

# How **Delaware Electric Cooperative** Uses Vegetation Intelligence to Reduce SAIDI and Costs

Utility Analytics Week

Grace Malcom  
Delaware Electric Cooperative



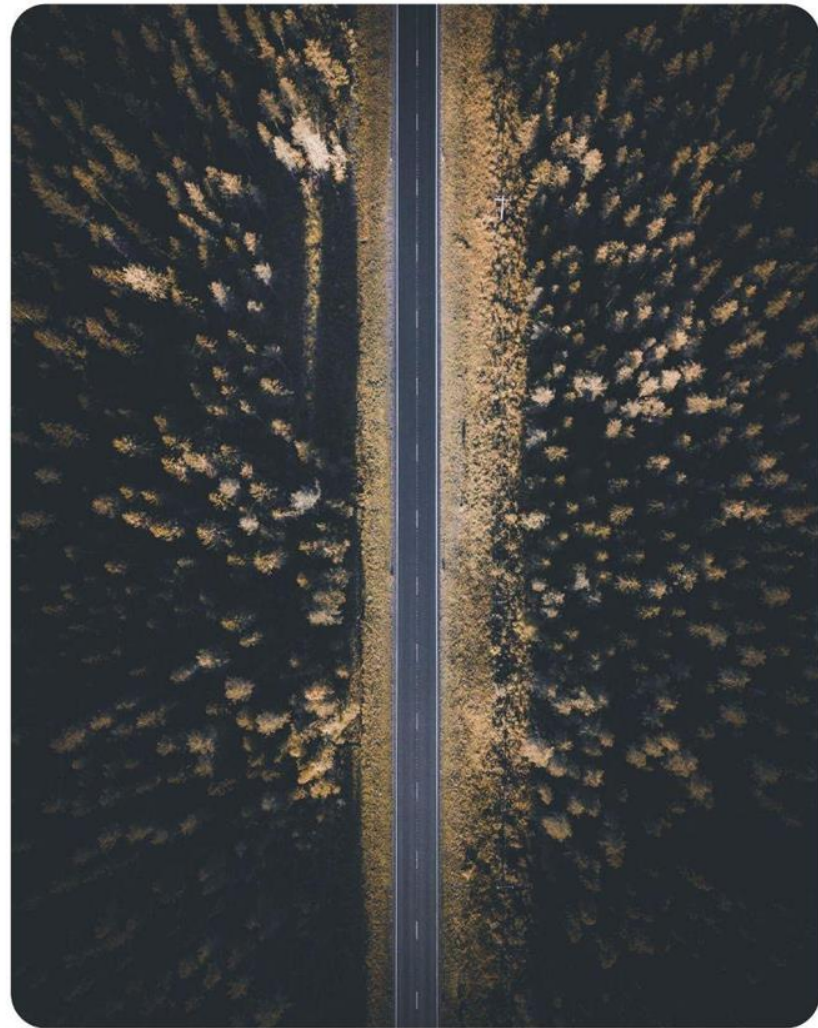
Grace Malcom  
Data Scientist at Delaware  
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How we're using objective,  
network-wide satellite data to  
make better decisions for budget  
and reliability

# Agenda

- Intro to Delaware Electric Cooperative
- What problems we're solving
- How satellite intelligence helps
- Our specific use cases
- Lessons we learned
- Next steps
- Q&A





## Delaware Electric Cooperative

- Serves more than 115,000 members in Kent and Sussex Counties
- 2,000 OH distribution line miles
- Aiming to keep power affordable and reliable for our members



# Our biggest challenges



## Reliability

Maintaining our strong  
vegetation-related SAIDI  
standards



## Affordability

Managing ever-increasing  
budget constraints



## Hazard Trees

Storms and dead trees off the  
Right of Way



## Program Longevity

Successfully balancing both  
budget and reliability  
together



Why satellites?



# Satellites scale the knowledge of our field experts quickly and affordably.



Foot Patrol

Can take years.  
Subjective analysis.  
Dependent on community  
and linemen.



LiDAR

Flight and data processing  
can be 6+ months.  
Data often outdated by the  
time it's usable.



Satellites

Accurate network-wide  
data in weeks. Affordable.  
Plan impactful trimming  
on business goals  
immediately.



# A look into implementation

## Step 1

Partnered with Overstory to have satellites scan our network

## Step 2

Analyzed scan with machine learning based on custom risk framework, customers downstream, and SAIDI impact

## Step 3

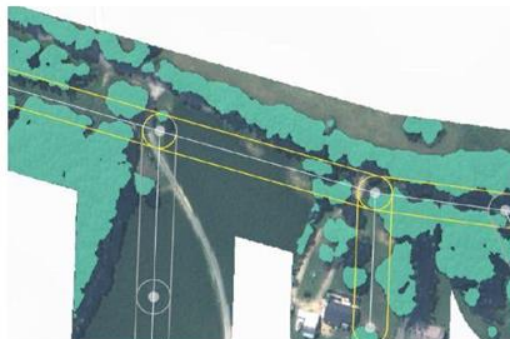
Making informed, objective decisions on which trimming gets pushed or pulled

# Key data layers fueling the analysis



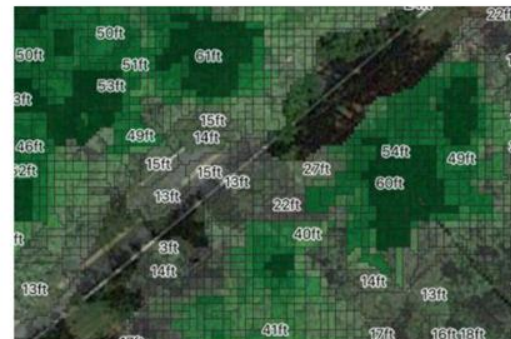
## Pole & line correction

Typically, assets are matched to their location in satellite imagery to ensure encroachment and risk are calculated accurately. (Our team already had outages mapped to specific spans, which gave us a head start.)



## Tree segmentation

Machine learning algorithms identify trees, distinguishing tree crowns from bushes, ground and shadows.



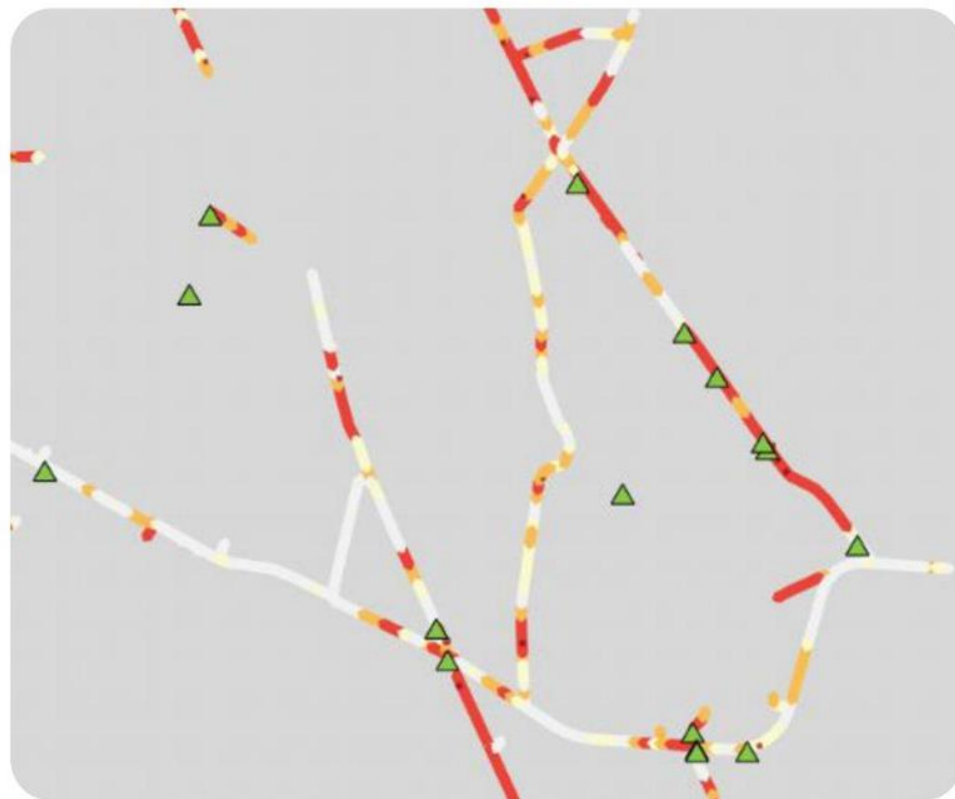
## Tree height

Imagery from multiple angles lets the tool accurately estimate tree heights.

## The real test:

How did machine learning predictions perform?

- We found a high correlation between high-risk spans and actual outages
- Used imagery after trimming help maintain high reliability and proactive strategy



▲  
Outage

●  
High Risk



# How we're putting the vegetation intelligence to work



# Let the numbers speak for themselves



Understanding the relationship between cost and reliability

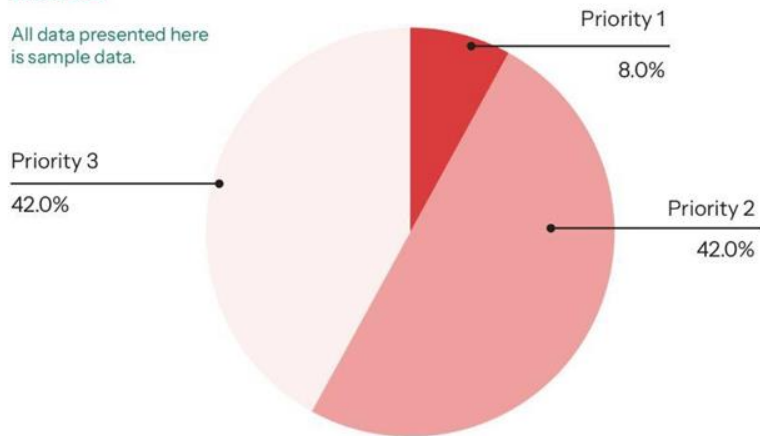


Using data to build consensus among the team

# Optimizing budget to reduce outages

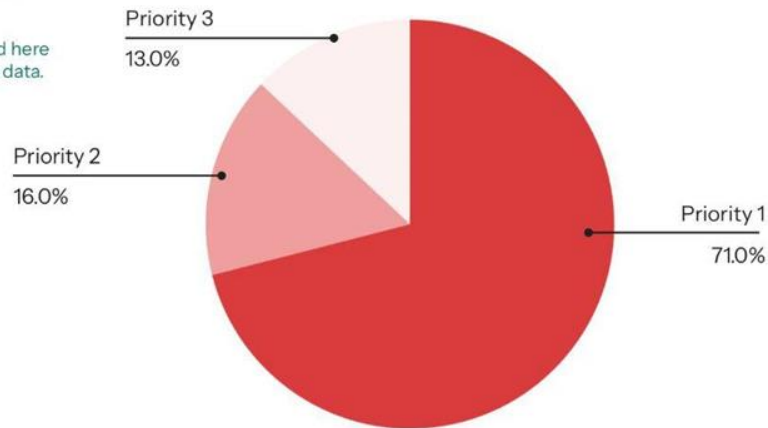
## Miles

All data presented here is sample data.



## SAIDI

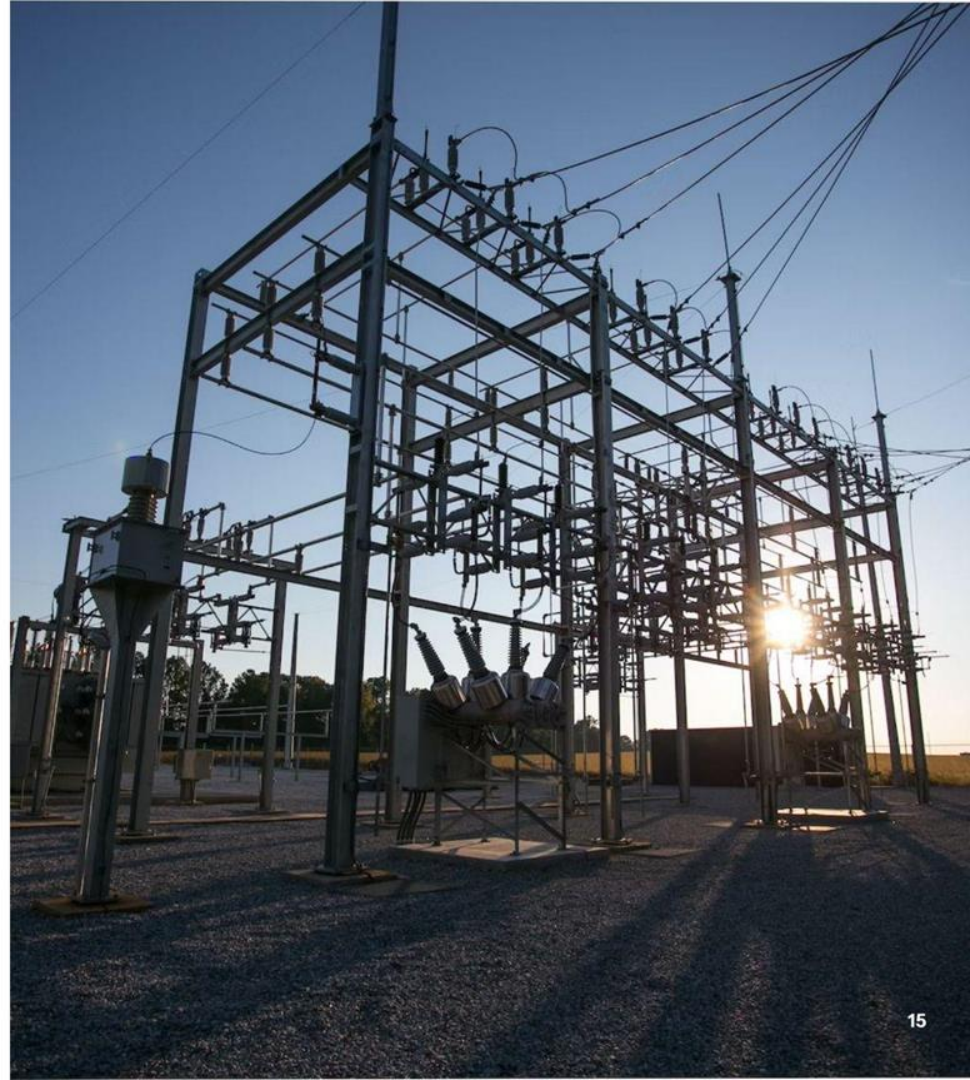
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- Basing trimming off outage prediction analysis. What do we sacrifice if we don't trim?
- Analyzing cost of trimming based on past contractor bids and potential inflation rates.


# Prioritizing the areas that matter most

- **High Reliability Zones** are areas that require extra attention because outages would be more impactful. They're the backbone of your system.



# Iterate on the cycle to trim what matters

- Using analytics to better prioritize budget and reliability while continuing cyclical trimming methods

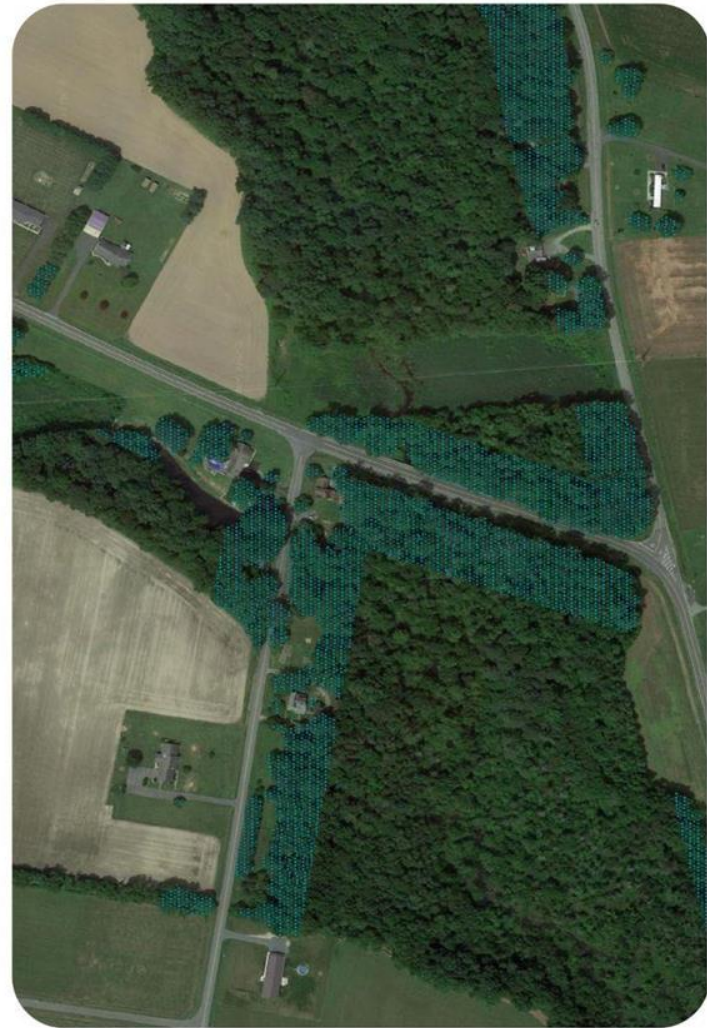
 **Estimated SAIDI & Outages**  
All data presented here is sample data.

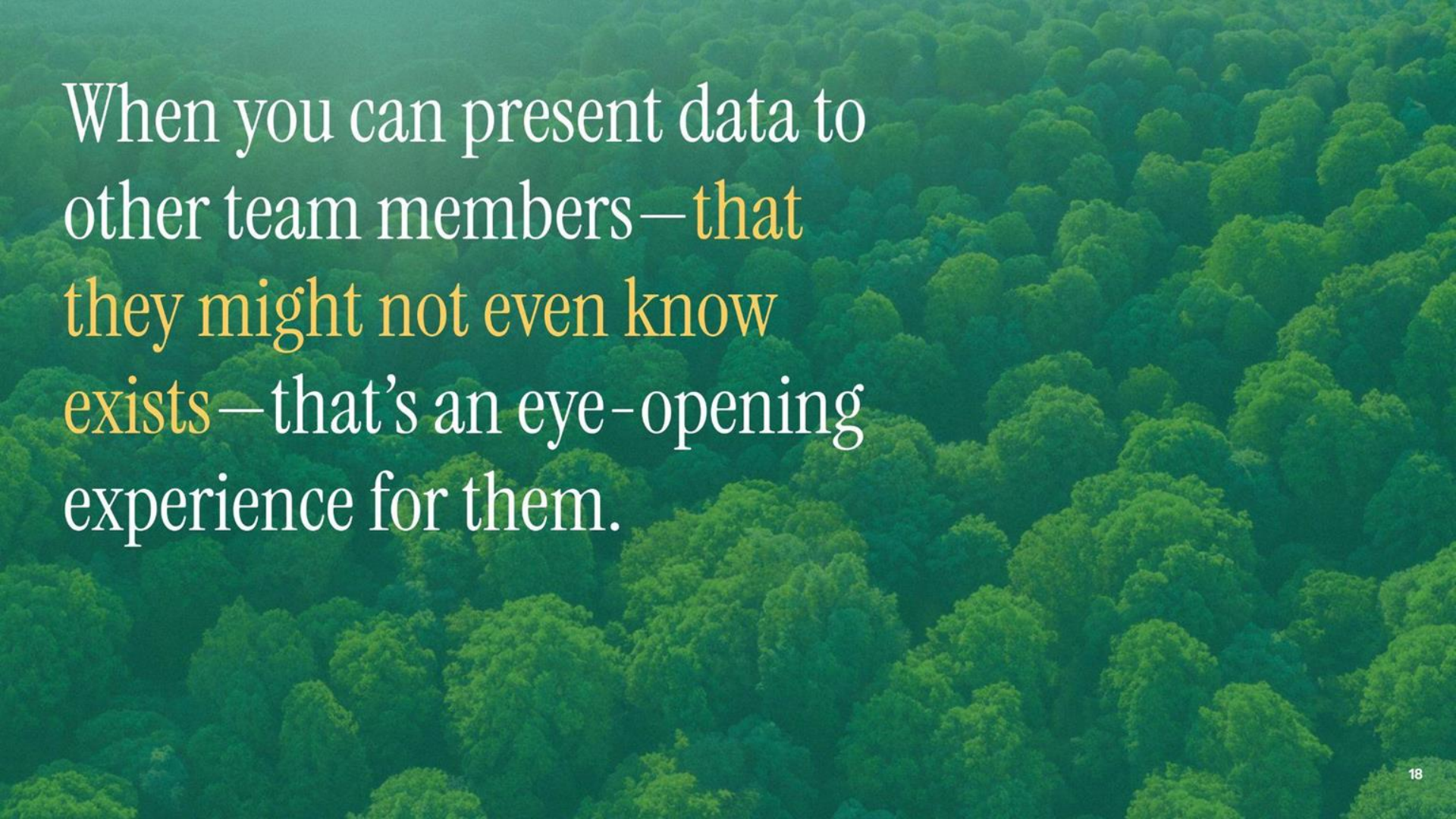
1	15-1	.90 SAIDI	10 Outages
2	15-2	.65 SAIDI	8 Outages
3	5-3	.55 SAIDI	9 Outages
4	6-1	.35 SAIDI	3 Outages
5	8-2	.33 SAIDI	4 Outages
6	8-3	.31 SAIDI	2 Outages





# Lessons we learned and future planning



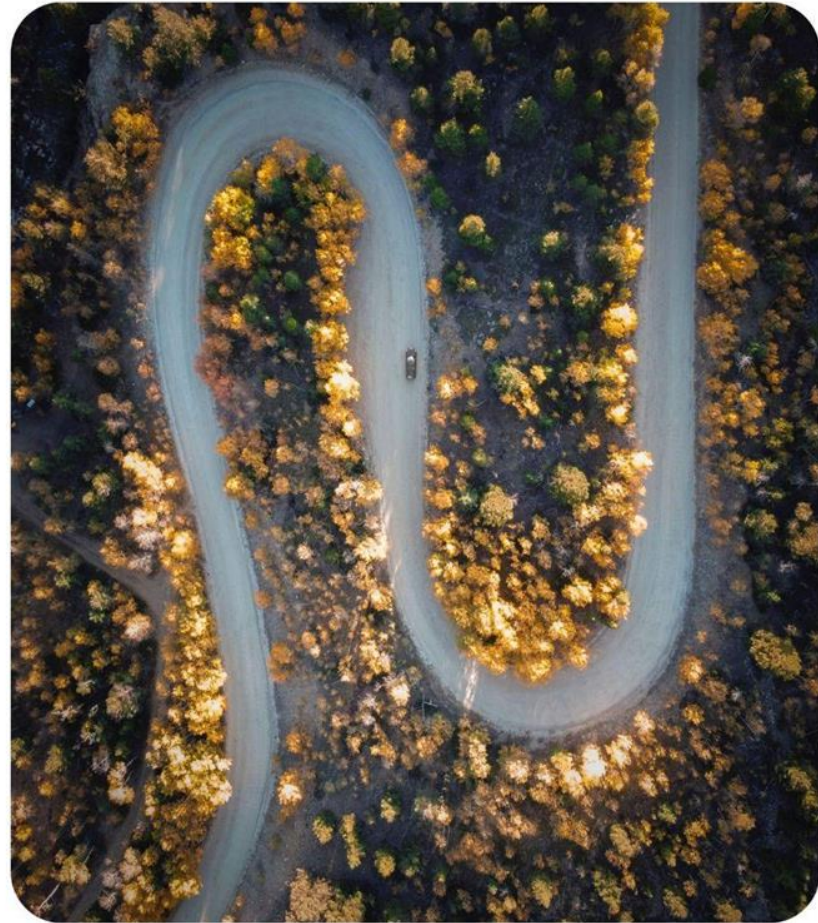
An aerial photograph of a dense, lush green forest, likely a deciduous woodland, with sunlight filtering through the canopy, creating a dappled light effect. The text is overlaid on the upper left portion of the image.

When you can present data to  
other team members—*that*  
*they might not even know*  
*exists*—that's an eye-opening  
experience for them.

# Your approach to each challenge will change as you get more (accurate) data

It's not necessarily just about cutting costs or increasing reliability.

It's about using data to find the smartest way to **balance and optimize** them.



# Figure out how the decisions we make today affect us in the future

Analyze budget and cycle to **maintain budget predictability** and **prepare for the next 3-5 years.**

↑ ↓

### Estimated SAIDI & Outages

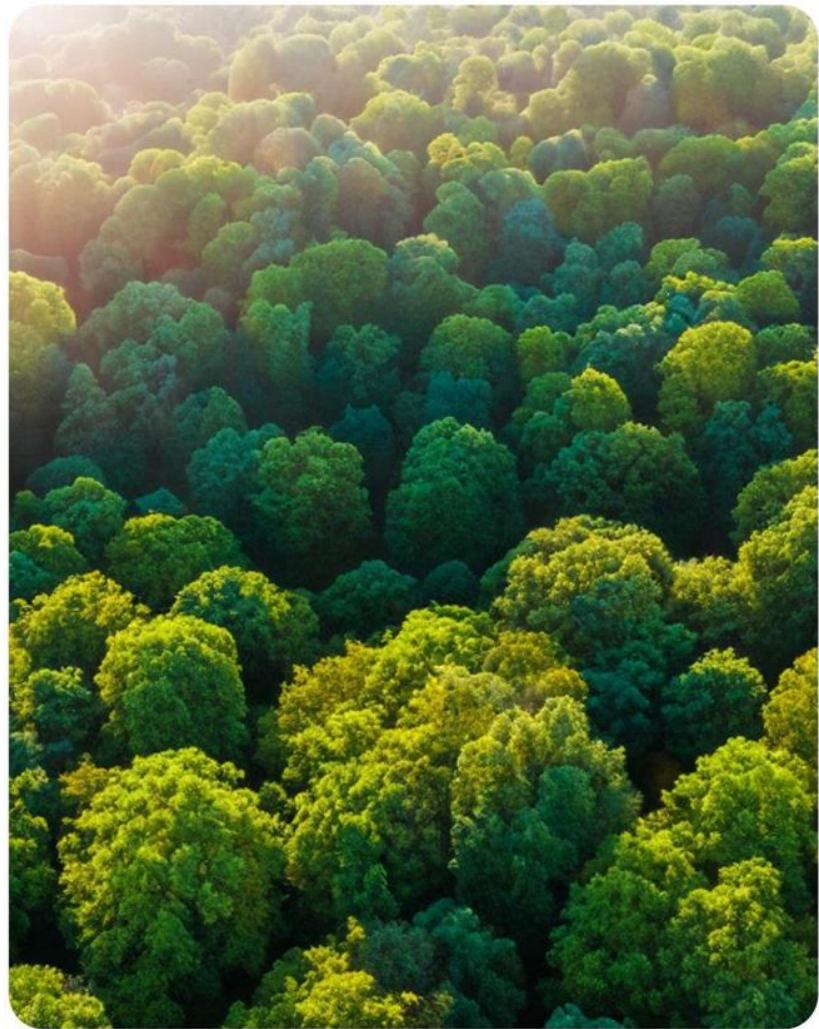
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# Q&A

# Key Takeaways

- Align your tech solutions with your key business goals
- Partner with your providers to make sure you're getting **actionable** intel
- Iterate and share the data with key stakeholders as you go to get buy-in



Thank you.

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Delaware Electric Cooperative