



vibrant planet

Vibrant utilities: how utilities can contribute to and benefit from resilient landscapes

Matthew Thompson, PhD, matt.thompson@vibrantplanet.net, 415-710-1272

Vice President of Wildfire Risk Analytics, Vibrant Planet, 11025 Pioneer Trail, Truckee, CA 96161

Katharyn Duffy, PhD, katharyn@vibrantplanet.net, 928-380-7403

Senior Scientist, Vibrant Planet, 11025 Pioneer Trail, Truckee, CA 96161

Utilities have a risk management problem – even leveraging the entire ignition prevention toolkit, some ignitions will inevitably occur. When they do, landscape fuel conditions beyond the right-of-way are a key driver of wildfire extent and intensity, and are one of the few variables that we can influence in advance. Reliance on reactive detection and suppression can impose unacceptable safety risks and be ineffective after fires escape initial attack. To expand the scope of mitigation and provide layered protection with prevention efforts, utilities require capabilities to co-design optimized forest management interventions, grounded in empirical efficacy, across boundaries and at scale.

The evidence is clear that fuel reduction and forest restoration treatments can, when strategically sited and scaled, reduce wildfire intensity and severity, support safer and more effective suppression, and generate positive ROI. And [evidence is emerging](#) that utility partnerships to manage fuels beyond the right-of-way can jointly protect communities and landscapes while reducing liability risk. The crux is to prospectively evaluate likely treatment effectiveness for prioritizing limited resources using best available data, science, and risk analysis.

Recommendation: Adopt science-based, collaborative approaches to adaptively manage landscapes and mitigate risk beyond the ROW

We recommend that utilities of all sizes and geographies contemplate participating in cross-boundary, collaborative landscape management planning to reduce wildfire risk. And we recommend they do so following science-based, adaptive management lifecycle approaches (Figure 1). In the “Do” phase, treatments are implemented and audited, ideally through [coordinated tracking systems](#) and based on [monitoring metrics that move beyond acres treated](#). Our focus in this lifecycle is on the “Plan” and “Learn” phases, guided by questions such as:

- Where can we have the necessary impact?
- How much impact will we have?
- What is effective, how long does it last?
- How well do our actions match our plans?

- How do we report treatment results?
- How can we adapt to current conditions?

The “Plan” phase entails assessing alternatives using impacts and return-on-investment calculations to build partnerships. In the ideal, processes of assessment and mitigation design are informed by validated, peer-reviewed research that conforms to open science standards including publicly accessible data and methodologies. This transparency allows for independent verification, fosters collaborative improvement, and enables other researchers and practitioners to build upon existing work, accelerating progress in wildfire risk modeling.



Figure 1: Adaptive Management Lifecycle

Recommendation: Invest in actionable science to learn what works

In addition to the aforementioned need for better treatment tracking and planning systems, we recommend beginning this lifecycle by using past and current treatments to discover what treatments work best for specific outcomes in specific locations. Treatment efficacy can and has been estimated through the use of [simulation-based modeling](#), which can be essential to project how fire spread patterns will change post-treatment. Empirical approaches are essential too, and [novel data-driven approaches](#) can provide actionable insights for treatment design and implementation. Critically, empirical approaches can help us better understand the myriad benefits of treatment beyond community protection and avoided home loss, including reduced drought mortality, reduced erosion and sedimentation, increased landscape water availability, and stabilized carbon pools, all of which support more resilient landscapes and communities.