Mary Nichols, Chair

California Air Resources Board

P.O. Box 2815

Sacramento, CA 95812

Re: Comments on the January 2017 Discussion Draft of the 2030 Target Scoping

 Plan Update

On behalf of the **Carbon Cycle Institute**, we are writing to offer comments, suggestions, and amendments to the Discussion Draft of the 2030 Target Scoping Plan Update, with emphasis on agriculture and working lands. We would like to direct you to our December 2016 comments on the earlier draft of the Scoping Plan Update and our comments in response to “Carbon Sequestration Modeling Methods and Initial Results for the Natural and Working Lands Sectors”, as those comments are still highly germane and should be reflected in this latest version. We will provide further comment and suggestions related to the proposed actions to “enhance” and “innovate” in the Natural and Working Lands sectors (Chapter IV, Section D4).

We want to highlight our disappointment that this Final Draft of the Scoping Plan Update does not take appropriate and reasonably achievable efforts to define robust goals, actions, and strategies for the 2030 timeframe. We strongly feel that the lack of completion of the modeling efforts for baseline for the Natural and Working Lands sector should not preclude the development and discussion of near-term goals and actions, including setting a robust overall goal. To that point, there are considerable existing and near-term efforts on carbon sequestration and management of working and agricultural lands that alone could make significant contributions to the 2030 Target, as well as help advance our knowledge and on-the-ground impacts on climate change, resilience, and the drought.

The Carbon Cycle Institute’s mission is to stop and reverse climate change by advancing natural, science-verified solutions that remove atmospheric carbon while promoting environmental stewardship, social equity and economic sustainability. To that end, we support projects that promote climate-beneficial management practices on working lands throughout California, work to build the technical capacity of land managers and producers to plan and implement impactful projects that reduce GHGs and sequester carbon in the lands base, and are heavily engaged in gathering scientific data on the important role these practices can play in sequestering carbon from the atmosphere.

California’s working lands and rangelands naturally capture carbon from the atmosphere through photosynthesis and transfer it to the soil, where it provides important ecological services, including the enhancement of soil water holding capacity. Land managers can dramatically increase carbon storage in California’s soils by employing a number of practices recognized by the Natural Resources Conservation Service (NRCS) as climate beneficial, including compost application, riparian restoration, no-till farming, windbreaks, agroforestry and other practices. Along with increasing long-term carbon sequestration in soils and plant material, these practices also offer additional water, habitat, and economic viability benefits for farmers and working land managers.

We would like to see increased emphasis on the potential role of soils in helping the state meet its 2030 GHG reduction goal of 40 percent below 1990, in light of both the tremendous demand from producers to implement carbon-beneficial practices and the robust infrastructure and leadership at the regional and local level ready and able to move projects forward at scale. The State’s GHG and carbon reductions targets for 2030 and 2050 are extremely ambitious, which we applaud, but they are deeper than what has been accomplished to date. Without the natural and working lands sector, in general, and carbon sequestration and soils, specifically, it is difficult to see how the State will meet its 2030 and 2050 climate goals. As detailed below in our comments, the IPCC and leading climate experts agree that we must engage our soils in agricultural and working lands in a significant manner to address climate change, and we need to take significant steps now to scale our efforts in this arena if we want to reap the benefits in the

2030 (and 2050) timeframe.

Thank you for your just consideration of our comments and recommendations.

Dr. Jeffrey Creque and Torri Estrada

Carbon Cycle Institute

**Summary of Comments**

(ARB/Scoping Plan Update text, followed by CCI comments in *italics)*

Page ES4. Executive Summary

*We would suggest that the vision for an integrated (multi-prong) approach to addressing climate change is important and necessary. What is missing from your current integrated approach – climate mitigation and adaptation that also addresses reduction is criteria pollutants and creates economic and community-scale benefits for disadvantaged communities – is the scientific understanding that emissions reduction alone will be sufficient. As noted by the IPCC, we need strategies that result in net removal of carbon from the atmosphere and those strategies need to be deployed immediately to reap their significant impacts. IPCC SPM 2.4 p. 16 (2014): ”A large fraction of anthropogenic climate change resulting from CO2 emissions is irreversible on a multi-century to millennial time scale,* ***except in the case of a large net removal of CO2 from the atmosphere over a sustained period.****,*

Page ES5. Executive Summary

By 2018, develop Integrated Natural and Working Lands Action Plan to secure California’s land base as a net carbon sink.

As noted in the introduction, it is unclear why the State would delay developing at least an initial *Action Plan for Natural and Working Lands until 2018. We have ample information and strategies, including many current programs identified in the Draft, to put forward recommendations for actions. Since land-based strategies in this sector take multiple years to manifest, it is imperative that the Scoping Plan identifies and start moving on near-term goals and actions.*

Page ES7. Executive Summary/Comprehensive Approach

*We would suggest including the Healthy Soils Initiative as a key interagency approach to advance one of the State’s core climate change pillars, Carbon Sequestration in the Lands Base.*

Page ES8. Executive Summary/Comprehensive Approach

We will see enhanced efforts in our natural and working landscapes, ranging from efforts to restore forests to a natural condition that sequesters carbon, improves water quality, and protects residents from catastrophic wild fire, to converting waste to compost for application on the land base, to ensuring that wetlands *(and working lands)* can sequester carbon and clean our water.

Page 5. Climate Legislation and Directives

*We would suggest including legislation related to the Healthy Soils Initiative in your overview of climate legislation, including AB 859.*

Page 7. Building on California’s Environmental Legacy

*This section does not include in any substantive manner working lands and agriculture, including the considerable amount of work to maintain them as carbon stocks. Nor does it reflect the importance of carbon sequestration in the land base, one of the State’s climate change pillars.*

Page 11. Updated Climate Science Supports the Need for More Action

*This section discusses the impacts of climate change, including the significant impacts of drought on California, in general, and agriculture and working lands, specifically. We note that despite the discussion about drought and its impact, there are no strategies put forward in the Discussion Draft, including those in the Natural and Working Lands sector that could directly address drought. Increasing below ground soil carbon has that direct impact.*

Page 15. Progress Toward Achieving the 2020 Limit

*While we agree that the exchange of CO2 between the atmosphere and the state’s natural and working lands is not currently precisely quantified - nor quantifiable- engaging this sector should not be delayed. Practices known to increase the rate of carbon accumulation in soils and woody biomass take time, and waiting to initiate climate beneficial practices will render their timely impacts less effective. The important point here is that we do have enough information to know whether the impact of a given practice has a high probability of yielding positive carbon benefits (ie, net negative atmospheric CO2e). Implementation of these practices should have begun at scale decades ago, and should be encouraged now at every opportunity. If we understand the carbon benefits of new practices added to the existing management context, we can make some broad but reasonable assumptions about the potential for increased carbon capture on managed lands at the state scale.*

Disturbance processes would include activities such as conversion from one land category to a different category, fire, and harvest. The CARB Natural and Working Lands Inventory covers varieties of forests and woodlands, grasslands, and wetlands (biomass-stock-change only). The CARB Natural and Working Lands Inventory includes default carbon densities for croplands and urban/developed lands to facilitate stock-change estimation for natural lands that convert to cropland, natural lands that convert to developed lands, and for croplands that convert to developed lands.

*It is here assumed that working land carbon stocks can only decline in response to disturbance; but disturbance can also involve actions that result in increased system carbon capture. Examples include intensification of grazing management on grasslands, improved forest management including selective harvest, rewetting of xerified wetlands, and prescribed fire to prevent wildfire, to name just a few.*

Page 25. EJAC Recommendations

The Committee’s key Natural and Working Lands, Agriculture, and Waste sector recommendations include diverting waste, returning carbon to the soil, not burning biomass, supporting healthy soils as a critical element to land and waste management, and integrating urban forestry within local communities.

*Where are these recommendations integrated into Natural and Working Lands section of this Discussion Draft?*

Page 25. Relying on Sound Science and Research

The scientific record overwhelmingly and undeniably demonstrates that climate change is occurring. It also connects human-related activities to the atmospheric burden of CO2 with expansion at an unprecedented rate. In developing this Proposed Plan, time matters. The policies that are included must lead rapidly to real results to avoid the most catastrophic impacts of climate change.

While the Proposed Plan charts the path to achieving the 2030 GHG emissions reduction target, we need momentum to propel us to the 2050 statewide GHG target (80 percent below 1990 levels). In developing the Proposed Plan, we considered what policies are needed for the mid-term and long-term, knowing that some policies for the long-term must begin implementation now.

*Working land practices demand immediate attention, as increasing the capacity of working lands to sequester significant amounts of CO2 will take time.*

Note that Figure I-5 does not include emissions or sequestration potential from the natural and working lands sector.

*We urge ARB to include sequestration potential of working lands in this figure to illustrate the essentiality of sequestration in meeting the <1.5 C target. See Hansen et al 2016 for possible approach to developing this figure.*

Page 31. The Proposed Scenario

At this time, work is still underway on how to quantify the GHG emissions within the natural and working lands sector. As such, the analyses in this chapter do not include any estimates from this sector. Additional information on the current efforts to better understand emissions fluxes and model the actions needed to support the goal of net carbon sequestration in natural and working lands can be found in Chapter lV. Even absent any quantification data, the large potential role for this sector in achieving the State’s climate goals should be considered in conjunction with any efforts to reduce GHG emissions in the energy and industrial sectors.

*As mentioned above, we are disappointed that there was no analysis generated for the Natural and Working Lands sector in this section. We provided substantial comments in December 2016 to Lawrence Berkeley Lab’s presentation on its model approaches and assumptions; we have not seen any updates or had any communications on this effort. This effectively means that only one of the State’s core climate change pillars, carbon sequestration in the lands base, is not represented in this section.*

Page 37. Proposed Scoping Plan Scenario

*Despite the stated goals of the Plan, table II-2 appears to show the state will not meet its 2030 goals under current commitments.*

If the estimated GHG reductions from the known commitments and the refinery measure are not realized due to delays in implementation or technology deployment, the post-2020 Cap-and-Trade Program would deliver the additional GHG reductions to ensure the 2030 target is achieved.

*But how this will occur is pure speculation, as indeed is the assumption that even the 221MMT target will be achieved.*

Page 38. 20 Percent Reduction in GHGs at Refineries

The proposed new regulation to achieve a 20 percent GHG reduction in the refinery sector would require all refineries, by 2030, to achieve the benchmark of the most efficient existing refinery on a simple barrel basis. An efficiency benchmark is reflected as GHG emissions per unit of product. This regulation would not limit mass GHG emissions….

*This is alarming, as there appears to be no certainty whatsoever that the assumed 30MMT of reductions will be achieved. If refineries process more fuel, even if more efficiently, emissions could easily rise.*

Page 43. Post-2020 Cap-and-Trade Program with Declining Caps

*Table II-3. ARB calls for a reduction in agricultural emissions of 4-8% by 2030. If California were to adopt the French Ministry of Agriculture’s 4 Per Thousand goal the rate of 600,000 new working land acres per year, the state could achieve a 50% agricultural emission reduction by 2030. A 40% reduction could be achieved by engaging 380,000 acres per year at a sequestration rate of 0.25 MT CO2e/acre/year.*

Page 48. Policy Analysis of Proposed Scoping Plan Scenario

*We note with emphasis that all the State’s climate change pillars are well represented in the proposed scenario except Carbon Sequestration in the Lands Base. Please explain.*

Page 107. Natural and Working Lands including Agricultural Lands

In his 2015 State of the State address, Governor Brown established 2030 targets for GHG emission reductions and called for policies and actions to reduce GHG emissions ***[from and sequester carbon in]*** natural and working lands, including forests, rangelands, farms, wetlands, and soils. This policy objective was codified through passage of SB 1386 in 2016. The 2030 Target Scoping Plan focuses renewed attention on California's natural and working lands and the contribution they make to meet the State’s long-term goals for carbon sequestration, GHG reduction, and climate change adaptation.

Page 112. Agriculture’s Role in Emission Reduction and Carbon Sequestration

*We would also recommending including a discussion between the direct relationship between increasing soil carbon (carbon sequestration) and increasing the soil’s ability to hold and retain more water, in the form of precipitation and runoff (as a drought and climate resilience strategy).*

Page 114. Enhance Carbon Sequestration and Resilience through Management and Restoration

State agencies will require additional resources to complete efforts to model projections for this sector.

*There needs to be a more robust discussion here, including recommendations on the types and amounts of resources required and what key agencies and programs could deploy those toward advancing our goals in the Natural and Working Lands sectors.*

Page 118. Efforts to Support Sector Objectives

*We would encourage ARB to discuss explicitly the connection between carbon sequestration on working and agricultural lands, compost and organics diversion, especially as a transition to the next chapter on Waste.*

Page 119. Waste Management

Within CARB’s greenhouse gas inventory, emissions from the waste management sector consist of methane and nitrous oxide emissions from landfills and from commercial-scale composting, with methane being the primary contributor to the sector’s emissions. The sector emitted 8.85 MMTCO2e in 2014, comprising approximately 2 percent of the state’s GHG emissions.

*It is disingenuous and counterproductive to lump compost emissions with landfill emissions. Compost is the most effective available alternative to landfilling of organics and constitutes less than 6% of total emissions from the waste sector (ARB 2016;* <https://www.arb.ca.gov/cc/inventory/pubs/reports/2000_2014/ghg_inventory_trends_00-14_20160617.pdf>*); this is* ***less than 0.0012% of the state’s GHG emissions****. Assuming composting currently captures 25% of the state’s organic waste stream, if this were increased to 75% diversion of organics from landfill, methane emissions from the landfill sector would be reduced by roughly 80%, and GHG emissions from composting would constitute .0036% of State GHG emissions.*

*Compost must be separated from landfill emissions in the Scoping Plan. ARB must recognize the enormous GHG reduction potential of composting as an alternative to landfilling of organics. We applaud ARB’s recognition of the multiple benefits of organic waste diversion to composting, but given the overwhelming carbon sequestration benefits of compost applications on agricultural and rangelands, the Scoping Plan does not need to focus on reducing GHG emissions from the compost-production sector (as it does on page 123)*

Page 123. Waste Management/Efforts to Reduce Greenhouse Gases

Over one hundred California local governments have developed emissions reduction targets that, if achieved, would result in a reduction of more than 45 MMTCO2e each year by 2020, and 83 MMTCO2e each year by 2050.

*This represents less than what we at CCI have estimated could be achieved with carbon sequestration in Sonoma County soils alone, highlighting the critical necessity to incorporate C sequestration in working land soils as a significant component of local climate action plans.*