

EVALUATING THE CLIMATE MITIGATION POTENTIAL OF NATURAL AND WORKING LANDS IN SANTA BARBARA COUNTY



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PROBLEM

Urgent action is needed to mitigate climate change, the impacts of which are already being felt locally and globally. The State of California and the County of Santa Barbara have both demonstrated climate leadership by setting ambitious emissions reduction targets. However, climate action planning to meet these goals has, until recently, neglected to include natural and working lands. These lands, such as forests, grasslands, and farmland, are systems of soil and vegetation that can act as either net carbon sources or sinks, depending on how they are managed. **This project assesses the potential of natural and working lands in Santa Barbara County to contribute to greenhouse gas emissions reduction and carbon storage goals**, for incorporation into the County's upcoming Climate Action Plan update.

CLIMATE TARGETS

California

- ➔ Reduce GHG emissions 40% below 1990 levels by 2030
- ➔ Reach carbon neutrality by 2045

Santa Barbara County

- ➔ Reduce GHG emissions 50% below 2007 levels by 2030

FINDINGS

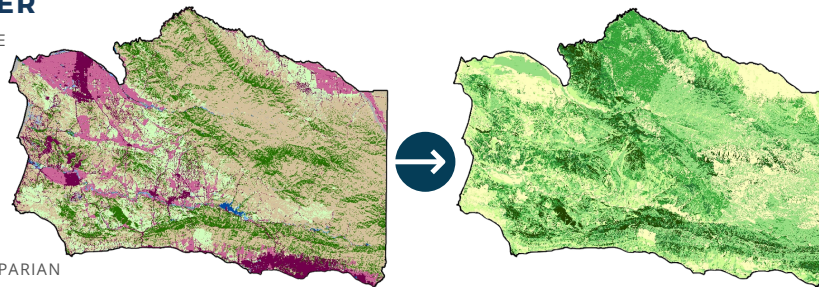
Trends in Land Use & Carbon Inventory

We used geospatial vegetation data combined with estimates of biomass and soil carbon densities to quantify the historical county landscape carbon stock. We then extrapolated historical trends to 2030 to create a baseline scenario of future working land use and resulting carbon stock and emissions.

County Land Area and Carbon Stock in Natural and Working Lands in 2016

LAND COVER

- AGRICULTURE
- BARREN
- DEVELOPED
- FOREST
- GRASSLAND
- SHRUBLAND
- WATER
- WETLAND/RIPARIAN



CARBON STOCK

METRIC TONS OF CARBON PER 30x30m PIXEL

LOW HIGH

0 34.36

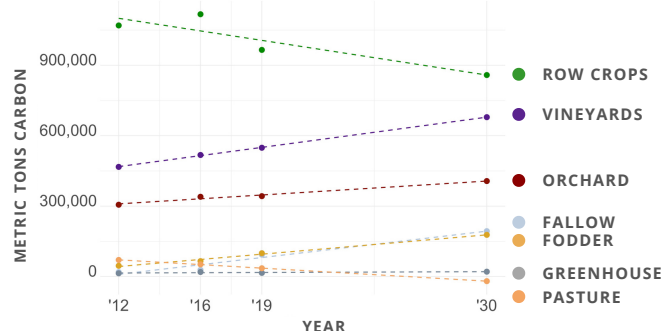
ESTIMATED TOTAL: 51,114,031 MT C

Calculated and mapped using USDA LANDFIRE, CalAg, and CARB carbon values

Working Lands Projections to 2030

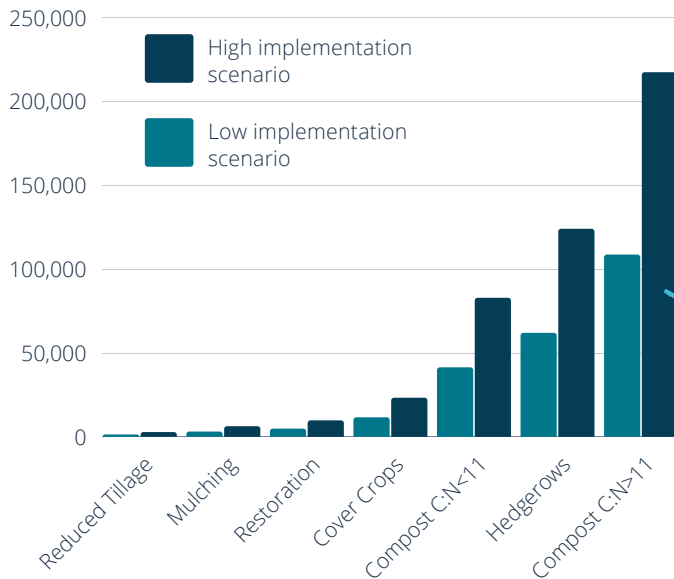
Our projections indicate that total land in agriculture will decrease 1% by 2030, with a corresponding 1% decrease in carbon stock. Loss of agricultural land is attributable to development, groundwater availability, and economic conditions. Decreases are expected for rangeland (not shown), row crops and pastureland, while orchards and vineyards are projected to increase. Note that carbon stock projections for working lands do not indicate countywide trends, since they do not include projections for natural or urban land.

CARBON STOCKS BY LAND CLASS



Calculated using CalAg Pesticide Permitting and Use Reporting spatial datasets from 2012, 2016, and 2019

Emissions Reductions & CO₂ Sequestration (MTCO₂e) in 2030



Calculated using USDA's COMET-Planner emissions reductions per acre

Mitigation Potential of Climate-Smart Management Practices

We modeled the emissions reductions and carbon sequestration on working lands that could be achieved through increased implementation of 7 conservation practices relevant to the county. High and low implementation scenarios were developed to account for uncertainty and establish a range of possibilities.

> 200,000 MTCO₂e
= 46,000
cars taken off the road for 1 year



EPA GHG Equivalencies

The impact could be even greater if multiple management practices were implemented at the same time, or if the implementation levels were even higher.

Barriers to Greater Implementation of Climate-Smart Management Practices

Through strategic outreach to members of the county's farming and ranching community, we identified major barriers to greater implementation of these practices—the cost of materials and labor, time-intensive and conflicting regulatory and permitting requirements, and lack of access to technical resources and expertise.



COST



**REGULATIONS
& PERMITS**



**TECHNICAL
GUIDANCE**

RECOMMENDATIONS

We recommend the County consider the following strategies to address the identified barriers to greater implementation of climate-smart management practices, and to ultimately increase carbon sequestration and reduce emissions on working lands:

- Promote adoption of climate-smart practices with:
 - Regulation and permit streamlining
 - Farmer-to-farmer networking and resource sharing
 - Technical support for implementation
 - Carbon farm planning
 - Affordable, high quality compost
- Preserve natural and working lands
- Follow the State's lead in incentivizing sequestration by setting a carbon neutrality goal for the County
- Improve data collection on current implementation of management practices

PROJECT IMPACT

This project takes an important step toward integrating working lands, as well as the community responsible for managing them, into the public climate action planning process. Locally, it provides a foundation for Santa Barbara County to continue natural lands analysis for incorporation into its Climate Action Plan update. Based on our analysis, we also highlight key strategies the County can pursue to preserve existing carbon sinks and promote climate-smart management practices on working lands, while protecting valuable economic and natural resources. More broadly, this work provides tools and a framework for landscape carbon accounting that can be of use to jurisdictions across the state as they work to achieve California's ambitious climate goals.