CALIFORNIA CHAPARRAL INSTITUTE

...the voice of the chaparral

California Board of Forestry
c/o: Matt Dias, Executive Officer
Sacramento, CA 94244-2460

December 10, 2019

Re: 2019 VTP Programmatic EIR (PEIR)

Dear Members of the Board,

We refer you to the letter below that we sent to the Board in 2013. We wrote, "… *we believe by working together, we can develop a viable (VTP) program that will gain the support of those who have voiced strong opposition to the current approach.*"

We were hopeful that during a July 11, 2013, meeting at the Riverside Cal Fire Unit headquarters that the needed collaboration would begin. Instead, Cal Fire staff merely provided an overview of the proposed program that we and others in the environmental and scientific communities had already found to be completely inadequate. Requests to discuss creative, comprehensive solutions were rejected.

The same standard operating procedure has been followed ever since – dismiss workable, comprehensive solutions and hire consulting firms to utilize outdated forestry practices to address 21st century wildfire threats to life and property that have little or nothing to do with forests.

Although the PEIR admits that **the VTP's approach will fail during wind-driven fires**, *the fires that kill the most people and destroy the most homes*, the action portion of the program has remained the same for 15 years – clear habitat and ignore the actual causes of loss of life and property during devastating wildfires.

In light of the fact that **87% of the destruction by wildfire** in 2017 and 2018 was caused by **only six wind-driven fires** (out of a total of approximately 16,000 wildland fires), we find the current VTP and its associated PEIR a violation of the public trust.

The PEIR needs to be rejected. Our analysis of the document follows.

Sincerely,

Richard W. Halsey
Director

Austin Gent
Conservation Director

May 7, 2013

Board of Forestry and Fire Protection
Resource Protection Committee
Attn: George Gentry
Executive Officer
VegetationTreatment@fire.ca.gov
Sacramento, CA 94244-2460

Re: Collaboration on the PEIR for the Vegetation Treatment Program (VTP)

Dear Mr. Gentry and Board Members,

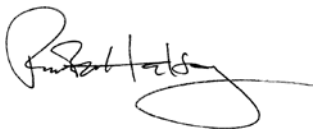
We respectfully request that the Resource Protection Committee discuss a proactive proposal at today's meeting: invite members of the environmental and fire science communities who submitted detailed comment letters critical of the Draft PEIR to participate in a collaborative process to assist the Board in shaping a successful VTP.

Although there are distinct differences in how each of us would achieve the VTP's objectives, we all agree in the common goal of protecting life, property, and natural resources from wildland fire. As such, we believe by working together, we can develop a viable program that will gain the support of those who have voiced strong opposition to the current approach.

Such a collaborative effort is the preferable option.

We look forward to your positive response.

Sincerely,



Richard W. Halsey
Director
California Chaparral Institute

The Problematic Final Program EIR

As per our jointly signed letter with Shute, Mihaly, & Weinberger, LLP, the Final Program EIR (PEIR) "neither adequately responds to comments previously raised nor cures the legal inadequacies identified by those comments."

We add the following to that letter.

In summary:

1. The PEIR continually fails to understand the future impacts of climate change. It needs to **take chaparral *out* of the "ecological restoration" category**.

2. The PEIR is a Prejudicial Abuse of Discretion.

3. The PEIR failures to adequately respond to comments with a "good faith, reasoned analysis"

4. As explained in our previous comments, the PEIR fails to meet its most important objective – protecting the life and property of Californian citizenry from extreme wildfires.

1. The PEIR continually fails to understand the future impacts of climate change. Take chaparral *out* of the "ecological restoration" category.

As we noted in our comments, it is the future that matters, not what has happened over the past 100 years. Yet, the authors of the PEIR completely fail to understand that fact. We presented **a map produced by the state of California** in our last comments that indicates that native shrublands are under extreme threat, especially in southern California, and many will likely be type converted by the next century due to climate change.

How did the consulting firm respond? It maintained that the PEIR *only* delineates areas "where treatments could be implemented," and, in violation of CEQA, delegates local habitat clearance project managers to determine if treatments are appropriate and what environmental impacts they may cause. What? The PEIR clearly states that chaparral is under threat, but it goes ahead and targets chaparral for "ecological restoration" nonetheless. By designating plant communities as threatened, then later targeting them for potential clearance projects, is either disingenuous, lazy, or both.

As we also wrote in our previous comment letter, the CNPS fire regime patterns for chaparral plant communities were not based on actual research, but informal estimates. Citing conclusions that have no scientific support, regardless of where they are published, violates the basic principles of sound research.

Regardless, the claim that "most chaparral types require a minimum of 10 years to recover from fire," and 15 years for obligate seeding species, is a thinly veiled rationale to burn, masticate, or herbicide any chaparral stand that is just past its minimal survival age. This is unacceptable.

The authors of the PEIR obviously fail to grasp the future environment we are facing. When an ecosystem is threatened by too many fires, and the threat is only going to increase based on climate change predictions, **there is NO justifiable rationale to "treat" such an ecosystem with even more fire or other clearance techniques to "return the vegetation type to its natural condition class."**

The state has a responsibility to preserve and protect fragile ecosystems that not only provide support for rich biodiversity, but also are vital in sequestering carbon.

Take chaparral *off* the potential "ecological restoration" list. The older stands of chaparral that still exist are becoming increasingly rare due to increased fire frequencies. We do not need to add more fire, or "treatment," to a plant community that already suffers too much disturbance.

As written, the PEIR provides a blank check for local entities to ignore the impacts of climate change on native plant communities and allow for the "treatment" of chaparral regardless of the cumulative impacts of those treatments.

The notion that somehow the "ecological restoration" of chaparral can consist of "35 percent relative cover," with "patches distributed in a mosaic pattern," that retains a yet to be defined "habitat function," is a complete misunderstanding of the natural structure of chaparral, and fails to grasp our current understanding of chaparral ecology.

What intact, ecologically healthy chaparral looks like.

What chaparral will look like as per the PEIR's prescribed "ecological restoration" treatment regime – a "mosaic" of shrub patches surrounded by non-native, flammable weeds.

2. The PEIR is a Prejudicial Abuse of Discretion

Approval of the Final PEIR as it currently stands would constitute a prejudicial abuse of discretion, as defined by P.R.C. § 21168.5., which "is established if the agency has not proceeded in a manner required by law or if the determination or decision is not supported by substantial evidence."

As it currently stands, the Final PEIR fails to comply with the statutes (P.R.C. § 21000 *et seq.*) and guidelines (14 C.C.R. § 15000 *et seq.*) of the California Environmental Quality Act (CEQA) on multiple grounds, of which are both procedural and substantive in nature. But this multi-pronged regulatory failure is old news – our comment letter, which was sent to the Board on 09 August, 2019, presented in light of substantial evidence the multiple grounds by which the Draft PEIR failed to comply with CEQA both procedurally and substantively.

These procedural and substantive grounds in the first draft, and the final volume, of the PEIR include, but are not limited to: flaws in clearly establishing significance thresholds (and especially for the reasonably foreseeable effect of type conversion); flaws in the approach to mitigating potentially significant impacts that directly and/or indirectly result from the project; flaws in the definition and subsequent analysis of a reasonable range of

project alternatives; flaws concerning the definition of the project's primary objectives in relation to PEIR's findings; and, not to be forgotten, flaws in relying on evidence that is used in the PEIR in an unsubstantiated, clearly erroneous and inaccurate way (and especially with regard to the responses to commenters in the second volume). While such grounds that were presented in our comment letter to the Draft PEIR will be discussed more in detail below, we – by this reference – incorporate the letter herein as a whole, including any and all appendices and/or supplements.

3. Failure to adequately respond to comments with a "good faith, reasoned analysis"

The CEQA Guidelines §15088(c) holds that, "[i]n particular, the major environmental issues raised when the Lead Agency's position is at variance with recommendations and objections raised in the comments must be addressed in detail giving reasons why specific comments and suggestions were not accepted. There must be good faith, reasoned analysis in response. Conclusory statements unsupported by factual information will not suffice."

Due to the apparent lack of detail towards our comments, along with a firm reliance on assertions that are unsupported by factual information, **the PEIR in its current state violates §15088(c) of the CEQA Guidelines.**

Regarding the Lead Agency's response to our comments sent in on August 09, 2019, the Agency's responses fail in general to address "in detail," and with a "good faith, reasoned analysis," the critical environmental issues we've raised in the past – and especially those concerning (a) the differences in wildfire patterns and fire ecology between California's forests and its shrublands, and (b) the type-conversion of native shrublands to invasive, weedy grasslands as a reasonably foreseeable effect of the proposed actions projected to occur throughout our state's shrubland-dominant native landscapes.

The Agency's responses to our comments not only fail to comply with CEQA because of what is lacking in their analyses, but also because of the various ways they fail to base such analyses on the good faith effort to accurately represent the references they cite therein. In other words, the substantial evidence that the PEIR is required by CEQA to provide is, in many cases, entirely unsubstantiated and, thus, an unfaithful effort at full disclosure. In this way, the PEIR consistently tries to substantiate it's claims about the VTP and its overall effectiveness by citing references in a way that is clearly inconsistent and erroneous, when compared to the actual language of the referenced material, itself.

The **PEIR essentially cherry picks information from the cited references in order to support its own claims**, misappropriating the findings therein by doing so. For the vast majority of references that are cited, the PEIR either overgeneralizes or oversimplifies the studies' findings, or it entirely ignores the vital context that's otherwise necessary to fully grasp such findings. This, perhaps, was the most striking of all the PEIR's flaws during this final circulation, in relation to the erroneous usage of cited references in multiple of the "Master Responses" that the Agency had incorporated into their reply to us – and

particularly with regard to Master Response 1, “Effectiveness of the CalVTP in Reducing Wildfire Risk.”

Looking back to the language of §15088(c) of the Guidelines, CEQA demands that the public’s comments “must be addressed *in detail* giving reasons why specific comments and suggestions were not suggested.”

While incorporating the response to our comments by reference to the Master Responses included in this second volume may be clear and understandable, simply telling us to “refer to Master Response [namely, 1 or 3]” lacks the specific details and/or explanations that CEQA compliance—and the very nature of our comments—requires by law and logic.

Furthermore, because the Master Responses almost consistently cite studies and articles in a way that either distorts, or entirely misappropriates, the scientific evidence therein, the Agency lacks the “good faith, reasoned analysis in response” that CEQA requires, while simultaneously forming conclusory statements that aren’t supported by facts (i.e. because they distort or reduce those very same facts). Because of this particular issue, the approval of this Final PEIR by the Lead Agency would thus constitute a prejudicial abuse of discretion on behalf of the Agency.

Specific examples of the Lead Agency’s violation of §15088(c) of the CEQA Guidelines (as listed above), along with that of §15091(b) of the Guidelines (which states that “The findings required by subdivision (a) [of §15091] shall be supported by substantial evidence in the record,”), shall be provided, below. These examples that follow also aim to show how the Lead Agency violated §15384 of the Guidelines (“Substantial Evidence”), in that they based many of their claims on cited evidence that was deliberately twisted, or taken out of context, so that they could fill the bill of CEQA compliance.

After all, how can evidence ever be “substantial” – and how can such efforts of utilizing such evidence be done in complete “good faith” – if there’s persistently exists the deliberate manipulation of relevant, factual information at hand, of which’s done in the false name of supporting broad and unwarranted claims?

Examining Master Response 1 (MR1) to our comments, in relation to the PEIR’s use of citations and substantial evidence

Basic conclusion: The PEIR’s corrections required by CEQA do not accurately reflect the citations used and/or the evidence substantiated from within each of the cited works. We cite the following as examples of this failure.

Our previous comments were focused on native shrubland ecosystems and the devastating power of wind-driven wildfires. The PEIR responses to our comments consistently ignored both issues and continually cited unrelated forest-based research in

an attempt to support the responses. This failure to cite research specific to the wildfires and ecosystems we address in our letter **betrays the forest-centric approach that has plagued the VTP process over the past 15 years.**

A. Through misrepresentation of referenced citations scope and context, and through misapplication of ponderosa and mixed-conifer forest fire research to native shrublands, the PEIR's response fails to adequately substantiate the claims such citations are used to support.

The PEIR (MR1) states,

> *As discussed under "Vegetation (Fuel) Management" in Section 3.17.1, "Environmental Setting," in Volume II of this Final PEIR, vegetation treatment is the primary approach to wildfire management because it can reduce the intensity and severity of wildfire, slowing fire movement and creating favorable conditions for firefighting to protect targeted, high-value resources (**Carey and Schumann 2003; Prichard et al. 2010**).*

The language used in this passage of MR1 misrepresents the two references cited and lacks relevant, detailed analysis to the issue of wind-driven shrubland/chaparral fires that we voiced concern for in our comment letter. The two citations at hand are used as a basis for substantial evidence (as required by §15088(c) of the Guidelines) to support the claim that "vegetation treatment…can reduce the intensity and severity of wildfire, slowing fire movement and creating favorable conditions for firefighting to protect targeted, high-value resources." **The language of this particular claim is precarious**, and may lead land management officials (however hastily) to the adoption of the following false assumptions[1]: (i) that vegetation treatments can reduce wildfire intensity and severity in *all* of California's nearly-200 unique ecosystem types; (ii) that vegetation treatments, in general, are able to slow fire movement and create favorable conditions in *all* of California's ecological communities; (iii) and finally, that vegetation treatment is the "primary approach" throughout *all* of California's different natural landscapes.

However, by looking directly to each of these two studies cited, it becomes quite apparent that the PEIR's basis for substantial evidence as support for its claim, here, is actually unsubstantiated. By turning directly to the two cited articles, it becomes very clear that the factual information within those references was manipulated in either scope or context, so that the PEIR's erroneous blanket claims could be backed by (what at least appears to be) "substantial evidence". Through the inclusion of these sources alongside the claim made above, the PEIR at first appears to sufficiently utilize the facts from legitimate resources, thus giving the impression that the claim holds some weight. However, the PEIR uses these sources in a way that undermines the full picture of each of their findings—and it's neither unreasonable nor infeasible to say that such a complete

[1] That such assumptions are false is made clear throughout our previous comments and concerns raised during the public review process—for further elaboration, please revisit our points raised in our comments as well as the wealth of recent scientific studies listed in our past bibliographies.

picture of the findings to any analysis is a crucial virtue that's shared throughout the global scientific community

By failing to disclose the fact that each of these two references were site-specific studies of wildfire behavior carried out at vastly different, specific locations, the PEIR lacks good faith in the use of sound facts as required by state law to substantiate its claim as evidence.

In Carey and Schumann (2003), we immediately are told in the Executive Summary that the "assessment focused on ponderosa pine" and other "forest types" – the study does *not*, however, substantially delve into an assessment on California's native shrublands. We are told by Carey and Schumann that, at best, the "notion that [vegetation treatments] reduces the incident of catastrophic fire should be viewed as **a working hypothesis**," and not as a well-established fact (emphasis theirs). Furthermore, on the broader scientific understanding of vegetation treatments, Carey and Schumann reveal how "[s]cientists recognized that large scale prescribed burning and mechanical thinning are still experimental and may yet reveal unanticipated effects on biodiversity, wildlife populations and ecosystem function." That Carey and Schumann regard the efficacy of vegetation treatments as, at the very best, conditional is a relevant fact that is *not* adequately reflected by the language of the PEIR's claim in utilizing Carey and Schumann's research.

Building on this concern of the PEIR generating substantial evidence in an unsubstantiated manner, we can turn to the second cited reference, Prichard et al. (2010), to see the same exact thing. Right off the bat, the article's title, "Fuel treatments reduce the severity of wildfire effects in dry mixed conifer forest, Washington, USA," indicates that the PEIR took geographically-unrelated research that supports vegetation treatments and prematurely applied the effectiveness of such treatments to simultaneously apply to the whole state of California.

To be used in the PEIR as substantial evidence for the blanket claim that vegetation treatments are effective throughout all of California's ecosystems, the underlying scope and context of Prichard et al.'s research is overlooked and misappropriated to serve as support for a claim that, otherwise, would remain unsubstantiated. This surely can't be classified as a good faith effort at full disclosure as required under the provisions of CEQA. Furthermore, Prichard et al. explicitly indicates that the differences in the efficacy of vegetation treatments between different ecosystems are extremely important to note: "…our results should be applicable to many dry **forests** with low- to mixed-severity fire regimes in the western United States. **However, they may not apply to forests with [native] shrub and (or) grassland understories**," (emphasis added).

Whereas each of these two cited references note the nuances that exist in the efficacy of vegetation treatments between different ecosystem types, the PEIR—which skews the scope and context of both these references in attempt to generate the substantial evidence that's required by state law—oversimplifies their findings and shapes a generalized, unsubstantiated claim out of them.

B. Misrepresentation of citation and misapplication of forest fuel reduction research to native shrublands.

Even when discussing the efficacy of vegetation treatments within threatened locales of the WUI – an important part of adapting to the wildfire crisis (along with home hardening, community planning, etc.) – the PEIR continues to lack good faith in providing a reasoned analysis in response to our comments. Just as it does with Carey and Schumann (2003) and Prichard et al. (2010) above, the responses lack the good faith effort at a reasoned and detailed analysis, along with lacking a good faith effort at full disclosure (as required by both §15088(c) and §15151 of the CEQA Guidelines).

With this in mind, MR1 of the PEIR states,

> *Fuel reduction has proven successful where it is targeted at protecting specific resources in limited geographic areas, such as in areas of extreme fire danger or in the WUI (**Loudermilk et al. 2014**).*

In making the claim that vegetation treatments ("fuel reduction") have "proven successful where [they are] targeted at protecting specific resources in limited geographic areas," such as the WUI or (Very) High Fire Hazard Severity Zones, the PEIR cites a study by Loudermilk et al. (2014). At first take, the sentence appears to be constructed with all it needs to pass CEQA compliance – it makes a claim in support of vegetation treatment efficacy and cites a source as substantial evidence to that claim. But the assumption that the PEIR's language implies (that fuel reduction has "proven successful" in *all* areas of extreme fire danger, or in *all* WUIs) doesn't necessarily match the actual findings arrived at by Loudermilk et al.

Loudermilk et al.'s inquiry **does *not* imply that fuel reduction treatments have proven successful in *all* of the state's "targeted" areas of concern**, whereas the extremely general language of the PEIR's claim does. From Loudermilk's title, alone, it becomes clear that these findings emerge from a case study in the Lake Tahoe Basin (LTB) – an ecosystem type with a drastically different fire ecology than, say, southern California's shrublands. Accordingly, Loudermilk et al.'s analysis must be taken alongside the recognition of the geographic context that the analysis was performed in – the fact that fuel reduction has "proven successful" only becomes a *relevant* fact of information when the context or scope of the study is disclosed.

In the study itself, Loudermilk et. al addresses this point, saying that "fuel treatments [have] become an essential management tool for reducing wildfire intensity and severity **in this region** [i.e. the Lake Tahoe Basin]" (emphasis added). Loudermilk et. al reinforces this point later on in the article, when summing up how their "case study of fuel reduction treatments in the LTB focused on a **relatively small and unique landscape**," the findings of which are unique to that "relatively small and unique landscape." In other words, as the findings are specific to the LTB, they must not be

generalized to substantiate the broad claim (and the assumption that comes with it) that vegetation treatments have "proven successful" in *all* targeted areas of the state—because this simply isn't true, as we've stressed again and again in our previous comments to the Board.

By failing to disclose the context and scope that underscores the *factual findings* in Loudermilk et al., the PEIR makes another broad claim about the efficacy of vegetation treatments in relation to wildfire with evidence that is not substantiated, as the law requires.

C. Cherry picking/misrepresenting citations to support assumptions about fire behavior.

Another place in MR1 that the PEIR employs such unsubstantiated references as a means to support a broad and generalized claim is when it cites the articles of Lydersen et al. (2017) and Johnson and Kennedy (2019):

> *Areas that are treated often exhibit different fire progression characteristics and reduced fire severity compared to areas that are not treated (**Lydersen et al. 2017; Johnson and Kennedy 2019**).*

From the language used in this claim, it would seem as if the two cited publications would support the assertion that treated areas of land "often exhibit different fire progression characteristics and reduced fire severity compared to areas that are not treated." However, by looking to each of the individual references directly, it becomes clear that this isn't necessarily the case—that is, that the two sources cited are (like before) cherry picked for selective information that is ultimately used to support an extremely generalized claim.

The sentence in MR1 citing these two sources forms a claim about the effectiveness of vegetation treatments in reducing wildfire risk, in attempt to fulfill the first listed objective of the CalVTP (2.2. Objectives of the CalVTP), holding that "[a]reas that are treated often exhibit different fire progression characteristics and reduced fire severity compared to areas that are not treated." However, it cites these two sources in a manner that oversimplifies the findings and contexts of each of the two studies—this is particularly notable through the generalized language of "areas that are treated" versus "areas that are not treated."

The PEIR's uses the generalizable word "areas" in relation to each of the articles cited, in order to substantiate the claim that treated areas "often exhibit…reduced fire severity compared to [untreated areas]." In doing so, the language of "areas" both (a) lacks the specificity that's absolutely necessary to sufficiently account for the different ecological contexts (which includes different fire patterns) of the state's unique ecological "types" (as defined in the Introductory section of the CalVTP),, and (b) makes a drastic, oversimplified generalization out of two articles with very narrow parameters. In other

words, the PEIR uses language that lacks specificity and oversimplifies both the nuances of California's wildfire problem, along with the findings and contexts of both references.

In the attempt to substantiate the sentence's claim, the PEIR obscures the relevant, factual information that's required to support the substantial evidence of the document, and does so in a manner that leads to the erroneous assumption that there's a single solution to the state's complicated wildfire problem—and the PEIR itself even acknowledges how "[w]ildfire behavior is a product of several variables, primarily weather, vegetation, topography, and human influences, which intermix to produce local and regional fire regimes that affect how, when, and why fires burn," [3.17.1. Wildfire – Environmental Setting].

Thus, by this exact rationale provided by the PEIR itself, it's apparent that wildfire does not exhibit any single standard of behavior or potential throughout the entire state. Given the fact that the VTP could treat up to 20.3 million acres of public land in the years to come—and land that exhibits a globally-recognized level of biological diversity along with major geographical variations (topography, regional climate, latitude, flora and fauna)—the PEIR's language doesn't accurately reflect either the nuances of the wildfire problem with respect to different locations, or the analytical basis for the findings of both cited studies. All of this becomes more or less reinforced once we take a look at Lydersen et al. and Johnson and Kennedy, directly.

On the one hand, Lydersen et al. (2017) presents a site-specific case study that assesses "the relative influence of previous fuel treatments…on fire-severity in the Rim Fire of 2013," which occurred in the eastern Sierra Nevada forests, proximate to the Lake Tahoe Basin, Stanislaus National Forest and Yosemite National Park. Being limited to analyzing the intersection between vegetation treatments and wildfire in a particular, forested area of northern California, Lydersen et al.'s analysis focused predominantly on what (before the Rim Fire) was conifer forest (approximately 68% of the burned area) and hardwood forest (around 16% of the burned area). Contrary to the widespread presence of conifer- and hardwood-forest species, shrublands only accounted for about 7% of the pre-burned area.

Even if Lydersen et al.'s findings reinforce the efficacy of vegetation treatments, that **efficacy of such treatments remains restricted to a *single, narrow area* when compared to the whole of California**. In other words—yes, vegetation treatments were reported by Lydersen et al. (2017) to be somewhat effective in "demonstrating reduced wildfire severity." But such effectiveness is not to be extended outside the limited area of inquiry—doing so would compromise the adequacy and accuracy of the factual information that's presented in the study. And, in MR1, the PEIR does exactly that—compromise the factual information and findings of Lydersen et al.'s analysis by citing it in relation to a broad claim that *all* treated areas throughout the state exhibit lower wildfire potential.

By essentially ignoring this important scope and/or context of Lydersen et al. (2017), and by stretching out the findings to be applied to an area that exceeds their original scope,

the PEIR fails at providing the public with a good faith analysis of reasonably foreseeable environmental impacts. It doesn't consider the fact that lower-elevation shrublands and higher-elevation conifer and hardwood forests do not respond in the same way to either wildfire, or to the vegetation treatments attempting to alleviate the impacts of wildfire. Even though in 3.17.1. 'Wildfire Behavior and Controlling Factors,' the PEIR itself recognizes that "[w]ildfire behavior is a product of several variables…which intermix to produce local and regional fire regimes that affect how, when, and where fires burn," it ignores the existence of these variations when it attempts to substantiate claims promoting the efficacy of vegetation treatments throughout each and every ecosystem type of California.

But Lydersen et al. (2017) is not the only resource that the PEIR misappropriates in relation to making such a general claim that treated areas "often" have reduced fire severity than do untreated areas. Just as the PEIR fails to situate the findings of Lydersen et al. in context by defining the geographical scope of the study, it also fails to do the same with Johnson and Kennedy (2019). The only difference between these two resources is that, whereas Lydersen et al. focuses on the efficacy of vegetation treatments in the conifer and hardwood forests of the eastern Sierra Nevada, Johnson and Kennedy focuses on treatment efficacy and wildfire in the forests of eastern Arizona. Nevertheless, the PEIR fails to acknowledge the geographical contexts that come with the findings of each of the two references that are cited in order to substantiate the broad claim that treated areas are "often" safer from wildfire than untreated areas. Different geographical contexts naturally evoke different patterns of, and ecological responses to, wildfire—by failing to explicitly consider this point, the PEIR fails to provide a good faith effort at full disclosure of the highly nuanced impacts and behaviors of wildfire that may vary drastically from one place in the state, to another.

Because the PEIR fails to address the context and/or scope of the scientific evidence it cites, it inhibits itself from sufficiently analyzing the full extent of the potentially significant environmental impacts that are discussed in its references, since a comprehensive understanding of the scientific facts requires a basic understanding of the circumstances by which those facts were produced and/or analyzed. And, in this way, the PEIR fails to provide a good faith, reasoned analysis in response to the significant environmental issues raised by our comments (as is required by the language of CEQA Guidelines §15088(c)).

D. Other examples of mis-cited papers

There are several other instances where the PEIR skews the factual information of the references it cites in order to substantiate a broad claim that—without the full context and/or scope under which the findings were arrived at—cannot be substantiated by what is cited. This leaves much of the PEIR's substantial evidence to be rather unsubstantiated, and, by doing so, the Lead Agency fails to provide a good faith effort at a reasoned analysis in response, or a good faith effort at full disclosure of relevant facts to the public.

The PEIR states,

> *Reducing fuels through mechanical treatments and prescribed fire has been found to be effective at reducing fire frequency, fire severity, and annual area burned when applied at the landscape scale over an extended period (**Kim et al. 2013; Martinson and Omi 2013; Prichard and Kennedy 2014; Tubbesing et al. 2019**).*
>
> **PEIR CLAIM: *"When applied at the landscape scale [and] over an extended period [of time], reducing fuels (via mechanical treatments and prescribed fire) has been found to be effective at reducing (A) fire frequency, (B) fire severity, and (C) annual area burned."***

Kim et al. (2013): Yeon-Su Kim, Y., W. Covington, P. Ervin, R. Fitch, E. L. Kalies, D. Rideout, K. Rollins, A. Sanchez-Meador, M. Taylor, D. Vosick, T. Wu, J. Yoder. 2013 (May). The Efficacy of Hazardous Fuel Treatments: A Rapid Assessment of the Economic and Ecologic Consequences of Alternative Hazardous Fuel Treatments. Northern Arizona University.

- Understanding the ecologic and economic effectiveness of hazardous fuel and restoration treatments at the national level poses challenges that prevent simple answers to these questions. Complicating factors include:
    - **Scale.** Geography, fuels, forest types, and fire regimes vary nationally and therefore do not lend themselves to an easy comparison for analysis.
    - **Time and treatment effectiveness.** The relationship of a treatment to long-term risk reduction is contingent on the quality of the treatment at the start, vegetation type, maintenance, and additional factors such as climate change.
    - **Fire is inevitable and the choices made to suppress and the choices made to suppress a fire will influence fire cost.** Numerous analyses have concluded that the most expensive fires occur under extreme weather conditions and that these fires are a small percentage of the entire ignitions that occur in the country.
    - **Although federal budget analysts are most interested in investments in treatments and how they may influence suppression costs at the federal level, the damage caused by fire is externalized across multiple**

levels of government and the private sector. Analyzing the costs and benefits only in terms of federal programs is inadequate for understanding the full value of restoration treatments, wildfire suppression cost, and losses avoided. In addition, it will under estimate the total cost of inaction.

- **From a theoretical standpoint, the economic relationship between investments in treatments and a reduction in suppression costs is complicated**. The analysis cannot be reduced to the simple formula of X dollars invested in treatments will yield Y dollars of savings in suppression. (4 – emphasis and formatting theirs)

- If the current trends of development in the WUI and weather conditions consistent with the last 10 years continue, the cost of suppression and number of acres burned will likely increase. Addressing growth in the WUI and fire risk is essential to reducing suppression costs. (5)

- 'Suppression Decisions and Inevitability' Fire is inevitable and the choices made in the process to suppress a fire will influence fire cost. Numerous analyses have concluded that the most expensive fires occur under extreme weather conditions and that these fires are a small percentage of the entire ignitions that occur in the country. About 1% of all fires account for 97/5% of the total acres burned (Calkin et al. 2005) and 85% of fire suppression costs (Brookings Institution 2005). Research shows that where they occur, restoration and fuel treatments **can be** valuable assets for both suppressing and managing **fire exhibiting moderate behavior**. **However, where fire behavior is extreme—such as plume-driven fires—the fire can overwhelm even the best treatments (Graham 2003), leading to expensive damage and ecological harm.** (10-11, emphasis ours).

Martinson and Omi (2013): Martinson, E. J., and P.N. Omi. 2013. Fuel treatments and fire severity: a meta-analysis. Res. Pap. RMRS-RP-103WWW. Fort Collins, CO: US Department of Agriculture, Forest Service, Rocky Mountain Research Station. 38 p., 103.

- Management Implications The results of this meta-analysis add empirical support for the basic principles of fuels management proposed by Agee and Skinner (2005) that emphasize the reduction of surface fuels and the preservation of the largest trees in a stand, while recognizing the importance of opening the canopy in order to achieve the maximum benefits of hazard reduction. This meta-analysis also confirms that all treatments may not be beneficial in all locations and provides a quantifiable estimate of the expected relative effectiveness of different types of treatment in broad vegetation categories. However, caution is warranted in extrapolating the results to ecosystems other than long-needle pine and mixed conifer forests due to the lack of empirical information on treatment effectiveness and the potential for negative ecological consequences, such as invasion by more flammable non- native species (Martinson and others 2008). (23)

Prichard and Kennedy (2014): Prichard, S.J. and Kennedy, M.C. 2014. Fuel Treatments and Landform Modify Landscape Patterns of Burn Severity in an Extreme Fire Event. *Ecological Applications*. 24(3): 571-590.

- (Materials and Methods – Study Area) The Tripod Complex fire area is located in the Okanogan-Wenatchee National Forest, north-central Washington State… The study area spans a range of elevations, forest types, and fire regimes. At low elevations, forests are dominated by ponderosa pine *(Pinus ponderosa*) and Douglas fir (*Pseudotsuga menziesii*)… Mid-elevation sites (800–1300 m) are mixed- conifer forests of ponderosa pine, Douglas fir, lodgepole pine (*Pinus contorta* var. *latifolia*), western larch (*Larix occidentalis*) and Engelmann spruce (*Picea engelmannii*). High-elevation forests (.1300 m) are dominated by lodgepole pine, subalpine fir (*Abies lasiocarpa*), Engelmann spruce, subalpine larch (*L. lyallii*), and whitebark pine (*P. albicaulis*). The fire regime at mid elevations is characterized as mixed severity, with wildfires of varying size, patch mosaics, and severity. High elevation lodgepole pine, Engelmann spruce, and subalpine fir forests have a high-severity fire regime (Agee 1993). (572-73)

- Our ability to predict burn severity is **limited** by a number of missing variables that are generally unavailable for large fire events (Finney et al. 2005, Collins et al. 2007, Wimberly et al. 2009). These include vegetation structure; surface fuel loads and moistures; local fire weather, including wind speed, wind direction, temperature, and relative humidity; and fine-scale interactions between landform, fuels, wind, and fire. (583)

- Under climatic change scenarios, semiarid forests will experience a greater likelihood of extreme wildfire events, and it is reasonable to expect that no amount of fuel treatment will prevent large areas from burning during regional fire years (Gedalof et al. 2005, Littell et al. 2009). (587)

Tubbesing et al. (2019): Tubbesing, C. L., D.L. Fry, G.B. Roller, B.M. Collins, V.A. Fedorova, S.L. Stephens, and J.J. Battles. 2019. Strategically placed landscape fuel treatments decrease fire severity and promote recovery in the northern Sierra Nevada. Forest Ecology and Management 436, 45-55.

- Study looks at fuel treatments in relation to forests of Sierra Nevada alone.

The PEIR states,

> *These effects [the claim, above] have also been found to be most effective during extreme weather conditions (i.e., hotter and drier). At these times, there is also a higher likelihood that fires will intersect with treated areas, which contributes to*

> *higher effectiveness of those treatments at reducing wildfire behavior and effects (**Cassell 2018**).*

Cassell (2018): Cassell, Brooke Alyce. 2018. Assessing the Effects of Climate Change and Fuel Treatments on Forest Dynamics and Wildfire in Conifer Forests of the Inland West: Linking Landscape and Social Perspectives. Dissertations and Theses. Paper 4226.

- **First and Foremost:** Study assesses climate change effects and fuel treatments on the forest dynamics/wildfire of the "**Conifer Forests of the Inland West"** (via Title)

- (Abstract) Forest management is used to proactively modify forest structure and composition to improve fire resilience. Yet, research is needed to assess how to best utilize mechanical fuel reduction and prescribed fire at the landscape scale. Human communities also exist within these landscapes, and decisions regarding how to manage forests must carefully consider how management will affect such communities.

- However, wildfire activity is expected to increase with ongoing climate change (Westerling et al. 2006a, Fried et al. 2008, Littell et al. 2009, Abatzoglou and Williams 2016), and there is a need for greater understanding of how effective fuel treatments will be under future climatic conditions at the landscape scale and over time. (2)

Loudermilk et al. 2014: - Loudermilk, E. L., Stanton, A., Scheller, R. M., Dilts, T. E., Weisberg, P. J., Skinner, C., & Yang, J. 2014. Effectiveness of fuel treatments for mitigating wildfire risk and sequestering forest carbon: A case study in the Lake Tahoe Basin. Forest Ecology and Management, 323, 114–125.

- **First and Foremost** – the article cited is a "case study in the **Lake Tahoe Basin.**" Again, irrelevant to shrubland ecosystems.

The PEIR states,

> *In another study, mechanical treatments followed by prescribed burning produced the strongest results, with more resilient forest structures, lower surface fuel loads, and a reduced rate of accumulation of surface fuels (**Schwilk et al. 2009**).*

Schwilk et al. (2009): Schwilk, D. W., Keeley, J. E., Knapp, E. E., McIver, J., Bailey, J. D., Fettig, C. J., … Outcalt, K. W. (2009). The National Fire and Fire Surrogate study: Effects of fuel reduction methods on forest vegetation structure and fuels. Ecological Applications, 19(2), 285–304.

- (Abstract) Changes in vegetation and fuels were evaluated from measurements taken before and after fuel reduction treatments (prescribed fire, mechanical treatments, and the combination of the two) at 12 Fire and Fire Surrogate (FFS) **sites located in forests with a surface fire regime across the conterminous United States…** Overall, the response to fuel reduction treatments of the ecological variables presented in this paper was generally maximized by the combined mechanical plus burning treatment. If the management goal is to quickly produce stands with fewer and larger diameter trees, less surface fuel mass, and greater herbaceous species richness, the combined treatment gave the most desirable results. However, because mechanical plus burning treatments **also favored alien species invasion at some sites**, monitoring and control need to be part of the prescription when using this treatment.

- (Conclusion) Increases in alien herbaceous species were particularly strongly associated with the combined mechanical plus burning treatments, presumably because this treatment resulted in the greatest increase in resources for growth and the highest amount of soil disturbance. At some sites the response of native and alien herbaceous species diversity appeared to be driven more strongly by mechanical treatments (canopy removal, or deeper soil disturbance), while at other sites, the response appeared to be more strongly associated with burning (extent of bare mineral soil exposure and possibly stimulation of germination by heat and/or compounds in smoke).

The PEIR states,

> *It has also been found that fuel treatments are most effective when wildfires are driven by typical weather situations where prevailing seasonal conditions of temperature, soil/fuel, and moisture contents are present. In circumstances where extreme weather conditions exist, such as in cases of extremely low humidity and very high winds, fuel treatments are less effective (**Brown et al. 2008**), particularly when persistently high winds can blow hot embers over long distances.*

Brown et al. (2008): Brown, T. J., C. A. Kolden, J.T. Abatzoglou. 2008. Assessing Fuels Treatments in Southern California National Forests in the Context of Climate Change.

- This article supports the fact that fuel treatments are not effective (or "less effective") in directly/indirectly preventing wildfire/reducing wildfire risk.

The PEIR states,

> *While evidence has not definitively concluded that forest fuel treatments lead to a reduction in the overall size of a fire (**USFS 2009; Schoennagel et al. 2017**), such treatments can aid in protecting public safety and homes and other structures by reducing wildfire intensity and severity in treated areas under normal fire conditions and by increasing firefighting effectiveness (**Kalies and Yocom Kent 2016**).*

Schoennagel et al. (2017): Schoennagel, T., J.K. Balch, H. Brenkert-Smith, P. E. Dennison, B.J. Harvey, M.A. Krawchuck, N. Mietkiewicz, P. Morgan, M. A. Moritz, R. Rasker, M.G. Turner, and C. Whitlock. 2017 (May 2). Adapt to more wildfire in western North American forests as climate changes. *Proceedings of the National Academy of Sciences* 114(18):4582-4590.

- (Abstract) Policy and management have focused primarily on specified resilience approaches aimed at resistance to wildfire and restoration of areas burned by wildfire through fire suppression and fuels management. These strategies are inadequate to address a new era of western wildfires. In contrast, policies that promote adaptive resilience to wildfire, by which people and ecosystems adjust and reorganize in response to changing fire regimes to reduce future vulnerability, are needed. Key aspects of an adaptive resilience approach are (i) recognizing that fuels reduction cannot alter regional wildfire trends; (ii) targeting fuels reduction to increase adaptation by some ecosystems and residential communities to more frequent fire; (iii) actively managing more wild and prescribed fires with a range of severities; and (iv) incentivizing and planning residential development to withstand inevitable wildfire.

- (Intro) We suggest an approach based on the concept of adaptive resilience, or adjusting to changing fire regimes (e.g., shifts in prevailing fire frequency, severity, and size) to reduce vulnerability and build resilience into SESs. **Adaptive resilience to wildfire means recognizing the limited impact of past fuels management**, acknowledging the important role of wildfire in maintaining many ecosystems and ecosystem services, and embracing new strategies to help human communities live with fire. Our discussion focuses on western North American **forests** but is relevant to fire-influenced ecosystems across the globe. We emphasize that long-term solutions must integrate relevant natural and social science into policies that successfully foster adaptation to future wildfire.

Kalies and Yocom Kent (2016): Kalies, E. and Yocom Kent, L. 2016. Tamm Review: Are fuel treatments effective at achieving ecological and social objectives? A systematic review. Forest Ecology and Management, 375, 84-95.

- (From Abstract) The article provides a systematic review of 56 studies addressing fuel treatments in 8 western states – it takes on fire in a broader way and inherently does not fully reflect the CA wildfire problem because it takes into account other, completely different forest ecosystem types in neighboring states.

The PEIR states,

> *Where treatments have occurred, the pattern of wildfire progression may be limited in some areas to low-intensity underbrush and surface burning, which can create safer conditions for firefighters to successfully suppress fires in areas near homes or other structures, or around areas of high resource value. Fuel treatments also promote faster postfire forest recovery by causing less damage to soils and leaving some live vegetation within burn areas (**USFS 2009**), increasing seedling regeneration (**Tubbesing et al. 2019**), protecting resources such as soils, wildlife, riparian function, and wetlands (**Kim et al. 2013**), and reducing drought-related tree mortality (**Restaino et al. 2019**).*

Tubbesing et al. 2019 – See above

Kim et al. (2013): Yeon-Su Kim, Y., W. Covington, P. Ervin, R. Fitch, E. L. Kalies, D. Rideout, K. Rollins, A. Sanchez-Meador, M. Taylor, D. Vosick, T. Wu, J. Yoder. 2013 (May). The Efficacy of Hazardous Fuel Treatments: A Rapid Assessment of the Economic and Ecologic Consequences of Alternative Hazardous Fuel Treatments. Northern Arizona University

> *PEIR Claim (in relation to Kim et al.): "Fuel treatments also promote faster postfire forest recovery by…protecting resources such as soils, wildlife, riparian function, and wetlands…"*

- (ES) Understanding the ecologic and economic effectiveness of hazardous fuel and restoration treatments at the national level poses challenges that prevent simple answers to these questions. Complicating factors include:

    - **Scale.** Geography, fuels, forest types, and fire regimes vary nationally and therefore do not lend themselves to an easy comparison for analysis.
    - **Time and treatment effectiveness.** The relationship of a treatment to long-term risk reduction is contingent on the quality of the treatment at the start, vegetation type, maintenance, and additional factors such as climate change.
    - **Fire is inevitable and the choices made to suppress and the choices made to suppress a fire will influence fire cost.** Numerous analyses have concluded that the most expensive fires occur under extreme weather conditions and that these fires are a small percentage of the entire ignitions that occur in the country.

  - **Although federal budget analysts are most interested in investments in treatments and how they may influence suppression costs at the federal level, the damage caused by fire is externalized across multiple levels of government and the private sector**. Analyzing the costs and benefits only in terms of federal programs is inadequate for understanding the full value of restoration treatments, wildfire suppression cost, and losses avoided. In addition, it will under estimate the total cost of inaction.
  - **From a theoretical standpoint, the economic relationship between investments in treatments and a reduction in suppression costs is complicated**. The analysis cannot be reduced to the simple formula of X dollars invested in treatments will yield Y dollars of savings in suppression. (4 – emphasis and formatting theirs)

- ('Suppression Decisions and Inevitability') Fire is inevitable and the choices made in the process to suppress a fire will influence fire cost. Numerous analyses have concluded that the most expensive fires occur under extreme weather conditions and that these fires are a small percentage of the entire ignitions that occur in the country. About 1% of all fires account for 97/5% of the total acres burned (Calkin et al. 2005) and 85% of fire suppression costs (Brookings Institution 2005). Research shows that where they occur, restoration and fuel treatments **can be** valuable assets for both suppressing and managing **fire exhibiting moderate behavior**. **However, where fire behavior is extreme—such as plume-driven fires—the fire can overwhelm even the best treatments (Graham 2003), leading to expensive damage and ecological harm.** (10-11, emphasis ours).

Takeaway with the use of Kim et al. (2013): PEIR applies an extremely broad, and still-uncertain, study (using examples from namely western forests, which aren't necessarily even in CA) to a problem that is filled with nuances and complications.