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DEPARTMENT OF ENVIRONMENTAL SCIENCE AND POLICY
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DAVIS, CALIFORNIA 95616-8576

8/9/2021

Re: LAGUNA BEACH FIRE DEPARTMENT-DEFENSIBLE SPACE GUIDELINES (May, 21)

To Whom It May Concern:

I am writing this letter in reference to the Draft Laguna Beach Fire Department Defensible Space Guidelines. I am an ecologist with extensive experience in landscape and ecosystem processes. I have been the lead on multiple projects for local, state and federal agencies, including for the US Forest Service, CalFire, and the Department of Water Resources. I have written "how-to" guidance on a wide range of topics, primarily focused on the interaction between people and nature. I have taught courses and guided the research of dozens of graduate and undergraduate students.

In regards to the Defensible Space Guidelines, I have the following primary points that are based in the extensive scientific and technical literature in each area: 1) Landscape vegetation, including trees, provide a wide range of measurable aesthetic, economic, health, recreational, carbon-fixing, and thermal benefits; and 2) thinning moist vegetation that is typical of landscaped urban areas will not necessarily protect dwellings from catching fire and burning in a landscape-scale fire.

1) The US Forest Service's Urban and Communoty Forestry Program has highlighted many benefits of urban tree-scapes, many of which are summarized here: https://public.tableau.com/views/USUrbanForestStatisticsValuesandProjections/USUrbanForestStatisticsValuesandProjections?:showVizHome=no. Many of the benefits are listed in the USFS 10-year plan for urban forests nationwide, which was based on input from hundreds of technical and political stakeholders throughout the country: https://urbanforestplan.org/wp-content/uploads/2015/11/FinalActionPlan_Complete_11_17_15.pdf. Many, if not most of these benefits would be severely affected by the guidelines as written, resulting in measurable loss in property and community value and well-being.

2) In the largest study to date of structure loss in recent fires in California, Syphare and Keeley (2019, https://www.mdpi.com/2571-6255/2/3/49) determined that "*structural characteristics explained more of a difference between survived and destroyed structures than defensible space distance. The most consistently important structural characteristics—having enclosed eaves, vent screens, and multi-pane windows—were those that potentially prevented wind-born ember penetration into structures*...." The scientific literature includes example of studies that say defensible space can reduce the risk of structure ignition and those that say structural attributes are as or more important. With contemporary fires in California, it is likely that fires will get so hot and move so fast that they are very difficult to stop. Fuel moisture is a critical factor in both fire ignition and propagation and recent studies have suggested that landscape sprinklers can reduce ignition risk (https://era.library.ualberta.ca/items/43c770ac-70b3-4dfd-8e2e-34ab26398807). Others have pointed to the importance of factors like adjacent slope steepness, fuel moisture, atmospheric conditions, and structural vulnerability as critical in structure loss: "*The prolonged ember attack mechanism stemming from spotting is the main cause of structural losses in the*

UWI (Urban-Wildlife Interface, Stephens and Collins 2007)." (Korman, 2013; https://ascelibrary.org/doi/pdf/10.1061/9780784412909.061).

From the broad range of conditions that can result in large-scale, structure-loss, landscape fires in California, it seems very unlikely that a one-size fits-all ordinance can result in conditions that will protect homes and thus the city except in very specific circumstances. From the literature, it is clear that fire-proofing urban areas depends on many things, including (but not limited to): 1) not building homes in wildland-urban interface areas, 2) not building homes close to steep slopes, 3) fire-proofing the structures themselves to reduce ignitable surfaces (e.g., flammable roof shingles) and routes of access for embers (e.g., attic vents), 4) retaining moist landscaping (soils and vegetation), and 5) many atmospheric conditions beyond any municipality's control. Site-tailored defensible space requirements could play a role if combined with all of the other factors, but by itself could be easily over-ridden by something as simple as a very windy and hot day.

Thanks for your hard and careful work. Feel free to contact me for any clarification on my comments.

Sincerely,

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