

March 17, 2017

RE: Comments on the January 20, 2017 DRAFT California Forest Carbon Plan (FCP)

Forest Climate Action Team:

Thank you for the extended comment time period, as this will help make sure that FCAT revisions can be done before the closing of the public comment period for the 2030 Scoping Plan that describes 11 different government programs related to forest and other woody carbon. On p 117-118 of the 2030 Scoping Plan, the Forest Carbon Plan is listed as 10th in the list of 11 programs to be consulted by ARB. Tracking carbon fluxes in forests, forest products, and in the indirect impacts are complicated topics and our understanding improves every month. It is therefore important that California not simply 'lock in' to definitions because they are in an earlier government document.

The Forest Carbon Plan was generated by a team comprised of many resource related state, local and federal agencies – most of whom had no previous responsibility for monitoring and modeling the full life cycle of forest related carbon sequestration. Historic data sets are scattered and California lacks the integrated analytical resources of forest research institutes of national governments that typically compiled IPCC reports. As California moves forward, the state government would benefit by emulating what has been done in Canada and Sweden going beyond simply meeting IPCC annual reporting and adding

- 1) Evidence based approach for evaluating existing conditions, and
- 2) Scenario planning for future opportunities that integrates best management practices as well as more innovative practices.

I will provide some more details on why the two steps would be valuable for California to stay at the international forefront of climate change mitigation later in the letter. Before that, I will provide a little more context on what is in, and not in, the draft FCP of January 20, 2017. The January 20, 2017 Forest Carbon Plan seems to primarily address about the half of forest area in California - the federal forests that are mainly managed by the USDA Forest Service. Forests that are regulated by the rules promulgated by the California Board of Forestry and Fire Protection such as the new AB32-compliant themes captured by AB 1504, do not seem to be that well captured by the bulk of the text and graphics of the January 20, 2017 Forest Carbon Plan.

It would appear that the January 20, 2017 draft of the Forest Carbon Plan is primarily referring to the Forest Service lands (the largest single forest landowner in the state) on page 1 of the Executive Summary when it states:

“Today, many forests are unhealthy, with unnaturally dense stands that lack resilience, making them more susceptible to drought, disease, insect pests, and uncharacteristically large, severe wildfires. In fact, there is growing evidence that

many of California's forests have become net emitters of carbon due primarily to the uncharacteristic fire and mortality we are witnessing. These events result in massive amounts of dead trees that are no longer removing carbon from the atmosphere and that will continue to emit greenhouse gasses for decades as they decay. The vegetation that replaces the trees that have died will not compensate for the carbon loss for decades (if ever; for example where forest converts to shrubs). Managing forests in California to be healthy, resilient net sinks of carbon is a vital part of California's climate change policy. Forested lands in the state are the largest land-based carbon sink, but recent trends and long-term evidence suggest that these lands will become a source of overall net greenhouse gas (GHG) emissions if actions are not taken to protect these lands and enhance their potential to sequester carbon. Decades of fire exclusion, coupled with ongoing drought and the growing impacts of climate change, have dramatically increased the size and intensity of wildfires and bark beetle infestations; exposed millions of urban and rural residents to unhealthy smoke-laden air; and threaten progress toward meeting the state's ambitious 2030 and 2050 targets for GHG reductions." (FCP, 1/20/17, Executive Summary, p1, 3rd paragraph)

The private forest lands show a quite different pattern of carbon flux than the federal lands with much more of the carbon initially captured as the needles pull in CO₂ being converted into harvested wood products and bioenergy.

The 2016 FIA report (Christensen, G., Waddell, K., Stanton, S. and Kuegler, O. 2016 California's Forest Resources: Forest Inventory and Analysis, 2001-2010. PNW-GTR-913. U.S. Forest Service, Pacific Northwest Research Station, Portland, OR.) provides an excellent starting point in terms for assessing the carbon flux of forests under different management approaches. Figure 34 in the chapter by Olaf Kuegler is a simple graphic that illustrates the much higher losses of forest carbon to mortality that is a key theme of the Forest Carbon Plan. The figure illustrates per acre mortality rates that are about 3x as high on Forest Service land as they are on private lands. This is a reasonable metric of poor forest health and is an area of great concern to the USFS. The carbon source problem is clearly evident on the relatively small percentage of forests that are in the "Forest Service- Reserved" classification.

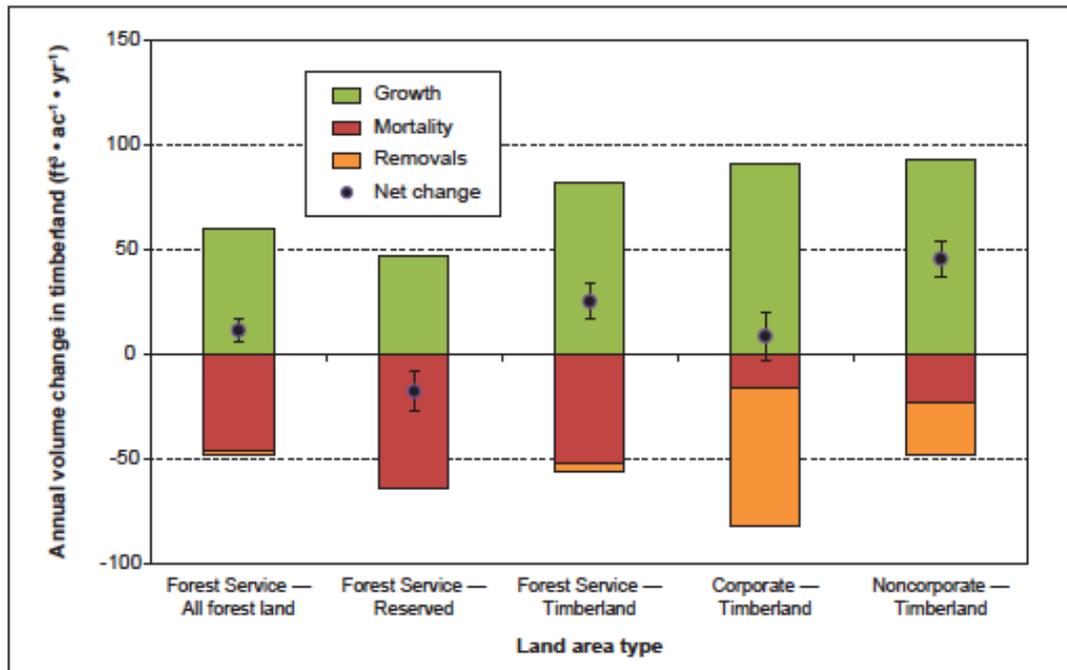


Figure 34—Combined average annual change in volume (cubic feet) growth, removals, and mortality per acre per year on national forest land between 2001–2006 and 2006–2010 by land status compared to privately owned timberland between 1991–1994 and 2007–2010 in California (error bars represent sampling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

from Kuegler in Christensen et al. 2016

As this figure is based on data on carbon fluxes only up to 2010, it needs to be updated over time. Fortunately, the FIA program is collecting and processing data on another 1/10th of California’s forests annually, so this data will be getting better and better.

Unfortunately the Forest Carbon Plan does not seem to capture the latest IPCC Good Guidance on forestry carbon accounting that essentially requires all countries that collect good government data on wood product life cycles to use that information (IPCC. 2014. 2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol. T.K. Takahiko Hiraishi, Kiyoto Tanabe, Nalin Srivastava, Baasansuren Jamsranjav, Maya Fukuda and Tiffany Troxler (eds) (ed), Kanagawa, Japan.). California is in a somewhat unique situation in that we have larger populations than countries such as Canada and Sweden that have IPCC compliant forest AND forest product carbon profiles (Gustavsson, L., Haus, S., Lundblad, M., Lundström, A., Ortiz, C.A., Sathre, R. *et al.* 2017 Climate change effects of forestry and substitution of carbon-intensive materials and fossil fuels. *Renewable and Sustainable Energy Reviews*, **67**, 612-624.; Smyth, C.E., Stinson, G., Neilson, E., Lemprière, T.C., Hafer, M., Rampley, G.J. *et al.* 2014 Quantifying the biophysical climate change mitigation potential of Canada's forest sector. *Biogeosciences*, **11**, 3515-3529.), but do not have a forest study of similar quality. This is clearly an area where valuable new work could be done – but it is currently not really addressed in the draft Forest Carbon Plan that is best considered to be a document focused on the ‘non private’ half of forests in California.

The focus on forests that are managed primarily for benefits other than the production of sustainable wood products is a very important issue in California and aligns well with the majority of the state and federal agencies on the Forest Climate Action Team. However, it does not seem to be well aligned with the very different opportunities for climate change mitigation for managed forests (sometimes referred to as working forests) that have been thoroughly demonstrated by the recent national level scenarios in Canada and Sweden (Smyth et al. 2014, Gustavsson et al. 2017). To develop similar products for California, the state would require a bit more

- 1) Evidence based approach for evaluating existing conditions, and
- 2) Scenario planning for future opportunities that integrates best management practices as well as more innovative practices.

As it stands now, achieving evidence based analysis and scenario planning that would be relevant to the privately managed forest lands of California probably can not be achieved by simply revising the current FCP. Fortunately, there is continuous development of new carbon flux insights based on remeasurements of FIA plots (rather than just models that use a single FIA measurement), calibrated forest carbon growth-removal-mortality models, and improved information on current and future potential carbon life cycle analyses of harvested wood. A possible option would be focus the revised FCP report on the forest lands that are described on page 1 of the executive summary and also start a new and different evidence based approach tied to scenario planning. The suggested second component could align well with the Governor's climate change pillars related to energy efficient buildings (the end use of most harvested wood products produced from California wood) and reduced carbon intensity of transportation fuels (a potential use of harvest wood that can only be used for energy). After all, nearly all Californians currently live in homes and apartments built of wood. Many of these homes are now well over 100 years of age and have proved to be an excellent example of carbon sequestration.

Sincerely,



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