FIRE SMART COMMUNITY PILOT PLAYBOOK

Building Fire-Ready Communities Through Innovation & Collaboration

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TAHOE FUND
GORDON AND BETTY MOORE FOUNDATION
TYROLIAN VILLAGE
fire aside
TAHOE REGIONAL PLANNING AGENCY
CLIMATE & WILDFIRE INSTITUTE
NVEnergy FOUNDATION
BURNBOT
VANDERBILT UNIVERSITY
ROCKROSE RISK
vibrant planet
WILDFIRE SERVICES

SUMMARY

Wildfire risk in the Tahoe Basin and across the West is escalating, which is threatening lives, property and the environment. Land managers and homeowners are facing more pressure than ever to mitigate that risk. While comprehensive models exist for identifying, prioritizing and implementing effective mitigations in the wildland (e.g., fuels reduction treatments in forests), it has been difficult to create similar models for doing so at the neighborhood and parcel levels.

Fortunately, the availability of new technologies is upending the status quo, and unlocking new opportunities for neighborhoods and homeowners to efficiently increase their resilience to wildfire, by providing them with highly tailored, site-specific recommendations for action.

The Fire Smart Community Pilot was launched in spring 2025 to create the most fire-ready community in Tahoe, by bringing together several of these new technologies, the local fire district, a willing homeowners association (HOA) and wildfire researchers to identify, prioritize and implement what we will refer to as the "mitigations that matter most."

The Pilot is taking place in Tyrolian Village (Incline Village, NV), a 228-unit HOA that owns common-space land up to five feet from all residences within its 61-acre footprint. While every neighborhood has its unique characteristics, the intent from the start was to use this Pilot to create a replicable, exportable model to help decision makers allocate limited resources to the highest-value mitigations in communities throughout Tahoe and the West.

This Pilot demonstrates that with the right tools, teamwork and commitment, communities in wildfire-prone areas can build a more resilient future — one that safeguards both people and the places we love.

This playbook is our attempt to capture the Pilot process and learnings in real time, so that you too can create a Fire Smart Community.

PILOT OBJECTIVES

The Pilot rests on a simple premise: New technology allows us to think differently about how we identify, plan and execute mitigations that will have the biggest impact on reducing the risk to life and property in communities within the wildland urban interface (WUI).

MISSION

Create the most fire-ready neighborhood in Lake Tahoe by bringing together the latest technology to identify and implement the mitigations that matter most within the natural and built environments.

GOALS

- Protect lives, property and natural resources.
- Create a mechanism for quantifying the difference in risk before and after mitigations are implemented.
- Where possible, enhance alignment with the insurance sector to support affordable insurance outcomes.
- Build a replicable model that others — in Tahoe and throughout the West — can adapt and implement in their own communities.

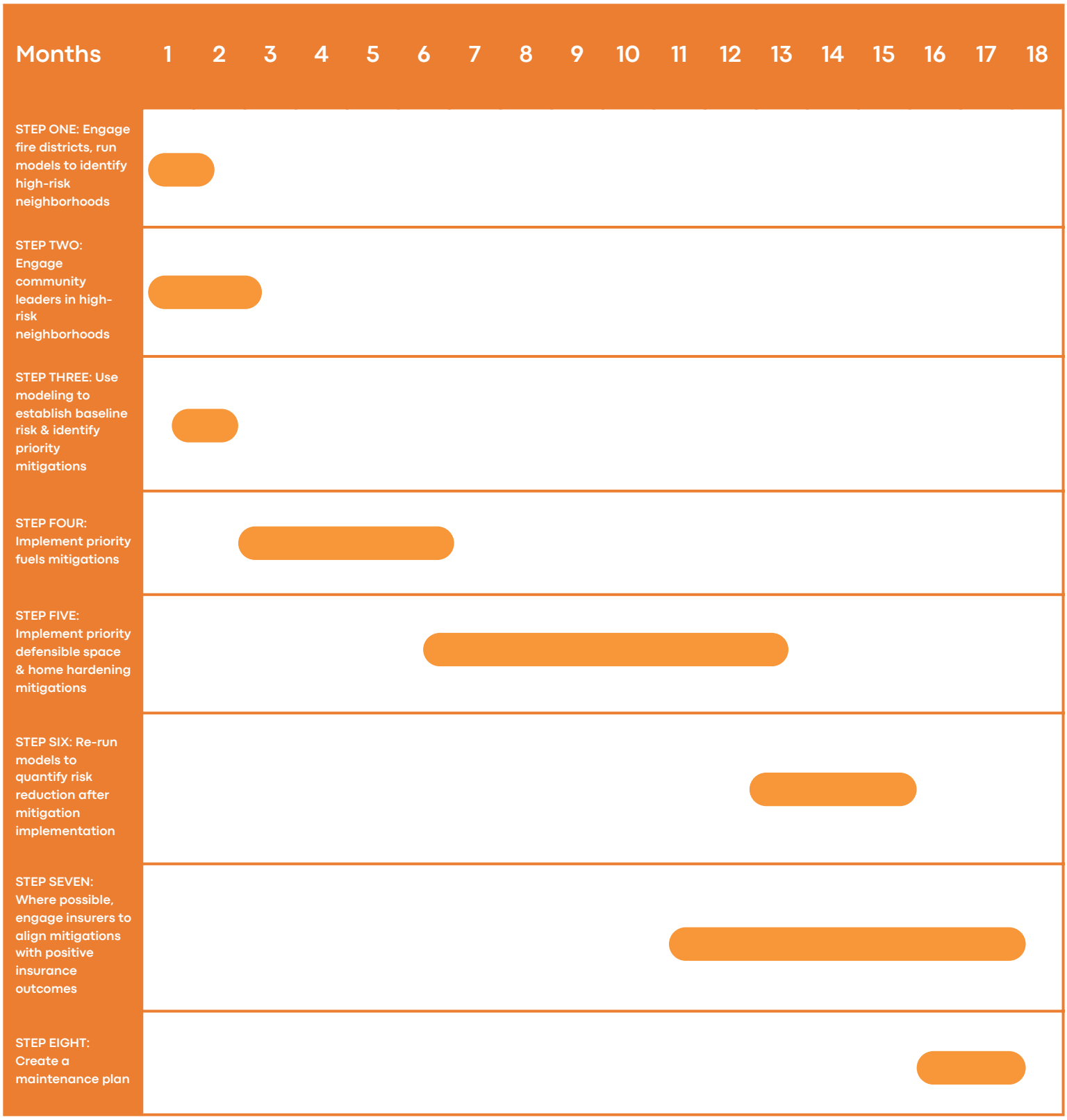
While the Pilot is still ongoing, it is already generating valuable lessons for replication.

A NOTE ON INSURANCE

This pilot is focused on increasing community resilience. Aligning that work with positive insurance outcomes is a desirable secondary objective, but is not the priority. We have been careful not to tie the success of the Pilot to insurance outcomes; although, through the use of data, analytics and modeling, we do hope to influence positive results.

CORE PILOT STEPS

The figure below illustrates the core steps of the Pilot process and an example timeline for implementing them. Both can be adapted to meet your community's unique starting point, needs and stakeholders.



Notably, the Tyrolian Village Pilot adds a middle round of modeling ("Modeling Phase 2") that is not included in the Core Pilot Steps. This was done intentionally to isolate the different impacts on risk reduction of vegetation mitigation versus defensible space and home hardening mitigation.

THE TYROLIAN VILLAGE PILOT

KEY PLAYERS

- Tahoe Fund, in partnership with the North Lake Tahoe Fire Protection District (NLTFPD), convened partners and handled the logistics of calendar invites, agendas and organizing a demo day to build awareness about the Pilot. They also played an important role in managing outreach to stakeholders and generating media about the Pilot to encourage other communities to do similar work.
- NLTFPD led all mitigation planning, inspections and implementation.
- Greg Erfani, President of the Tyrolian Village Homeowners Association (TVA), was the community champion, organizing and generating support from neighbors. Greg obtained grant funding and worked closely with NLTFPD on implementation.
- The Climate and Wildfire Institute (CWI), through the support of the Gordon and Betty Moore Foundation's Wildfire Resilience Initiative, provided resources and expertise in planning, execution and documentation of the pilot.
- The Tahoe Regional Planning Agency (TRPA) provided technical, regulatory and advisory assistance.
- Fire Aside digitized defensible space inspections and provided each homeowner with personalized defensible space and home hardening recommendations.
- Vibrant Planet and Dr. Hussam Mahmoud modeled risk and prioritized parcel- and neighborhood-scale mitigations that NLTFPD, TVA and residents could act on.
- BurnBot expedited fuels reduction work with their remote mastication equipment.

STEP-BY-STEP GUIDE & KEY LEARNINGS

☑ STEP 1

ASSEMBLING THE TEAM & TECH

Engage core pilot partners and determine which technology tools you will bring into the project.

- Community Champion: TVA President Greg Erfani
- Fire District Leadership: NLTFPD Chief Ryan Sommers and Division Chief Isaac Powning
- Nonprofit Project Convener: Tahoe Fund
- Tech Tools: BurnBot, FireAside, Vibrant Planet and Dr. Hussam Mahmoud's AGNI-NAR model

KEY LEARNINGS

The Right People Are Critical To Success
Identify your fire district lead, community champion and a convening organization that can pull together the collaboration.

Pick Your Tech Tools Early
Assemble your team of tech partners as early as you can so they can see the entire scope from beginning to end.

You Are Building A Think Tank
You will find yourself troubleshooting at all phases of the project. Embrace the challenges as opportunities to improve the process for future efforts. Use your stakeholder group as a think tank that solves problems quickly and openly.

De-Risk Tech For Fire Districts
Nonprofits and other organizations with flexible capital can play a key role in demonstrating innovative technologies for fire districts and other implementers. Technology is new and can be seen as risky, so overcoming this hurdle is important.

Modeling Accelerates Boots On The Ground Decision Making
Fire district personnel are at the center of the Fire Smart Community model and are leaders at each stage. High-tech modeling is a tool that enhances their existing knowledge base, accelerates decision making, and ensures that the highest wildfire risk areas are identified for treatment or mitigation.

☑ STEP 2

PUBLIC LANDS MITIGATION

Mitigate the fire risk outside of the neighborhood. NLTFPD and NV Energy treated public lands and utility corridors outside of the neighborhood, resulting in adjacent risk reduction and safer ingress/egress for evacuations.

KEY LEARNINGS

Start Outside The Neighborhood
Mitigating public lands and utility corridors bordering neighborhoods is critical to reducing risk within neighborhoods. You can't make a neighborhood safe without mitigating fire pathways into it.

☑ STEP 3

NEIGHBORHOOD-SCALE FUELS MODELING

MODELING PHASE 1

Use a tech company to model the neighborhood's baseline risk. Vibrant Planet ran models on Tyrolian Village to establish its baseline wildfire risk (intensity x probability), and identify and prioritize strategic fuels mitigations that would reduce the risk to homes in the neighborhood.

KEY LEARNINGS

Consider Starting In An HOA
It may be easier to start your work with an HOA that owns the common-space land within the community and can compel action from homeowners. It is important to identify your community type before deciding how to deploy technology.

☑ STEP 4

NEIGHBORHOOD FUELS REDUCTION

Reduce the hazardous vegetation in the neighborhood. NLTFPD treated vegetation at the neighborhood scale, including hand thinning and building community-adjacent fuel breaks. TVA hired a contractor to remove dead trees within the community.

Use tech-driven tools to efficiently conduct fuels reduction activities within and around neighborhoods. Using a vegetation modification prescription from NLTFPD—informed by modeling from Vibrant Planet and BurnBot—BurnBot executed priority fuels reduction treatments in common areas with remotely-operated masticators. BurnBot treated 36 acres in under one week. By contrast, the 27-acre hand-thinning portion of the project took three times as long to complete.

KEY LEARNINGS

Fuels Reduction Looks Different Than Typical Landscaping
Prior to conducting fuels reduction work with tech partners like BurnBot, hold community meetings to educate residents on what post-fuels-reduction landscaping will look like. Emphasize increased safety for the community. A fire-ready community will have a different aesthetic than a traditionally landscaped one.

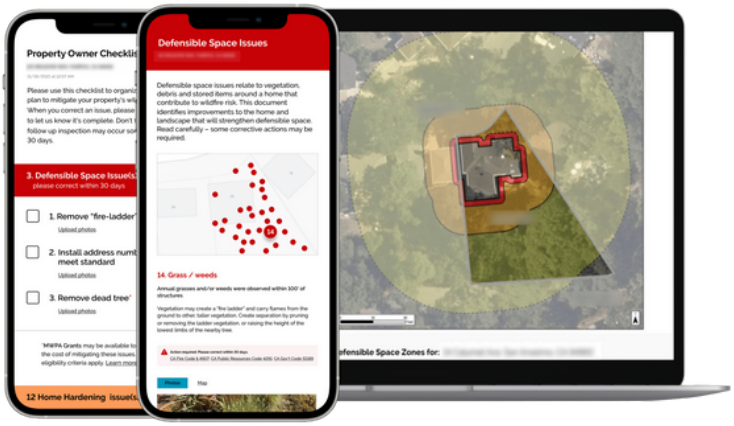
STEP 5

DEFENSIBLE SPACE & HOME HARDENING INSPECTIONS AND REPORT DISTRIBUTION

Use tech to collect Defensible Space Inspection (DSI) data (resilient and non-resilient attributes of every parcel in the community). NLTFPD used Fire Aside, which was funded by the Tahoe Community Foundation, to conduct 228 DSIs and calculate Structure Exposure Scores to guide actions on vents, roofs, gutters, ember-resistant zones and defensible space.

Share the DSIs with homeowners. Reports were distributed electronically to TVA residents to encourage them to begin action on priority defensible space and home hardening recommendations.

Use multiple communication streams to reach homeowners. The Pilot team sent postcards and email correspondence from NLTFPD and TVA to encourage residents to open their reports and take action. Through Fire Aside and follow-up assessments, NLTFPD could track actions as residents uploaded completed activities.



KEY LEARNINGS

Good Data In Means Good Data Out
To guarantee sufficient and accurate data inputs for modeling, DSIs need to be standardized. Make sure fire districts are collecting key data points, including defensible space and home hardening attributes.

Home Hardening Is Critical
The devastating fires in Los Angeles have drawn attention to the importance of home hardening. Ensure you are not just talking about defensible space when you are working on homeowner mitigations.

Home Inspections Seem Scary
Many residents are scared to have their homes inspected because they worry about 1) the expense of the work they will need to do, and 2) insurance companies potentially using the information against them. Ensure communities are informed about data privacy and how their information will be used. Take a kind approach.

It's Difficult To Get Homeowners To Open Their DSI Reports
The pilot team had a goal of a 90% open rate by mid-July 2025. When that date came, only about 35% of the 228 homeowners had opened their reports. This was likely due, at least in part, to the fears referenced above. Consistent email engagement, educational campaigns and door-to-door conversations about what defensible space and home hardening are, and what the reports mean, may help residents see the bigger picture.

Avoid Words Like "Violation"
People prefer to do this work through encouraging suggestions rather than strict compliance. Communicate the importance of the work to the safety of their neighbors, rather than attempting to drive action through fear.

Second Homeowner Challenge
It is more difficult to communicate with homeowners who do not primarily reside within a pilot neighborhood. Consider creative approaches to engage this hard-to-reach audience.

☑ STEP 6

PARCEL-SCALE DEFENSIBLE SPACE & HOME HARDENING MODELING

MODELING PHASE 2

Use technology to model down to the parcel level. Dr. Mahmoud integrated Vibrant Planet fuel modeling data, Fire Aside DSI data, and historic wind patterns into the AGNI-NAR model to calculate parcel relative vulnerability and transmissibility scores.

Use technology to identify the highest-priority homes. Similar to disease modeling, the AGNI-NAR data highlighted the most vulnerable and superspreader residences. This allowed Pilot organizers to prioritize defensible space and home hardening work on those residences to increase the safety of the greater community.

KEY LEARNINGS

Determine Data Privacy Policies
To make the models most effective, you will likely share data across organizations. Think through privacy concerns, especially around the local fire district's DSI data, and ensure non-disclosure agreements are in place to govern how data is protected.

Use "Superspreader" Modeling To Prioritize High-Value Investments
Modeling like Dr. Mahmoud's is a powerful tool for determining how to allocate funding and resources to get the best return on your investment.

STEP 7

PRIORITY DEFENSIBLE SPACE & HOME HARDENING MITIGATION IMPLEMENTATION

Bring in contractors who can do the work. The Pilot team partnered with Wildfire Services Group, a defensible space and home hardening contractor, that residents could easily contact and hire.

Incentivize the highest-priority homes. The Tahoe Fund applied for and received a $50,000 grant from the NV Energy Foundation for a Home Hardening Fund to provide financial incentives and assistance to the highest-priority homes.

KEY LEARNINGS

Empathetic Communication Is Key
Residents will likely not react well to being told they're "superspreaders" or the "most vulnerable" structure owners in the neighborhood. Ask a trusted community member or the fire district to have that conversation in person.

Home Hardening Is Hard
Moving from recommendations to action is really hard! Doing so requires continual engagement with the community, including email correspondence, presentations at HOA meetings, and sometimes, knocking on doors. Provide a list of recommended contractors to help remove barriers to action.

We Need More Contractors
Host local trainings for contractors on defensible space and home hardening to ensure that specialists are available in your community.

Mitigations Can Be Expensive
Pursue grants or tap into HOA funds to help residents offset the costs of defensible space and home hardening work.

Educate Homeowners On General Home Hardening & Defensible Space Best Practices
Give homeowners easy-to-understand educational materials on the importance of home hardening and defensible space work. Existing resources that describe regional best practices can help homeowners become familiar with common mitigations, such as installing mesh screens and double-paned windows, implementing Zone 0, and removing firewood from underneath decks.

STEP 8

POST-MITIGATION MODELING

MODELING PHASE 3

Conduct a final round of modeling. Capture the impact of fuels reduction, home hardening and defensible space mitigations, and generate a comprehensive risk reduction score. (Note: This is not yet complete in the Pilot.)

KEY LEARNINGS

Create Before & After Visualizations
Use before-and-after images from the modeling processes to illustrate risk reduction in a way that non-fire professionals can understand. Doing so can help homeowners better appreciate the value of the work they did, encourage additional work in the future, and contribute to an increased sense of safety.

STEP 9

INSURANCE COMPANY ENGAGEMENT

Invite insurance companies into the work. RockRose Risk was at the table from the start of the Pilot, and was able to use modeling from the Pilot to better inform insurers and re-insurers about true risk based on localized mitigation efforts. Insurers provided critical insights into the intricacies of the market and how they use data and modeling tools to decide whether to write policies in communities at risk of wildfire.

KEY LEARNINGS

Plan Field Visits
Organize field visits for insurance companies to come see the on-the-ground work being done to reduce wildfire risk in the community.

STEP 10

MAINTENANCE PLAN

It all grows back! Develop a long-term funding and maintenance plan to sustain wildfire resilience efforts.

KEY LEARNINGS

The Partnerships Don't End Here
The local fire district and community should work together to determine the timing and type of fuels reduction needed in the coming years to ensure the community remains wildfire resilient.

EARLY IMPACT REPORT

As the Pilot advances, it will continue to generate opportunities for homeowner follow-ups, data to inform positive insurance outcomes, and learnings for replicability.

RESULTS TO DATE

Fuel Treatments: 61 acres, which includes 34 acres treated by BurnBot and 27 acres hand-thinned by NLTFPD

Homes Evaluated & Engaged: 228 DSIs completed

Regional Pilot Expansion: Pilot has expanded to four additional Tahoe communities in both Nevada and California (Glenbrook, Incline Pines, South Lake Tahoe, and Carnelian Woods).

Regional BurnBot Expansion: Adoption of BurnBot's masticating machines has expanded across the Tahoe Region, with 148 acres treated outside of Tyrolian Village and 100 more acres in the planning phase.

Insurance Outcomes: RockRose Risk rewrote a policy for the largest HOA in Incline Village (McCloud HOA), reducing the HOA's premium by 33%. Mercury Insurance brought its entire underwriting team to Incline Village to visit TVA. During this visit, the underwriting team identified sufficiently mitigated homes and vegetation, and expressed interest in writing policies based on the outcomes of the work completed thus far. Additional positive Insurance outcomes are expected over a longer horizon.

Work In Progress:

- Post-treatment modeling is underway to quantify changes in risk.
- Homeowner follow-ups are ongoing to encourage implementation of home hardening and defensible space recommendations.
- To ensure the highest return on investment, Pilot organizers are connecting the Home Hardening Fund to the mitigations that matter most, as determined by Fire Aside data and Dr. Mahmoud's AGNI-NAR modeling.
- This winter (2025/2026), NLTFPD will pile burn on the 27 acres that were hand-thinned.

PILOT EXPANSION IN TAHOE

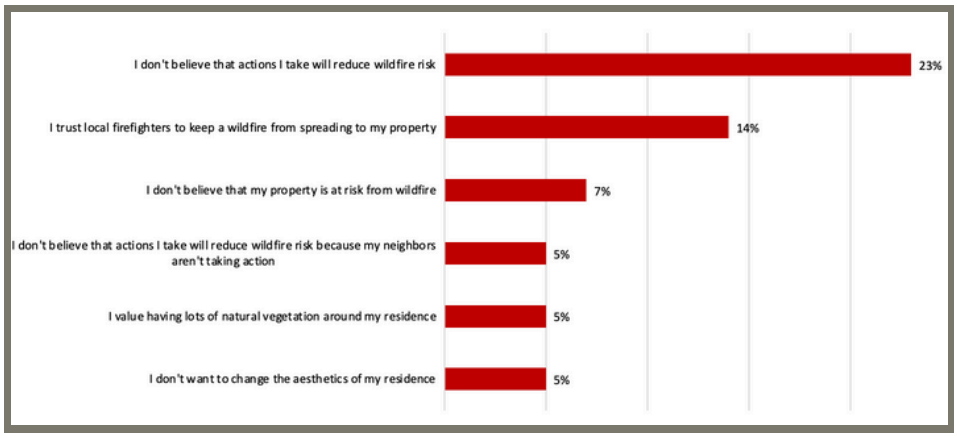
Interest generated by the TVA Pilot led to four more pilots in the Tahoe Basin. They showcase how this process can be used across a range of neighborhood types.

Pilots	Tyrolian Village	Incline Pines	Glenbrook	South Lake	Carnelian Woods
Location	Incline Village, Nevada	Incline Village, Nevada	Glenbrook, Nevada	South Lake Tahoe, California	Carnelian Woods, California
Fire District	North Lake Tahoe Fire Protection District	North Lake Tahoe Fire Protection District	Tahoe Douglas Fire Protection District	Lake Valley Fire Protection District, South Lake Tahoe Fire Department	North Tahoe Fire Protection District
Community Size	61 acres, 228 homes	15 acres, 41 homes	750 acres, 46 homes within 300 home HOA	TBD	88 acres, 118 homes
Community Type	HOA owns common space up to 5 feet, not structures	HOA owns common space up to 5 feet, not structures	Private homeowners own property within an HOA community	Private homeowners, no HOA	HOA owns common space up to the outside of the structures
Fire Tech	Fire Aside, Vibrant Planet, Dr. Mahmoud's AGNI-NAR model, BurnBot	Fire Aside, Vibrant Planet, BurnBot	Fire Aside, Vibrant Planet, Xyloplan, BurnBot	Fire Aside, Vibrant Planet, Xyloplan	TBD

SURVEY LESSONS

Pilot organizers enlisted the help of a social scientist, Natalie Bennett, from the University of Colorado Boulder, to survey homeowners within four communities around Tahoe to understand how they perceive and prioritize wildfire risk and mitigations. Some of Natalie's key findings, as of October 2025, are below.

What are the barriers to action?

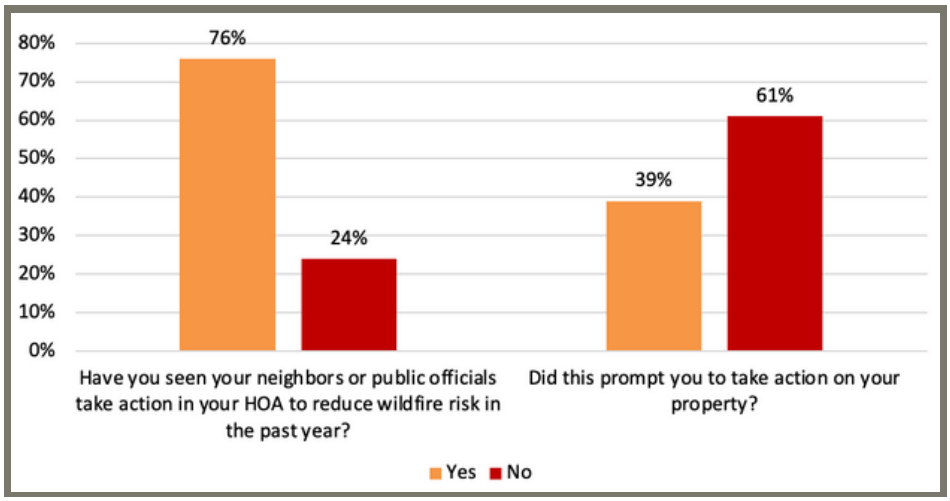


Overwhelmingly, the two most common barriers to action were 1) a belief that actions wouldn't be effective in reducing risk (23%) and 2) trust that local firefighters would keep a wildfire from spreading (14%). This suggests that tailoring messaging to these communities that highlights the effectiveness of home hardening and defensible space actions could improve action. Further, highlighting that homeowners bear responsibility for keeping their property safe before a wildfire event could help combat this second barrier.

How does seeing action being taken around them influence homeowners' own actions and risk attitudes?

76% of homeowners said they have seen their neighbors or public officials take action in the HOA in the past year, and 39% said that this prompted them to take action themselves.

21% of homeowners said that seeing this action being taken around them made them feel less worried about wildfire risk to the community, while 67% of homeowners said that it did not change their risk attitudes.



These findings suggest that seeing action has a greater impact on a homeowner's behaviors than on their risk attitudes. This also points to the importance that just a few individuals taking action in a community can have to spur collective action.

BUILDING A FIRE-READY FUTURE, TOGETHER

The Fire Smart Community Pilot is demonstrating that when innovation meets collaboration, extraordinary progress and speed of implementation are possible. By bringing together homeowners, fire districts, community organizations, researchers and technology partners, this project is showing that communities can take control of their wildfire risk — and in doing so, safeguard the lives, property and natural beauty that make their communities exceptional. The Tyrolian Village Pilot is more than just a local success story; it is a new model for resilience that any community can follow.

To get in touch with a Fire Smart Community Pilot partner, please email info@tahoefund.org.

Pilot organizers would like to extend a tremendous thanks to Genny Biggs at the Gordon & Betty Moore Foundation for coining the term "mitigations that matter most," honing the vision for this pilot, and continuously encouraging us to take on this work. Your support made this effort possible.

This playbook was prepared by the Climate & Wildfire Institute and the Tahoe Fund
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