SPIDA SOFTWARE
Part of Bentley Systems

POLE LOADING SOFTWARE

5 ESSENTIAL STEPS

TO ENSURE INTEGRATION, ADOPTION, AND CONSISTENT RESULTS

JACOB BARLOW

Senior project engineer at Randolph Electric Membership Corporation, an electric cooperative in North Carolina, shares his first-hand experience, as well as the opportunities and threats that arise when implementing pole loading software.

Electric cooperatives are under constant pressure to improve internal processes and increase productivity and efficiency, all while keeping costs down and adhering to regulation changes. Randolph Electric Membership Corporation (REMC) faced a similar challenge, as they wanted to empower their stakers to make design decisions more efficiently and to observe the National Electric Safety Code (NESC) guidelines, all without overbuilding their overhead distribution power system or overspending member funds.

REMC's Jacob Barlow shares the challenges he faced, the decisions that drove him to implement pole loading software into his operations, and the return on investment that he sought with the time and cost benefits. Additionally, Jacob describes his "start small" implementation process for incorporating a software application into the co-op's technology mix and current internal workflows.

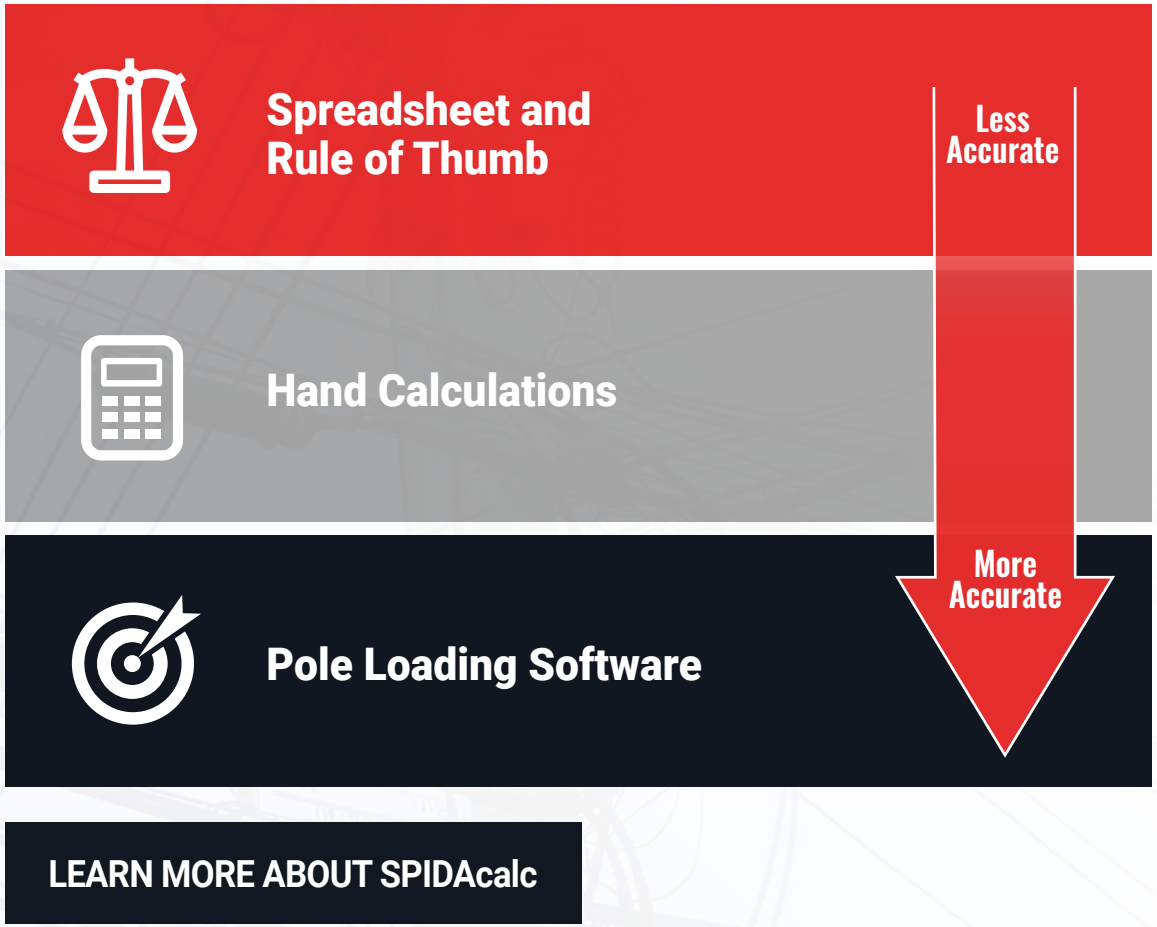
Pole Loading Basics

When evaluating overhead infrastructure, it is crucial to utilize a specific set of conditions or standards to ensure that the correct margins of safety requirements are maintained, as well as that the results produced are accurate and consistent across all aspects of the utility. Many utilities rely on a variety of methods for determining pole loading, each technique with varying levels of accuracy depending on the method and experience of the designer.

When designing a pole line, there are three scenarios that can occur:

- **Underbuilt –** Designs are missing key information and are not built accurately.
- **Overbuilt –** Designs are using oversized materials and/or duplicate materials, such as down guys and anchors, with no real consideration of the downstream costs.
- **Built Just Right –** The stars have aligned, and your design is built with the correct equipment and safety codes.

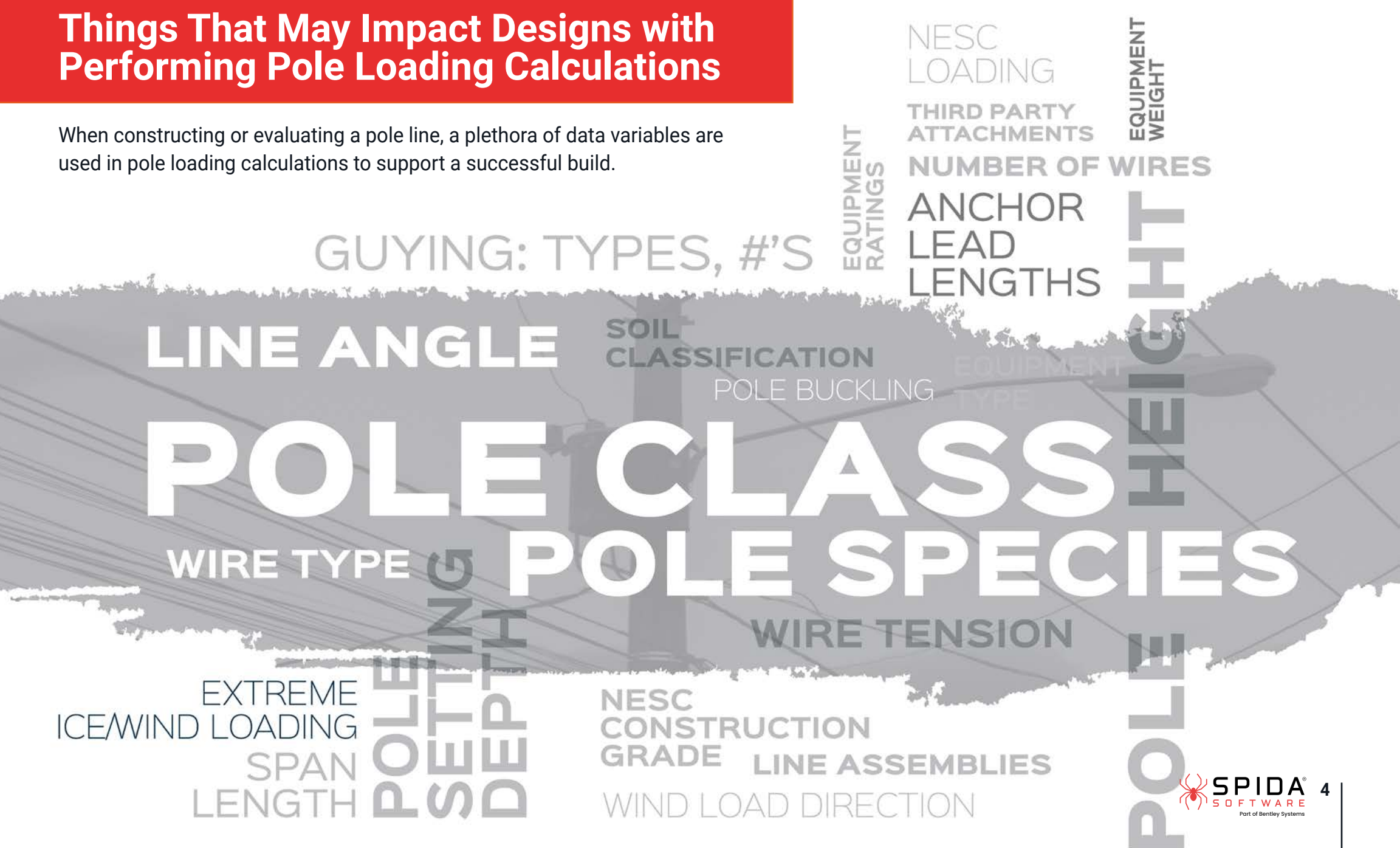
With the right technology, you can solve these challenges by:



LEARN MORE ABOUT SPIDAcalc

Things That May Impact Designs with Performing Pole Loading Calculations

When constructing or evaluating a pole line, a plethora of data variables are used in pole loading calculations to support a successful build.



Jacob's Professional Experience Before and After Implementing Pole Loading Software

BEFORE Implementing Pole Loading Software

The Assignment

As an established electrical engineer in a new position as senior project engineer, Jacob was tasked with learning REMC's operations, Rural Utilities Service (RUS) standards, and the duties of stakers and field engineering technicians. To gain the necessary knowledge, he took on a small staking assignment in which he performed hand calculations for all pole loading, collected information from the field and different tables, read RUS guidelines, checked equipment ratings in the warehouse, and relied on the knowledge of his coworkers.

The Findings

Throughout this experience, he learned that hand calculations were time intensive. He was only 90% confident in his work, and they "needed software to do this."

AFTER Implementing Pole Loading Software

The Result

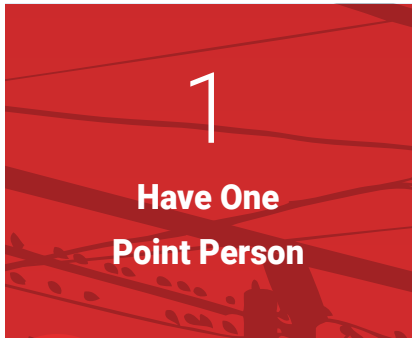
After implementing SPIDAcalc, Jacob and his team saw the true value of pole loading software, and it was quickly accepted internally. Not only did the team see time savings, but they also avoided hand calculations and performed pole loading calculations more efficiently. They also realized that there was a greater impact on their designs when using different equipment and techniques than they initially believed. Examples include:

- Enhancing transition points or a double dead-end framing from a 1/0 ACSR to a 336 ACSR, and quickly showing the impact on a pole.
- Calculating anchor loading, especially in different soil classes.
- Showing the impacts of different anchor lead lengths and the effects on anchor holding capacity and pole buckling.

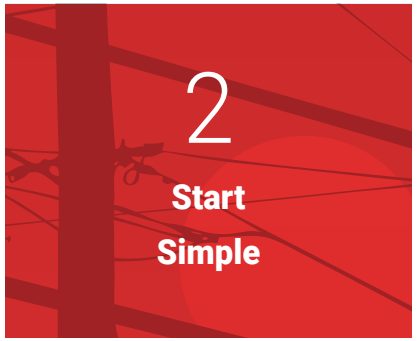
The team discovered the true costs of overbuilding by eliminating extra anchors where appropriate, saving approximately USD 500 per pole design. They also learned the benefits of selecting the correct size and class of wood poles, saving USD 75 per pole. An additional and unexpected benefit of using pole loading software was its impact on their warehouse. With analysis methods at their fingertips, the stakers saw the benefits of using new or different anchors for their pole designs, and the warehouse was able to reevaluate their inventory and adjust the amount of heavier pole classes kept in stock.

REMC's Five Essential Steps to Ensure Integration, Adoption, and Consistent Results

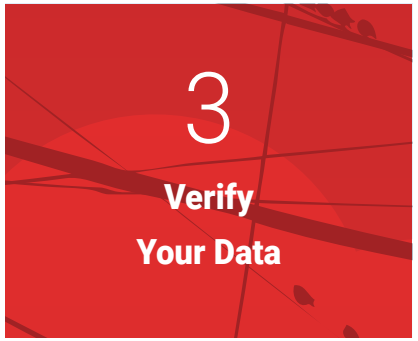
In searching for a solution to the many challenges that the stakers at REMC face, Jacob found that his co-op had already invested in pole loading software, but no one had implemented it or trained others on how to use it. Subsequently, Jacob developed his five essential steps to ensure integration, adoption, and consistent results for applying pole loading software in a co-op environment:



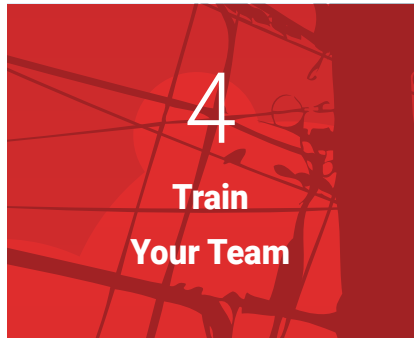
By assigning a team lead, we were able to tackle questions, comments, and concerns and then relay information throughout the organization effectively.



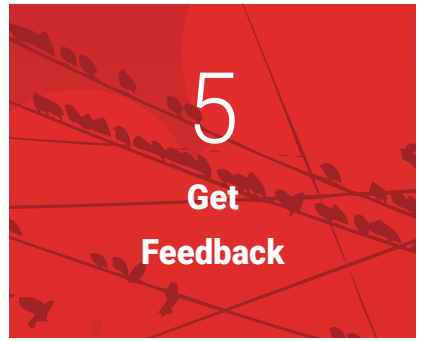
We focused on the most-used distribution units first when implementing SPIDAcalc. The familiarity helped our stakers in designing, analyzing, and building confidence in using the software.



SPIDAcalc houses an equipment inventory called a client file to assist in designing a pole line. We prebuilt our commonly designed poles so that the base of each design was accurate and correct. Attachment heights, insulator types, and allowed angles were standardized and available for all stakers to use, resulting in no errors with equipment ratings.



With any new software, training is key to implementation. We held training for our engineers and stakers, enabling them to get familiar with SPIDAcalc and ask questions.



Checking in with your team on a regular basis and obtaining feedback is a sure-fire way to gauge your implementation's success. The team has had a lot of positive feedback.

Introducing SPIDAcalc v8.0

Your complete pole line design software solution.

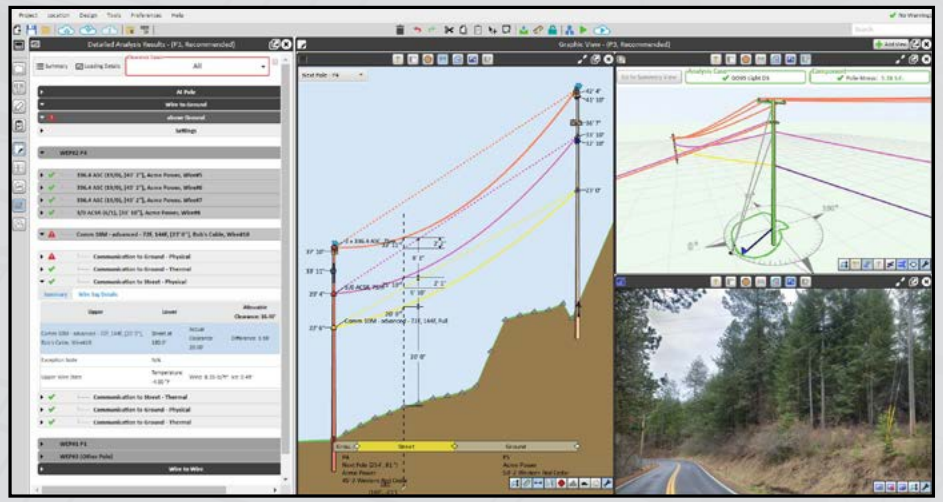
NEW for v8.0

Automated Clearance Evaluations – Real-time evaluation of at-pole, to-ground, and wire-to-wire clearances as designs are modeled. Visualize defined clearance results in Profile View, Design Status Panel, and generate Excel-based reports to ensure Clearance Requirements are met.

Enhanced in v8.0

Terrain Modeling – Import terrain data from a CSV or quickly acquire from a service to model and apply terrain throughout an entire project. Define environment regions, such as road and rail crossings along the span, configurable with specific clearance requirements.

Learn more about SPIDAcalc v8.0



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