April 4, 2016

Forest Climate Action Team
c/o California Department of Forestry and Fire Protection
1416 9th Street
Sacramento, CA 95814

Re: California Forest Carbon Plan Concept Paper

Dear FCAT Members:

Thank you for your recent public workshops on the draft version of the *California Forest Carbon Plan Concept Paper: Managing Our Forest Landscapes in a Changing Climate*. The workshop and the paper reflect the substantial thought and time your team has devoted to the challenging task of developing a Forest Carbon Plan to inform the development of goals for forest carbon sequestration while securing the important co-benefits associated with forest carbon sequestration. Those co-benefits include fish and wildlife habitat and protection, wildlife corridors and refuge (particularly in a climate-change challenged era), air quality, water quality, soil stabilization, and flora habitat and conservation.

On behalf of Sierra Club California and Ebbetts Pass Forest Watch, we offer the following comments to help ensure that the final draft of the paper is as well-crafted, accurate and effective as possible.

Concept Paper's Strengths

The vision outlined in the paper has many strengths and generally provides a valuable foundation for state agencies and land owners regarding forests and forest stewardship today and in the future. The vision provides many good and valid forest conditions for which the Forest Carbon Plan should strive to achieve, including:

- Sustainable forests that are net carbon sinks;
- Healthy forests that are resilient…to climate change, including increased forest insect and disease threat and fire risks;
- Forests that provide for healthy watersheds and supplies;
- (Integrated carbon, restoration, and wild fire protection goals;
- Forests that are protected from fragmentation and conversion, and that provide a diverse range of quality, interconnected habitat types for terrestrial and aquatic wildlife species, including listed and non-listed species;
- Forests that provide an abundance of outdoor recreational and tourism opportunities;
- Extensive, well-managed urban forests that sequester carbon, provide significant environmental, social and economic co-benefits to communities

rich and poor, and yield wood products and biomass when trees must be removed; and
- Collaborative, adaptive, and innovative planning and implementation.

We appreciate that one of the team's intents within the paper is to summarize and incorporate the best available science to achieve this vision. We note that in pursuing this intent, it is important to resist demands from the forest product industry to bias this paper and the Forest Carbon Plan into a justification for logging practices that threaten forest ecological benefits, including plant and wildlife habitat, that can and should be the overt co-benefits of sequestration.

Recommendations for Strengthening the Concept Paper

We offer the following recommendations for improving the concept paper. We anticipate (based on the information shared at the workshop) that there will be a draft of the Forest Carbon Plan, based on the concept paper, and that it will be made available for additional review and comment before the final plan is prepared.

1. *Definitions must be clear and overt.*

During the Sacramento workshop, one stakeholder noted that the concept paper tended to conflate or confuse terminology. We agree. We particularly noticed a strong reliance on "ecosystem services" and a definition of those services that was unclear. The lack of clarity generally about that term's meaning is likely a product of the term's evolution and how it has been used differently by different authors over time. To avoid confusion, it would be valuable at the opening of the Forest Carbon Plan to provide a clear and comprehensive definition of "ecosystem services" as it is used in this paper.

2. *The importance of timing must be incorporated into proposed actions to enhance forest sequestration.*

As was so clearly demonstrated at the UN Paris negotiations last year, the world's leaders have acknowledged that we are at a critical tipping point in the effort to avert the worst effects of climate change. Timing is important. What emissions we produced or avoid today will have magnified impacts in the future. Thus, the concept paper must acknowledge this and recognize and prioritize any forest related actions that can curtail emissions in the next several years and protect ongoing sequestration in the short term.

Unfortunately, some of the actions described in the plan may actually increase emissions and decrease carbon sequestration in the short term These actions include additional logging for fuel reduction, controlled burns, wood harvesting, etc. These emissions increases must be offset in the short-term. This could be done by ensuring reductions in intensive forest management methods such as clearcutting or even-aged management, which also happen to have negative impacts on habitat, corridor integrity, biodiversity, air and water quality, soil stability, fire control, and recreational attributes. Another option would be to offset the additional emission by requiring other planned harvest to be deferred to allow trees to grow larger and store more carbon sequestration and become more fire resilient.

3. *Forest harvest and forest disturbance emissions must be transparently and fully measured.*

The paper relies heavily on forest products for sequestration. Yet it makes no mention of the "lifecycle" emissions of climate pollutants released in the harvest, product fabrication, and product use. Those emissions sources include transportation of workers and equipment to the harvest site, use of heavy equipment at the harvest site, deep soil ripping, transportation of logs from the harvest site to the mill, energy used to mill the logs, transportation of milled wood to sales point, construction emissions associated with using the milled wood (transporting the wood to the job site, powering equipment used to saw and hammer wood, or equipment used to fabricate into furniture or other products), and emissions associated with transportation and disposal of slash and waste wood associated with harvest and use of the harvested wood.

If forest harvest emissions are not fully accounted for, Californians will be misled on the progress achieved on reducing climate pollution and give priority to the wrong mitigation measures. Emissions from logging and forest product manufacturing and use must be measured and reported.

Notably, a substantial body of research shows that clearcutting and even-aged management of forests produces more climate pollution than other forms of logging. Emissions from clear cuts typically are not offset by new forest growth for at least 20 to 40 years. To ensure the concept paper's credibility, it is essential that it address the urgent need to better manage private industrial timberlands and to acknowledge that essentially monoculture plantations do not match the definition of healthy forests.

Regarding emissions and sequestration accounting methodology, we recommend the FCAT examine the methodology used by the Center for Economic Sustainability in the detailed technical report "Clearcutting our Carbon Accounts", November 2015 (http://sustainable-economy.org/advocacy/). This report contains additional analyses of forest carbon issues and references that the FCAT report does not yet consider. This report was funded by World Resources Institute, Global Forest Watch Program.

Additionally, regarding accounting, the report should note that it is inappropriate to consider granting carbon credits to industrial timber companies for carbon sequestered on not-for-profit or public lands and to assume that forest carbon emissions accounting is not needed due to sequestration.

To compensate for the carbon emissions debt created by logging methods and logging's immediate reduction of a forest's ability to store carbon, the concept paper appears to assume that carbon storage in wood products will suffice. The paper fails to acknowledge that there is much debate about this assumption. The FCAT needs to ensure the public that they are aware of and taking into consideration articles challenging wood substitutions and storage assumptions. One to consider would be Law and Harmon's 2011 paper (http://terraweb.forestry.oregonstate.edu/pubs/lawharmon2011.pdf
The following excerpt from Clearcutting our Carbon Accounts report mentioned above is one of many views that should be considered by FCAT on this issue, "Estimates of the amount of stored carbon lost from a given acre logged vary depending on these factors. Ingerson (2009) completed one of the most comprehensive reviews on this issue, tracing the amount of the original live tree volume (and thus carbon stored) remaining after logging, primary processing, secondary processing, and construction. Compiling and calibrating

estimates from a variety of sources, she concluded that these losses amount – on average – to 82% of the original live tree volume. In other words, when a site is logged and the wood converted into long-lived wood products, only 18% of the original carbon stores are preserved, and then only for a few decades at most before those longer lived wood products start to decay. The remaining 82% of the carbon stocks are released into the atmosphere in a relatively short period of time. This value is essentially 100% for short-lived wood and paper products

4. *The need to improve all forest management, including industrial timberland management, should be discussed.*

The current draft concept paper attempts to draw conclusions about the carbon and forest health of various forest ownerships/management practices using inadequate information and fails to discuss the improvements in Corporate Industrial management impacts on emissions, resiliency and carbon storage.

Indeed, the paper includes data and a brief discussion that could mislead readers and policymakers about the impact of current industrial timberland management practices.

Specifically, Data in Tables 4 and 5 in the report use a limited data set to identify the "signature" (proxy for emissions and carbon sequestration) of various forest/timberland ownership and management. Unfortunately, the concept paper used this inappropriate and inadequate data to conclude that corporate forest ownership was producing better results...-The chart below is from the new Forest Inventory Analysis (FIA) published February 2016. It should be noted that Forest Service-Timberland bar is more similar to private and corporate timberland than the other two Forest Service categories.

California's Forest Resources: Forest Inventory and Analysis, 2001–2010

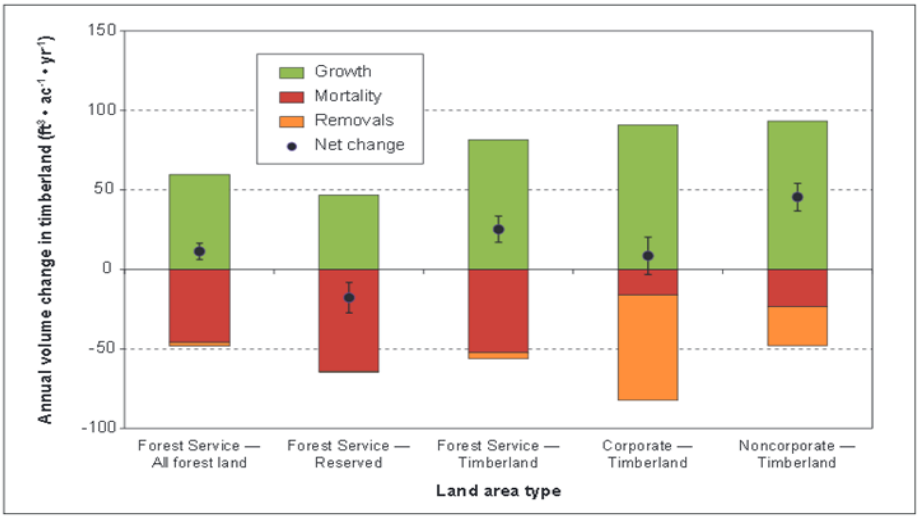

Figure 34—Combined average annual change in volume (cubic feet) growth, removals, and mortality per acre per year on national forest land between 2001–2006 and 2006–2010 by land status compared to privately owned timberland between 1991–1994 and 2007–2010 in California (error bars represent sampling 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.

Just by looking at this chart a fair conclusion is that private/noncorporate timberland has a far better "signature" than Corporate timberland vs the conclusion reached in the FCAT draft.

But in fact, the FIA data used by FCAT should not be probably not used for conclusions regarding one forest management ownership/practices vs another.

- The years chosen for growth and mortality and harvest data for private forests are limited to only 1991-1994 and 2007 to 2010.This data excludes a 4-year drought period and includes years where lumber harvest was extremely low due to the housing slump

- High level aggregated FIA data can result in dramatically incorrect conclusions about management practices. The analysis FCAT made using FIA data was too superficial and does not compare "apples to apples" because it fails to examine comparable portfolios of timberland by various ownership and adjust for differences such as elevation and regional soils, elevation, species, rainfall etc. FCAT must do much better than this before reaching conclusions or will not be credible or successful.

- Weaknesses or gaps in data used in the concept paper must be overtly noted. Conclusions on tree mortality need to be based on similar timberland types and elevations and regions of the state. For instance, Beetle kill is disproportionally higher in Southern California areas in general, so beetle kill rates in those areas (in Kings Canyon, for instance), must be compared to morality rates on corporate timberlands for similar elevations, regions and areas.

We encourage FCAT and EPA to invest additional resources to strengthen the data on emissions, sequestration, and harvest, mortality and replacement growth quantity and quality that can stand the test of unbiased review and scrutiny.

5. The impact of forest practices on climate adaptation goals should be addressed.

In California, certain legal forest practices undermine the state's climate adaptation goals. Clearcutting and the plantation planting practices on which clearcutting practices rely, on state and private lands, for example, can undermine adaptations intended to protect rural communities from the risks of wildfires, floods and landslides, degradation of water supplies (including snowpack), and loss of critical natural resources, including fisheries and healthy forests. As noted by the U.S. Forest Service in several reports and presentations, plantations experience a disproportionately high amount of stand-crown fires as compared to older, biodiverse forests.

The concept paper fails to adequately address the impacts of clearcutting and tree plantations. Tree plantations are not healthy forests. The Forest Carbon Plan should note this and discuss reforms that could stop or dramatically reduce clearcutting and reform tree plantations, including regulatory changes and more focused and robust enforcement of existing regulations. Changes could include accounting for timber industry emissions, promoting alternatives to clearcutting, lengthening timber harvest rotations, protecting state forestlands and reforming the timber tax code to incentivize carbon storage.

6. Alternatives to bioenergy dependent on forest waste must be more thoroughly considered.

The concept paper assumes that bioenergy—including through waste incineration—will be one of the forest product uses. It's important that the Forest Carbon Plan consider whether the bioenergy from trees is displacing, cleaner renewable energy. Additionally, the document must note that there may be ways to ensure that efforts to return biomass to the natural cycle, for instance as forest soil amendment. UC Davis could perhaps provide assistance on this matter.

7. Wildlife protection is a forest service that needs to be highlighted as essential during a climate change era.

Although it is mentioned a number of times, forests essential role in wildlife protection, particularly as climate changes, is underplayed in concept paper. That role and the strategies to preserve that role needs greater discussion in the Forest Carbon Plan. In the draft outline for the final plan distributed at the workshop, section III.e on page 3 is about co-benefits. There is no clear indication that habitat and wildlife protection, or flora biodiversity values, will be discussed or will get the thoughtful attention they deserve. Any discussion of wildlife and habitat protection provided by forests should address, among other things, the extensive wildlife fragmentation in the Sierra due to industrial timber clearcutting.

8. Importance of Older Trees and incentives to protect and grow more

FCAT needs to further develop information and data on the status and importance of old trees to both adaption and carbon storage. Old tree inventories and incentives to protect and promote older trees need to be developed.

9. Dispel forest carbon myths.

Several myths about forest carbon sequestration have distorted the general conversation about how to manage our forests. The FCAT can and should use the opportunity of the Forest Carbon Plan to dispel some of the most persistent of those myths. See Myths and Facts (Forest Carbon and Global Warming) http://www.slideshare.net/dougoh/forest-carbon-climate-myths-presentation

These include:

1. **Young forest myth: Fast growing forests absorb more carbon and are better than slow growing old forests.**
    a. In fact, older forests store more carbon than young forests and they are still growing and storing carbon.
    b. Old forests cannot be converted into young forests without losing most of the carbon to the atmosphere.

2. **Wood Products myth: It is better to store carbon in wood products vs forests**

a. In fact, carbon is stored more securely in healthy biodiverse forests than in short-lived forests or in partial storage in wood products (paper, wood pallets, shipping boxes, decks, furniture, etc.).
b. Logging kills trees and stops sequestration and starves the food web.

3. **Fire myth: Fires release all stored carbon**
    a. In fact, not all trees die and the older trees tend to survive fire.
    b. If the trees are not harvested after a fire, they continue to store carbon with slow decay vs harvest which will release most remaining carbon and disturb and degrade soil carbon.
    c. Fires release less carbon than logging, especially clearcutting

Conclusion

Thank you again for the work you have invested in preparing the concept paper and for the work you will continue to invest as you develop the Forest Carbon Plan. We look forward to the first draft of that plan.

Sincerely,

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