Guidehouse

Community-Based Approach to Wildfire Risk Mitigation

Prepared for: Pacific Gas & Electric Company, Salt River Project, Liberty Utilities (CalPeco Electric) LLC (“Liberty”), Idaho Power, National Forest Foundation, and Blue Forest

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1 Executive Summary

This whitepaper introduces a partnership-based model for wildfire risk mitigation that positions utilities as catalysts in a public-private ecosystem of resilience. It explores how utilities can expand their role beyond the traditional right-of-way (ROW) wildfire mitigation efforts to engage in programs, and with partners, that are mutually beneficial to their infrastructure, their customers, and the communities and forests they operate within.

Catastrophic wildfire is becoming increasingly common and severe due to climate change, unsustainable forest management practices, and development in the wildland urban interface (WUI). These factors have transformed wildfires into a year-round and geographically diverse threat with growing frequency and intensity, which is having far reaching effects on community resilience, economic stability, infrastructure integrity, and public safety. Electric utility assets are one source of wildfire ignition owing to their high energy, and many utilities have taken significant steps in the last decade to assess their wildfire risk, develop response strategies, and harden their assets to reduce the risk of ignition. But the threat of catastrophic wildfire extends beyond the utility ROW, and utility infrastructure and customers are threatened by all wildfires, not just those that the utilities ignite. Utility mitigation programs within the ROW remain a crucial piece of a wildfire mitigation plan, but the frequency, scale, and severity of today's wildfires warrants a collaborative and comprehensive approach, representative of the magnitude of the challenge.

The first section outlines the evolving nature of wildfire risk and its implications. Wildfires are no longer confined to seasons or regions, and their impacts are increasingly severe. This section highlights the economic, social, and infrastructural consequences of recent fires and emphasizes the need for landscape mitigation strategies in addition to the tools that utilities have traditionally used to manage wildfire risk.

The second section discusses the opportunities presented by this model. Utilities can accelerate implementation timelines, reduce costs through shared investment, act as catalysts for meaningful change, enhance public trust, and achieve meaningful risk reduction. Case studies from Pacific Gas & Electric (PG&E), Liberty, Idaho Power, and the Salt River Project (SRP) illustrate how utilities have captured these benefits, and show how key non-profit organizations like the National Forest Foundation (NFF) and Blue Forest have played a pivotal role in resilience partnerships by serving as critical intermediaries linking public funding, private capital, utility contributions, and on the ground implementation to accelerate forest restoration and wildfire risk mitigation.

The last section provides strategic insights to grow this approach. Resilience partnerships are not a cookie-cutter solution; they require engagement with local communities and understanding of local conditions like land ownership, vegetation type, community needs, and infrastructure context. Moving forward, resilience partnerships can attract a diverse pool of potential partners, namely regulators, utilities, conservation non-profits, local governments, insurers, and private landowners; this section highlights how each can play a collaborative role in scaling up this approach to achieve landscape-scale impact.

The catastrophic wildfire challenge is a collective problem, requiring a collective and comprehensive response. Wildfire resilience partnerships have proven to be an important tool to improve community safety, reduce utility risk, and restore healthy forests, and deserve expanded participation and support moving forward.

2 Background and Context

2.1 The Changing Nature of Wildfire Risk

Catastrophic wildfires are becoming increasingly common and severe, elevating overall wildfire risk. Historically, wildfire was considered seasonal and geographically limited, but impacts of climate change have transformed wildfire into a year-round threat. As of June 1st, 2025, the U.S. has already seen 28,120 fires this calendar year, burning a combined area of over 1.1 million acres.[1] Since 2000, the U.S. has averaged 7.4 million burned acres per year, over double the 1990 to 1999 annual average of 3.3 million burned acres.[2] A combination of climate change effects, such as rising temperatures and extended droughts, overly dense forests, and construction in the wildland urban interface (WUI) have led to wildfires becoming more frequent, burning hotter, growing larger, and causing greater damage.[3,4,5]

Drought indices closely tied to fire activity have risen steadily since 1982 at a rate of between 3.3% and 4% annually.[6] Simultaneously, forest management practices of fire elimination have led to vegetation fuel buildup as fires that historically were beneficial to forest health have not been allowed to burn.[7] Burn intensity and area are projected to increase dramatically moving forward, with some Western states seeing up to a 660% projected increase in median burned area for 1°C of warming, and up to a 41% increase in burn severity by 2100 compared to a 1971 to 2000 baseline.[8] The historically safer Southeastern U.S. is also projected to see increasing fire risk, with at least a 30% increase by 2060.[9]

Exacerbating exposure to wildfire is the continued development in the WUI over the last 50 years. This trend has increased human, property, and infrastructure exposure to wildfire, while simultaneously increasing the frequency of human-caused ignitions. Additionally, local ordinances requiring fire resistant and resilient buildings have not been widely adopted, in large part because of high costs and homeowner resistance.[10] The consequences are stark; in 2017, costs and losses of wildfires in the U.S. were estimated at between $92B and $452B in 2025

[1] National Interagency Fire Center. *National Fire News*. National Fire News | National Interagency Fire Center
[2] Congressional Research Service. *Wildfire Statistics*. Wildfire Statistics | Congress.gov | Library of Congress
[3] Ostoja, S.M., A.R. Crimmins, R.G. Byron, A.E. East, M. Méndez, S.M. O'Neill, D.L. Peterson, J.R. Pierce, C. Raymond, A. Tripati, and A. Vaidyanathan. *Focus on western wildfires In: Fifth National Climate Assessment.* https://doi.org/10.7930/NCA5.2023.F2
[4] National Oceanic and Atmospheric Administration. *Wildfire Climate Connection*. Wildfire climate connection | National Oceanic and Atmospheric Administration
[5] U.S. Environmental Protection Agency. *Climate Change Indicators: Wildfires*. Climate Change Indicators: Wildfires | US EPA
[6] Westerling, A. L. *Increasing western US forest wildfire activity: sensitivity to changes in the timing of spring.* https://doi.org/10.1098/rstb.2015.0178
[7] Ostoja et. al.
[8] Vose, J.M., D.L. Peterson, G.M. Domke, C.J. Fettig, L.A. Joyce, R.E. Keane, C.H. Luce, J.P. Prestemon, L.E. Band, J.S. Clark, N.E. Cooley, A. D'Amato, and J.E. Halofsky. *Forests. In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II* Forests - Fourth National Climate Assessment
[9] Ibid.
[10] Renner, C., M. Reams, T. Haines. *Mitigating Wildfire Risk in the Wildland Urban Interface: The Role of Regulations*. Monitoring Science and Technology Symposium: Unifying Knowledge for Sustainability in the Western Hemisphere

dollars.[11] Surging insurance premiums, declining insurability, and mounting losses to residential, commercial, and industrial assets threaten to destabilize local economies, strain public resources, and undermine the long-term resilience of communities.

Utilities whose infrastructure often intersects with high-risk zones face escalating operational and reputational risks from wildfire ignitions. However, ignition is merely a starting point; in California, the number of ignitions is decreasing and yet burned acres in wildfires are significantly up over the last 10 years.[12] Further, the landscape factors that lead to increased wildfire risk are mostly outside of direct utility control and utilities remain exposed to wildfires ignited by external causes. While traditional utility mitigation strategies, such as grid hardening, vegetation management, and situational awareness tools remain essential, resilience partnerships that take on fuels reduction beyond the utility right-of-way (ROW), capacity building, or fire break implementation can significantly bolster risk reduction efforts for both utilities and the communities they serve.

The scale and complexity of today's wildfire challenge demands a broader, more collaborative approach. This whitepaper introduces a partnership-based model for wildfire risk mitigation, one that positions utilities not just as infrastructure providers, but as keystone partners in a public-private ecosystem of resilience. Drawing on insights from a coalition of utilities and natural resource not-for-profits, including PG&E, Idaho Power, Liberty, Salt River Project (SRP), the National Forest Foundation (NFF), and Blue Forest, this paper outlines a new approach. It explores how utilities can expand their role beyond the ROW to engage in wildfire mitigation efforts that are beneficial to the communities they serve, the infrastructure they manage, and the forests they operate within.

2.2 Wildfire Risk Implications

The implications of escalating wildfire risk are profound and multifaceted, impacting community resilience, economic stability, infrastructure integrity, and public safety. On August 8, 2023, wind-driven wildfires in Maui, Hawaii claimed more than 100 lives, destroyed more than 2,200 structures, and caused approximately $5.5B in damages, underscoring the scale of the threat and urgent need for landscape mitigation strategies.[13] Critical infrastructure, including electric transmission and distribution lines, substations, and generation sites, are increasingly vulnerable to fire damage regardless of ignition source. Utilities face not only the physical threat of asset loss, but the financial and reputational risks associated with service disruptions and liability exposure.

The insurance industry has responded to increasing wildfire risk with rising premiums, reduced coverage, and in extreme cases, complete market exit. This has left homeowners and businesses, particularly in drier western states like California, underinsured or uninsured. Further, even after rebuilding, structures that were exposed to natural disasters see decreased property value and increased insurance premiums. California has enacted legislation to maintain access to homeowner's insurance, but major rate increases are likely following

[11] Thomas, D., D. Butry, S. Gilbert, D. Webb, J. Fung. *The Costs and Losses of Wildfires: A Literature Survey*. The Costs and Losses of Wildfires: A Literature Survey
[12] Statistics | CAL FIRE
[13] FEMA. *Preliminary After-Action Report: 2023 Maui Wildfire*. Preliminary After-Action Report: 2023 Maui Wildfire

significant wildfires, and it is unclear if the insurance industry will be allowed to raise rates quickly enough to remain operationally viable in the risk transfer market.[14]

The growing scale of wildfires is also straining wildfire response systems. Increasing wildfire activity due to climate change has been studied widely but there has been relatively limited focus on the ways that increased fire activity could overwhelm the existing response system. One recent U.S. Forest Service (USFS) study focused on the systemic impacts of the 2021 Dixie Fire, where suppression cost for this fire exceeded one third of the five-year average annual suppression costs for all fires.[15] On top of cost, the Dixie Fire required extremes in peak personnel workload, suppression effort in containment line length, and travel demand. Resource sinks like the 2021 Dixie Fire reduce the ability to combat contemporary fires and can have lasting impacts on future readiness. An expanded approach to wildfire mitigation has the added benefit of reduced strain on the wildfire response system.

At the community level, wildfires disrupt lives, displace families, and can cause lasting physical, psychological, and economic damage. Low-income households, rural residents, and historically disadvantaged groups often face the greatest challenges in evacuation and recovery. These inequities further highlight the need for an inclusive, community-based approach to wildfire risk mitigation that prioritizes local engagement and community resilience.

2.3 Current Utility Mitigation Strategies

Utilities have developed a portfolio of wildfire mitigation strategies currently deployed as part of their wildfire mitigation plans (WMPs). Mitigation strategies generally have one of three objectives: preventing sparks, preventing ignition, and preventing spread/consequence. Additionally, strategies can be broken down into three categories: grid hardening, vegetation management, and improved understanding of service area.

Grid hardening is the process of upgrading utility equipment to better withstand weather events and reduce the number of outages—thereby reducing sparks from faults or otherwise reducing spark generation and ignition risk. Grid hardening includes conductor upgrades like undergrounding or covered conductors, structure upgrades like pole protection, steel supports, or cross-arm upgrades to fire resistant material, and equipment upgrades like non-expulsion fuses. Undergrounding lines is extremely effective at reducing weather-based outages and preventing sparks from reaching above-ground fuels, however it is also one of the more expensive hardening options available. Generally, undergrounding is reserved for only the most at-risk lines. Covered conductors are a less expensive alternative to undergrounding. Covered conductors prevent both outages and sparks due to contact with branches or other ignitable hazards, as well as reducing the contact area in the event of a downed wire. Covered conductors are still a significant cost increase from traditional bare wire so are only implemented in high fire risk areas as well—often focusing on areas with overhead vegetation. Utilities may also choose to replace wooden poles with steel support structures, increasing line resilience to high winds, preventing failure due to rot, and preventing fire damage should a wildfire pass through. Alternatively, utilities may use a mesh wrap to protect the base of the poles from damage during a fire. Finally, utilities may upgrade equipment such as replacing traditional

[14] Ibid.
[15] Thompson, M. P., Belval, E. J., Bayham, J., Calkin, D. E., Stonesifer, C. S., & Flores, D. *Wildfire Response: A System on the Brink?* https://doi.org/10.1093/jofore/fvac042

expulsion fuses with non-expulsion fuses. This reduces spark output in the event of a fuse activation.

In addition to grid hardening, utilities may improve or modify their vegetation management plans. Vegetation management can reduce sparks by clearing overhead branches and trees in the ROW thus limiting potential vegetation contact. Utilities often conduct more aggressive or frequent overhead trimming in high fire risk zones to limit sparks where ignition can quickly spread. Some utilities go beyond standard practice by removing ignitable fuels from around utility equipment in an effort to further reduce ignitions or by creating fire breaks along utility corridors to reduce the consequence of a wildfire.

Finally, utilities invest in improved understanding of their service area. This includes situational awareness measures (e.g., wildfire detection cameras, sensors, and weather stations), improved patrols and inspections, and wildfire risk models. Improved awareness allows for prioritization of the most effective mitigations. Additionally, situational awareness allows utilities to implement programs such as protective equipment and device settings (PEDS) and public safety power shutoffs (PSPS). A utility may also coordinate with emergency responders to reduce the consequence of a fire through early detections. Wildfire detection can be done visually through a camera or through smoke sensors as both allow for early response and coordination with emergency services. Weather stations provide the utility with more accurate information about temperature, humidity, and wind speed. These are crucial for making decisions around PEDS and PSPS deployment, as well as correlating weather conditions with outages and ignitions for future mitigation planning. Improved patrols and inspections give the utility a better understanding of “what’s out there,” allowing for more timely repairs, maintenance, and vegetation management. Another common practice for utilities is investment in risk models that show the ignition and consequence risk for individual parts of their system. These models are used to plan and prioritize investments and other actions. Overall, utilities have a comprehensive portfolio of potential actions and investments to draw from when designing a WMP.

3 A New Business Model for Wildfire Risk Reduction

Wildfire resilience partnerships represent a new approach to wildfire mitigation in the electric utility sector. Instead of planning and implementing wildfire mitigation as isolated or standalone activities, and solely within the ROW, utilities act as one partner in a collective approach to wildfire mitigation that more broadly reduces wildfire risk. Through participation in this model, utilities can capture both traditional and novel wildfire mitigation benefits and communities can see greater risk reduction regardless of ignition source. Utilities, federal, state and local agencies, and non-profit organizations all currently invest in wildfire mitigation through different programs. By initiating, or actively contributing to, collaboration between these entities working towards the same objectives, utility resilience partnerships capture additional efficiencies and impact to advance common goals. Utilities such as SRP, Idaho Power, Liberty, and PG&E have active programs proving the efficacy of this approach, and non-profits like NFF and Blue Forest have shown how they can leverage their expertise to maximize positive impact.

3.1 Opportunities Presented by a New Approach

Resilience partnerships can present multiple benefits relative to existing utility wildfire risk mitigation tools. Projects taken on through resilience partnerships may offer cost-effective risk mitigation, faster implementation, and increased customer satisfaction. Such projects also serve as catalysts for collaboration and community risk reduction, advance opportunities to achieve corporate sustainability goals, and deliver meaningful societal benefits. Where appropriate, the benefits presented by utility wildfire resilience partnerships justify use as a complementary tool in the broader utility risk mitigation toolbox.

3.1.1 Cost Effectiveness

Utilities may achieve greater financial efficiency in wildfire mitigation by incorporating resilience partnerships into their strategy. Unlike traditional utility mitigation approaches that rely solely on utility budgets, proactive partnerships often include external funding, such as state and federal grants or private capital, providing additional leverage to each utility dollar invested. Additional benefits could also be unlocked by monetizing wildfire management products, such as biomass waste where utilities or partners may play a key role in ensuring a steady supply of biomass to generation facilities or for other purposes. Notably, Section 3.2.4 provides details of an initial benefit cost analysis performed by PG&E, illustrating findings that resilience partnerships may outperform conventional mitigation strategies, even not accounting for the broader benefits like community resilience and forest health that are not captured in standard benefit cost frameworks. At a minimum, the opportunity for effective spending makes resilience partnerships a worthwhile consideration for any utility developing their wildfire mitigation strategy.

3.1.2 Speed

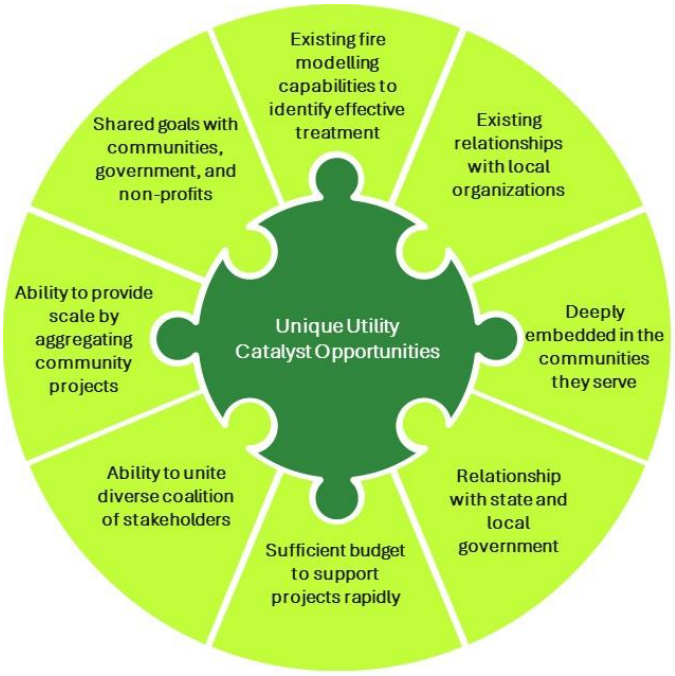
Wildfire is a present-day challenge, and while traditional utility WMPs include near term risk reduction solutions, risk reduction through significant infrastructure modification is a time-consuming process. Notably, PG&E has identified a plan to install 10,000 miles of powerlines underground but based on current rates of progress this will take more than 40 years to

complete.[16] Landscape scale projects that rely on state or federal funding sources alone often take over 10 years to complete, but the same projects can often be implemented in less than 5 years when catalyzed by a combination of funding sources such as utility contributions.[17] Resilience partnerships provide an expedited path to action for both utilities and other key stakeholders, capitalizing on expertise and capacity from each stakeholder to minimize time spent seeking funding, permitting, or contracting.

3.1.3 Catalytic Potential

Utilities are uniquely positioned to act as catalysts in wildfire resilience partnerships. Figure 1 illustrates the key role utilities can play, leveraging their operational experience, access to key data, existing relationships, and budget to accelerate progress, attract co-funding, scale projects, and provide the stability that many community projects need. Even modest financial contributions can sufficiently de-risk projects to unlock federal funding or private capital, while uniting communities can help all benefit from economies of scale. By actively contributing to resilience partnerships, utilities not only reduce their own wildfire risk but serve as a keystone stakeholder in a broader more sustainable wildfire resilience ecosystem.

Figure 1: Utilities are Key Piece to Successful Resilience Partnerships



Source: Guidehouse, 2025

3.1.4 Community and Customer Satisfaction

Utilities face the challenge of often being out of mind for most customers with exception to power outages or paying a bill. Notably with wildfires, while utilities have been responsible for only a small fraction of events, at least 5 of the top 20 most destructive wildfires in California

[16] Undergrounding A Safe, Stronger and More Affordable Energy Future
[17] Blue Forest, 2025.

were ignited by utilities creating a reputational issue for utilities more broadly.[18] Wildfire resilience partnerships that tackle shared risk allow utilities to interact closely with leaders in the communities they serve in a positive light, collectively achieving meaningful reductions in risk to both the community and the utility. By capitalizing on existing favorable community relationships with local fire departments, non-profits, and community leaders, utilities can advance wildfire resilience goals while simultaneously improving their public perception.

3.1.5 Sustainability Goals

Corporate sustainability is becoming ever more important from both a reputational and ideological standpoint. Resilience partnerships often have benefits beyond traditional utility risk reduction such as forest and habitat health, broader biodiversity, emissions reductions, carbon sequestration, environmental stewardship, and resilience in water supply. Further, programs like vegetation and fuel management present the opportunity to advance additional benefits, with treatments increasing forest health and biomass biproducts offering an opportunity to financially capitalize on a historical waste product.

3.1.6 Societal Benefit

By supporting projects that improve forest health, enhance emergency response capacity, and foster community engagement, resilience partnerships contribute to safer and more resilient communities. Furthermore, traditional utility wildfire risk reduction focuses on reducing utility ignition or fire spread following utility ignition, whereas resilience partnerships tackle wildfire risk more broadly, reducing utility ignition and spread risk but also providing fuel breaks, access to firefighters for quicker containment, evacuation corridors, or improved wildfire response that reduces wildfire risk for all, regardless of ignition source.

3.2 Business Model in Action

Several utilities have already incorporated the wildfire resilience partnership business model and are actively capitalizing on the opportunities presented above. Notably, projects from Salt River Project, Idaho Power, Liberty, and PG&E have captured all the benefits discussed in Section 3.1 and demonstrate how utilities can act as a key catalyst in effective wildfire resilience partnerships.

3.2.1 Salt River Project

As both an electric and water utility, SRP has dual interests in forest restoration. In the Phoenix area, forest overgrowth increases wildfire risk which endangers the water supply. To achieve 76,000 acres of forest thinning initiatives, SRP and the Arizona Department of Forestry and Fire Management (DFFM) partnered with USFS, with USFS bringing 50% of the funding and the remainder coming from SRP along with contributions from the Bureau of Reclamation, other grants, local governments, and other non-profits. This tri-party coalition between SRP, DFFM, and USFS is made possible under the Good Neighbor Authority (GNA) which allows partnerships between USFS and state forest authorities. Due to its classification under the GNA, this partnership also garnered funding from the Bipartisan Infrastructure Law (BIL). By catalyzing the relationship between DFFM and USFS, SRP achieved even more funding

[18] Xinyue Wang and Paolo Bocchini. *Predicting wildfire ignition induced by dynamic conductor swaying under strong winds.* Predicting wildfire ignition induced by dynamic conductor swaying under strong winds | Scientific Reports

through the BIL, exemplifying how utilities can kick start successful collaborations that attract funding far beyond what could otherwise be achieved.

In addition to top-down funding, SRP activates their bottom-up customer base through the Healthy Forest Initiative. The Healthy Forest Initiative allows residential electric customers to donate $3 each bill towards forest thinning initiatives, matched by SRP up to $200,000 annually. This initiative allows any customer to be a part of the restoration effort and provides an additional funding stream. Notably, customers participating in SRP's Healthy Forest Initiative rate SRP an average of 7 points higher for Overall Customer Experience based on an average of customer ratings from June 2021 to July 2025, demonstrating the public perception benefits of collaborative utility engagement with the communities they serve.[19]

SRP's Resilient Water and Forest Initiative is a program focused on attracting corporate donations to forest thinning projects. By quantitatively modelling the water, carbon, and biodiversity benefits of forest thinning projects, SRP attracts donations from corporations seeking to meet their own corporate sustainability goals. In exchange for their donations, corporations are allowed to claim the proportional amount of benefits towards their goal. As of July 2025, SRP's corporate partners have contributed over $4.5M towards forest restoration, representing another creative and cost-effective source of funds and demonstrating how utilities can act as catalyst for additional wildfire mitigation investment.

Finally, SRP also sits on working groups and coalitions for the forest product industry. There is considerable cost in removing debris from the forest after a forest restoration project, but by collaborating with the forest product industry, SRP can decrease upfront forest restoration costs. For example, SRP maintains a power purchase agreement (PPA) with a biomass-fueled power generation plant to create an end use for otherwise unusable biomass and slash, reducing the burnable fuel bed while also generating electricity.

3.2.2 Idaho Power

As a strategy for reducing wildfire risk to communities, Idaho Power is an active partner to a variety of coalitions focused on increasing pace and scale of forestry projects. Through these efforts, Idaho Power serves as a catalyst to drive project prioritization, project efficiency, and secure funding that might not otherwise be available to the partnership or local community. For example, through the Southwest Idaho All Lands Partnership, Idaho Power worked closely with NFF, local, state, and federal agencies and partners to develop a grant request through the National Resource Conservation Service (NRCS) Regional Conservation Partnerships Program (RCPP). To increase the competitiveness of the grant request, Idaho Power quantified their "business as usual" vegetation management program over a five-year timeframe within the project area. This approach meant that the grant request could show more than a 1:1 in-kind match towards the total grant ask, ultimately resulting in a successful $20.3M award to the partnership to support fuels mitigation efforts across private and county-owned lands. Idaho Power has since worked with other utilities to share this approach. While this strategy represents a simple solution, it has the potential to double the impact of forest restoration work without additional utility spending.

Beyond in-kind contributions to support partner-developed grant applications, Idaho Power works with USFS, BLM, Idaho Department of Lands, community leaders, and non-profit entities to collaboratively plan and execute projects on a case-by-case and need-by-need basis. Idaho

[19] SRP Broad-Based Residential Customer Experience Survey 2021-2025

Power recently partnered with the Boise National Forest and Wild Turkey Federation on a forest health improvement project in a high recreation use area where Idaho Power's powerlines supply power to the area's local ski resort. Utilizing USFS stewardship authorities, forest thinning and biomass removal was executed through The Wild Turkey Federation, with Idaho Power crews felling specific trees that has the potential to strike the powerline. Following the forest thinning efforts, Idaho Power coordinated additional mastication efforts within the powerline ROW to create a continuous fire break in strategic locations. In this way, Idaho Power's coordination with the USFS and Wildfire Turkey Federation achieved additional risk reduction in and around the powerline corridor while increasing the overall effectiveness of the project.

3.2.3 Liberty

Liberty's Forest Resilience Corridors Project is a leading example of a wildfire resilience partnership. Developed in collaboration with the USFS and NFF, the project treats 7,600 acres of National Forest land under and adjacent to Liberty infrastructure. This partnership pools a ~$7.5M grant, secured by the USFS via the Southern Nevada Public Lands Management Act, with Liberty's 20% cash match and in-kind contributions to enhance cost-effectiveness while reducing wildfire risk through large-scale fuel removal. With NFF administering the project, this three-way partnership leverages the strengths of each entity.

Crucially, Liberty's 20% cash match is a requirement for NFF to receive the grant, underscoring the catalytic funding role that utilities can play in resilience partnerships. Beyond funding, Liberty secured contracts with environmental consulting firms to coordinate with USFS on required pre-project surveys, further accelerating implementation. Although most of the forest land treated by this project falls outside of Liberty's ROW, the project benefits both Liberty's infrastructure, by reducing ignition and spread risk, and the communities within the Lake Tahoe Basin Management Unit (LTBMU) through increased forest health and wildfire resilience. Liberty has received positive feedback from state regulators, the Office of Energy Infrastructure Safety, and the Wildfire Safety Advisory Board for this project, and are now being approached by agencies for collaboration on similar work.

Notably, Liberty included this project in their WMP and incorporated it as a component of their general rate case vegetation management approach, making them the first utility to seek and receive cost recovery for a wildfire resilience partnership. Cost recovery for resilience partnerships is key to scaling this approach and achieving landscape scale risk reduction. Liberty's approach sets precedent upon which other utilities can build and demonstrates to regulators that resilience partnerships are a cost-effective risk reduction tool which they should support. A further discussion on cost recovery and the role of regulators is included in Section 4.2.1 below.

Liberty's success through the resilience corridors project has sparked a wave of smaller projects and collaborations with local government agencies and nonprofits. One such example is a partnership with the Truckee Fire Protection District (TFPD), where Liberty treated ~15 miles of powerline for a roadside fuel break, as well as partnering with the TFPD for additional fuels treatment beyond regular compliance in that area. The TFPD helped with right-of-entry agreements onto private land and public outreach, thus improving community sentiment towards Liberty, and Liberty's strategic and cost-effective use of VM budget allowed TFPD funding to go further, thus maximizing community safety benefits and risk reduction.

3.2.4 Pacific Gas & Electric Company

PG&E currently has over 100 resilience partnership projects, all designed to capture partnership benefits related to fuels treatment, local capacity building, access/egress routes, fuel breaks, biomass utilization, and fire response.

One such example is PG&E's biomass partnership, in which they have partnered with two counties to deploy a new mobile biomass converter called a carbonizer. Wood waste and disposal is often a limiting factor in scaling landscape resilience activities, and the carbonizer converts wood waste to biochar on site, thus eliminating wood disposal trucking miles while creating a valuable product from biomass waste. PG&E engaged with these counties to pool PG&E waste wood with third party waste wood to ensure sufficient biomass was accumulated to keep unit costs low. In the end, this project eliminated 136,096 trucking miles, processed 14,862 tons of biomass, and yielded significant financial savings. Further, the biochar produced by this project was distributed to the community at no cost, providing a valuable soil additive while simultaneously improving PG&E's reputation. Reflecting on the success of this project, the counties involved have expressed interest in future carbonizer projects with or without PG&E, demonstrating the catalytic potential of utility engagement. PG&E's biomass partnership capitalizes on cost effectiveness, emissions reductions, community satisfaction, the catalytic potential of utility engagement, societal benefit, and wildfire risk reduction through fuel removal.

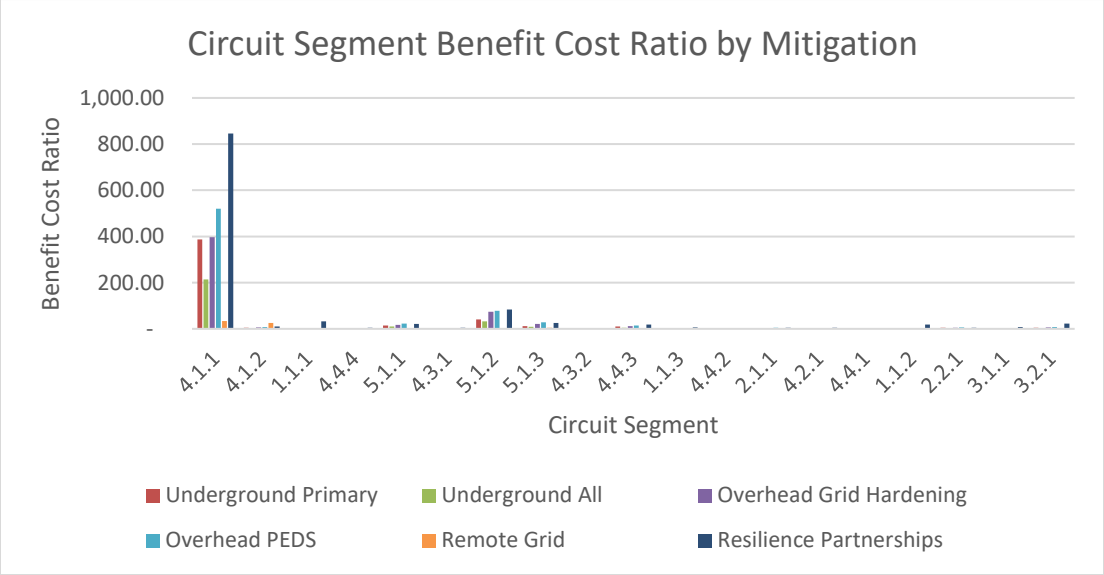
Another key example is PG&E's partnership in Lake County delivering a $500,000 capacity-building grant to the Clear Lake Environmental Research Center (CLERC) to develop wildfire resilience and community empowerment. With the grant, the Hogback Fire and Fuel Crew (HFFC) doubled its staffing, positioning it to respond to emergencies more quickly and enabling execution of proactive wildfire mitigation projects. One mitigation initiative created a 100 to 120-foot-wide powerline anchored fuel break on private land in Hidden Valley Lake. This initiative was made possible by CLERC's successful coordination with private landowners for entry rights and was strategically positioned to reduce the speed of fire spread into the downwind community during any wildfire while simultaneously reducing PG&E ignition risk. When the crew's chipper failed just before project work began, PG&E's flexible funding allowed for immediate replacement of costly equipment, highlighting the speed and flexibility benefits that utility partnerships and grants can bring. Since the partnership with PG&E began the HFFC has secured additional federal and state grants, showing again how utility participation can jump-start and expand these projects.

PG&E's Upper Mokelumne Project is another example of catalytic utility funding leading to a successful resilience partnership. In this project PG&E provided a $100,000 flexible financing grant to Blue Forest to help launch a Forest Resilience Bond (FRB)[20] for fuels treatment in the Upper Mokelumne watershed, upstream from PG&E's Tiger Creek powerhouse. As of March 2025, 2,400 acres have been treated, with over half directly enabled from PG&E's grant. These treatments protect critical infrastructure, including a PG&E transmission corridor and hydroelectric generation plant, as well as nearby communities, while simultaneously protecting a key evacuation route. Beyond PG&E and Blue Forest, the partnership includes the Upper Mokelumne River Watershed Authority, Eldorado National Forest, and CAL FIRE, who provided the initial grant funding. In addition to reducing wildfire risk, fuels treatment in this region ensures drinking water availability and quality for the region, a benefit which led to the investment of another $440,000 from PepsiCo North America and up to $100,000 from the East Bay Municipal Utility District. An increase in water quantity following forest restoration is also

[20] See Section 3.2.5 for details on Forest Resilience Bonds.

expected to lead to an increase in hydroelectric generation from PG&E's Tiger Creek plant. CAL FIRE has recognized the success of this project and awarded another $4.29M grant, with PG&E's financing again playing a key accelerative role. Beyond wildfire risk reduction and cost-effectiveness, the Upper Mokelumne Project highlights the significant societal benefits of resilience partnerships.

Figure 2: Benefit Cost Analysis of PG&E Resilience Partnerships

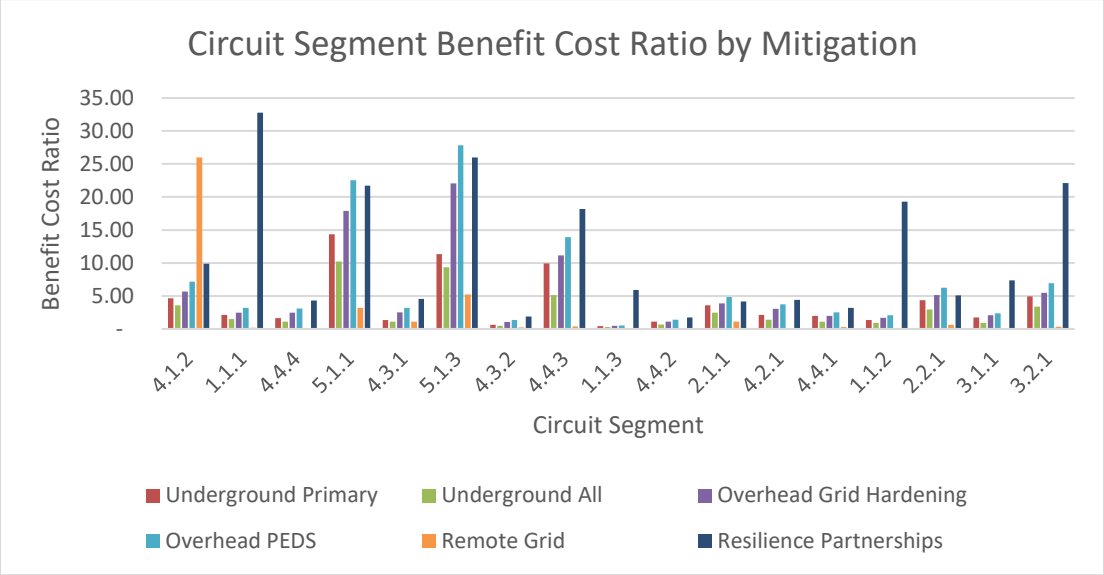


Source: PG&E analysis (2025)

PG&E has financially analyzed the cost-effectiveness of resilience partnerships compared to traditional utility mitigation measures. Resilience partnerships often address a different side of risk, focusing on reducing the harmful consequences of wildfire rather than reducing likelihood of ignition. PG&E's analysis quantifies consequence reduction whereas typical benefit-cost analyses in this domain only consider the reduction in ignition risk. While this analysis and these projects are still nascent, early results are very promising; as seen in Figure 2 and Figure 3, on 15 of the 19 analyzed circuit segments the resilience partnerships have the highest benefit-cost ratio. The projects considered are five diverse fuel treatment projects, either underway or in planning, with benefits derived from the reduction in distribution liability risk as determined by fire spread modelling. Translation from fire risk score to financial value was made using standard measures as PG&E has filed in past RAMP proceedings. Notably, some benefits remain uncaptured in this analysis, including reductions in vegetation outage risk, reductions in distribution ignition risk, transmission reliability improvement and ignition risk reduction, improved first responder and customer access/egress in the case of a fire, avoided revenue loss from damaged houses regardless of fire source, potential insurance cost reductions, and improved customer satisfaction from PG&E's role in reducing community risk. PG&E is currently contracting to develop optimization modelling for a pilot county that will indicate where projects like fuels treatment may be implemented to maximize PG&E's return on investment.

While these financial analyses and optimization findings offer initial perspective on a small sample of projects, the results undeniably warrant further consideration of resilience partnerships as a cost-effective option in a utilities' toolbox of wildfire mitigation measures.

Figure 3: Benefit Cost Analysis of PG&E Resilience Partnerships, Highest 2 Segments Removed



Source: PG&E analysis (2025)

3.2.5 National Forest Foundation and Blue Forest

Utilities are crucial participants in resilience partnerships, but the concept of a resilience partnership inherently requires collaboration with and contribution from community organizations, non-profits, state and federal agencies, and private sector funders. Two of the most influential non-utility organizations advancing wildfire resilience partnerships are NFF and Blue Forest. Both NFF and Blue Forest serve as critical intermediaries that connect public and private funding, private capital, utility contributions, and on the ground implementation to accelerate forest restoration and wildfire risk mitigation.

Blue Forest is a pioneer in conservation finance, known for developing the FRB, a private investment vehicle that leverages new revenue streams to provide upfront financing for forest and watershed restoration. Blue Forest quantifies ecological benefits such as reduced wildfire risk or increased water yield to attract beneficiaries to fund projects through grant agreements and long-term funding contracts. Investors provide the upfront capital for a project and are repaid from the identified beneficiary funding. FRBs also act as bridge loans for reimbursable sources of traditional funding such as state and federal grants. Project beneficiaries—typically utilities who are motivated to reduce liability, improve operational reliability, and protect infrastructure and communities, but also corporations that have water replenishment and other sustainability goals—reimburse financing costs ineligible for coverage by government funding sources. Even more importantly, beneficiaries add flexible funding to projects that can pay for project activities also ineligible from government grant sources, such as road improvements to enable access for vegetation management equipment.

NFF is the official non-profit partner of the USFS and plays a complementary role by raising and managing funds and implementing local wildfire mitigation projects across the 193-million-acre National Forest System. With a 2025 budget of approximately $100M, 70% of which is dedicated to wildfire resilience, NFF leverages federal funding 6:1 with contributions from

utilities, corporations, state and local governments, and other sources. NFF contributes to wildfire resilience partnerships in many ways, from acting as a bank sponsor in the U.S. Army Corps of Engineer's Wetland Mitigation Banking Program where they sell credits to fund wetland restoration projects that serve as natural fire breaks, to securing, aggregating, and administering third-party funding across the country as with the Forest Resilience Corridor's project described in Section 3.2.3, where they source contractors and ensure timely execution of the planned mitigation work.

While there are a host of national, regional, and local non-profit entities with which to partner, Blue Forest and NFF have been able to help bridge the gap between utilities, governments, and communities to ensure availability of capital and successful project implementation. Their work as key players in wildfire resilience partnerships has enabled risk reduction efforts to be scaled with speed and flexibility, yielding measurable impacts on wildfire risk reduction and forest health.

4 Strategic Insights for Effective Wildfire Resilience Partnerships

The magnitude of the wildfire challenge requires a collective solution and expanded participation in support of wildfire resilience partnerships. This section presents insights to help advance partnerships, set goals, and scale the approach.

4.1 Adapting Wildfire Risk Strategies to Meet Local Conditions

Wildfire risk is pervasive throughout North America, and how each utility addresses risk is driven by geography, regulatory landscape, lines of business, and nature of existing community partnerships.

A utility's highest at-risk service territory may be characterized by the WUI, rural private land, or in some cases may be dominated by federally owned land. For example, much of PG&E's highest risk territory is in the WUI, making interactions with private landowners critical, while the importance of protecting rural areas of SRP's watersheds leads to more investment in conservation and sustainable land use. For both Liberty and Idaho Power, coordinating activities with USFS is critically important given the significant at-risk territory on public lands. It is necessary for each utility to assess its own situation and determine how both public and private partners can help address challenges unique to its service territory.

Beyond the variations in land ownership, a utilities' location within the development gradient and the dominant type of vegetation (e.g., grass, trees, chaparral) is key in determining the nature of potential wildfire spread and intensity and thus the appropriate mitigation efforts. In the WUI, programs targeted at reducing ember cast and urban conflagration could significantly reduce overall utility risk, whereas in the forest a program focused on fuels reduction could be more effective. It is also important to consider utility infrastructure positioning, whether utility assets exist along roads, around communities or elsewhere determines the potential for powerline anchored evacuation and resilience corridors. Overall, for successful partnerships utilities must engage with their unique partners to address the needs of their communities in the context of and at a scale that matters.

4.2 The Future of Utility Resilience Partnerships

While utility wildfire resilience partnerships have shown their benefit, they will not be as large or impactful as they can be without support from regulators, implementation from additional utilities, and engagement from the broader wildfire mitigation ecosystem.

4.2.1 Recognition of Resilience Partnerships as an Effective Mitigation Tool

Regulatory buy-in is crucial for the success of resiliency partnerships. While these partnerships are a departure from the status quo of utility spending and involvement, they represent a significant potential for financial savings and positive impact on customers. By allowing cost recovery for resilience partnership spending, regulators hold the power to enable and incentivize these collaborations. For example, note that Liberty included the Forest Resilience Corridors Project as part of their vegetation management approach in their WMP and received cost recovery on their grant matching with the USFS. This cost recovery allowed Liberty to participate in large-scale resilience partnerships and deliver regional impact. Consider further

that SRP is not bound by cost recovery and is therefore able to work consistently towards their long-term goal of 800,000 acres thinned by 2035. This magnitude of forest management may not be possible for regulated utilities without some level of assured cost recovery.

Regarding the evaluation of partnership efficacy, as shown in Section 3.2.4, PG&E found that resiliency partnerships were often more cost effective than traditional utility wildfire mitigation solutions even when considering only the direct risk mitigation benefits for utility infrastructure. Regulators can use analysis such as this to review resiliency partnerships as a portfolio option alongside traditional solutions. However, truly understanding this analysis requires an understanding of forestry, wildfire, and land management. Expertise in these subjects is unrealistic to expect from all utility regulators. Therefore, regulators should consider employing staff or advisors with forestry, wildfire and/or land management backgrounds to evaluate decisions regarding utility resilience partnership plans.

Finally, regulators could better support utility wildfire resilience partnerships by adopting an alternative cost recovery approach. Under current rules, these project costs are classified as operational expenditures (OPEX), meaning they are fully expensed in the year incurred and recovered dollar-for-dollar without an additional return. As a result, this structure can disincentivize utilities from making significant investments in wildfire resilience partnership projects, despite the substantial benefits generated for customers, communities, and infrastructure.

Considering an alternative cost recovery approach, specifically allowing costs to be classified as a capital expenditure (CAPEX), could significantly enhance the scale of utility participation and spending in wildfire resilience partnership projects. This approach would allow utilities to spread costs over several years and also earn a regulated return on their investment, making larger, long-term commitments more financially viable and attractive.

4.2.2 The Role of Electric and Water Utilities

As discussed throughout this paper, utilities have the opportunity to play a catalytic role in wildfire prevention through resilience partnerships. Both electric and water utilities have great incentives to pursue collaborative solutions.

Electric utilities are being held increasingly accountable for wildfires ignited by utility equipment, as a fault on the electric system has the potential to ignite a catastrophic wildfire. To address the challenge, utilities generally invest in resilience and prevention measures targeted at reducing sparks (e.g., covered conductor, non-expulsion fuse types, power shutoffs) much like they do to reduce ignition risk in the case of a spark (e.g., vegetation management programs, clearing beneath and around poles within the ROW). While these measures are effective for reducing utility-caused wildfires, they may not adequately safeguard against large destructive fires moving into utilities service territories or meaningfully improve the general wildfire resilience of the community or customers.

Water utilities are responsible for the health and planning of reservoirs and distribution of water. Forest overgrowth not only increases wildfire risk due to the availability of fuel in a forested watershed but may also impact the available water supply. Wildfire may leave land vulnerable to post-wildfire flooding and polluted runoff that in turn disrupts the water system, including intakes, reservoirs, and treatment plants the water utility depends on, which poses risks to water quality and availability and ultimately impacts cost of service. Therefore, water utilities also have an interest in wildfire prevention efforts.

As climate change increases the risk to utility equipment, so too does it increase the risk to utility customers from wildfire of any kind, even if the fire was ignited by a non-utility source. Due to this increasing wildfire risk, many entities and stakeholders beyond utilities share in the motivation to invest in wildfire mitigation programs. Thus, many opportunities exist for both electric and water utilities to partner with local, regional, and national organizations seeking to enact greater impact. Utilities can catalyze projects through three primary avenues: planning, funding, and execution, illustrated in Figure 4.

From a planning perspective, utilities can analyze where the highest consequence risk sits, and where that risk potentially overlaps with stakeholder-identified areas of focus (e.g., highlighted in community wildfire protection plan, or areas already targeted with National Environmental Policy Act or California Environmental Quality Act permitting), and either support targeted project execution or planning. Utilities may also lend continuity and stability, allowing for multi-year efforts instead of ad-hoc smaller projects. Finally, by participating in and encouraging planning among stakeholders and sponsoring working groups, utilities can contribute to the "art of the possible" and identify creative collaboration opportunities to advance shared goals.

Figure 4: Utility Roles in Wildfire Resilience Partnerships

Source: Guidehouse, 2025

Funding is another key area where utilities can have significant impact. Considering grants, terms may require matching from other parties as a condition of an award. Notably, utilities already invest significantly in vegetation management as an essential component of operations, generally credited with reducing service outages between 37% and 63% during high- and low-severity storms, respectively[21]. This work can be used as part of an in-kind contribution; specifically, utilities can contribute directly through financial donations and/or as in-kind contributions of labor and outcomes, for example, contribution of physical vegetation

[21] Utility Dive "Vegetation inspection, a challenge for utilities," September, 2022.

management in a target area. In addition, because of the reliable characteristics of utility performance, creating a partnership with a utility may increase an organization's likelihood for grant application approval. Utilities also maintain networks of corporate and residential customers, many of whom have a strong interest in protecting their communities. Tapping into these networks for support is another method by which utilities can advance wildfire prevention work. Some component of utility investment in wildfire risk may be re-allocated towards resilience partnerships where appropriate, such as in areas where this tactic is most cost effective, fastest, or most viable for reducing locational risk. This reallocation requires cost-recovery approval from the regulatory commissions (see Section 4.2.1) but may represent a more efficient use of utility funds and create scaled-up impact that would otherwise not be possible.

Finally, utilities can contribute to resilience partnerships through execution and coordination. Utilities employ project management, forestry professionals, and vegetation management crews as part of their business-as-usual operations. These teams can collaborate with federal and state land managers and stakeholders from other partners to most efficiently coordinate on a project, such as effectively working through an area for vegetation management or providing remote sensing. Overall, by participating in resilience partnerships utilities generate possibilities for more impactful and more efficient project work. Utilities can serve as a key catalyst of planning, funding, and executing wildfire mitigation work that benefits the utility, its partners, and the community.

4.2.3 Potential Partners Beyond Utilities

Involvement of diverse stakeholders in future resilience partnerships is necessary to increase efficacy, widen the benefit pool, and accelerate mitigation efforts. Each new entity brings unique capabilities, expertise, resources, and perspectives essential to scaling an approach and addressing the collective challenge. Wildfire does not differentiate based on industry or landownership, and intense collaboration between all those affected is the only way to meet the scale of the challenge.

While forestry and conservation non-profits including Blue Forest and NFF have played a key role in advancing the power and utility sector potential in public-private partnerships, there is room for many more to join in this effort. Additional expertise in land management and forest restoration, as well as additional philanthropic funding, will ensure ecologically sound and effective approaches and efficient use of funds. Local and municipal governments are already helping by contributing their knowledge of the citizens they serve alongside community specific risks and priorities. Their ability to mobilize public support and deploy local funding mechanisms is invaluable to this work.

States and federal government have already been providing critical grants, but more can be done to support these efforts with regulation and collaboration. State and federal agency land managers are key to ensuring access to public lands which are essential to achieving landscape-scale impact. Many high-risk fire areas lie on or adjacent to private property, and landowner participation is necessary for creating contiguous treatment zones, effective fuel breaks, and reducing urban conflagration. Furthermore, local government, state government, land managers, utilities, and corporations working in collaboration with local community leaders in the regions they serve will only improve and strengthen community relationships.

Biomass processors and the timber industry can help to turn forest restoration byproducts into economic assets. By participating in resilience partnerships these businesses can reduce disposal costs, generate revenue, and support local economies.

Insurers and reinsurers have a significantly impactful role to play in wildfire resilience partnerships. As wildfire losses and risks have escalated with climate change, insurers have faced mounting financial strain, shrinking market participation, and increased reliance on backstop mechanisms like California's FAIR Plan. Despite these pressures, insurers have limited incentive to invest in wildfire risk mitigation due to regulatory constraints, short policy durations, and the inability to capture long-term benefits if customers switch providers. Current catastrophe models are often too coarse to recognize highly local mitigation efforts, but some reinsurers are beginning to explore more granular wildfire modelling that could enable insurers to better quantify and reward local mitigation. Investment vehicles like Blue Forest's FRB give the insurance industry a pathway to support mitigation as well. As the insurance industry grapples with the challenges of underinsurance, affordability, growing exposure, and customer frustration, resilience partnerships offer a path to stabilize risk and support community level adaptation.

Wildfire resilience partnerships present an opportunity for bold, meaningful change in the way society approaches, and thinks about, wildfire mitigation. Catastrophic wildfire is a collective problem, requiring a collective and collaborative solution. Utility resilience partnerships have shown sufficient promise warranting additional participation, further funding, regulatory review for cost allowance, and status as an accepted tool in the wildfire mitigation arsenal.

5 Appendix

Table 1: Examples of Public-Private Partnerships for Wildfire Mitigation

Project	Primary Sponsor	Description
Flagstaff Watershed Protection Project	City of Flagstaff	$10M municipal bond approved by voters in 2012 to treat 15,300 acres of forest land over 10 years. Expected payback through property taxes.
Santa Fe Municipal Watershed Investment Program	City of Santa Fe	$5.1M bond for 15,455 acres over 20 years to finance maintenance of forest treatment. Paid for by a charge incorporated into billing for water utility customers. Developed in part by the USDA Forest Service.
Tuolumne County Community Fuels Treatment	PG&E / American Forest Foundation (AFF)	PG&E funded a $500K grant to AFF to deliver targeted forest restoration in Tuolumne County and demonstrate new models for achieving utility resilience, complementing a $5M CAL FIRE grant there. AFF's first project treated 20 acres along the one-way road on the grounds of the public school Foothill Horizons which tied into work on surrounding private lands. As part of the project, AFF and the school invited surrounding neighbors to see the work and new biochar study, which anecdotally resulted in 400 additional nearby acres getting treated as neighbors hired the forestry crew that was in the area, further enhancing area resilience at low per acre cost.
Deer Point Forest Stewardship Project	Idaho Power / USFS	A four-year, 1,300-acre collaborative effort to reduce wildfire risk in the Boise National Forest's year-round recreation area. Idaho Power contributed by coordinating with the USFS to implement and maintain fuel breaks under powerlines, supporting long-term protection of community and recreational assets. This project brought together a variety of partners including federal and state land management entities, non-governmental organizations, a local ski resort, the timber industry, and the city of Boise.
Utility Resilience Corridors	PG&E / American Forest Foundation (AFF)	As part of a PG&E grant, AFF recruited private landowners in a high fire risk area, who had distribution lines with higher outage frequency running through their parcel, to participate in a pilot to inform a potential new program. AFF has offered to conduct free and more holistic forest restoration treatment within 50 feet of both sides of the powerline, removing trees and reducing fuels under wires. The private landowners and surrounding areas will receive improved wildfire safety with a fuel break, and a more resilient, healthier forest landscape. PG&E in turn intends to improve reliability, while also reducing ignition risk, wildfire consequence risk, future tree grow-in risk and reducing ongoing maintenance. Landowners

Project	Primary Sponsor	Description
		expressed strong interest in participating, with work to commence shortly after publication of this white paper.
Matching Funding for State Grants	PG&E / Butte County Fire Safe Council	Butte County Fire Safe Council reached out to PG&E to participate in a $6M CAL FIRE grant application. The project would reduce wildfire consequence risk in a high-risk area, which includes a portion of PG&E lands in Oroville. PG&E committed a match of $300K, an amount equivalent to 50% of the treatment cost for the PG&E parcel. CAL FIRE awarded the grant to project, though a fire did burn through part of the area before CEQA permitting could be completed. The project will continue forward, now partly also focused on post-fire restoration.
Cragin Watershed Protection Project	SRP / USFS / DFFM	A ten-year, 32,000-acre landscape scale forest thinning effort around C.C. Cragin reservoir, which is owned by the Bureau of Reclamation and maintained and operated by SRP. The portfolio of projects on the Coconino National Forest is being implemented under the SRP-DFFM-USFS tri-party framework. Project funding is split equally between USFS and SRP, with SRP bringing on additional funding support from a corporate partner. The projects will help reduce the risk of catastrophic wildfire which helps protect surface water supplies, water delivery and storage infrastructure, and wildlife habitat.