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Subject: Draft Forest Carbon Plan

To: The Forest Climate Action Team

On behalf of the California Forestry Association, we thank the Forest Climate Action Team for the opportunity to comment on the Draft Forest Carbon Plan (Plan). The Plan ostensibly provides California strategic direction for forestry activities "guided by the best available science" to "move forests to a more ecologically resilient state". It also purports to provide an "assessment of forest conditions across California".

Unfortunately, this document does not achieve its intended purpose in our view. To be sure, many ideas are presented that have great merit, but the overarching situation that confronts California is not squarely addressed. The Plan itself is a compendium of viewpoints, often at odds, that have been expressed over the last decade by disparate groups and compiled by disparate writers.

To begin with, the Plan does not explicitly acknowledge the authorities for forestry activities in this State, nor their differing management directives, and these management decisions have drastically different outcomes for carbon sequestration.

For private and State lands, this entity is the Board of Forestry and Fire Protection (BOF). The BOF represents the state's interest in federal matters pertaining to forestry, and the protection of the state's interests in forest resources on private lands, and shall determine, establish, and maintain adequate forest policy. (PRC § 740)

In 2008, the BOF developed "The 2008 Strategic Plan and Report to the California Air Resources Board on Meeting AB 32 Forestry Sector Targets" (2008 Strategic Plan). This plan succinctly laid out what needed to occur to help the forestry sector meet its targets:

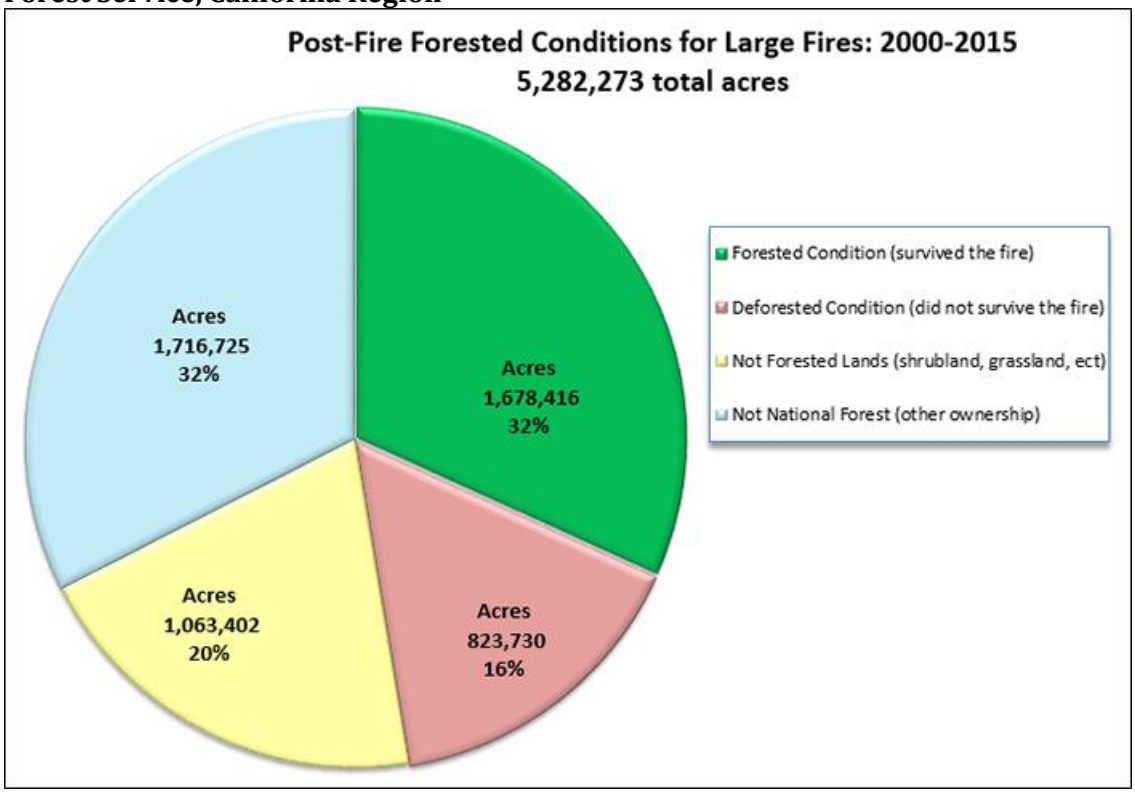
- Improvement of forest inventory and monitoring to ensure changes will be detected.
- Consideration of additional statutory and regulatory needs, including a review of the effects of existing regulations on carbon sequestration.
- Working with Federal agencies to maintain and increase sequestration levels by: 1) preventing losses of inventory and growth rates; 2) continuing reforestation efforts; and 3) fuels management treatments on federal lands to reduce the risk of catastrophic wildfire.
- Reducing barriers and providing additional incentives to encourage voluntary action by private landowners to increase inventory and growth rates while decreasing risk of losses.
- Developing sound policies and regulations for CALFIRE that will contribute to reduction of the risk of catastrophic wildfire.
- Encouraging research related to climate change impacts for the Forestry Sector.

• Working with other agencies and legislative authorities to ensure development of policies, infrastructure and funding to support fuels reduction and biomass utilization.

The Plan does not acknowledge this previous strategic direction, and by extension, does not evaluate what has occurred in the intervening time.

On the Federal side, the United States Forest Service (USFS) control the vast majority of those lands. During this time, the USFS has been continually beset by administrative issues that have prevented any meaningful activity that would have been beneficial, owing to the cumbersome weight of bureaucracy including the National Environmental Protection Act (NEPA).

Forest Service, California Region



Source:
https://www.fs.usda.gov/detailfull/r5/landmanagement/resourcemanagement/?cid=fsbdev3_047149&width=full

In California, there are 32 million acres of forestland, and of that amount, close to 17 million are considered timberland. Forest is considered timberland if it is growing on ground capable of significant annual tree growth and considered available for timber management.

This is land potentially available for production of wood products and does not include acreages locally withdrawn from timber harvest or other active management. About 18 percent, nearly 6 million acres, of California's forests are unavailable for timber production. Federal ownership accounts for around 9.5 million acres of timberland, private ownership accounts for 7.5 million acres (source: GTR 913). And yet, when we examine these ownerships, we find private ownerships have less mortality and greater carbon sequestration than their Federal counterpart. This difference is a direct result of management choices made by both sectors, and it seems that these differences should be highlighted to show that a significant difference can be made by having the USFS adopt a similar approach as the private sector.

In a study published in 2010 (Goines, B., and M. Nechodom. "National forest carbon inventory scenarios for the pacific southwest region (California). United States Department of Agriculture."), the following points were made:

> "This study was designed as a rapid, macro-level assessment of forest carbon inventories, values, and implementation costs under six management alternatives modeled over 20 million acres of California's national forest lands using the best available data and modeling techniques. Regional growth and disturbance models were applied using Forest Inventory and Analysis (FIA) data, contemporary research and expert judgment of scientists and practitioners familiar with California's forests. The results reflect general projections rather than site-specific predictions of growth and disturbance, and display the key resource impacts of alternative management approaches."
> "Findings and Recommendations
>
> Carbon sequestration under the "Business as Usual" (BAU) scenario will outpace losses to wildfire, pest, drought, and inter-tree competition for the next 4-6 decades. However, at some point in the mid-21st century, carbon losses (from wildfire, disease and other disturbance) overtake growth. **The Region's national forests will become net emitters of carbon during the latter half of the 21st century under the BAU scenario** (emphasis added).
>
> 2. The sustainability of the Region's forest carbon sink in the next 100 years is largely dependent upon the frequency and the extent of wildfire, and the effectiveness of forest health management strategies.
>
> 3. The precision of forest carbon measurements and predictions of future carbon inventories are extremely limited at large scales because of uncertainty in current inventories, and particularly in forest ecosystem components that have not been historically measured.

4. Long-term increases of carbon inventories in California's national forests will depend on the establishment of forest ecosystems that are resilient to increasing disturbance under anticipated changing climate regimes.

5. Maximum carbon sequestration is not always compatible with other resource objectives. **Some trade-offs in other ecosystem values, including habitat and recreation qualities, may be required to maximize national forest carbon sequestration capabilities** (emphasis added).

6. Assessments of the roles of forests in climate regulation and mitigation must include consideration of sequestration of carbon in forest products and the reduced carbon emissions associated with bioenergy produced from forest biomass."

This study indicated that management scenarios that mimicked those of the private sector would result in increased carbon sequestration over the current business as usual (BAU).

The Forest Inventory Analysis (FIA) of the Pacific Northwest Research Station recently released the following information:

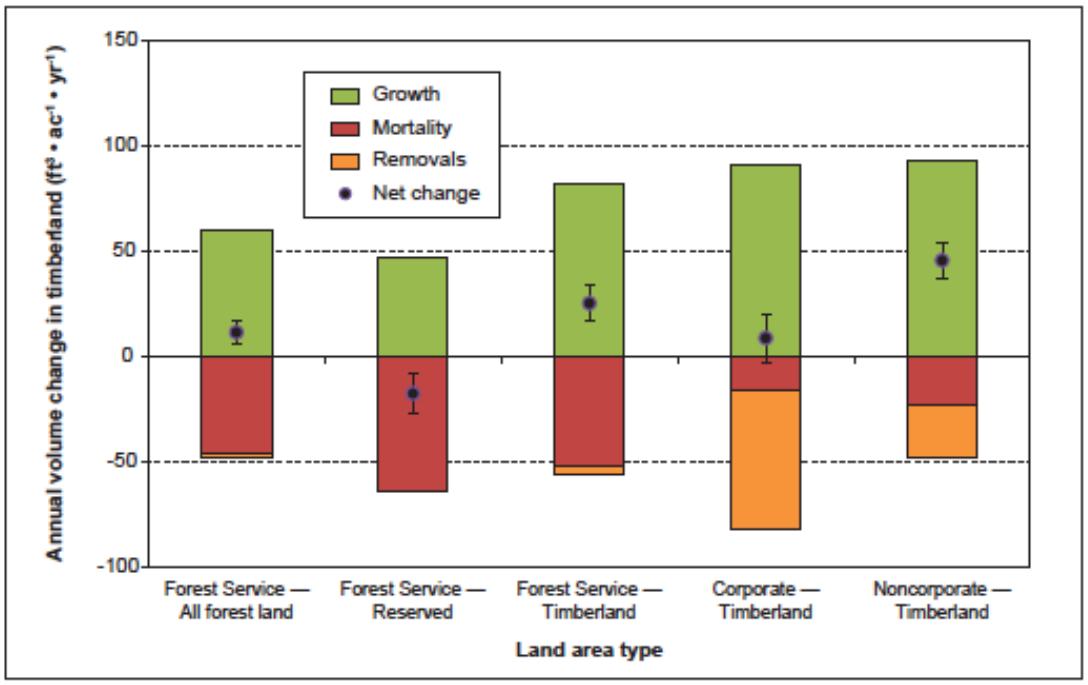
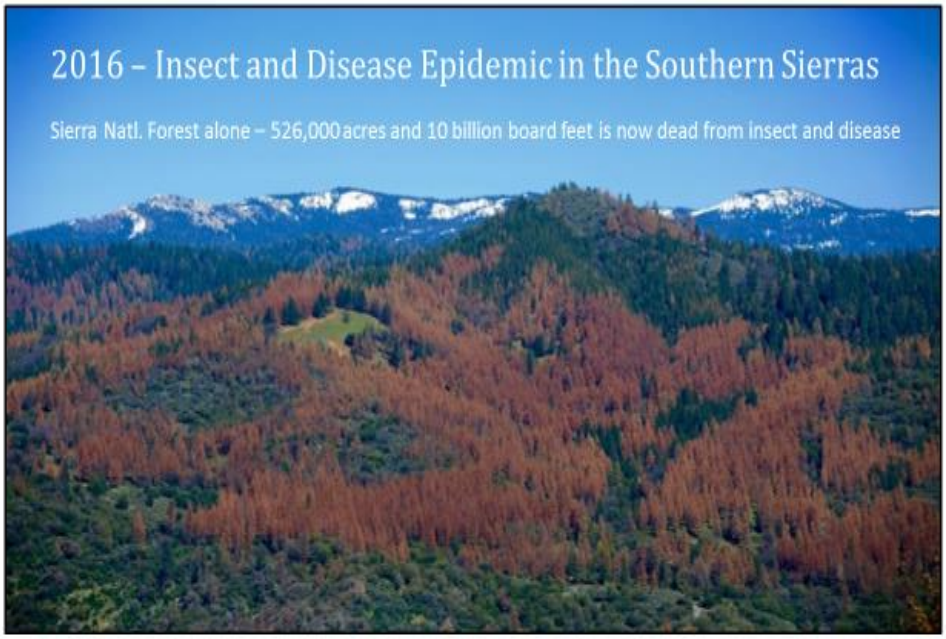


Figure 34—Combined average annual change in volume (cubic feet) growth, removals, and mortality per acre per year on national forest land between 2001–2006 and 2006–2010 by land status compared to privately owned timberland between 1991–1994 and 2007–2010 in California (error bars represent sampling error). Although volume changes are on an annual per-acre basis, it is important to note that Forest Service estimates of change cover a different timeframe than private timberland.

In looking at the per acre numbers up to the total ownerships in California, it is clear even though the USFS is a liability for carbon sequestration, private timberlands are ensuring that California's forests were a strong carbon sink between 2000 and 2010. This does not begin to account for the fact that USFS lands have much higher levels of drought and beetle mortality than private lands since these numbers were calculated.



Acres of tree mortality detected in National Forests of the south Sierra from 2010 – 2016

National Forest	Rounded Acres* *Rounded to the nearest 1000*
Eldorado	220,000
LTBMU	21,000
Sequoia	595,000
Sierra	696,000
Stanislaus	377,000
Tahoe	178,000
Total	**2,087,000**

*All overlap between surveys was removed from data prior to analysis

Again, from the Forest Inventory Analysis (FIA):

Table 1: In-forest sequestration rates in live trees on Conifer Forests of California

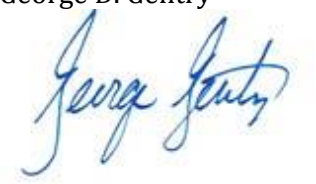
mmtCO2/yr	~2000 - 2010						
million acres ->	**7.492**	4.057	3.435	9.14	3.271	**12.41**	19.903
	All Private timberlands	Private - Corp.	Private - Family	Federal - NFS timberlands	Federal - other timberland, other NFS	**All Federal Forest**	All Forests
Growth	**23.5**	13.3	10.0	22.4	7.3	**29.6**	53.2
Mortality	**5.3**	2.6	2.7	16.0	9.2	**25.1**	30.4
Removals	**12.0**	9.5	2.5	1.1	0.1	**1.2**	13.2
Net Change	**6.3**	1.2	4.8	5.3	-2.0	**3.3**	9.6
Net Growth & Yield/Gross Growth	78%	81%	73%	29%	-26%	15%	43%

These figures clearly show the difference between management strategies. Private lands, on 60% of the acreage, sequester almost twice the carbon on the ground (6.3 to 3.3) but also provide a huge quantity of wood for durable wood products that also sequester carbon. The Federal lands, by contrast provide little. This also raises the issue of funding for Federal lands. As mentioned later in this letter, a multi-billion dollar effort is needed to restore and reforest Federal lands, and this can be accomplished if the USFS will commit to active management and timber sales.

It is important to note that this report relies heavily on McIver et al. 2015 (PNW-GTR-908). As the authors have expressed to you in a comment letter, this report was not intended as a report on masses of carbon; it reports board foot Scribner volumes of timber and cubic volumes of wood and bark. They also stated: "For example, over 61% (149.6 of 243.7 MMCF) of wood volume harvested and delivered to sawmills, veneer plants, and other solid wood facilities ended up in finished GREEN lumber, veneer, posts, poles, and fiberboard products during 2012." If this report is to be used, the Plan needs to clearly articulate how its figures were derived, and to clarify the actual utilization of wood volume, rather than leaving misconceptions that occur in the plan.

Attached to this letter are more specific recommendations. Again, thank you for the opportunity to comment.

George D. Gentry



Vice President Regulatory Affairs
California Forestry Association

General Recommendations:

1. Acknowledge the differing authorities and management objectives between private timberlands and Federal timberlands.

2. Recognize that these two entities, as a result of management decisions, have different implications for carbon sequestration. Incorporate findings from Goines, B., and M. Nechodom. "National forest carbon inventory scenarios for the pacific southwest region (California). United States Department of Agriculture."

3. Clarify the identified issues associated with McIver et al. 2015 (PNW-GTR-908).

General Recommendations, Inventory and accounting:

The Draft Plan mentions different inventory accounting efforts being undertaken by the California Air Resources Board/Lawrence-Berkeley Energy Labs (LBEL) for the 2014 Scoping Plan, the California Natural Resources Agency/CAL FIRE for the Forest Carbon Plan, and the BOF/CAL FIRE for the AB 1504 reports.

> AB 1504, with its emphasis on life cycle analysis and FIA data would seem to be the preferred effort as it originates with the body that has the expertise and authority to review the effort for accuracy.

Chapter 5 of the Draft Plan discusses California forest carbon monitoring and accounting and notes these activities must align with federal and international standards. Review the Intergovernmental Policy on Climate Change (IPCC) accepted methods for carbon stock accounting, to insure widespread acceptance of methodology.

Reference to different units (i.e. metric tons of carbon vs. carbon dioxide equivalents) throughout the document is confusing. All metrics should be reported in CO2e for clarity and/or a conversion factor between C and CO2e should be provided.

Recent data is available from the Forest Inventory and Analysis program in which growth, removals, and mortality have been analyzed. These data provide more detailed information on above-ground carbon changes among different ownership classes and due to varying mortality agents. These data indicate a substantial difference in the degree of change compared to the numbers reported in the Draft Plan (p. 73, Section 6.3 – Carbon Stock-Change Rates, tables 12 and 13).

Specific Recommendations:

Pg. 3, Proposed Actions

The Draft Plan provides a goal of increasing reforestation on private lands by 25% over the current level,
The Draft Plan states CAL FIRE estimates 500,000 acres of non-federal forests need treatment annually to achieve the forest health and resiliency goals of the Forest Carbon Plan.

The above statements do not reflect any known study or observation of the current conditions on private lands in the State. Please provide additional information.

Pg. 4, B.4

There are 2.4 million acres of non-reserved understocked forest stands (Draft Carbon Plan, p. 155).
The Forest Service, California Region National Forests are grossly overly dense and has 800,000 acres of productive forest land that is deforested due to wildfires. The deforested productive forest lands from wildfire are now primarily brushfields. For deforested lands, it would take $1,500-2,000/acre or more to remove the brush and invasive species, do site preparation (contour till, pre-emergent herbicide spray) and plant seedlings.
Further there is 2 million acres dead due to the insect and disease epidemic. To remove the beetle-killed dead trees and reforest would up to $6,000/acre.
This is at least a **$15 billion problem**. It is not possible to eliminate this backlog by 2020. It's unlikely the backlog could be eliminated by 2030. And, the backlog will continue to grow with the on-going trend in wildfire and insect and disease.

Pg. 4, Section D

The Draft Plan identifies the expansion of wood products manufacturing as a goal but does not identify and address costly and often redundant permitting impediments to active forest management. There is a need to eliminate duplicative regulatory procedures to not only lessen private landowner burden, but also reduce state agency regulatory costs, resulting in more public funding available for forest resilience projects.

Supporting continued research in Nano-cellulose technology should be mentioned.

For investment in additional milling or manufacturing technology, there must be a consistent supply chain of forest products. The Forest Carbon Plan must cite the need for long terms supply agreements from federal lands to support investment in manufacturing infrastructure.

Pg. 16, Table 2

It's unclear why the Eldorado, Stanislaus and Sequoia National Forests would not be included.

Pg. 26 Section 3.2

The Draft Plan states that "commercial harvesting can play a beneficial role" (Expand and Improve Forest Management to Ameliorate Forest Health and Resilience). Commercial harvest as demonstrated earlier, is an integral strategy in utilizing the capacity of trees to actively sequester carbon.

Pg. 28, 3.2.1

The Forest Service, California Region, has had their Ecological Restoration Direction in-place since March 2011. There has been no increase in pace and scale since then. The only increase is associated with the Forest Service assuming low intensity burned acres within the perimeter of wildfires is "good fire" and therefore they count it as an "accomplishment". In 2016, Region 5 counted 239,000 acres as "accomplishment from low intensity burned acres in wildfires.

Unfortunately, what we are finding, particularly in the southern and central Sierra Nevada Mountains, is what was low intensity wildfire in recent years is now dead. The Rim Fire is the perfect example. What was mapped as low intensity burn October 2013, following the wildfire, is now been killed by bark beetle. The combination of 4+ years of drought and the heat stress around the base of the trees from the low intensity fire made them extremely susceptible to beetle infestation. We're now finding the same is true on the 2014 King Fire. Hence, the Forest Service should only be counting mechanical thinning and prescribed burning as accomplishment, which will put their recent annual average accomplishment at less than 200,000 acres per year.

Since 2001, the burned acres on California National Forests has averaged 320,000 acres/year. In recent years, burn severity is approaching 50%. Further, there are 2 million acres on the National Forests now affected by the insect and disease epidemic. The natural

disturbance agents have taken over.

Pgs. 29-30, 3.2.2

There's no mention that California private non-industrial land owners have little ability to actively manage their forests. The arduous requirements of the Forest Practices Rules and wildlife surveys makes it prohibitively expensive.

Pg. 30, 3.2.3

This section should be rewritten and use the information from the Forest Service Region 5. See info above for Page 4, B.4.

Pgs. 32-34, 3.3

Nano-cellulose technology should be added.

2/3 of the insect and disease killed trees are on the National Forests. There should be recognition that essentially all of the insect and disease-killed trees on the National Forests cannot be removed soon enough to be able to have any significant lumber value. The trees deteriorate within four months of tree death. It takes the Forest Service generally 9 months or more to get from project initiation to an awarded contract. It can take an additional 6 months if there are Threatened and Endangered Species present requiring a Biological Opinion.

On average, stump-biomass powerplant costs to remove insect and disease killed trees is $80/bone dry ton or 8 cents/kW-hr. The environmental benefit of consuming wood waste in a biomass boiler compared to open pile burning has been monetized and is 11.4 cents/kW-hr.

On page 33, the paper calls for building out the 50 MW small scale 5 MW and smaller biomass facilities. A study by the Beck Group has shown that it will take 18-22 cents/kW-hr for this size plant to be economically viable.

The statement that "carbon can quickly be recovered to pre-treatment levels if large, fire-tolerant overstory trees are not removed in large quantities," (p. 61, Section 6.3 – Forest Carbon Storage Dynamics) ignores the fact that forests maintain the ability to recover carbon after tree removal remains, whether large or small trees are retained.

Page 70, 6.3.4

In reviewing McIver (2015), Figure 6, page 24 – the data should parallel the draft Forest Carbon Plan data and pie chart on page 70. But it doesn't. McIver shows lumber accounted for 35% of timber harvest while the draft Forest Carbon Plan says 26%. See previous comments related to McIver.

Pg. 87 Section 8.7

In Sustainable Rural Economies, there should be greater emphasis pointing to the maintenance of a forest products industry infrastructure, (i.e. people who are equipped to handle wood products in large quantities). Additionally, there needs to be an expectation of long-term raw material flow from federal lands to allow for investment in infrastructure.

Pg. 103, Section 9.1

A discussion of the McIver data does not differentiate between public versus private timber harvest between 2000-2012, or pre-recession versus post-recession harvesting.

Pg. 104, Section 9.1

The statement: "Private timberland management practices can result in conditions different from the desired healthy forest conditions described in the Plan of more large, widely spaced trees," is a an assumption that is contrary to the Forest Practice Act and the Rules. This Board of Forestry has established the necessary criteria for a healthy forest, and these principles should be embodied.