their network.

In a double–blind setup, they found that about 90% of the time Overstory marked a span as high risk, planners, too, found that work was indeed needed on that span. Beyond that, when the Overstory analysis showed a span as clear of risk, the arborist found over 95% of the time that no work was needed on the span. [1]

Validated by the utility's own certified arborists, Overstory's risk scores were evaluated as both accurate and reliable. And because Overstory analysis doesn't require walking the lines, it can be performed quickly, safely, and more regularly to provide powerful network-wide insights.

> ❝
> We've done the verification and the results are spot on.
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> _____
>
> MANAGER OF VEGETATION MANAGEMENT AT US INVESTOR-OWNED UTILITY

[1] This near-perfect accuracy was achieved in Overstory's first iteration and, thanks to the machine learning models employed, the results will only improve with more time and data.

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Pre-and post-trimming verification

Beyond verifying the Overstory risk analyses aligned with their planners assessments, the utility had Overstory reanalyze the same territory after a growing season. Comparing Overstory risk analysis in areas that were trimmed, they got insight on the eliminated risk as well as an estimate on anticipated drop in outages for the trimmed areas.

Measuring risk to
optimize reliability

Virtually all utilities in the US today face evolving challenges to digitize, manage budget, find key labor pools, and importantly mitigate wildfires. This particular utility has identified different use-cases for satellite-based vegetation intelligence combined with ability to objectively measure risk is can help them with moving forward:

Cycle optimization

Weighing outage, SAIDI, wildfire risks, and historical metrics, the team determines which circuits should be trimmed each year. Some high-risk circuits will be pulled into a faster cycle and lower risk circuits will move into a slower cycle.

Hot spot program targeting

With more objective analysis (based on risk frameworks tailored to the network), the team can run a hot spot program in a prudent, defensible, and scalable way. This replaces a less efficient process that relies on training linemen to assume the role of an arborist and identify vegetation problems while out in the field.

Further, the vegetation team can pinpoint and manage hot spots not already identified for upcoming cycle trimming so they avoid expensive trips back at random times throughout the year.
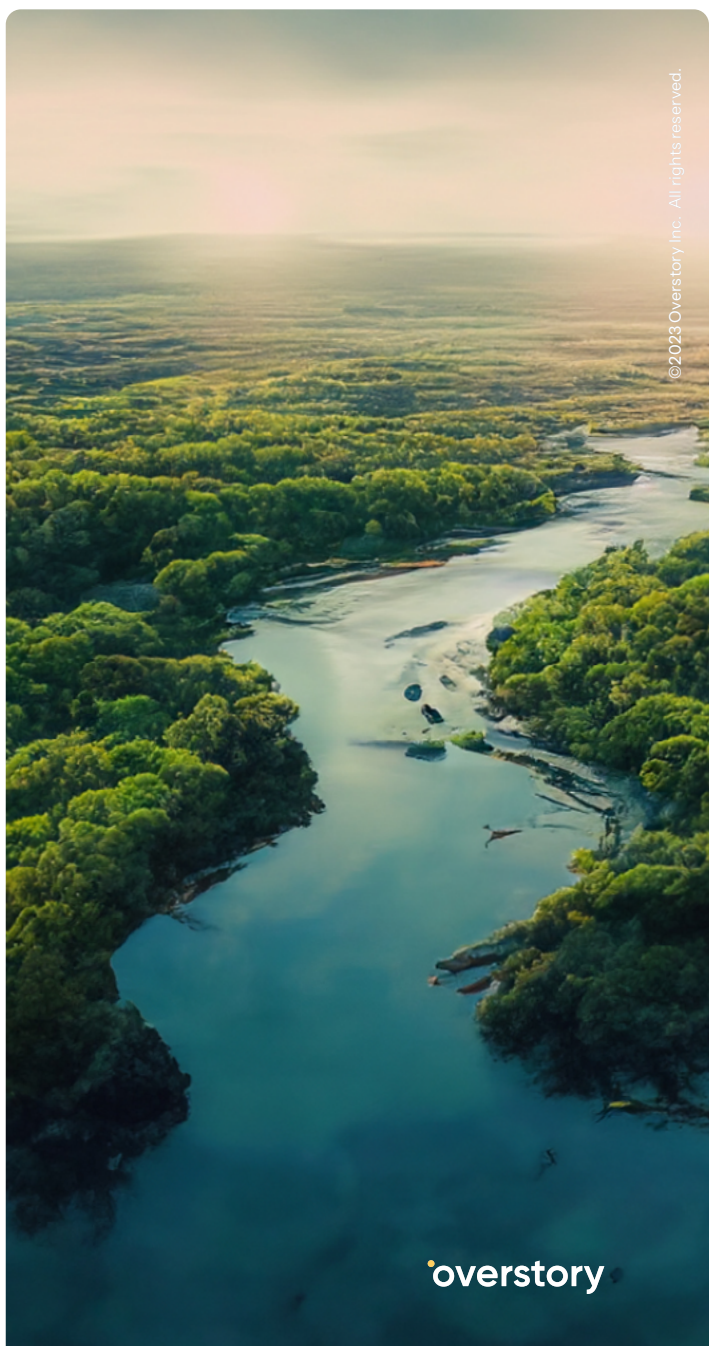
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Minimizing time and labor costs

Wildfire mitigation

With Overstory data, the utility can better pinpoint the location of hazard trees (dead trees with strike potential to the conductor) in critical wildfire risk zones. This enables effective planning and funding to eliminate those trees as threats evolve, especially in particularly dangerous, dry, and hard-to-reach areas and in the WUI, where fires can have devastating consequences.

Additionally, as the wildfire mitigation plan is further defined and rolled out, the utility's improved situational awareness of the state of their vegetation enables them to efficiently implement new programs like structure brushing, fuel load reduction, and targeted risk tree removal.

Objective, accurate data across their transmission and distribution lines can help the IOU to make more informed, strategic decisions to support their reliability goals and to support the wildfire mitigation plan.

The data can help get the most out of the available time and budget. Rather than paying for "windshield time"—that is, the time contractors spend driving to each location to assess risk—they're focusing funds on removing vegetation from the areas they know are the riskiest and highest impact.

This strategic approach to situational awareness lets them stretch their time and budget further. Now, beyond system hardening and safer infrastructure, they have a tool to help objectively and systematically identify and address more risk at a lower cost.

Using satellite intelligence for smarter vegetation management

Overstory gives vegetation management teams a bird's eye view of their network using satellite imagery and machine learning to prioritize the trimming work that matters most. Rather than relying on annual cycles or reactive strategies alone, teams using Overstory can help plan strategic vegetation management work based on Overstory's configurable risk scoring and analysis on vegetation encroachment, hazard trees, wildfires, fall-in and grow-in potential, SAIDI impact, and more.

By helping to proactively mitigate the risk of hazard trees and hot spots, Overstory helps VM teams make drastic impacts on key business metrics like outages, SAIDI, SAIFI, and O&M budgets, ultimately helping utilities improve cost and reliability.
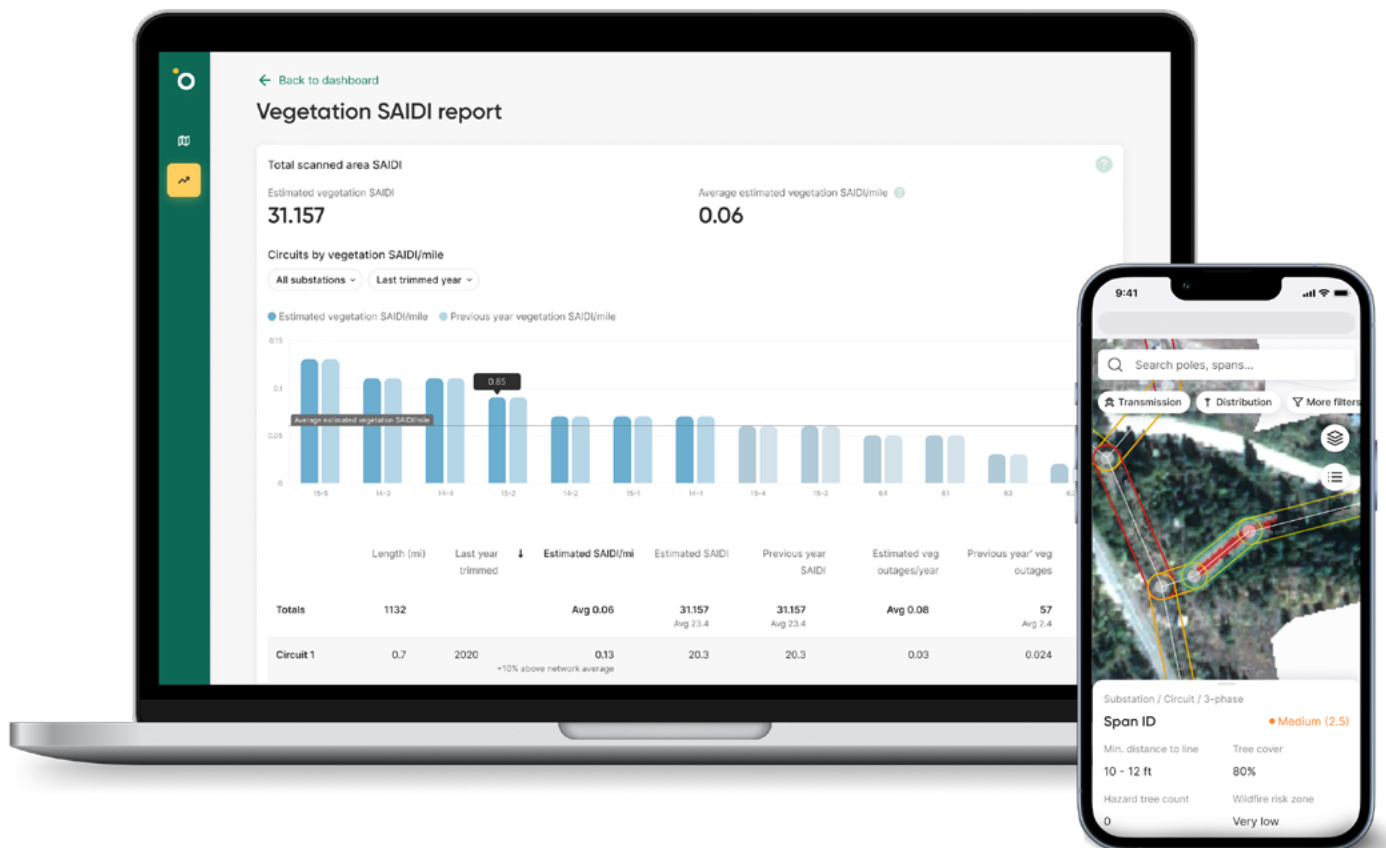
Learn more about how Overstory can help your VM team make smarter decisions, starting with a custom risk framework. Book a demo at **www.overstory.com/demo.**

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