

California Air Resources Board
1001 I Street
Sacramento, CA 95814

July 8, 2016

Re: 2030 Target Scoping Plan Concept Paper (online comment submitted to:
[http://www.arb.ca.gov/lispub/comm2/bcsubform.php?listname=sp-concept-paper-
ws&comm_period=1](http://www.arb.ca.gov/lispub/comm2/bcsubform.php?listname=sp-concept-paper-
ws&comm_period=1))

Dear Air Resources Board Members:

On behalf of the Pesticide Action Network, and the statewide coalition Californians for Pesticide Reform, we thank you for the opportunity to comment on the recent draft paper, *2030 Target Scoping Plan Concept Paper*. The paper presents many concrete, well-designed, and valuable approaches to help California achieve its GHG reduction target of 40% below 1990 levels by 2030. We focus our comments on those practices that serve to exploit the great potential of agricultural lands to *both* reduce GHG and sequester carbon (C) while at the same time protecting vital soil and water resources ensuring a vibrant future for California's agricultural economy. In fact, of the various sectors described in the Scoping Plan's Figure 3 (p.19), agriculture is the *only* sector where innovative practices not only reduce GHG emissions, but can actually mitigate climate change through sequestration of C into healthy, productive soils.

The regenerative or agroecological practices we support can also function to protect agricultural communities from human health hazards associated with practices they replace as well as help ensure long-term environmental and economic viability of the communities in which they are practiced. We see great potential for the allocation of GHGR funds to disadvantaged communities, including in California's heavily agricultural counties, as is required under SB 535.

Pesticide Action Network (PAN) North America is one of five regional centers worldwide representing hundreds of organizations in more than 90 countries. We work collectively around the globe and at the local and state level to push for public policies to better protect workers and the public from exposure to hazardous pesticides. We also work to promote the transition to a more just, environmentally sound and viable food and agriculture system. With offices in Oakland, CA we represent about 22,000 CA members. We are an active member of the 15-member California Caucus of the National Sustainable Agriculture Coalition (NSAC) based in Washington, D.C., and a founding member of the statewide coalition, Californians for Pesticide Reform, with a membership of about 185 community-based organizations.

We are grateful for the significant improvements over the 2008 Scoping Plan that largely failed to recognize the huge potential for agricultural lands managed with the best regenerative practices, to contribute to climate change mitigation. We support this direction. California's farmer, ranchers and residents need more; we need a much more aggressive approach that will truly serve to transform California's agricultural lands into highly productive, diverse, climate-mitigating landscapes. The growing body of scientific support along with rapidly growing number of demonstrative stories from the field fully support this approach.

Inventory of GHG fluxes

We are encouraged by ARB's development of a comprehensive inventory of GHG fluxes (p.5) *from* (our emphasis) California's natural and working lands. An essential element of this inventory can and must be an accounting as well of C *additions to* working lands from the implementation of regenerative land management practices.

In this context, we are quite pleased to see that the Scoping Plan recognizes that storage of C in natural and working lands (p.9) is one of the "most effective ways to remove GHGs from the atmosphere." We therefore fully support all four of the high-level objectives outlined on p.9 with special emphasis on #2 – increasing C storage in natural and working lands.

However, we are concerned that limited California-derived data may be used as justification for not moving proactively or aggressively to recognize the potential of, and provide support for, the implementation of those practices with the greatest C sequestration potential. Therefore, we strongly advise ARB to look to the U.S. literature and even the international literature to provide details on potential C contributions of different land management practices, and not limit ARB's consideration of practices receiving support to those for which CA data are plentiful.

Diverse, perennial systems sequester the greatest quantities of carbon

Much research in California and elsewhere support the contention that organic, regenerative, and other sustainable farming practices can contribute significant amounts of C to managed soils.¹ A well-referenced comprehensive analysis by Eric Toensmeier of carbon farming practices around the globe presents additional, solid, scientific evidence of the great potential for highly diverse agriculture to both mitigate and reverse the current trajectory of climate change. The data show that if implemented on a larger scale than currently practiced, regenerative agriculture — from tropical home gardens to temperate permaculture — could draw down more than 100 billion tons of C into the soil.² That's equal to 367 billion tons of carbon dioxide (CO₂) which would indeed bring us back from our current climate change tipping point. Climate scientists report that to reverse the disastrous course we're now on, we need to draw down an estimated 200 billion metric tons of CO₂.

Because it involves high levels of on-farm biodiversity, regenerative carbon farming produces lucrative combinations of food, fiber, building materials and biofuel. It also protects pollinators and wildlife habitat, and improves soil quality and productivity, and protects water resources. For every 21 tons of C sequestered per hectare (2.5 acres), soil organic matter goes up about one percent, which in turn increases the soil's ability to hold water by 25,000 gallons.³

Carbon farming practices range from well-managed pasture-land (e.g. rotational grazing and incorporation of diverse herbaceous and woody species), to regenerative organic farming, to agroforestry systems. The latter offer the most robust version of carbon farming, sequestering by far the greatest amount of C at 10-40 times the best annual cropping or managed grazing systems. Agroforestry is described in *The Carbon Farming Solution* as "intentional, intensive, integrated and interactive" system of farming. In addition to C sequestration, agroforestry systems can reduce need for fuel, fertilizers and pesticides.

In fact, the elimination or dramatic reduction in the use of synthetic pesticides and fertilizers will protect vital soil biology — the engine of soil C sequestration. Unfortunately, most pesticide

active ingredients have not been tested for their effects on soil organisms⁴ and the enormous complexity of the soil microbial community structure and function make definitive conclusions about the nature of pesticide impacts on that community very difficult.⁵

Protecting Public Health while mitigating climate change – a win-win scenario

We strongly support the intent of the Scoping Plan (p.6) to identify policies that will optimize win-win solutions while also minimizing costs — both to farmers and ranchers as well as to public health costs associated with “business as usual” practices.

Ubiquitous exposure to highly hazardous pesticides, especially among children in California’s agricultural communities in the San Joaquin Valley and Central Coast, are one of the most serious public health costs associated with agricultural production. This need not continue to be the case as the very same climate-friendly agricultural practices, from regenerative organic to agroforestry, that show the greatest promise of sequestering C and reducing GHG emissions also dramatically reduce or entirely avoid the use of synthetic pesticides and fertilizers. Not only does implementation of these practices reduce the direct use of petroleum-derived pesticides and fertilizers, but they provide additional benefits by reducing GHG emissions associated with their production and transport.⁶

We agree fully that “addressing climate change presents a significant opportunity to improve public health for all of California’s residents” (p.10) and especially those “facing the greatest health inequities” including poor and largely Latino residents of California’s San Joaquin Valley and Central Coast Communities.

Children’s health at risk with many current agricultural practices and policies

California’s Central Valley’s primary asset is the agriculture industry that feeds the nation and world; however, the Valley has 40% food insecurity and 67% of adults are obese, while children suffer from chronic disease, hunger and poverty. Fresno County, for example, is the richest agricultural producing county in the nation and the nation’s poorest congressional district, with poverty and hunger at about 40% according to the California Health Inventory Survey.⁷ An abundance of food leaves the region, local produce distribution systems are broken, rural corner stores sell predominantly cheap junk food and soda, and residents struggle routinely with lack of potable water and transportation access.

In 2014, the California Department of Public Health published a report documenting that over 500,00 students attend schools within a quarter mile of use of highly hazardous pesticides.⁸ Central Coast and San Joaquin Valley students are most likely to face exposure to these pesticides and Latino children were 91% more likely than white students to be exposed to the highest levels. The top highly hazardous pesticides used (by quantity) are highly volatile soil fumigants followed by the carcinogenic fungicide captan, neurotoxic organophosphate pesticides, and the herbicide paraquat, a known endocrine disruptor.

While children in agricultural communities face the same food-borne exposures to pesticides as their urban counterparts, they face additional exposures when agricultural chemicals contaminate water supplies or drift from nearby fields. Per pound, children’s exposure is greater than that of adults. In addition, as their physiological systems undergo rapid changes from the womb through adolescence, interference from pesticides and industrial chemicals—even at very low levels—

can derail the process in ways that lead to significant health harms including cancer, neurodevelopmental harms and learning disabilities.⁹

Opportunities for Climate-friendly agriculture to benefit Environmental Justice Communities

We strongly believe that policies that support widespread implementation of climate-friendly agricultural practices, among the greatest number of farmers, especially in California's San Joaquin Valley and Central Coast regions will provide great health and economic benefits to some of the state's most impoverished agricultural communities. Creating and implementing such policies in these communities will help ARB comply with its obligation under SB535 to allocate a minimum of 25% of its GHG reduction funds to benefit disadvantaged communities and 10% of such projects located within disadvantaged communities.

The human health and environmental benefits of organic farming are well known. In addition to reports that consumption of organic food can significantly reduce children's exposure, for example, to neurotoxic organophosphate pesticides¹⁰, organic and other regenerative agricultural practices provide a host of other benefits to human health and environmental health. The benefits of the elimination of use of all highly hazardous pesticides is obvious to the community health of agricultural communities. The benefits to pollinators, natural enemies of crop pests and diseases, other wildlife have been documented for decades as well. Benefits to soil health of the elimination of highly hazardous pesticides is likely as well but has been less studied.

Organic production brings clear economic benefits to the communities in which it is practiced. Organic farming is profitable. Census data show that organic farms in the United States on average have higher sales, higher production expenses, and higher operating profit than the average for all U.S. farms, creating real opportunity for rural economic livelihood. Organic farms bring community-wide economic benefits by providing expanding employment opportunities. The Organic Farming Research Foundation reported data from a five-state study indicating that organic farms hired an average of 61 year-round employees compared with 28 year-round employees hired on conventional farms. The study also found that organic farms hire more seasonal workers than do conventional farms.¹¹ The following two examples illustrate this point.

Singing Frogs Farm based in Sebastopol, CA has, in about ten years, quadrupled soil organic matter (with no nutrient leaching), dramatically increased above- and below-ground biodiversity, reduced water use, increased perennial plantings and now produce roughly \$100,000 in vegetable sales per crop acre per year with over half of that revenue paying our year-round employees' salaries.¹²

In the Capay Valley, Full Belly Farm¹³ produces 80 different organic crops using a whole farm systems approach including a focus on building soil resources and planting habitat for beneficial insects and wildlife — all toward realizing a goal of integrating farm production with long-term environmental stewardship. Full Belly also provides year-round employment for their hired workers. Both farms provide a variety of on-farm demonstrations and education programs.

Scoping Plan Analysis

It is appropriate that ARB promises to include, in their Scoping Plan analysis (p.17), estimates of impacts of land use both from business-as-usual practices as well as proposed policies. We strongly encourage the analysis to include additional practices mentioned and referenced in these comments but not yet identified in proposed approaches. We caution, however, that lack of thorough on-the-ground verification of less-known practices¹⁴, such as perennial grain crops, that show great C sequestration and/or GHG reduction potential based on published descriptions, should not be grounds for dismissal of those practices for support under the Scoping Plan. This point supports ARB's stated intent to "encourage innovation and voluntary actions" (p.7) that may go beyond the limits of the Scoping Plan.

The allocation of GHG reduction funds in support of farmers and ranchers who both implement climate-friendly regenerative agricultural practices — both innovative and the tried and true — and share their experiences, will go a long way towards building the next generation of ranchers and farmers who will implement those practice because they make economic sense to do so while also protecting the environment and public health for generations to come.

We are encouraged to see that ARB plans to include in its analysis various co-benefits as described on p.20. In addition to those described, we urge ARB to expand the list to include other co-benefits described by CDFA's online ecosystem services database that includes — in addition to soil health and water quality and yield, and nutrient cycling — pollinator services and pest control.¹⁵ While some of these services may not be quantifiable in relation to the land management practices that generate them, they nevertheless are very important benefits and must be taken into consideration when evaluating practices for which GHGR funds are to be allocated. This idea was discussed at the May 18, 2016 CDFA public hearing on the Healthy Soil Initiative with specific discussion of using co-benefits as components of scoring potential project recipients of GHGR funds generally, and the Healthy Soil Initiative in particular.

We believe, as is stated in the Scoping Plan (p.8) that not only that "economic prosperity and environmental sustainability can be achieved together" but that economic prosperity is California's \$54 billion agricultural industry is *dependent* on the sustainable stewardship of the environment — i.e. the soil, water, pollinators, and natural enemies of pests and diseases.

Whole Farm Systems approach

Demonstration projects and incentives should support a whole farm system approach to C sequestration, GHG reduction, improving soil health and overall long-term environmental stewardship. This entails identifying and evaluating a full suite of GHG reduction and sequestration opportunities on the farm to optimize GHG reduction and sequestration potentials by providing producers with a range of site-specific opportunities and the information needed to select those practices that will best support overall land management objectives while maximizing GHG benefits. A whole farm system approach should allow for economies of scale and economic and environmental synergies not otherwise realized with single practice implementation.

Research indicates that the integration of multiple GHG-reducing practices on farms and ranches may be more effective at mitigating climate change than changing single, individual agricultural practices. For example, UC Davis research showed that reduced tillage combined with growing

cover crops has greater ability to sequester C and increase yields than either practice alone.² It is the synergistic benefits of combined practices in a whole-farm context that hold the most promise for increased C sequestration in soils and reduced GHG emissions in agriculture.

We encourage CDFA and its agency partners to prioritize projects that combine multiple practices and promote the use of integrated farming systems that work across multiple management areas including: water use/irrigation; off-farm inputs; energy use; crop choices and cropping patterns; and biodiversity.

A whole farm approach includes creating and maintaining a productive, well-compensated workforce; one ideally supported year-round. Complex, diverse farming systems tend to provide for a greater number of on-farm jobs that last longer as greater crop diversity leads to extended or continuous on-farm production (as previously described in the two CA farm examples)..

Emphasis should be placed on demonstration projects

The effective transformation of CA's agriculture will happen not by a small handful of large farmers and ranchers implementing practices on a few large farms. Rather, the greater the numbers of farmers and ranchers engaged, the greater the potential multiplier effect as each individual can, in turn, communicate their challenges, trials, errors and successes to others. Thus, whether financial supports are allocated as simple incentives to farmers/ranchers to implement climate-friendly practices or to develop more comprehensive demonstration projects, both should require substantial components of outreach to other farmers and ranchers. It is well known that the most effective way for farmers and ranchers to learn is by seeing and doing, and there is no better way than local on-farm demonstrations.

The Natural Resources Conservation Service documents this phenomenon quite well. It's report, "California Soil Health Partnership" illustrates the transformative power and effectiveness of on-farm demonstrations. Such outreach efforts build not only knowledge but capacity to similarly share and transfer knowledge from farmer-to-farmer, and helps identify and supporting the development of farmer leaders.¹⁶

Finally, it is also essential that practice incentives be made available to all scale of farmers and rancher as well as those who do not own the land. In order to ensure that land ownership not be a criterion for receipt of state support for implementation of climate-friendly farming practices.

Comments on the Scoping Plan Proposed Concepts

Rather than support one Concept or another, we generally support those policies that ensure long-term solutions to climate change challenges while providing the greatest benefits to California residents, especially those most at risk and who serve the most to gain from implementation of climate-mitigating practices that improve environmental quality and provide increased economic opportunities.

All concepts include Natural and Working Lands goals, all of which we fully support: forest land restoration; in-fill and revitalization of the urban core; land preservation (we support the "ambitious" goal of Concept #3); and increase habitat protection.

While we do not address methane production (and mitigation) in any detail, we do have the following comment in response to the Concept element “enhancement of short-lived climate pollutant strategy” and the related goal of > 40% reduction in methane emissions. In relation to this goal, we strongly encourage ARB to look at *land management* as a key component of agriculture-related methane production and not just focus on costly, high-tech methane digesters. In appropriately managed rotationally grazed perennial grasslands and shrublands, green plants and the soil ecosystem work together to ensure that more C is sequestered than emitted, easily compensating for the methane produced by livestock.¹⁷

While we recognize that California’s GHG reduction strategy is based on a cap and trade system we were very encouraged to see, and fully support, the idea of a carbon tax as listed under Concept #4. We recognize that the concept is only slowly gaining support, but it does remain a viable concept around the globe.¹⁸

Conclusion

Both PAN and CPR see great potential for allocation of California’s GHGR funds to bring great public health and economic benefits to CA rural communities, including largely disadvantaged Latino populations, through the widespread promotion of climate-friendly agricultural practices based primarily on principles of carbon farming.

To effectively use GHGR funds to help transform California agriculture, ARB, CDFA and all partnering agencies must direct resources to the greatest number of farm and ranch operations, rather than just a few large-scale operations that involve relatively few individuals or organizations. Specifically, we urge policies to be explicitly scale-neutral so small- and medium-sized farms can participate. To effectively do this would likely require that smaller-budgeted operations be awarded additional support for technical assistance much along the lines of what NRCS offers for the development of conservation plans.

Furthermore, since a growing number of farmers, especially new and beginning farmers, often lease the land on which they farm, policy instruments must be designed to assist those farmers and ranchers as well.

We thank you for your attention.

Sincerely,

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