



ENVIRONMENTAL DEFENSE

finding the ways that work

Attachment 1: Description of Emissions Reduction Measure Form

Please fill out one form for each emission reduction measure. See instructions on attachment 2.

Title: Manage forestry and agriculture sectors to facilitate long term GHG sequestration while creating opportunities to enhance wildlife habitat, improve water quality, and expand recreational opportunities.

Type of Measure (check all that apply):

- | | |
|--|--|
| <input checked="" type="checkbox"/> Direct regulation | <input checked="" type="checkbox"/> Market-based compliance: Offsets |
| <input checked="" type="checkbox"/> Monetary Incentive | <input checked="" type="checkbox"/> Non-monetary incentive |
| <input type="checkbox"/> Voluntary | <input type="checkbox"/> Alternative Compliance Mechanism |
| <input checked="" type="checkbox"/> Other Describe: Collaboration with Federal Land Agencies | |

Responsible Agency: California Air Resources Board

Sector:

- | | |
|---|---|
| <input type="checkbox"/> Transportation | <input type="checkbox"/> Electricity Generation |
| <input type="checkbox"/> Other Industrial | <input type="checkbox"/> Refineries |
| <input checked="" type="checkbox"/> Agriculture (and Forestry) | <input type="checkbox"/> Cement |
| <input checked="" type="checkbox"/> Sequestration (Terrestrial/ Forestry) | <input type="checkbox"/> Other Describe: |

2020 Baseline Emissions assumed (MMT CO₂ eq): Unknown.

Percent reduction in 2020: See Below.

Cost effectiveness (\$/metric ton CO₂E) in 2020: See Below.

Description:

Forests

Forests can and should play an important role in meeting California's 2020 and 2050 emission reduction targets. California forests have the potential to sequester significant amount of CO₂ mitigating climate change and providing a suite of additional environmental benefits associated with enhanced wildlife habitat, improved water quality, and expanded recreational opportunities. That said, if improperly managed, forests can serve as a source of emissions due

to catastrophic wildfire, decline in forest health, conversion, and unsustainable levels of harvest. California should promote forest restoration and improved forest management to sequester carbon, increase resilience to fire and other natural disturbance, and enhance overall ecological integrity of forest ecosystems. Our policy recommendations include:

Emission reduction target and inventory: The state should set an emission reduction target for the forest sector. The target should be based on a detailed inventory and ecological assessment of forests by subregion and forest type. Some forests are amenable to additional carbon sequestration and others are not (i.e., overstocked forests subject to catastrophic fire risk and insect/disease damage). The inventory and assessment would provide a scientific basis for setting a reasonable net emission reduction target for the forest sector.

Forestry offsets: Environmental Defense supports creating opportunities for generating offsets for carbon sequestration in the forest sector. An offset program should be built upon strong measurement and verification protocols and on a strong scientific understanding of forest dynamics. The CCAR Forestry Protocols are a good start but we believe targeted improvements must be made in order for them to function effectively under a cap and trade program. As a guideline, we recommend that CARB look closely at the recently published manual for GHG offset project entitle *Harnessing Farms and Forests in the Low Carbon Economy* (Duke University Press, 2007). Initially, offset opportunities in the forestry sector should be limited to reforestation, urban forest planting, and avoided conversion/forest conservation projects. Strong measurement and accounting protocols have been developed for projects of these types and widespread certainty exists in the scientific community about real, verifiable climate benefits from projects in these sectors. Projects on managed timberland also hold great promise (e.g., extending rotation length, increasing retention) although they are more difficult to quantify and issues of baseline, additionality and leakage must be examined quite closely order to ensure true net GHG emission reduction. The *Harnessing Farms and Forests* publication includes detailed protocols for addressing each of these issues in a robust manner. Projects certified under the existing CCAR forest protocols as well as those supported through PG&E's Climate Smart offset program offer excellent opportunities to test and refine measurement and verification protocols.

Additional incentives: Environmental Defense supports implementation of a suite of incentive-based programs to encourage private landowners to engage in forest management that sequesters carbon and enhances forests ecological integrity. Specifically, we recommend that programs such as the California Forest Improvement Program (CalFire) that provide technical and financial assistance to private landowners be greatly enhanced and funded at substantially higher levels. Incentive programs at the state level should be coupled with federal incentive programs (e.g., Farm Bill conservation programs) to the greatest extent possible.

Federal forestland: CARB, in collaboration with the Resources Agency and CalFire, must work closely US Forest Service, Bureau of Land Management, and National Park Service to improve the ecological integrity of forest land in federal ownership in California. Nearly half of California's 30 million acres of forestland is in federal ownership. In particular, it is essential

that federal forests, particularly in the Sierra Nevada, be managed to increase their resilience to wildfire in order to reduce the frequency of catastrophic events.

Agriculture

As with forests, agricultural lands in California offer strong potential for both reducing GHG emissions and sequestering CO₂ in vegetation and soils. For many cropping systems in California, additional research is necessary to determine the precise potential and the precise management practices that will capitalize on this potential. As information emerges from ongoing and new research, CARB should be prepared to take advantage of emerging opportunities for farmers and ranchers to participate in meeting California's emission reduction targets. Our policy recommendations include:

Agricultural offsets: Carbon sequestration in soils in the agricultural sector should be considered for inclusion as an offset opportunity in a cap and trade program. As with the forestry sector, an agricultural offset program should be built upon strong measurement and verification protocols and on a strong scientific understanding of dynamics in agricultural systems. As a guideline, we recommend that CARB look closely at the recently published manual for GHG offset project entitle *Harnessing Farms and Forests in the Low Carbon Economy* (Duke University Press, 2007).

Farm and ranchland protection: The state should greatly strengthen efforts to protect farm and ranchland from unplanned development including increased funding for agricultural conservation easements and strengthening and expanding the Williamson Act. In addition, Environmental Defense advocates a wide range of improved land use planning and smart growth policies which are articulated in our recommendations on land use.

Farm engines: Farm vehicles and stationary engines represent a significant source of GHG emissions. Regulatory and incentive-based measures to reduce emissions and enhance the efficiency of these engines will have a significant climate benefit. Quantifying that benefit will require more detailed reporting about engine type and usage than currently available. CARB is already planning a rule to reduce emissions of criteria pollutants associated with in-use on-farm vehicles and should incorporate reductions in GHGs into this rule. Toward this end, CARB should consider ways to encourage increased fuel efficiency and use of alternative/low carbon fuels in farm equipment. Finally, CARB should facilitate and expand existing efforts to convert stationary diesel engines (e.g. irrigation pumps) to electric pumps.

Emission reduction calculations and assumptions:

The impact of any particular measure will depend upon the intensity at which it is implemented, the region of the state, and whether complementary measures are enacted. Until

these measures are better defined, we are unable to give emissions reductions estimates. We will work with CARB to develop these estimates.

Cost effectiveness calculation and assumptions:

The cost-effectiveness of any particular measure will depend upon the intensity at which it is implemented, the region of the state, and whether complementary measures are enacted. Until these measures are better defined, we are unable to give emissions reductions estimates. We will work with CARB to develop these estimates.

Implementation barriers and ways to overcome them:

None to be discussed at this time.

Potential impacts on criteria pollutants

None to be discussed at this time.

Name: Eric Holst

Organization: Environmental Defense

Phone / email: (916) 492-7080 / eholst@environmentaldefense.org