THE JOHN MUIR PROJECT
OF EARTH ISLAND INSTITUTE


August 22, 2017

Carole D'Elia, Executive Director
Little Hoover Commission
925 L Street, Suite 805
Sacramento, CA 95814

Dear Ms. D'Elia,

On behalf of the John Muir Project (JMP) of Earth Island Institute and Sierra Club California (SCC), we are writing in response to several questions posed by the Little Hoover Commission (LHC) in the agenda for the August 23, 2017 public meeting in Sacramento. For your consideration, below we excerpt each question and add our thoughts in response, followed by some further comments in response to issues raised in the August 21, 2017 meeting between staff of LHC and SCC.

**Question:** "Are the directives in the Governor's 2015 Proclamation of a State of Emergency and subsequent implementing legislation and California Public Utilities Commission Resolutions effective in removing and processing the hazard trees?"

**Response:** We are not aware of significant legal or regulatory impediments to felling true hazard trees that could fall on public roads, homes or administrative structures, powerlines, or campgrounds, though there are some lower-income homeowners who may need some financial assistance with felling hazard trees immediately adjacent to their homes within the Defensible Space zone (0 to 60 feet from homes; see Syphard et al. 2014). However, we disagree with the apparent assumption inherent in the question—i.e., that hazard trees, once felled, must be removed and processed. Once felled, snags (standing dead trees) are no longer falling hazards.

Moreover, large downed logs are vitally important habitat for reptiles, amphibians, and small mammals (Bull 2002), and imperiled wildlife species such as the California spotted owl and Pacific fisher depend on high densities of downed logs because their small mammal prey species benefit from, and depend upon, high densities of downed logs as habitat (Verner et al. 1992, Purcell et al. 2009, Lofroth et al. 2010).

When downed logs decay, they return essential nutrients to the soil, which helps to maintain soil productivity and carbon sequestration potential, and large downed logs (e.g., over 10 inches in

diameter) do not meaningfully increase fire intensity when fires occur (Bebi et al. 2003, Meigs et al. 2016), and may actually decrease fire intensity by acting as moisture reservoirs (Amaranthus et al. 1989). Therefore, from an ecological perspective, and from the standpoint of making certain that resources are not unnecessarily spent where they do not further public safety, leaving felled hazard trees on the ground is desirable in most cases (an exception to this is felled hazard trees within the Defensible Space zone).

Further, there is reason for concern that, in many cases, snags are being felled when they could not possibly reach the road, structure, or powerline in question (e.g., snags that are not nearly tall enough to reach the road, and snags that are leaning away from the road and are down a steep slope from the road). When this occurs, it unnecessarily damages wildlife habitat, and diverts resources away from protection of public safety. Finally, where roads are not necessary for public access to properties, administrative facilities, campgrounds, or other infrastructure, such roads can simply be closed, rather than unnecessarily expending resources felling hazard trees along such roads.

**Question:** "How is progress toward meeting the Proclamation directives being measured?"

**Response:** This is difficult to assess for two reasons. First, the Proclamation identified two distinctly different areas that would be targeted—Tier 1 areas, where hazard trees could fall on roads, homes/facilities, powerlines, or campgrounds, and Tier 2 areas (comprising a vastly larger area than Tier 1, and occurring mostly on National Forest lands), where new snags are not near human infrastructure, but the Proclamation assumed that forests with higher levels of snags create an increased potential for intense fire, and promoted their removal on this basis. However, the overwhelming weight of scientific evidence indicates that forests with high levels of snags from drought and native bark beetles do not have increased fire intensity or rate of fire spread either in the immediate term (within less than a few years after the trees died) or in the long-term—up to 25 years or more later (Bebi et al. 2003, Bond et al. 2009, Hart et al. 2015, Meigs et al. 2016). Therefore, at least with regard to Tier 2 areas, it is hard to assess progress in accomplishing an objective that current science indicates will not be accomplished by the activities (widespread logging of snags in remote forests) that are being promoted.

We are very concerned about the LHC-organized panel, during the August 24, 2017 public meeting, to discuss "market development in utilizing the 102 million dead trees and [] long-term forest management" (see August 10, 2017 LHC Notice of Meeting for 8/24/17). We would like to assume that the wording of this Notice by LHC did not mean to convey an intention to log the 102 million new snags, most of which occur in ecologically important patches of snag forest habitat on National Forest lands. However, our concern is underscored by the fact that there is no invited panel of independent scientists, who are unaffiliated with industries or land management agencies involved in the sale of trees for lumber or bioenergy, to discuss the ecological value of these snags in our forest ecosystems.

A program to log this snag forest habitat in Tier 2 areas would be highly damaging, ecologically, to numerous species that depend on high levels of snags and downed logs for denning/resting, nesting/roosting, and/or foraging habitat, including the California spotted owl, Pacific fisher, and Black-backed woodpecker (Hanson and North 2008, Lee et al. 2012, Siegel et al. 2013, Hanson

2015).

With regard to Tier 1 areas, assessing progress would entail a state monitoring program to consistently identify and track (a) the miles of roads along which hazard tree felling is/was truly necessary for public safety and access (as opposed to roads that can be closed), and the proportion of this mileage for which hazard tree felling has been completed, (b) the miles of roads (with hazard trees) which are not necessary for public access, and the proportion of this mileage represented by roads that have been closed to protect public safety and wildlife habitat, (c) the total acreage of areas with hazard trees that are/were within falling distance of public campgrounds, powerlines, and administrative facilities, and the proportion of this acreage for which hazard tree felling has occurred, and (d) the total number of homes with hazard trees within falling distance of the houses, and the proportion of these for which hazard trees have already been felled (either at the homeowners' expense, or with some type of public assistance). We are not aware of the existence of any such comprehensive state monitoring program.

**Question:** "What adjustments could be made for forest bioenergy to be a more effective tool in responding to the tree mortality crisis?"

**Response:** As discussed above, removal and processing of felled hazard trees is not ecologically or economically necessary or advisable for most areas, but the one place where such removal and processing could be helpful is in the Defensible Space zone that extends up to 60 feet from homes (further distances provide no additional fire-protection benefits; see Syphard et al. 2014). We are not aware of any prioritization of such areas currently, which is a concern. Though many homeowners have already felled and removed hazard trees adjacent to their homes at their own expense (typically having such trees cut up into firewood), there may be some lower-income homeowners who cannot afford such measures, and require assistance. However, the assumption, inherent in the question, that hazard trees removed from such areas should/would be burned for bioenergy ignores other uses, including firewood, and wood shavings for animal bedding.

**Question:** "What role can and should forest bioenergy play in long-term forest management?"

**Response:** Forest bioenergy should not play a long-term role in forest management. The fundamental assumptions upon which proponents of long-term forest bioenergy rely are not supported by current science. Long-term forest bioenergy proponents assume that snags and downed logs are little more than "fuel" that should be removed from the forest, and do not appreciate the fact that hundreds of scientific studies now recognize the extremely high ecological importance of snags and downed logs, and patches of snags/logs, for native biodiversity and wildlife abundance (see studies cited above; see also DellaSala and Hanson 2015) and, as discussed above, snags and logs do not increase fire intensity or spread, contrary to common misconceptions.

Moreover, wood combustion generates 206.8 lbs CO2/MMBtu, compared to 205.6 lbs CO2/MMBtu for bituminous coal (https://www.epa.gov/sites/production/files/2015-07/documents/emission-factors_2014.pdf). Proponents of long-term forest bioenergy also frequently assume that current forests contain far more biomass (i.e., are much denser) than historical forests, which is contradicted by research showing that, as of 2014, there were 30%

more trees per acre, but 19% lower basal area, in current California forests versus historical forests (McIntyre et al. 2015); therefore, in terms of overall biomass (as indicated by basal area), current forests are less dense than historical forests. This was before the recent significant pulse of snag recruitment in the Sierra Nevada, which further reduced the number of trees per acre, and live tree basal area.

Further, proponents of long-term forest bioenergy often assume that we currently have too much fire, or too much high-intensity fire, relative to natural, historical levels in California's forests, and promote removal of live trees and/or snags, for bioenergy, ostensibly as fuel-reduction/fire-management. However, there is now a broad consensus of scientists concluding that we currently have a deficit of wildland fire of all intensities in California's forests (Odion et al. 2014, Hanson et al. 2015, Parks et al. 2015, Doerr and Santin 2016).

**Question:** "Bioenergy costs more than other types of renewable energy, and some of the benefits of forest bioenergy as a forest management tool, such as utilization of small diameter trees or jobs creation, are not typically factors that would justify higher electricity costs. If forest biomass does become a forest management tool, how could the higher cost of bioenergy be fairly distributed?"

**Response:** As stated above, current science does not justify long-term forest bioenergy, nor does it justify the enormous public subsidies that would be required to create the infrastructure for long-term forest bioenergy, or the profoundly adverse habitat damage that would occur, as well as the severe climate-change impacts of removing large amounts of stored carbon in our forests (in both live and dead trees), burning it for bioenergy, and pumping many millions of metric tons of carbon into our atmosphere.

Finally, following up on the discussion about Blodgett Forest Research Station, mechanical thinning, and fire during the meeting between LHC and SCC staff on August 21, 2017, we offer some additional notes for your consideration. First, with regard to mechanical thinning and fire, while it is true that thinning plus prescribed-fire can temporarily reduce fire severity in wildland fires (e.g., Stephens and Moghaddas 2005, Stephens et al. 2009), it is important to understand that fire-alone produces very similar results to thinning-plus-fire in terms of tree mortality in subsequent wildland fire (Stephens and Moghaddas 2005 [Table 12], Stephens et al. 2009 [Figures 4 through 6]), which indicates that it is previous fire, not thinning, that somewhat affects subsequent fire severity (for about 10-15 years). Thinning alone may actually increase fire severity (Stephens and Moghaddas 2005 [Table 12]).

Moreover, mechanical thinning, or thinning-plus-fire, kills the majority of the trees in the stands before wildland fire occurs (Stephens et al. 2009 [Table 6]), and this tree mortality from logging itself is not accounted for in the tree-mortality figures from fire. Adding this mortality to the total indicates overall tree mortality levels that are similar to, or higher than, levels associated with no action at all—the key difference being that thinning is expensive (often about $1000/acre), results in serious adverse impacts to imperiled species such as the California spotted owl, Pacific fisher, Black-backed woodpecker, and Olive-sided flycatcher (Robertson and Hutto 2007, Hutto 2008, Garner 2013, Stephens et al. 2014), and, unlike mixed-intensity fire, leaves

stumps as opposed to creating ecologically important snags and downed logs, which benefit wildlife (DellaSala and Hanson 2015).
Further, while conducting defensible space work immediately adjacent to homes is highly important for public safety, from an ecological standpoint, the overall goal of mechanical thinning—preventing high-intensity fire patches from occurring at the landscape scale in mostly remote forests—is questionable, given: a) that we currently have less, not more, fire of all intensities in our forests than we did historically, prior to fire suppression (Odion et al. 2014, Baker 2015, Hanson et al. 2015, Parks et al. 2015, Doerr and Santin 2016); b) fire intensity is not increasing, according to the most current science (Hanson and Odion 2015, Parks et al. 2016, Keyser and Westerling 2017); and c) snag forest habitat is now recognized as being one of the most biodiverse, wildlife-rich, and ecologically important of all forest types in our western U.S. conifer forests, including in large fires (DellaSala and Hanson 2015).

With regard to reports indicating higher levels of young conifer growth/regeneration following mechanical thinning or thinning-plus-fire, relative to prescribed fire, at Blodgett Forest, this does not seem like an argument in favor of thinning, given that the primary stated purpose of thinning projects is to reduce the density of smaller trees and reduce potential fire intensity in future wildland fires.

We look forward to a continuing dialogue with LHC on these issues, and hope that future public meetings will include a substantial number of agenda items regarding the ecological value of the new snag forest habitat patches in California's forests.

Sincerely,

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