Memorandum

September 7, 2021

TO: Technical Advisory Committee and Stakeholders

FROM: Leroy Westerling, Workgroup Lead (Long-term Wildfire Risk Modeling)

RE: Response to comments received on proposed vegetation management scenarios (CEC EPIC Project# EPC-18-026).

Thank you for your feedback regarding the vegetation management scenarios related to the long-term wildfire risk modeling task of the CEC/Pyregence Project (EPC-18-026). We received a number of comments. As such, we've assembled a spreadsheet that tracks the questions and comments received from the Technical Advisory Committee (TAC) and other stakeholders. Included in the spreadsheet are our responses, attached to this memo.

Our review of questions/comments found there were two main categories: 1) requests for clarification and 2) questions about scope of scenarios to be investigated under the CEC EPIC project. For the former, many of the issues were from incorrect or inconsistent terminology used on our end and to that point we hope the responses within the attached spreadsheet clarifies those issues. For the latter, our goal is to build a framework that would be able to be built upon in the future where other model components, methods, or scenarios could be considered. Depending on the complexity or time and effort involved, an additional scenario might be possible to include as part of this project or might require that we identify additional resources. For the two additional management approaches in the comments (indigenous burning and moving beyond agencies' current ambitions), we do not have data readily at hand that could be used to create additional scenarios within the resources currently budgeted. However, all the work going into the project is open source and so it also will be possible for different agencies and stakeholders to develop new scenarios or tailor our developed workflow to meet their needs. The goal of the two scenarios outlined in the previous memo is primarily about creating a contrast between what agencies currently plan on doing and what they had been doing. As part of this project, we are also building an extension with an interactive visualization tool that will be able to fill in the gaps between these two scenarios under a range of potential future climate projections.

If you have additional questions or comments, please feel free to follow-up with us directly, contact Shane Romsos at sromsos@sig-gis.com.

Thank you for your input,

LeRoy Westerling

Commenter	Comment Received	Pyregence Response
David Weisse	Under “High Ambition approach” why make assumption #8? Fire can serve in a restoration function in areas other than roadless and wilderness. Perhaps a more aggressive prescribed fire use (including unplanned ignitions) and reducing the suppression effort only to protect life and property provided the fire is providing ecological benefits. Lower intensity fire implemented more frequently may be necessary.	There are several considerations here, the first is there is difficulty in isolating the effectiveness of changes in suppression effort given the reliance on historic data to calibrate our models. Secondly, we wanted to keep the recent practice as the baseline going forward. However, with additional funding and time, new scenarios could be developed for the process-based models that allow for changing the spatial application of suppression effort and effectiveness.
Adam Moreno	1. What data are you using to quantify your BAU management acres? As this reads, it seems like you came up with the high ambition scenario first and then cranked it down to what you estimate to be a BAU acres/year rate.	For Federal Land, we relied on FACTS completed acres on USFS lands and the NPS equivalent. Private lands were more difficult to assess. We took the average volume harvested on private land and assumed a consistent 25MBF per acre of land to arrive at acreage targets. The WUI treatments were the most difficult to estimate. We were expecting to have access to the CECS data by this point and any numbers of from that dataset will supersede those here.
Adam Moreno	2. How did you decide how to distribute your high ambition acres spatially?	On the large scale, placement of treatments is being driven by the State's fire risk map; higher risk areas will be treated before lower risk areas. On the small scale, for example mechanically treatable areas on federal land at extreme risk, treatments placement will be random under restrictions such that treatment wouldn't occur immediately after fire.
Adam Moreno	3. It appears that management is going to be done pixel by pixel. Are you then coordinating treatments through time on specific pixels? As you say the management is opportunistic, I suppose that means it’s random.	Yes, treatments will be coordinated through time on a 15 year return interval so that areas that treated first, like mechanically treatable areas on federal land at extreme risk, will be retreated. In instances where the treatment rate is not high enough to accomplish the number of acres in a particular hazard class for a management area, then all treatments for the risk/management area will occur in that area.
Adam Moreno	4. I am confused as to acres/year for types of treatments. For example, I can’t seem to figure out from you memo, how many clearcuts or thinnings occur for each ownership type.	The number of treatment types is going to be limited. On Private Industrial Forestry land, there will only be clearcuts and precommercial thins. On Private Non-industrial Forestry land, there will be selective harvesting. On Fed/State land, there will be selective harvesting, mechanical thinning, and hand thinning. Ultimately, all of those treatments will look like a proportional thin from below up to different diameter targets.
Adam Moreno	5. Will the BAU also allow all lands to be treated, even though, as they are now, not all lands that could be treated are (across all ownerships)?	Yes, the BAU scenario will use the same management zones as the High Ambition scenario, but the treatments will not be organized by fire risk hazard zone.
Adam Moreno	1. As you may, or may not know, CARB and CALFIRE are both going through this scenario development processes as well. One of the biggest issues that we at CARB are having to consider are	Since the fire hazard risk map underpins the high ambition scenario, the amount of area treated in each region is determined by that risk. So certain regions will receive more or less treatment as a result. The southern Sierras would receive about 1/3rd the amount of

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	the regional and local differences in management. From the memo at least, I don't see regional differences in management scenarios. So, for example, will southern lands be management differently than northern? Or coastal from interior? Or based on veg type?	treatment of the northern Sierras or North coast forests simply due to the management zones and present risk. While the treatments are generic in how they treat the forest, they are crafted to reflect the species differences in the different regions.
Adam Moreno	2. I will be interested in the management that you put into the southern interior. We have heard form stakeholders in this area and they general consensus that we are hearing is that those lands must be lightly managed, apart from removal of invasives.	We would be happy to set up a meeting to discuss further. We recognize that these state-level oriented scenarios do not adequately integrate these regional differences (or reflect regional capacities/infrastructure) for treatment.
Adam Moreno	3. As you place management on the ground, for most treatments, it says your slope has to be less than 30%. I think the forest practice rules allow up to 50%, but I could be wrong. I would actually like to hear your thoughts on this, because this is also a variable in my management modeling.	Regarding slope limitations, certain harvest methods are possible on slopes steeper than 30% (sky-line cable methods can be greater than 40%), so long as there are soil erosion mitigation methods in place. However, given the increasing costs associated with operating on steeper slopes, it was assumed that the slope threshold for choosing between mechanical and hand thinning was going to be lower. Note that there is no associated slope estriction on private industrial forest lands.
Adam Moreno	4. I would be very interested in another alternative scenario, an Ecological Knowledge Scenario, where we management entire state using indigenous practices. The state is super interested in learning more about this management style, and this scenario would be received very well throughout agencies.	We hope to develop additional scenarios, depending on time and funding, that have objectives beyond simple risk mitigation. But to address an ecological knowledge scenario, we would still need a process to update indigenous practices into the modern context which is beyond our present scope.
Erik De Kok	This (1million acres) was per the agreement between CA and USFS, however there could still be lands that require treatment both in the SRA and other highly-vulnerable areas in the LRA that are not covered under that agreement.	Based on the acres the state has agreed to treat, there would be some opportunity for acres to be treated outside of the SRA areas, but it was assumed that those would have a lower priority than the areas within the SRA. Ultimately, we wanted to ensure that our targets aligned with the established targets.
Erik De Kok	By focusing on "forest management zones" only, does this mean that vegetation management scenarios in this study will focus only on truly "forested" landscapes and thus exclude other land cover types that may also have high wildfire risk and vulnerability (e.g., chapparal, coastal scrub, grassland, oak woodland, etc.)?	This is an error on our end, this should read "landscape management zones" to reflect the issue raised--this scenario will treat lands besides just forested areas.

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Erik De Kok	Is prescribed burning considered as a possible form of vegetation treatment under these scenarios? CAL FIRE includes prescribed burning as a form of treatment in the CalVTP, for example...	Yes, but it follows a separate accounting scheme.
Erik De Kok	Is this the same as the Fire Hazard Severity Zone ratings, which are Moderate, High, and Very High? I'm not familiar with the "Extremely High" category.	This is an error on our end, the area maked "extremely high" is the same as "very high", and the figure will be changed to match CalFIRE's terminology.
Erik De Kok	See previous comment. How is prescribed fire accounted for in treatment categorization?	See previous comment.
Alex Horangic	What are the assumptions about the relative efficacy of different treatment methods (e.g., is prescribed fire more effective than mechanical treatment?)	Treatment effectiveness within these models is a function of many different things. On the whole, prescribed fire would likely be more effective at reducing fire severity because it removes a greater proportion of biomass across the different pools that contribute to fire severity (though this is still a function of what was present before and after the treatment--for instance a young stand that is treated would still likely experience high levels of mortality during a fire given that younger trees are more susceptible to fire). However, whether or not the treated areas actually reduce fire severity depends on whether or not a wildfire intersects such areas during the period of time when biomass is reduced. In other words, there is generally a 10-to-15-year window in which treatments would be effective before enough trees or shrubs regrow.
Alex Horangic	Will there be opportunity to add additional vegetation management/treatment scenarios at a later date in the modeling framework, if for instance the state defines differing or additional scenarios?	Possibly, though it depends on how well developed the scenarios are and the amount of time and effort it might require to recreate the scenario in the model. Development of a scenario from scratch would likely require additional time and funding. In general, the point of the current project is to set up a framework (models and data) and provide a specified set of initial scenarios. Going forward, we expect that Pyregence (and other groups as well) will want to expand on the scenario space as well as make iterative improvements on the published models and data sets, as resources allow.