

Tuolumne County
Administration Center
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Heather Ryan
*Clerk of the Board
of Supervisors*

**BOARD OF SUPERVISORS
COUNTY OF TUOLUMNE**

David Goldemberg, *First District*
Kathleen Haff, *Fourth District*

Ryan Campbell, *Second District*

Anaiah Kirk, *Third District*
Jaron Brandon, *Fifth District*

**Natural Resource Committee
Wednesday February 1st, 2023 @ 10:00 am
Conference Room OES – 3B
3rd Floor of AN Francisco Building.
48 Yaney Avenue
Sonora, 95370**

AGENDA

1. Call the meeting to order
2. Public Forum – The public may speak on any item not on the printed agenda. No action may be taken by the Committee. The amount of time allocated for the public forum is limited to 15 minutes.
3. Consideration of approving the minutes of the meeting held on January 4th, 2023.
4. Partner agencies updates
 - A. USFS updates
 - B. TUD updates
5. Committee Business
 - A. Staff reports and recommendations
 - a. Review of Board of Supervisors goals and priorities for 2023
 - B. Committee member reports
6. Discussion Items
 - A. Discussion and approval of committee goals and workplan for 2023 continued
 1. Farm Bill and any possible funding opportunities, programs, projects and more. It was discussed that the Farm Bill may be able to support the

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Travel Management Plan which this committee received an update last meeting on Jan 4th, 2023.

2. Academic pathways and partnerships; possibly with UC Merced, and other academic institutions, to get more support with and for biomass products, careers in said areas of study, accurate and up to date data and current studies. Bio brick, bio timber that is carbon neutral was discussed.

B. Discussion and approval of draft letter(s) to the legislature on wildfire emissions being included in Climate Action Plan (CAP)

1. Discuss and approve letter(s)
2. Andre Introduce Wildfire Emissions Inventory Estimate

C. Discussion of Farm Bill updates

1. Andre (research)
2. Anaiah, Jaron and Sherri Brennan (meeting outcome)

D. Discussion of Columbia College forestry certification program

1. Jaron

E. Discussion of Drought Declarations

1. Dore Bietz

F. Discussion of possible academic partnership with UC Merced (or other) to have more qualified career paths, data and studies on biomass products (bio brick, bio timber, etc.) in context of SB 495 and AB 2446.

1. Jaron

7. Open Items

- A. Open Carry-on County roads within public lands issue – Updates
- B. At Large member application process to fill vacancy – Any progress
- C. Member applications – Need to be completed

8. Adjourn

Next Regular scheduled meeting will be March 1, 2023

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Membership Roster

Name	Position	Group
Anaiah Kirk	Supervisor	County
Jaron Brandon	Supervisor	County
Kathleen Haff	Alternate Supervisor	County
Jim Phelan	Member	TC RCD
Jim Maddox	Member	F&G PFAC
Dick Gaiser	Member	Ag AC
Andre Rivera	CAO Staff	County
Dore Bietz	OES	County
At Large	Member	TBD

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MINUTES

Natural Resource Committee

January 4th, 2023 @ 10:00 a.m.

AN Francisco Building

48 Yaney Ave, Sonora CA 95370

1. Call the meeting to order: Meeting called to order by Supervisor Haff @ 10:00 am. (Quorum reached).
 - A. In attendance:
 - A. Committee members (quorum met)
 1. Jim Phelan (Committee Member) Tuolumne County Resource Conservation District
 2. Dick Gaiser (Committee Member) Agricultural Advisory Committee
 3. Jim Maddox (Committee Member) Fish and Wildlife - Absent
 4. Supervisor Kirk (Committee Board Member)
 5. Supervisor Brandon (Committee Board Member)
 - B. Staff Present
 1. Sean Hembree (CAO Staff)
 2. Andre Rivera (CAO Staff)
 - C. Partners
 1. USFS Staff
 2. TUD Staff
2. Public Forum – The public may speak on any item not on the printed agenda. No action may be taken by the Committee. The amount of time allocated for the public forum is limited to 15 minutes.
 - A. Public Comments – None.
3. Consideration of approving the minutes of the meeting held on November 2, 2022.
 - A. Jim Phelan moved to approve. Dick Gaiser seconded. Motion passed.
 - B. Public Comment – None.
4. Partner Agencies
 - A. USFS Travel Management Plan Update
 1. Beth Martinez and Benjamin Cossel gave update on Travel Management Plan. There are 3 parts: Subpart A, B and C. Subpart A deals with economically and environmentally sustainable road system. This is pending due to staffing shortages, etc. Subpart B deals with roads and trails for motor use and is in litigation although minimization criteria have been updated for trails and roads in question. Also 3 decisions of reroutes completed. 86 roads in question. This subpart was commented as needing better fire planning and fire access. Beth mentioned fire break maintenance as difficult to keep up on. Subpart C deals with travel management restrictions and OHV's and OSV's. This is in current litigation per

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several plaintiffs. The issue is OSV access below 5,000 feet and in other areas deemed sensitive habitat areas. Sherri Brennan made comment that law enforcement is needed to assist in offroad vehicle destruction of sensitive areas, trash and confrontational attitudes. These closures of offroad vehicle use areas is better than the alternative. Anaiah agreed this is an issue. It was agreed that law enforcement and staffing shortages are the main issues with above issues. No one wants to work as enforcement of Travel Management Restrictions. TC Sherriff can apply for OHV funding to be able to assist as has in the past. Beth stated OHV funding not the issue and agreed to above issues of staffing shortages and law enforcement as likely ways to resolve. Jaron mentioned watershed and trash issues with possibility of seeking education pathways to hiring qualified people to assist in staffing shortages. Jaron also mentioned SPUC training programs as possible solution. Jim mentioned dispersed camping as problem which is causing pollution issues. Farm Bill was brought up as opportunity for funding. Andre to research Farm Bill and bring back next meeting. Sherri Brennan to meet with Anaiah and Jaron to discuss Farm Bill as well and bring back to next meeting. Andre to put drought declarations as discussion topic for next agenda as well.

B. TUD – No updates other than work crews are very busy due to weather systems.

5. Committee Business

A. Staff Reports and recommendations

1. Review of Committee Handbook rules and protocols:
Reviewed that committee exists to support Board of Supervisors goals and priorities which will be discussed Jan 9th and 10th. Andre to report back when completed. Annual committee goals and priorities to go to board for approval. We will discuss later today. Committee member term limits are to be staggered. We will discuss and approve later today. Anaiah requested to have rules attached to each agenda going forward.

6. Discussion items

A. Committee goals and priorities for 2023

A. Discussed the following as priorities:

1. Farm Bill, research and bring back to next meeting (Andre will research, Anaiah, Jaron and Sherri Brennan will discuss and bring back to next meeting.
2. PG&E water rights; this was discussed as an ongoing discussion between TUD and PG&E in terms of extensive time and resources spent and desire to move forward. Don Perkins is heading that discussion.
3. Academic pathways and partnerships; possibly with UC Merced to get more support in and for biomass products, careers, data and studies. Bio brick, bio timber that is carbon neutral was discussed. Andre to research Assembly Bills, biomass products and bring back any relevant information. Dore may have information.
4. This discussion and possible approval of goals/priorities for 2023 will continue at the next meeting.

B. Climate Action Plan

1. Discussion of draft letter was done. Anaiah elaborated that this letter will hopefully trigger more funding for forest health, and fire suppression projects that are much needed to assist in reducing emissions; landscape health was mentioned. Jaron agreed and suggested he wants to make some edits and/or additions to the letter. Letter will be brought back to next meeting. It was discussed that buy in from RCRC and or other organizations will be helpful; also, SPUC and other urban/regional partners could be more impactful if included in the process. Both Jaron and Anaiah will bring their own copies of the draft letter for discussion and approval at next meeting. It was mentioned that a one-page letter was preferred.

C. Discussion of re-appointments and approval of staggered term limits

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1. We discussed re-appointments and the application process. It was stressed that all members needed to reapply and be approved by the full board asap. Staggered term limits were discussed, suggested and voted on. Both Jim's will be 2-year terms with Dick Gaiser and the soon to be filled at large member at 4-year terms. The 2 Jim's will be switched to 4-year terms after 2 years to have our staggered 4-year term appointments. Move to approve by Dick Gaiser, seconded by Jim Phelan, motion passed

7. Open Items

A. Open Carry-on County roads within public lands issue

1. Staff discussed that county counsel needs more background/specific information in order to research and report back on for the committee. It was discussed that the issue is whether there is any ordinance prohibiting open carry firearms on county roads in public lands. Dore was mentioned as having more information. Andre will get with Dore to get more information and then relay to county counsel.

B. At Large Member application process to fill vacancy.

1. The vacancy was discussed, and members will reach out to potential applicant for this vacancy. Andre will follow up with members to get the ball rolling.

8. Meeting Adjourned at 11:09 a.m.

A. Items for next meeting

1. Farm Bill research, Andre will complete. Anaiah, Jaron and Beth Brennan will meet and discuss and bring back what comes from discussion.
2. Columbia College has new forestry certification program that Jaron will discuss.
3. Discussion and approval of goals/priorities for 2023 continued.
4. Fire emissions letter will be brought back with both Jaron and Anaiah to bring draft letters for discussion and approval.
5. Discussion of drought declarations
6. Biomass products and related Assembly Bills discussion, Andre to get with Dore to research further. This is in context of academic partnership with UC Merced (or other) to have pathway for more qualified career pathways, data and studies.
7. Staff report on Board of Supervisors workshop results of goals and priorities for 2023.

With SB 32, California has set targets to reduce greenhouse gas (GHG) emissions to 40% below 1990 levels by 2030 and to achieve an 80% reduction of GHGs below 1990 levels by 2050. By 2019, emissions only dropped by 2% in the 19 years since 1990. The state's goal is to reduce emissions by 38% in the 7 years between now and 2030. Furthermore, the State acknowledges there is a "Local Emissions Gap" of about 23.4% after state mandated 14.4% reductions by 2030. (See pages 2-9 and 2-10 in the CAP <https://www.tuolumnecounty.ca.gov/1332/Climate-Action-Plan>). As of 2020, 13.7% of energy consumed in California came from renewables, such as solar, wind and biomass, and excluding hydro (<https://www.eia.gov/state/?sid=CA#tabs-1>). To achieve the targets, the share of renewables needs to increase to about 33% by 2030 and about 70% by 2050.

California has set some of the most aggressive goals to reduce greenhouse gas (GHG) with SB 32. However, there are three key data-gaps for climate strategy and policy that need to be addressed not outlined in current legislation: 1) emission increases from megafires as well as unhealthy forests, 2) emission reductions from managed and healthy forests, and 3) untracked environmental cost of inaction in forest health projects.

A study conducted by UCLA and the University of Chicago demonstrated that one year of megafire emissions effectively eliminated nearly two decades of reductions from other sources, emitting 127 million metric tons of carbon or equivalent to 34.4% of total CARB-tracked emissions.

The County of Tuolumne respectfully requests the Governor's office take lead to establish a clear, consistent data framework for the state to account for wildfire emissions, emission reductions from forest health projects, and the comparative environmental cost of not taking action. This will empower local government with the data to show strong correlation between healthy, managed forests and achieving state climate goals.

Capturing wildfire smoke and emissions is key for future understanding future health impacts. It is a top reason for school closures and AQI scores of 460 in the Bay Area and Sacramento that threaten pulmonary and respiratory health. Post-traumatic stress disorder (PTSD) and other mental health impacts for adults and children are substantially increased from fire and disaster.

Governor Newsom, as proud local leaders on the cutting edge of forest stewardship agreements, biomass, timber production, and public-private forest partnerships, Tuolumne County recognizes that data is critical to private investment, public grants, policymaking, and good governance at all levels, and we need your advocacy to see this happen.

We respectfully request the Governor's office to work with the California Air Resources Board, California Board of Forestry, and State Legislature to develop and implement a clear, consistent standard to measure wildfire and forest management emissions to track, target, and reduce emissions while offering us the tools to keep people safe and economies on the rise.

<https://innovation.luskin.ucla.edu/wp-content/uploads/2021/12/Wildfire-and-Water-Supply-in-California.pdf>

To the Office of Governor Gavin Newsom:

California is unquestionably a state and global leader in sustainability and decarbonization with SB 32 setting aggressive goals to reduce greenhouse gas (GHG) emissions 40% below 1990 levels by 2030 and 80% by 2050. While there are valid questions about the feasibility of public and private entities to close the “Local Emissions Gap” of 38% in the next 7 years, as well as equity concerns from disproportionately impacted lower-income rural areas, the purpose of this letter is not only to reiterate rural concerns about wildfire but to also identify what is a glaring data-gap for emissions from megafires and forest health projects in state climate goals.

The County of Tuolumne requests the Governor’s office take lead to establish a clear, consistent data framework that accounts for these emissions and enables stakeholders to demonstrate the strong correlation between healthy, managed forests and state climate strategy. To borrow a quote from Peter Drucker, *“if you can’t measure it, you can’t improve it.”*

Tuolumne County is sadly not a stranger to these burns. From ignition on August 17th to containment on October 24th, the 2013 Rim Fire burned consumed 257,314 acres in both Tuolumne and Mariposa counties into both the Hetch Hetchy reservoir system and Yosemite National Park. It nearly destroyed the town of Groveland and was the second largest fire California had ever seen – nine years later, it sits at eleventh place due to the increasing megafire severity and frequency. The destructive power of these events is terrifying; able to consume entire communities, burn millions of acres of preserved green space, threaten species preserves, and render productive, beautiful forests into moonscaped brushlands that will require *billions* to restore.

Dixie. Mendocino Complex. Creek. August Complex. Camp. Tubbs. There are fewer and fewer areas without a story like ours. The threat looms over every forested portion of California and is without equal one of the greatest challenges our communities and we as local governments face.

While more resources are clearly needed, the significance of addressing California wildfire is well-known and we are thankful for the attention and resources now being put into this issue. As Governor Newsom stated on November 22nd, 2022, *“There’s no better representation of how volatile fire seasons can be than my first term as Governor – two of the most destructive wildfire seasons in recorded history, and two of the least destructive in a decade.”*

Beyond sheer destructive power, the adjacent impacts of fire and forest health are complex, diverse, and statewide. Fire threatens urban water systems and the critical role of forest health in watersheds that provide 60% of California’s supply – according to a study in 2020, the Tubbs and Camp fires *“are the first known wildfires where widespread drinking water chemical contamination was discovered in the water distribution network and not in the source water after the fire.”*¹² Wildfire smoke is a top reason for school closures with air quality scores in the Bay Area and Sacramento ranging in the 460 range, well beyond the AQI of 275 that many county offices considered dangerous to pulmonary and respiratory

¹ <https://awwa.onlinelibrary.wiley.com/doi/10.1002/aws2.1183>

² <https://innovation.luskin.ucla.edu/wp-content/uploads/2021/12/Wildfire-and-Water-Supply-in-California.pdf>

health.³⁴ Furthermore, a scoping review of 60 studies established negative impacts on mental health and psychosocial wellbeing from wildfire and chronic disaster, especially regarding instances of post-traumatic stress disorder (PTSD) in adults as well as children.⁵

This exceptionally small selection of problems could grow exponentially if it were to cover the economic costs in fire suppression, disaster recovery, fire insurance threatening home ownership, loss of biodiversity, soil erosion, damage to cultural resources, impacts to indigenous peoples, and others. Governor Newsom witnessed these impacts first-hand visiting the North Complex Fire and Camp fire among others, experiences that likely speak louder than any statistics could provide.

Beyond these horrors, however, is the truth that forests and climate are inextricably linked. Forest health is climate health. Climate health is forest health. It may not be constructed by human hands like an automobile or lawnmower or power plant, but the emissions are nonetheless anthropogenic in nature and indistinguishable molecule to molecule.

In 2022, the Tuolumne County Board of Supervisors adopted a Climate Action Plan (CAP) which inventoried county emissions and set goals within our General Plan to meet State requirements. Many if not most areas have created a similar such commitment and not without controversy to communities struggling with an unreliable electric grid, skyrocketing energy and housing costs, and more. It can sometimes feel as though we are forgotten areas of the state. But, for a Sierra Nevada county of roughly 55,000 people where towns rarely exceed a few thousand people and 78% of land is National Forest, areas inhabited for thousands of years and inseparable from California's history, the impacts from human activities like transportation and construction are minute compared to the impacts of our natural systems.

California is measuring GHG inventories across many sectors but wildfire emissions are notably missing; so are adjacent emissions issues such as timber die-offs, forest overcrowding, and unmanaged natural lands. In 2006, SB 495 (Dahle) recommended creating a data framework to track emissions that would allow local Climate Actions Plans and state policymaking to positively account for GHG impacts from timber, forest health operations, and fire hazard reduction.⁶ While it unfortunately predated the precipitous rise of fire severity, rural counties such as Tuolumne can best meet state climate and conservation goals when GHG inventories are empowered with wildfire and forest health emissions data.

This is an optimal time for action and an opportunity for state leadership that crosses party lines. With 30x30 California, the State is seeking to protect and conserve natural lands and with AB 2446, aggressive goals have been set for green building material production such as cross-laminated timber. Yet both conserved and productive lands are under siege from wildfire in such a way that bring about a common enemy. A now infamous 2022 CalMatters article brought renewed attention to wildfire emission through a study conducted by UCLA and the University of Chicago demonstrating one year of megafire

³ <https://calmatters.org/environment/2018/11/school-closures-california-wildfires-1-million-students/>

⁴ Rosenthal A, Stover E, Haar RJ. Health and social impacts of California wildfires and the deficiencies in current recovery resources: an exploratory qualitative study of systems-level issues. PLoS One. 2021;16(3):e0248617. doi:10.1371/journal.pone.0248617

⁵ To P, Eboeime E, Agyapong VIO. The impact of wildfires on mental health: a scoping review. Behav Sci (Basel). 2021;11(9):126. doi:10.3390/bs11090126

⁶ <https://openstates.org/ca/bills/20212022/SB495/>

emissions effectively *eliminated nearly two decades of reductions from other sources* by emitting 127 million metric tons of carbon⁷ or equivalent to 34.4% of total state GHG emissions according to the California Air Resources Board 2020 GHG Emission Inventory.⁸ This cross section of social, economic, and environmental goals is the definition of a potential triple bottom line solution.

As proud local leaders on the cutting edge of stewardship agreements, biomass, timber production, fuel reduction, resiliency centers, emergency management, public-private partnerships, and forest collaboratives, Tuolumne County recognizes that data is critical to private investment, public grants, policymaking, and good governance at all levels.

We respectfully request the Governor's office to work with the California Air Resources Board, California Board of Forestry, and State Legislature to develop and implement a clear, consistent standard to measure wildfire and forest management emissions in order to track, target, and reduce emissions while offering us the tools to keep people safe and economies on the rise.

We further recommend the Governor's office solicit input from local government stakeholders in the Rural County Representatives of California (RCRC), California State Association of Counties (CSAC), National Association of Counties (NACO), and partners such as the League of California Cities to work to understand and address local needs in this work.

People and the environment – these are our two *most precious* resources. There are many strong and compelling reasons to make forest health a top state priority but specific to climate change, State climate policy will remain severely incomplete if California continues to not account for wildfire emissions.

⁷ <https://www.sciencedirect.com/science/article/pii/S0269749122011022>

⁸ <https://ww2.arb.ca.gov/ghg-inventory-data>

ATTN:

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- 1) Emission increases from megafires as well as unhealthy forests
- 2) Emission reductions from managed and healthy forests
- 3) Untracked environmental cost of inaction in forest health projects

A now infamous 2022 CalMatters article brought renewed attention to wildfire emission through a study conducted by UCLA and the University of Chicago demonstrating one year of megafire emissions effectively *eliminated nearly two decades of reductions from other sources*, emitting 127 million metric tons of carbon¹ or equivalent to 34.4% of total CARB-tracked emissions.² This cross section of social, economic, and environmental goals is the definition of a potential triple bottom line solution.

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To borrow a quote from Peter Drucker, “*if you can’t measure it, you can’t improve it.*”

Tuolumne County is sadly no stranger to megafire. From ignition on August 17th to containment on October 24th, the 2013 Rim Fire burned consumed 257,314 acres in both Tuolumne and Mariposa counties threatening Hetch Hetchy, Yosemite National Park, and nearly destroying the town of Groveland. It was California’s second largest fire – nine years later, it sits at eleventh largest.

It is worth repeating the terrifyingly destructive power of these events; able to consume entire communities, spread faster than an Olympic runner, wipe out endangered habitats and soil bacteria alike, and render productive, beautiful forests into moonscaped brushlands that will require *billions* to restore. Dixie. Mendocino Complex. Creek. August Complex. Camp. Tubbs. There are fewer and fewer areas without a story like this and it is without equal the greatest challenge forested areas face.

Beyond these horrors is the truth that forests and climate are inextricably linked. *Forest health is climate health*. And conversely, an unhealthy forest contributes to an unhealthy climate. It may not be constructed by human hands like an automobile or lawnmower or power plant, but modern fire patterns are nonetheless anthropogenic.

¹ <https://www.sciencedirect.com/science/article/pii/S0269749122011022>

² <https://ww2.arb.ca.gov/ghg-inventory-data>

California is measuring GHG inventories across many sectors but wildfire emissions are notably missing; so are adjacent emissions issues such as timber die-offs, forest overcrowding, and unmanaged natural lands. According to the Rural County Representatives of California (RCRC), tracking these emissions has been an ongoing RCRC concern for over 14 years and in 2021, SB 495³ (Dahle) re-introduced the concept of this data framework for existing climate change strategy so policymaking can positively account for GHG impacts from timber, forest health operations, and fire hazard reduction. The best way to empower rural counties like Tuolumne to meet state climate goals is where we will have the greatest impact. SB 495, or similar legislation, would provide the data to back that up.

This is an optimal time for action by state leadership that crosses party lines. One-fourth of the legislature is newly elected and many committees have new leadership. The State is taking a more active role in protecting and conserving natural lands with 30x30 and with AB 2446, aggressive goals have been set for green building material production such as cross-laminated timber that require productive forest biomass. To achieve SB 32 goals, there seems to be a strong support to ensure all relevant emissions are tracked and part of state and local policymaking. Fire also presents a common enemy to both conserved and productive lands.

While local, state, and federal jurisdictions have struggled with “green tape” even for the most clearly environmentally beneficial projects, there is no EIR required to choose not to take action. A century of human fire suppression and reductions in mechanical harvest have left most California forests in an unsustainable cycle of overgrowth, fuel buildup, and inevitable megafire that frequently exceeds environmental tolerances and grows back as brushlands, not forests. Yet, only actions taken to improve the environment are subject to the scrutiny of CEQA and NEPA. We assert that in the case of California forests, inaction has the greatest negative environmental consequences. Without measuring those impacts, they cannot be accounted for in policymaking and this leads to incomplete planning.

More resources are clearly and critically needed, but addressing California wildfire is now a dinner table issue across the state. As Governor Newsom stated on November 22nd, 2022, *“There’s no better representation of how volatile fire seasons can be than my first term as Governor – two of the most destructive wildfire seasons in recorded history, and two of the least destructive in a decade.”* The new State and Federal resources into this issue are well placed and we thank Governor Newsom for protecting the bulk of these investments into the 2023-2024 budget.

We also wish to briefly present the adjacent impacts of fire and forest health are complex, diverse, and not isolated to just physical damage or solely rural areas. Fire threatens urban water systems and forest watersheds that provide 60% of California’s supply.⁴⁵ Wildfire smoke is a top reason for school closures and AQI scores of 460 in the Bay Area and Sacramento that threaten pulmonary and respiratory health.⁶⁷ Post-traumatic stress disorder (PTSD) and other mental health impacts for adults and children

³ <https://openstates.org/ca/bills/20212022/SB495/>

⁴ <https://awwa.onlinelibrary.wiley.com/doi/10.1002/aws2.1183>

⁵ <https://innovation.luskin.ucla.edu/wp-content/uploads/2021/12/Wildfire-and-Water-Supply-in-California.pdf>

⁶ <https://calmatters.org/environment/2018/11/school-closures-california-wildfires-1-million-students/>

⁷ Rosenthal A, Stover E, Haar RJ. Health and social impacts of California wildfires and the deficiencies in current recovery resources: an exploratory qualitative study of systems-level issues. PLoS One. 2021;16(3):e0248617. doi:10.1371/journal.pone.0248617

are substantially increased from fire and disaster.⁸ And California's immense natural resources are reduced for potential green housing materials while an exponential *tree tax* from insurance premiums create housing instability. This is only a small selection of issues but Governor Newsom's experiences at the North Complex, Camp, and other fire aftermaths likely speaks louder than any statistics could provide.

In 2022, the Tuolumne County Board of Supervisors adopted a Climate Action Plan (CAP) which inventoried county emissions and set goals within our General Plan to meet State requirements. Many if not most areas have created a similar such commitment and not without controversy to communities struggling with an unreliable electric grid, skyrocketing energy and housing costs, and more. But, for a Sierra Nevada county of roughly 55,000 people where towns rarely exceed a few thousand people and 78% of land is National Forest, areas inhabited for thousands of years and inseparable from California's history, the impacts from human activities such as transportation, construction, and propane are minute compared to the impacts of our natural systems. This is where we can *together* make the greatest impact.

Governor Newsom, as proud local leaders on the cutting edge of forest stewardship agreements, biomass, timber production, and public-private forest partnerships, Tuolumne County recognizes that data is critical to private investment, public grants, policymaking, and good governance at all levels and we need your advocacy to see this happen.

We respectfully request the Governor's office to work with the California Air Resources Board, California Board of Forestry, and State Legislature to develop and implement a clear, consistent standard to measure wildfire and forest management emissions in order to track, target, and reduce emissions while offering us the tools to keep people safe and economies on the rise.

We further recommend the Governor's office solicit input from local government stakeholders in the Rural County Representatives of California (RCRC), California State Association of Counties (CSAC), National Association of Counties (NACO), and partners such as the League of California Cities.

⁸ To P, Eboreime E, Agyapong VIO. The impact of wildfires on mental health: a scoping review. Behav Sci (Basel). 2021;11(9):126. doi:10.3390/bs11090126

WILDFIRE CALCULATOR ESTIMATES

Tuolumne County Wildfire Emissions (10 Years)
Based on Burned Area (MODIS)

2012-2022

Year	Area Burned km2	Area Burned Square Miles	Area Burned Acres	Carbon Burned (Tons) (Fuel)	Methane (Tons)	Carbon Dioxide (Tons)	Carbon Monoxide (Tons)	Material Burned (Tons)	Sulfur Dioxide (Tons)
2012	4	2	988	1,863	10	5,482	215	3,726	9
2013	875	338	216,217	2,395,855	24,618	7,768,314	496,191	4,791,710	6929
2014	13	5	3,212	18,397	189	59,795	3,858	36,794	55
2015	0.4	0	99	1,214	13	3,941	265	2,428	4
2016	9	3	2,224	9,428	92	29,689	1,840	18,855	34
2017	6	2	1,483	8,592	93	27,890	1,865	17,185	26
2018	85	33	21,004	181,674	1,954	589,581	39,347	363,348	550
2019	3	1	741	3,057	31	9,859	630	6,114	9
2020	12	5	2,965	11,738	93	37,504	1,974	23,476	34
2021	98	38	24,216	206,118	2,384	665,066	46,835	412,237	629
2022	15	6	3,707	32,789	375	105,867	7,372	65,578	99
Total	1,119	432	276,511	2,870,726	29,851	9,302,987	600,392	5,741,452	8,380
Average	112	43	27,651	287,073	2,985	930,299	60,039	574,145	838

Year	Ammonia (Tons)	Non-Methane Organic Compound (Ton)	Nitrogen Dioxide (Tons)	Nitrogen Oxide (Tons)	Nitrogen Oxide & Dioxide (Tons)	PM10 (Tons)	PM2.5 (Tons)
2012	3	66	11	10	12	44	40
2013	5,836	127,645	6,206	10,251	7,118	82,757	74,489
2014	46	971	46	79	52	654	589
2015	3	65	3	5	3	45	40
2016	22	462	32	44	34	317	285
2017	22	460	21	37	23	315	284
2018	462	9,724	446	781	486	6,654	5,989
2019	8	159	8	14	9	106	96
2020	26	529	38	52	53	340	306
2021	558	11,062	499	924	550	7,738	6,964
2022	87	1,763	80	146	88	1,219	1,097
Total	7,074	152,907	7,391	12,344	8,427	100,189	90,179
Average	707	15,291	739	1,234	843	10,019	9,018

[Wildland Fire Emissions Inventory System \(wfeis.mtri.org\)](http://wfeis.mtri.org)

[Developed by Michigan Tech Research Institute \(MTRI; mtri.org\)](http://mtri.org)

Development of WFEIS has been supported through grants from the NASA Carbon Cycle Science Program (grant #NNX08AK69G to MTU and USFS), the NASA Applications program (grants #NNX09AP53G to the National Institute of Aerospace, A. Soja, PI and #NNX12AQ90G to MTU and USFS), the NASA Carbon Monitoring Program (Grant #NNX12AM91G to MTU and USFS), and the NASA Terrestrial Ecology Arctic-boreal Vulnerability Experiment program (grant #80NSSC19M0106 to MTU and UMD).

Source: French, N.H.F., D. McKenzie, T. Erickson, B. Koziol, M. Billmire, K.A. Endsley, N.K.Y. Scheinerman, L. Jenkins, M.E. Miller, R. Ottmar, and S. Prichard. "Modeling regional-scale fire emissions with the Wildland Fire Emissions Information System." *Earth Interactions* 18, no. 16 (2014)

Farm Bill Updates

Needs:

1. Travel Management Plan Assistance
2. Forest Health (biomass removal, forest thinning, pollution/trash, overuse)
3. Forest Management (road maintenance, debris removal, tree removal, sensitive/critical area protection, pollution/trash, overuse)
4. Watershed Issues (pollution, erosion, debris)
5. Staffing Issues (training, hiring incentives, career pathways/academic partnerships)
6. Biomass, bio-wood products, bio-brick, bio-timber, wood waste by-products
7. Forest land public versus private and Farm Bill

Opportunities:

1. Wetland Reserves Enhancement Partnership
2. Watershed Programs
3. Water Bank Program
4. Joint Chiefs' Landscape Restoration Partnership
5. Working Lands for Wildlife
6. Source Water Protection
7. WaterSMART
8. Landscape Conservation Initiatives
9. Healthy Forest Reserves Program
10. Watershed and Flood Prevention Operations (WFPO) Program
11. Watershed Rehabilitation
12. Emergency Watershed Protection
13. Conservation Stewardship Program
14. Conservation Innovation Grants
15. Environmental Quality Incentives Program

Columbia College

Columbia College forestry certification program (research and report - Jaron)

“A two-year program that results in a Certificate of Achievement in the Management and Restoration of Fire-Adapted Ecosystems as well as a Certificate of Completion as a Registered Apprentice through the Division of Apprenticeship Standards. Apprentices work as Forest Conservation Technicians and are given the opportunity to take additional coursework toward Certificates of Achievement and/or an Associate of Science Degree.”

Coursework:

- ☐ Ecology and the Use of Fire in Forest Ecosystems (FNR 22)
- ☐ Fire-Fuels Management (FNR 24)
- ☐ Applied Forest Inventory and Management (FNR 62)
- ☐ Ecological Restoration (FNR 83)
- ☐ Excavator Mulcher Operation (FNR 150)
- ☐ Wildland Fire Control (FIRE 7)
- ☐ Basic Power Saw Safety (FIRE 111)
- ☐ Basic First Aid & CPR (EMS 153)

Possible Opportunity:

Paid on-the-job training (2,000 hours)

Agenda Item F

Academic partnerships – research biomass, wood by-product fields for possible partnerships with. Related to AB 2446. UC Merced, others.

The below study published in Materials Today Journal in April 2022, discusses the success of bio-printing wood-based products without the need for any wood at all. The technology uses cells from plant material (*Zinnia elegans*) to then create a composite material that can be used in 3D printers to make wood-based products. This material can be used to create wood products in any shape or size. No deforestation and no waste by products. This research is now being translated to actual timber production by the study author's company, FORAY bioscience, using pine tree cells. This could be an opportunity for any of our biomass facilities within and around the County of Tuolumne. All that would be needed is funding for the 3D printer and staff who are trained to operate it. We seem to have a few sources of material here in the County of Tuolumne.

<https://www.sciencedirect.com/science/article/pii/S1369702122000451?via%3Dihub>

(Study)

<https://interestingengineering.com/innovation/lab-grown-3d-printed-wood>

(Article)

<https://www.foraybio.com/>

(Company)

Biomass facilities/plants:

1. Cal Sierra Earth Resource Facility (ERF)
2. GreenWorks
3. Plainview Slash Site
4. Pacific Ultrapower Chinese Station
5. Tuolumne Biomass LLC at T-Five Ranches site
6. Golden State Natural Resources at 12001 La Grange Road