Carbon Cycle Institute

June 15, 2018

TO: California Air Resources Board; California Environmental Protection Agency; California Department of Food and Agriculture; California Natural Resources Agency
VIA: *https://arb.ca.gov/cc/natandworkinglands/natandworkinglands.htm.*
RE: Comment on California 2030 Natural and Working Lands Climate Change Implementation Plan Concept Paper

Dear CARB, Cal EPA, CDFA and CNRA;

Thank you for the opportunity to comment on ARB's Natural and Working Lands Implementation Plan Concept Paper (Concept). We applaud the efforts of ARB (and the California Department of Agriculture and Natural Resources Agency) in this direction, while respectfully disagreeing that the Concept "sets California on an ambitious path forward….." On the contrary, we view the Concept as a limited (and potentially counter-productive) step toward realizing the state's enormous potential "for using forests, farmland, ranchland, grasslands, wetlands, and urban land to mitigate climate change while enhancing their resilience to worsening climate change impacts." It is disappointing, and alarming, that, the scope of the 2030 Plan does not engage all NWL in California but only lands owned by the State or funded through state programs and activities.

The Concept states, incorrectly: "While non-state funded strategies taken by federal agencies, local jurisdictions, and private entities are also important, methods to track these efforts have not yet been developed and are not within the scope of this Plan." SB 859, and reiterated in ARB Resolution 17-46, states the ARB must establish a carbon accounting framework for natural and working lands by 2018. SB 859 does not require "methods to track" working lands strategies be considered and integrated into the Plan. The Concept explicitly outlines the intent to use COMET-Planner[1], a tool designed to quantify the impacts of multiple conservation practices, whether undertaken by federal, local or private entities. COMET-Planner is a tool developed by scientists at Colorado State University and the USDA that allows quantification of GHG benefits of an extensive suite of NRCS conservation practices that have been successfully implemented in California and the US for over 70 years. Further, the Concept ignores the existing mechanisms and efforts by both state and non-state organizations, which are measuring, tracking, and adaptively managing on-the-ground impacts on working lands from a carbon sequestration and climate resilience perspective. The Project Tracker tool developed by and for the state's Resource Conservation Districts offers a means of tracking projects funded by state, federal and private agencies and individuals, under the auspices of these special districts. The state should embrace and build upon the work of USDA-NRCS and Resource Conservation District carbon sequestration activities on working lands, including the technical support and funding opportunities available to land managers through these well-established frameworks.

State-funded actions and projects for working lands are dependent upon non-state capital, labor resources, technical support and leadership. None of the other Five Pillars of the State's climate strategy has been limited to only state-funded strategies, and the reasoning behind such an approach is unclear. ARB and its collaborating agencies should articulate the reasoning behind such an approach, which appears arbitrary and capricious. Lastly, the exclusion of non-state actions for

[1]COMET-Planner was developed by the Nobel Prize-winning ecosystem carbon modeling team of the Natural Resources and Ecology Lab at Colorado State University (not University of Colorado as stated in the Concept).

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working lands effectively prevents meaningful public and substantive stakeholder participation, including from those from and working with disadvantaged communities.

It is not clear how the limited scope of the 2030 Plan, focusing "…on demonstrated practices that sequester carbon and are ***currently funded*** by State agencies." can be reconciled with the stated goal of an "ambitious path forward." ARB's own guidance establishes the goal for the Plan and it suggests a much more substantive and engaged approach that includes non-state organizations and actions[2]. Known terrestrial sequestration strategies take time; *delay in implementation of practices at scale will mean long term delays in achieving effective sequestration rates and will render achieving 2030 goals that much more difficult, not to say, improbable.* In addition, the Concept Overview states (page 3) that the plan will" …identify the statewide scope and scale of state-funded conservation, improved management and restoration treatments…." We recommend that the relevant state agencies establish adequate funding levels to achieve the stated goals and provide a transparent and inclusive process to set "potential regional goals," rather than relying on existing inadequate levels of state-funded conservation.

The Concept Introduction (page 4) includes figures for carbon sequestration values achieved by forest offset projects and mentions other land-based offset protocols such as rice cultivation. Our experience shows that participation by agricultural producers in such protocols is dismal. We recommend a thorough assessment of the barriers to participation in those protocols and the development of a strategy for removing those barriers, some of which are discussed in the soon to be published California 4th Climate Assessment.

> **CARB Natural and Working Lands Emissions Inventory (NWL Inventory)**
> The NWL Inventory provides a retrospective estimate of carbon stocks, stock change and resulting GHG flux associated with stock change in California's natural and working lands, and attributes stock changes to disturbances.....which will help show whether and how much ***recent GHG emissions*** from the land base differ from the long-term objective of ***maintaining*** this sector as a net sink of carbon. ***If*** the NWL Inventory indicates that lands are currently a net source of emissions, ***then*** the focus of the Implementation Plan must be on ***making up for losses*** by ***establishing a land base*** that can sequester more carbon in the future, avoiding GHG emissions in sector (sic), and protecting the existing carbon stocks.

This statement appears to indicate an intention to do nothing toward enhancement of carbon capture on working lands unless and until there is evidence that such lands are losing carbon relative to baseline conditions (however that baseline is determined). This framework assumes "disturbance" to be inherently detrimental to ecosystem dynamics. This perspective is catastrophic as we look toward the necessity of *increasing* carbon capture on working lands, whether they are "disturbed," and recognize that in most cases, these lands must be disturbed, –i.e., subject to some management intervention- if their carbon capture capacity is to be realized.

Most terrestrial carbon interventions take time to reach their sequestration potentials; what is the proposed time frame for the inventory to determine whether lands are a net sink? Delay is not an option if this sector is to be effective in the near term. Whether working lands in CA are a net sink or source at this moment in time, the state should be laser-focused on implementing strategies to

[2] ARB Resolution 17-46: "California's **local and regional governments** are critical partners in meeting the State's GHG emission reduction goals and strong collaboration with these agencies will be necessary to achieve the State's **near-term**, mid-term, and longer-term emission goals and improve its ability to adapt to potential climate change impacts."

increase carbon capture and sequestration on our working lands, not as a hypothetical "deeper GHG goal" for 2050, but *now*. To achieve "deeper GHG goals" for 2050 through sequestration on natural and working lands, we must begin to implement known carbon-beneficial land management practices immediately.

Significant GHG sequestration efforts are already underway across the state under the auspices of the Resource Conservation Districts, USDA Natural Resources Conservation Service, and independent land managers. Lacking is a comprehensive state-led framework, and financial support, to scale the work to the level that must be realized if the potential of this sector is to be realized. We need action on this front in the very near term if natural and working lands are to be a meaningful part of achieving even the proposed modest 2030 goals, ***as they must be.***

CALAND and COMET-Planner

It is unclear why the state is wasting precious time and resources running two Business as Usual scenarios with the CALAND model. If the goal is to engage and optimize the function of natural and working lands as carbon sinks, the focus should be on identifying alternative scenarios to achieve that goal. 2030 is less than 12 years away. Natural and working land scenarios must begin to be implemented *now* if results are expected by 2030. There is no way even the modest 2030 goal of 15-20 MMT can be met if we continue to delay implementation of practices that have been known since at least the Dust Bowl years to be effective means of increasing carbon storage in soils and vegetation on working lands. We already know that "the scale of implementation needs to be more aggressive," as amply evident in global climate trends. Assessment efforts must not delay the start of work on the ground.

Developing implementation targets for conservation, restoration, and management on natural and working lands for the Implementation Plan

> A stakeholder outreach effort will elicit feedback for potential revision of the acreage targets for natural and working lands. This process will seek to engage practitioners, Resource Conservation Districts, land trusts, NGOs, nonprofits, and local, regional, and tribal governments through regional meetings and additional conversations. Stakeholders will be asked to provide feedback on whether the business-as-usual and ambitious scenarios consider regional priorities and conservation, restoration, and management projects on natural and working lands. Additionally, this process will aim to elicit existing regional conservation, restoration, and acreage goals that should be represented, especially in ambitious scenarios for the Implementation Plan. This process will aim to help agencies understand what is needed for successful regional implementation.

This is a laudable approach and long overdue; it must be pursued with all due haste and urgency. To reiterate: terrestrial sequestration takes time; while ARB may begin to credit carbon capture in year two of an oak woodland restoration, for example, the reality is that it takes several years for a tree to begin to sequester significant quantities of carbon. *2030 goals will not, and cannot, be met if project implementation is delayed.* Please clarify where the state envisions the additional resources needed for this work would come from, and whether those resources would be directed solely to State agencies and programs or would be available to external partners such as RCDs and NGOs.

CCI and its partners are now assessing the total number of working lands projects (and resulting carbon sequestration and water benefits) currently ready for implementation across the state. Our preliminary assessment indicates that thirty-six (36) carbon farm plans have been completed to date encompassing approximately 35,000 acres, with a total estimated potential, if implemented, to sequester 550,000 metric tons of carbon by year 20. Currently, there are another thirty-one (31)

carbon farm plans being developed throughout California, with a total estimated potential, if implemented, to sequester 472,000 metric tons over 20 years. Based upon our survey of existing RCD partners, there is a current demand from forty-nine (49) producers interested in completing CFPs across California, which represents an additional total estimated potential to sequester nearly 750,000 metric tons of carbon over 20 years.

Reassessing the 2030 intervention-based goal for the Implementation Plan
To enable assessment of the existing goal of 15-20 MMT by 2030, ARB should disclose the process and data used to define the goal. The *goal* of 15-20 MMT represents less than 2 MMT per year between now and 2030. *To take a single example*, using ARB's own COMPOST-Planner model, simply applying a minimal amount of compost (about 5 dry tons per acre annually-well below accepted agronomic maximums) on the state's 10 million irrigated acres would alone result in reduction/sequestration of over *44.5 million metric tons of CO2e per year.* In addition, at 1-2% N, this compost would obviate the need for *500,000 to 1 million tons of synthetic N fertilizer each year, avoiding 7.8 to 15.6 MMT of CO2e annually*, while also eliminating the attendant water and air quality impacts of that use.[3] This does not begin to address the vast potential for improved management of our forest lands, woodlands, rangelands and pasture lands to provide many times this level of carbon sequestration, should we choose to *ambitiously* engage that potential.

PLAN SCOPE
Agencies should develop a transparent and inclusive process and criteria for "including land management activities not included in modeling efforts and activities for which the carbon flux science is still emerging."

> **"BOX 2–** Implementation of the Natural and Working Lands climate strategy is anticipated to involve departments and programs including but not limited to:"

We strongly recommend adding CARCD and the state's Resource Conservation Districts to this list. The RCD's are the key to project implementation on the ground and should not be an afterthought in this process. In addition, the State and regional Conservation Corps should be integrated into the process to insure the human resources are available to do the actual work on the ground to make natural and working lands projects possible.

SOIL CONSERVATION ON CULTIVATED LANDS
Compost should not be lumped into a generic cropland soil factor. COMET-Planner does not provide comprehensive sequestration values for compost application, and compost therefore cannot be used as an element of the single soil factor referenced in this section. A separate factor for compost, based on either ARB's COMPOST-Planner, the carbon content of the compost applied, or other such metric should be employed instead. This is particularly important because compost is the single most potent strategy available for increasing soil carbon on managed lands in the near term, and the strategy most readily controlled and manipulated to meet specific management objectives. While rates of carbon accrual by cover crops, tillage reduction, etc. are subject to site-specific climatic, soil and other constraints, this is not the case for compost.

RANGELAND COMPOST APPLICATION

[3] *Every metric ton of nitrogen spread in the form of fertilizer is responsible for emissions of 10.5 t CO2e in the field (67%) and 5.1 t CO2e during its production (33%). -Foucherot, C. and Bellassen, V. 2011. Carbon offset projects in the agricultural sector. Climate Report No. 31, CDC Climat Research, Paris. December, 2011.*

It is unclear what "traditionally" managed rangelands means. Ranchers in California have been using adaptive management strategies for decades to adapt to ever-changing environmental conditions that are inherent to California's rangelands areas. Perhaps better language would be "rangelands previously un-treated with compost applications."

PRESCRIBED GRAZING
The NRCS practice standard for Prescribed Grazing assumes that current grazing management is inadequate for the resources of concern. It does not specify the cause of the degradation that the practice is designed to address. "Overgrazing," (a poorly defined term) is just one of the potential causes for the presumed degraded state. Others include; cultivation, invasive species, erosion, underutilization etc. Neither CDFA nor DPR have the expertise needed to successfully implement prescribed grazing as a practice to achieve climate change benefits on state lands. Except for a few exceptions, DPR does not use grazing as a tool to achieve conservation objectives on state lands. We encourage state agencies to partner with institutions/organizations that can provide the relevant expertise (NRCS, UCCE, RCDs, etc).

RIPARIAN RESTORATION
The assumption that riparian restoration carbon capture rates are analogous to those of upland forests fails to recognize the significantly greater productivity of riparian systems. Willow, cottonwood and other phreatophytic species accumulate carbon at much greater rates than oaks; use of oak woodlands as reference for carbon accrual in riparian systems should be reevaluated.

URBAN FORESTS
Please add CalTrans to the list of implementing agencies in this category. California's 400,000 miles of public road rights of way offer significant potential for tree planting and carbon sequestration, as was once common along our roadways.

We appreciate the opportunity to provide feedback on the Natural and Working Lands Implementation Plan Concept Paper. We look forward to the development of a more comprehensive strategy for climate change mitigation and adaptation that encompasses all natural and working lands in California at a scale and within a time frame that render such engagement a truly effective climate change mitigation and resilience strategy.

Sincerely,

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