



## PLUMAS COUNTY PLANNING & BUILDING SERVICES

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April 8, 2018

**Re:** Comments by Plumas County on the draft Forest Carbon Plan Concept Paper.

Via email transmission to: [fcacalfire@fire.ca.gov](mailto:fcacalfire@fire.ca.gov)

From Randy Wilson @ [randywilson@countyofplumas.com](mailto:randywilson@countyofplumas.com)

Plumas County welcomes the opportunity to comment on the draft Forest Carbon Plan Concept Paper (Plan).

As the Planning Director for Plumas County, I would like to commend you on your Plan development approach. It is difficult to put unfinished work before the public. But as I know from our recent General Plan update, early involvement is a key to a successful Plan. For me, a successful Plan is built from the ground up by those that will carry it out and adapt it for the future.

The process you outline for completing the Plan means that while we can see the outlines of the Plan in the Forest Carbon Plan outline, there are different levels of detail. You are asking for input specifically on goals, vision, and intent. We get a preview of science, strategies, and a funding portfolio for more context.

We comment on the goals, vision, and intent sections recognizing that some of our suggested edits may belong elsewhere in the Plan. Please consider our comments in the development of the appropriate Plan sections. Plumas County supports the Plan's goals for wildland forests, with some suggestions.

Suggestions for the Goals for wildland forests: (Pg. 22) Added: *in italics*) below:

**“Goal:** Increase protections on forested lands to reduce the rate of fragmentation and conversion to non-forest uses, to preserve forestland sequestration potential, and to promote infill and compact development. *“(Add: In order to reduce risk of forest conversion to non-forested conditions through catastrophic wildfire, conserve carbon stocks in forestlands through restoring more open stands and fire resistant conditions.)”*

**“Goals:** Increase all forest carbon storage pools and minimize GHG and black carbon emissions in a sustainable manner so that the carbon bank in living trees is resilient and grows over time, as ecological limits allow. These management and restoration objectives and strategies must be applied flexibly across National Parks, National Forests, other federal forests, State Forests, State Parks, County Parks, industrial timberlands, family forests, etc. The methods and intensity applied will have to be tailored to any given forest stand and related to conditions and management activities around it to maximize beneficial watershed or landscape-scale impacts.

California’s high-level forest carbon goal is to progressively scale up to get an additional 500,000 acres/year of nonfederal forestlands and smaller federal forest lands under plans and appropriately managed to improve forest health, with performance assessment for carbon sequestration.” (Add: *The total forest landscape restoration goal is 1 million acres of forestlands acres/year.*)

Plumas County supports the following draft strategies:

**Local**

- Support local efforts to generate funding for fire prevention, forest health projects, the development of wood product and biomass facilities, and urban forest projects.
- Land use planning for forest protection and conservation in general plans.
- Support rural and disadvantaged communities with opportunities for training and jobs implementing forest (wildland and urban) management and treatment programs.

**Private**

- Support purchases of forest carbon offsets to improve forest health, maintain working forestlands, and establish urban forests.
- Support the establishment and care of urban forests.
- Support voluntary conservation easements and tax credits to protect important native forests facing pressures for conversion to non-forest land uses.
- Support strengthening of markets for forest products that provide carbon sequestration and emission displacement benefits
- Invest in infrastructure required for active management of forestlands and production of forest products and biomass energy.

Suggestions for broadening the **Vision**: (Added: *in italics*) below:

The Forest Climate Action Team (FCAT) has developed a Vision Statement for its work:

The Forest Carbon Plan will provide forest carbon targets and an array of strategies to promote healthy wildland and urban forests that protect and enhance forest carbon and the broader range of forest environmental services for all forests in California, (Add: *including providing opportunities to implement the Plan through partnerships with all levels of government, through local and regional forest and watershed collaboratives, and with the public.*)

Our vision of forest protection, enhancement, and innovation includes:

- Sustainable forests that are net sinks of carbon.
- Healthy forests that are resilient to anticipated climate change effects, including increased forest insect and disease threats and higher wildland fire risks (Add: *and increasing drought stress and mortality - especially for mature forests and habitats they provide for special status forest species*).

- Forests that provide for healthy watersheds and water supplies (quality, quantity, and infrastructure) (Add: *and that are more drought resilient in more variable precipitation regimes*).
- Forests that provide management (Add: *conservation and stewardship*) opportunities that generate long-term economic benefits for landowners, workers, and communities.
- Working forests that produce wood products and biomass for energy and (*that*) are managed to maintain forest health and biodiversity (Add: *and that include both forest product and forest stewardship related employment opportunities for DAC and tribal communities*.)
- Forests that are protected from fragmentation and conversion (Add: *from development and from conversion to non-forest conditions by catastrophic wildfire*) and that (Add: *across forest types and ownerships*) provide a diverse range of quality, interconnected habitat types for terrestrial and aquatic wildlife species, including listed and non-listed, (Add: *and tribally important*) species
- Forests that provide an abundance of outdoor recreational and tourism opportunities (Add: *and include opportunities for reintroducing tribal forest ecosystem management (Traditional Ecological Knowledge into outdoor education)*,) recreation and tourist experiences in forests.
- Integrated carbon, restoration, and wildfire protection goals (Add: *that are implemented across all forest landownerships and that include opportunities for collaborative forest health assessments and actions. Include opportunities for reintroducing Traditional Ecological Knowledge as essential parts of fire reintroduction and forest and carbon conservation at multiple scales*.)
- Extensive, well-managed urban forests that sequester carbon; provide significant environmental, social, economic, (Add: *and public health*) co-benefits to communities rich and poor, (Add; *urban and rural*); and yield wood products and biomass when trees must be removed.
- Collaborative, adaptive, and innovative planning and implementation (Add: *at all scales and across all lands. Effective collaborative adaptive, and innovative planning and implementation includes existing and emerging forest, water and watershed, and habitat conservation partnerships at all levels and through developing targeted actions and investments for ensuring that DAC and tribal benefits are tangible co-benefits of sustaining and restoring the forest ecosystems*

Suggestions for the broadening the **Intent** of the Forest Carbon Plan: (Added: *in italics*) below:

It is our intent that the Forest Carbon Plan:

- Summarize the best available science about carbon sequestration and climate pollutant emissions in California's forests, over a wide range of natural conditions and management situations (Add: *including increasing and more prolonged drought stress and the conservation of forests and habitat connectivity through prolonged droughts*).

- Establish forest health and resiliency conditions (Add: *Forest health resiliency conditions at multiple management scales are needed to reach targets for carbon sequestration and net reductions in emissions of greenhouse gases (GHGs) and atmospheric black carbon. (Add: Collaborative landscape scale targets for the different forest types and ownerships can then be “downscaled” and phased into near, medium, and long-term action targets for different regions. Near-term actions should include community firesafe and community wildfire protection programs that are embedded within larger fireshed and watershed protection and enhancement programs and include public forest ownerships and projects surrounding communities as essential and fungible aspects of achieving forest health and resiliency conditions.*)
- Develop near-, medium- and long-term targets for carbon sequestration and emissions reductions by region and ownership, through 2050 and beyond, based on goals and ecosystem potential. (Add: *Incorporate “ecosystem potential “ and goals, strategies and performance measures developed by forest and water and watershed collaboratives in order to enhance the effective implementation of targets.*)
- Develop implementation and investment strategies to achieve carbon sequestration targets (Add: *and integration with other related targets in the Climate Scoping Plan Update. Benefits to Disadvantaged Communities (DACs) and tribes and including specific water-related co-benefits such more drought resilient forests, conserving and connecting water sensitive forest species and habitats using Traditional Ecological Knowledge (TEK), and watershed scale benefits from reestablishing a more historic forest hydrograph.*)
- Provide a framework for managing California’s forested landscapes to increase carbon sequestration and reduce climate-warming emissions, alongside other values of healthy forests (Add: *at multiple scales and across public and private forest ownerships.*)
- Identify synergies and gaps in various federal and state mandates, policies, regulations, and programs related to forests, (Add: *such as achieving co-benefits of reducing moisture stress in forests and thinking about a network of forest drought refuge reserves for conserving forest types during prolonged drought. Drought refugia should include watersheds with extensive forests overlying significant soil and groundwater reserves as well as drought refugia networks in more drought-vulnerable forests.*)
- Address both (Add: *public and privately owned*) wildland forests and urban forests.
- Be consistent with state and federal wildland fire management goals and strategies. (Add: *Strengthen the effectiveness of state and federal wildland fire goals and strategies by phasing and integrating wildland community safety and forest protection with conserving forest ecosystems and forest carbon across ownerships in the larger watershed, fireshed and landscape scales that surround communities.*)

**The purpose of this concept paper is to describe the framework and process that FCAT is employing to develop the Forest Carbon Plan. The FCAT further aims for this paper to foster public discussion of carbon sequestration and emission reduction goals and strategies, as well as related ecosystem, social, and economic considerations. Timely identification and discussion of forest carbon goals and targets will allow the FCAT to**

**provide recommendations to the Air Resources Board (ARB) for inclusion in the anticipated spring 2016 release of the Scoping Plan Update Discussion Draft.**

The problems that the Forest Carbon Plan (and program) must solve are integrated and connected across ownerships by the very characteristics of carbon sequestration/GHG emissions problem itself. Fire, drought, insect epidemics, and forest fragmentation and conversion to non-forest conditions are key carbon sequestration and GHG emission drivers that recognize no ownership boundaries and which have global to local dimensions and impacts. And these key drivers present challenges with timeframes from the immediate to at least 2050.

Suggestions on strengthening connections between carbon, forest health, drought and fire and the purpose of the concept paper:

Specifically, we would suggest that the discussion on pages 3-7 be reformatted around the following key points:

- **“Past human activities, such as fire suppression and logging, influence acres burned, but the impacts are small when compared to drought, wind and temperature. A meta-analysis of over 1,200 studies and 3,200 years of evidence concluded that “managers will have to learn to work with, not against, the time-varying influence of climate on widespread fire years; recent experience suggests that it is unlikely that the forces that set up west-wide years can be resisted at the scale of individual forests or management units” (Swetnam et al., 2011). “ (Pg.7)**
- **“Carbon storage strategies must also consider the broader range of environmental services that forests provide (e.g. clean water, water storage, clean air, soil productivity nutrient cycling, wildlife habitat, forest products and recreation” (Pg.4)**
- **“Relatively small changes in temperature and precipitation can affect reforestation success, growth, susceptibility to pests and forest productivity”. (Pg.6)**
- **“The risk of losing all the trees to severe wildfire suggests that redistributing the total carbon storage among fewer, larger and more fire resilient trees has the highest chance of storing the most carbon in the long term.” (Pp. 4&5)**
- **Forest treatments can reduce stand densities and fuel loads, restoring the structure and composition of fire-excluded forest ecosystems to better match functioning, fire-adapted ecosystem conditions. Although these treatments may result in short-term forest carbon losses through biomass removal, carbon can quickly be recovered through retention of larger trees that have the capacity to rapidly add volume. These treatments also can lead to longer-term stability of the carbon sink and increased quality in terms of:**
  - **Decreased risk of loss to catastrophic wildfire;**
  - **Increased carbon sequestration rates over time rather than decreasing; and**
  - **Increased carbon stored in live biomass compared to dead.**

- **(Add: *Reduced drought stress for residual stands*)** (Pg. 23)

There appears to be some disconnects between the carbon conservation strategies listed above and other aspects of the Carbon Plan.

For example, it appears that cap and trade funds allocations exclude federal lands, which comprise 60% of forests in California, and the hope that the federal government will match the “state” program, which contain some of the largest mature tree carbon stocks. The Carbon Plan should not rely on passing federal legislation that stops fire borrowing or other unsecured federal funding. Funding carbon sequestration for private forest lands rather than on all California forest lands seems inconsistent with the intent of the Carbon Plan and the Climate Scoping Plan update.

For another example, forestlands that are unsuitable for commercial harvesting but that have significant carbon storage in mature trees can accomplish catastrophic fire risk reduction through alternative methods such as prescribed burning and hand thinning and biomass removal etc....and should be an important Carbon Plan element.

And finally, “**drought**” is not a manageable factor for FCAT. On the other hand, “**water stress**” is a more manageable factor. Reducing water stress can moderate some of the 27% of tree mortality attributed to climate change in the 2016 Climate Scoping Plan Update\_(Pgs.7 &27).

And reducing water stress is potentially a significant co-benefit for the Carbon Plan and for the 2016 Climate Scoping Plan Update to the extent it mitigates the disproportionate drought and insect mortality in mature forests and trees. In our Integrated Regional Water Management Plan update for the Upper Feather River we have developed policy recommendations for implementing resource management strategies including forests, for the Department of Water Resources California Water Plan update. We are conducting an exploratory study of forest and water balances in the Upper Feather River watershed to begin quantifying the benefits of a restored forest hydrograph. And we have developed a suite of projects that implement the Carbon Plan vision, goals, and strategies in our region. Some of our UFR IRWM projects are in partnership with the tribes and DACs in our region. In summary, our vision, goals, objectives, and strategies are in alignment with those that we discuss above.

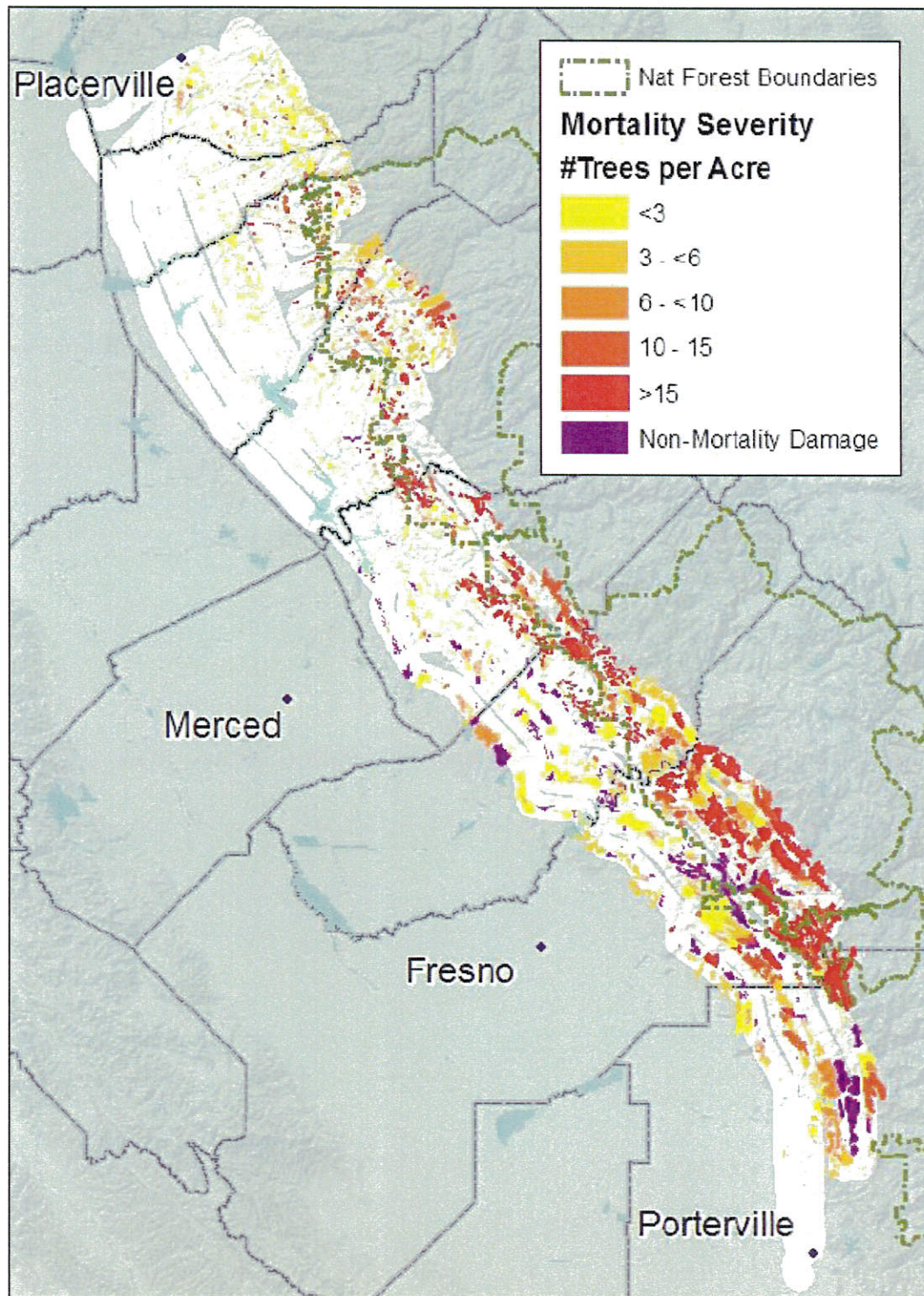


Figure 2. Tree Mortality and Other Damage in Southern Sierra Foothills, 2015 (USDA Forest Service, 2015).

Figure 2 from the Carbon Plan concept paper is illustrative of two key points. First, the drought hit some regions of California's forests harder than others. The severity of forest mortality across California's forestlands was driven by low precipitation and high temperature patterns. However, other factors such as fire and forest treatment histories, current forest structures, and available moisture were also drivers of mature tree mortality. Of these factors, water stress in multiple drought years is the least understood factor.

What is significant about the map is what is missing. Forests with more groundwater storage capacity may have exhibited less severe mortality by the 4<sup>th</sup> year of the drought. The sequestration of carbon in open stands of large trees potentially favors the forest hydrograph by reducing summer evapotranspiration and by enhancing winter infiltration into forest soils and groundwater as the forest canopy density is reduced.

**“Carbon storage among fewer, larger and more fire resilient trees has the highest chance of storing the most carbon in the long term.”** And buffering these stands from acute moisture stress during prolonged or severe droughts may be a significant co-benefit- especially in forests overlying thick soils with connected aquifers

These more groundwater rich and drought tolerant forests may be the areas not depicted in Figure 2. The Southern Cascade and Northern Sierra regions have extensive forested areas overlying significant soil and groundwater storage capacity. And across headwater forests, there are pockets of deeper soils with connected aquifers. Groundwater augments summertime water supplies for many forest ecological hot spots such as mountain meadows and springs, aspen groves, black oak forests, riparian forests, seasonal meadows and wetlands, and stands of old growth conifers.

Plumas County supports the further integration of forest health with watershed health as the Carbon plan develops. Considering the importance of reducing moisture stress in forests and exploring the watershed benefits restoring a more natural forest hydrograph in forest health treatments may enrich the planning and implementation vision described here. **“Planning and implementation will be designed for effectiveness at the watershed or other regionally relevant large landscape scale. This approach will integrate forest management and restoration activities taking place through a number of existing statewide and regional programs and new or modified ones currently under development or recently proposed, such as the CAL FIRE GGRF-funded Forest Health Program and the Department of Fish and Wildlife GGRF-funded Greenhouse Gas Emissions Reduction through Restoration Program, both currently proposed in the Governor's fiscal year 2016-17 budget. If these proposed programs are funded by the Legislature, coordination between them would help to ensure the programs are aligned and generating watershed benefits.”** (Pg. 23)



And the science described here. **“In addition to wildfire, increased stress from drought can have a deleterious effect on forest carbon sinks. A study conducted by the Universities of California, Berkeley and Davis, and the U.S. Geological Survey found that the drought has contributed to denser forests with smaller trees, which has implications for the quality of those forest carbon sinks and their risk of loss due to severe wildfires (McIntyre et al., 2015). Additionally, not only is tree growth, and therefore carbon sequestration rates, stunted during drought periods, but growth rates can remain impacted for additional years after the drought has ended (Anderegg et al., 2015). However, Dore et al. (2012) found that when a drought hit their study site in the third year following implementation of their treatments, treated forests were able to sustain their carbon sequestration rates under significantly hotter and dryer conditions than the untreated stands, despite the fact that the treated site had fewer trees and leaf area. These findings have important implications for the benefits of forest treatments on the resiliency of forest carbon sinks in times of drought. “(Pg. 10). California’s historic drought and unprecedented tree mortality have focused significant public attention on forests and the wildland-urban interface. Accordingly, there has been great public interest in the Forest Carbon Plan as a vehicle to deliver forest-based policies that will address concerns for forest health. This concept paper is intended to invite public engagement in developing forest health management strategies. (Pg.3)**

Thank you for the opportunity to comment. I look forward to further development of the Carbon Plan. If you have questions or comments, please do not hesitate to contact me.

Sincerely,



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cc: Regional Water Management Group for the UFR IRWM Plan

cc: Leah Wills [leah2u@frontiernet.net](mailto:leah2u@frontiernet.net) (UFR IRWM Plan Uplands and Forests Workgroup Coordinator and staff for the District)