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California Air Resources Board
1001 I Street, Sacramento, CA 95814

**RE: 2022 Scoping Plan Update - Natural and Working Lands Scenarios**

To the California Air Resources Board,

The Center for Biological Diversity appreciates this opportunity to provide input regarding the analysis of Natural and Working Lands scenarios in the development of the 2022 Scoping Plan Update. We offer these comments following the December 2 technical workshop on the development of Natural and Working Land scenarios. These comments seek to respond to specific questions raised in the workshop, and to recommend ways to make the scenarios analysis as accurate and useful as possible.

## I. Defining Land Conservation

We strongly support land protection as a key policy option across land types—forests, shrublands, grasslands, wetlands, deserts. Land protection promotes carbon storage and sequestration while protecting ecological functions and their many co-benefits. Explicitly defining conservation in Scenario 1 to mean preservation of natural ecosystems—no logging, thinning, or forest biomass energy—and in Scenario 3 to mean long-term protection from development and mechanical interference would allow for a more accurate comparison of scenarios and better distinguish among treatment types.

## II. Discrete Land Categories

Separating forests and shrublands as discrete land type categories is critical to providing useful comparisons among scenarios. Forests and shrublands—or chaparral ecosystems—are very different in structure, fire behavior, and carbon storage dynamics.

Similarly, the forests land type seems focused primarily on conifer forests. Separating forest lands by forest types, and distinguishing between oak woodlands and riparian woodlands, is critical to capturing the vast differences in structure, function, and carbon dynamics among these systems.

The same point applies to grassland savanna, oak woodlands, and rangelands, all of which may be considered grasslands under the current categories, but each of which is strikingly different with respect to carbon storage and dynamics. Distinguishing among these different systems will be critical in identifying the impacts of various treatment impacts.

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## III. Defining Treatment Types.

The draft identifies clearcutting as a treatment type distinct from thinning, a distinction which should allow for better understanding of the impacts of clearcutting, which tends to result in greater soil disturbance and is strongly associated with biomass removal. We strongly support this approach. Considering clearcutting as simply an extreme thinning treatment would tend to obscure these impacts through the aggregation of thinning types across a landscape.

For the same reasons, biomass harvest should be categorized as a distinct treatment type, to clarify the carbon implications of removing biomass from project sites.

Commercial harvest and fuels reduction (thinning) projects can be difficult to distinguish in practice, as fuels reduction projects often remove large trees for commercial incentive. Clearly defining these treatment types will be critical in providing an accurate comparison of treatments.

## IV. Agricultural Pesticide Use

The workshop presentation indicated that pesticide use would be one of the treatment categories assessed. We strongly support this approach. Pesticide use in California is a significant but often overlooked factor in greenhouse gas emissions in agricultural lands and has substantial negative impacts on soil carbon sequestration. Identifying the use of synthetic pesticides in agricultural lands as a discrete treatment category will allow for a more useful comparison of alternatives and distinguish the carbon implications of pesticides.

## V. Biomass Removal

Carbon accounting for biomass removal associated with bioenergy must accurately reflect whether the biomass removed from the forest is actually replaced by subsequent growth, and must account for the timing of emissions compared to sequestration. Numerous studies show that it takes many decades to more than a century, if ever, for new trees to grow large enough to capture the carbon that was released in logging and biomass harvest.[1] One study concluded that the increase in atmospheric greenhouse gases may be permanent.[2]

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[1] *See* Searchinger, T.D. et al., Fixing a critical climate accounting error, 326 Science 527 (2009); Gunn, J., et al., Manomet Center for Conservation Sciences, Massachusetts Biomass Sustainability and Carbon Policy Study: Report to the Commonwealth of Massachusetts Department of Energy Resources (2010); Hudiburg, T.W. et al., Regional carbon dioxide implications of forest bioenergy production, 1 Nature Climate Change 419 (2011); Law, B.E. and M.E. Harmon, Forest sector carbon management, measurement and verification, and discussion of policy related to climate change, 2 Carbon Management 73 (2011); Campbell, J.L. et al., Can fuel-reduction treatments really increase forest carbon storage in the western US by reducing future fire emissions? 10 Frontiers in Ecology and Environment 83 (2012); Holtsmark, Bjart, The outcome is in the assumptions: Analyzing the effects on atmospheric CO2 levels of increased use of bioenergy from forest biomass, 5 GCB Bioenergy 467 (2012); Mitchell, S.R. et al., Carbon debt and carbon sequestration parity in forest bioenergy production, 4 Global Change Biology Bioenergy 818 (2012); Schulze, E.-D. et al., Large-scale bioenergy from additional harvest of forest biomass is neither sustainable nor greenhouse gas neutral, 4 Global Change Biology Bioenergy 611 (2012); Booth, Mary S., Not carbon neutral: Assessing the net emissions impact of residues burned for bioenergy, 13 Environmental Research Letters 035001 (2018); Sterman, John D. et al., Does replacing coal with wood lower CO2 emissions? Dynamic lifecycle analysis of wood bioenergy, 13 Environmental Research Letters 015007 (2018)

[2] *See* Holtsmark, Bjart, The outcome is in the assumptions: Analyzing the effects on atmospheric CO2 levels of increased use of bioenergy from forest biomass, 5 GCB Bioenergy 467 (2012)

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**VI. Timing of Carbon Impacts**

The carbon impacts of treatment activities can occur over long and varying timeframes, whereas the treatments can occur in a single season. Forest growth, forest growth foregone to logging and thinning, and the regrowth of forest sites after logging all occur over long timeframes and at different rates. Large trees tend to sequester carbon at far greater rates than the small trees of post-harvest regeneration, and logged forest may not grow back at all, or may grow much more slowly than anticipated.

Similarly, the carbon loss due to forest fire can happen over decades, as large trees are slow to decompose and regeneration can simultaneously replace decomposition. Alternatively, in some grassland systems the carbon lost to fire can be replaced by new growth the following season.

To provide a useful comparison of scenarios and assessment of specific treatment types the analysis must accurately estimate the timeframes for these processes and their carbon implications, and must be explicit in the timing of the carbon costs and benefits of various treatment types.

**VII. WUI and Defensible Space**

The workshop presentation indicated that the analysis would model Rural and WUI forests as a category. The definition of WUI is often expansive and variable, even within models like RHESys, and it will likely be necessary to identify a specific distance from structures in order to obtain meaningful results. This is especially true for defensible space, which may be better defined as the ignition zone, an area with 100-300 feet of a structure.

Thank you for your consideration of these comments. We look forward to working with the Air Resources Board and other stakeholders in the analysis of the Natural and Working Lands scenarios and in developing the Scoping Plan Update over the coming months.

Sincerely,

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