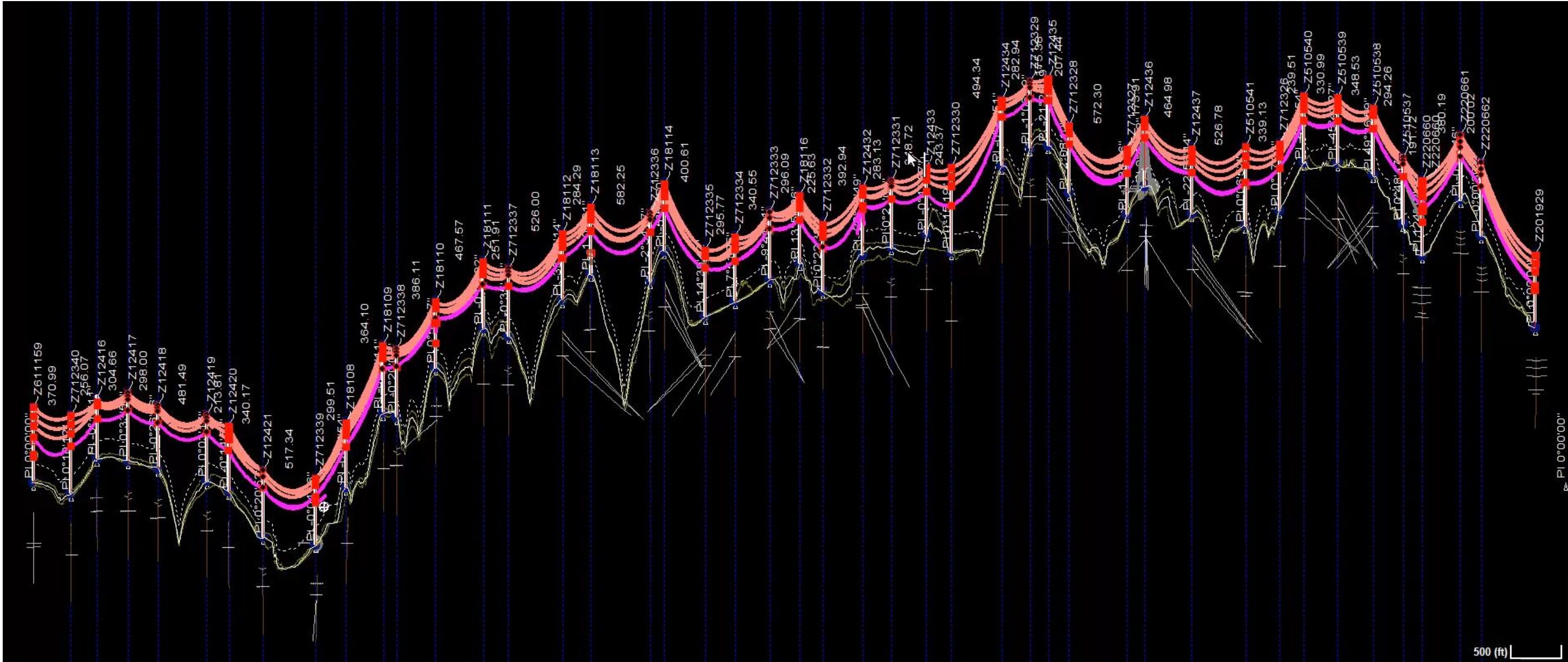




Project summary

Organization:
Qualus (formerly Aquawolf)

Solution:
Transmission and distribution

Location:
Southern California, United States

Project playbook:
PLS-CADD®

Qualus digitally transforms pole analysis and finds millions in potential savings

Power Line Systems improved capture and analysis, reducing engineering time by up to 75%

Project overview

A major California utility was faced with strengthening infrastructure against wildfires and severe storms while managing rising internal costs and ratepayer expectations.

Qualus used PLS applications to unlock a new standard for utility workflows—combining data automation, digital capture, and engineering-grade analysis in a scalable, sustainable way.

The project illustrated that modeling accuracy can have significant financial impact when applied to a utility's broader infrastructure portfolio.

ROI

Engineering time was reduced by 60% to 75%.

Unnecessary pole replacements were avoided, producing potential savings of USD 2.5 million annually.

Navigating a dual challenge

Utilities incur billions in costs each year from severe storms and wildfires. They are under growing pressure to strengthen infrastructure against these threats while controlling costs and minimizing ratepayer impact. To manage expenses and improve engineering efficiency, utilities are adopting digital solutions that streamline project planning, data collection, and execution.

A major cost-saving opportunity lies in the way utilities assess and model utility poles. Infrastructure engineering firm Qualus was engaged by a large Southern California utility to evaluate alternatives to the existing pole evaluation process. The firm was asked to compare versions of Bentley's Power Line Systems PLS-CADD application as an alternative to legacy field capture and pole analysis and determine if the new workflow would be cost-effective at scale.

Legacy workflow limitations

The risks of using inaccurate data are costly: unnecessary infrastructure replacements, project delays, and construction disruptions. With pole replacements costing anywhere from USD 20,000 to USD 100,000 each, the savings for utilities could be significant.

Additionally, legacy workflows can force a choice between speed and precision. Manual data collection and modeling slow the project process while often increasing costs and reliance on over-conservative assumptions. With engineering time valued at a premium, workflow efficiencies are essential for saving time and money without sacrificing quality or data integrity. Recognizing the drawbacks of traditional structural analysis tools, Qualus focused on identifying opportunities for improvement in efficiency and accuracy.

A proposed new end-to-end workflow

Qualus hypothesized that they could eliminate the need to choose between cost and capability. A proposed, new end-to-end workflow would integrate 3D survey data captured via a photogrammetric platform (Looq AI) with automated modeling in Bentley's full-featured PLS-CADD. To validate the workflow, Qualus conducted a pilot with 20 previously analyzed structures. They re-captured field data, processed it through their automated system, and ran models in both the original legacy tool and the full-featured PLS-CADD platform. The comparison showed that full PLS-CADD models consistently produced more accurate and conservative results.

As Qualus projected, the new integrated workflow enabled more accurate and cost-effective pole structural analysis, challenging the traditional tradeoff between quality and expense. Using Looq AI's rapid photogrammetric platform allowed teams to collect data faster, facilitating automated model population and reducing manual effort. Total analysis costs remained flat due to the reduced capture expenses, and the utility gained reusable, survey-grade 3D data as an added benefit.

Millions in potential savings

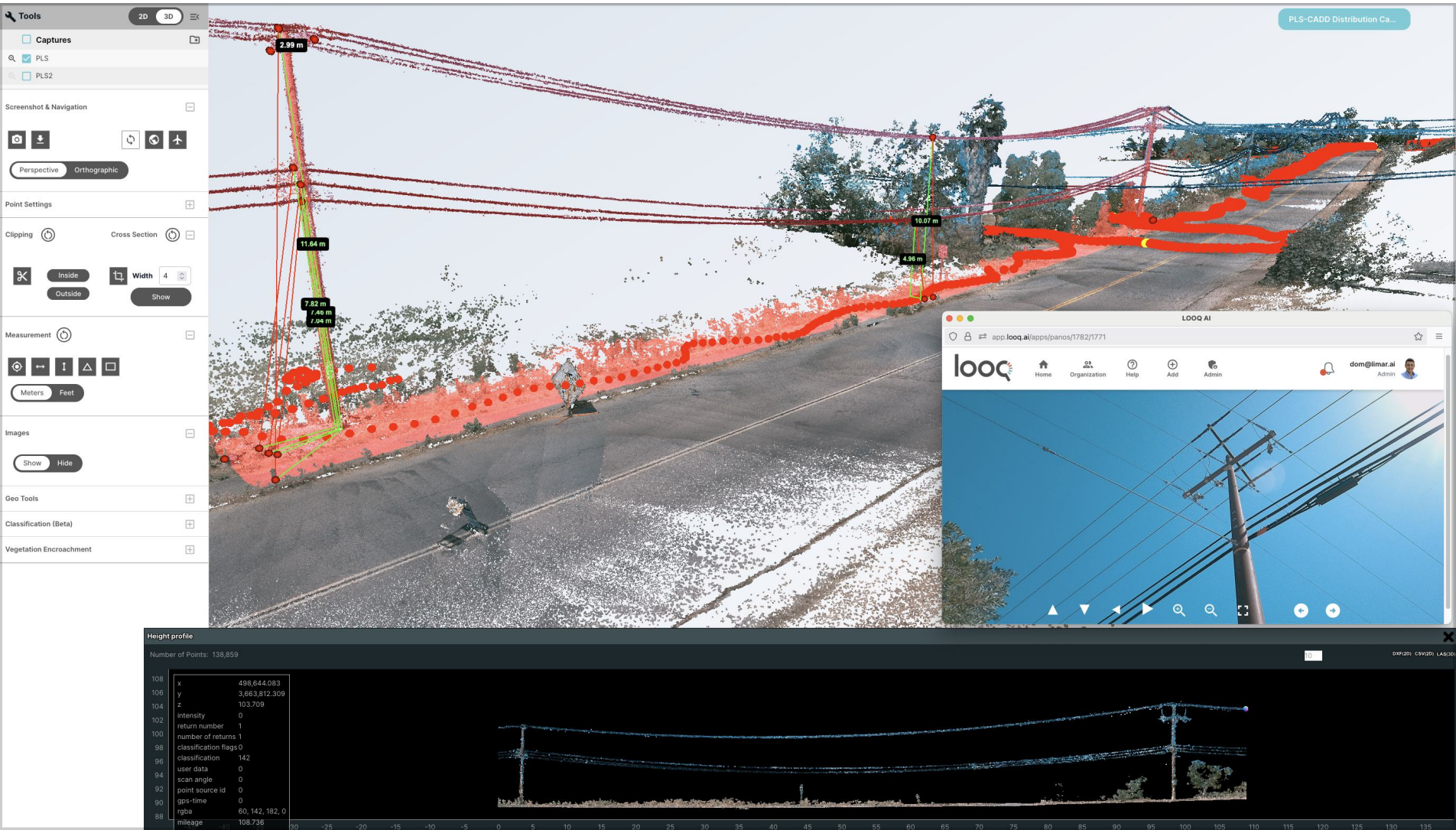
The new automated workflow reduced modeling time from three to four hours to about one hour per structure, cutting engineering time by 60% to 75% and shifting more work to lower-cost engineering staff. A bonus finding pointed to millions in potential savings. PLS-CADD supported detailed engineering inputs such as span interaction and terrain alignment, resulting in more realistic and conservative assessments than simpler tools. The results revealed significantly lower structure usage values, showing that poles previously flagged for replacement were, in fact, within tolerance.

Estimated pole replacement cost was USD 25,000 per structure—and with roughly 1,000 poles replaced annually, the capital outlay for the utility could be significant. If just 10% of poles avoided replacement using PLS-CADD insights, the utility could gain USD 2.5 million in potential annual savings. These discrepancies revealed a critical opportunity: utilities could reduce unnecessary replacements and associated project costs without compromising safety or engineering standards.

Qualus proved that high-end structural analysis no longer comes at a premium. By combining automated modeling and survey-grade 3D data capture with Bentley's full-featured PLS-CADD application, Qualus streamlined workflows and improved analysis quality at the same overall project cost as legacy workflows. From reducing engineering hours to improving modeling consistency and enabling data reuse, Qualus demonstrated the power of digital transformation to transform workflows, aligning across systems, and unlocking new levels of value from every stage of the infrastructure lifecycle. With Bentley software at the core, and evolving partnerships across the digital ecosystem, this approach can help modernize how utilities build and maintain resilient, cost-efficient networks.

“Utilities shouldn’t have to choose between resilience and affordability. By combining advanced engineering analysis with faster, smarter data capture, we’re helping clients modernize infrastructure at scale—without raising costs for the communities they serve. This workflow cut modeling time by over 60% and revealed false-positive replacements flagged by legacy tools. With Bentley PLS-CADD at the core, we helped the utility make smarter, faster, and more cost-effective decisions—supporting both system resilience and ratepayer value.

— Alex Richards, Senior Director, Qualus



Capture workflow with 3D models and 2D imagery.

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