UAA Grant Recommendation:

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Environmental Consultants, LLC d.b.a. ECI
"Development of a Regional Research Approach to Modeling Tree Failure Risk Probability Affecting Distribution Overhead Lines"
Request: $49,730

Project Summary

Electric utilities and regulators are constantly evaluating means to improve both reliability and public safety while also reducing cost. As trees are among the most frequent causes of interruptions and represent one of the largest maintenance costs, vegetation management is a frequent subject of inquiry.

Recent development in tree risk management has moved the arboriculture industry from simply identifying hazard trees, toward a Tree Risk Assessment process where both the risk and consequences of a tree failure are taken into account. The primary inputs include the likelihood of failure, likelihood of impact and consequence of the potential impact to derive a risk rating that ranges from low to extreme. While determining the likelihood of impact and the potential consequence has a degree of subjectivity, these two inputs are reasonably objective. Yet, determining the likelihood of failure continues to be a challenging task as there are a large host of factors that potentially influence the tree stability. Which explains why understanding the probability of tree failure is listed as one of the Utility Arborist Association's top 5 research priorities.

Trees continue to be among the leading causes of electric distribution system service interruptions. Tree maintenance is often the largest O&M expenses. Utilities are increasingly looking beyond routine maintenance zones to address tree conditions that may lead to interruptions. Failure can be categorized as either from roots, stems or branches. Our team will review what is known about failures from these three zones, concentrating on why seemingly healthy trees fail. The approach of investigating why seemingly healthy trees fail is important as it has been reported that as many as 50-65% of failures take place in trees with no externally detectable defects. This suggests the utility arboriculture industry has much to learn as to why trees fail and how to predict the likelihood of failure.

Development of failure risk probability models to include observable and non-observable defects and lack thereof within severity ranges will help utilities and regulators better understand the risks and benefits of programs designed to further reduce tree-caused outages over specific time periods. Environmental and fiscal responsibility can be enhanced through prioritization of high failure probability conditions.