



**NCRP CAL FIRE Forest Health Pilot Regional Assessment
Response to Questions and Feedback
Responses prepared by NCRP Staff Team and Tukman Geospatial
May 18, 2024**

Following is NCRP’s response to comments received after the NCRP CAL FIRE Forest Health Pilot workshop held on February 22, 2024, focused on a regional screening of potential actions to enhance forest health, including forest fuels reduction, pest management, reforestation (ecological restoration), and biomass utilization. Comments provided during the workshop are also included below.

The draft story map that documents the data and inputs that inform this regional screening level assessment can be found here:

<https://storymaps.arcgis.com/stories/71fa804c5ac246d399b30cd25f20d227>. Please note that three CAL FIRE Forest Health categories - land conservation, prescribed and cultural fire, as well as ecological restoration/reforestation - are not included in this screening level assessment, and will be addressed via local knowledge and land manager expertise.

It is important to note that this CAL FIRE Forest Health Pilot is one project of many NCRP initiatives – many of which are included in the [Vision for North Coast Resilience](#), and all of which are guided by the NCRP mission, goals, objectives and principles outlined in the [overview section](#) of the Vision for North Coast Resilience.

Written questions and comments submitted after the February 22, 2024 workshop (questions are summarized succinctly from longer responses submitted, including multiple long statements that did not include questions):

Question: Re: Forest Fuels Reduction Activity. Will there be unintended consequences for actually creating the conditions for wind to move through more easily? There are many complexities to consider and there could be reasons to reduce vegetation but unless an area is evaluated for at least increasing wind and reducing moisture, using vegetation to imply fuel to be removed could create undesired effects. Out away from structures or other areas of concern should be areas left alone. Of course, there are exceptions that need to be evaluated.

Comments on other CAL FIRE Forest Health Categories

- *Prescribed fire. This is something Forest Unlimited supports as long as it is done in a more native, tradition fashion and not the white man for larger, hotter fires to get it done in one fell swoop (typical cultural flaw).*
- *Pest Management. So-called pests that attack trees have been around for millennia are part of the ecology of a forest that make forests healthy and resilient and support many types of wildlife that are part of long food chains that connect to more than we can see. Measures for removing trees should be carefully evaluated and used sparingly to not create unintended consequences.*
- *Reforestation. This priority is appropriate because reforestation is starting over from scratch. It needs to be done but only when all other measures are taken for saving trees and the forest ecosystems that they are a part of.*
- *Biomass utilization. You may be aware that there is a plan afoot for biomass industries to move into the California and the Pacific Northwest for pellet production and biomass energy production. This is a further reason that "logging" is not considered to be a factor for vegetation removal as fuel. The answer to the problem is more logging.*

NCRP Response: This modeling effort provides a screening tool that helps NCRP, land managers, Tribes, and other project sponsors and community members prioritize forest health and wildland fuels reduction activities on the landscape, especially in wildlands near communities. The forests across the North Coast region are at their most healthy, resilient, and supportive of native species when forest structure at the landscape scale is diverse, with a range of seral stages and densities in line with natural fire history, topography, and resource availability. This program, by working at the landscape scale, will evaluate and prioritize a mixture of treatment types, intensities, and natural stressor events that help restore and enhance forest and habitat diversity in treated and untreated stands. By evaluating these needs at the landscape scale, Forest Health Pilot projects will avoid a one-size-fits-all treatment paradigm. Treatments proposed in NCRP Forest Health Pilot projects are expected to include managed, prescribed, and cultural use of wildfire to reduce surface fuels, cycle nutrients, and spur tree defenses to insects and diseases, as well as ladder fuel removal and thinning from below, and removal of small diameter fuels from overly dense stands. These treatments not only reduce fuel levels but also increase wildfire resilience when implemented correctly¹. Years of fire exclusion and a lack of Indigenous burning on much of our landscape has led to out of balance, overly dense forests, and higher fire severity when wildfire does burn². See <https://www.sciencedirect.com/science/article/pii/S0378112722006144> and <https://esajournals.onlinelibrary.wiley.com/doi/10.1002/eap.2973>. Reinstating historical forest conditions in these areas by removing ladder fuels and smaller diameter trees allows treated forests to experience lower tree mortality rates during severe droughts and to be more resilient to wildfires³. The use of managed fire, prescribed and cultural burns (after initial mechanical treatment) can further enhance understory plant community diversity and further improves forest health and forest resilience.

¹ Jain, T.B., Abrahamson, I., Anderson, N., Hood, S., Hanberry, B., Kilkenny, F., McKinney, S., Ott, J., Urza, A., Chambers, J., Battaglia, M., Varner, J.M., O'Brien, J.J., 2021. Effectiveness of fuel treatments at the landscape scale: State of understanding and key research gaps. JFSP PROJECT ID: 19-S-01-2. Boise, ID: Joint Fire Sciences Program. 65 p. <http://www.fs.usda.gov/treesearch/pubs/63869>

² Scott L. Stephens, James D. Mclver, Ralph E. J. Boerner, Christopher J. Fettig, Joseph B. Fontaine, Bruce R. Hartsough, Patricia L. Kennedy, Dylan W. Schwilk, The Effects of Forest Fuel-Reduction Treatments in the United States, *BioScience*, Volume 62, Issue 6, June 2012, Pages 549–560, <https://doi.org/10.1525/bio.2012.62.6.6>

³ Sankey, T., Tatum, J. Thinning increases forest resiliency during unprecedented drought. *Sci Rep* 12, 9041 (2022). <https://doi.org/10.1038/s41598-022-12982-z>

See <https://www.sciencedirect.com/science/article/pii/S037811272400197X>. The CAL FIRE Forest Health Pilot may include projects submitted by partners that will utilize excess materials from forest thinning in ways that substitute for non-local products, keep carbon stored in wood products, and reduce future emissions and potential air quality effects from future fires.

In 2022 and 2023, CAL FIRE distributed 93.1 million dollars for 17 projects statewide. The list of recipients, and project descriptions, is [here](#).

The NCRP team will add language to the story map and links to the above referenced Vision for North Coast Resilience to further clarify NCRP's mission, goals, principles related to ecosystem function and watershed health, climate resilience, community health and safety, as well as the NCRP's long history of Tribal leadership and direction on all aspects of NCRP activities, including cultural fire, prescribed fire and managed fire. Regarding pests, like fire they play an important role in creating heterogeneity in forest structure and habitats. Like with fire, however, pests do not have a simple interaction with forests, or yield the same result regardless of conditions. When conditions are right for a significant event, such as overly-stressed homogenous forests and drought, interactions that typically reinforce resilience and stability can lead to a reset of the system at the landscape-scale. Regarding the proposed biomass facility referenced above, this project has no relationship to the NCRP.

Question: "Each input dataset is divided into classes with corresponding scores ranging from 0 to 4 (see next graphic for details) and weighted by its relative importance in determining overall suitability for treatment." Is the weighting relative; that is, 2 is worse than 1, 4 is worse than 3, but 4 is not twice as bad as 2? What are the references/rationales for this relative ranking? Is this an "Expert Witness" ranking? I can support an Expert Witness rank if that is explained with references/rationales. I have used this type of ranking myself.

NCRP Response: The weighting is in the form of a multiplier that is applied to each input value before adding up all weighted input values into the raw forest health priority score. So these weights are absolute in that an input with a weight of 2 will be given double the importance of an input with a weight of 1. For example, housing density is weighted by a factor of 3 - this means that areas receiving a value of 4 in the input dataset for housing severity receive a weighted value of 12 in the overall raw priority score calculation, areas receiving an input value of 3 receive a weighted value of 9 in the raw priority score, etc. This is an "Expert Witness" ranking - the weighting values were determined based on the opinions of the assessment team regarding the relative importance of each input dataset in determining overall forest health priority. Weights were determined iteratively by the project team and numerous combinations of weights were analyzed and tested. We will add a short explanation of the weighting and how it was determined.

Question: Re Tables of Input datasets with weighting Values. I note in the tables for Burn Severity, Mechanical Treatment, and Housing Density, the Values of 2, 1 and 4, respectively, are used for different categories. In Burn Severity, the categories of Moderate and Low have a value of 2. For Mechanical Treatment, the categories of Steep and Wilderness have Values of 1. On Housing Density, the categories

of 0.4-1 and >1 houses/acre have values of 4. What are the references/rationales for this same Values? It might be instructive to change the Burn Severity Values for Low to 3, and Housing Density Value for > houses/acre, and see how that affects the outcome. I suspect Tukman has done this.

NCRP Response: Perhaps it makes more sense to collapse the classes that share the same value within each input dataset. We attempted to do this with the Burn Severity input (areas with Moderate and Low severity have equal priority so they both receive a score of 2), but we were inconsistent in doing so for other inputs (e.g., the Housing Density categories of 0.4-1 and > 1 houses per acre could be combined into a single class called "> 0.4 houses/acre"). Adding short explanations of why these classes receive the same value for each input may be helpful as well. We will combine classes with the same value within each input and add brief explanations of the rationale for lumping classes together where necessary.

Question: Re: "The six input layers above are weighted based on relative importance and combined to create a composite map of treatment priority for the North Coast Region." From the Logic Model page, "Each input dataset is divided into classes with corresponding scores ranging from 0 to 4 (see next graphic for details) and weighted by its relative importance in determining overall suitability for treatment. The weighted inputs are then combined to produce a raw suitability score (2-48)." By "classes with corresponding scores ranging from 0 to 4" do we mean "Values" from the Tables? If so, say so. I think we should use consistent terminology.

NCRP Response: Yes, "scores" and "values" both refer to the numbers assigned to each class. Using consistent terminology would make this less confusing. We will change the language here to refer to these numbers as "values."

Question: From the Logic Model page, explain how we developed the Weighing factors of 1-3. What are the references/rationales for this relative ranking? Is this an "Expert Witness" ranking?

NCRP Response: This is an "Expert Witness" ranking - the weighting values were determined based on the opinions of the assessment team regarding the relative importance of each input dataset in determining overall forest health priority. Weights were determined iteratively by the project team and numerous combinations of weights were analyzed and tested. We will add a short explanation of the weighting and how it was determined.

Question: Re: "...and remaining areas are ranked by their raw priority score on a scale of 2-48. Lastly, these raw scores are converted to a 0-5 scale..." Explain how we go from 2-48 to 0-5. If we divided 46 into 5 categories (which doesn't divide up evenly), where are the breakpoints and why were those breakpoints chosen. What are the references/rationales.

NCRP Response: In this final step, the scores of 2-48 get reclassified into quintiles, which are coded as 1-5. This classification scheme is based on a desire to create different forest health priority tiers that cover a roughly equal area on the landscape. To achieve this goal, we divided up the pixels with a raw score range of 2-48 into a reclassified range from 1-5. This was done by doing a 'slice' in arcgis spatial analyst,

and results in a relatively equal number of acres in classes 1-5. We will add a short explanation of the rationale behind the quintile classification for the final forest health priority maps.

Question: Re Sub-Regional Forest Health Priority Area Map - “These broader zones were then further split up by ecoregion and partially along county jurisdictional boundaries...” We need a reference and short explanation of “ecoregions.” Explain where you choose ecoregion over County boundaries.

NCRP Response: We used a combination of county boundaries, ecoregions, and burn probability to create the ecoregions. Burn probability, ecoregions, and pyromes were used so that regions with very distinct vegetation communities and fire dynamics were in different subregions. The redwood region, for example, which generally has lower burn probability than the interior mountains, was in its own subregion. We will add a short explanation/reference(s) to the story map to clarify the determination of sub-regional boundaries.

Question: “The sub-regional map differs somewhat from the regional map because the priority rankings were assigned within a single sub-region at a time to provide a more nuanced view of treatment priority within each sub-region. I am unclear on what this statement means in terms of explaining why the “sub-regional map differs somewhat from the regional map”. From the Logic Model page, “For any given 30x30 meter pixel on the landscape, the scores for all variables are added up and weighted (weights are shown above in the logic model).” We should explain how this calculation is different for the Regional and Sub-Regional maps. Explain how the “nuanced view” is calculated.

NCRP Response: The scoring for the regional and sub-regional maps differs only in the final step in which the “raw priority score” is divided into quintiles. For the regional map, this final ranking considers all areas in the North Coast region and assigns the priority value for a given area based on that area’s percentile within the entire region. The sub-regional version, on the other hand, assigns this final priority value based on an area’s percentile within its designated sub-region only. For example, a given pixel on the landscape may have an overall raw priority score in the 70th percentile for the North Coast region but in the 85th percentile for the sub-region that contains it - in this case, the pixel would receive a score of 4 on the regional map and a score of 5 on the sub-regional map. The “nuanced view” just refers to the fact that each pixel is ranked in relation to other pixels within the same sub-region only, which results in slight differences between the regional and sub-regional versions and may help minimize the effect of variation in conditions between sub-regions. We agree that adding a short explanation of the scoring differences between the regional and sub-regional maps is a good idea and will add/change some of the language in this section to increase clarity.

Question: Re: Co-Benefits of Forest Health Treatments. Same comments here as I made in the Sub-Regional Forest Health map concerning how the sub-regional and regional maps differ.

NCRP Response: See response and proposed action above.

Question: Re: Proposed Changes Slide. Really glad you are considering updates with info from experts. What is the source of data for vegetation type and crown fire probability? Existing data?

NCRP Response: The vegetation type data is an existing dataset from CAL FIRE FRAP (). The proposed dataset for crown fire probability is the Fire-Type Probability dataset from Pyrologix (<https://pyrologix.com/reports/Contemporary-Wildfire-Hazard-Across-California.pdf>). Once these updates are made, we will add information on data sources to the story map.

Question: Is there a better method to access mortality? Seems like color air photos would be a great source. The Lidar data also provide a good data set.

NCRP Response: New Lidar that is pending for the North Coast region will definitely be a huge help and, when used in combination with existing datasets like 4-band NAIP, should provide the foundational data needed for better tree mortality mapping.

Comment: I think these layers and final priority maps should be made publicly available and be used in grant application. I prefer geodatabases, but I could see these being in a series of rasters.

NCRP Response: Yes, we want to make the final input layers and public priority maps available to the public. This would be in the form of tiled imagery layers on the NCRP website and ArcGIS Online, but probably also in a downloadable form such as rasters/a geodatabase. The draft versions are currently available as tiled imagery layers and can be found in the NCRP CAL FIRE Forest Health Pilot Regional Assessment Web Map: <https://arcg.is/yaCe81>. We will make the final versions of the assessment inputs and outputs available to the public for online use and download.

Comment: Fire severity assessment timing question. As part of the USGS Post Fire Debris Flow Susceptibility mapping, Fire Severity is assessed within days of the fire containment.
https://landslides.usgs.gov/hazards/postfire_debrisflow/

NCRP Response: NCRP team will reach out to this commenter to determine specific recommendations for the application of these data.

Comment: I think a follow up meeting/presentation would be very useful that describes the changes made to the model and rationale for each change, plus an explanation of suggested changes not made and the rationale.

NCRP Response: We agree that a follow-up meeting would be useful. We will aim to hold a follow-up meeting in which we summarize the changes made to the model based on feedback and the suggested changes that were not made (and why they were not made). We would also like to provide an opportunity for questions/comments on the decisions that were made based on people's suggestions. This will likely be included in an upcoming workshop for prospective project sponsors, where NCRP will share the input and updates to the regional screening level assessment, provide information about how this assessment can be used for project development (and what its limitations are), and hear additional data needs of project sponsors.

Question: Frankly, we are deeply concerned that this document, which purports to be about “Forest Health,” appears in fact to be aimed at locating where tree removals can most efficiently occur under the guise of “fuel load reduction,” without regard to potential long-term damage to forest ecosystems. CalFire appears to have pivoted away from the goals of saving lives and property from fire, and towards “forest health.” How is “forest health” being defined? How is it being monitored after removals and what forest health indicators are used? We understand that CalFire is targeting 1 million acres per year for “vegetation management” and that this Pilot Study focuses on 91,000 square miles in 6 counties to enact this policy at the regional level.

NCRP Response: NCRP team is not clear on the basis for this comment – the NCRP workshop was focused on requesting input on a screening level assessment and story map that addresses a very limited number of forest health metrics that can be derived from regional spatial data, and that may support the prioritization of forest health activities, as part of a CAL FIRE/NCRP Forest Health Pilot. As mentioned above, this initiative tiers from the Vision for North Coast Resilience and is guided by NCRP Goals and Objectives related to ecosystem and community vitality. Projects have not yet been submitted by partners, nor evaluated by the NCRP technical team, Leadership Council or CAL FIRE. We invite a further conversation with the commenters to enhance understanding of the NCRP and its goals and initiatives.

This modeling effort provides a screening tool that helps NCRP, land managers, Tribes, and other project proponents and community members prioritize forest health (including, but not limited to) forest health and wildland fuels reduction activities on the landscape, especially in wildlands near communities. Treatments proposed by local project sponsors in NCRP Forest Health Pilot projects are expected to include cultural use of fire, prescribed fire and managed fire, as well as ladder fuel removal, thinning from below, and removal of small diameter fuels from overly dense stands. These treatments not only reduce fuel levels but also increase wildfire resilience when implemented correctly⁴. Years of fire exclusion and a lack of Indigenous burning on much of our landscape has led to out of balance, overly dense forests and higher fire severity when wildfire does burn⁵. Reinstating historical forest conditions in these areas by removing ladder fuels and smaller diameter trees allows treated forests to experience lower tree mortality rates during severe droughts and to be more resilient to wildfires⁶. The addition of prescribed burns (after initial mechanical treatment) further enhances understory plant community diversity and further improves forest health and forest resilience. In most cases, there is no market for the small diameter material removed from the forest during these costly mechanical treatments. As a

⁴ Jain, T.B., Abrahamson, I., Anderson, N., Hood, S., Hanberry, B., Kilkenny, F., McKinney, S., Ott, J., Urza, A., Chambers, J., Battaglia, M., Varner, J.M., O'Brien, J.J., 2021. Effectiveness of fuel treatments at the landscape scale: State of understanding and key research gaps. JFSP PROJECT ID: 19-S-01-2. Boise, ID: Joint Fire Sciences Program. 65 p. <http://www.fs.usda.gov/treesearch/pubs/63869>

⁵ Scott L. Stephens, James D. Mclver, Ralph E. J. Boerner, Christopher J. Fettig, Joseph B. Fontaine, Bruce R. Hartsough, Patricia L. Kennedy, Dylan W. Schwilk, The Effects of Forest Fuel-Reduction Treatments in the United States, *BioScience*, Volume 62, Issue 6, June 2012, Pages 549–560, <https://doi.org/10.1525/bio.2012.62.6.6>

⁶ Sankey, T., Tatum, J. Thinning increases forest resiliency during unprecedented drought. *Sci Rep* 12, 9041 (2022). <https://doi.org/10.1038/s41598-022-12982-z>

result, this important work would likely not proceed were it not for CAL FIRE's funding. In 2022 and 2023, CAL FIRE distributed 93.1 million dollars for 17 projects statewide. The list of recipients, and project descriptions, is [here](#).

Comment: Studies show that the most effective way to protect lives and homes from wildfires is through home hardening and the maintenance of defensible space up to 100 feet away. Beyond that, vegetation removal can be largely ineffective ⁷and can even exacerbate the spread of fire by opening the way for the wind-driven flying embers which cause 95% of the fires that are destructive to homes and communities. Vegetation removal dries out the soil and allows for the incursion of non-native species that are often more flammable than the vegetation that was removed in the first place, thus creating the need for an endless cycle of removals. Wildfire has been an essential process in California ecosystems for millennia. Indeed, many ecosystems are fire-adapted with plants that require fire to reproduce. Wildfire can be not only beneficial but necessary for the health of forest ecosystems.

NCRP Response: As described in the [Fire Resilient Forests Strategy](#) of the [Vision for North Coast Resilience](#), NCRP and regional partners strongly support cultural burning, managed fire, and prescribed fire as key tools for restoring and maintaining forest health. The Vision for North Coast Resilience was developed in collaboration with input from over 500 entities and individuals in the North Coast region and beyond over a three year period. This shared vision for resilience represents input about priority actions from Tribes, counties, NGOs, RCDS and citizens in the region, and multiple versions of the draft were shared for public input via the NCRP website, meetings and workshops. NCRP, regional partners and state partners understand and strongly agree with the critical importance of tools such as cultural and prescribed fire, and the need for their much wider implementation on the landscape in the coming years. The [Fuel Management Solution](#) of the Vision Plan also supports policies that promote managed fire, the strategic choice to manage unplanned ignitions to achieve objectives such as ecosystem restoration or hazardous fuel reduction, where and when it is appropriate⁸. As Stephen Pyne has eloquently articulated, we need 'Fires of choice, not fires of chance'⁹.

NCRP supports the "homes-outward" approach to community safety, and supports the information that the commenter included in citation 7 below that the best area to focus on home/development ignition resistance is to focus in the 100feet around structures.

Of the \$93 million that CAL FIRE distributed statewide for Forest Health Projects in the 2022-2023 cycle, the largest amount of funding in the NCRP area (\$7 million) went to the Mid Klamath Watershed Council to 'implement the Western Klamath Restoration Partnership's innovative plan to restore fire processes in the Klamath Mountains¹⁰.' This funding is being used to bring cultural burning practices to a

⁷ [Wildland--urban fire disasters aren't actually a wildfire problem \(usda.gov\)](#)

⁸ Dale, L. A., & Barrett, K. (2023). Missing the Mark: Effectiveness and Funding in Community Wildfire Risk Reduction. *Columbia University Academic Commons*.

<https://academiccommons.columbia.edu/doi/10.7916/tsrx-r694>

⁹ Kolbert, Elizabeth. "The Perverse Policies That Fuel Wildfires." *The New Yorker*. Link to the article.

¹⁰ [Link to CAL FIRE list of 2022-2023 projects](#)

landscape scale across this very remote part of our region in a way that serves as a model for the state and the nation.

Comment: We will never be able to prevent all wildfires, but we can try to protect human lives and property by not building new homes in fire zones. We can prevent human-caused ignitions, including from power lines, keep evacuation routes free, harden structures and maintain defensible space. We can support traditional cultural burning by Native tribes, in accordance with their age-old practices which are based not on the fear of fire with a view to prevention, but working with fire as an ally to promote the health of the plants they use for food, medicine, fiber, and building materials.

NCRP Response: NCRP agrees with this comment. Please see the [Fire Resilient Forests](#) strategy and the [Community Health and Safety](#) strategy from the Vision Plan, representing this shared vision articulated by regional partners. NCRP advocates a homes-outward approach to hazardous fuel treatments intended to protect communities, beginning with home hardening and defensible space, and moving outward to incorporate road treatments, multi-benefit community fuel breaks, protection of community infrastructure, and other measures, including the development of land use policies that support fire safe communities. This approach is compatible with the Indigenous practice, shared by Karuk cultural fire practitioners, of using different kinds of cultural fire, with different frequencies and intensities, at different distances from homes, villages, and different types of cultural and subsistence resources. A major goal is to increase the amount of ‘good fire’ on the landscape - fire that burns at low and moderate intensity, stays near the ground, and ‘treats’ the ladder fuels and dense understory fuels, creating landscapes that are more resilient to high severity fires (those that are much more difficult to control than their low and moderate intensity counterparts.) This goal includes supporting the recommendations in the Good Fire Report¹¹ which will increase the ability of cultural fire practitioners to practice good fire across the region.

Comment: On the one hand, the document states, For this Pilot, NCRP is identifying and prioritizing projects in the CAL FIRE Forest Health Categories listed below:

1. *Forest fuels reduction*
2. *Prescribed fire*
3. *Pest management*
4. *Reforestation*
5. *Biomass utilization*

But on the other hand, “Prescribed fire and reforestation are not explicitly featured...” and pest management and biomass utilization are not mentioned again. It is alarming that biomass utilization is listed at all.

¹¹ Clark, S.A., Miller, A., & Hankins, D.L. 2024. *Good Fire: Current Barriers to the Expansion of Cultural Burning and Prescribed Fire in California and Recommended Solutions*. Karuk Tribe. Retrieved from <https://karuktribeclimatechangeprojects.com/good-fire/>

NCRP Response: This assessment is a screening tool and is intended to help prioritize projects related to forest fuels reduction, with some potential limited application to biomass utilization. Regional Assessments, Spatial Analysis, and Modeling is one of two equally important first steps in NCRP's Adaptive Planning and Prioritization Framework (APPF). The second is Indigenous Science, TEK, and Local Expertise, which is gathered from Tribes and other regional partners via many methods (including public workshops like this one) and the feedback solicited from them. NCRP expects that this Pilot will include projects focused on ecological restoration/reforestation, as well as prescribed fire and cultural burn projects, however the needed high resolution spatial datasets to do landscape scale prioritization of such projects do not currently exist, and NCRP expects that the rationale for these projects will be derived from local expert knowledge from practitioners on the ground. Prescribed and cultural fire projects will be prioritized based on traditional ecological knowledge and local expertise. NCRP is in the process of developing a regional biomass strategy that considers biomass utilization through the lens of NCRP principles and goals, including ecosystem and biodiversity protection, climate resilience, emissions avoidance, local economic vitality, and community health and safety.

Comment: *There is a heavy emphasis on fuels reduction, hazardous fuels, and build-up of wildlands fuels. The Assessment assumes that all forest "fuels" are hazardous and a "risk to forest health." Yet miles from human communities, areas that are "thinned" in the name of fuel load reduction have a less than 1% chance of ever even encountering a wildfire, according to studies recognized by the USFS.*

NCRP Response: This assessment is one tool in a much larger prioritization framework, and is intended as a screening tool to help evaluate and prioritize projects related to forest fuels reduction via mechanical thinning. Cultural fire, prescribed fire and restoration take place at scales that are not appropriate for this type of regional spatial assessment, and the prioritization of these types of projects will be determined based on other factors such as local expertise, indigenous and western science. As described above, NCRP actively supports prescribed fire and cultural burn projects, as well as ecological restoration and land conservation, and expects that the Pilot will include projects submitted by partners that include cultural fire, prescribed fire, managed fire, ecological restoration and possibly environmentally sensitive biomass utilization.

Question: *What is the definition of forest health? George Wuerthner clearly describes the difference between the foresters' view and the forest ecologists' view, one valuing wood as a commodity, the other as an essential, living, ecosystem. Foresters view disturbances as threats that must be managed, leading to tree and understory removal and loss of valuable habitat, while ecologists view forest disturbances as healthy processes necessary to maintain biodiversity¹².*

NCRP Response: NCRP's mission is not focused on forests as commodity – see Vision Plan described above. NCRP agrees that forest disturbance, especially fire, needs to be returned to the landscape at a much broader scale. See comments above.

¹² <https://www.thewildlifeneeds.com/2018/03/29/forester-vs-ecologist/>

Question: How many forest ecologists, rather than only foresters, have been involved in the development of this plan?

NCRP Response: NCRP has multiple staff and consultants that are ecologists that were involved in the development of the Vision for North Coast Resilience, and (as described above) the Vision plan was informed by over 500 entities and individuals in the North Coast region and beyond. Contributors included ecologists, indigenous science experts, planners, data and analysis experts, agency representatives, and other experts from Tribes, NGOs, RCDS, county government, local, state and federal agencies. NCRP has not quantified the exact number of forest ecologists vs registered professional foresters, but the staff team estimates that the ratio of ecologists to foresters is likely 5:1. As described above, this regional screening level assessment is one small element of the CAL FIRE Forest Health Pilot, which is designed to implement key strategies outlined in the Vision Plan.

Question: Scoring is based on unburned and severely burned forests. Has North Coast Resource Partnership (NCRP) done any mapping to indicate how previously thinned forests burn fast and intensely? And related to that question: What about logged and unlogged forests? Both the MTBS and RAVG studies cited are fire studies. What studies have been done on the impact of vegetation removals on forest ecosystems? What does it mean that only unburned or severely burned forests are being considered, and thought to have higher fuel loads?

NCRP Response: As previously stated, this assessment is a screening tool used as one factor to assist with prioritizing projects. It does not follow from the existence of this screening tool that only unburned or severely burned forests are being considered for projects. Any project submitted will be considered and scored based on a wide range of criteria, of which spatial data is only one small screening element to evaluate opportunities at the scale of the 19,000 square mile north coast region. Unburned forests receive a higher prioritization in this assessment. Projects will not be ruled out if the area has burned at low or moderate intensity, but the assumption is that these areas have been ‘treated by fire.’ Areas the recently burned at low to moderate severity likely experienced fire effects in line with historic conditions and the fire likely helped reinforce stability and resilience. While this may also hold true for unburned or high severity burned areas, they could also indicate areas with more specific treatment needs. Only local knowledge and experience can evaluate that need and the screening tool is intended to draw attention to those areas to encourage local review and solutions.

Question: Recently treated and non-woody areas score 0. Treated forests are those that have already been subjected to “thinning.” Are cumulative impacts considered? “Thinning” itself can kill over 50% of the trees in a given stand, including mature trees. That number of trees removed needs to be taken into account when assessing fire severity. A study of over 1,500 wildfires concluded that treatments themselves can result in higher severity fires, (Bradley et al, 2016)¹³. According to a study covering almost 141 million acres across 11 states and 74 national forests, fuel treatments are not ecologically appropriate in many fire-prone ecosystems and their effectiveness at landscape scales is limited.

¹³ <https://esajournals.onlinelibrary.wiley.com/doi/full/10.1002/ecs2.1492>

Wildfires rarely interact with treatments before fuels recover to hazardous levels, and treatments are generally not designed to be effective during the extreme weather and fire behavior conditions associated with the small number of large, destructive fires that escape initial containment. (Downing et al, 2022)¹⁴.

NCRP Response: Downing’s study is a national one, and the sentence before the one you quote reads ‘In some contexts, strategically placed fuel treatments can reduce fire severity and local fire spread’ and Downing cites two papers (one by Prichard in Washington State, and one by Stephens in California) that demonstrate the effectiveness of treatments in California and Washington ecosystems. High-priority projects proposed by North Coast Tribes, NGOs, RCDs, agencies, counties and other partners are expected to be strategically placed so that they help reduce the risk of catastrophic fire to both the ecosystems and the communities of the North Coast, and so that they provide an opportunity to anchor suppression activities to prevent future catastrophic fire, and pave the way for more managed fire, prescribed fire, and cultural burns. NCRP scoring criteria for the CAL FIRE Pilot take into account a variety of objectives related to ecological, climate and forest health benefits

Question: *Given that fire spreads faster through grasslands than through forests, why are grasslands omitted from the study? Given that we are in the midst of both a climate crisis and the sixth extinction crisis, what is being done to safeguard forest ecosystems and the life they support, including for example roosting, nesting, and feeding sites for birds, insects including pollinators, fungi, and the complex underground networks of mycorrhizal and other interactions that have barely begun to be understood yet? What are the dangers of removing swathes of trees across the landscape, which at the very least will result in drying out of soils and surrounding vegetation, changes to flora and fauna, and the decimation of a great deal of wildlife habitat as trees and understory are removed to be chipped or masticated? The section on mechanical equipment focuses on where it is physically feasible to use this equipment, without constraints. What will be the impact of this heavy equipment as it leaves areas devoid of vegetation, and compacts soil, leading to further desiccation of the soil, erosion into creeks and waterways, and even possible landslides? Will NCRP conduct specific measures of soil moisture and soil microorganisms before and after treatment?*

NCRP Response: As described above, NCRP’s mission is strongly focused on ecosystem function, biodiversity protection and forest health, and the evaluation process that NCRP has in place would not support funding projects that result in the outcomes you describe above. Grasslands are included in NCRP’s long term, overall assessments of North Coast ecosystems and landscapes, but in this particular assessment , since this assessment is focused on one element of the Forest Health categories - the prioritization of mechanical treatments. NCRP supports projects where prescribed and cultural burns are used in grasslands, and projects that eradicate invasive grasses and weeds. As native species are reestablished, the goal is to focus on ignition reduction strategies to keep these areas from burning too frequently compared to historic rates. This particular screening level assessment does not address these

¹⁴ <https://www.nature.com/articles/s41598-022-06002-3>

types of projects. NCRP expects that project sponsors may request funding for grassland restoration projects under this CAL FIRE Pilot program.

Question: This study is based on computer modeling. How much ground-truthing is being incorporated to examine the actual impacts on the ground a few years after fires to determine how burned forests have revived and regenerated, or how logged areas have fared in terms of regrowth, invasive species, etc.? Often burned forests left to recover without being logged regenerate with vibrant, abundant growth. “Tree mortality” is assumed to be a negative, but post-fire forests with standing snags are extremely rich wildlife habitat, providing homes for a wide variety of species. Tree mortality in and of itself is a natural process, whether caused by fire or pests or other natural causes. Dead trees are an important part of living ecosystems. They provide habitat, feeding, and nesting sites, and are also important for building soil and soil structure as they slowly decompose in place¹⁵. Also, as mentioned above, tree mortality due to thinning itself does not appear to be included in the Assessment. For precise cumulative impacts, any tree mortality resulting from treatments needs to be taken into account.

NCRP Response: NCRP is not engaged with logging and it is not part of the NCRP mission or focus. NCRP concurs that burned forests left to recover without being logged often maintain vibrant, abundant growth. This is especially true for areas that have experienced low to moderate severity wildfires that have burned within the historic range of variation, where cultural/prescribed/managed ‘good fire’ has reduced the density of smaller diameter fuels (including ladder fuels) and reduced competition among remaining trees for water and resources, which makes them more resilient to pests, diseases, and severe wildfires. NCRP also agree that snags provide critical wildlife habitat and should be retained in many cases. Widespread tree mortality may have negative consequences to ecosystems and human communities, though of course the degree of impact (or benefit) from tree mortality is geographically and place dependent and cannot necessarily be generalized. Please see the [Post-Fire Ecosystem Restoration Solution](#) in the Vision Plan for more discussion of this topic. NCRP does not implement projects – it facilitates projects by supporting local experts (Tribes, NGOs, RCDs, etc) and these entities have years of experience stewarding the land in the North Coast region, and will be monitoring their projects in a variety of ways and reporting on outcomes via the NCRP project tracker tool. NCRP and partners will continue to monitor and track changes across the landscape over time, both in actively managed areas and elsewhere, to understand impacts, changes, and to adaptively manage and address climate change-induced stress on these important landscapes.

Question: The incorporation of maps from The Nature Conservancy is not reassuring. A coalition of 158 scientists, environmental, forest protection and racial justice groups exposed TNC’s involvement in large-scale industrial logging, wood products, and biomass energy interests¹⁶. What is the relationship between TNC and NCRP?

¹⁵ <https://www.fws.gov/story/life-beyond-death-tree>

¹⁶ <https://dogwoodalliance.org/2022/04/release-the-nature-conservancy-exposed-for-promoting-industrial-logging-and-wood-products/>

NCRP Response: NCRP has no affiliation with The Nature Conservancy, and does not have goals or objectives related to large-scale industrial logging, wood products, and biomass energy interests.

Question: How will the evaluation, assessment, and reporting, of projects be achieved and what will be included, especially in regard to impact on intricate living ecosystems, wildlife habitat, viability of species affected by removal of habitat, changes to flora and fauna, impacts to soil, water quality, natural processes, and ecosystem functions? Will there be monitoring for impacts? Will there be “control” areas that are left intact for comparison? Will there be before-and-after studies? Who will carry out these studies and this monitoring and what qualifications will they have to do so? How will the process be halted if it turns out to be damaging and destructive to forest ecosystems and habitat?

NCRP Response: NCRP has a very strong focus on ecosystem protection, enhancement, and biodiversity and those are criteria in the RFP packet that will be provided to local project sponsors, and evaluation criteria that will be used to prioritize and select projects. NCRP does not implement projects – it facilitates projects by supporting local experts (Tribes, NGOs, RCDs, etc) and these entities have years of experience stewarding the land in the North Coast region, and will be monitoring their projects in a variety of ways and reporting on outcomes via the NCRP project tracker tool.

Question: We are alarmed about the impact on climate from the release of carbon into the atmosphere by removal of millions of trees over such a large area. The prevalent idea, that wildfires emit more carbon than forest treatments, has been proved to be incorrect by a large margin. Multiple studies on the harmful impacts of forest extractions include one by Bartowitz et al (2022), stating that “...increasing harvest of mature trees to save them from fire increases [carbon] emissions rather than preventing them¹⁷.” Climate scientists agree that the best thing we can do for the climate is to protect existing trees¹⁸. Larger trees store and sequester more carbon than smaller trees. In terms of climate change, the best advice always seems to be “leave it in the ground,” and this is true of trees as well as fossil fuels. Carbon is released when trees are removed, and far more carbon is released when trees are cut down than when they are burned by wildfire or left in place to slowly decompose over time.

The Priority Landscapes web application emphasizes timber removals:

- *Standing timber: Shows the estimated commercial timber volume on lands available for harvesting. Standing Timber was primarily derived from LEMMA Structure Maps... Lands not available for timber harvest were removed... Site quality: This shows the productivity of timberland, based upon potential volume of wood (i.e. cubic feet) that can be produced per acre in a year... It shows the potential timber volume produced... Large trees: Derived from FRAP vegetation layer FVEG15 (WHRSIZE), which in turn (for this attribute) came from CALVEG data of the USFS. Tree size class scores were 1=(6-11" DBH), 3=(11-24" DBH), and 5=(over 24" DBH).*

¹⁷ <https://www.frontiersin.org/articles/10.3389/ffgc.2022.867112/full>

¹⁸ <https://www.ehn.org/forest-carbon-sequestration-2649749746.html>

This brings up the question: Is anything off limits? Will there be protections for trees of any size (DBH), age, species, or in any area e.g. riparian zones, timing? Again, it seems that the real reason for the study is to locate where most timber can be removed from the forests under the guise of “forest health.”

NCRP Response: Data and what organizations do with data are two very different things. As mentioned previously, this regional screening level assessment is one small element informing the NCRP CAL FIRE Forest Health Pilot, is only focused on one CAL FIRE Forest Health Category, and will not be driving decision making. NCRP does not have goals and objectives related to timber harvest, however NCRP uses data from a variety of federal and state agency sources, as well as academic, Tribal, NGO, and local agency data to evaluate the landscape and inform priorities. NCRP encourages you to look at the projects that were completed under the Cal Fire Forest Health Program last year to determine whether those projects appear designed to remove timber from the forests and sell that timber. The projects are listed [here](#). In the North Coast region, recipients for the 2022-2023 funds for this program included the [Mid-Klamath Watershed Council](#), the [Eel River Recovery Project](#), and the [Watershed Research and Training Center](#). NCRP does not anticipate millions of trees being removed under this Pilot, nor does NCRP know at this point what types of projects will be submitted and ultimately approved by the NCRP Leadership Council for this Pilot – it is quite possible that all or a majority of the proposed project activities may include cultural fire and ecological restoration, with few or no projects submitted that propose mechanical treatment. This regional screening assessment is meant to support the NCRP technical committee and project sponsors in considering potential fuel load reduction projects – it is one limited element in a comprehensive NCRP CAL FIRE Forest Health Pilot that is requesting projects via an RFP that include ecological restoration, cultural fire, prescribed fire, managed fire, and environmentally sensitive biomass utilization.

Comment: *Biomass utilization is listed as a priority with no further explanation and was mentioned with minimal discussion during the February 22 webinar. Biomass energy is not clean, renewable, or carbon neutral¹⁹. It has extremely negative health impacts on local communities, and especially, most often, on the low income communities where facilities tend to be situated. If social equity is truly to be considered as part of this process, the priority would be not to install facilities or support the processing of wood for biomass energy or biofuels. They are a threat to human health and local communities as well as to the future of forest ecosystems²⁰.*

NCRP Response: Please see the [Forest Biomass Residuals Solution](#) from the Vision Plan for an explanation of NCRP’s approach to this topic. As mentioned above, NCRP is working on a regional biomass strategy that evaluates ways that biomass removed for fuel load reduction can be utilized at the local scale in a manner that supports ecosystem function and community health and safety. NCRP will be sharing public drafts of the regional biomass strategy for community input.

¹⁹ https://www.biologicaldiversity.org/campaigns/debunking_the_biomass_myth/pdfs/Forest-Bioenergy-Briefing-Book-March-2021.pdf

²⁰ <https://www.dsawsp.org/environment/biomass-energy>

Question: There is overlap between the areas of removal as defined by recent Golden State Natural Resources (GSNR) maps and the North Coast region. Can you reassure us that there is no link between this NCRP Pilot study and the massive biomass facilities being proposed in Tuolumne and Lassen Counties, to ship forests in the form of wood chips, at the rate of 1 million tons per year, from the port of Stockton, on the international market?

NCRP Response: There is no link between the listed project and the NCRP. A project such as you describe would not be eligible for funding under the NCRP Cal Fire Forest Health Pilot, nor is a project like this part of the upcoming NCRP Regional Biomass strategy. We encourage you to learn more about the NCRP's emerging position on biomass, and when it is available we hope that you will review the draft strategy and offer your insights and recommendations.

Questions and Answers from the Workshop Chat/Q&A (2/22/2024)

What is the process for submitting suggested edits and feedback for consideration?

Provide questions or written feedback by March 15, 2024 to Karen Gaffney
kgaffney@northcoastresourcepartnership.org

Where can we find "Cal Fire Forest Health Priorities"?

<https://www.fire.ca.gov/what-we-do/natural-resource-management/forest-health>
<https://www.fire.ca.gov/what-we-do/grants/forest-health>

How are "resilience" and "forest health" defined? What are the specific indicators for each?

CAL FIRE does not define what a resilient forest looks like, instead their procedural guide has goals such as addressing health and resilience to catastrophic events including drought, encouraging disaster resilience, helping protect the upper watersheds, long-term storage of forest trees and soils through reforestation and forest fuel reduction, and reduction of pests. NCRP has a strong focus on ecosystem function and biodiversity and has some preliminary forest health and resilience criteria built into the draft packet that is currently being worked on that builds on the foundation that CALFIRE articulated above. A workshop participant offered that a definition of Forest health – a major objective of sustainable forest management – is conceptualized as forest's long-term ability to provide, over sufficiently large areas, diverse ecological services, host biodiversity, and buffer external stress and disturbance (Trumbore et al., 2015; From: Forest Ecology and Management, 2021).

How do you measure GHG reductions?

<https://tools.airfire.org/playground/v3.5/emissionsinputs.php>

NCRP looks at carbon stocks and the ability of the forest to remain intact and not lose large amounts of carbon in the event of catastrophic fires in the form of emissions. While catastrophic fires burn many more acres at a time than a beneficial fire, actual carbon released in the plume differences can be around 10-20% higher in a catastrophic fire vs beneficial. The massive carbon difference occurs from the

loss of sequestration in the years following the fire as well as if a fire occurs about 15 years after the first fire, consuming and emitting all of the fallen snags left from the first fire. The co-benefit of these projects will decrease ladder fuels, increase resilience to future fire and impart that resilience across the landscape, resulting in less catastrophic fires in the future.

Is the 8-foot flame region inclusionary for treatment to prevent that in a wildfire, or exclusionary?

It is inclusionary and based around probability of flame length in areas exceeding 8 feet and does not include probability of anything below 8 feet. The highest priority score goes to areas that have the greatest probability of 8 foot or greater flame lengths. This Pyrologix reference report has more information about how those inputs are derived:

<http://pyrologix.com/reports/Contemporary-Wildfire-Hazard-Across-California.pdf>

How does the fire probability relate to or overlay current and on-going projects?

Currently, the model does not include this, but the suggestion will be considered for future integration.

Could the Burn Severity scored area be disputed by a viewer especially at the local level?

Yes, partners working on the ground in the region will inform local data.

Types of mechanical treatments differ and may not result in traditional species being supported. More detailed information, or a qualifier statement may be needed here. Should mechanical Treatment Feasibility be disputed as scored?

<https://www.nwcg.gov/course/ffm/vert-horiz-and-slope/41-flame-length>

Yes, partners working on the ground in the region will inform local data.

How many years before MBTS and/or RAVG assess areas as "high severity"? What is the accuracy of USFS mortality; do they ground truth their aerial surveys?

The MBTS and RAVG are annual data sets. Every year they assess areas that have burned larger than 1000 acres and map burn severity from low to high in those footprints. Aerial surveys done by USFS performed by a fixed wing aircraft mapping patches of mortality. These are not assessed for accuracy, but it is the best form of data available to map mortality on the landscape, although not a perfect data set especially when relying on statewide or national mapping programs. Tukman Geospatial is hoping to improve the mapping of these areas with LIDAR data coming available soon.

Where is the forest type, fog, and weather data?

This model does not make value assessments about forest types. There is no way to show the difference in value between thinning ladder fuel in one type of forest versus another. It is by design that the model does not prioritize forest type. Making value choices between different plant communities is difficult. How do we say that the redwood zone is more important than interior oak woodlands? Future assessments may include that, but this one does not. LIDAR data may be supportive in certain areas and some tradeoffs may need to be made based on scale, resolution and cost and local knowledge will be relied on to support the assessment.

CAL FIRE Very High Fire Hazard Severity maps are not changing as our landscape is with wildfire or prescribed fire, or treatments - seems we are still using old data?

Tukman Geospatial is not using the Very High Hazard Severity maps in this analysis. They are using the Pyrologix data sets that have up to date fuelscapes that reflect the landscape after the last 10 years of fire and are kept up to date. When Pyrologix runs the fire simulator to create the burn probability and flame length predictions they take into account recent weather conditions. Here are the latest maps effective 4/1/2024: <https://osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones>

When we go to run the GHG emissions at the website provided, prescribed fire under moist conditions produces less than half the emissions produced by wildfire under the same conditions, which does not seem to make sense. If conditions are moist, wildfire too can burn with patchy/low intensity. Can you talk about these models? Here is the link provided. Thanks.

<https://tools.airfire.org/playground/v3.5/emissionsinputs.php>

This is a really good question. There must be assumptions behind the scenes in this Forest Service model that result in this discrepancy. We suggest that you contact Sim Larkin (sim.larkin@usda.gov), the contact provided by the Forest Service for this tool.

Where is the input data on weather?

Weather input in this assessment is built into the Pyrologix work.

Is there any recognition that fire has been an essential part of the landscape for millennia, even necessary for some species? Given that we are in a biodiversity/extinction crisis, how will impacts of removals on wildlife habitat, species, soils, water, be measured? Before/after surveys? Control sites which are left alone? Is anything off limits e.g. size of trees, particular species of plants or animals, riparian areas, distance from structures? How do we know that extraction at this level will in fact be beneficial for forests habitats? "Tree mortality" is more certain if a tree is cut down than if it is left to die slowly for whatever reason, returning to the soil. It seems that these habitats are being treated only as "fuels" rather than living organisms and essential life support systems?

NCRP has a very strong focus on ecosystem protection, enhancement, and biodiversity and those are criteria in the RFP packet that will be provided. NCRP does not implement projects – it facilitates projects by supporting local experts (Tribes, NGOs, RCDs, etc) and these entities have years of experience stewarding the land in the North Coast region, and will be monitoring their projects in a variety of ways and reporting on outcomes via the NCRP project tracker tool.

Can resilience drop when soil moisture is lost due to mechanical treatments? We know that soil forest carbon as well as soil moisture is lost during and after mechanical treatments.

Since the purpose of this model is to help prioritize forest health activities like thinning from below and ladder fuel removal, it focuses more on fuel and vegetation than on soils. The tool does prioritize treatments in areas with gentler slopes over those with steeper slopes but it does not include a soil carbon loss component.

Can we also look at fire history data as a tool?

It is a tool that Tukman Geospatial uses frequently for all manner of analysis in the North Coast. In this analysis, it is represented in input that considers Burn Severity, and used by Pyrologix in developing their probability data.

Will the final versions of these layers be made publicly available so individual organizations can overlay them with internal plans/use them as a tool to design project boundaries?

Yes, preliminary thoughts are that this tool would be utilized during the RFP process where folks would identify if their project occurs in an area identified as a high priority in this screening tool, and if it does not, explain why your project is still valuable but falls outside of that screening area due to a resolution problem or mistake in the model. NCRP is very interested in adaptively updating these models and recognizing what their limitations are and plans to develop a packet for project sponsors to utilize in the development of their projects.

How has this modeling process interacted with other prioritization models currently being developed, such as the Landtender model and Planscape? As, for example, the Trinity Priority Landscape (USFS) is using Landtender, it is a challenge for managers working across jurisdictions to interact with these different priority models and the different projects they suggest. I hope some degree of coordination is occurring on the modeling end.

NCRP goes out of its way to very carefully interact with all partners to understand what other entities are doing to avoid replication and to align with and compliment that work where appropriate.

Has a forest fire ecologist been consulted? If so, who? Can we make recommendations?

Yes, we have a strong base of consultants ranging from experts in indigenous science, registered professional foresters, ecologists, CEQA experts, etc. and would appreciate recommendations. NCRP has an on-going request for a statement of qualifications on the website. People are invited to submit their statement of qualifications for consideration to be added to our consultant pool (see [NCRP Request for Qualifications](#)).

How long after wildfire do the MBTS and RAVG measurements take place? They can be very different. For one wildfire, the initial RAVG assumed 33% high severity, which later dropped to 19.9% after 1 year when MBTS measurements took place. Currently, how long do they wait after a wildfire to get fire severity data? Sometimes it takes trees a while to get back to the business of greening out.

The protocol is unknown as far as the date of post fire imagery and window of time that they collect that data. Sometimes green up doesn't happen the following season. MBTS and RAVG rely on data from USFS and USGS, knowing it's not perfect.

<https://burnseverity.cr.usgs.gov/products/mtbs>

My understanding is that models such as LANDFIRE or FOFEM tend to overestimate the losses: "Stenzel et al. (2019) highlighted that these models overestimate the wildfire emissions from California's forests by three-to-four times that of actual field-based values..." Therefore, it would be great to know which particular models are being used in GHG calculations.

Article: Forest Carbon Emission Sources Are Not Equal: Putting Fire, Harvest, and Fossil Fuel Emissions in Context <https://www.frontiersin.org/articles/10.3389/ffgc.2022.867112/full>

For all forest health grants, applicants will be required to include a quantitative estimate of the net GHG benefit in terms of metric tonnes of carbon dioxide equivalent (CO₂e) per the [Forest Health Quantification Methodology \(QM\) and Calculator Tool](#).

What kind of RFP will there be specifically for biomass or forest fuels reduction?

NCRP has a view of biomass that tends to be a nuanced and narrow approach, and that derives from the NCRP's mission, goals, objectives and principles. Specifically, biomass has to be environmentally beneficial as well as beneficial to the local community in which that biomass work takes place.

From CAL FIRE's "Eligible biomass utilization activities under Forest Health": 1) utilize woody biomass for wood products such as post and pole, firewood, dimensional lumber, plywood, or other products which allows for continued carbon storage; 2) generate energy through combustion or gasification, which displaces carbon-intensive fossil fuel-based energy; or 3) utilize woody biomass to help develop markets for beneficial uses of the material. Beneficial uses include, but are not limited to, dimensional lumber, animal bedding, biochar, artistic and cultural products, cross-laminated timber, mulch, oriented strand board, pulp, post, shredding, and veneer products.

Example of biomass-related demonstration project sponsored by the NCRP (#4 on this page):

<https://storymaps.arcgis.com/collections/3723c43d4c2047fc80e1fb2b81f0ec29>

For project development, if we were to incorporate some biomass component, we don't have a metric for that, how would we go about showing that there is enough biomass to warrant funding?

CAL FIRE doesn't require quantification and it's generally a subsequent activity not a main focus of their projects. CAL FIRE does have a program that specifically addresses wood products and bioenergy, and grants specific to workforce development:

<https://www.fire.ca.gov/what-we-do/natural-resource-management/environmental-protection-program/wood-products-and-bioenergy>

Should the model weight WUI a higher priority?

There is an on-going dialogue about the jurisdictional authority for the Forest Health Program versus the Fire Prevention Program and overlaying NCRP focus on forest health but also being concerned about the health and safety of communities as it relates to the treatment of forests in the WUI and thinking about building footprints and community vulnerability. However, it is not the main focus of the Forest Health Program. CAL FIRE has specific programs like the Wildfire Prevention Program which targets community resilience and the WUI, whereas the Forest Health Program focuses outside of that into the landscape. CAL FIRE does consider community protection under forest health grants as it relates to a community being surrounded by healthy forests being less likely to be threatened. CAL FIRE programs are specific to the funding source:

Forest Health v. Wildfire Prevention: https://34c031f8-c9fd-4018-8c5a-4159cdf6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/what-we-do/grants/forest-health/forest-health-v-fire-prevention_graphic.pdf?rev=f7c2122bfad948afa45d2c410d9cb650&hash=06993A6622780536EBFDE3AF2B2295E1