



# Climate Resiliency is Economic and Community Development

December 10, 2024

El Dorado Board of Supervisors

Sierra Institute for Community and Environment

Jonathan Kusel, Ph.D.



# Sierra Institute

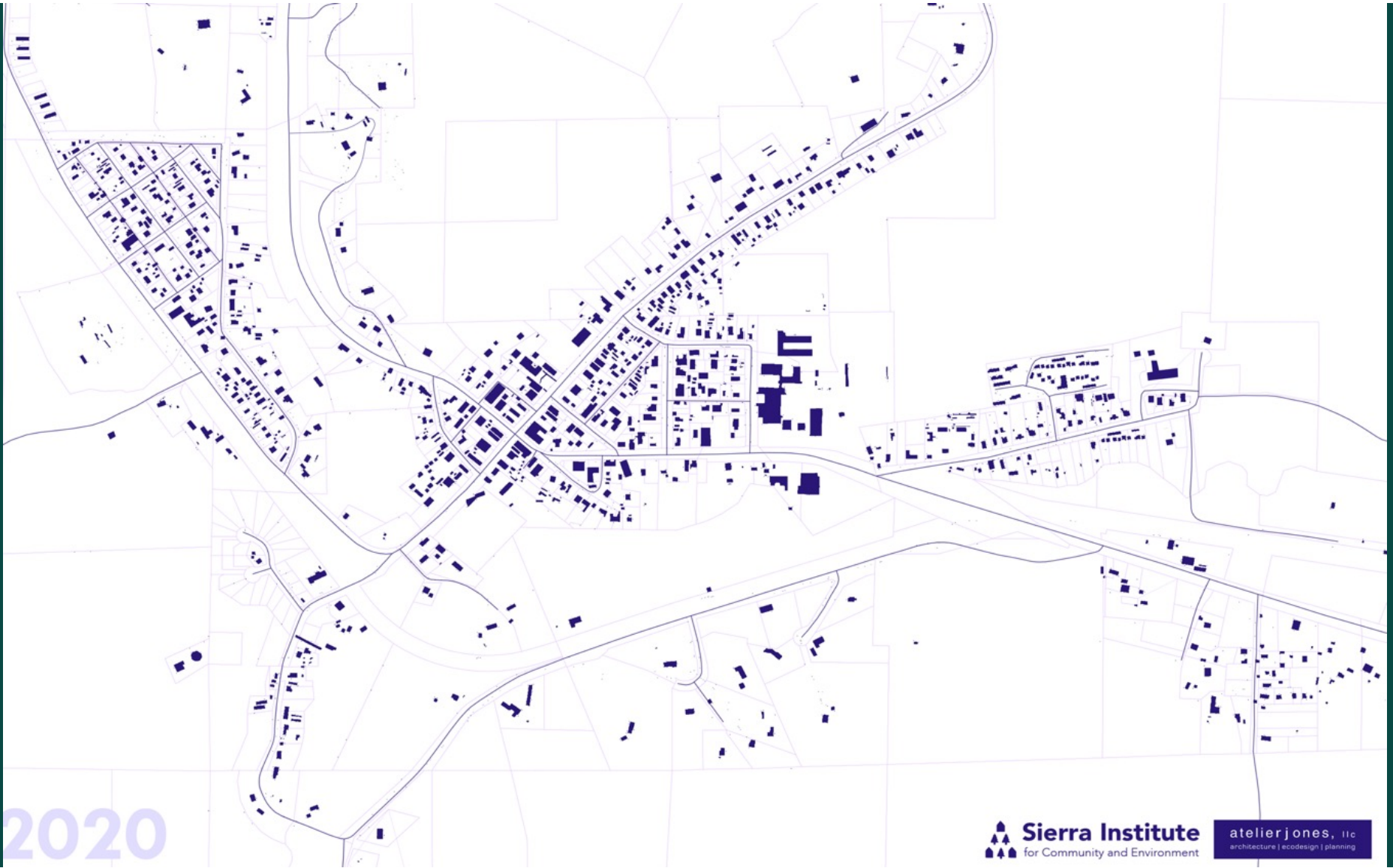
for Community and Environment



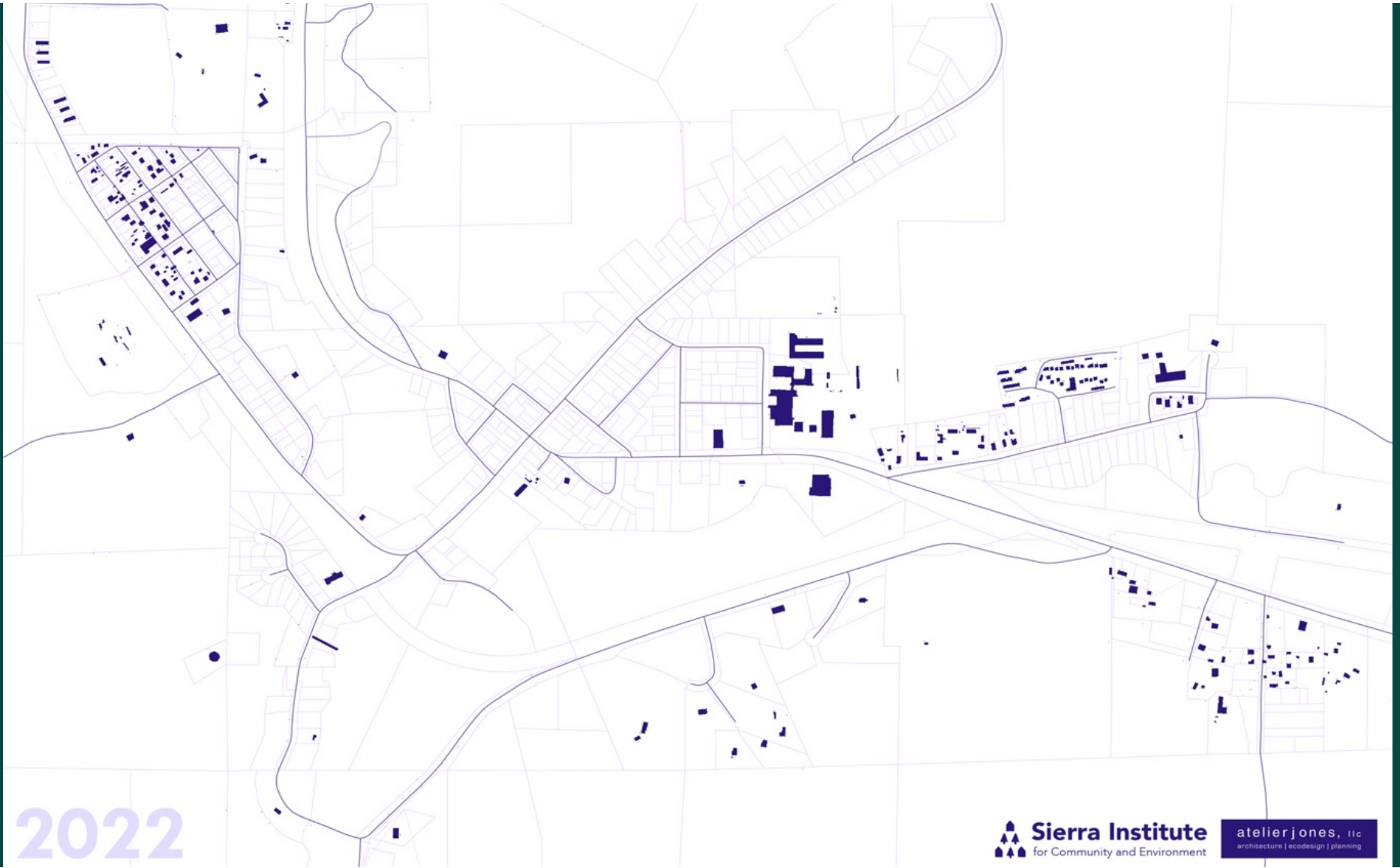
# 2021 Dixie Fire

- 2nd largest wildfire in California history
- Burned nearly 1,000,000 acres
- Greenville, CA saw the greatest losses with hundreds of homes destroyed and complete loss of its downtown business District

Image Source: ABC News



2020



2022

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# From Moonlight Recovery to Dixie Fire Devastation 2021



*“Mortality attributable to PM<sub>2.5</sub> from wildland fires in California from 2008 to 2018”*

- *52,480 to 55,710 premature deaths*
- *Economic impact of \$432 to \$456 billion*

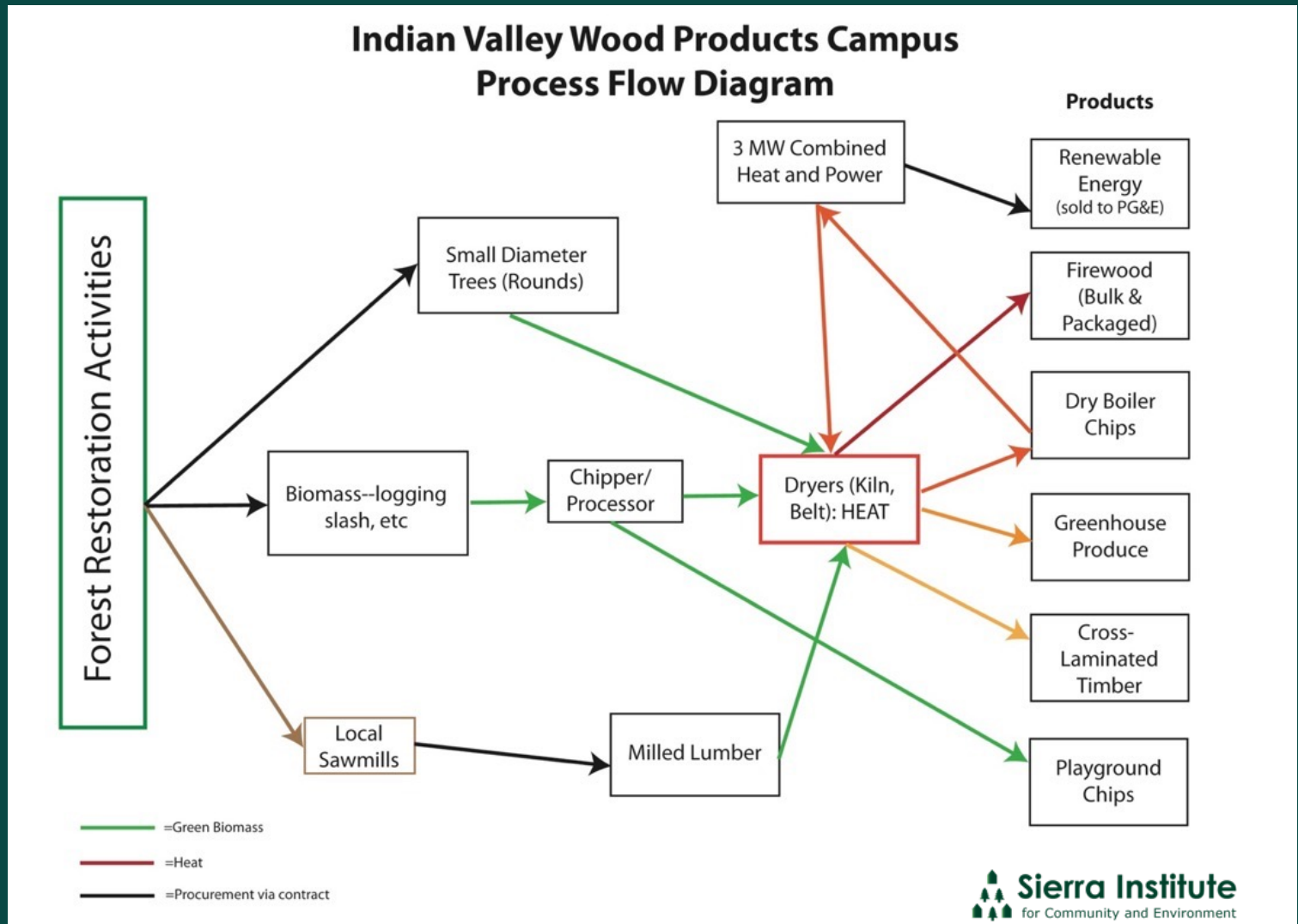
- *Science Advances, June 2024*

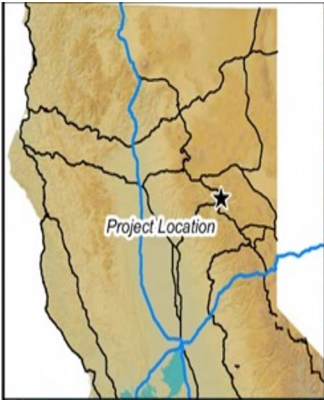
- *Worst case scenario: by mid-century, cumulative deaths from wildfire-smoke could top 700,000.*

- *The Atlantic, June 2024 (citing the National Bureau of Economic Research)*



# The Campus linked to forest restoration





Historic Crescent Mills Sawmill

Abandoned Crescent Mills Site



Crescent Mills Phase I Remediation



Cross laminated timber shed

# Development of wood utilization infrastructure



Firewood



## Cross laminated timber building construction—December 2017



Full building  
erected in two  
days.





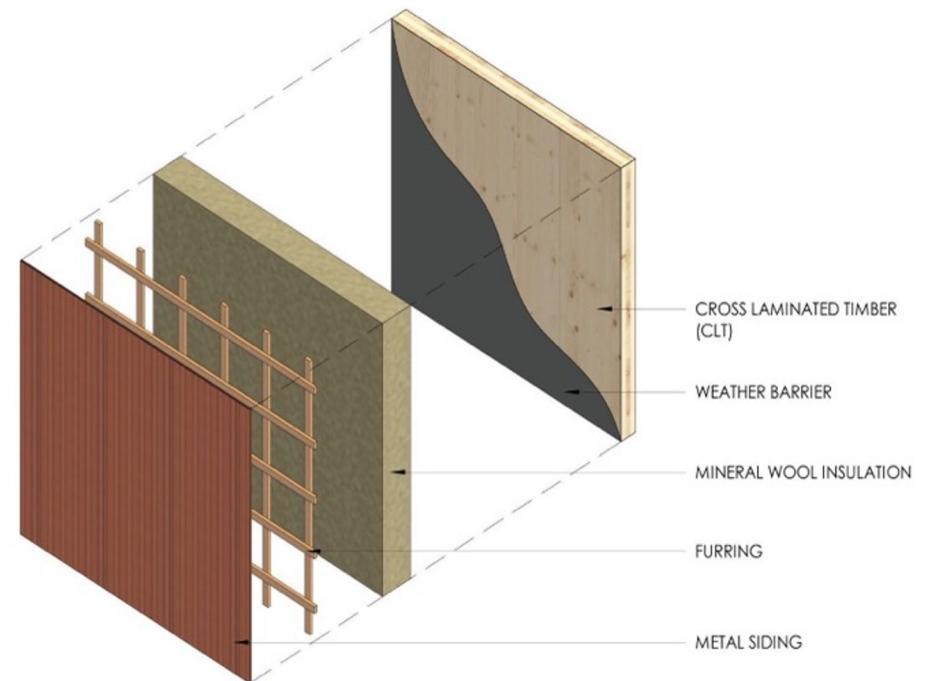
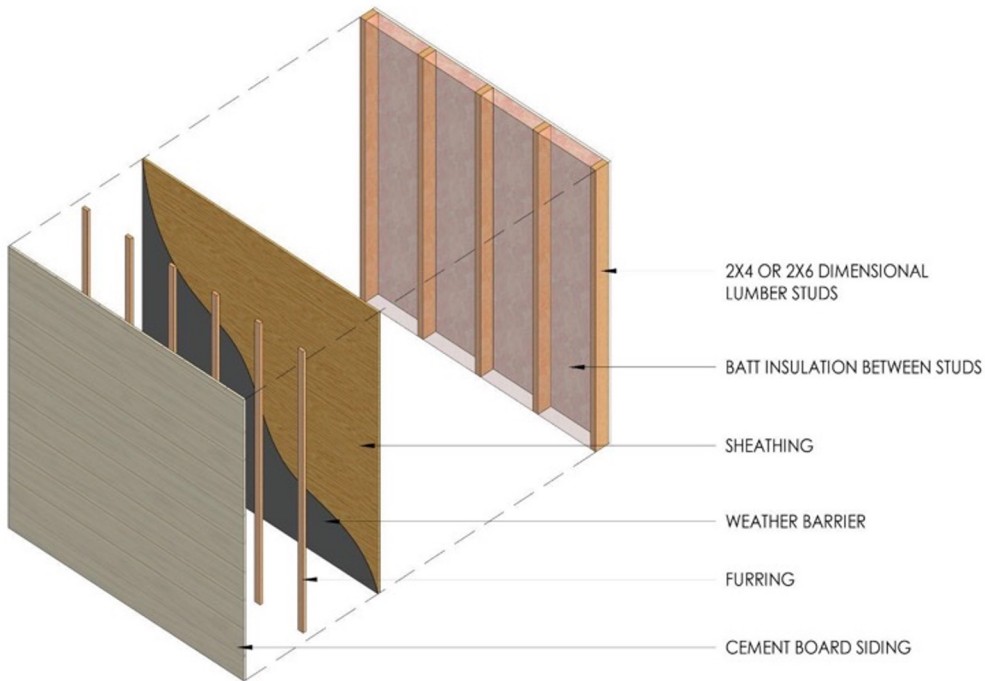
# Sawmill Development



## Ribbon cutting and tour



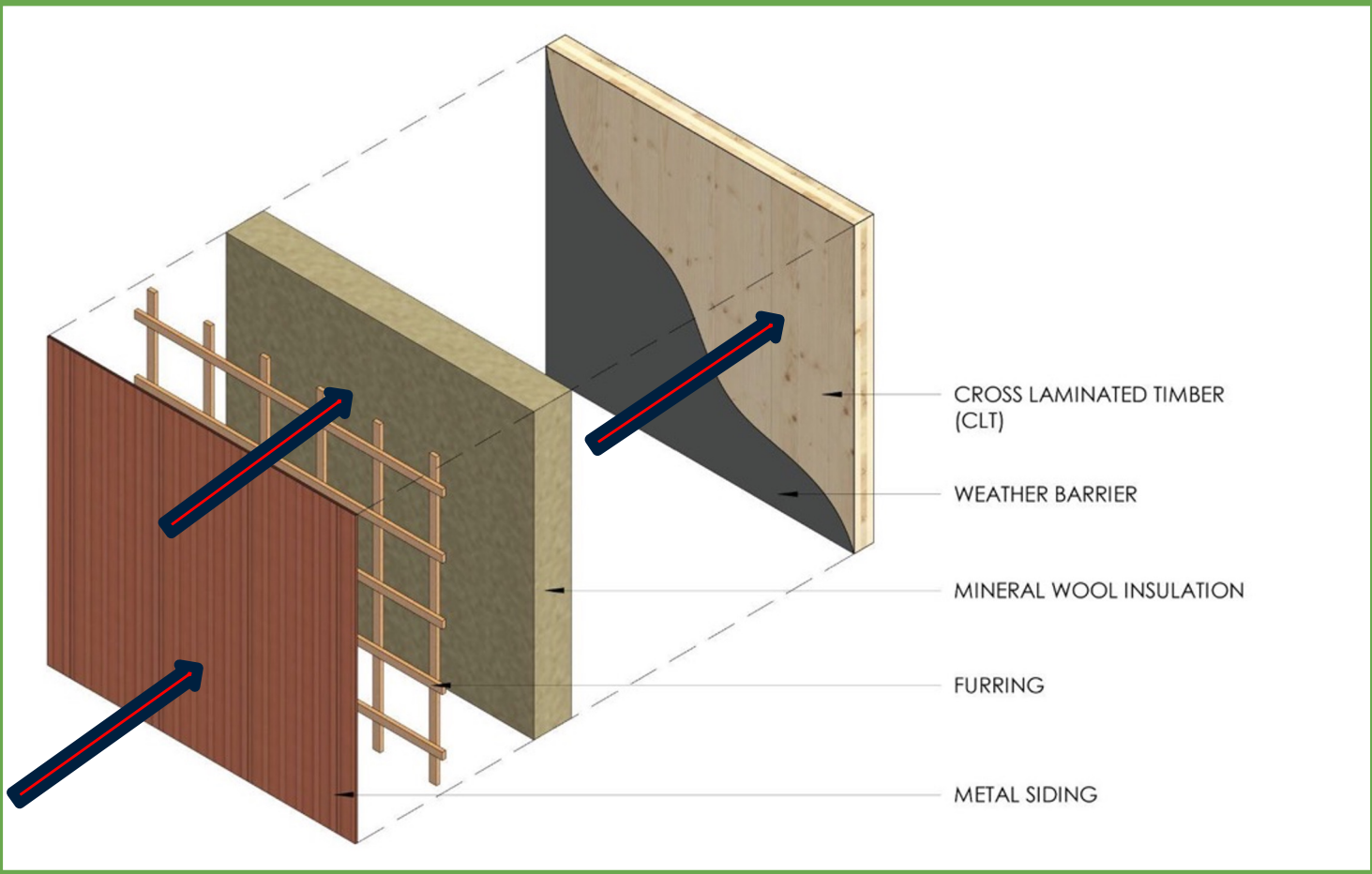
# Building Better in the Wildland Urban Interface (WUI)



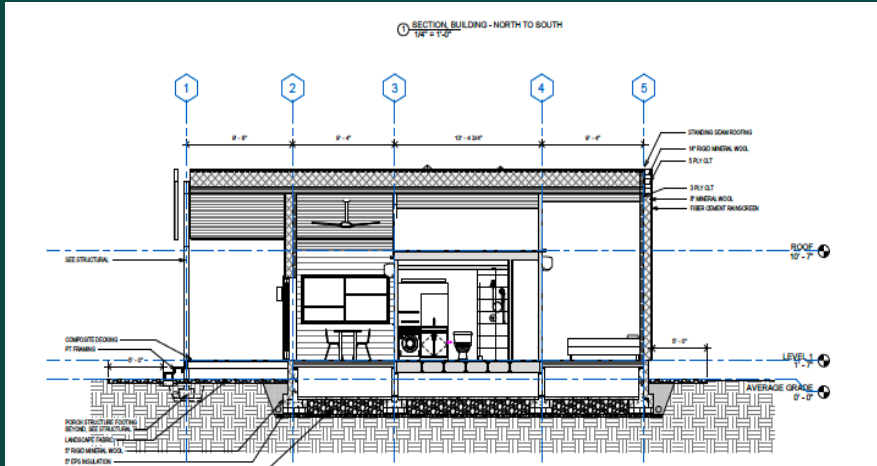
Conventional Stick-Frame; minimal lines of defense

Cross Laminated Timber (CLT): multiple fire-resistant layers to increase resilience

# Building Better in the Wildland Urban Interface (WUI)







## Two-bedroom home

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Lara Swimmer Photography



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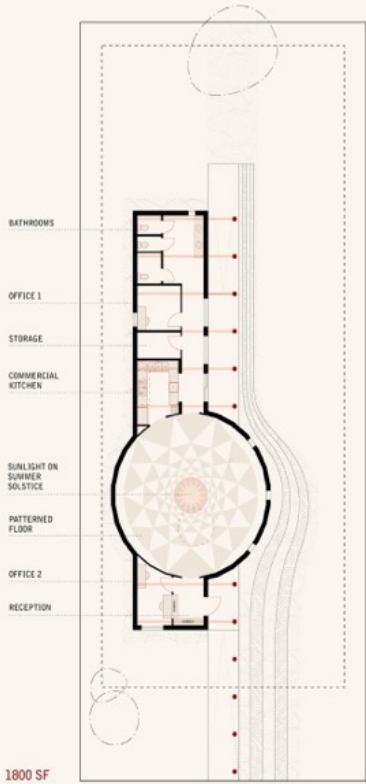






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# Roundhouse Council Indian Education and Cultural Center



Roundhouse  
Council Indian  
Education  
and Cultural Center



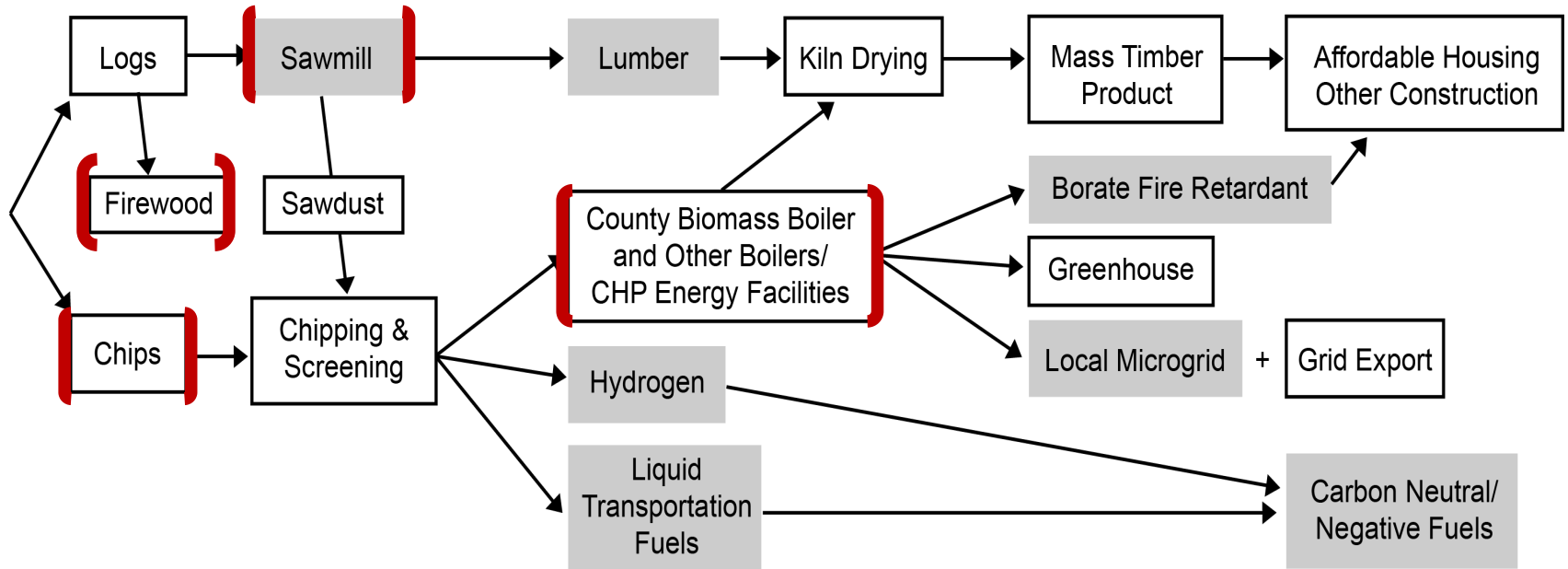
# Roundhouse Council Indian Education and Cultural Center



# Indian Valley Wood Utilization Campus Process Flow Diagram

Forest Restoration Activities

Material    Wood Processing    Products/Utilization

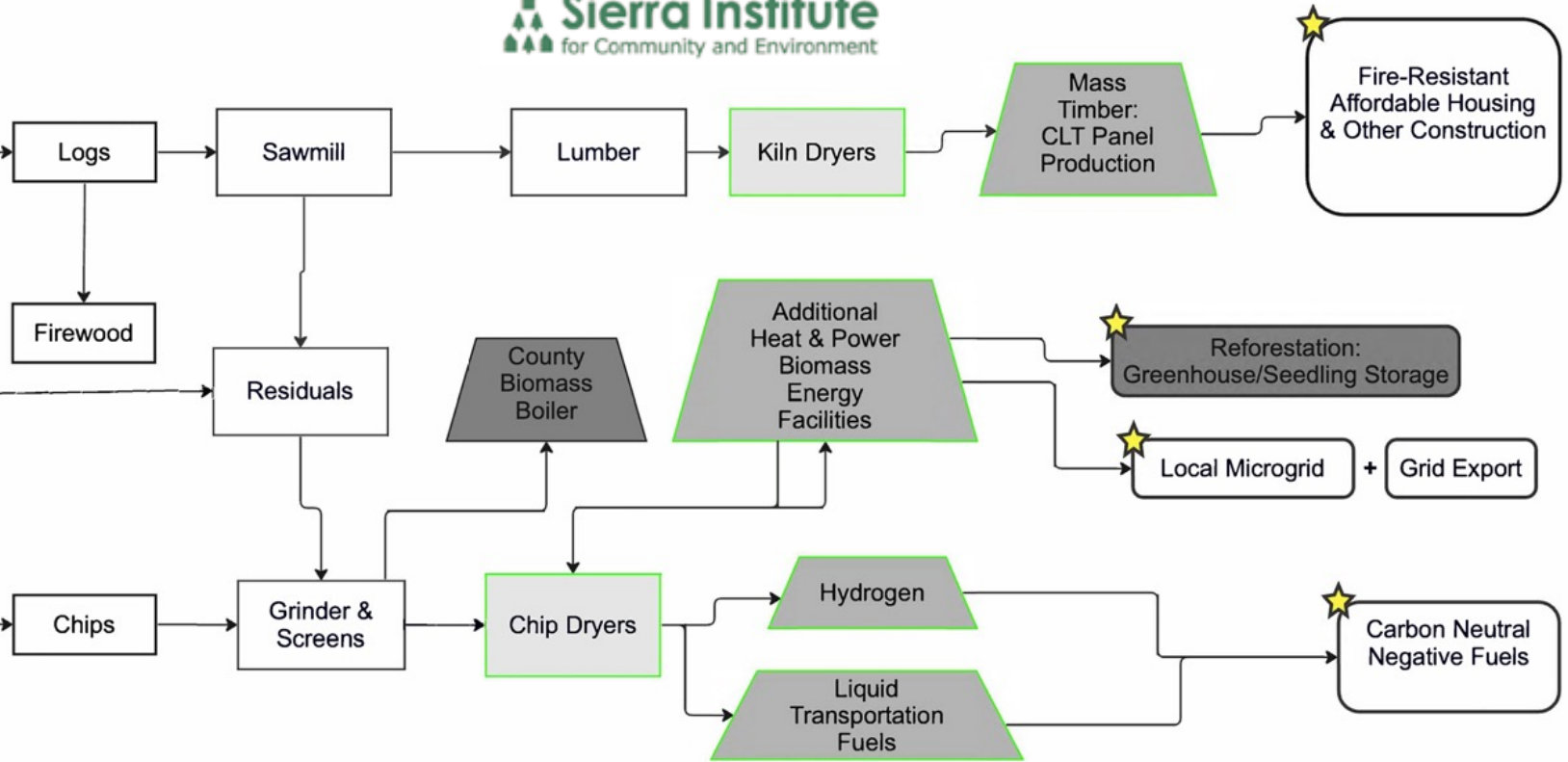




# Indian Valley Wood Utilization Campus Process Flow Diagram



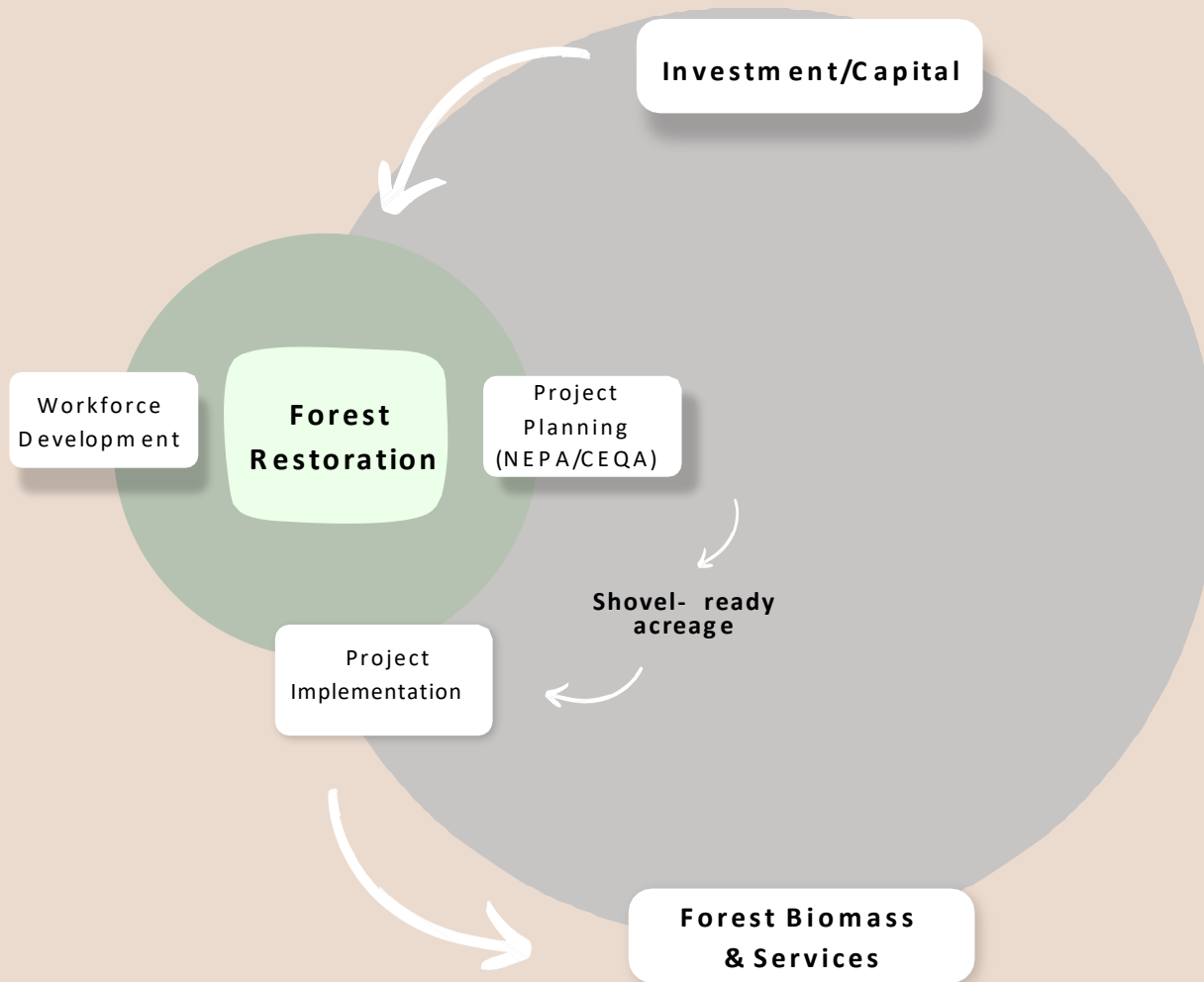
Forest Restoration Activities

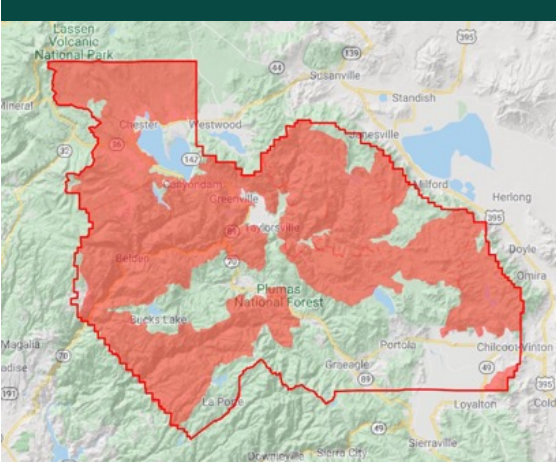


**Key**

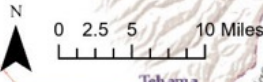
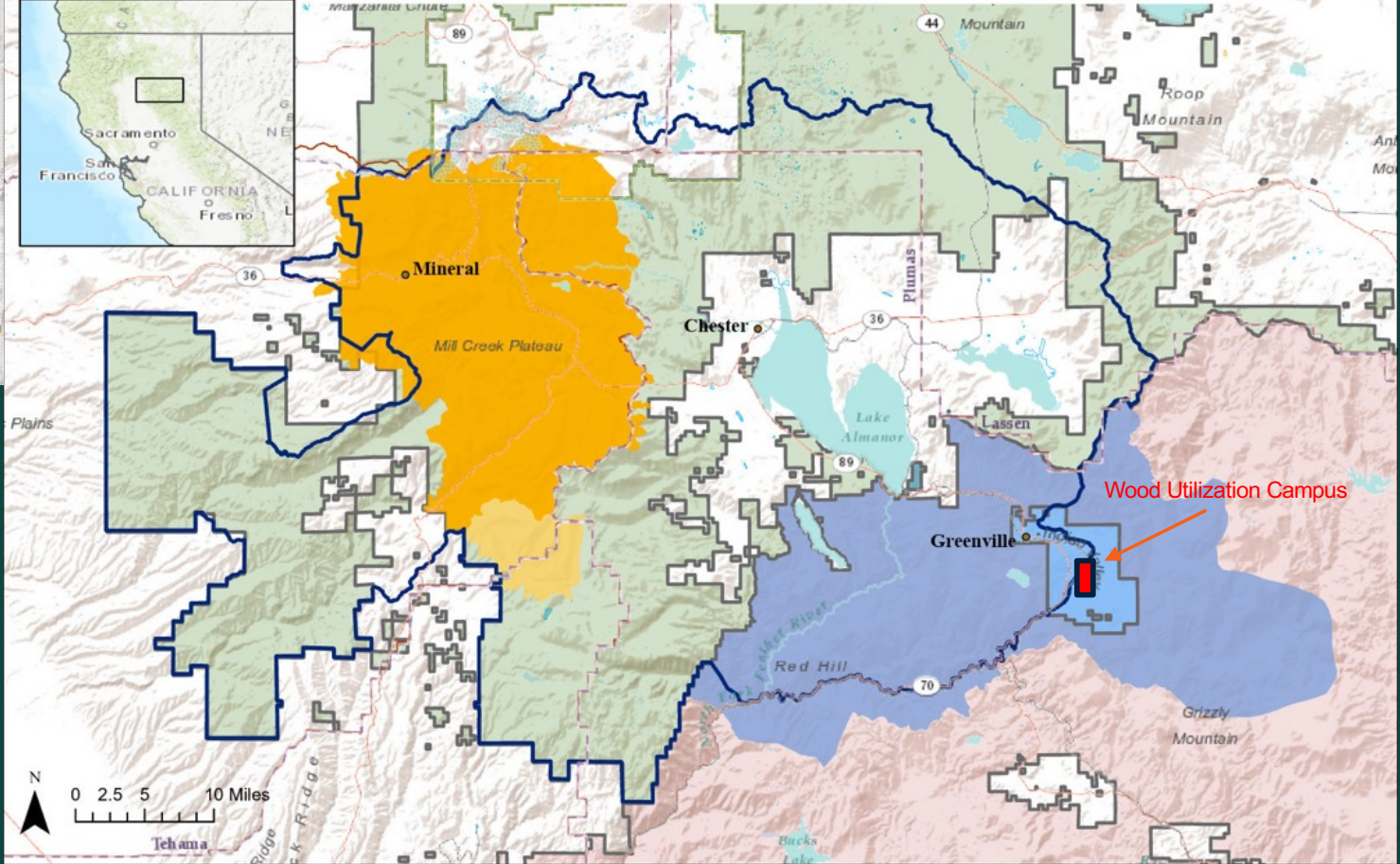
- Project Initiated
- In Progress
- Investment Opportunity
- Project Executed
- Targeted Success

# Building a Circular Economy





## South Lassen Watersheds Group Boundary and Large-Landscape Projects



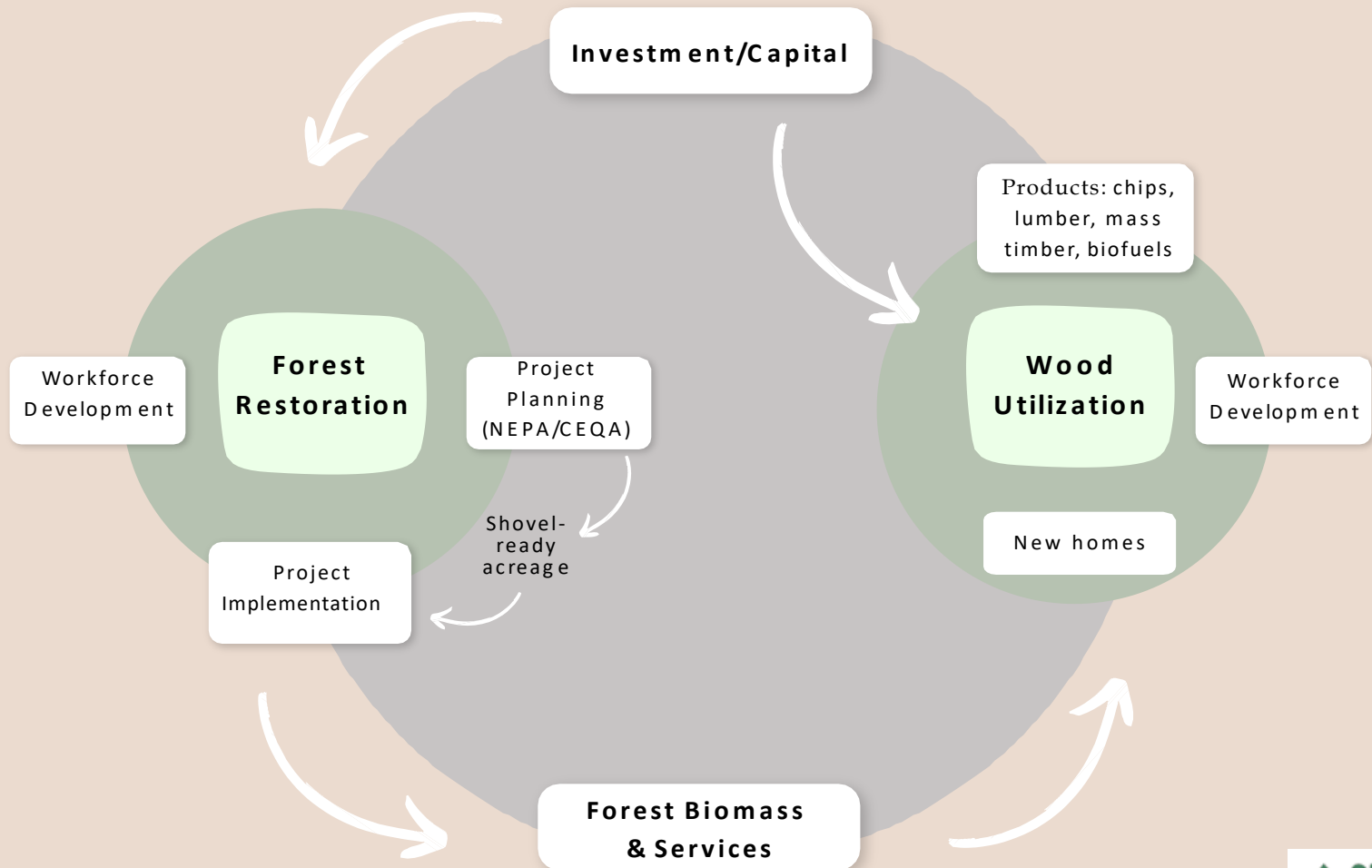
- Projects in Planning (NEPA) Phase**
- West Lassen Headwaters Project
  - Upper Butte Creek Forest Health Project

- Proposed Project**
- North Fork Communities Project

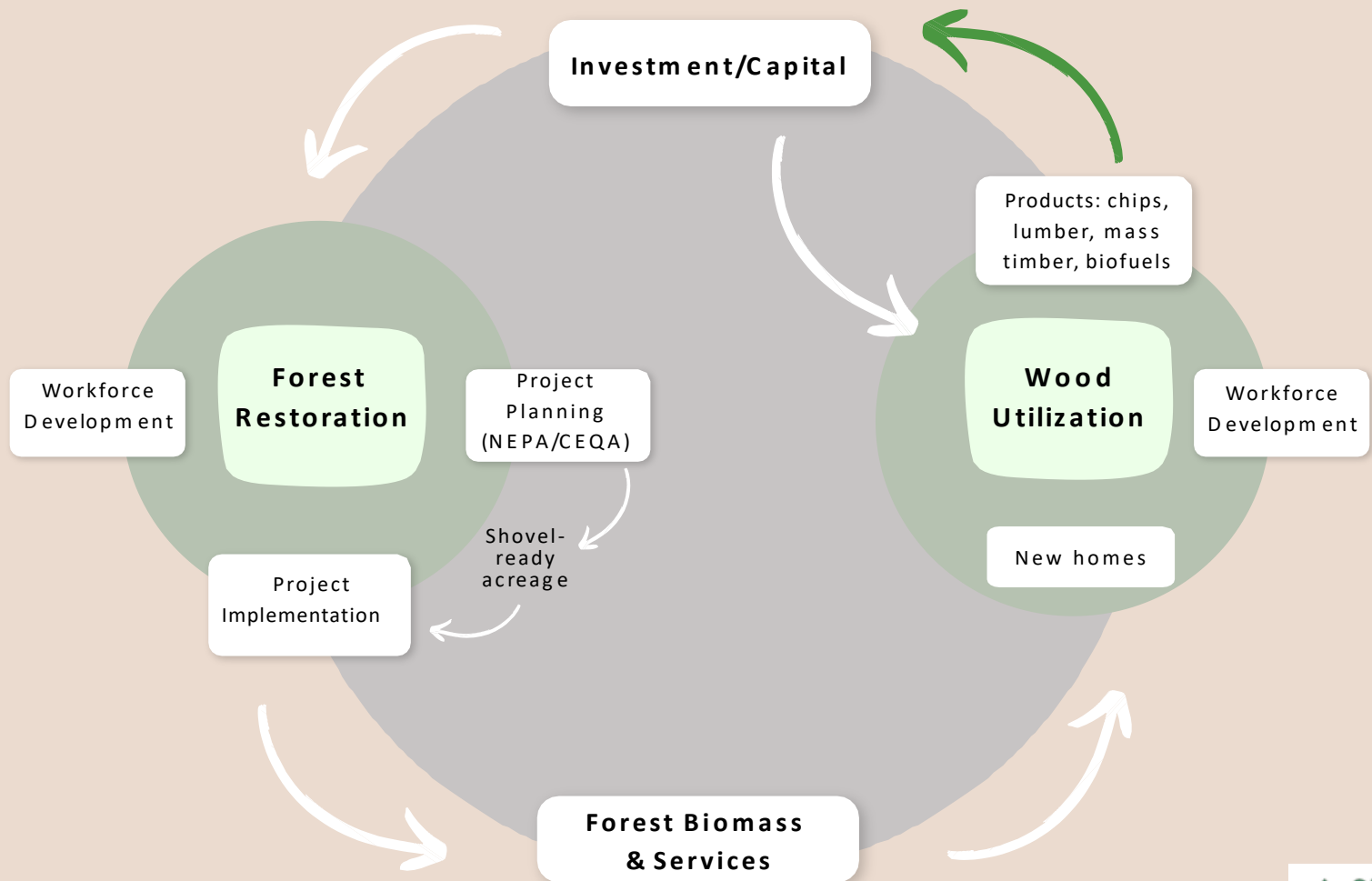
- South Lassen Watersheds Group Boundary
- Lassen National Forest
- Plumas National Forest
- County



# Building a Circular Economy



# Building a Circular Economy



We need to advance forest restoration

# Invest in wood utilization



*We need to build a circular economy*



# Climate Resiliency, Recovery, and Community Development

Thank you.

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Cross laminated timber building construction—December 2017



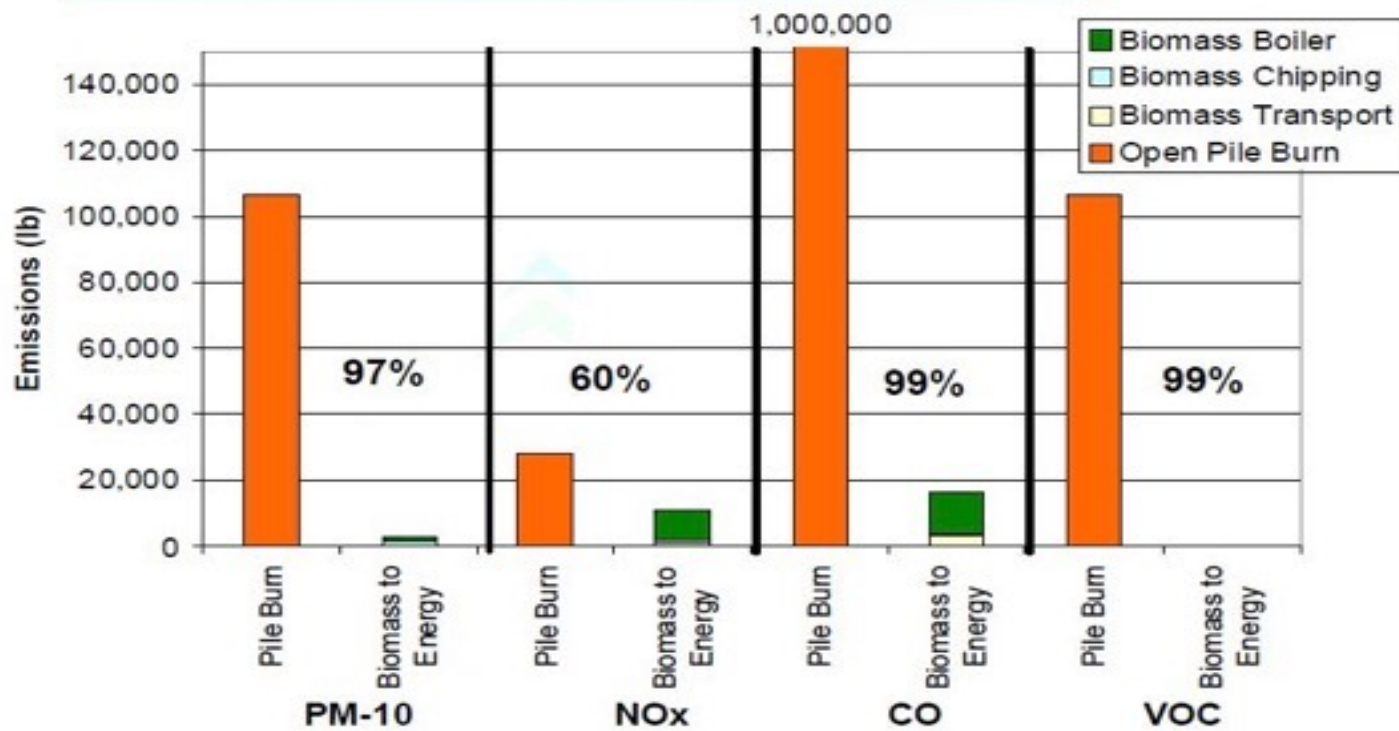
All panels up in 2 days!



Emissions based on burning 6,800 BDT of biomass

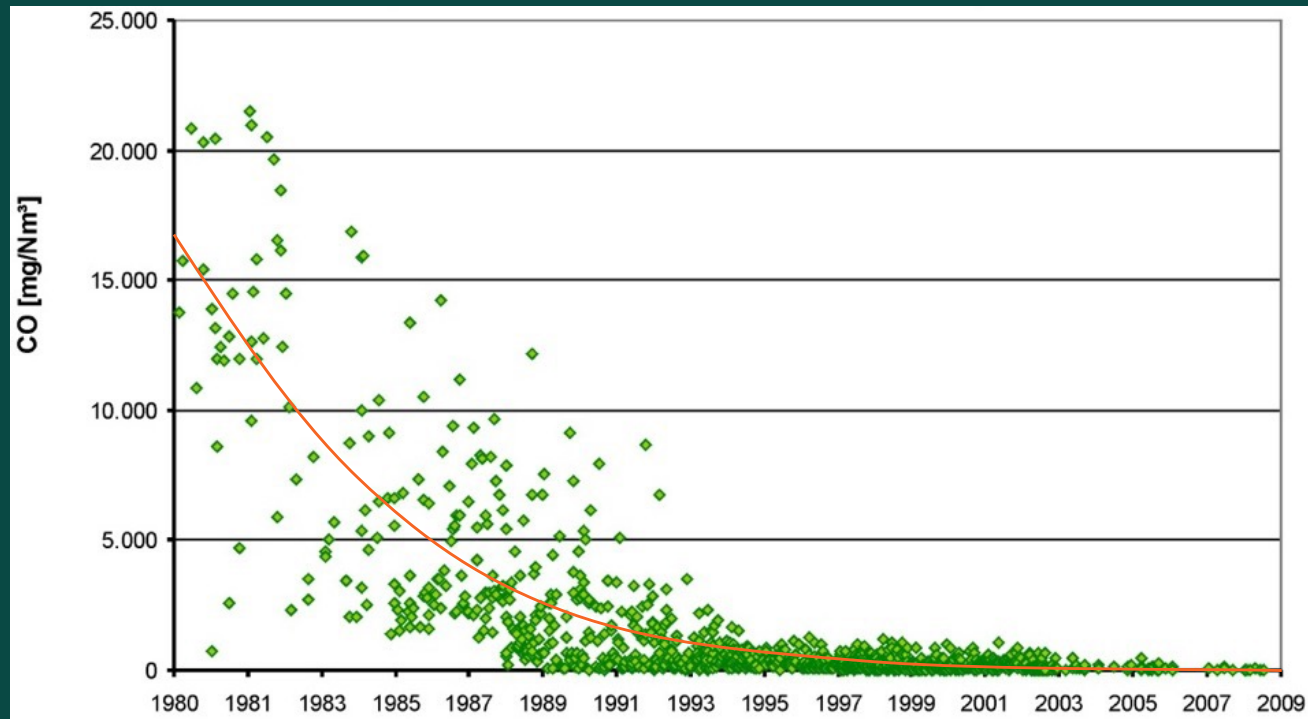


## CRITERIA AIR POLLUTANT REDUCTIONS



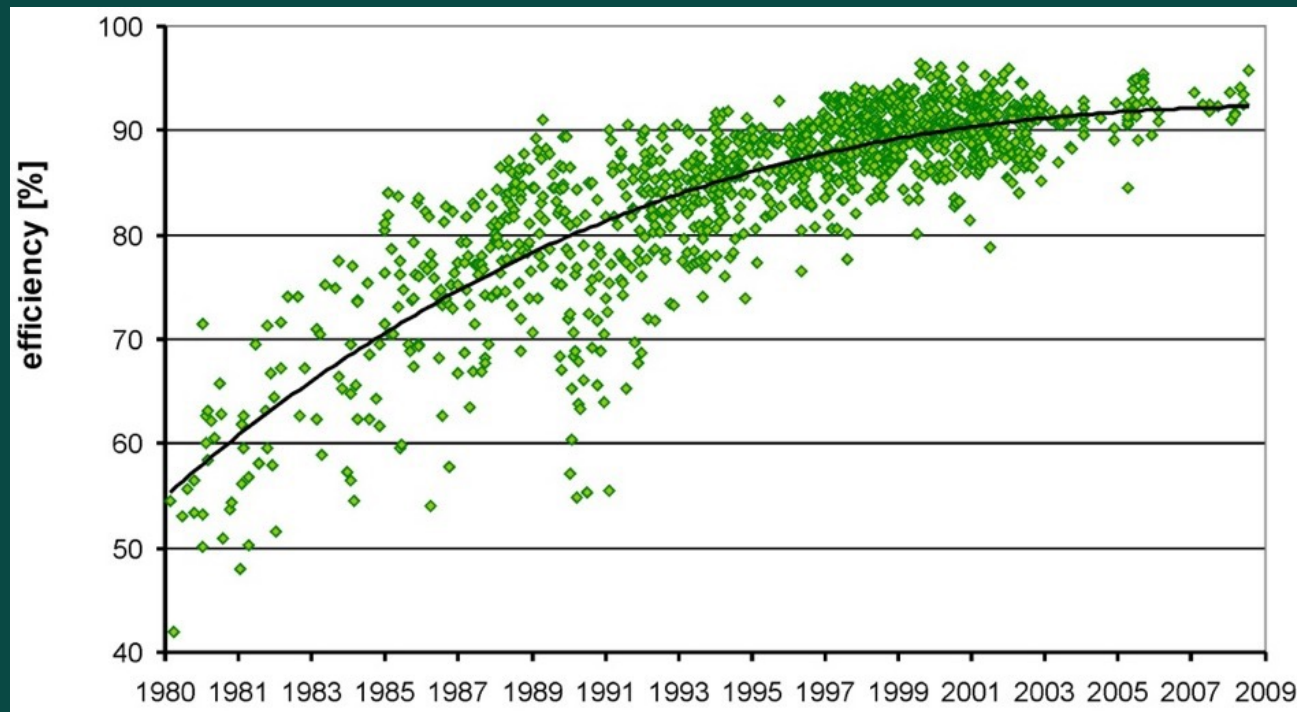
Springsteen, et al. 2011. Emission Reductions from Woody Biomass Waste for Energy as an Alternative to Pile Burning. *Journal of Air and Waste Management*. 61:63-68

# Clean



Development of emissions of Austrian Biomass Boilers, measured by the federal agency for agricultural engineering Wieselburg (BLT)

## Efficient



Development of emissions of Austrian Biomass Boilers, measured by the federal agency for agricultural engineering Wieselburg (BLT)