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3-16-2017

Dr. Russ Henley
Assistant Secretary of Forest Resources Management
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

RE: Proposed Forest Carbon Plan

Dear Dr. Russ Henley:

This letter is Sierra Pacific Industries comments on the California Forest Carbon Plan (CFCP). The first several pages is a discussion about carbon cycles and the potential forests have for affecting atmospheric CO_2, followed by four important areas where forests and forest products can significantly contribute to lowering atmospheric CO_2.

The CFCP is intended to help guide forest policy. Policies should integrate into the state's economy. Successful policies integrate into the economy as positive economic drivers. Very successful policies positively affect the economy and other social and natural capital. The CFCP has the potential to guide the development of very successful California forestry policies that simultaneously improve our economy, help meet our climate goals, and protect the natural and social capital of our watersheds. The development of such successful forest policy should begin with understanding the difference between biogenic and geologic carbon as sources of atmospheric CO_2 and the biological limitations and market potential forests have for contributing to the solutions we seek.

In simple terms carbon is sourced from two "pools". The first "pool" is geologic carbon and the other "pool" is biogenic carbon. Biogenic carbon is active in the biogenic carbon cycle. In simple terms biogenic carbon cycling is the transfer of carbon from its natural state as solid plant material to a gaseous state and back again. The biogenic carbon cycle occurs generally on a comparatively short time scale of decades or less. The graph of the CO_2 flux derived from Antarctic ice cores shows a relatively stable trend over the last 600,000 years, until the last 50 years when a marked increase above the millennia range was measured at the Mauna Loa Observatory (http://www.ipcc-data.org/observ/ddc_co2.html). Due to the scale of the graph last 50 years is represented as a vertical red line extending above the millennia range.

Changes in CO2 in the distant past

The observed and projected changes in CO2 concentrations can be put into context by comparing them with measurements of past variations. The levels of carbon dioxide in the atmosphere in the distant past can be determined from bubbles of air trapped in ice. Data from the Antarctic sites Vostok and Epica ice cores (see Fig. 6.3 of the IPCC AR4, the physical science basis are plotted together in figure 3. Also shown are the AD2007 annual mean concentration measured at Mauna Loa and the the projected concentrations for AD2100 under 6 SRES marker and illustrative scenarios. The 50 year period of Mauna Loa observations and the century covered by the projections span less than the thickness of a line on this graph.

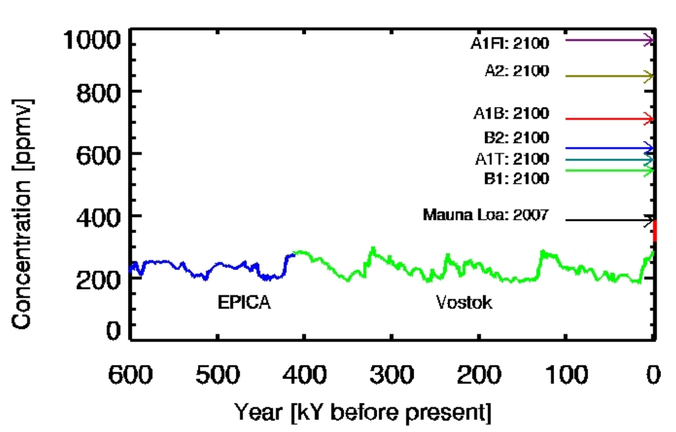
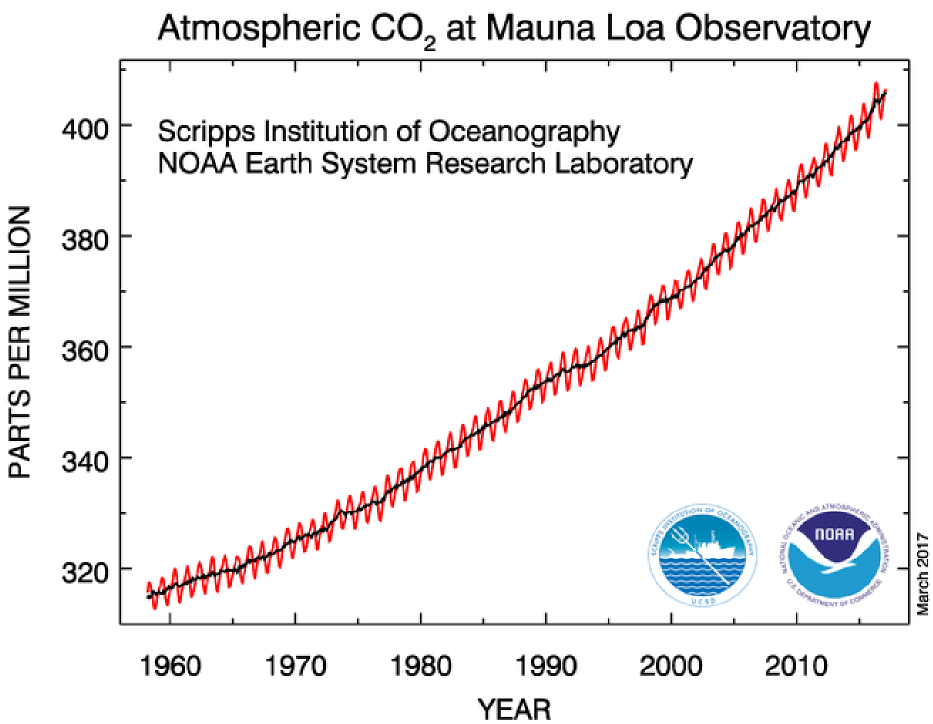


Figure 3: CO2 concentrations derived from EPICA and Vostok ice cores. The red bar at the side indicates the evolution of the Mauna Loa measurements. On this time scale, the 50 years of measurements span less than the thickness of the line, so it appears vertical.

Geologic carbon is generally separate from the biogenic carbon cycle. The geologic carbon cycle is on a time scale of millions of years. Geologic carbon can return to the atmosphere as a gas from volcanic activity and anthropogenic use of fossil fuels. Biogenic carbon can move to the geologic pool through absorption into large waterbodies such as oceans, mineralization in soils, and continental plate tectonics. The return of biogenic CO_2 to the geologic pool of carbon is a much slower process than the gasification of fossil fuels from anthropogenic activities. The difference in time scales for the cycling of carbon within and between these two pools means that they are not “equal” when considering climate policy. It is important that the CFCP does not blur the distinction between geologic carbon and biogenic carbon. This difference in carbon sourcing is recognized in the Cap and Trade regulations 17 CCR § 95852.2. Emissions without a Compliance Obligation, which exempts biomass energy from reporting its emissions as part of meeting a greenhouse gas compliance obligation, and also by the California Energy Commission which recognizes forest biomass as eligible for registering under its Renewable Portfolio Standard.

Plants sequester carbon from the atmosphere through photosynthesis. The growth of all of the plants on Earth make a noticeable effect on CO_2 levels in the atmosphere as shown on the graph from the Mauna Loa Observatory below (https://www.esrl.noaa.gov/gmd/ccgg/trends/full.html).



The annual dip in the upwardly trending curve of CO_2 levels is caused by the plants in the northern hemisphere breaking bud in the spring each year. This is a clear and significant signal that plant sequestration can reduce atmospheric CO_2. The upward trend of the curve however shows that carbon from the geologic pool of carbon is overwhelming the benefits of plant photosynthesis.

The climate goal delineated in Senate Bill 32 requires a reduction in the emissions of CO_2 to 40% below 1990 levels by 2030. Atmospheric CO_2 contains carbon sourced from biogenic and geologic sources. Prior to the wide spread use of coal for power and oil for transportation the atmospheric CO_2 reflected the natural CO_2 flux of the biogenic carbon pool. Today the natural CO_2 flux of carbon in the biogenic carbon pool is functioning properly as shown by the relatively stable annual dip in CO_2 at the Mana Loa Observatory. The geologic carbon pool however has been disrupted by use of geologically sourced carbon based fuels, which are the cause of the recent and dramatic increase in atmospheric CO_2, not a disruption in the biogenic carbon cycle.

As you know trees are one of the few plants that can be efficiently made into long lived building products. Because tree growth sequesters carbon from the atmosphere and the bi-products from their harvest and manufacturing creates a fuel source for bioenergy there is tremendous potential for using forests to contribute to meeting California’s climate goals. The key to forests making a significant contribution will rely on polices that foster sustainable forestry practices, utilization of wood products in substitution of more highly energy embodied building materials, providing and securing existing wood biomass disposal opportunities for offsetting fossil fuel use and reducing harmful emissions, and using prescribed fire appropriately.

The Importance of Sustainable Forestry Practices

Sustainable forestry practices ensure that forests contribute to the stability of the biogenic CO_2 flux within its normal range. However, with the appropriate policies forests have the ability to make more significant contributions to meeting California's climate goals. The necessary policies should incentivize implementing sustainable forestry practices, utilization of wood products in substitution of more highly energy embodied building materials, and securing existing and providing new wood biomass disposal opportunities to offset fossil fuel use and reduce harmful emissions.

Sustainable forestry practices ensure that forests contribute to maintaining the CO_2 flux. In California sustainable forestry practices are already a mandatory regulatory requirement. The forestry practices codified in 14 CCR § 896 states that the "purpose of the Forest Practice Rules is to implement 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 intent of the Z'berg-Nejedly Forest Practice Act is found in Division 4, Chapter 8, Public Resources Code 4513 which states:

> 4513 Timberlands; creation and maintenance of system of regulation and use; legislative intent.
> It is the intent of the Legislature 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.

A Timber Harvest Plan (THP) is the functional equivalent to the Environmental Impact Report process under CEQA and has been certified as such, pursuant to PRC Section 21080.5. In recognition of that certification and PRC Section 4582.75, these rules are intended to provide the exclusive criteria tor reviewing THPs. The California Forest Practice Rules require that a THP be prepared by a Registered Professional Forester (RPF). The THP process requires public notification of adjacent land owners, public agencies, and Native American tribes. The notification process allows all potentially affected parties ample opportunity to comment on a proposed Timber Harvesting Plan. The THP is reviewed for its compliance with State law by a multi-disciplinary review team including CAL FIRE, the California Department of Fish & Game, the Regional Water Quality Control Board, and the Department of Mines and Geology. A THP must be approved by the Director of the State Board of Forestry before timber operations can occur. The California Forest Practice Rules state that "no THP shall be approved which fails to adopt feasible mitigation measures or alternatives from the range of measures set out or provided for in these rules which would substantially lessen or avoid significant adverse impacts which the activity may have on the environment".

The most recent Forest Inventory Analysis (FIA) data that shows that private industrial and non-industrial forests, managed for a variety of objectives, all have been successfully sequestering carbon net of all emissions. This fact is reflected in PRC 4512.5 (b) which states that "In fact, the forest sector is the only sector included in the scoping plan that provides a net sequestration of greenhouse gas emissions." Therefore it can be concluded that the California Forest Practice Rules have had a positive effect on the carbon profile on privately owned forests. Furthermore the effectiveness of sustainable forestry practices at improving total forest sequestration has been adjudicated. The case *Center for Biological Diversity v. California Department of Forestry and Fire Protection*, Judicial Council Coordination Proceeding Case No. 4628, El Dorado County Case No. SC20100151 was adjudicated and a decision rendered March 28, 2011. The complaint in the consolidated case was that 19 Timber Harvest Plans (THPs) submitted by Sierra Pacific Industries did not comply with CEQA or the Global Warming Solutions Act. Among the

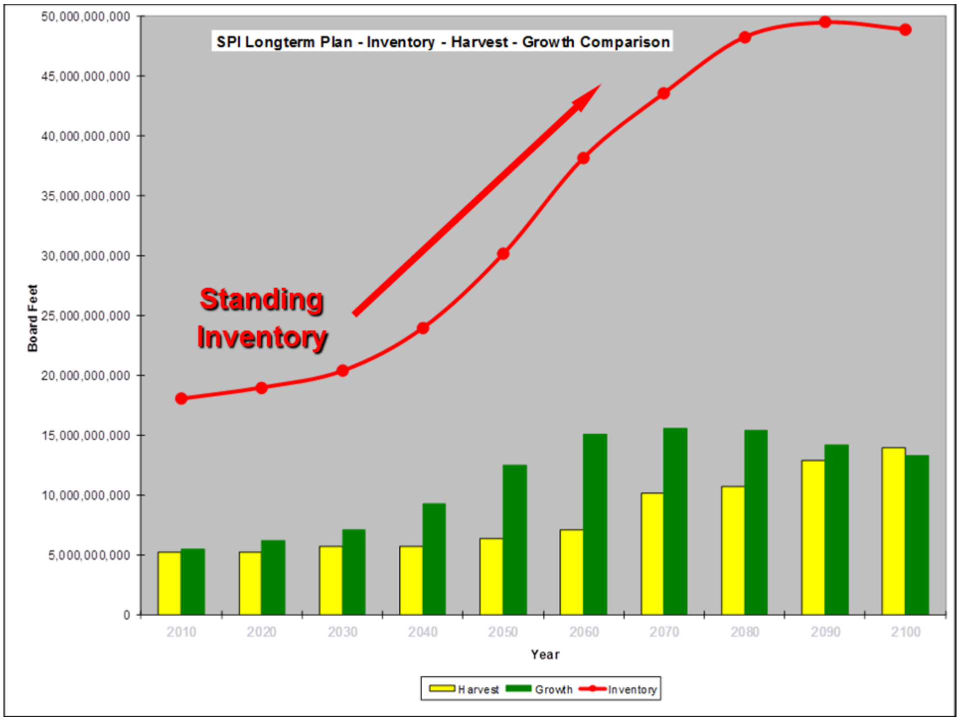
Court's conclusion it stated: "On and individual THP basis as well as considering all 19 THPs, the cumulated sequestrations of all 19 THPs and the application of the total sequestrations far exceed the total emissions for each period considered and there was no significant impact of emissions as such were fully offset by sequestrations." The Court went on to rule: "There was a net excess of sequestrations which fully offset the emissions of GHG and the environment was not adversely impacted or affected, in fact, the GHG sink was increased over and above the emissions and the environment benefited from the sequestration of CO_2." Based on *Center for Biological Diversity v. California Department of Forestry and Fire Protection* and the number of THPs (1475) and NTMPs (65) since 2011, which have included a GHG emissions analysis, and have been evaluated and approved by the California Department of Forestry and Fire Protection, the CFCP should clearly state that the existing forestry regulations adequately addresses the potential for significant carbon emissions resulting from timber harvesting.

While the existing forest regulation addresses carbon emissions adequately, there are biological limitations to the amount of biogenic carbon that can accrue on the landscape. Biogenic carbon in trees cannot increase infinitely because the area available for trees is finite and tree growth rates slow down as trees become larger, older, and eventually die and emit the carbon they sequestered. Currently the CFCP seems to promote sustainable forestry practices that leads to forest regulation, which occurs when the standing volume of trees (carbon sink) reaches carrying capacity. At carrying capacity growth and mortality or growth and harvesting or a combination of the three equilibrates. Due to our Mediterranean climate forests at carrying capacity are at risk from insects and fire if the stand structure is not in a resilient condition. Even in a resilient condition forests at carrying capacity will be in a static condition that will maintain the biogenic CO2 flux within the normal range, but not yield the majority of climate benefits a dynamically managed forest can provide.

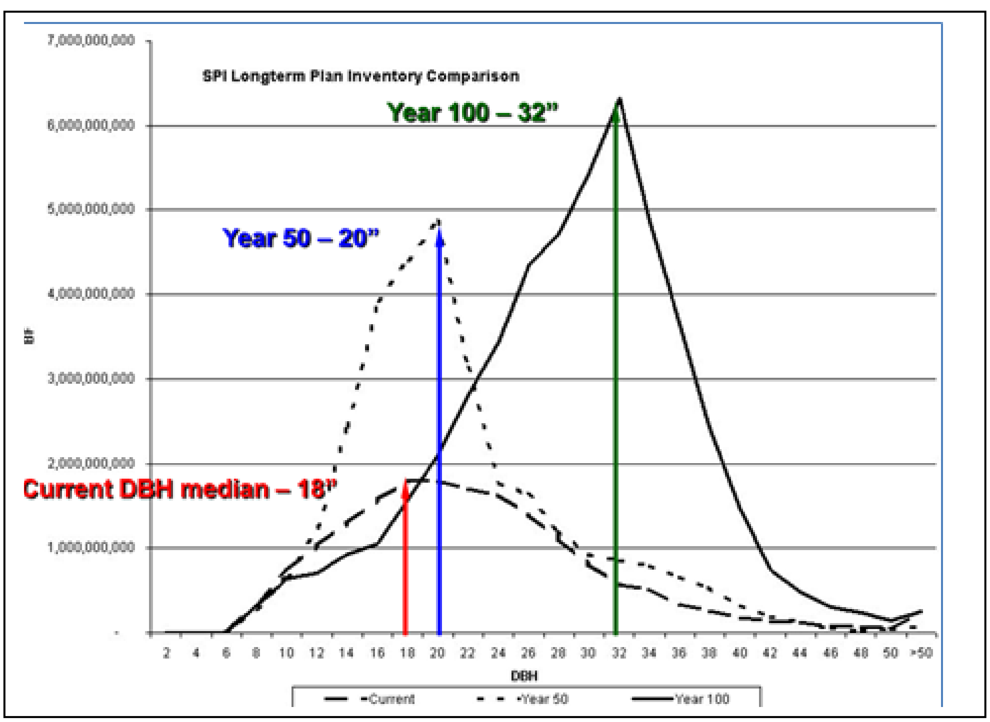
Taking a more active and dynamic view of sustainable forestry practices will increase California's opportunities to simultaneously improve its economy, help meet its climate goals, and protect the natural and social capital of our watersheds.

Regardless of the management intensity carbon stocks will increase and equilibrate at a rate that reflects the soil productivity, the density and distribution of trees, tree size, age, and mortality. Tree size, density and distribution are optimized to the degree feasible based on management constraints. Management constraints include but are not limited to access, topography, products to be produced, wildlife, watershed, recreation, soil, visual and archeology resources. Sustainable forestry practices plan for the rate of harvest and growth by implementing a comprehensive forest mensuration program.

Sustainable forestry practices can and will necessarily vary depending on the ownership objectives and management constraints. Sierra Pacific Industries provides one example of what sustainable forestry practices can accomplish regarding carbon sequestration. Sierra Pacific Industries estimates of standing tree inventory, growth and harvest are based on field measurements at over 400,000 individual forest inventory plots across the Sierra Pacific Industries ownership. Wood is approximately ½ carbon by weight. Therefore, the increase in Sierra Pacific Industries' inventory of trees directly correlates to increases in carbon on the landscape. On an annual basis, Sierra Pacific Industries has carefully calculated the rates of sequestration for our timberlands, as well as for the emissions from individual harvest plans. After accounting for logging, hauling, milling, and product emissions from all our annual timber harvest projects, our forests still sequester 20 times those emissions every year. The high rate of sequestration from our timberlands does not consider the carbon storage that is maintained in lumber and other wood products, the fossil fuel savings from renewable biomass energy, nor the emissions savings that can be realized by substituting wood products such as mass timber construction techniques in place of more highly energy embodied materials such as cement and steel. As shown on the graph below Sierra Pacific Industries forests are projected to sequester substantial amounts of carbon during the next 40 years before flattening off at a growth rate that is twice the level of sequestration that is occurring currently.



The higher landscape carbon equilibrium that Sierra Pacific Industries has estimated to attain from its sustainable forestry practices is maintained by continued harvesting, planting, tending, spacing, which results in increased tree growth. Sierra Pacific Industries' sustainable forestry practices results in its timberlands sequestering three times the amount of carbon over the next 100 years as compared to a custodial forest management approach. This substantial increase in sequestration however requires significant monetary investments in establishing and managing tree densities. Sierra Pacific Industries' sustainable forestry practices will increase the current modal diameter of volume by diameter class from 18 inches to 32 inches. These larger trees will be widely spaced and, due to their size, stand structure and landscape distribution, will have increased fire resilience.



Fire resilient landscapes are a goal that is desired by a broad suite of stakeholders. Reducing tree densities is a requirement of reducing current risk and maintaining resilient forests because as a regulated forest reaches carrying capacity, tree growth slows and the forest becomes at risk to natural disturbance such as insects and fire. The CFCP does not currently emphasize the importance of forest as sites of active sequestration which need harvesting to maintain both their resilience and rapid growth (sequestration) rate.

The best method for reducing tree density is through mechanical forest harvesting because it provides the most certainty regarding outcomes including managing the risk of liability. Mechanical forest harvesting allows foresters to plan for and control post-project stand conditions including: tree species, spacing, composition, size, frequency, distribution and fuel loading. Mechanical treatment of fuels as part of sustainable forestry practices should improve the outcomes of future planned or natural fire events. Mechanical forest harvesting allows the planning of future expected growth and available wood products. Wood products derived from harvesting reduce the costs of forest resiliency projects. Long-term plans that utilize sustainable forestry practices and mechanical forest harvesting can reliably estimate the expected flow of wood products over time, which is essential for business investments in manufacturing infrastructure. Some mechanical harvesting projects will not be economically feasible due to the distance to market and the expected wood products from the project.

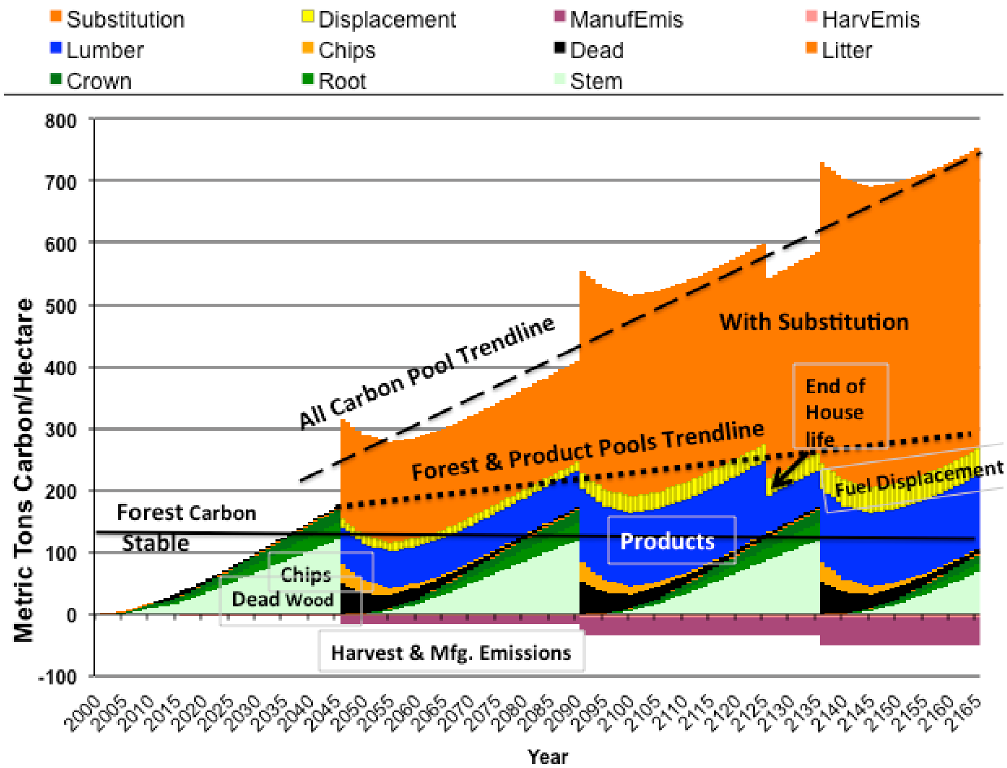
The Importance of wood product substitution

Increased sequestration rates are important for maximizing the forests contribution to reducing atmospheric CO_2. Forest growth however slows and carbon stocks become static at older stand ages. The age when this occurs will vary depending on tree species and bioregion. In order to maintain stand growth and thus sequestration rates tree age must be managed. When older trees are harvested to make growing space for younger trees the fate of that wood will influence the total CO_2 benefit to the atmosphere accruing cumulatively overtime. The longer lasting the wood product the more cumulative impact on sequestration occurs. When wood products are used in substitution of more highly energy embodied building materials the greatest gains in cumulative atmospheric benefit occurs because their application in the built environment provides very long residence times, in combination with the greenhouse gas offsets that occur when comparing each building products life cycle.

Incentives to utilize wood products in substitution of more highly energy embodied building materials should be emphasized as a mechanism to increase market demand for wood products. The sheer quantity of wood necessary for multi-story Cross Laminated Timber(CLT)-mass timber constructed buildings would increase wood demand. The size of material used in CLT products can be as small as 2”x 4” dimension lumber; therefore the price and utilization of small trees should be positively impacted. (http://www.rethinkwood.com/tall-wood-mass-timber/products/cross-laminated-timber-clt). Modern small log sawmills can economically mill a 10’ 6” log that is 5 inches in diameter on the small end. Economic principles suggest that an increase in the demand for wood products will lead to higher prices for wood. Higher prices for wood should motivate non-industrial owners to take a more active approach to forest management because there would be a higher likelihood of profiting. Higher prices for wood should also improve the economics of sustainable forestry projects generally.

CLT-mass timber building construction will not only store carbon for potentially hundreds of years it has the added benefit of offsetting the GHG emissions that would have occurred if more highly energy embodied materials such as cement and steel were used. The CFCP should point out the impediments in the California Building Code that are preventing the wide spread use of CLT construction of multi-story buildings, even though individual projects have demonstrated their safety and price competitiveness http://www.woodworks.org/design-and-tools/building-systems/mass-timberclt-presentations-videos/.

Below is a graphical representation of the flux of forest carbon over time on a fixed area of a regulated forest. The graph is from the Consortium for Research on Renewable Industrial Materials (CORRIM) http://www.corrim.org/pubs/factsheets/fs_10.pdf, pg 3. Please note the steady accrual of carbon stocks in wood products and the carbon displaced with bioenergy, however the largest gains will occur when wood products are substituted for highly energy embodied cement and steel. In order to emphasize the substantial potential for cumulative CO_2 sequestration by using wood in substitution of more highly energy embodied building materials, the CFCP should include a graphical representation of this building practice, such as shown below.



The Importance of Biomass

Providing wood biomass disposal opportunities should be a key part of the CFCP. In order to manage for the most beneficial air quality outcomes, incentivizing the disposal of unmerchantable biomass needs to be addressed. Currently the technology for wood waste to energy is limited, however state of the art wood fired energy plants provide a much better emissions profile than open burning and its utilization as an energy source has additional benefits. Having a viable biomass industry will allow a greater amount of forest fuels to be removed when implementing sustainable forestry practices, which will reduce open-burning, forest fire emissions, a reduction in fire suppression costs and a minimization of tree mortality within a fire's perimeter.

Providing wood biomass disposal opportunities is also crucial for reducing harmful emissions while offsetting fossil fuel use. According to the California Air Pollution Control Officers Association (CAPCOA), "Biomass power plants are a primary alternative to the open burning of agricultural and forest waste and the emissions associated with open pile burning including criteria air pollutants (fine particulate matter (PM), carbon monoxide (CO), volatile organic compounds (VOC), and nitrogen oxides (NOx)), greenhouse gases (carbon dioxide (CO2) and short lived climate pollutants of methane and black carbon), and organic air toxics. Comprehensive life cycle assessments show reductions of greater than 99% for PM and black carbon, from 95-99% for CO and VOCs, 70% for NOx, and up to 30% for CO2 (University of California Division of Agriculture and Natural Resources 2015, Springsteen et al. 2011). In the near term, the lack of biomass plants will undo much of the progress that has been made in reducing open burning and the levels of harmful air pollutants in the air we breathe". In California where the highest level of unhealthful air quality occurs it causes a multitude of health issues. Health issues can include increased hospital and emergency room visits, an increased risk of having a heart attack, and premature deaths. According to Hall et al. (2008) the estimated annual cost associated with air pollution health effects in the South Coast Air Basin and San Joaquin Valley were $22 billion and $6 billion respectively.
(http://publichealth.lacounty.gov/mch/AsthmaCoalition/docs/BenefitsofMeetingCleanAirStandards_11_06_08.pdf).

While a study by the National Renewable Energy Laboratory (G. Morris 1999) indicated that the uncompensated (ancillary) benefits of biomass energy production are 11.4 cents, the price of energy paid to biomass power plants does not reflect those benefits. The CFCP should suggest a mechanism to support the cost of transporting biomass waste to a biomass power plant, for its safe disposal. The CFCP should discuss how biomass energy can work synergistically in support other renewable sources of energy by providing grid stability. Biomass energy could also be used as baseload power sources to specifically support the expansion of intermittent renewable sources of power such as wind and solar. SPI believes that using the Greenhouse Gas Reduction Fund (GGRF) is the best mechanism to support biomass power since the benefits are for all Californian's and if only some select utilities charged more in their rates to cover those ancillary benefits it wouldn't be permissible under the Commerce Law.

Additionally, if technology advances allow for the efficient conversion of wood biomass to liquid fuels, the need for the collection infrastructure and power source could be satisfied and work synergistically with the current biomass industry infrastructure,if it is maintained.

Appropriate use of Prescribed Fire

California has 40 million acres of forest land, and the median pre-European fire return interval was approximately 19 years (Taylor and Skinner 2003), which equates to burning approximately 2 million acres annually, which would create a lot of untreated emissions. Cal Fire estimates that there are approximately 11.3 million people living in the Wildland Urban Interface, which means there is significant risk to property using prescribed fire. Even when considering these untreated emissions and risks to property, there is still a keen interest in using prescribed fire as a management tool for treating overly dense forests. Sierra Pacific Industries believes prescribed fire has its place in sustainable forestry practices, however on commercial timberland it is our opinion that the tradeoffs between mechanical harvesting and prescribed fire have not been analyzed thoroughly enough for decision makers to make informed decisions regarding its use. SPI recommends that the CFCP develop an "average" cost/benefit analysis comparing prescribed fire to mechanical harvesting (tractor and cable). The analysis for ground based tractor logging should include biomass removals or mastication and the cable logging analysis should include "whole tree logging", with tops and limbs chipped at the landing. The analysis we are requesting should be restricted to "commercial timberland" and not include woodlands, chaparral, or non-commercial forests because those areas have significantly different commercial values, productivity, and management options. Results of the analysis could be used as a tool to understand the trade-offs between those two management techniques. Variables that should be compared include: air quality/health effects, effectiveness at reaching a desired stand density and fuel load, economic costs, certainty of acres treated/risks to property, certainty in protecting watershed and wildlife resources, bi-product values/jobs derived from the project, cumulative product sequestration, and energy offsets. The results of this analysis should provide policy makers an opportunity to evaluate the different outcomes from these two different management approaches. It is our opinion that this analysis would likely show that for each variable listed previously, mechanical treatments would create better outcomes overall than prescribed fire on commercial timberland. That said if funding permitted, prescribed fire could be applied following a mechanical treatment to meet a particular ecological objective such as germinating a rare plant population or strategic fuel minimization. Prescribed fire comes with many uncertainties and problems including unacceptable liability risk, smoke and other health issues. Prescribed fire should be primarily reserved for parks and wilderness areas where mechanical treatments are unavailable.

Forest Carbon Plan Requested Corrections

1. SPI has identified an error in the conversion of logs to wood products found on page 70 in the figure "End-uses as a percentage of 2012 Harvest". These conversion errors would greatly affect any long-term carbon flux analysis that used product fates for calculating long term cumulative carbon accruals from timber harvest and wood product manufacturing.

SPI has completed an analysis of the end uses of all of the logs it consumed in 2015. The analysis was done on a weight basis. The results show that 60% of the logs manufactured go to finished lumber (not 26%), 18 % goes to bio-energy (not 54%) and 15% goes to landscaping products (not 10%) and 7% goes to Pulp and fiberboard products (not 4%). Please update the CFCP to reflect the correct conversion factors for logs harvested to wood products so that accurate carbon flux analyses can be completed.

2. There is a bullet on pg. 118 that Sierra Pacific Industries believes is incorrect. The bullet reads: "The limited infrastructure capacity for forest management, wood processing, and biomass utilization, and the limited appropriately trained supporting workforce, are major impediments to forest restoration".

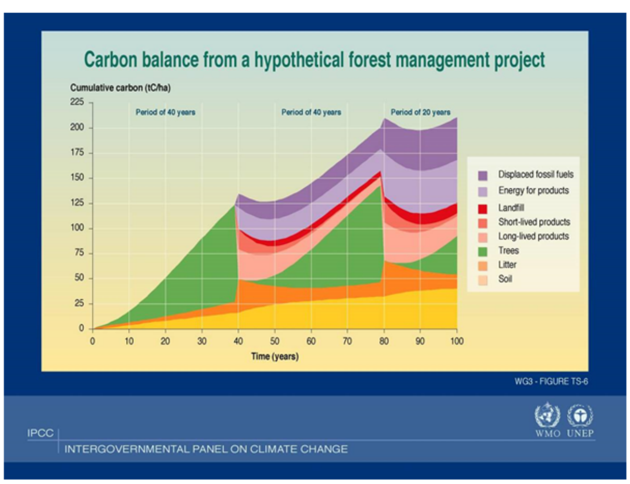
Sierra Pacific Industries believes that infrastructure capacity is not limiting, because the existing operations (sawmills and biomass power) are scaled to match the sustainable harvest from private timberlands and the currently available logs from the USFS. While there has been a recent spike in available dead trees this does not reflect a long-term reliable source of material that would support manufacturing technologies that are currently available at scale. Efforts at new business development would be dependent on the U.S. Forest Service and other public landowner's committing to a long-term increase in timber volume harvested at a sustainable harvest level.

Conclusion

Sierra Pacific Industries is supportive of the "Goals for Wildland Forests", p. 24 of the draft Forest Carbon Plan because they seem to be consistent with the International Panel on Climate Change (IPCC). The IPCC is the leading international body for the scientific assessment of climate change established in 1988 under the auspices of the United Nations. The IPCC judged the merits of sustainable forestry and bio-energy in its comprehensive study*; Forestry. In Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*., p549. The report concludes:

"In the long term, sustainable forest management strategy aimed at maintaining or increasing forest carbon stocks, while producing an annual yield of timber, fibre, or energy from the forest, will generate the largest sustained mitigation benefit."

Below are two separate graphs, one from the Intergovernmental Panel on Climate Change (IPCC) and one from Dr. Stewart and Sharma 2015 that both show how cumulative gains in carbon sequestration occurs using sustainable forestry practices. As you can see the fate of trees converted to products as the result of harvesting will influence a carbon flux analysis and therefore could influence the perceived benefit of sustainable forestry practices at varying time scales.



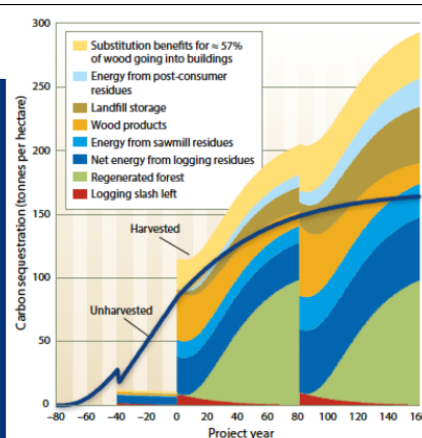


Fig. 1. Sequestration benefits over time from 1 hectare of a mixed-conifer forest under two scenarios: unharvested (or let-grow), and even-aged harvest and regeneration with 75% of slash (logging residues) used for energy at a harvest at year 0. The life cycle includes the 80 years since the forest started from seedlings as well as two cycles of harvesting and replanting.

Figure 1: Best practice scenario of carbon sequestration for a sustainably managed forests versus an unharvested forest (Source: Stewart and Sharma 2015)

Sierra Pacific Industries believes the forest carbon plan needs to provide tangible demonstrations of how various sustainable forestry practices and wood products result in different levels of carbon sequestration. These analyses should be reported in graphs similar to those from the IPCC and Dr. Stewart and Sharma 2015. These analyses should also compare the costs and benefits of pursuing one management scenario as compared to another. Variables that should be compared include: air quality/health effects, effectiveness at reaching a desired stand density and fuel load, economic costs, certainty of acres treated/risks to property, certainty in protecting watershed and wildlife resources, bi-product values/jobs derived from the project, cumulative product sequestration, and energy offsets.

It is our opinion that if the CFCP provides a clear description of tradeoffs between management activities and their outcomes, decision makers will produce policies that do the best job of positively affecting sustainable forestry practices and the markets the resulting wood products are sold into. Positively impacting both sustainable forestry practices and their markets will help society achieve its climate goals, improve the overall condition of California's natural resources, and improve the economics of implementing the stewardship activities.

Sincerely,

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Sierra Pacific Industries
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