Agenda:

Sign In on Paper Sign In Sheet

Time	Item
9:00 am	Coffee & Pastries Networking - SUPER FAST!
9:05 am	Popcorn Project Updates
9:35 am	5th Climate Assessment Update: Dr. Safeeq Khan
10:00 am	Wildfire Solutions Coalition - Wildfire Panel Framing
10:10 am	Panelist Presentations: Owen Doherty (Cal Adapt), Nadia Tase (Cal Fire), Eric Horntvedt (Truckee Fire)
10:30 am	In Conversation: Wildfire Solutions Coalition moderated discussion with Panelists
10:45 am	Audience Q&A
11:00 am	Close Out

CTA | Climate Transformation Alliance

Climate Transformation Alliance Quarterly Meeting

October 10th, 2025
Truckee Tahoe Airport

CTA Updates

- **CTA Strategic Planning**
  - Outcomes from Governing Partner Meeting
- **Subcommittee Meetings**
  - October 23 & 24
- **Next Quarterly Meeting**
  - In 2026!

CA 5th Climate Change Assessment, Sierra Nevada Regional Report

Safeeq Khan, PhD.
Coordinating Lead Author

CA Governor's Office of
Land Use and
Climate Innovation

UCMERCED

California's Fifth Climate Change Assessment: Sierra Nevada Region

(Summary of Key Findings)

10th October 2025

[**Presented by:** Safeeq Khan, Coordinating Lead Author, University of California, Merced]

Lead & Contributing Authors

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Technical Advisors

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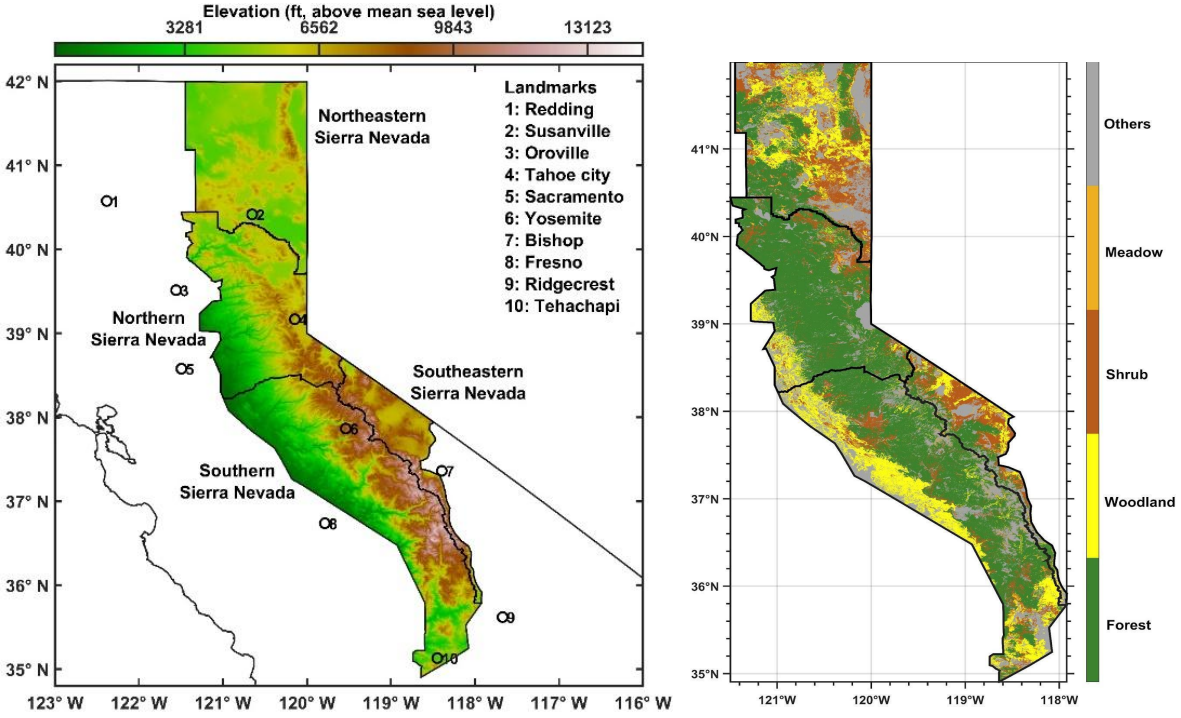
Community Advisors

J. Wentworth, J. Hatch, L. Olaerts

The Sierra Nevada: Geography and Importance

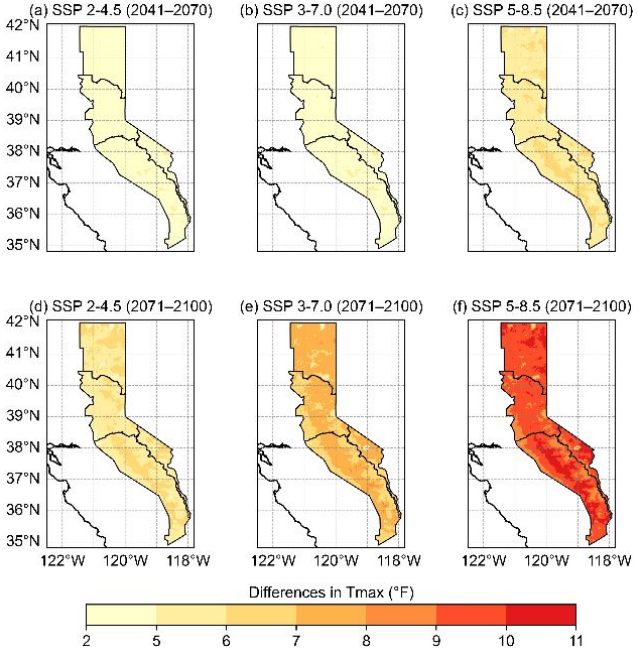
- → Encompasses California's major elevation gradients and watersheds, spanning foothills to alpine zones.
- → Provides the headwaters for more than 60% of the state's developed water supply, supporting agriculture and urban areas downstream.
- → Sustains critical ecosystems, communities, and infrastructure that are highly sensitive to



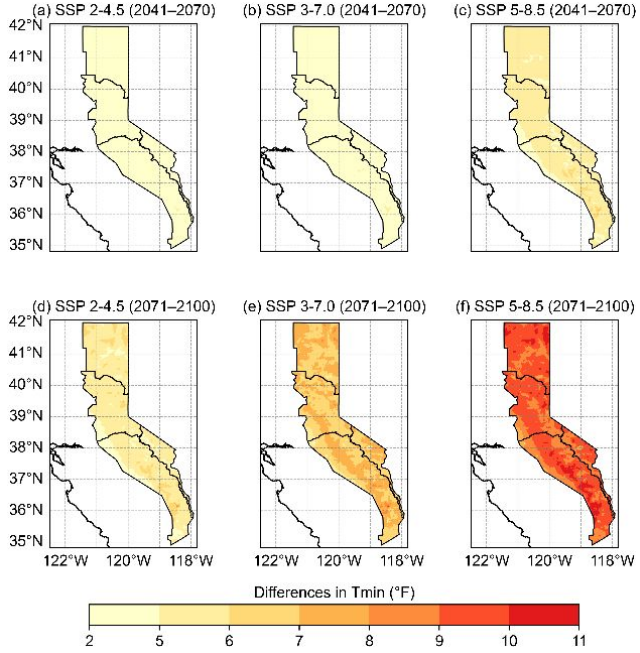
The topography and ecotones of the Sierra Nevada

Projected Temperature Increases Across All Seasons

- By the end of the century, annual temperatures are projected to increase by 5.8-9.5 ºF, depending on the emissions scenario.
- Warming occurs across all seasons, with clear spatial variations among Sierra subregions.
- The projections are based on statistically downscaled CMIP6 climate models.



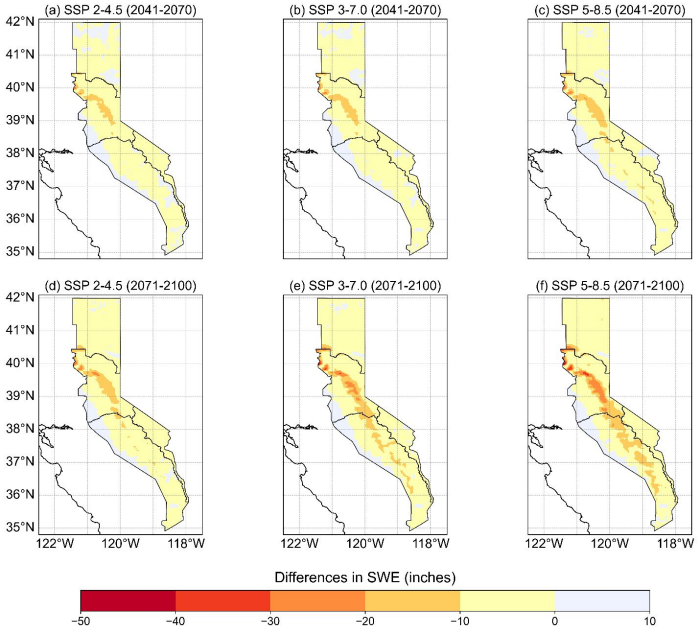
Projected changes in maximum temperature



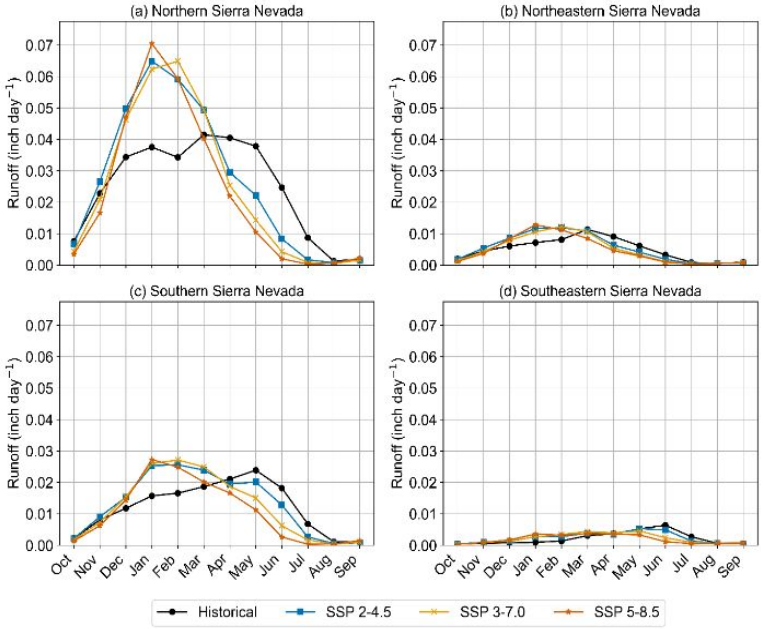
Projected changes in minimum temperature

Substantial Snowpack Declines and Earlier Runoff Projected

- → Snowpack is projected to decline by up to 90% across much of the Sierra Nevada by the end of the century.
- → The rain-snow transition zone is expected to rise 1,500-3,000 ft, shifting runoff earlier in the year and altering streamflow seasonality.
- → Peak runoff may occur one month earlier, and summer runoff could decline by 41-56%, with



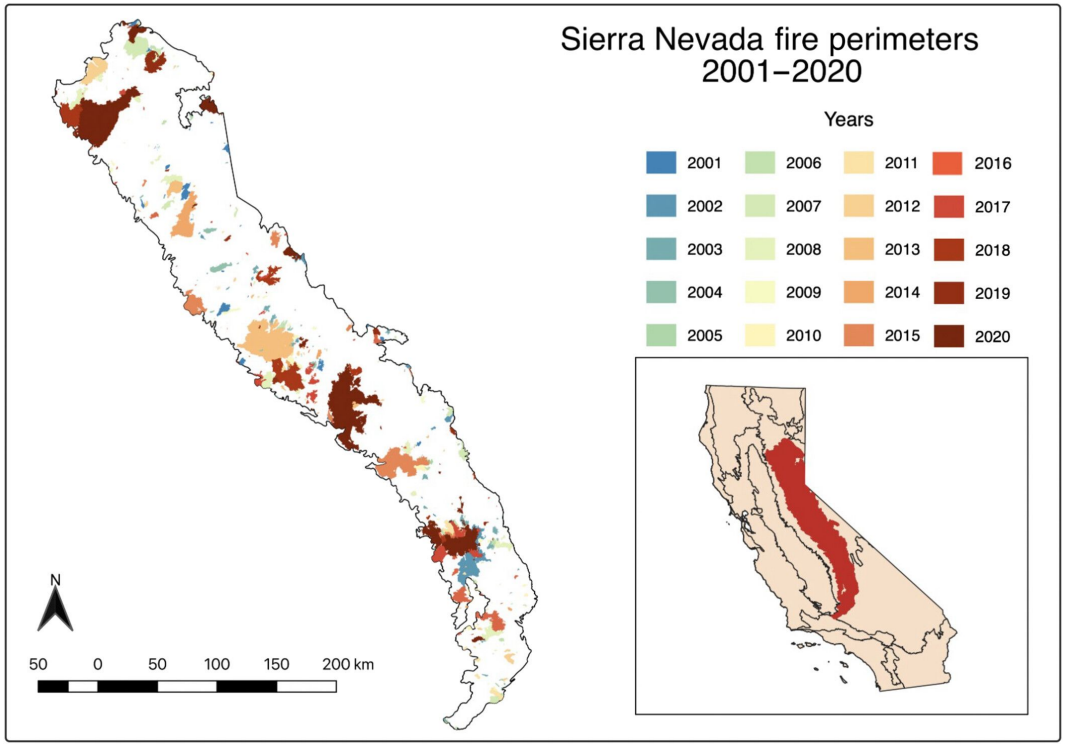
Projected absolute changes in the snow water equivalent (SWE) under emission scenarios



Projected monthly runoff under emission scenarios and across the subregions of Sierra Nevada

Wildfire Activity is Increasing and Projected to Grow Further

- → The region has experienced some of the largest and most severe wildfires in California's history over the past two decades.
- → Burned area and number of fires is projected to increase, driven by warmer, drier conditions.
- → Wildfire activity is increasingly affecting higher-elevation forests that historically burned less frequently.



Historical fire perimeter across the Sierra Nevada
[Source: Gutierrez et al., 2021, *Science Advances*]

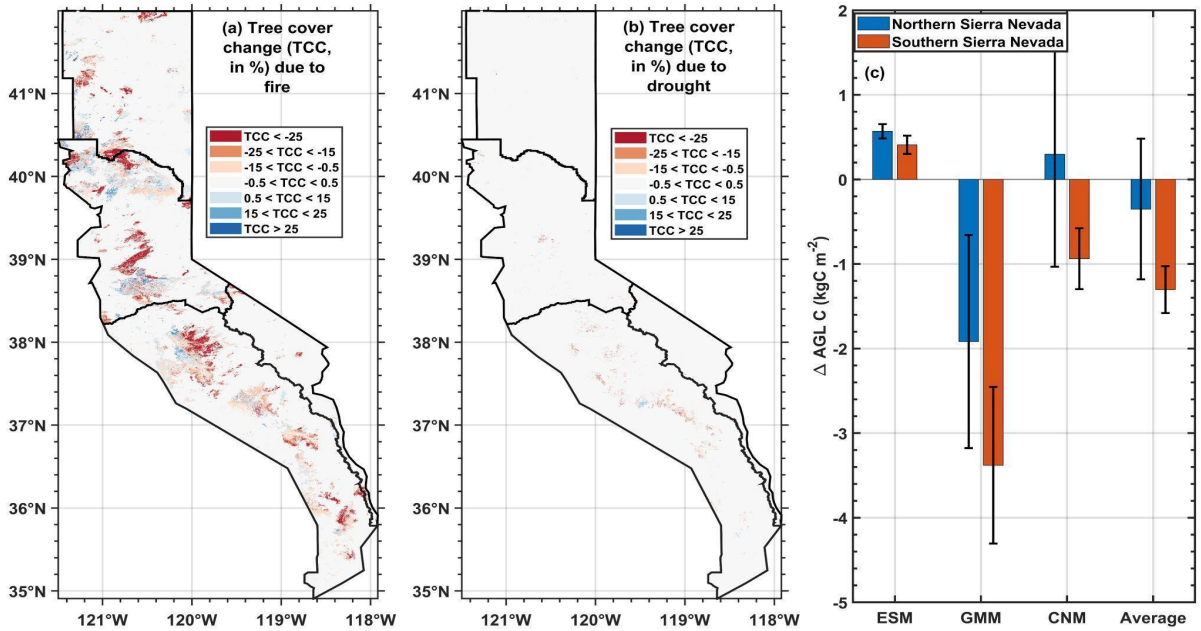
Projected Change by 2040
Burned area: ↑ $(59 \pm 33)\%$
Number of fires: ↑ $(51 \pm 32)\%$

Ecosystems Are Undergoing Major Shifts

→Forest ecosystems are transforming due to drought, bark beetle outbreaks, and wildfire disturbances.

→~30% of conifer forests converted to non-forest types between 2011 and 2020, reflecting rapid ecological change.

→Shifts in vegetation types across elevation ranges indicate changing ecological conditions and reduced carbon storage.



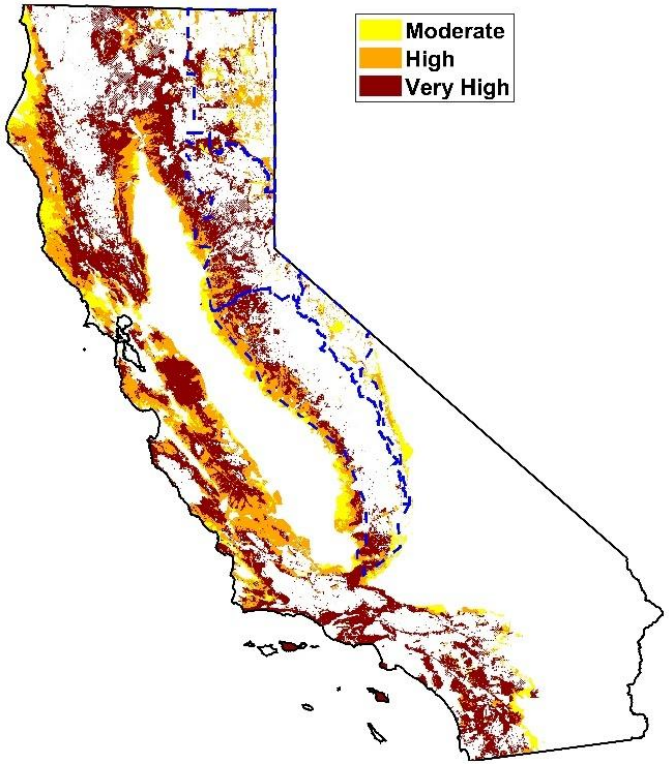
Changes in tree cover due to (a) fire, (b) drought, and (c) changes in carbon storage across the subregions of Sierra Nevada ["Northern" and "Southern" in Fig. (c) refer to the combined Northeastern and Northern areas, and the combined Southeastern and Southern areas of the Sierra Nevada, respectively.]

Communities Face Rising Climate Hazards

→More than one-third of the Sierra Nevada lies in high or very high wildfire hazard zones, increasing exposure risks for residents.

→~550,000 people live in poverty and 445,000 have disabilities, which heighten vulnerability to climate impacts.

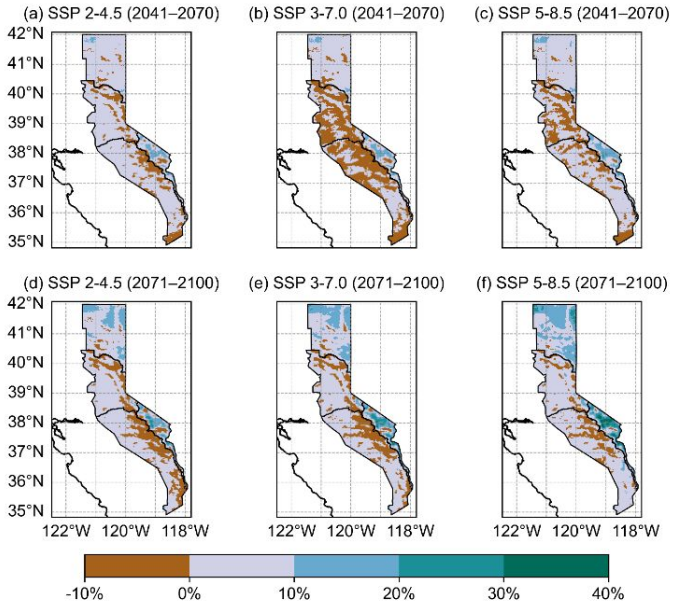
→Social and economic vulnerabilities intersect with hazard zones, challenging local resilience.



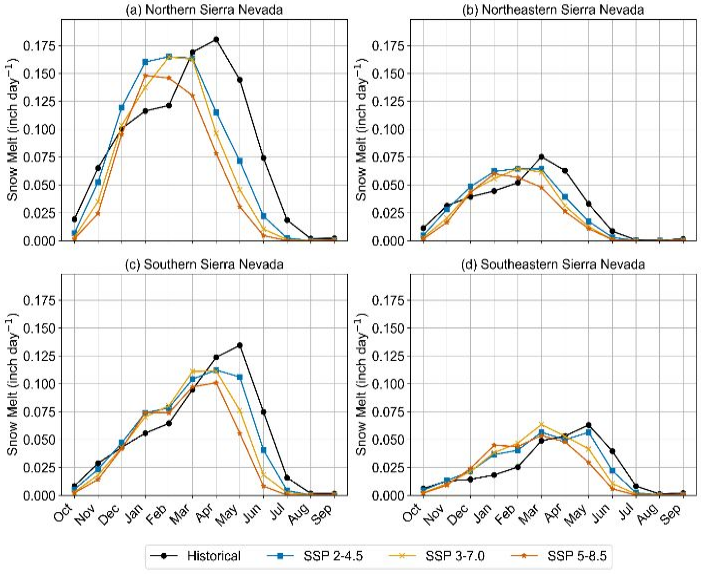
Fire hazard severity zones in California

Climate Changes Poses Risks to Critical Infrastructure

- → Shifting precipitation and snowmelt patterns alter water availability and reliability of hydropower generation.
- → Wildfire, flooding, and landslides, threaten transportation corridors, power lines, and water conveyance systems, causing cascading impacts.
- → Infrastructure vulnerabilities are compounded by their



Projected change in precipitation patterns



Projected change in snowmelt across the subregions

Adaptation Strategies Are Emerging Across Sectors

Possible Adaptation Strategies

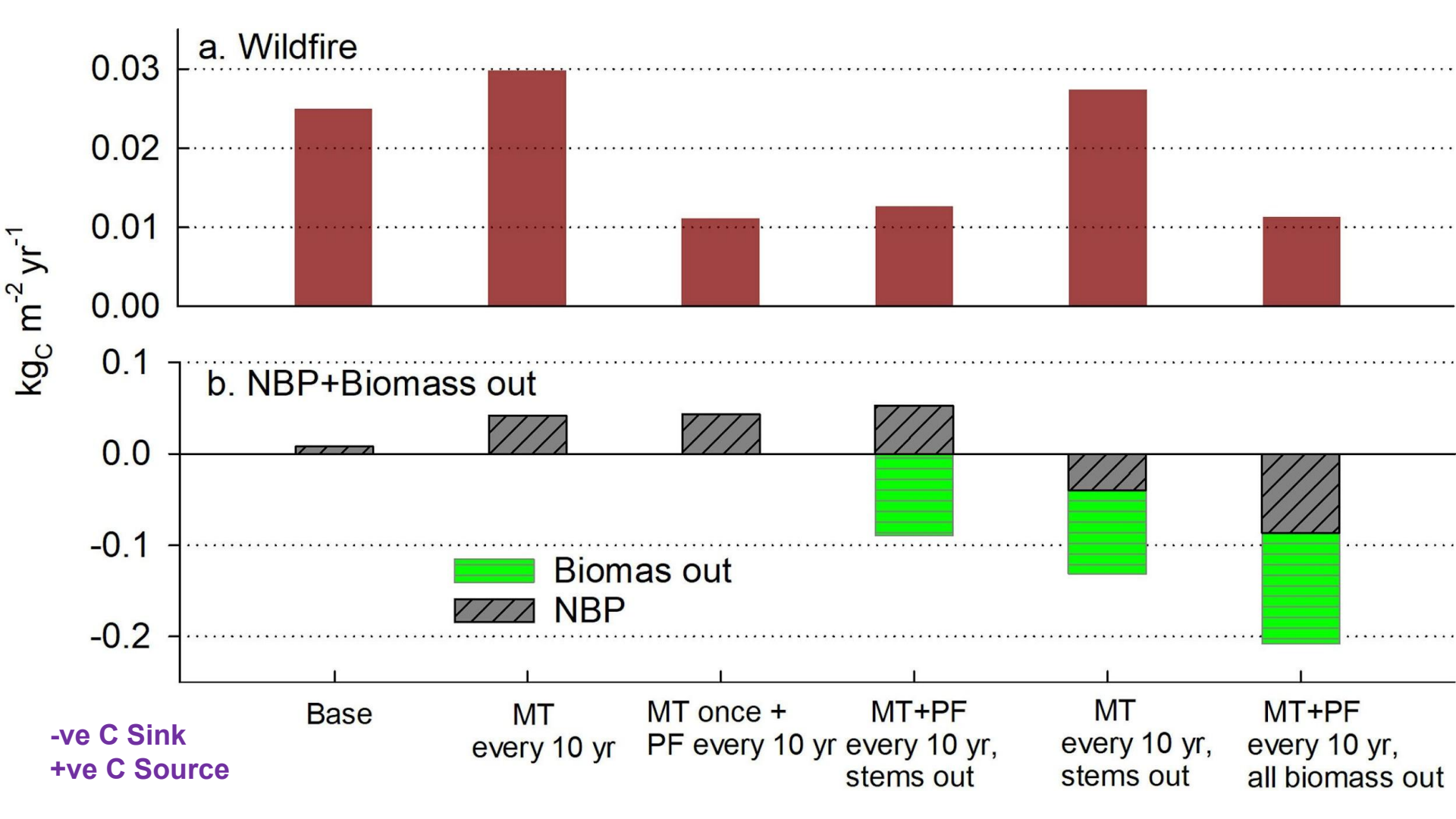
Forest and watershed management
Forest thinning, prescribed fire, and watershed restoration.

Tribal stewardship and partnerships
Tribal leadership and traditional ecological knowledge could play a central role in landscape adaptation.

Water & infrastructure modernization
Upgrading conveyance, storage, and hydropower systems supports reliable water and energy.

Community resilience & equity
Building adaptive capacity through inclusive planning & hazard mitigation improves social resilience.

Economic diversification and planning
Diversifying local economies and strengthening workforce capacity support long-term adaptation across sectors.


a. Wildfire
0.03
0.02
0.01
0.00
kgC m-2 yr-1
b. NBP+Biomass out
0.1
0.0
-0.1
-0.2
Biomas out
NBP
Base
MT every 10 yr
MT once + PF every 10 yr
MT+PF every 10 yr, stems out
MT every 10 yr, stems out
MT+PF every 10 yr, all biomass out
-ve C Sink
+ve C Source

The Sierra Nevada Plays a Central Role in California's Climate Future

- → Climate change is reshaping the region's climate, hydrology, ecosystems, communities, and infrastructure.
- → The Sierra Nevada's future is closely linked to the state's overall climate resilience.
- → Sustained, coordinated action is needed across sectors and scales.

For more information, visit snclimate.ucwater.org

THE WILDFIRE SOLUTIONS COALITION

Together, we can break California's cycle of catastrophic wildfire.

wildfiresolutionsca.org

The Challenge

WE NEED CONSISTENT FUNDING

to address California's wildfire crisis

- Addressing California's wildfire crisis will cost at least $2.5-$3 billion/year for 10 years
- The State of California currently has <$300M /yr committed to wildfire resilience on an ongoing basis
- Prop 4: $1.5 billion over the next few years, supported by nearly 60% of Californians
- Federal funding is at risk, declining, and/or lacking capacity for implementation

OUR GOAL

Secure the long-term funding needed to fully implement California's wildfire resilience strategy

THE WILDFIRE SOLUTIONS COALITION

WHAT'S AT STAKE:

Human Lives

Over 50,000 Californians have died from wildfire smoke impacts since 2008

Economic Costs

Wildfires cost California $117 billion per year in economic losses

Air Quality

Wildfire smoke has increased air pollution to levels not seen in over 20 years

Carbon Emissions

Wildfires are one of California's largest sources of greenhouse gas emissions

Ecosystem Health

The amount of high-severity wildfire has no historical precedent

WHAT WE STAND TO GAIN:

Public Health

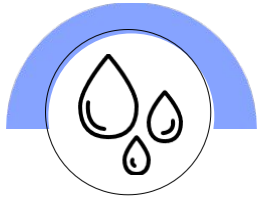
Preventing extreme wildfires will protect Californians' health, especially in low-income and disadvantaged communities

Cost Savings

Investments to reduce wildfire risk are extremely efficient – they save at least $6 for every $1 invested

Economic Opportunity

Wildfire resilience investments will create tens of thousands of jobs in communities across the state



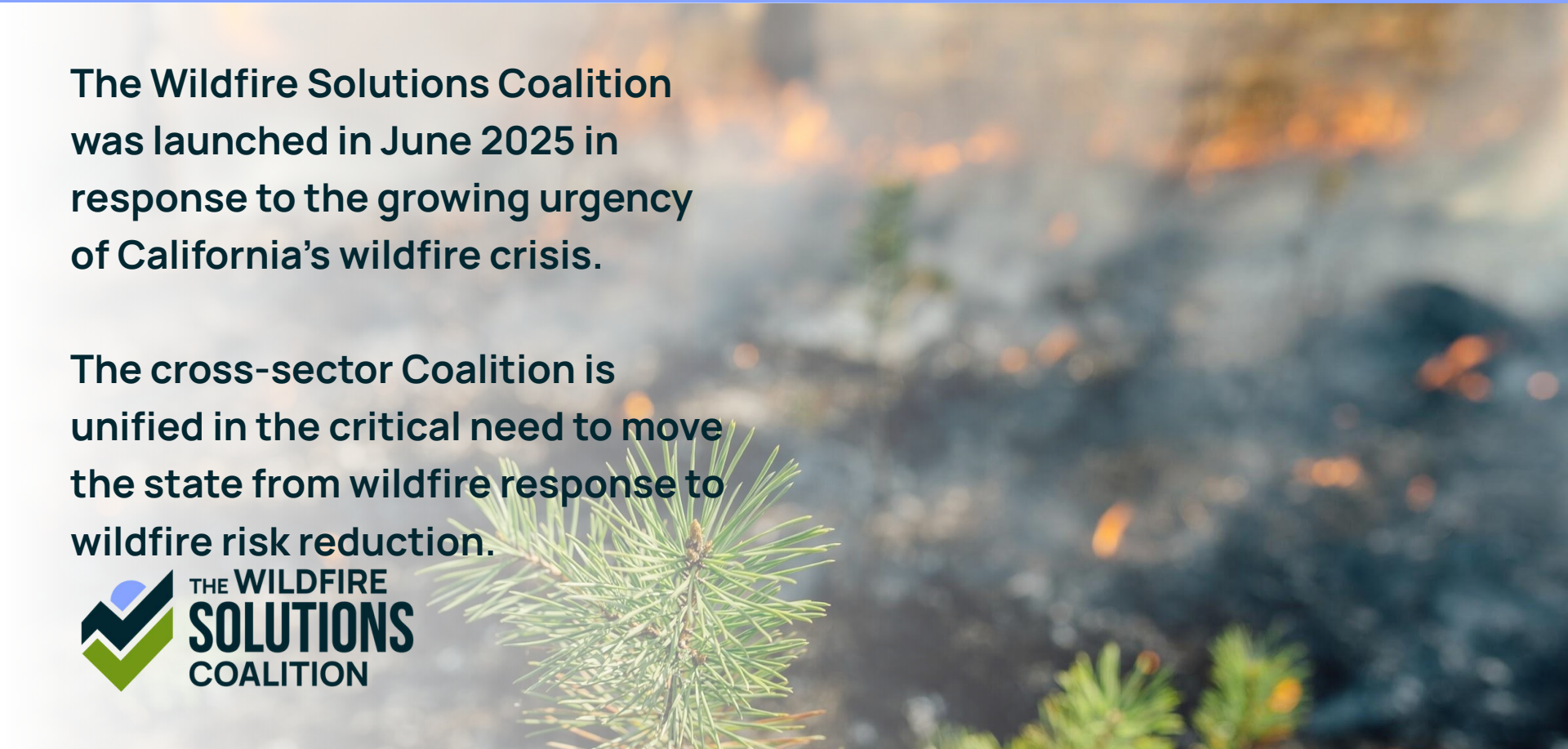
Water Security

Reducing extreme wildfire protects our water supply from dangerous contamination and expensive damage

Climate Action

Nature-based solutions are the most cost-effective way to reduce emissions and mitigate climate risks

The Coalition



The Wildfire Solutions Coalition was launched in June 2025 in response to the growing urgency of California's wildfire crisis.

The cross-sector Coalition is unified in the critical need to move the state from wildfire response to wildfire risk reduction.

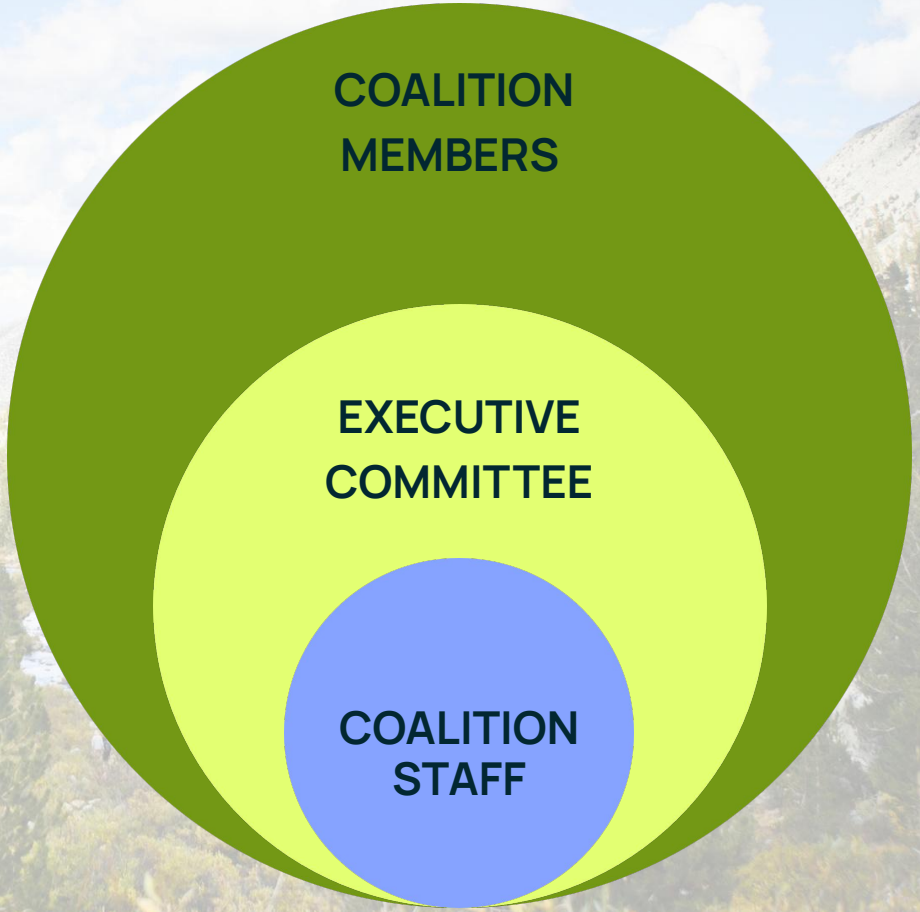
THE WILDFIRE SOLUTIONS COALITION

How We Work

- Expand & mobilize a broad-based, statewide coalition for wildfire resilience
- Elevate wildfire resilience as a near-term priority for state and local leaders
- Build strong public support for specific strategies to expand wildfire resilience funding

THE WILDFIRE SOLUTIONS COALITION

Coalition Structure



THE WILDFIRE SOLUTIONS COALITION

Coalition Roles

Coalition Members	Executive Committee	Coalition Staff
Ambassadors, Advocates, Messengers, Advisors	Advisors, Strategists, Fundraisers, Advocates, Messengers	Project Managers, Fiscal Sponsors (Subset of Executive Committee)
"This work is mission-aligned"	*"This work is a top priority"*	*"This work is a top priority"*

THE WILDFIRE SOLUTIONS COALITION

50+ members and growing!

2025: Cap-and-Invest, GGRF, Prop 4

- Reauthorize Cap-and-Invest
- Protect $200m in Cap-and-Invest allocations for wildfire resilience and mitigation
- Allocate Prop 4 wildfire funding
- Complement wildfire investments with funding for other nature-based climate solutions

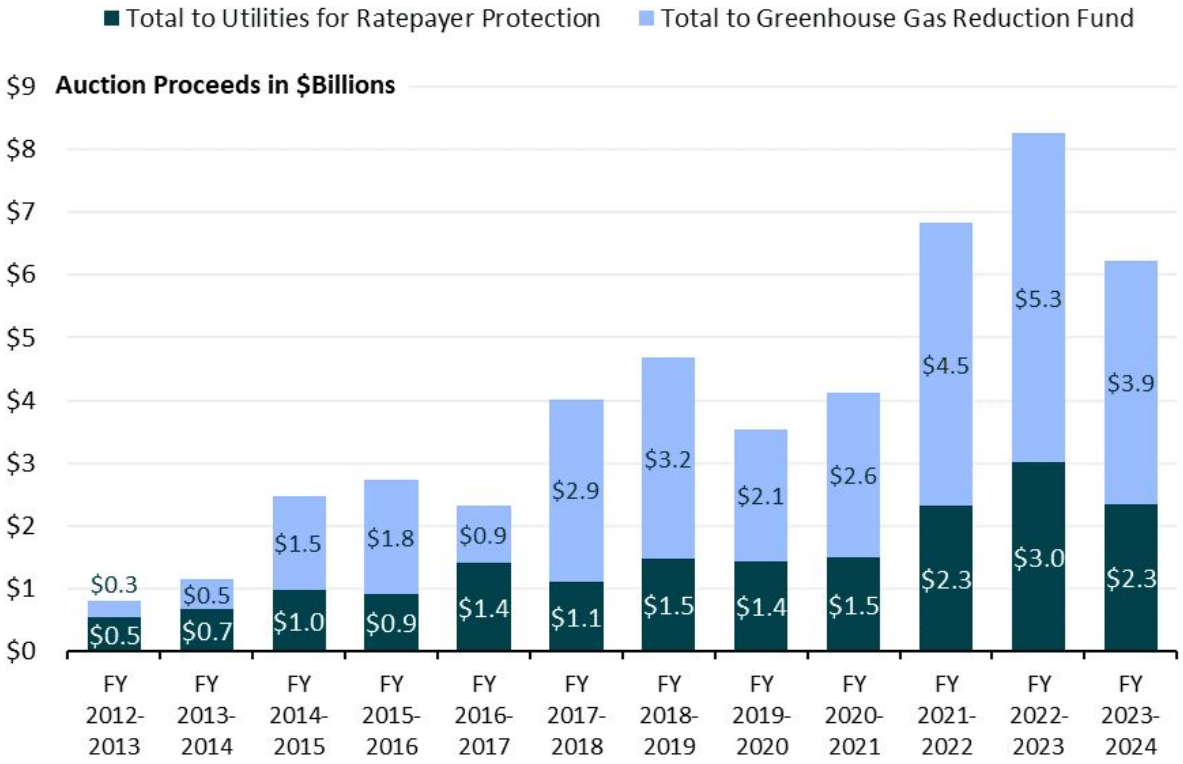
THE WILDFIRE SOLUTIONS COALITION

2026: GGRF, Prop 4, Gubernatorial Candidates

- Increase Cap-and-Invest appropriations for wildfire resilience and other nature-based climate solutions
- Continue to appropriate Prop 4 wildfire funding funds
- Educate gubernatorial candidates – California's Wildfire Governor

THE WILDFIRE SOLUTIONS COALITION

History of Cap & Trade Revenue



Source: Congressional Review Service

https://www.congress.gov/crs-product/R48314

Our Ask

Join the Coalition to secure sustained funding so California can execute its wildfire strategy and break out of the cycle of crisis.

THE WILDFIRE SOLUTIONS COALITION

wildfiresolutionsca.org

THE WILDFIRE SOLUTIONS COALITION

The Nature Conservancy

SIERRA BUSINESS COUNCIL

Northern Sierra Partnership

e_blackmer@sierrabusiness.org

info@wildfiresolutionsca.org

wildfiresolutionsca.org

Wildfire Resilience Panelists

Owen Doherty, PhD
Principal Research Scientist
Eagle Rock Analytics

Nadia Tase
Forest Health Research & Monitoring Program Manager
CAL FIRE

Eric Horntvedt
Wildfire Prevention Manager
Truckee Fire

Cal-Adapt:
ANALYTICS
ENGINE

Cal-Adapt:

From Climate Data to Local Planning

Owen Doherty, Ph.D.
Eagle Rock Analytics, Inc.

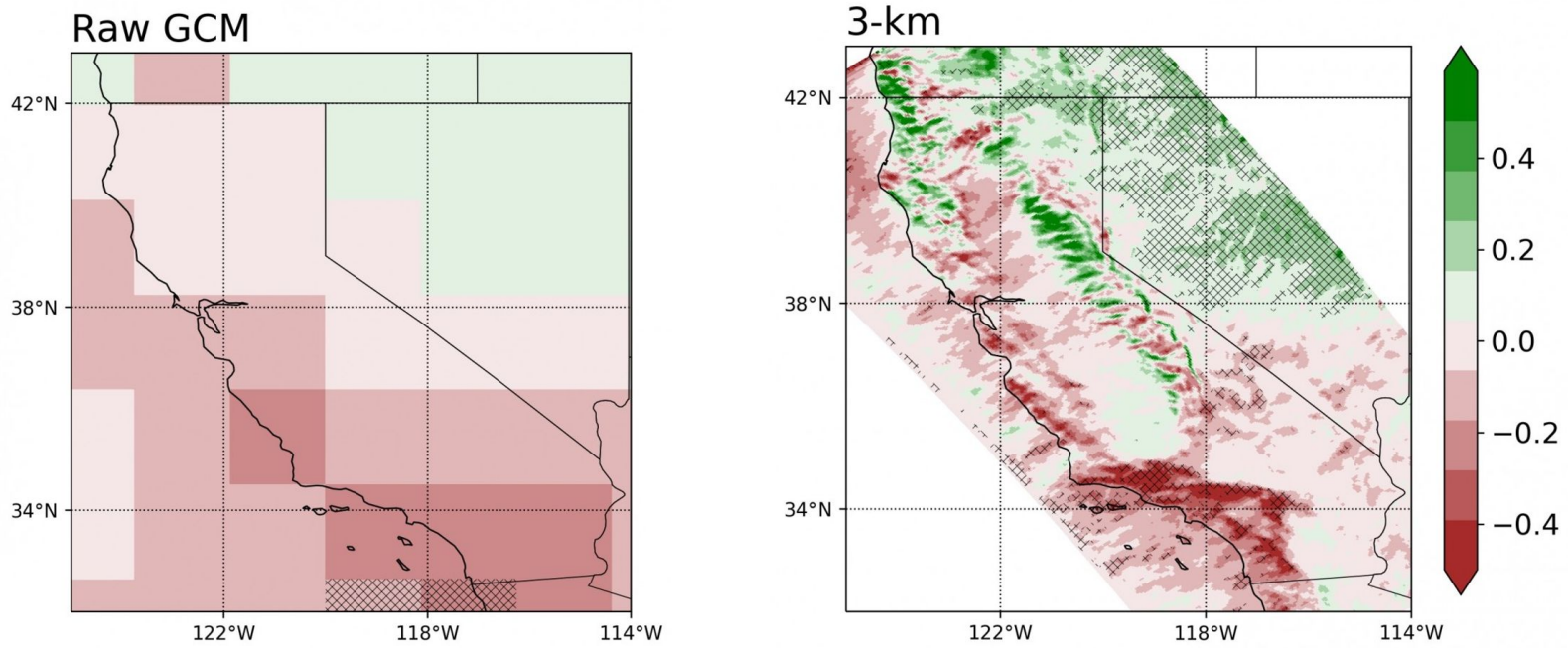
Sowing Change Strategies

SIG
Spatial Informatics Group

BERKELEY LAB

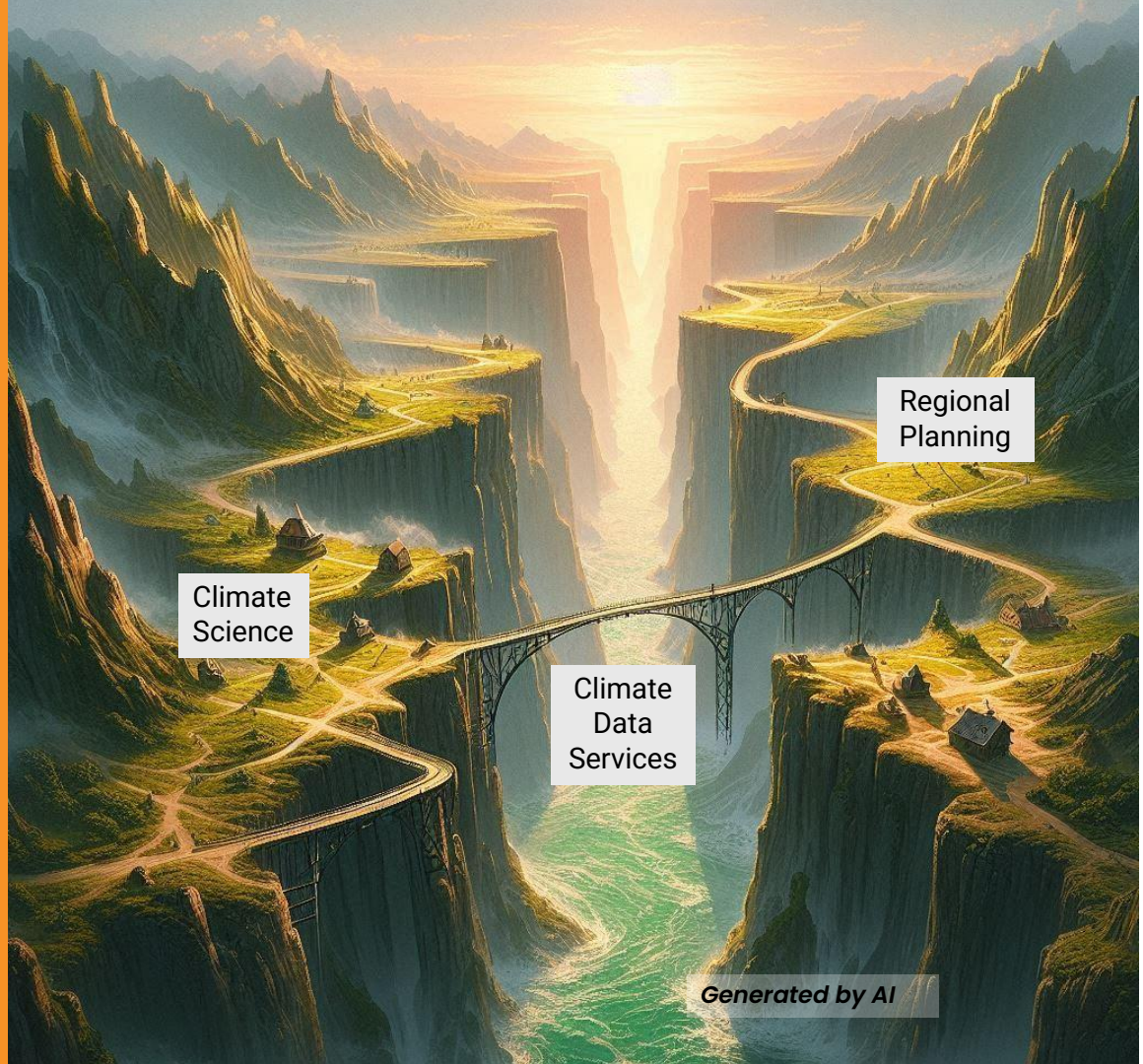
EAGLE ROCK ANALYTICS

Downscaling: Making Global Local



Source: Stefan Rahimi, UCLA

https://dept.atmos.ucla.edu/alexhall/downscaling-cmip6



Cal-Adapt: ANALYTICS ENGINE

The Climate Gap

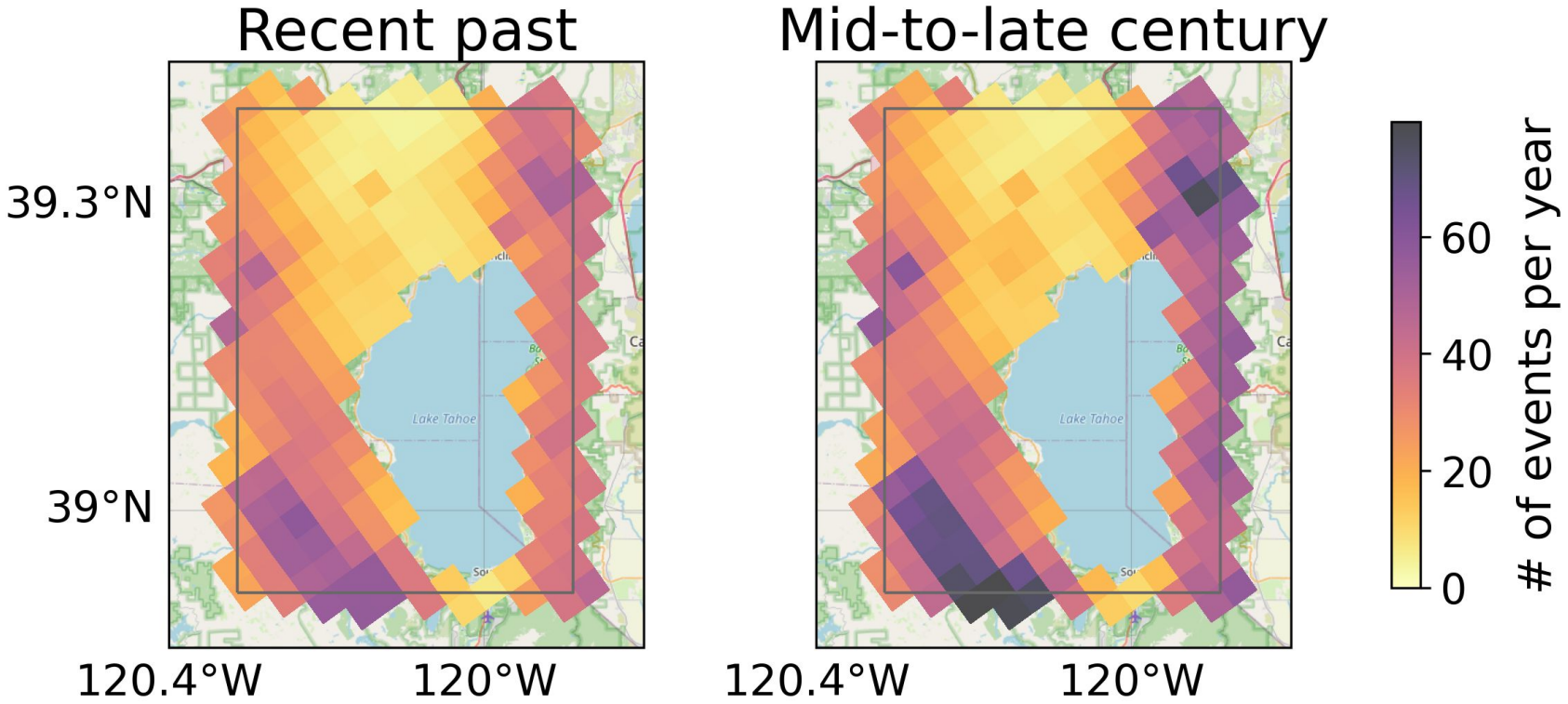
CAL-ADAPT

Cal-Adapt Fills the Gap

- Useful Info
- Access
- Locally Accessible

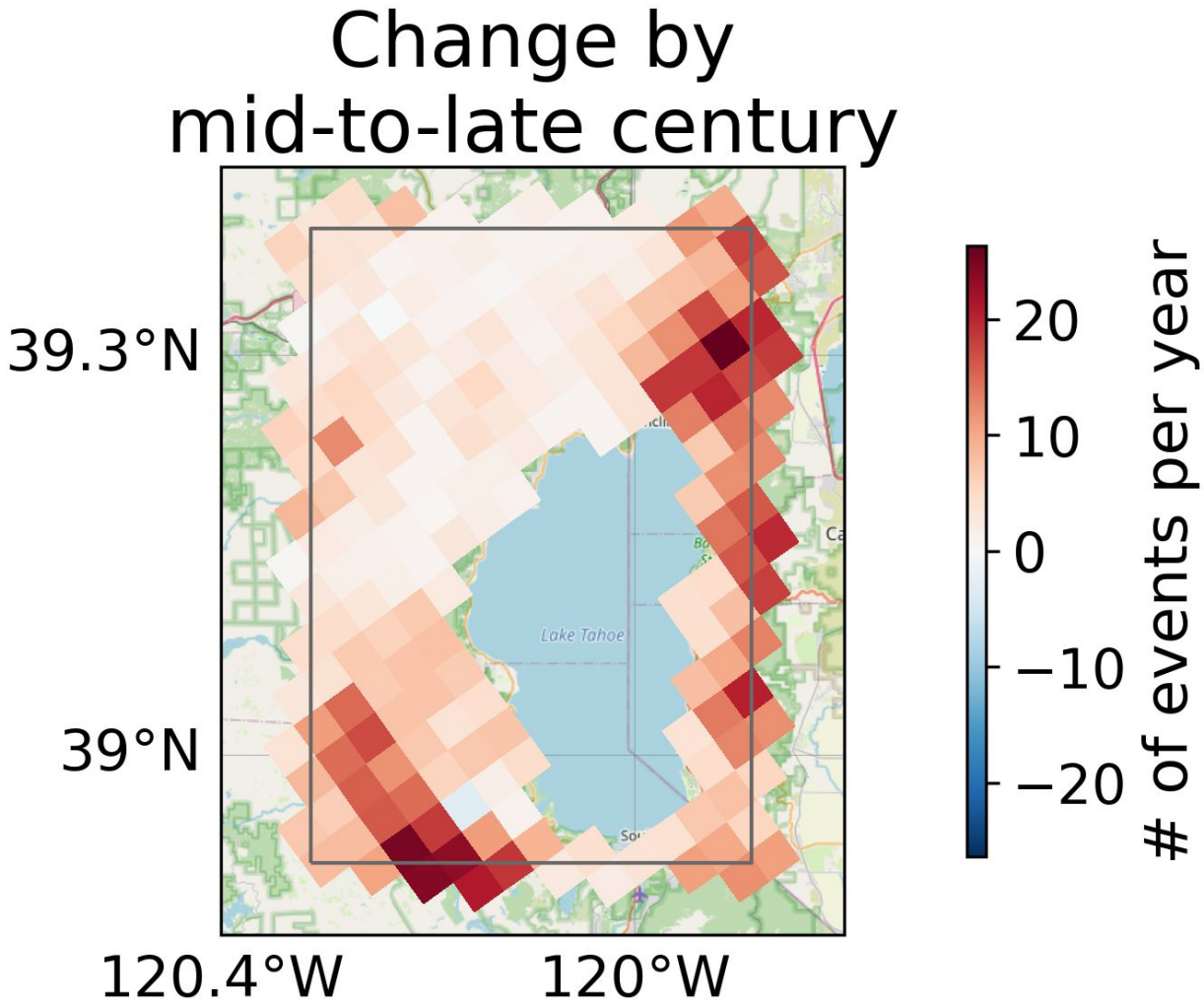
CAL-ADAPT

Climate Drivers of Fire in Truckee

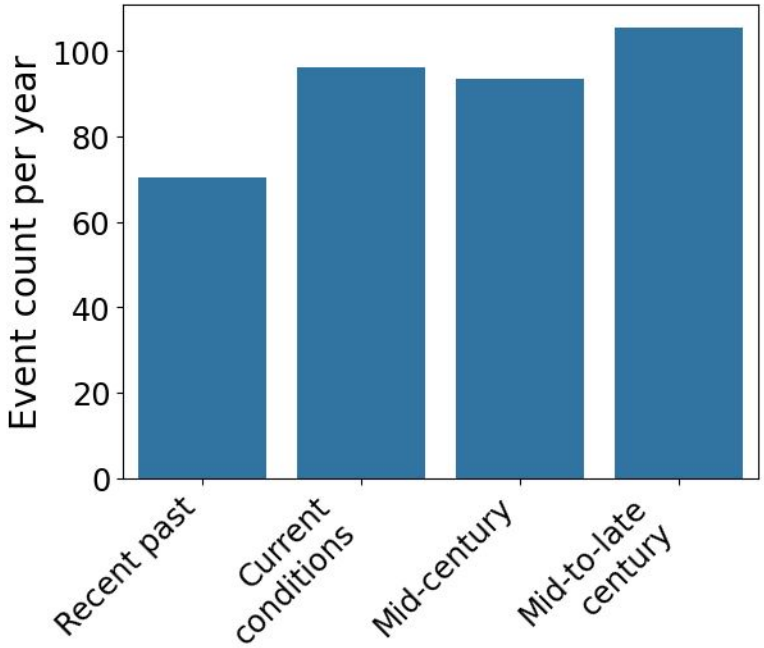


CAL-ADAPT

Climate Drivers of Fire in Truckee



Windy Days Following Drought



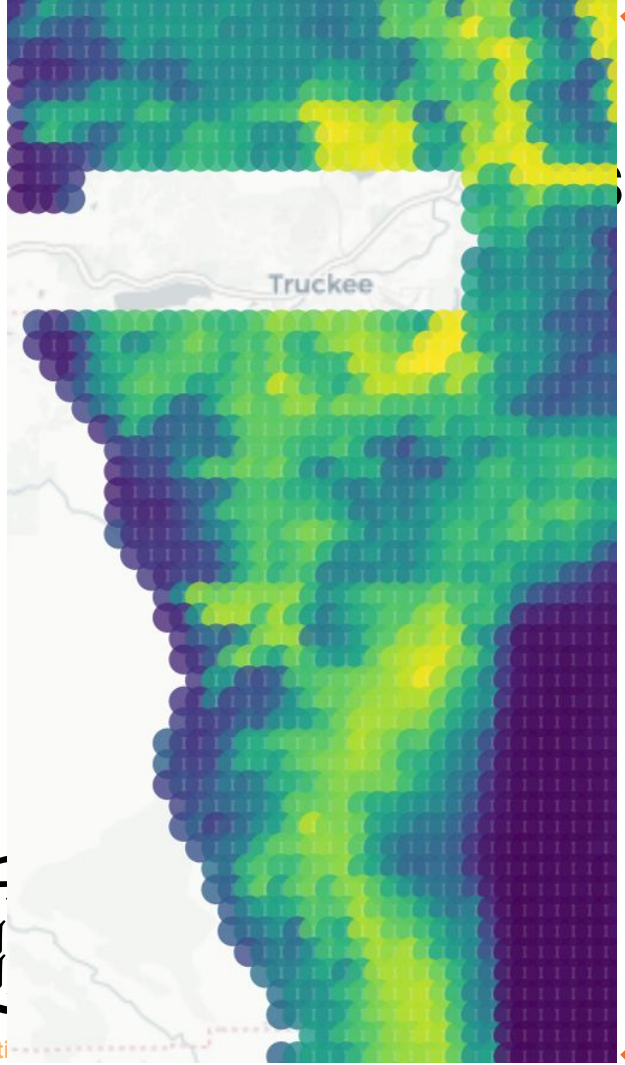
Cal-Adapt: ANALYTICS ENGINE

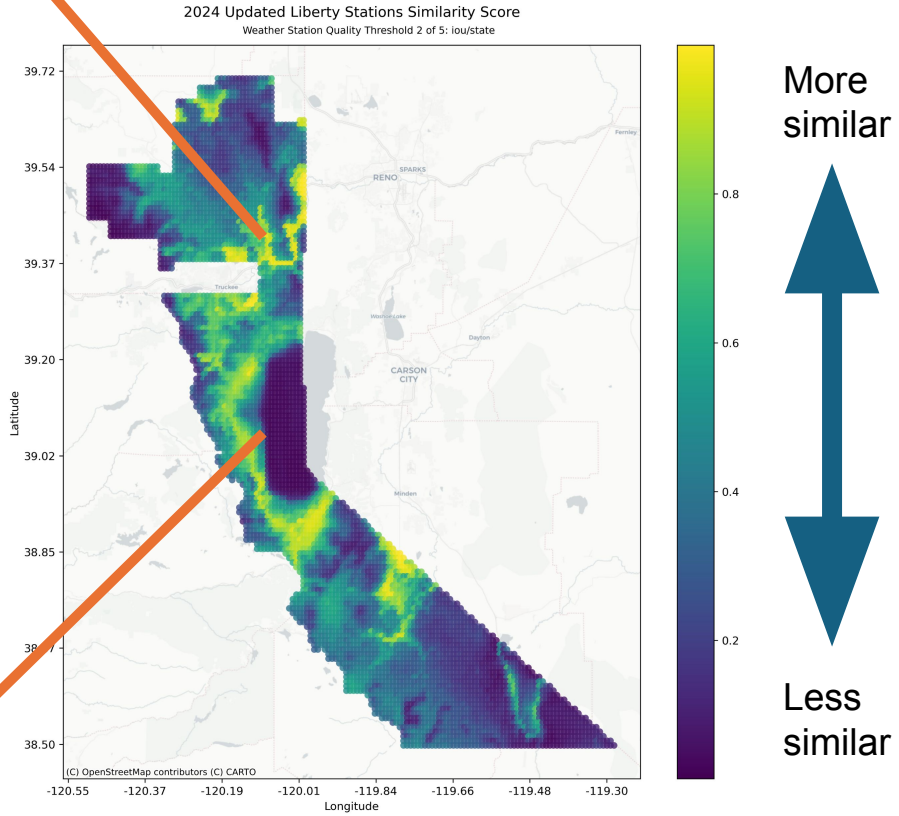
Climate Drivers of Fire in Truckee:

- Days with wind over 15 mph following a 3 month long dry period

CAL-ADAPT

s for Incident Response





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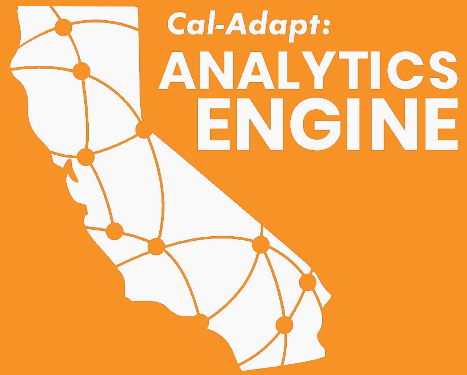


Effects of Forest Management & Wood Utilization on Carbon Sequestration & Storage in California

Nadia Tase
Forest Health Research & Monitoring Program Manager Fire and Resource Assessment Program, CAL FIRE

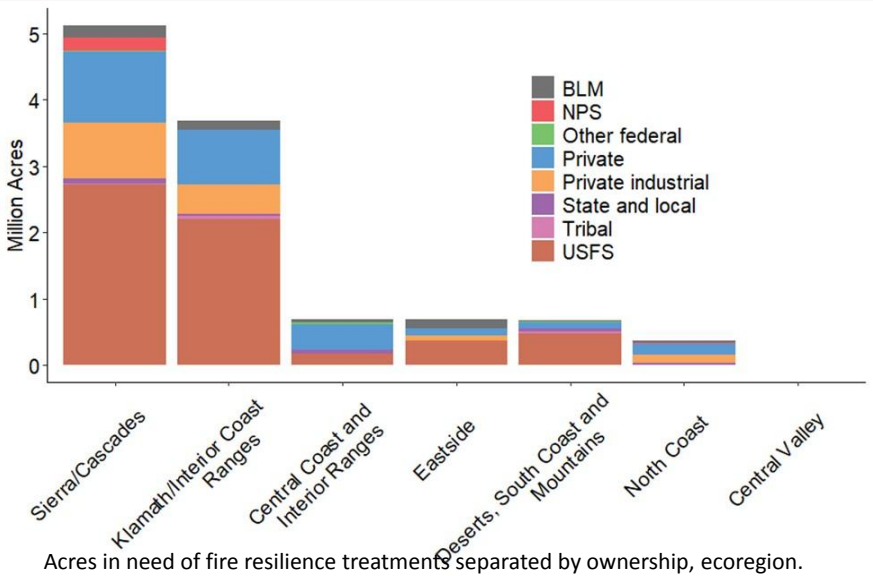
Sam Evans
Research Economist Fire and Resource Assessment Program, CAL FIRE

PI: Kendall DeLyser
Senior Director, Climate Science, American Forests

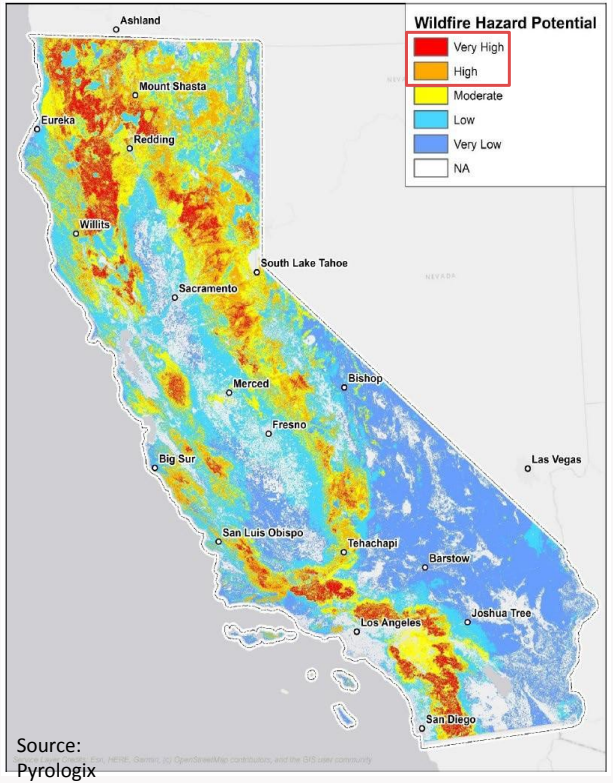
NEW! Scan this code to open our new report for California

Truckee Tahoe Climate Transformation Alliance, October 10th, 2025

Fire Resilience Needs Assessment



Acres in need of fire resilience treatments separated by ownership, ecoregion.



Source: Pyrologix

Wildfire hazard potential (WHP) indicates areas likely to burn and likely to be difficult to control.

- **11.2 million acres (36%)** need fire resilience treatments (slopes <70%).
- After applying filters, only **7.3 million acres** likely to be eligible.
- Includes pushing slope limits, increasing removal intensity, treating w/in wildlife habitat in some cases.

Treated at a steady rate over 10 years, this equates to an average of **735,000 acres per year in addition to**

Modeled Portfolios

Scenario Portfolios	Acres/yr
Ramp up = BAU + reforestation/resilience tx	1.3 M
Max Natural Climate Solutions (Max NCS) = BAU + Ramp up + reduced deforestation + silvopasture + extended rotations (applied to some BAU acres)	1.4 M

Influence of current and future conditions in California

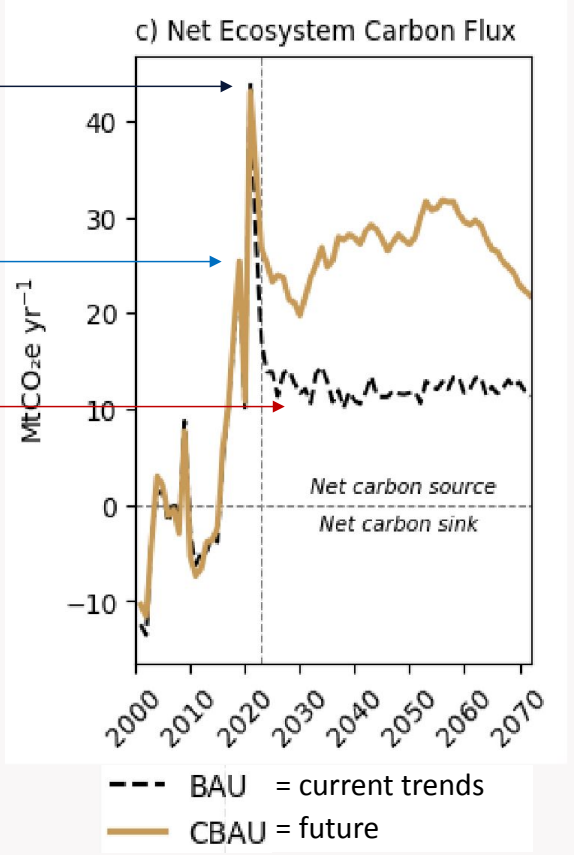
Future conditions include more high-severity **wildfire**, post-fire **regeneration challenges**, and **declines in productivity**

- **82%** of forest could fail to regrow after severe wildfire
- Projected over the next 50 years:
  - **48%** loss of forest area (15M acres)
  - **50%** decline in carbon stocks
  - **49%** higher carbon emissions
- **70%** of losses occur on NFS
  - 14.8 M 4.5 M acres
  - Reforestation need accumulates to 9M acres

2020: Emissions from wildfire

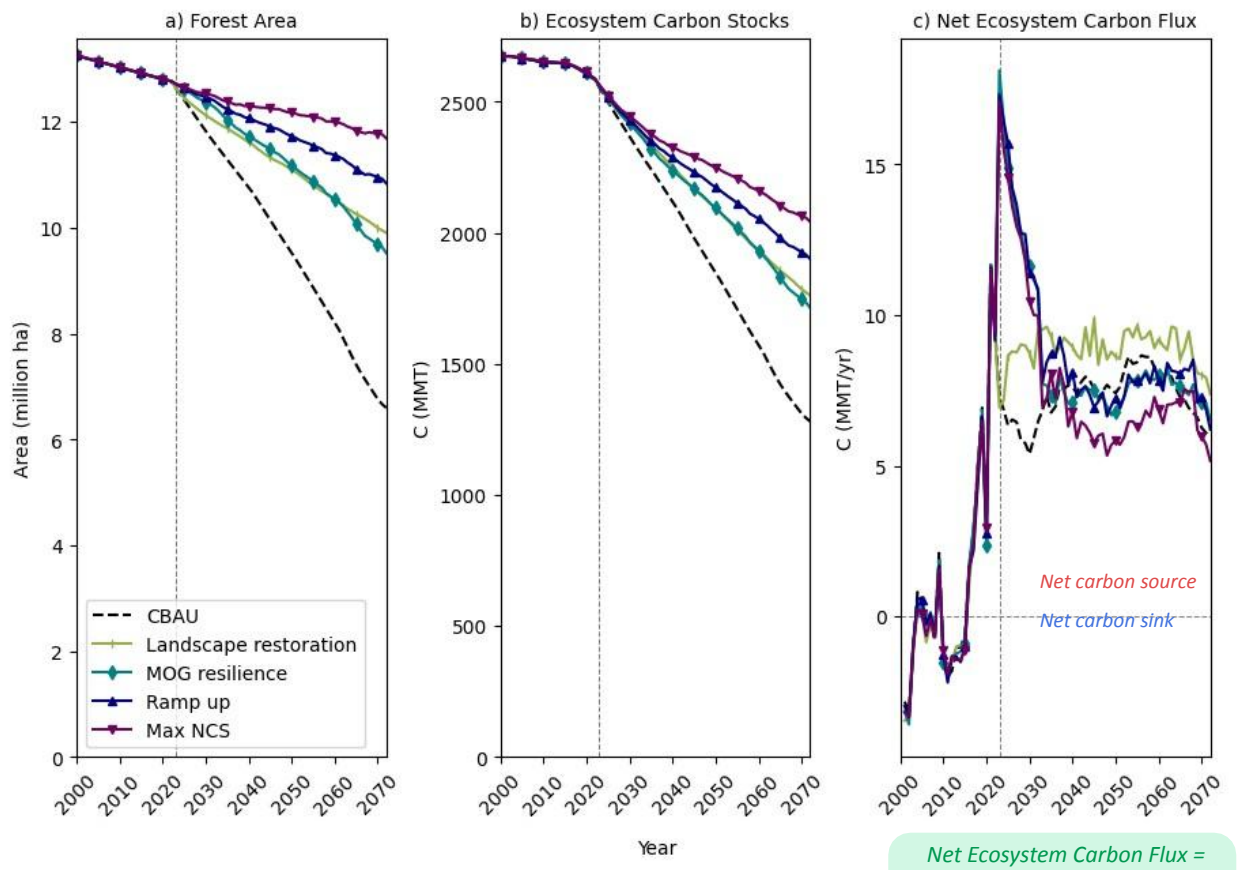
2015: Loss of productivity from insect-driven tree mortality

2022-2071: Forests are a net carbon source even if current trends continue— and expected future conditions make this worse



Forest ecosystem trends

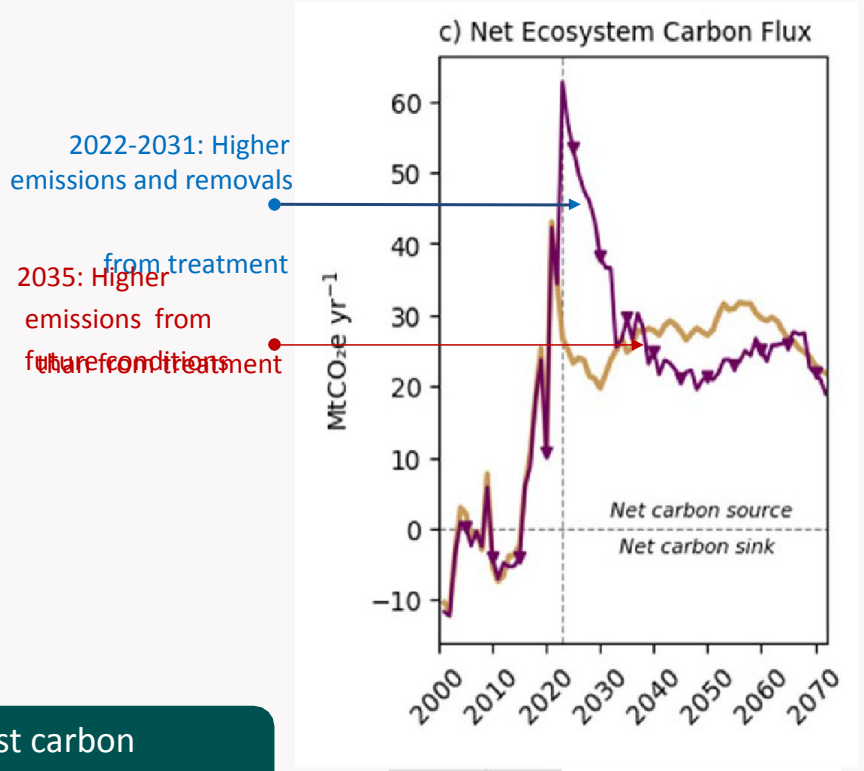
- Max NCS scenario best conserves overall forest area: **-8%** from 2022-2071 (40% better than CBAU)
- Max NCS scenario minimizes carbon stock losses: **-20%** from 2022-2071 (30% better than CBAU)
- Cumulative post-fire regeneration failure decreases from **12.7** to **2.3** million acres



Net Ecosystem Carbon Flux = Growth – Decomposition – Disturbance emissions – Harvest transfers

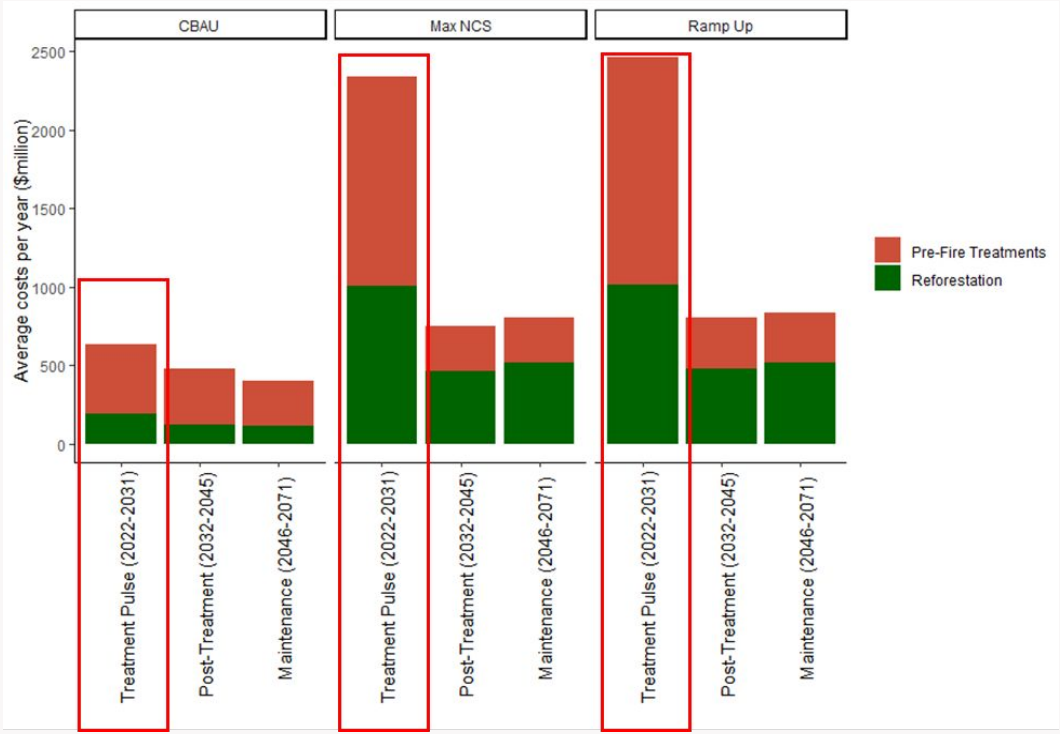
Restoring resilience in California forests

- Successful fire resilience and restoration treatments:
  - Reduce future wildfire severity and post-fire regeneration failure; increase stand age
  - Protect **40%** of forest from wildfire-related losses
  - Incur an up-front carbon cost to **stabilize forests** in the future.
- There is a **limited window of time** to act before future conditions intensify.
- NFS lands see strong benefits from restoring resilience, but treatments needs to **ramp up 3X**
  - area losses reduced from **10.3 M to 1.7 M** acres.
- The Sierra/Cascades comprise 55% of the forest area and carbon stock losses. Max NCS reduces forest area losses from 8.3million acres to 1.2 million acres.



Restoring resilience to California forests can reduce annual forest carbon emissions by **14%** and cumulative emissions by **6%** in California over the next 50 years.

Economics results



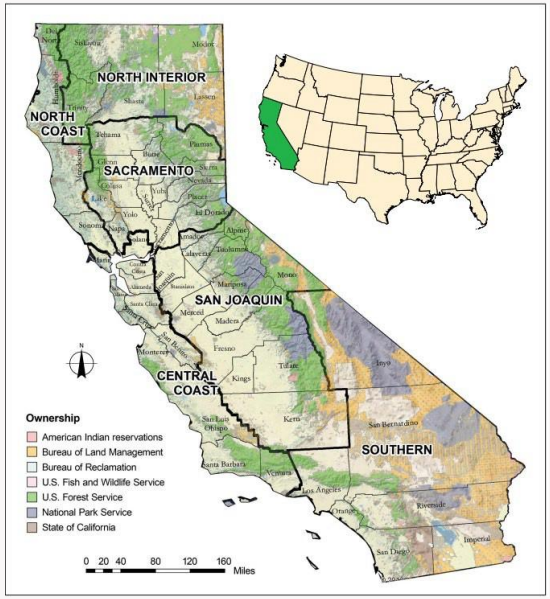
- $1.7 - $1.8 billion annually in pre-fire treatment and post-fire restoration
  - $896 - $1,009 million annually for pre-fire treatment
  - $811 - $819 million annually for post-fire restoration

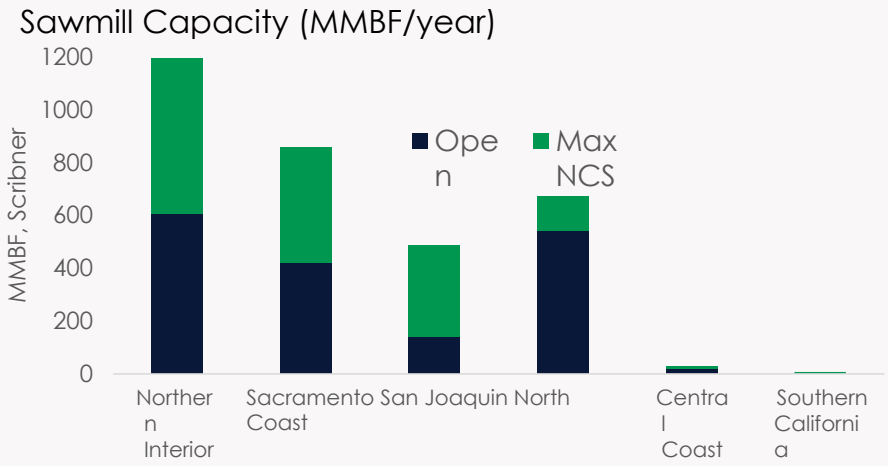
- Moderate log and biomass pricing assumptions suggest **39-50% of costs can be offset** through wood product sales if **capacity to process is available**.
  - Sawlog sales, not biomass, pay for the treatments.

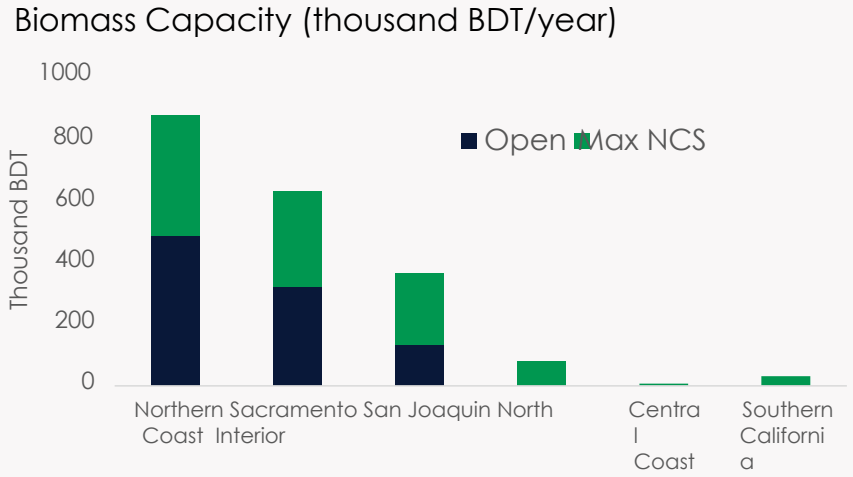
Capacity Needs

Sawmills: additional 1.5 – 1.6 billion BF per year (29-31 average size mills)

Biomass Facilities: 1.0 – 1.2 million BDT per year (8-9 large scale bioenergy facilities)







Questions?

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Truckee Fire Protection District

Avoiding Wildfire Losses & Emissions

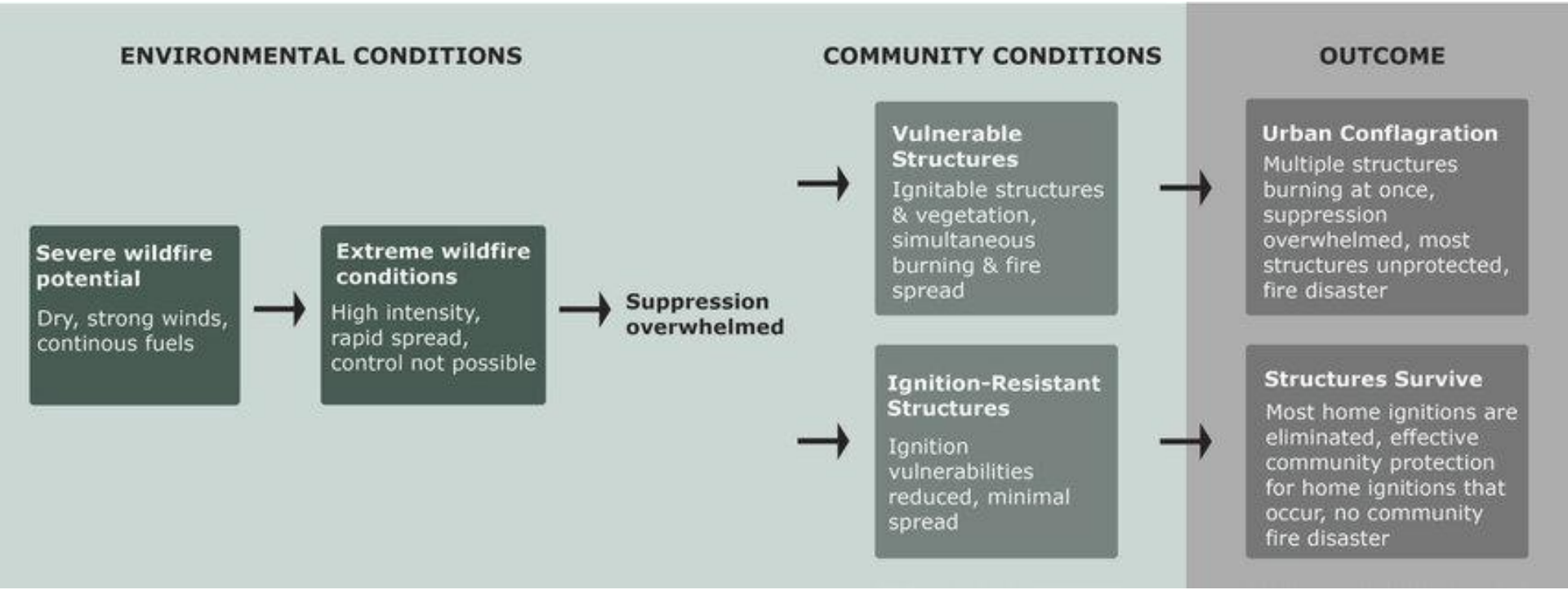
WILDFIRE PREVENTION
PAID FOR BY Measure T

Photo: Homes Survive 2024 Davis Fire near Reno & Washoe Valley

Avoiding Wildfire Losses & Emissions

- Why – We can't let destructive wildfire happen in Truckee
- Structures & Urban Conflagration
- Open Space & Forests

Community Fire Disaster Sequence –
Destruction or Resilience? The choice is ours.



THREE REASONS HOUSES BURN DURING A WILDFIRE

Embers

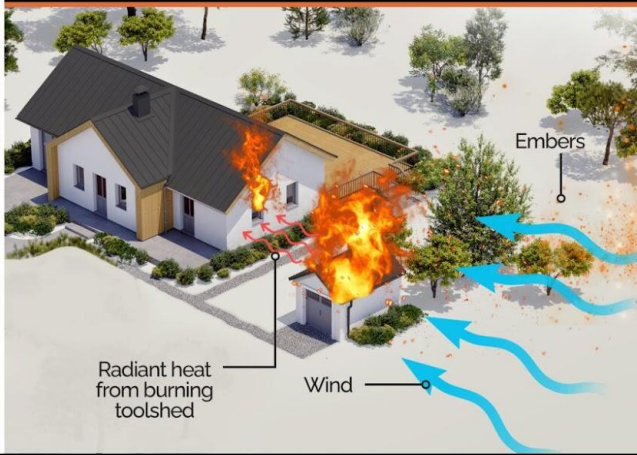
90% of Structure Ignition

Direct Flame Contact

Continuity of Fuels

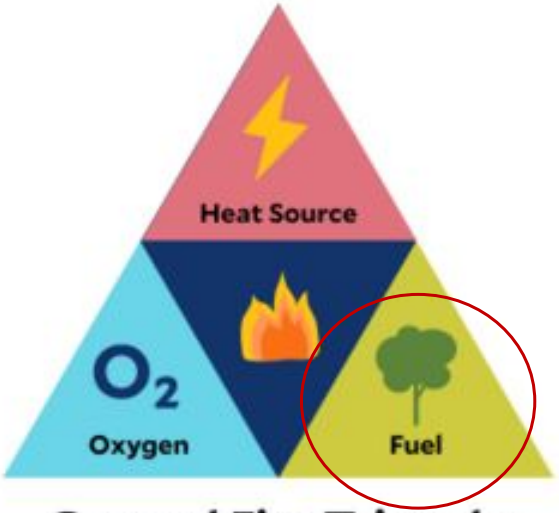
Radiant Heat

Density of Structures



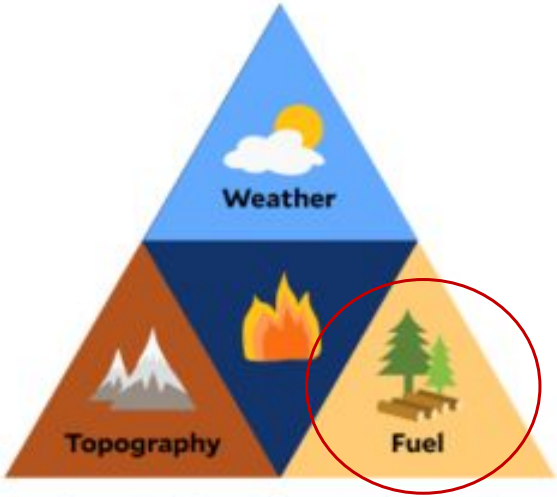
FRONTLINE® WILDFIRE DEFENSE

Fire Triangles – Fuel is the Variable We Can Manage!



General Fire Triangle

The three basic components necessary to start and sustain a fire



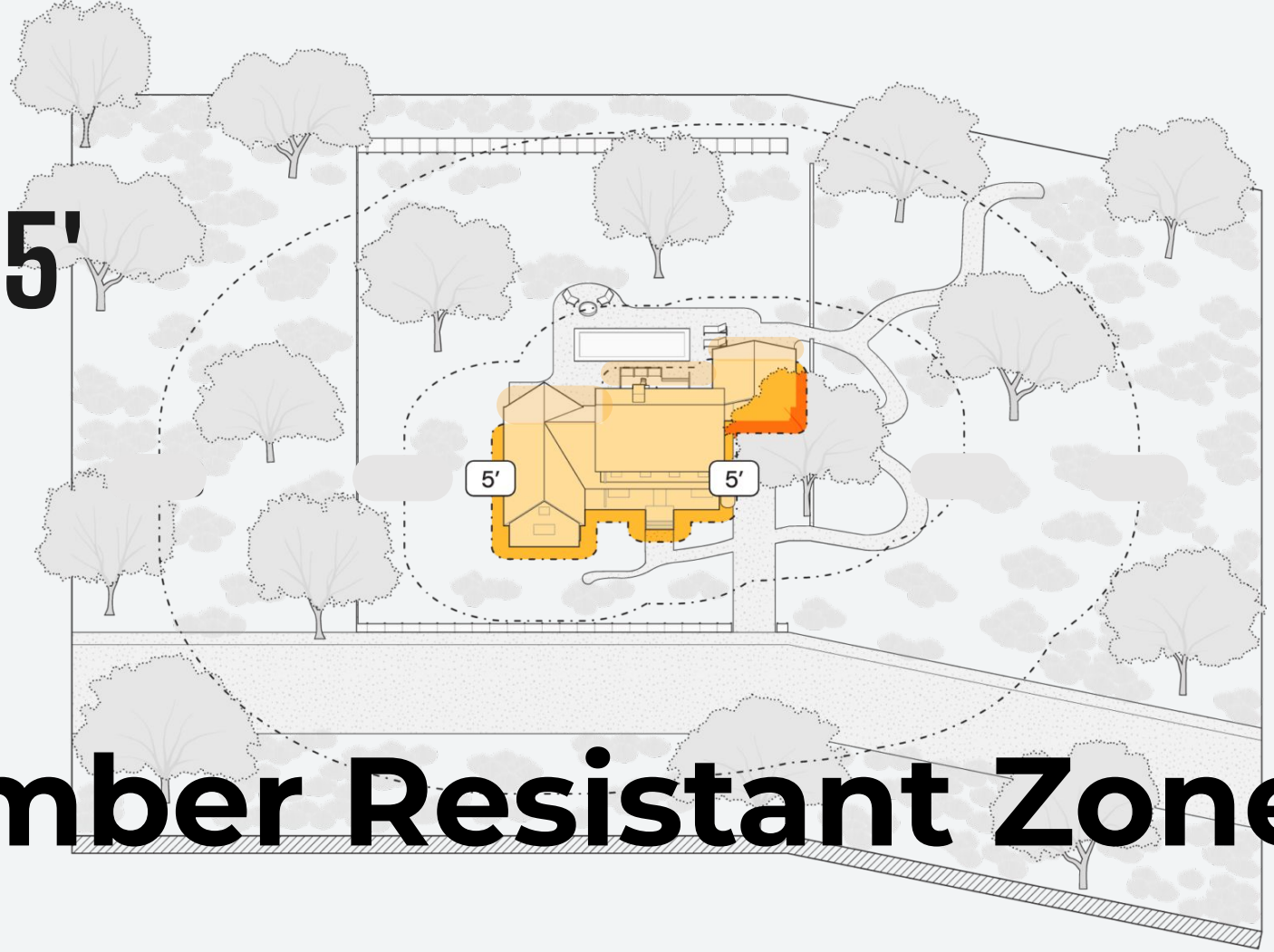
Fire Behavior Triangle

The factors involved in the severity, intensity, duration, size, and season of wildfires

The Home Ignition Problem is Solvable!

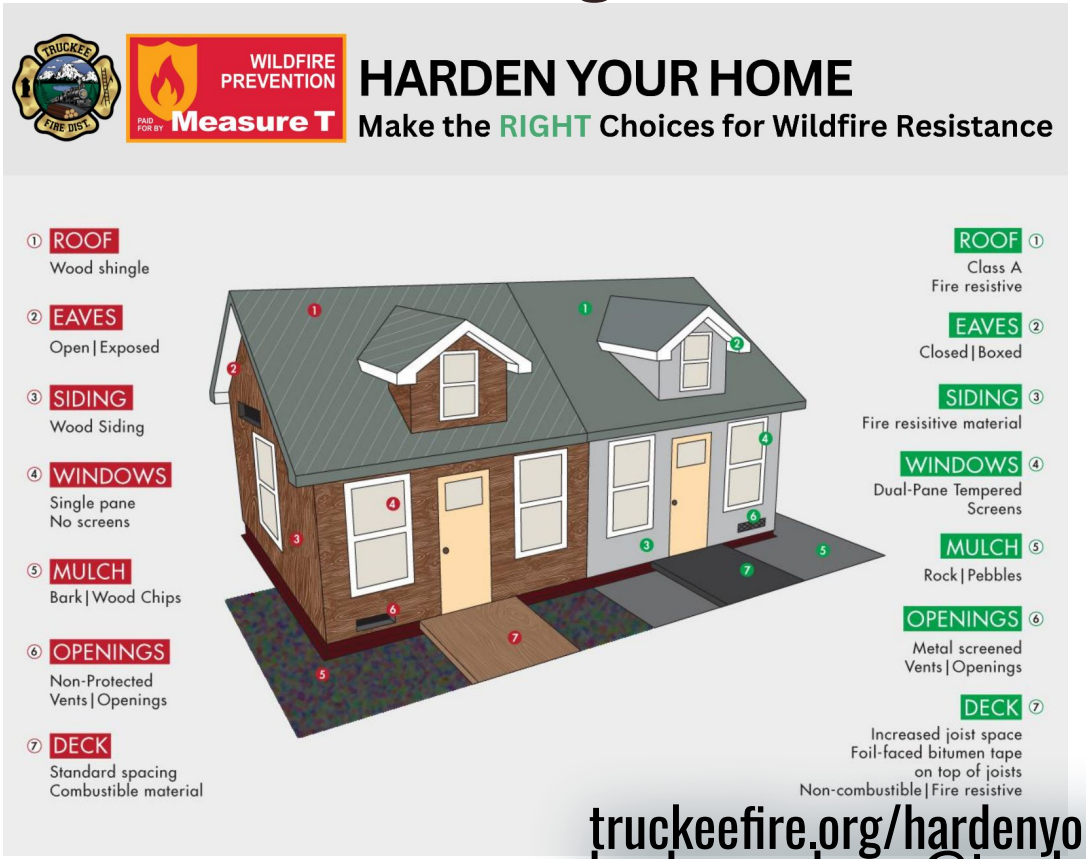
- 1 house fire produce ~30-50 metric tons of CO_2
  - ~18 metric tons CO_2 equivalent stored in just lumber
  - Toxic emissions from other household materials Think CO, SOx, and Nox
- Combined Defensible Space & Home Hardening increases home survivability 2-5x
  - The effort and financial expense is worth it
  - The catch is that it needs to be done at scale to reduce risk and exposure across property lines

ZONE 0 TO 5' ZERO



Ember Resistant Zone

Home Hardening.



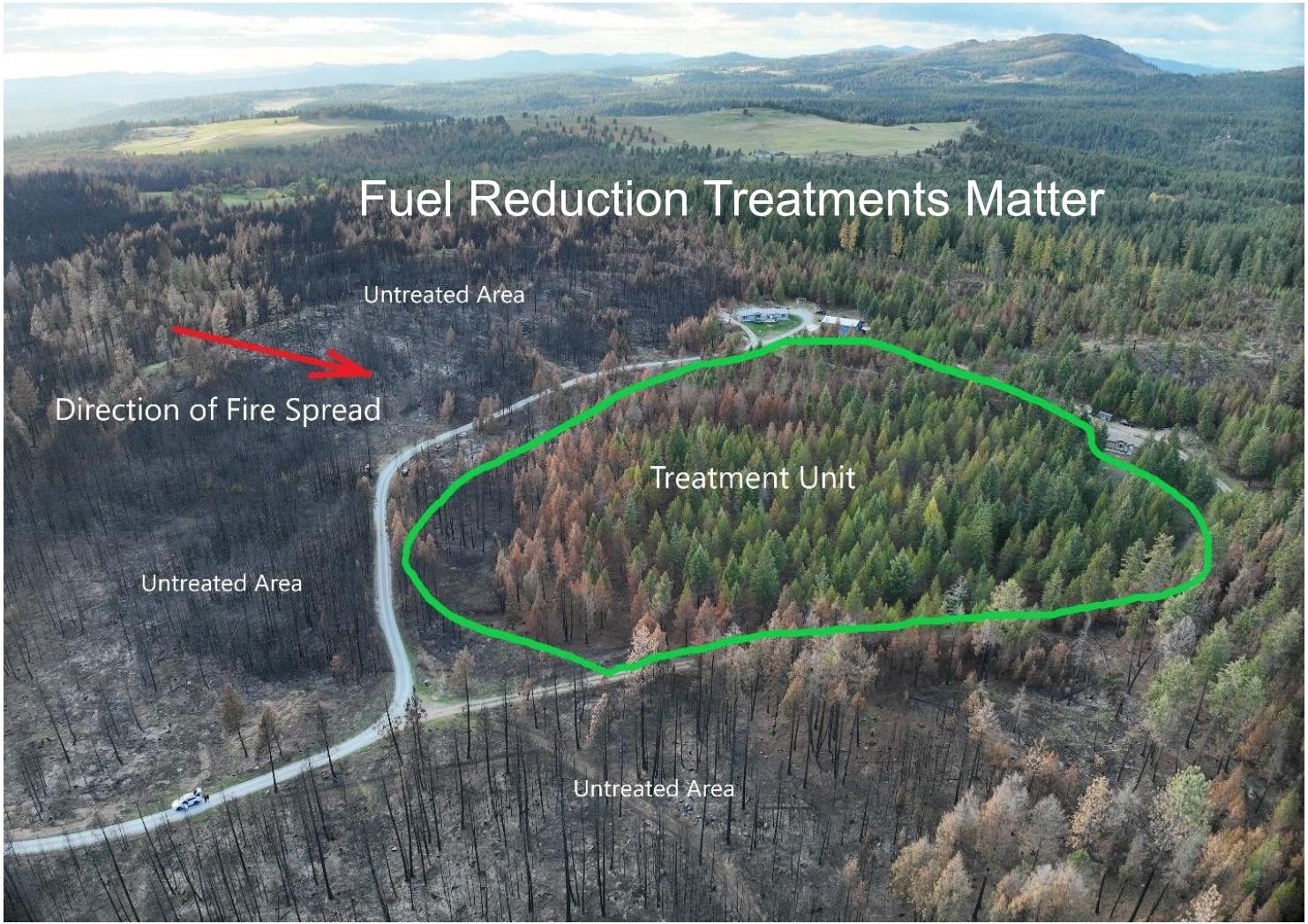
Truckeefire.org/HardenYourHome

- DIY Guides
- Retailer Supply Lists
- CATT Contractor List *coming soon!*
- Truckee Fire Rebate

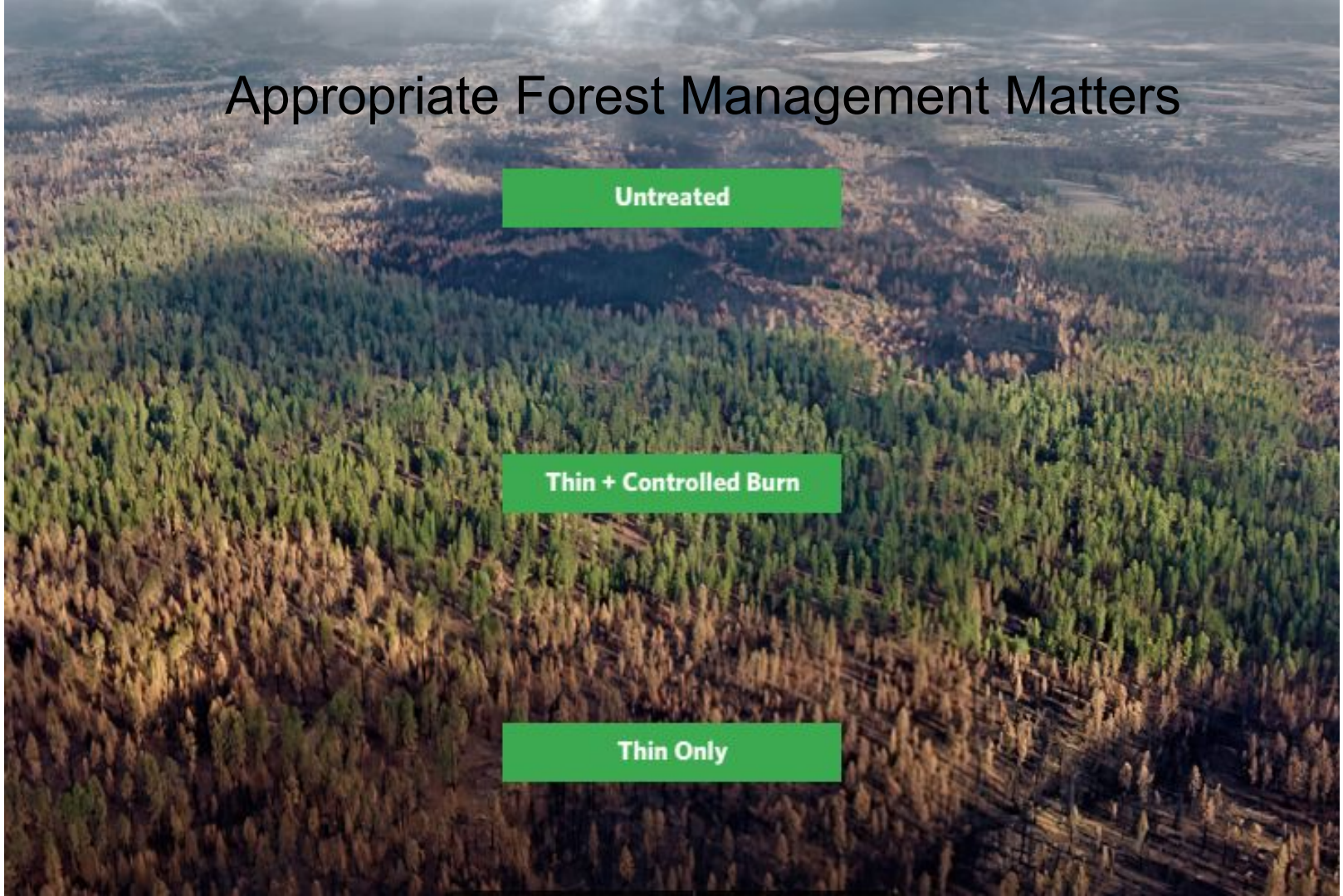
truckeefire.org/hardenyourhome
hardenyourhome@truckeefire.org

What we are doing as a community

- 3-year Defensible Space Inspection cycle = 5,000+ inspections annually
  - 25-50 scheduled in-person inspections per week
- Residential Green Waste Buffet
  - Grapple Pick-up Program serves ~4k piles annually, reduces single vehicle trips to the dump
- 85% of our homes in 35 active Firewise communities taking charge
- Home Hardening Rebate
- Local Block Grant Program
- …

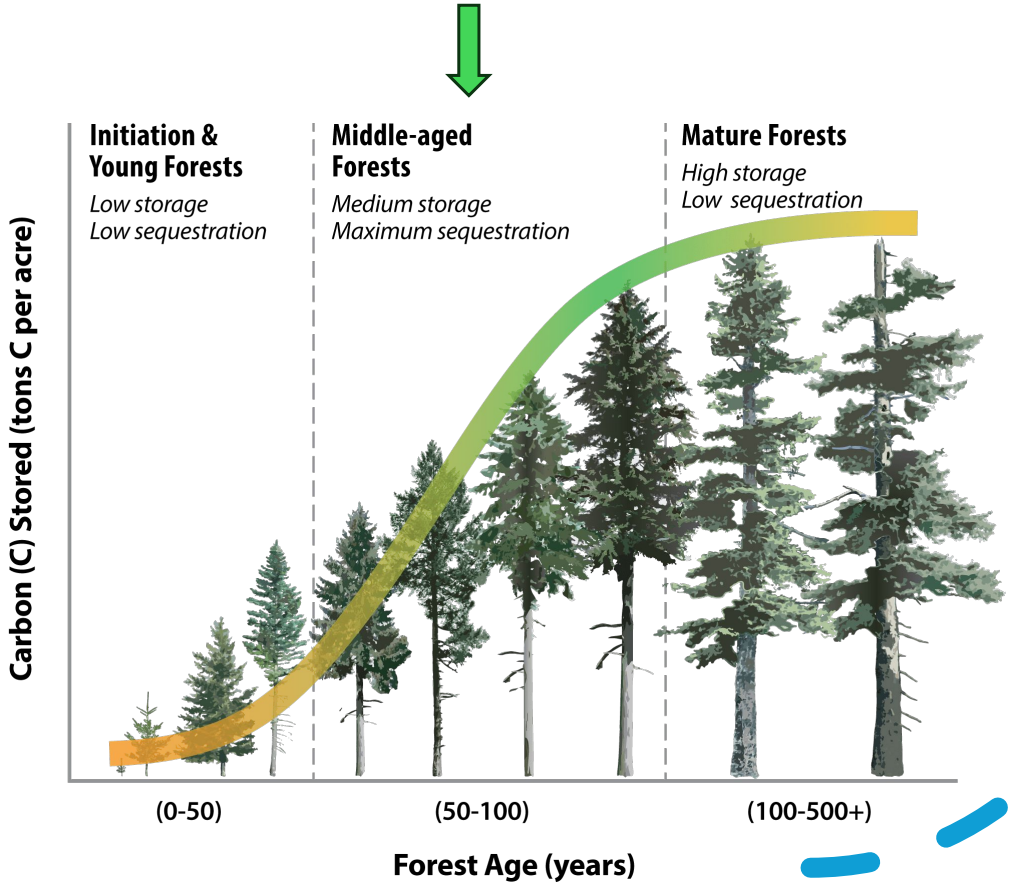

Fuel Reduction Treatments Matter
Untreated Area
Direction of Fire Spread
Treatment Unit
Untreated Area
Untreated Area

Appropriate Forest Management Matters

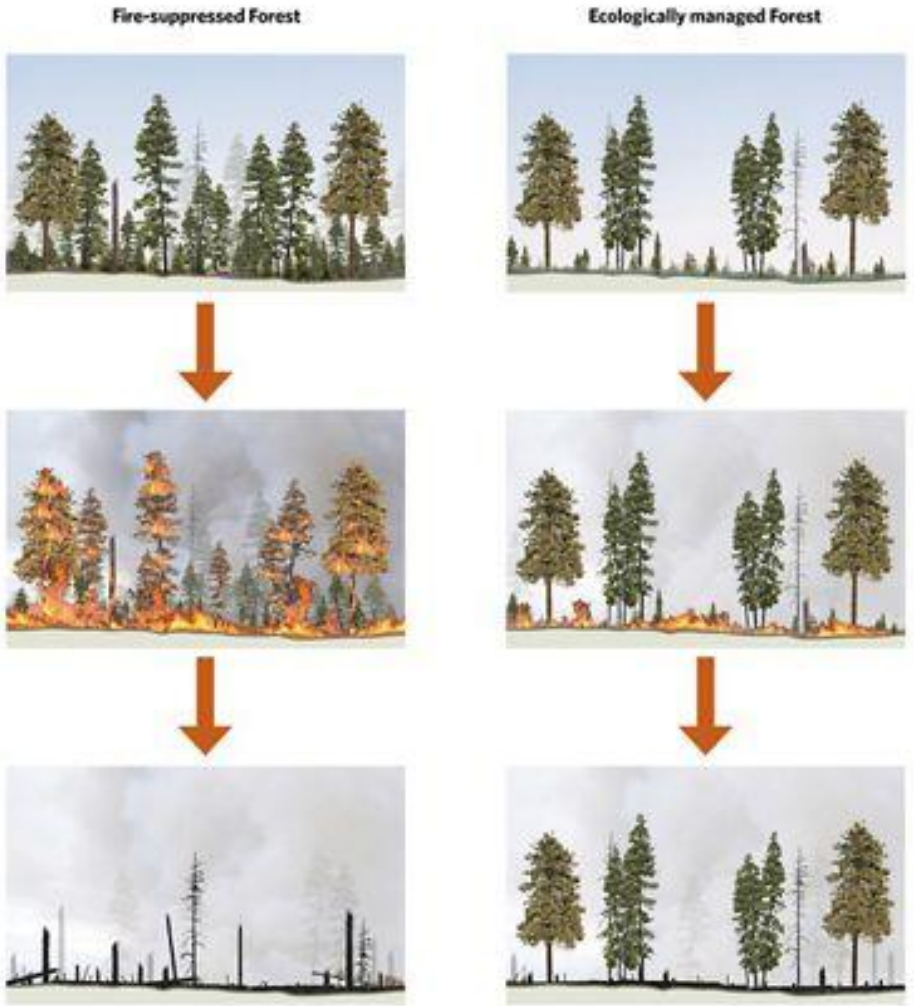


Multi-Objective middle-aged forest management

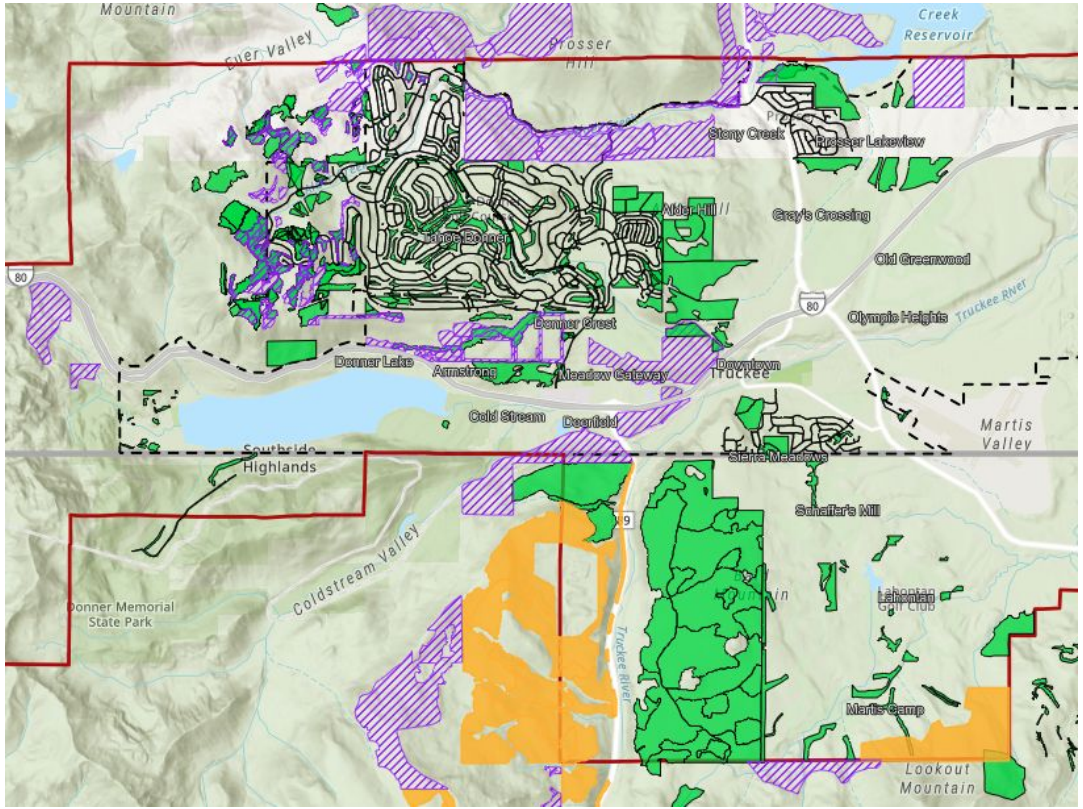
- 1 acre of burning forest can produce 34 tons of CO2 per acre (CARB 2021), number is highly variable and can be <1 ton/acre

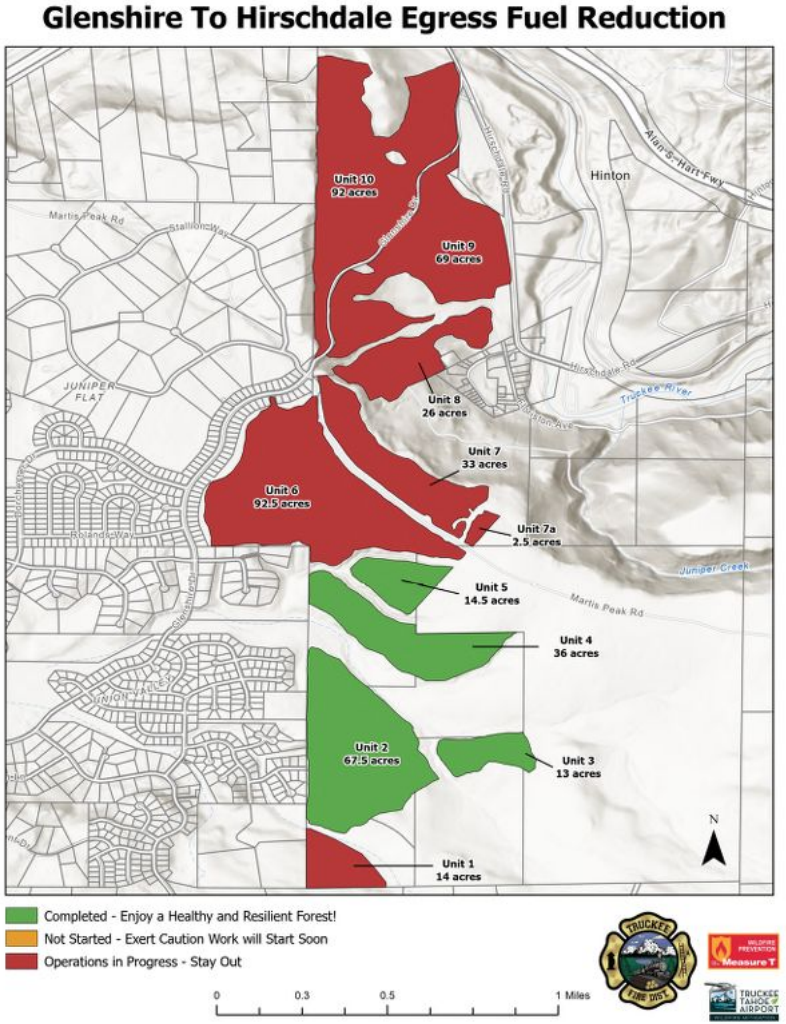


We are proactively working to address 150+ years of mismanagement, fire exclusion, and over-densification and overgrowth



Forestry Work In Action!

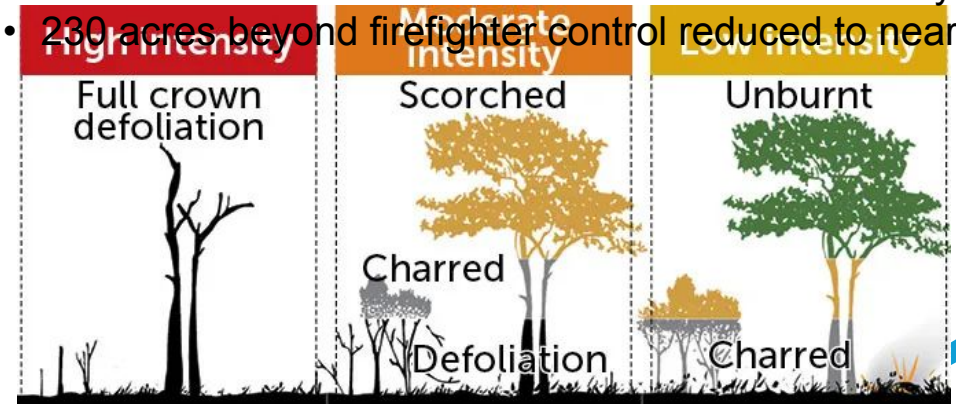




We can’t fire proof our forests, but we can reduce severity & intensity

Glenshire to Hirschdale Forest Management Project – Projected and Modeled Outcome Highlights (via Vibrant Planet & Pyrologix)

- 460 acre project east of Glenshire
- Total Wildfire Hazard reduced by 62%
- Characteristic Flame Length from 5’ down to less than 2’
- Rate of spread reduced by 77% from 14.3 to 3.3 chains per hour
- Number of Highly Exposed structures near project’s edge reduced from 21 to ZERO!
- Source of Ember loads to buildings reduced by 53%
- Acres of WUI with extreme fire behavior reduced by 100%
- 230 acres beyond firefighter control reduced to nearly 0



THANK YOU, Truckee!

Eric Horntvedt
Wildfire Prevention Manager
www.truckeefire.org

01 Clear **5 feet** around all structures

Remove pine needles, leaves, and debris, including under decks and stairs. Store woodpiles, gas cans, and other combustibles at least 30 feet from your home.

Pro tip: Rent a 6-yard dumpster or use yard waste carts in Truckee.

02 **Remove** dead vegetation & manage live vegetation

Clear grasses, weeds, shrubs, and dead trees. Prune tree limbs at least 6 feet above the ground and increase spacing between trees and shrubs.

Pro tip: Use Truckee Fire's green waste pick-up for shrubs, trees, and branches up to 8" in diameter.

03 Make your address **visible**

Ensure house numbers are at least 4" tall and readable from the road.

Pro tip: Check out Truckee Fire's Reflective Address Sign Program.

04 **Schedule a visit** from Truckee Fire

Schedule a defensible space inspection with Truckee Fire.

Pro tip: It's free, fast, and gives you a custom checklist to protect your home.

05 **Connect** with neighbors

Share this info and work together for a Wildfire Resilient Truckee!

Sign up for emergency alerts at **tahoealerts.com**

Q&A

Thank you!

Please reach out to Sierra Business Council with any questions.

Website: climatetransformationalliance.org
Email: cta@sierrabusiness.org
Phone: (530)582-4800

Sign In Here:

CTA | Climate Transformation Alliance