

A review of the California Forest Carbon Plan: Draft for Public Review, released on January 20, 2017

Prepared by Dr. John L Campbell, Assistant Professor of Research, Department of Forest Ecosystems and Society, Oregon State University, Corvallis Oregon. March 7, 2017

Background

In late January of 2017, I was approached by Susan Robinson of Ebbetts Pass Forest Watch and asked if I could provide a critical review of the California Forest Carbon Plan - draft public review version (hereafter referred to as the CFCP) based on my professional expertise on forest carbon dynamics. After a brief conversation clarifying the scope and independence of my review, I agreed to prepare and deliver a document articulating the strengths and shortcomings of the CFCP as I saw them, in return for a modest consulting fee. The views and opinions expressed in this review are mine only do not necessarily reflect that of other individuals, or organizations.

Summary

The CFCP advocates for increased logging and prescribed burning on public forest land and a continuation of business-as-usual logging on commercial forests. A case is made that both these actions result in favorable ecological, economic and social outcomes and that under this management regime state-wide forest carbon stocks will, in future decades, aggrade to levels higher than they are today. While the arguments in favor of forest restoration are generally defensible, the actions proposed by the CFCP rely almost entirely on a single dogmatic narrative of improved forest health through harvest without acknowledging the role natural disturbance can play in maintaining healthy forest function or the easy carbon savings that would result from increasing rotation lengths on lands managed for timber production. The degree to which the CFCP would accelerate the restoration of historic structure to certain fire-prone pine forests in California, it has my endorsement. However, I believe an improved forest carbon plan would: 1) less often conflate climate adaptation through managed resilience with climate mitigation through carbon sequestration, 2) explicitly embrace natural disturbance as part of the solution rather than part of the problem, and 3) rely less on existing rubrics of sustainability to keep commercial timberland carbon neutral and resilient to disturbance. In the sections below I elaborate on these three themes and provide advice on how these shortcomings may be addressed while keeping within the stated objectives and scope of the CFCP.

Conflating forest health with carbon storage

I agree with the CFCP that thinning certain over-stocked forests in fire-prone landscapes represents a wise balance between climate mitigation (afforded through maximizing carbon storage) and climate adaptation (afforded through increased

resilience to climate driven stressors), but any suggestion that this plan maximizes both adaptation and mitigation is a falsehood.

Too often, the CFCP mistakenly implies that increased tree harvest and wood utilization drives increased carbon storage. When at best such activities can be compatible with increased forest carbon storage above current amounts while providing a level of ecological services much greater than if forests were managed solely to maximize carbon storage. Throughout the CFCP it is asserted that reductions in forest carbon stocks associated with restoration thinning will be replaced by growth of the remaining trees within a few decades, but the reader is regularly led to believe that such growth and storage would not occur without the thinning (pages 9, 10, 48, and 61). While it is true and well-established that thinning can redistribute productivity to remaining trees, I am unaware of a single study, or plausible mechanism, by which tree removal increases stand-level productivity (and by extension carbon stocks). For instance, the CFCP fairly cites Battles et al. (2015) as empirical evidence that thinned forests can “within a decade or two” regain the carbon lost due to the removal of smaller trees, but fails to acknowledge that the un-thinned control forests in this same study continued to grow over this period and, at all times, contained more carbon than the thinned ones. Even when one considers the protection thinning affords forests from carbon losses in high-severity fire, thinned forests contain less carbon over space and time than do fire suppressed ones (provided conditions afford timely post-fire regeneration). Such is well-established in several reviews of the subject, all of which are notable missing from the CFCP citations (Campbell et al., 2012; Restaino and Peterson 2013; Young, 2015; Kalies and Kent 2016).

Does this mean thinning forests cannot be part of a plan to keep forest carbon stocks growing in California? Does this mean that restored thin forests can't contain more carbon tomorrow than their fire-suppressed counterparts do today? Absolutely not. However, for the CFCP to maintain its integrity and ability to withstand future scrutiny, it should be more transparent regarding the carbon costs of maintaining fire-resilient forests and describe restoration for what it is: a deliberate and desired departure from our current trajectory towards even denser forests. To better, and more accurately, articulate the CFCP's balance between historical resilience and maximum carbon storage over space and time, I suggest three revisions to the document.

First, the CFCP should emphasize and reiterate its statement: “Accumulating evidence suggests that in Mediterranean-climate forests such as those of California, the optimal, resilient level of carbon storage in living trees is much less than what the site can maximally support at a given point in time” (page 48). Framing all subsequent endorsement of thinning in this larger narrative would help the CFCP better advocate for restoration.

Second, CFCP should consider adopting the conceptual narrative of Loudermilk et al. (2014) who argues that certain forests maintained at low density, over time and space, can contain *more* carbon than dense forests do now, *less* carbon than dense forests would later (even when subject to fire), and *potentially more* carbon than dense forests would later in the event that climate change significantly compromised their capacity to regenerate after disturbance. Such a narrative captures the concept of “safeguarding” against forest collapse while also acknowledging the perpetual carbon costs of doing so.

Thirdly, the CFCP should state clearly that a contribution by the forest sector to California's commitment to reduce carbon emissions need not maximize forest carbon storage, only grow it from current levels. As such, the base line to which future carbon stocks should be measured should be current forests now (prior to proposed restoration) not future forest conditions if left untreated (which by the CFCP's own buried admission) would render restoration as a loss. As written, the CFCP already assumes this rubric, but rather than stating it clearly, the document too often leads the reader into thinking its plan to "safeguard" carbon in forests is one also that maximizes it.

Failure to embrace natural disturbance as part of the solution rather than part of the problem

Throughout the CFCP, wildfire, insect mortality, and drought mortality are all described as undesirable carbon losses to be mitigated through preemptive thinning when it is generally understood that California forests are in need of more fire not less (Stephens et al., 2007; Marlon et al., 2012; Baker, 2015) and that insect mortality, and drought mortality function primarily to thin forests (Harvey et al., 2013; Meigs et al., 2016), much like that proposed through selective harvest. Clearly, prescribed thinning, unlike natural mortality, can insure retention of the most desirable trees, and prescribed fire can be conducted to minimize smoke pollution relative to that of wildfire. However, the severity distributions of wildfire in most California forest types today are not substantially different than they are thought to have been historically, and are only slightly skewed toward high severity among the lower-elevation pine forests typically targeted for restoration (Riely et al., 2017).

Why should the CFCP embrace natural disturbance as part of the solution? Simply put, all evidence points towards an increase in natural forest mortality in future decades, and a plan based primarily on fighting this trend with selective harvest is doomed only to fail. Explicitly acknowledging natural disturbance as an acceptable means by which to restore natural, resilient function to fire-suppressed forests would go a long way to improve the credibility of the CFCP, but the document need also rectify a persistent mischaracterization of dead trees as solely a source of carbon emissions compromising the capacity of California forests to function as net sinks. So long as mortality outpaces decay, which appears to be the case for many California forests today, dead trees collectively represent an aggrading carbon pool, not a shrinking one; just like that regularly claimed to occur in products made from wood thinned from forests. Moreover, there is no evidence I am aware of that trees surviving pulses of natural mortality pulses do not experience compensatory growth in the same manner in which trees surviving selective harvest are regularly claimed to. As currently written, the CFCP is peppered with claims that dead trees are driving California forests into a net sink (pages 1, 49, 59, 62, 75), but nowhere is this miss-calculation so glaring than in Tables 12 and 13 where forest carbon balance is compared across ownership classes. In this otherwise informative section, net forest carbon stores are calculated as growth minus mortality minus harvest when net forest carbon stores are, by definition, growth minus decomposition of dead trees minus harvest. Simply put, the sequestration of carbon in forests is defined by stocks, not fluxes, and dead trees are carbon stocks

which function to keep carbon away from the atmosphere regardless of the fact that they are releasing it. The CFCP's dogmatic obsession with minimizing natural mortality, dismissing dead trees as a carbon loss, and building markets to afford their salvage runs counter to its stated objective of thinning forests, returning natural disturbance to the ecosystem, and building carbon stocks on the landscape.

Overreliance on existing accounting schemes to keep commercial timberland carbon neutral

Frank declarations regarding the “differing imperatives” between public forests and privately owned timberland (page 104) are indeed a useful starting point in discussing the role production forests may play in achieving state-wide carbon balance goals. Unfortunately, the CFCP goes on to rely almost entirely on the existing California Forest Practice Act and Rules to insure carbon neutrality in privately owned forests without any critical assessment as to whether these rules are appropriate for assessing carbon balance or whether management practices deemed sustainable in past years will be reliably so under future climate conditions. Moreover, the CFCP appears to embrace, without critical assessment, some rather far-fetched assertions that “managed forest stands show substantial carbon sequestration benefits over unmanaged stands” (page 71)

I realize that a comprehensive re-evaluation of California's Forest Practice Act and Rules is beyond the scope of the CFCP, but to best insure the goals of maintaining carbon storage across all forest lands of California, the CFCP should propose contingency plans for the modification of harvest practices (if even voluntary) in the event that current rubrics of sustainability fail to grow carbon on private lands under a changing climate. Such contingencies should be uncontentious since, unlike carbon storage on public land (which is admittedly complicated by nuanced and scale-dependent issues such as multi-use and resilience to stochastic events), carbon storage on production timberland is easily tuned by adjusting rotation interval (Harmon et al., 1990; Mitchell et al., 2012). In short, the California's Forest Practice Act should be a starting point, not an ending point for the CFCP objectives.

Regarding assertions by the CFCP that forests managed for timber production function to store more carbon than unmanaged ones, the citations provided are insufficiently documented to back such claims and appear to be based on several false or exaggerated assumptions. A creditable CFCP should better scrutinize these assertions keeping in mind these three facts:

First, when un-merchantable harvest residue, finds its way to a mill, utilizing it for energy through combustion is reasonable, but to credit this entire carbon stream as a carbon offset denies the fact that an equal amount of energy could have been acquired through the combustion of much less fossil fuel and the fact that energy demand by the mill was itself created by the harvest. As it pertains to the objective of the CFCP, fuel offsets should apply only to any residual energy sent to independent users, with the additional realization that just because a fuel source is renewable does not make it carbon neutral (TerMikaelian et al., 2015)

Second, the use of wood products often involves less energy for manufacturing than some other materials used for building, but it is not always clear how much of this

energy is fossil-based, whether the amount of carbon involved in fossil energy is constant, or whether the amount of energy involved is constant over time. Some of these factors would likely lower the initial displacement of fossil carbon and reduce the long-term benefits.

Thirdly, despite noted improvements in wood utilization and disposal methods over the last couple of decades, the longevity of forest biomass once harvested is, by the CFCP's own calculations, not substantially different than a dead tree left in the forest to decay and or combust. Citing Smith et al. (2006), the CFCP claims that after 100 years, approximately 61% wood product carbon is release to the atmosphere, yet after the same period, dead bole wood left to decay and combust in the forests releases approximately 63% percent of its carbon into the atmosphere (Campbell et al., 2016). This parity in decomposition leaves long-term landfill storage as the only demonstrable difference between trees left to decay in the forest and those entering the product stream, which necessary comes at the cost of reducing time-averaged forest carbon stocks (Stewart and Sharma, 2015).

In addition to weak logic regarding the capacity of production forests to store carbon, there exists a double standard in the CFCP regarding the preceded threats posed by high tree density on public versus private lands. While there seems to be a rush to thin fire-suppressed forests on public land in order to reduce future drought and fire mortality, the CFCP makes no mention of the need to do so on production forests, which by design have higher water demands and canopy fuel densities. Obviously, a certain tree density is required to keep production forests profitable, but if the authors of the CFCP feel so strongly that healthy forests of the future must be thinner than they currently are, then such must also apply to the large fraction of California forests managed for timber production.

I acknowledge that timber production is an exceedingly important part of California's economy (especially for certain rural communities), California and the world over need wood, and that wood can be produced from California forest in a carbon-neutral manner. In general, the CFCP has done well by including commercial timber production in their overriding carbon plan. However, to embrace in totality claims that managed forests do a better job than unmanaged ones in sequestering carbon from the atmosphere leads inevitably to one awfully-strange conclusion: maximum carbon storage by California forests would be achieved by converting all forest lands into young production forests subject to comprehensive fire suppression, and that our best hope for sequestering carbon from the atmosphere lies in the expansion of the build environment. The CFCP can do better than to fall into this trap, while also acknowledging the needs to generate timber and profit from privately owned forests.

Dr. John L Campbell



Assistant Professor of Research
Department of Forest Ecosystems and Society
Oregon State University, Corvallis Oregon.

Citations

- Baker, WL. 2015. Are High-Severity Fires Burning at Much Higher Rates Recently than Historically in Dry-Forest Landscapes of the Western USA? *PLoS ONE* 10(9): e0136147 doi:10.1371/journal.pone.0136147
- Campbell, J.L. , J.B. Fontaine, and D.C. Donato. 2016. Carbon emissions from decomposition of fire-killed trees following a large wildfire in Oregon, United States. *Journal of Geophysical Research: Biogeosciences* 121 (3), 718-730.
- Campbell, J.L., M.E. Harmon, and S.R. Mitchell. 2012. Can fuel reduction treatments really increase forest carbon sequestration by reducing future fire emissions? *Frontiers in Ecology and the Environment*. 10(2):83-90.
- Harmon, ME, WK Ferrell, and JF Franklin. 1990. Effects on carbon storage of conversion of old-growth forests to young forests. *Science* 247: 699–702.
- Harvey, BJ, DC Donato, W Romme, and MG Turner. 2013. Influence of recent bark beetle outbreak on fire severity and post-fire tree regeneration in montane Douglas-fir forests. *Ecology* 94:2475–86.
- Kalies, EL, and LL Yocom Kent. 2016. Tamm Review: Are fuel treatments effective at achieving ecological and social objectives? A systematic review. *Forest Ecology and Management* 375: 84–95.
- Loudermilk, EL, RM Scheller, PJ Weisberg, and A Kretchun. 2016. Bending the carbon curve: fire management for carbon resilience under climate change. *Landscape Ecology* DOI 10.1007/s10980-016-0447-x
- Marlon, JR, PJ Bartlein, DG Gavin, CJ Long, RS Anderson, CE Briles, KJ Brown, D Colombaroli, DJ Hallett, MJ Power, EA Scharf, and MK Walsh. 2012. Long-term perspective on wildfires in the western USA. *PNAS* 109(9): 535-543.
- Meigs, G.W., H.S.J. Zald, J.L. Campbell, W.S. Keeton, and R.E. Kennedy. 2016. Do insect outbreaks reduce the severity of subsequent forest fires? *Environmental Research Letters* 11 (4), 045008.
- Mitchell, SR, ME Harmon, KB O’Connell, and F Schnekenburger. 2012. Carbon debt and carbon sequestration parity in forest bioenergy production. *Global Change Biology- Bioenergy* 4: 818–827.
- Reilly, M.J, CJ Dunn, GW Meigs, TA Spies, RE Kennedy, JD Bailey, and K Briggs. 2017. Contemporary patterns of fire extent and severity in forests of the Pacific Northwest, United States (1985–2010). *Ecosphere*, in press.
- Restaino, JC, and DL Peterson. 2013. Wildfire and fuel treatment effects on forest carbon dynamics in the western United States. *Forest Ecology and Management* 303: 46–60.

- Smith, J, HL Skog, and R Birdsey. 2006. Methods for calculating forest ecosystem and harvested carbon with standard estimates for forest types of the United States. Gen. Tech. Rep. NE-343. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station. 216 p.
- Stephens, SL, RE Martin, and NE Clinton. 2007. Prehistoric fire area and emissions from California's forests, woodlands, shrublands, and grasslands. *Forest Ecology and Management*, 251(3), 205-216.
- Stewart, W, and B Sharma. 2015. Carbon calculator tracks the climate benefits of managed private forests. *California Agriculture*, 69(1), 21-26.
- TerMikaelian, MT, SJ Colombo, and J Chen. 2015. The burning question: does forest bioenergy reduce carbon emissions? A review of common misconceptions about forest carbon accounting. *Journal of Forestry* 113(1):57:68.
- Young, D. 2015. Carbon Implications of Fuels Reduction and Ecological Restoration Treatments in Sierra Nevada Forests. Report prepared for The Nature Conservancy 555 Capitol Mall, Suite 1290, Sacramento, CA 95814



Sent to: fcat.calfire@fire.ca.gov on Date Shown below

March 17, 2017

Forest Climate Action Team (FCAT)

RE: Comments on Draft California Forest Carbon Plan

Dear FCAT Team Members:

The following comments are submitted on behalf of the Environmental Protection Information Center (“EPIC”) regarding the January 17, 2017 Public Review Draft of the California Forest Carbon Plan (“Draft Plan.”). EPIC appreciates the opportunity to provide the FCAT Team with our comments and respectfully request a written response to all points raised herein.

The Forest Carbon Plan illustrates well the business-as-usual approach undertaken by the California Department of Forestry and Fire Protection (“CALFIRE”) in its regulation of forest practice in California. Rather than dig in deep and effectively address the climate crisis, CALFIRE, as lead for this document, has issued nothing more than a plan for a plan. Of great concern is the lack of effective measures to regulate timber operations which ensure the net carbon sequestration we need from our forestlands. Instead, we see what we have experienced now for many years—an agency that is unwilling or unable to respond to legislative mandates and timelines, leaving our forestlands exposed to the impacts of climate change, and refusing to grapple with its role in facilitating the current unhealthy state of many of our private forestlands. The Forest Carbon Plan bears little relationship to, or understanding of, the existing regulatory and policy structure for California’s private land forest management. Moreover, it does not even satisfy the directives which initiated its development. As a consequence, we are presented with a totally inadequate document, while the effects of climate change on our forestlands and their resources continue without effective action or response. Finally, the plan as written fails to reconcile the fact that much of the actions proposed in the Draft Plan are likely, at best, to lead directly back again to the unhealthy state of our forestlands that it claims to attempt to remediate.

As an organization which has spent four decades preventing harmful effects from timber operations and protecting forestlands, these comments focus on private timberlands.

I. Genesis of the Forest Carbon Plan.

A. Forest Carbon Plan Initiated in 2014.

The *First Update to the Climate Change Scoping Plan*, May 2014 (“2014 Update”),

requires that “[q]uantitative planning targets must be set to increase net forest carbon in California in the near term, mid-term, and by 2050, while ensuring forest resilience, health, and continued ecosystem services. Forest carbon inventory and assessments should be continually maintained and refined to support this effort, and appropriate measures, funding, and incentives must also be established.” (*Id.*, at 72-73.) The “[s]pecific actions to meet these planning targets for increasing carbon storage in California forests will be laid out in a ‘Forest Carbon Plan’ (Plan).” (*Id.*, at 73.)

According to the 2014 Update, at a minimum, the Forest Carbon Plan must:

- Set mid-term and long-term planning targets;
- Identify actions to meet those targets; and
- Provide recommendations on funding those actions. (*Id.*)

In addition, “the Plan should include a review of Forest Practice Regulations and recommendations for best management practices and potential additional regulatory measures or amendments needed to minimize GHG emissions and enhance carbon storage associated with silvicultural treatments. For example, a requirement for Sustained Yield Plans to demonstrate that activities not only maintain the current level of carbon sequestration, but actually increase carbon sequestration over the 100-year planning horizon.” (*Id.*)

Further, the 2014 Update also provided that a working group

“will be convened to produce a report that outlines funding needs and opportunities for the Natural and Working Lands Sector as a whole. The GHG Inventory, Forest Carbon Plan, local land use planning efforts, and other statewide efforts should be considered in development of the report.” (*Id.*, at 75.)

The “Forestry Sector” Working Paper, included as Appendix C in the 2014 Update, recognized:

Future climate change scenarios predict increases in temperature, increases in atmospheric CO₂ concentrations, and changes in the amount and distribution of precipitation. Altering these fundamental drivers of climate can result in changes in tree growth, changes in the range and distribution of species, and alteration to disturbance regimes (e.g., wildfires, outbreaks of pests, invasive species) . . . [and that] [r]elatively small changes in temperature and precipitation can affect reforestation success, growth, susceptibility to pests and forest productivity.” (*Id.*, App. C, at 5, 6.)

The Forest Sector Policy Framework depended upon the creation of the “Interagency Forestry Working Group” (IFWG) “to provide recommendations and coordinate efforts for all California forest and climate change related activities to protect the state’s forests.” (*See*, www.climatechange.ca.gov/climate_action_team/forestry.html, last accessed March 6, 2017.) According to Appendix C, the IFWG was created to “address a broad range of climate change issues,” with three primary tasks: (1) update the GHG inventory for the forestry sector; (2) evaluate adequacy of existing forest regulations and programs to achieve the Scoping Plan forest

Environmental Protection Information Center

145 G Street, Suite A, Arcata, CA 95521 | (707) 822-7711

www.wildcalifornia.org

Page 2 of 23

sector GHG targets, and (3) define biomass sustainability for biomass and biofuel utilization.” (2014 Update, App. C. at 19.) The IFWG functioned for a short period of time, issued draft task reports, and last met in October 2010. (See, www.climatechange.ca.gov/climate_action_team/forestry/meetings/, last accessed March 6, 2017.)

B. Other Directives For The Forest Carbon Plan

1. Forest Climate Action Team

In 2014, the Natural Resources Agency in conjunction with CalEPA convened an inter-agency working group, called the Forest Climate Action Team, to develop the Forest Carbon Plan. (*Annual Report to the Joint Legislative Budget Committee on Assembly Bill 32 (Chapter 488, Statutes of 2006) The California Global Warming Solutions Act of 2006*, January 2015, at 26-27.) CNRA and CalEPA “are lead agencies for developing the Forest Carbon Plan document.” (*Id.*, at 27.)

2. Climate Change Adaptation Strategy

A component of California’s efforts to address climate change is embodied in its Climate Change Adaptation Strategy. In 2016, the Natural Resources Agency moved beyond the 2014 Update finding that climate change “can” impact forests, to find that climate change is *already* impacting California forests:

“Climate change in California forests is affecting tree survival and growth, forest composition, forest health and productivity, and has increased the intensity of ecosystem disturbances from wildlife, insects and spread of invasive species and land type conversion. These impacts result in less capacity to store carbon and more risk of greenhouse gas emissions.” (“Safeguarding California: Implementation Action Plans” (March 2016), Forestry Sector Plan [“Forestry Implementation Action Plan”], at 92[.]

The first action proposed in the Forestry Implementation Action Plan is to “improve forest health, resiliency and co-benefits by implementing forest management practices on public and private lands.” (*Id.*, at 97[.]). This includes “[c]oordinat[ing] efforts to reduce wildfire risks and severity to reduce associated emissions and avoid risk of landscape conversion to invasive species” and to “[m]anage the forest in such a way that increases overall carbon storage and provides multiple co-benefits such as water and biodiversity protection.” (*Id.*) It also includes actions to invest in urban forestry, improve efforts for biomass utilization, implement forest management for overall health and protection of watersheds, implement priority research, and implement forest health monitoring in an adaptive management context. (*Id.*, at 97-98.)

According to this document, the “Forest Carbon Plan will provide forest carbon targets and an array of strategies to promote healthy forests that protect and enhance forest carbon and the broader range of forest environmental services for all forest in California.” (*Id.*, at 99.) In addition, “[a]s part of the forest carbon plan, a Resource Economic Study will be drafted by UC

Berkeley academics. The study will evaluate several different management actions and investment choices identified in the Forest Carbon Plan.” (*Id.*, at 100.)

3. 2017 Scoping Plan Update.

The 2017 Update to the Scoping Plan “sits at the center of this broad tapestry of California’s other climate-oriented plans and strategies. These include, for example, ... the State’s Forest Carbon Plan . . . These are designed to focus on reducing carbon pollution while also delivering targeted results and a broad range of co-benefits.” (“*The 2017 Climate Change Scoping Plan Update the Proposed Strategy for Achieving California’s 2030 Greenhouse Gas Target*,” January 20, 2017 [“2017 Update”], at ES7.) The 2017 Update “was developed in close coordination with other State agency plans and regulations, including . . . the Forest Carbon Plan . . .”, (*id.*, at 7), and “builds off of ongoing efforts to identify targets for natural and working lands, such as through the Forest Carbon Draft Plan.” (*Id.*, at 25.)

According to the 2017 Draft Scoping Plan Update: “[t]he Forest Carbon Plan will include the goal to reduce black carbon emissions from unmanaged wildfire events through forest management and restoration activities that are designed to reduce the risk of wildfire.” (*Id.*, at 14, fn.28.)

The 2017 Update states that it “comprehensively addresses for the first time the greenhouse gas emissions from natural and working lands of California—including the agriculture and forestry sectors.” (*Id.*, at ES1.)

The 2017 Update states that it includes “an initial analysis of business-as-usual net carbon sequestration rates from natural and working lands, including forecasts to 2030 and 2050.” (*Id.*, at 1101.) However, Chapter II, which assesses alternatives scenarios against business-as-usual, does not include any estimates for natural and working lands, because “work is still underway on how to quantify the GHG emissions within the natural and working lands sector.” (*Id.*, at 31.) More projections need to be developed, which “will be used to estimate the difference between current carbon sequestration levels and expected sequestration levels in the scenarios to achieve the net zero loss goal by 2030 and net sequestration goal by 2050.” (*Id.*, at 110.)

Thus, despite its claims, the 2017 Draft Scoping Plan Update does not “comprehensively address for the first time the greenhouse emissions from natural and working lands in California.” (*Id.*, at ES1.) At most, it recognizes that more work is needed to understand carbon sequestration in natural and working lands, dependent on future modeling and projections (1) to “help guide near and long-term State policies to ensure net sequestration in our natural and working lands,” (2) to be refined over time, which “will be important to support implementation planning and to model implementation scenarios to 2100 to better understand the response of natural and working lands to major climate change impacts such as increased temperature, drought, and wildfire,” and (3) the results of which “may also inform the accounting framework requirements set forth in SB 859.” (*Id.*) Indeed, according to the 2017 Draft Scoping Plan Update: “Future work will identify and seek to fill gaps, and set a comprehensive and strategic path forward.” (*Id.*, at 111.)

Thus, another future plan is proposed: by 2018, the “state will complete an Integrated Natural and Working Lands Climate Change Action Plan” intended to “ensure the natural and working lands sector is a net carbon sink.” (*Id.*, at 115.) It is not clear if the Forest Carbon Plan may be included in this “Action Plan.” (*Id.*) As part of Scoping and Tracking Progress, the Forest Carbon Plan will be completed and implemented by some date in the future, although it is not stated how or when it will be completed and implemented. (*Id.*, at 118; Discussion Draft 2030 Target Scoping Plan Update, December 2, 2016, at 67.)

II. Summary Critique of the Draft Forest Carbon Plan.

The January 17, 2017 Public Review Draft of the Draft Forest Carbon Plan (“Draft Plan”) is yet another example of a “plan for a plan,” which mimics a *laissez faire* approach maintained by CAL FIRE and its Board of Forestry (“Board”) with respect to climate change and its impacts on forest lands. It is more than disappointing, for example, that after more than six years, we still have no assurance from the Board that the rules and regulations which govern private land forest practices provide for adequate carbon sequestration to meet our state mandates. (Pub. Res. Code § 4551(b)(1).) To CAL FIRE and its Board, it seems as though climate change remains a future concern, rather than an imperative to take effective action. The Draft Plan is another illustration of lack of care, as it has no effective action to undertake efforts to deal with the impacts of climate change on our forestlands. To the extent its main emphasis is on “management,” or “treatments,” through “thinning,” with utilization of biomass for non-urban forests, the Draft Plan fails to appreciate the need for action to protect and preserve our forestlands. While it gives attention to the need for large old trees, and land conservation, it provides no effective scheme to ensure these outcomes. It is long on ideas, and short on action.

A peer review of the Draft Plan conducted for Ebbetts Pass Forest Watch by Oregon State University Assistant Professor, Dr. John L. Campbell, provides the following summary of the review results, echoing our sentiments:

“The CFCP advocates for increased logging and prescribed burning on public forest land and a continuation of business-as-usual logging on commercial forests. A case is made that both these actions result in favorable ecological, economic and social outcomes and that under this management regime state-wide forest carbon stocks will, in future decades, aggrade to levels higher than they are today. While the arguments in favor of forest restoration are generally defensible, the actions proposed by the CFCP rely almost entirely on a single dogmatic narrative of improved forest health through harvest without acknowledging the roll natural disturbance can play in maintaining healthy forest function or the easy carbon savings that would result from increasing rotation lengths on lands managed for timber production.” (Campbell CFCP Peer Review, at 1, copy attached.)

The Draft Plan is at best incomplete and needs to be rewritten to be ready for public consumption. This comment letter addresses specific issues which underscore this lack of commitment to effectively deal with climate change impacts.

To start, Draft Plan lacks stated authority. The directives discussed above, as well as the Draft Plan itself, fail to identify the authority and implementation of the proposed Forest Carbon Plan. It is not clear, nor stated, under what authority and what agency or agencies review comments on the Draft Plan, and/or propose to take action on any decision about the Forest Carbon Plan. There is no clarity as to what status the Forest Carbon Plan has or will have in the existing regulatory structure for California's forest regulation, much less its roles in California's multi-faceted effort to deal with climate change. Nor are any protocols or standards provided to assess the Forest Carbon Plan.

The Draft Plan fails to satisfy the directives as set forth above. Moreover, it lacks any core reference to and understanding of the existing Forest Practice Act and the Forest and Rangeland Resources Assessment and Policy Act. These two statutory schemes provide the existing regulatory structure for commercial private land timber operations in California and the mechanism to ensure an ongoing and regular understanding our of forestlands and their resources. Forest practices in California depend on these statutes, and the Draft Plan largely ignores their existence and what role they could and should play in implementing the Plan. Nor is the Draft Plan accompanied by a required analysis under the California Environmental Quality Act ("CEQA").

Further, instead of meeting directives and existing in the context of our existing regulatory schemes, the Draft Plan relies on many assumptions, has no real action, and fails to reckon with how the use of offsets by timber industry can adversely affect reduction of GHG emissions and increased carbon sequestration. The Draft Plan is construed in such a way as though it is intended to exist in a vacuum.

III. The Forest Carbon Plan Lacks Statement of Authority and Protocols.

The public is asked to comment on a document which has no clear status. While conceived in the 2014 Update, it is unclear from that document or otherwise if the Forest Carbon Plan is a stand-alone regulatory tool, a part of the 2017 Scoping Plan Update, or some other kind of document. Nothing in the Draft Plan instructs as to its review protocols, adoption, and/or use by one or more agencies, or otherwise.

The Draft Plan itself starts by stating that it is the "detailed implementation plan for the forest carbon goals embodied in the 2030 Target Scoping Plan Update." (Draft Plan, at 1.) However, the 2017 Draft Scoping Plan Update makes no mention of the Forest Carbon Plan. Nor is there any mention of it in the accompanying Appendix F - Environmental Assessment, as part of the 'Project Description,' or elsewhere in the 2017 Draft Scoping Plan Update.

As noted above, the Draft Plan is listed as one effort which may be included in an as-yet-to-be-developed "Natural and Working Lands Climate Change Action Plan." (2017 Update, at 115.) The 2017 Update 'Scoping and Tracking Progress' lists the item "Complete and implement the Forest Carbon Plan," but it is not clear that this is one of the "many" efforts to be included in this future Action Plan. Nor does the 2017 Draft Scoping Plan Update identify what agency and when that progress effort may occur. (*Id.*, at 118.)

As such, the opportunity for public comment on the Draft Plan is stymied, with no framework against which it can be assessed. Because no authority or protocols are identified and no framework given as to how the Draft Plan relates to existing statutory and regulatory laws governing California forest practices, we are left with the guidance as provided by statements in the 2014 Scoping Plan Update, the 2016 Forestry Implementation Action Plan, and the 2017 Draft Scoping Plan Update. In the absence of any clarity as to the authority and protocols by which public comments may be reviewed and responded to, and the Forest Carbon Plan may be acted upon, we object to, and challenge the manner and substance by which the Draft Plan has been issued and proposed for public review.

IV. The Forest Carbon Plan Does Not Satisfy the Directives Given.

The only guidance as to what is to be included in the Draft Plan is provided by the three references identified above. From these, we identify six specific requirements:

- 1) Set mid-term and long-term planning targets for increasing carbon storage in California forests;
- 2) Identify specific actions to meet those targets;
- 3) Provide recommendations on funding those actions;
- 4) Should review the Forest Practice Regulations and recommendations for best management practices and potential additional regulatory measures or amendments needed to minimize GHG emissions and enhance carbon storage associated with silvicultural treatments, such as a requirement for Sustained Yield Plans to demonstrate that activities not only maintain the current level of carbon sequestration, but actually increase carbon sequestration over the 100-year planning horizon (2014 Update, at 73);
- 5) A Resource Economic Study, which will evaluate several different management actions and investment choices identified in the Forest Carbon Plan” (Forestry Implementation Action Plan, at 100); and;
- 6) Include the goal to reduce black carbon emissions from unmanaged wildfire events through forest management and restoration activities that are designed to reduce the risk of wildfire” (2017 Update, at 14, fn 28).

The Draft Plan pays lip service to the requirement for targets, actions, and recommendations for funding; however, upon close review and as highlighted below, these don’t come close to constituting a “detailed implementation plan for the forest carbon goals” in the 2017 Draft Scoping Plan Update.

For example, while it claims a “number of quantitative targets are included in this Draft Plan,” (Draft Plan, at 24), this is the only time one finds the term, “quantitative targets.” There is no clear path presented as to what are those “quantitative targets.” And, to the extent the “goals” articulated in Chapter 3 are intended to provide these targets, they lack effective strategy to enable the specific actions required by the 2014 Scoping Plan Update.

Another example is found in the stated target for non-federal forest lands: to “ensure that timber operations conducted under the [Act] and Rules contribute to the achievement of healthy and resilient forests that are net sinks of carbon.” (*Id.*, at 30.) We note this is a driving force of

the Forest Practice Act, and the Board duty pursuant to AB 1504, which is ignored here, yet with no statement as to how this will occur. AB 1504 was chaptered in 2010, and there has not been any real effort on the part of the Board of Forestry to meet the mandates imparted by the Legislature to-date. At present, there is still nothing in the Forest Practice Rules enacted by the Board that would ensure reductions in GHG emissions from forestry-related activities, or ensure added carbon dioxide storage beyond the status-quo. The Draft Plan perpetuates the failure of the Board by completely failing to include an evaluation of extant Forest Practice Rules, as required by AB 1504.

The Draft Plan does not include a review of the Forest Practice Rules, or any recommendations for best management practices and additional regulatory amendments needed to minimize GHG emissions and enhance carbon storage with silvicultural treatments. Nor does the Draft Plan provide a “resource economic study.” And, the Draft Plan explicitly states that “neither this plan, nor the draft Short-Lived Climate Pollutant Reduction Strategy (November 2016), includes an explicit, numerical emission reduction target for wildfire black carbon emissions.” (Draft Plan, at 30.)

V. The Forest Carbon Plan Fails to Recognize the Governance and Duties Under Existing Statutes.

The Draft Plan effectively ignores California’s regulatory structure governing private land forest practice, and the state’s forest research program intended to inform policy and regulatory changes. Notably, the Draft Plan all but ignores and lacks recognition of core principles in the California’s Z’Berg Nejedly Forest Practice Act (“Act”), Public Resources Code § 4511 *et seq.*, the law which regulates private land commercial forestry operations. This law governs how logging is done, and what standards apply—all of which is key to developing a statewide plan to ensure net carbon sequestration from these forests. As mentioned above, the Draft Plan did not bother do provide a review of the existing regulations under the Act, or make recommendations. In addition, the Draft Plan fails to require information through the Forest and Rangeland Resources Assessment and Policy Act (“FRAP”), which is administered by CAL FIRE. Finally, the Draft Plan fails to comply with the California Environmental Quality Act (“CEQA”), lacking any analysis or determination under CEQA.

We provide here an overview of these statutory schemes to illustrate how they must be utilized and complied with in the development of any Forest Carbon Plan intended to provide an effective strategy to reduce GHG emissions and ensure net carbon sequestration in our forests.

A. The Z’Berg Nejedly Forest Practice Act.

When the Legislature created the Act in 1973, it recognized that “the forest resources and timberlands of the state are among the most valuable of the natural resources of the state and that there is great concern throughout the state relating to their utilization, restoration, and protection.” (Pub. Res. Code § 4512(a).) California’s policy is “to encourage prudent and responsible forest resource management calculated to serve the public's need for timber and other forest products, while giving consideration to the public’s need for watershed protection, fisheries and wildlife, sequestration of carbon dioxide, and recreational opportunities alike in this

and future generations.”(*Id.* § 4512(c), Emphasis added.)¹

The Act is intended “to create and maintain an effective and comprehensive system of regulation and use of all timberlands so as to *ensure* both of the following:

- (a) Where feasible, the productivity of timberlands is restored, enhanced, and maintained.
- (b) The goal of maximum sustained production of high-quality timber products is achieved while giving consideration to values relating to sequestration of carbon dioxide, recreation, watershed, wildlife, range and forage, fisheries, regional economic vitality, employment, and aesthetic enjoyment. (*Id.* § 4513.)

The Board has a duty to ensure that our forest resources are protected, by among other things, adopting regulations which are regularly reviewed and revised in order to ensure that the “comprehensive system” envisioned by Section 4513. The Board, as part of CALFIRE, “shall represent the state’s interest in . . . the protection of the state’s interests in forest resources on private lands, and shall determine, establish, and maintain an adequate forest policy. General policies for guidance of the department shall be determined by the board.” (*Id.* §§ 730(a), 740.)

The Act requires the Board to adopt rules consistent with the following three policies:

- (1) “The board shall adopt district forest practice rules and regulations for each district in accordance with the policies set forth in Article 1 (commencing with Section 4511) . . . to ensure the continuous growing and harvesting of commercial forest tree species and to protect the soil, air, fish and wildlife, and water resources, including, but not limited to, streams lakes and estuaries.” (*Id.* § 4551.)
- (2) “The rules and regulations adopted by the board shall be based upon a study of the factors that significantly affect the present and future condition of timberlands and shall be used as standards by persons preparing timber harvesting plans.” (*Id.* § 4552.)
- (3) “The rules and regulations shall be continuously reviewed and may be revised. During the formulation or revision of the rules and regulations, the board shall consult with, and carefully evaluate the recommendations of, the department, concerned federal, state, and local agencies, educational institutions, civic and public interest organizations, and private organizations and individuals.” (*Id.* § 4553.)

To the extent the Board intends for CAL FIRE to exercise its professional judgment in applying any rules, the Board must provide “standards to guide the actions of director, and the director shall conform to such standards.” (*Id.* § 4552.) The rules developed by the Board are known as the Forest Practice Rules or Rules, and are codified at 14 Cal. Code Regs. § 895 et seq.

¹ADVANCE \u0031 While giving consideration to” means the rules and regulations “must provide for protection” of these resources and values. (*See* 58 Atty.Gen.Opn. 250 (1975).)

1. Key Forest Practice Act Provisions

At least two provisions of the Act are relevant to the issues presented by climate change: (1) the goal of “maximum sustained production of high quality timber products,” and (2) the duty to ensure carbon sequestration.

First, the goal of “maximum sustained production of high quality timber products” (MSP) is “perhaps *the* core concept of the Forest Practice Act” (*EPIC v. California Department of Forestry and Fire Protection*, 44 Cal.4th at 476, fn. 4 , emphasis in original.) Indeed, the “the Forest Practice Act imposes a duty on the Board of Forestry to adopt and enforce regulations which, in a manner left to the discretion of the Board, limit the aggregate harvest of timber on private timberlands in relation to the present and anticipated future supply of standing timber.” (*Redwood Coast Watersheds Association v. State Board of Forestry and Fire Protection* (1999) 70 Cal.App.4th 962, 970, emphasis added.)

Second, in 2010, the Legislature required forest resource management to protect the public’s need for “sequestration of carbon dioxide.” (Stats. 2010, c. 534 (A.B. 1504), § 1, codified as Pub. Res. Code § 4512(c).) At that time, the Legislature added a new section to the Act, finding that our “[s]tate forests play a critical and unique role in the state’s carbon balance by sequestering carbon dioxide from the atmosphere and storing it long term as carbon,” and that among other things, “[t]here is increasing evidence that climate change has and will continue to stress forest ecosystems, which underscores the importance of proactively managing forests so that they can adapt to these stressors and remain a net sequester of carbon dioxide.” (*Id.*, § 2; amended by Stats. 2011, c. 296 (AB 1023), § 256, codified as Pub. Res. Code § 4512.5 (a), (d).) The Legislature instructed that “[t]he Board, the Department, and the State Air Resources Board should strive to go beyond the status quo sequestration rate and ensure that their policies and regulations reflect the unique role forests play in combating climate change.” (*Id.* subd. (e).)

Also in 2010, the Legislature required the Board to:

“[E]nsure that its rules and regulations that govern the harvesting of commercial tree species, where applicable, consider the capacity of forest resources, including above ground and below ground biomass and soil, to sequester carbon dioxide emissions sufficient to meet or exceed the state’s greenhouse gas reduction requirements for the forestry sector, consistent with the scoping plan adopted by the State Air Resources Board pursuant to the California Global Warming Solutions Act of 2006 (Division 25.5 (commencing with Section 38500) of the Health and Safety Code).” (Stats. 2010, c. 534 (AB 1504), § 4, codified as Pub. Res. Code § 4551(b).)

According to the 2014 Update, the “Board of Forestry has been evaluating the adequacy of existing forest regulations and programs for achieving GHG emission reductions and ensuring carbon sequestration on forest lands.” (2014 Update, at 70.) To date however, the Board has not provided this assurance. The 2014 Update also refers to the duty under AB 1492 (2012) to “evaluate ecological performance measures, which are likely to include an evaluation of practices that may directly or indirectly affect GHG emissions.” (*Id.*, at 71.) To date, that

Environmental Protection Information Center

145 G Street, Suite A, Arcata, CA 95521 | (707) 822-7711

www.wildcalifornia.org

Page 10 of 23

evaluation has not occurred. According to the most recent AB 1492 annual report to the Legislature, “[a]s discussed in previous Annual Reports, developing ecological performance measures for management outcomes on the State’s nonfederal timberlands is a challenging task that will take significant effort and some time to accomplish.” (Assembly Bill 1492 Annual Report to the Joint Legislative Budget Committee on the Timber Regulation and Forest Restoration Program, February 8, 2016, at 20.) According to this report, the “state review team agencies are early in the process to develop new ecological performance measures per the requirements of AB 1492.” (*Id.*)

2. Regulations Intended to Implement the Act

The Board has adopted an extensive set of regulations governing the timber harvest plan (“THP”) process, which are intended to:

“[I]mplement the provisions of the Z’berg-Nejedly Forest Practice Act of 1973 in a manner consistent with other laws, including but not limited to, the Timberland Productivity Act of 1982, the California Environmental Quality Act (CEQA) of 1970, the Porter Cologne Water Quality Act, and the California Endangered Species Act. The provisions of these rules shall be followed by Registered Professional Foresters (RPFs) in preparing Timber Harvesting Plans, and by the Director in reviewing such plans to achieve the policies described in Sections 4512, 4513, of the Act, 21000, 21001, and 21002 of the Public Resources Code (PRC), and Sections 51101, 51102 and 51115.1 of the Government Code.” (14 Cal. Code Regs. § 896(a).)

These include regulations intended to fulfill the central requirement to ensure the goal of “maximum sustained production of high quality timber products.” The Board has not, however, promulgated regulations concerning climate change, carbon emissions, or carbon sequestration.

a. Regulations Intended to Fulfill MSP

The Board’s “silvicultural” rules are intended to implement the requirement for MSP, as they “provide for alternatives that when applied shall meet the objectives of the FPA (PRC 4512 and 4513).” (14 Cal. Code Regs. § 913.3.) These rules require that the registered professional forester (“RPF”) “select systems and alternatives which achieve maximum sustained production of high quality timber products.” (*Id.*) While CAL FIRE must deny a THP if it fails to achieve MSP, Rules, *see*, 14 Cal. Code Regs. § 898.2(g), the Rules do not define “maximum sustained production” (“MSP”), or require a specific process to show how or if MSP is attained. Rather, they provide three voluntary options to “achieve” MSP.

These options are set forth in Rules section 913.11, the goal of which is to achieve MSP “by meeting the requirements of either (a) or (b) or (c) in a THP, SYP or NTMP, or as otherwise provided in Article 6.8, Subchapter 7 [PTEIR].” Of the three options, only one, subsection (b), develops a “plan,”—the “Sustained Yield Plan.” The Board has adopted a separate set of rules as to SYP contents, process of review, monitoring, and renewal. (*See*, 14 Cal. Code Regs. § 1091.1 et seq.) “A THP which relies upon and is found to be consistent with an approved SYP shall be

Environmental Protection Information Center

145 G Street, Suite A, Arcata, CA 95521 | (707) 822-7711

www.wildcalifornia.org

Page 11 of 23

deemed adequate to achieve MSP.” (*See*, 14 Cal. Code Regs. § 913.11(b)(4).)

The other two options—subsections (a) and (c)—require information to be presented in each THP, and have no similar language permitting ongoing reliance as with the SYP. These two options are distinguished by the timberland owner’s acreage: Option-(a) is available for landowners with an acreage above 50,000 acres; Option-(c) is available for landowners with less than 50,000 acres. Additionally, Option-(c) may be used by a timberland ownership of more than 50,000 acres if an SYP or demonstration of achievement of MSP under Option-(a) “has been filed with the department and has not been returned unfiled or approved,” and “[f]or scattered parcels on timberland ownerships of 50,000 acres or more.” (*See*, 14 Cal. Code Regs. § 913.11(c).)

There is no requirement in any of these options to demonstrate anything about carbon sequestration.

b. No Regulations to Ensure Carbon Sequestration

While in 2010 the Legislature identified the requirement for forest resource management to protect the public’s need for carbon sequestration, *see*, Pub. Res. Code §§ 4512, 4513, and directed the Board to ensure that its regulations provide for carbon sequestration, *id.*, § 4551(b), to date the Board has not adopted any regulations, or amended existing regulations, to ensure carbon sequestration, or to provide standards and guidance to calculate and assess and greenhouse gas emissions and carbon storage. CAL FIRE developed a “Greenhouse Emissions Calculator, (“GHG Calculator”), which has not been adopted as a rule or a technical rule addendum by the Board. A download of the Excel file is available at <http://bit.ly/2j57Jfg>, and a “User Guide” for the GHG Calculator is available at <http://bit.ly/2j8u4Ls>.

The CAL FIRE GHG Calculator itself has been the subject of considerable objection and scrutiny. For example, in a letter submitted to the Air Resources Control Board regarding development of forestry protocols for GHG emissions reduction, Professor Mark Harmon of Oregon State University stated:

“I have major concerns about this carbon calculator. First, I believe I have found some specific errors in the programming. But secondly, and most importantly I believe that the entire basis of this calculator is flawed. It is flawed because it fails to address the fundamental dynamic of any forest carbon system. It does this by ignoring the dynamics of the dead and soil carbon. In doing so it creates artificial carbon sinks. Ignoring what is happening in the dead and soil carbon is simply not following the best science available of 20 years ago let alone today. I also found the losses assumed for site preparation completely unrealistic and far too low. The calculator ignores the initial starting point of wood products stores. On some lands perhaps there were no previous harvests. But on land on which there were harvests, then it is scientifically invalid to not account for these existing wood products stores.” (Harmon 2010, Letter to California Air Resources Control Board, copy attached.)

CAL FIRE's Board has not provided, pursuant to Pub. Res. Code § 4552, any guidance or standards to permit CAL FIRE to exercise its professional judgment in determining that harvesting of timber ensures carbon sequestration. (*See, Id.*, § 4551(b).)

Thus, to the extent the Draft Plan disregards the Act, it fails to satisfy the directive from the 2014 Update, which expressly stated that the Draft Plan:

“[S]hould include a review of Forest Practice Regulations and recommendations for best management practices and potential additional regulatory measures or amendments needed to minimize GHG emissions and enhance carbon storage associated with silvicultural treatments. For example, a requirement for Sustained Yield Plans to demonstrate that activities not only maintain the current level of carbon sequestration, but actually increase carbon sequestration over the 100-year planning horizon.” (2014 Update, at 73.)

The Draft Plan provides no such review. Rather, the Draft Plan seems to largely avoid the statutory requirements of the Act, and that the Forest Practice Act and Rules exist at all.

3. The Forest Carbon Plan Fails to Reckon with The Act and Its Administration by CAL FIRE.

According to the Draft Plan, California's forests remain unhealthy and overcrowded. (Draft Plan, at 16.) The Draft Plan refers to the “current unhealthy state of forests.” (*Id.*, at 18.) and scientists are concluding that California forests as they currently are will not be successful in absorbing those changes (from climate change impacts drought and temperature) as they once did. (*Id.*, at 53.) And on private corporate timberlands, there is “slightly” more growth than removal, with “less carbon stored per acre in live tree inventories, as they don't get as old and large as trees on public landscapes, but mortality is much lower.” (*Id.*, at 74.) These statements suggest that CAL FIRE's management and regulation of the Act is not meeting the intent of the Act. Yet, the Draft Plan provides no discussion as to what role the Act should assume in assuring the carbon sequestration desired.

The Draft Plan states that “[f]inding policy solutions that encourage sustainable management and use of California's forestlands and wood products to reduce business and emissions leakage while ensuring decreasing carbon footprint is a critical consideration.” (*Id.*, at 103.) We believe the Act already includes this directive, particularly through the mandate to ensure MSP. Unfortunately, as borne out by above statements, CAL FIRE and its Board are doing nothing to ensure this. We need enforcement and metrics, not policy wonk as provided in the Draft Plan. The Draft Plan needs to explicitly explain how this directive is achieved, given the CAL FIRE's role and deficient administration of the Act and current forest conditions.

The Draft Plan refers to most forests in western United States as “fire prone.” (*Id.*, at 47.) THP regulations do not require any analysis of how the silviculture prescriptions to be used in any specific logging plan may contribute to fire-prone conditions. This is a clear oversight in the Act, yet the Draft Plan ignores the need to deal with this key problem for private timberlands. Instead, it merely assumes that fire prone forest can be remedied with “treatments,” as though

analysis of silvicultural methods is irrelevant. It is remarkable, given where we are today, that the Draft Plan does not recommend the obvious need to eliminate clearcutting in California. We ask that a full explanation be given as to why this has not been provided. Here again, had the Draft Plan taken its charge to review regulations, it would have evaluated these concerns, and recommended changes.

The Draft Plan fails to identify or acknowledge what role the Act must play in achieving the climate change mitigation and adaptation goals set forth. It fails to consider or discuss if or how the forest management goals it sets forth will be enforceable, under the Act or otherwise. It does not explain how forest management and restoration practices will be “informed by the expected future changes,” and be “robust over a wide range of plausible future climate change outcomes.” (*Id.*, at 13.) The Draft Plan does not say how it will achieve the recommendations set forth. (*Id.*, at 100-101.) It provides no consideration of how a “focus on overall forest health and accompanying implementation of the recommendations identified in [the plan] will help to diversify management practices, and will achieve the [plan’s] goal of sequestering and maintaining more carbon over time.” It is totally unclear how this plays out. And, to the extent the Draft Plan claims it is the “detailed implementation plan” for the 2017 Scoping Plan Update, that document does not even list the Act as a applicable law or regulation pertaining to forest resources in California. (*See*, 2017 Update, Appendix F [Environmental Assessment], Attachment A, Table A2-2, at 149-152.)

The Draft Plan relies heavily on the concept that regional implementation is needed, with development of “Forest Carbon Action Plans.” (*Id.*, at 5.) In doing so, it ignores the Act’s three district forest district divisions. (*See*, Pub. Res. Code § 4531.) The Draft Plan does not explain how this regional implementation will occur, particularly given the existing Act. Is the intent to replace the Act, at least as it governs private land forestry operations? The current Act limits what local areas may do. Local governments have no authority to regulate the conduct of timber operations, except where authorized by the Board or the parcel is less than three acres and not zoned Timberland Production Zone. (*See*, *Big Creek Lumber Co. v. County of San Mateo* (1995) 31 Cal.App.4th 418, 424; Pub. Res. Code § 4516.5(d).)

While the Draft Plan advances the intent to work regionally, it provides no context of the current regulatory scheme, nor how it is to be done, coordinated, under what regulatory scheme, and how it may enforced. (*See*, Draft Plan, at 22.) Nor does the Draft Plan explain how “[n]ew information and tools will have a great impact as the Forest Carbon Plan begins implementation at the regional level and as strategies turn into actions.” (*Id.*, at 117.)

The existing statutory scheme does not constrain what private forestland owners do—it regulates what they do. Thus, when the Draft Plan claims that private landowners, “may be induced to improve management for carbon sequestration and other public benefit outcomes through incentive payments,” *id.*, at 29, it fails to explain just how this will occur, particularly under existing law. Is California intending to pay commercial enterprises for proper management of their lands? Similarly, under what mechanism will private commercial timberland owners be required to report carbon stock and GHG flux? (*Id.*, at 45.) What is the method by which this will be included in the review of proposed logging operations, in a manner that is transparent and enables the public to readily review the information?

The current Rules have “minimum resource conservation standards,” or “minimum stocking standards.” (*See*, 14 Cal. Code Regs. § 912.7.) The Draft Plan proposes to “increase annual area reforested by 25% over the current level by 2030.” (Draft Plan, at 31.) No explanation is given as to how this will be done, and under what authority. How will private landowners be required to do this, if it is not part of the existing Act?

The Draft Plan proposes to explore opportunities for regulatory and policy changes and streamlining for various activities, including the increased use of fire and for restoration and to develop new wood product and biomass facilities. (*Id.*, at 6.) This translates into seeking exemptions to allow for forest “treatments” or “thinning” which is proposed as a major management scheme. (*See e.g.*, *Id.* at 16, 18, 29, 30, 41, 113.) Once again, with no mention of the Act, it appears the Draft Plan wants to change the rules, with no explanation as to what is the current regulatory scheme, what rules should be changed, and how those changes could conflict with the Act, as well as other laws such as CEQA. This is a bold attempt to undermine necessary environmental and public review.

B. The Forest and Rangeland Resources Assessment and Policy Act Informs Forest Practices.

Relevant to the Draft Plan and its need to understand forestland conditions in California, is the “Forest and Rangeland Resources Assessment and Policy Act” (“FRAP”), an additional tool created in 1977 to protect our state’s forest resources to ensure adequate and continuous understanding of the value of our forested resources. FRAP also documents the significance of our forest resources, and the need to continually understand the needs and constraints of those resources. The Legislature found that although our forest resources “provide vitally important economic and environmental benefits,” “[f]orest resources in California are limited,” and “[d]emands on forest resources in California are expected to increase significantly in the next decades.” (Pub. Res. Code §§ 4789.1(a), (c).) The Legislature determined that “[b]etter use of forest resources can result where there is good information as to anticipated needs and constraints and the potentials for meeting such needs consistent with Section 4513.” (*Id.* subd. (d).)

FRAP is to “provide for the assessment of California’s forest resources in order to develop and implement forest resources policies for the state.” (*Id.* subd. (f).) FRAP imposes a duty on CAL FIRE to provide regular and timely assessments of our state forest resources.

“[U]nder policy guidance from the board and in consultation with the Secretary of Resources, the director [of CalFire] shall prepare and submit to the board and the Secretary of the Resources Agency, a preliminary forest and rangeland resource assessment and analysis not later than July 1, 1979, and shall present a full and updated assessment by January 1, 1987, and by January 1 of each fifth year thereafter.” (Pub. Res. Code § 4789.3(a), emphasis added.)²

^r Based on this, reports were due in 1992, 1997, 2002, 2007, 2012, and prospectively, in 2017. Currently, the most recent (2008) report was issued only in 2010. No report has been issued since. (*See*, CalFire, *California’s Forests and Rangelands: 2015 Assessment*,

The FRAP assessment also “shall recognize distinct differences in ownership and management of forest and rangeland resources in California between the various public and the various private owners.” (*Id.*)

The FRAP assessment is to include, among other items:

“(1) An assessment and analysis of the supply and availability of the various present and potential forest and rangeland resources of the state;

....

(3) An analysis of present and anticipated demand for various forest and rangeland resources in the state;

....

(5) A discussion of important policy considerations, laws, regulations, management responsibilities, and other factors expected to influence and significantly affect the use, ownership, and management of forest and rangeland resources.” (*Id.* subd. (a)(1), (3), (5).)

According to FRAP, CALFIRE is responsible for regulating and tracking certain activities, such as timber harvest and vegetation management, as well as providing land owner advice about sustainable practices. The Forest Practice Rules provide guidance for sustainable timber harvesting. Additionally, CAL FIRE provides incentives and assistance for sustainable private forest and range stewardship such as the California Forest Improvement Program (“CFIP”):

“When assessing the conditions of forests and rangelands *every five years*, we want to know if CALFIRE’s management policies and assistance programs are working to create sustainability. We want the ability to track over time if conditions are improving or *deteriorating*. But then again, we need to know what “improving” means, and *conversely*, what “deteriorating” means. *In short, we need to have a definition of sustainable and some agreed upon ideas of what to measure to assess progress toward or away from it.*” (CALFIRE, “FRASC: California’s Montreal Protocol Criteria and Indicators,” <http://bit.ly/2j1WqVj>, last visited Jan, 11, 2017, emphasis added.)

Such an assessment of our forests, at this time of critical change due to rapidly evolving climate conditions, is fundamental to understanding the relationship of logging to climate change and to implementing a framework to reduce GHG emissions and protecting our forests for this and future generations.

Despite the requirement to assess conditions “every five years,” the scheduled—and already tardy—2015 Assessment has not been done, leaving regulatory management of our forests without key information and guidance necessary to inform decision-making. Instead of having this required and timely information, the Draft Plan is forced to rely upon Forest Service data, through its Forest Inventory Analysis Program. (*Id.*, at 43.) The FIA has its limitations, and frap.fire.ca.gov/assessment/2015/assessment2015, last visited Jan. 11, 2017.)

is not current given its 10-year cycle of analysis. (*Id.*, at 43, 62.) Even though the FIA information is recognized as a sufficient protocol, the failure by CAL FIRE to do its job to ensure timely reporting of forest conditions undermines the Legislative directives to timely and consistently develop reliable data about our forest lands.

C. The Forest Carbon Plan Fails to Comply with CEQA.

There can be no question that the Forest Carbon Plan must be evaluated under CEQA. If it is intended as a stand-alone document, as it describes itself as the “detailed implementation plan for the forest carbon goals embodied in the 2030 Target Scoping Plan Update,” (Draft Plan, at 1), then it must be evaluated under CEQA. If it is not a stand-alone document, but intended to be part of the 2017 Update, then it should be evaluated as part of that project in its Environmental Assessment. It is not. And, to the extent it is intended to be the “foundational component” of the Natural and Working lands Climate Change Action Plan identified in the 2017 Update, it should be evaluated in the 2017 Update Environmental Assessment. It is not.

The Forest Carbon Plan is a project under CEQA as it is a discretionary action undertaken, supported and authorized by a public agency—in this case, and based on the 2014 Update, CALFIRE, CNRA and CalEPA. (Pub. Res. Code §§ 21065(a), 21080(a); 14 Cal. Code Regs., §§ 15357, 15378(a); *Friends of Mammoth v. Board of Supervisors* (1972) 8 Cal.3d 247, 262; *Citizens for Non-Toxic Pest Control v. Department of Food & Agric.* (1986) 187 Cal.App.3d 1575.) And, it is a project which may cause physical change to the environment, particularly through the use of thinning and other management techniques, and the advancement of biomass and biomass facilities. (Pub. Res. Code § 21065; 14 Cal. Code Regs., §§ 15060(c)(2), 15378(a).) No exemption applies.

The Draft Plan does have the potential to significantly adversely impact the environment. A key example is the thread throughout the document to engage in extensive “treatment” or “thinning” for management. This requires environmental review. Moreover, to the extent the Draft Plan leans toward securing regulatory ‘exemptions’ to implement this strategy, there is an even greater need to understand the full component of what effects such management may cause. While the Draft Plan assumes that “thinning” for management will facilitate, in the very long term, forested conditions to increase carbon sequestration, it provides no analysis of what may be the real environmental consequences in the course of the years during which this management will unfold.

The proposed enhanced use of exemptions, which is not evaluated in Section 4.2.1 of the Draft Plan, appears key. (Draft Plan, at 41.) Yet, such a proposal means there will be no public or other agency review, and no environmental analysis of any proposed management scenario. The Draft Plan notes that a report to the Legislature on the use of exemptions was due at the end of this year 2017. (*Id.*) We are concerned that the Draft Plan lays the foundation for the report to advance this expanded use of exemptions. Instead, the use of exemptions needs to be limited, given existing practices to use them when not appropriate.

It is common practice, for example, for many large industrial timber companies to submit annual notices to CAL FIRE to conduct exempt timber operations to remove, “dead, dying, and

diseased,” trees from their property throughout the year and at their discretion, relying upon 14 Cal. Code Regs. § 1038 in the Forest Practice Rules for the entirety of ownership, or for large areas of ownership, often totaling in the thousands of acres per-exemption. It is also known that exempt timber operations carried out pursuant to 14 Cal. Code Regs. §§ 1038 and 1052 (“Emergency Timber Operations”), are not analyzed for cumulative effects as part of other discretionary permits, such as THPs. At present, Emergency Timber Operations carried out pursuant to 14 Cal. Code Regs. § 1052 of the Forest Practice Rules contain no plain-language requirement to either meet minimum resource conservation standards post-operations or to artificially regenerate or have an artificial regeneration plan in the event minimum resource conservation standards are not attained immediately upon completion of operations. Thus, we have substantial questions and concerns about the lack of CEQA review of the Draft Plan, as it purports to encourage the Board of Forestry to contemplate expanding the use of ministerial CEQA permitting exemptions.

The Draft Plan must comply with CEQA before it proceeds any further. Because it is not clear under what statutory or agency authority this Draft Plan has been developed, we cannot comment on whether at this time any functional equivalent program may apply, which could inform the type of CEQA document to be prepared. Regardless, we believe that given the potential for significant individual and cumulative adverse environmental impacts which may result from the Draft Plan as written, an environmental impact report, or its equivalent, must be developed.

VI. The Forest Carbon Plan Relies on Unsupported Assumptions, Lacks Definition, and Fails to Identify Specific Actions to Meet Targets for Increasing Carbon Storage in California Forests.

A. The Forest Carbon Plan Lacks Definitions and Relies on Many Assumptions.

In addition to items identified above, here we identify provisions which lack definitions, and present assumptions without explanation.

For “treatments,” the Draft Plan does not explain what is meant by thinning, e.g. vegetation management. (*See*, Draft Plan, at 16.) What are “large scale thinning treatments,” and how are they to be regulated? What are “other similar stand-density reduction treatments” in addition to thinning? (*Id.*, at 18.) The Draft Plan assumes that untreated areas are worse than treated areas, relying on a 2012 Dore report, without adequate explanation. (*Id.*, at 17 fn. 36.)

On non-federal lands, the Draft Plan claims that CAL FIRE estimates increasing treatment on private lands to 500,000 acres per year, which the Draft Plan then concedes is not realistic. (*Id.*, at 29.) Thus, the Draft Plan projects an outcome based on an unrealistic assumption for levels of treatment. It becomes a “target . . . pending increased resources,” which is just another assumption. (*Id.*) The Draft Plan goes on to assume that treatments “can include” those that generate revenue. (*Id.*) Yet, it fails to identify under what authority these treatments can be required, or subject to payments as revenue. The Draft Plan also assumes that there will be a doubling of the rate of fuels reduction treatments within three years, from 2017 to 2020, based upon the Vegetation Management EIR. (*Id.*, at 30.) However, this type of treatment is not subject

to regulatory controls on private lands.

The Draft Plan goes on to assume that there will be “successful fuel reduction and forest management activities [that] will result in reduced area of forestland impacted by wildfire statewide.” (*Id.*) But this is based on it being “successful,” without any measures to ensure and enforce these efforts, and no metrics to determine what is considered “successful.” The Draft Plan claims that by “fuel reduction treatments and sustainable forest management . . . will aim to minimize total black carbon emissions from forests.” (*Id.*) This is yet another assumption, based on a premise these things will occur, and will occur successfully, even though the Draft Plan concedes that it does not include “explicit, numerical emission reduction target for wildfire black carbon emissions.” (*Id.*)

For growth, volume, and retention of large old trees, the Draft Plan also makes assumptions. For example, it assumes that lost carbon is sequestered within 15 to 20 years “if stand growth continues on the same trend.” (*Id.*, at 19.) However, stand growth will be affected (adversely) by climate change. (*See, e.g., Id.*, at 10, 11 [“drought impact[s] tree growth (and therefore carbon sequestration rates) during the drought itself, [and] that growth rates post-drought can remained stunted for one to four additional years.”]; 17 [drought suppresses growth . . . would result in decreased carbon sequestration.]; and at 53, 54.) The Draft Plan also assumes, without documenting just how this will occur, that, “[t]imber and other biomass harvest volumes are expected to increase as a result of the forest management activities outlined above.” (*Id.*, at 32.) The Draft Plan at one place advises that timber harvest volume has been trending upward in the last five years, (*id.*, at 50), yet elsewhere it advises that timber harvesting has been on the decline since the mid-1980’s, (*id.*, at 71, 103). This contradiction underscores the need for clarity. Additionally, the Draft Plan incorrectly assumes that increases in growing stock and volume of wood in our forests will automatically extrapolate into carbon dioxide sequestration with no reference, or research cited or presented to support the assumption.

The Draft Plan states that the “carbon benefits from treatments that promote growth and retention of larger trees include increased sequestration rates, more stable carbon storage, and decreased risk from the growing threat of climate change.” (*Id.*, at 60.) While we would agree that growth and retention of larger trees should increase sequestration rates, this provision fails to acknowledge that currently the Act does not include any such standards, and neither do the Forest Practice Rules. So how will this happen; what regulatory provisions will ensure, for example, retention of large old trees, particularly on private industrial timberlands or public timberlands? While we have a very good Forest Practice Act, we have a lead agency administering that Act which does not require MSP to facilitate this kind of management. How will that change? The Draft Plan does not identify the management scheme necessary for retention of large old trees and old forest stands.

The Draft Plan provides that the “carbon stock reported in each year will be in the ten-year rolling average of carbon stocks, so the value reported for 2015 is the average carbon stock over the years 2006 to 2015.” (*Id.*, at 44.) The Draft Plan does not explain or justify a 10- year rolling average as appropriate for keeping track of GHG emissions over time. Given the climate crisis we face, justification for this proposal is necessary.

The Draft Plan also “does not include targets or propose direct protocols for co-benefits from activities intended to improve forest health, such as benefits to air quality, biodiversity, and watershed function.” (*Id.*, at 87.) The Act would require their inclusion. Their omission here is further evidence of how the Draft Plan is not complete or capable of satisfying the directives of its creation or the Forest Practice Act.

The FCP depends on regional collaboration. (*See, Id.*, Table 3 at 36.) The Draft Plan also relies heavily on ownership cooperation—by both the federal government and private timberland owners. Given the current federal administration, it is clearly unrealistic now to rely on the U.S. Forest Service to fulfill any existing metrics or maintain policies from previous administrations. This agency is going to have significant budget cuts. Our federal public lands are under assault, and at risk of being heavily exploited, if not lost. Under these circumstances, how can California require the federal government to do anything? (*See, e.g., Id.*, at 28, 31, 32, 37, 38.) This includes any expectation of funding. Similarly, reliance on private industry does not guarantee anything. (*Id.*, at 44, 49.)

Lastly, the Draft Plan is based on assumptions as about funding. (*See, Id.*, at 38.) It assumes that non-monetary resources will be given through technical assistance, and tools that identify forest conditions. (*Id.*, at 39.) It does not explain how this information will be developed or adequate. Further, the Draft Plan assumes financial assistance may be available to assist with regulatory compliance by private landowners. (*Id.*, at 43.) No explanation or actual basis is provided to support these kinds of claims.

B. The FCP Does Not Provide Effective Actions Needed to Increase Carbon Storage in California Forests.

The FCP states “California cannot meet the climate change goals of either this Draft Forest Carbon Plan or the broader Natural and Working Lands strategy without increasing the levels and resilience of forest carbon sequestration and storage in its wildlands forests.” (*Id.*, at 26.) The Draft Plan fails to define specific actions to ensure this outcome, which can be enforced in a manner that is transparent and subject to the Act. The Forest Carbon Plan fails to provide concrete regulatory proposals which would restore the Legislative policies and require actions. Even the implementation measures set forth in Chapter 4 provide very little in the way of taking action; while it speaks about high-level performance objectives - and implementation goals, it fails to set forth concrete action necessary to increase carbon storage in California forests. (*Id.*, at 44.)

Some examples include the proposal for non-federal lands, to “increase annual area reforested by 25% over the current level by 2030.” (*Id.*, at 31.) This is a statement of intent, with no clarity as to how it will occur, be regulated and ensured. Similarly, the claim is made that transportation of forest biomass will be limited to local areas. (*Id.*, at 32.) There is no mechanism in place to make that happen, and no concrete proposals to make sure it happens.

The goals for forest health described in the FCP call for, in most instances, a significant increase in the pace and scale of management activity beyond what can be supported by existing funding levels, such that “[t]o meet these goals, the complex collaborations and implementation

strategies needed to achieve the goals of this Forest Carbon Plan will need to leverage resources from existing state, federal and private efforts.” (*Id.*, at 36, 37.) And some of those resources are subject to annual appropriation decisions, so may not be reliable. (*Id.*) In other words, there may be resources in the future, but it is not clear what will be available. Indeed, according to the FCP, the “CNRA will seek resources to develop and implement a centralized database to track implementation activities identified in this plan by December 31, 2018.” (*Id.*, at 46.) This means that only a search for funding will occur in two years’ time. At some later time a data base for tracking activities may be developed, depending on funding. So there is no assurance that activities will be implemented or tracked. It is only an effort “to seek resources.” Without funding, the FCP cannot achieve even the minimal proposals its sets forth, particularly in the time frame needed. When the FCP claims the need for repetition and maintenance of fuels treatment, *id.*, at 61, it does not, and cannot, provide any specific action which is assured and can be enforced.

Further, the presumption that turning un-merchantable forest materials into biomass for a fuels source, with cogeneration is “carbon-neutral” and a net-carbon savings is not founded in facts or the available research. Here again we refer to the Peer Review of Dr. John L. Campbell:

“When un-merchantable harvest residue finds its way to a mill, utilizing it for energy through combustion is reasonable, but to credit this entire carbon stream as a carbon offset denies the fact that a an equal amount of energy could have been acquired through the combustion of much less fossil fuel and the fact that energy demand by the mill was itself created by the harvest. As it pertains to the objective of the CFCP, fuel offsets should apply only to any residual energy sent to independent users, with the additional realization that just because a fuel source is renewable does not make it carbon neutral.” (Campbell, 2017, Peer Review of CFCP, at 4-5.).

VII. The Forest Carbon Plan Fails to Acknowledge The Role of Offsets.

In addition to the Draft Plan’s failure to acknowledge or grapple with the reality of pre-existing governing statues and regulations, the Draft Plan also fails to acknowledge, discuss, or analyze in a meaningful way how the actions proposed may impact market-based carbon offset trading under the current AB 32 Cap-and-Trade system or under the guise of the Federal Forest Carbon trading system. Currently, private industrial timberland owners in California, such as Sierra Pacific Industries (“SPI”) (the largest industrial land owner in California), and Green Diamond Resource Company sell carbon offsets for designated timber projects. As we understand this practice, this means a company like SPI develops a timber project, which it characterizes as a good carbon sequestration action. It gets credits for that project, and provides offsets to another industrial emitter, like a fossil fuel industry entity, *e.g.* Chevron. In this way, while a company such as SPI appears to be creating net carbon sequestration in its project, it sells some or all of that sequestration to another polluter, who in turn then can use it to claim an “offset” for its emissions. The other polluter does not actually reduce its emissions, but instead relies on the offsets from elsewhere to get credit for reduced emissions. The net effect of this practice is that the people and environment in which those real time emissions occur still are exposed to those emissions; the offsets do not reduce emissions, they simply give credit for

better practices elsewhere.

This process has at least two consequences for the Draft Plan at issue here. **First**, the Draft Plan references “offset projects” as evidence of improving management for carbon sequestration, *id.*, at 29, 38, but does not acknowledge how this is contributing to ongoing GHG emissions from the fossil fuel industry. Nor does it discuss how this practice will be factored in terms of increasing carbon storage in California’s forests. California needs reductions in GHG emissions, not forest offsets to allow continued GHG emissions in other sectors. If carbon storage is being “sold” to give offsets for other GHG sources, then it is not increasing carbon storage, and certainly is not assuring increased net carbon sequestration over time. Based on this, it appears that GHG reductions are not actualized, but simply are being traded and shuffled around like any other market commodity with no assurance or verification of the authenticity of the purported outcome.

Second, this practice has an environmental justice impact which the Draft Plan fails to acknowledge or even address. It is worth noting that in the 2017 Update, the Environmental Justice Advisory Committee recommended that as matter of equity, for Natural and Working Lands “timely and comprehensive data collection is essential to avoiding negative impacts and ensuring co-benefits. Such data must include: a. emissions from forestry and wood products, *since forest management is a net source of greenhouse gases.*” (2017 Update, Appendix A: AB 32 Environmental Justice Advisory Committee (EJAC) Initial Recommendations for Discussion Draft Version of 2030 Target Scoping Plan Update August 26, 2016, revised December 22, 2016, at 19 of 25, emphasis added.)

Forest offsets are allowed, permitting emissions to occur elsewhere. This means air quality may not benefit. This has direct impacts on many different populations, including those more vulnerable populations like in the Central Valley. And it has a direct impact in terms of the ongoing GHG emissions. Offsets from forestry must not be allowed. Our forests must not be assumed to be or offered as compensation for fossil fuel industry GHG emissions. These must be separately accounted, and our forests must be protected to ensure the high quality resources they provide, such as water, fisheries, and wildlife.

CONCLUSION

The Forest Carbon Plan needs to be entirely redone. Further, it needs independent peer review. EPIC suggests that future peer review guidelines be conducted pursuant to the guidelines established by the federal Office of Management and Budget’s “Final Information Quality Bulletin for Peer Review” for “influential scientific information.” (*See* Office of Management and Budget, Budget’s “Final Information Quality Bulletin for Peer Review,” Dec. 16, 2004, available at

http://www.cio.noaa.gov/services_programs/pdfs/OMB_Peer_Review_Bulletin_m05-03.pdf).

Further, the Forest Carbon Plan requires accompanying CEQA analysis. And it must satisfy the directives which identified its existence, and provide a clear statement of authority, process for review and action, its implementing authority, with express understanding and relationship to the existing Forest Practice Act and in reliance upon contemporary FRAP information. As a matter of policy, the use of thinning as the management scheme must be revisited, and under no

Environmental Protection Information Center

145 G Street, Suite A, Arcata, CA 95521 | (707) 822-7711

www.wildcalifornia.org

Page 22 of 23

circumstances should the use of exemptions be available for any such management.

Respectfully Submitted,



Rob DiPerna
California Forest and Wildlife Advocate
Environmental Protection Information Center (EPIC)

LIST ATTACHMENTS

CAMPBELL, JL. (2017). Peer Review of California Forest Carbon Plan. *Prepared for Ebbetts Pass Forest Watch.*

HARMON, 2010. Letter to California Air Resources Board re: CAL FIRE Greenhouse Gas Calculator.

http://www.arb.ca.gov/lispub/comm/bccomdisp.php?listname=forestghg07&comment_num=22&virt_num=22

Comment 22 for Forestry Greenhouse Gas Accounting Protocols (forestghg07) - Non-Reg.

First Name: Mark

Last Name: Harmon

Email Address: mark.harmon@oregonstate.edu

Affiliation: Oregon State University

Subject: comments on Forest Protocols

Comment:

Mary Nichols, Chair

California Air Resources Board

Sacramento, CA 95812

Fax: (916) 322 - 3928

Re: CARB Consideration of the California Climate Action Registry
Forest Protocols

Dear Chair Nichols and other members of the Air Resources Board:

I am writing your board to clarify some of the scientific and technical issues related to the proposed California Climate Action Registry Forest Protocols that appear to have been raised in discussions leading up to the California Air Resources Board's deliberations on endorsement of the Forest Protocols. I do so as a scientist that has been involved in studying the issue of carbon stores in forests for over 20 years. During this time I have published scores of peer-reviewed papers on this subject, developed models of the processes involved, taught undergraduate and graduate level classes, presented findings in national and international scientific conferences and symposia as well as public and government briefings, and been involved in the development of national level research plans to study carbon dynamics. I am considered to be an expert in this arena and my advice has been sought out by fellow scientists, government agencies (state and federal), private land owners, consultants, NGOs and many others. In fact I was asked to provide guidance on the Forest Protocols when they were initially being developed.

Below I list some important points regarding specific issues that appear to have been raised.

Carbon Sequestration by Younger versus Older Forests

It is very disappointing to find that arguments are still being made that younger forests are better for climate mitigation than older ones. The mistaken basis for this argument is that

younger forests store carbon at faster rates than older forests. There is a grain of truth to the assertion that forests at a relatively young age do have the potential to take up more carbon than older forests. But it is also true that forests younger than this optimum age also take up less carbon. Indeed immediately after disturbance very young forests are releasing carbon as the dead material caused by the disturbance (including timber harvests) decomposes. Averaged over the entire period between disturbances, the average flow into a forest equals the amount going out as long as the same type of disturbance is repeated. This finding has been repeatedly demonstrated in scientific examinations of this issue. The key is therefore not the rate of carbon uptake or release at any particular time, but the average amount stored over time. I am not aware of a single scientific study in which the average carbon store of a forest disturbed by clear cut harvesting at a long interval is smaller than one disturbed at a shorter interval. Not a single study, and I just performed a literature search on this very issue. In addition to the interval between disturbances, another important factor is the amount of carbon removed by each disturbance. Timber harvest, clear cutting in particular, removes more carbon from the forest than any other disturbance (including fire). The result is that harvesting forests generally reduces carbon stores and results in a net release of carbon to the atmosphere.

Another mistaken notion is that the Forest Protocols should focus on rates of uptake and not changes in stores or stock changes. Scientists refer to these rates of carbon uptake and release as fluxes. One must measure all the positive and negative fluxes to understand the overall balance (much like in a bank balance in which one must account for all the sources of income and expenses for it to make sense). Simple mathematics tells us that as long as all the relevant fluxes in and out of the forest are measured the answer will be the same as if the changes in stocks are measured. The only difference is that measuring changes in stocks is far easier and cheaper than accounting for all the fluxes. Scientists measure fluxes to understand the mechanisms, but there is no need to do this to determine the net change in carbon stores. A net increase in stores is related to a positive flux into the forest, a net decrease a negative flow out to the atmosphere, and no change means the flows in and out are equal. Both methods are scientifically valid.

Accounting for Wood Products

In the Forest Protocols wood products are treated as an optional carbon store. I believe this is completely appropriate for several reasons. While it is true that some of the carbon harvested from a forest is stored for a period of time it is not the case that this material is stored forever. Similar to other forest-related pools, it is the balance of inputs versus outputs that determines whether the wood products pool is increasing or decreasing. Not all harvested carbon results in storage into longer term pools. A considerable amount, estimated by the guidelines to be 40%, is released to the atmosphere during manufacturing and initial use. The remaining amount suffers losses during use from fires, decomposition, and other factors. We know this because about half the wood products that are produced today are used to replace the ones that have been in use. I believe the Forest Protocols addresses these issues adequately by providing reasonable conversion factors, manufacturing losses, and product life-spans that are based on previous peer-reviewed scientific studies.

Setting aside the specifics of how forest products could be tracked, there are several

reasons to make forest products optional at this time. First, is that even when this store is included it only comprises a small fraction of the total forest system stock of carbon. Again, based on a recent literature review, less than 20% of the total forest system carbon store is held in forest products. The average fraction is likely less than 10%. Second, unlike carbon in the forest itself, it is impossible to specifically account for where forest products end up. Therefore there is no way to confirm the carbon stores are actually present. At least with a forest one can visit the actual site of storage. Third, it is difficult to demonstrate the new forest products meet additionality requirements: some of the new material replaces old material and hence there is no real additionality. Granted the new harvest may help to maintain current stores in forest products and that is accounted for under the proposed Forest Protocols. Fourth, the project supplying the raw material has a limited ability to control the various products that are produced and how and where they are used, which means that the exact contribution to forest products pools is highly uncertain. At best the average storage rates can be computed until a better way (probably incurring a great deal of expense) to track the actual uses and life-span of products is developed.

Use of default biomass coefficients

While it would be ideal if one could directly measure all the carbon in a forest this is not practical at this time. Instead one must relate the size of the trees and other items to the amount of carbon they store. By making very detailed measures of dimensions of each object (e.g., each tree) one can compute volumes and coupling that with measurements of carbon content per unit volume of each object one can very precisely determine carbon stores in many kinds of forest pools. Unfortunately that would be a very expensive process. A more economical approach is to develop biomass equations from a subsampling of trees or other objects. However, this too is has considerable expense and requires technical training. For those unable to develop or afford project specific biomass equations, the Forest Protocols provide default biomass regression equations that are reasonable and sound. These default equations were developed by respected and leading scientists in the field of forest inventory (Richard Birdsey, Linda Heath, Jennifer Jenkins and David Chojnacky) and were based on a nationwide literature search using many thousands of diameter measurements from a wide selection of many North American tree species. The equations were peer-reviewed, published by the USDA Forest Service, and have become a national standard for scientific study.

I see benefits other than economic ones in using the standardized default equations. It places everyone on equal footing and allows for standardized checking of results. While the absolute carbon store may be systematically over- or underestimated by these equations, these biases are greatly reduced when the net change in stocks is considered. I see nothing whatsoever preventing landowners from developing site specific biomass equations that are more accurate than the default ones. The only restriction is that the equations are approved by a third-party certifier, a step that is essential to assure a credible program.

Use of growth and yield models

At the start of any project, it is logical to project the potential increases in carbon stocks. Projects unable to at least predict a positive increase in carbon stores should not be considered viable. Projections are ideally based on results from similar kinds of projects,

but given the early stages of forest carbon management, these data rarely exist. A viable alternative is use models to estimate potential project benefits. The Forest Protocols specify a number of timber growth and yield models including CACTOS (California Conifer Timber Output Simulator), CRYPTOS (California Conifer Timber Output Simulator), FVS (Forest Vegetation Simulator), SPS (Stand Projection System), VFP (Visual Forester Professional), and FREIGHTS (Forest Resource Inventory Growth, and Harvest Tracking System). I will not comment on the merits of these specific models, however, I do note they were pre-approved by the California Climate Action Registry and the California Department of Forestry and Fire Protection which would seem to be the appropriate institutions to conduct a model evaluation and approval. If the models have a shortcoming it is that they are largely focused on the live part of the forests and do not include the other forest carbon pools. Still it is unlikely that forests will increase overall carbon stores if the tree stores are decreasing; therefore these models are a logical starting point.

As with other aspects of the Forest Protocols, projects are given flexibility to develop their own projection models so long as they have been reviewed by technically competent peers, are parameterized for the specific conditions of the project, are used within the scope for which they were developed and evaluated, and are clearly documented. Frankly I do not understand why anyone would trust a model that was not reviewed, was parameterized for a developed for or was not documented. That would be completely illogical. The Protocols also correctly point out that a sensitivity analysis should be performed and that the models should be periodically reviewed. Clearly it would be impossible to understand any model unless one understands the various uncertainties associated with it. Periodic review is required because models change as does the science they are based upon. The Forest Protocol requirements of annual reporting and direct sampling of forest carbon (over ten year intervals) ensure that the model projections are compared with ground-level data. By coupling models and data one can more accurately forecast future changes in carbon stores. Besides, the measured changes in carbon stores are what actually happened, projections just what might have happened.

Requiring Confidence Level be Determined

While it is true carbon is carbon, not all carbon stores projects are equally credible. There are two facets to this issue. The first is whether the project plan itself is viable. The Forest Protocols deal with this issue by requiring information on the location, climate, likely disturbances, longevity, proposed activity and other factors that might influence the storage of carbon. Projects failing to meet these requirements should not be considered viable. The second is that those potentially viable projects demonstrating actual increases in carbon stocks should have more value than ones that do not. As projects are likely to use a range of sampling methods, the Forest Protocols correctly uses the degree of statistical confidence to modify the estimate

of carbon stocks. These are used as deductions to provide a conservative estimate of the most likely carbon store in a project.

This is entirely appropriate given underestimating stores causes less potential environmental damage than overestimating the stores. While this approach emphasizes the effect of sampling errors (there are other kinds that are not considered), it is a completely rigorous and technically sound way to factor in the quality of the carbon store estimate. Given the sliding scale of deductions the managers of a project can decide if the gains in carbon related to reducing uncertainty outweigh the costs of increased sampling. Therefore this sliding scale discount approach provides flexibility to landowners while ensuring a high level of confidence in forest carbon estimates.

Thank you for taking the time to consider these comments concerning several scientific and technical aspects of the California Climate Action Registry Forest Protocols. I hope my input clarifies several potential misunderstandings and leads you toward the logical decision of endorsing the Forest Protocols as a voluntary early action measure.

Sincerely,

Mark E. Harmon
Richardson Chair and Professor
Forest Science

Attachment: www.arb.ca.gov/lists/forestghg07/22-ca_air_quality_board-forest_products_protocols-harmon-letterhead.doc

Original File Name: CA air Quality Board-forest products protocols-harmon-letterhead.DOC

Date and Time Comment Was Submitted: 2007-10-17 15:40:02