Climate Smart Agriculture Incentive Programs

April 11, 2023

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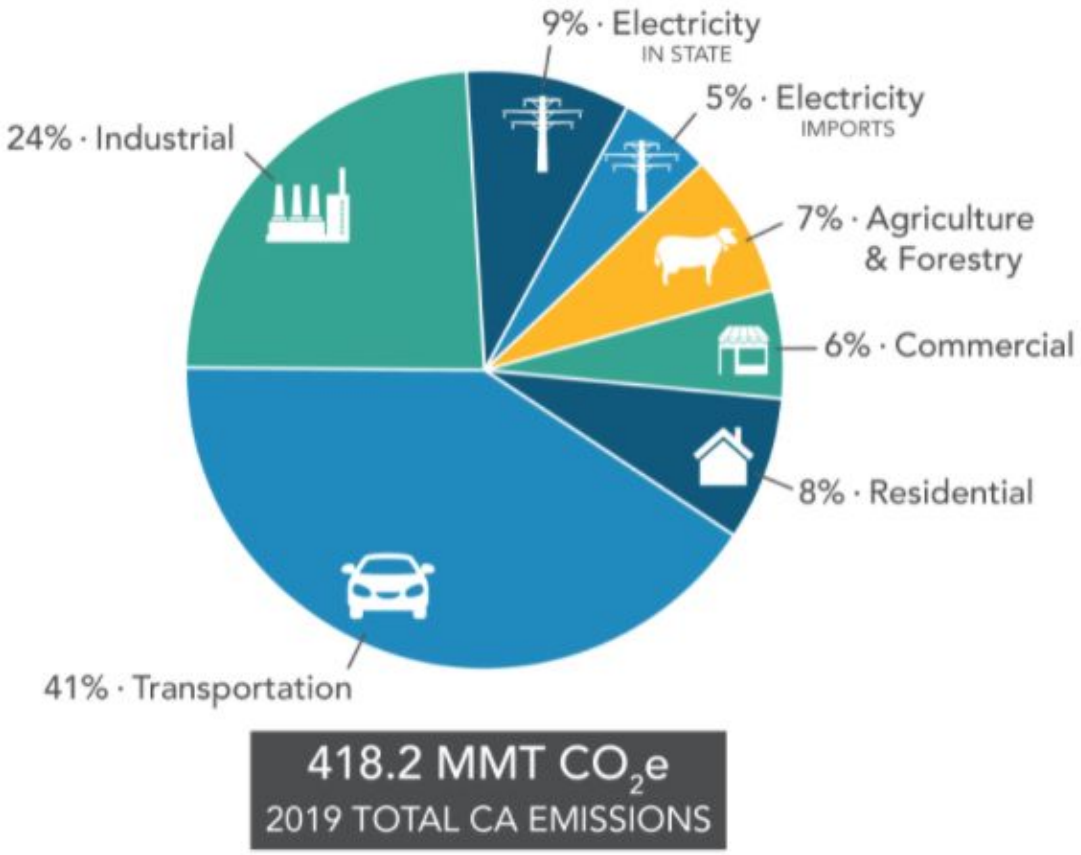
GHG Emissions From Agriculture In California



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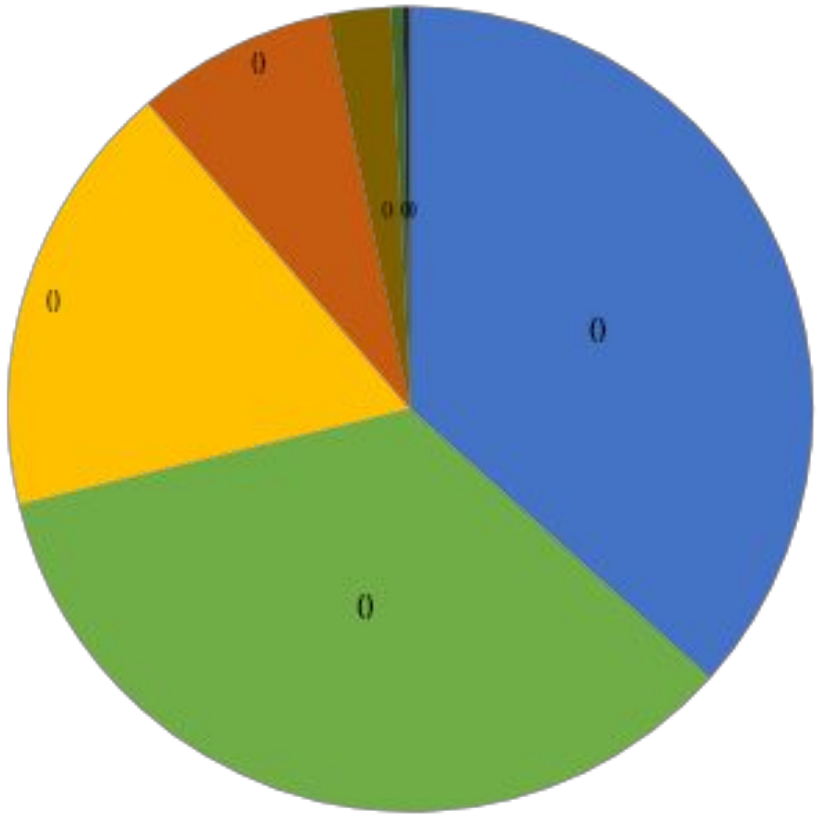

Source: California Greenhouse Gas Inventory – 2021 Edition
https://ww2.arb.ca.gov/ghg-inventory-data

Healthy Soils Program: Vision

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- All practices must bring about soil carbon sequestration
- Adaptation co-benefits:
  - Water retention
  - Resistance to erosion
  - Lower pesticide needs
- Continually trials new practices through "Demonstration Projects."
- Designed to "offset risk" of trying new practices.
  - Adoption is the goal, and will be studied
  - Not allowed to support long-term use on same field
- ~$66M in 2023 and again in 2024, marking great increase
- Serves both Climate Smart Ag targets in Scoping Plan, and NWL CSS NBS
  - requiring at least current funding levels

Healthy Soils Program Practices in 2022 Awards

Croplands:

- Compost: 65,157 acres
- Cover Cropping: 5,728 acres (was higher in previous years with greater water availability)
- No-Till: 3,285 acres
- Reduced Till: 896 acres
- N Fertilizer reduction: 2,980 acres
- Mulching and Whole Orchard Recycling: 1,704 acres

Rangelands:

- Prescribed Grazing: 7,825 acres
- Range Planting: 3,972 acres

State Water Efficiency and Enhancement Program (SWEEP)

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- Guided by statute, all projects have had to save irrigation water AND reduce GHGs
  - Upgrades of irrigation type
  - Upgrades to irrigation monitoring
  - Pump efficiency improvements
  - Conversions from fossil fuel to electric pumps
  - Installation of renewable energy (only solar seen so far)
- Southern Desert Region Program has now allowed projects that do not reduce GHGs.
  - Switching from surface water to microirrigation takes more energy, which emits GHGs
- Redesigned Application Tool will be easier
  - Similar to HSP Application, where feasible
- Tool will also incorporate nitrous oxide (N2O) benefits
- Unsteady funding, from $0 in 2019 to $50 M in 2021-22; higher this year
- Supports NWL Climate Smart Strategy Nature Based Solutions for Croplands:
  - "C. Increase water and nutrient use efficiency, including through installation of climate smart irrigation systems"

New Programs since 2022

Water Efficiency Technical Assistance (WETA): free on-site consultations to improve irrigation design and methods: $4 M awarded in 2022, up to $14 M may be awarded in 2023

- Supports NWL CSS Croplands Solution C

Pollinator Habitat Program (PHP): plantings of fallow fields and permanent plantings to support pollinators, with a wide definition affecting many native species of birds and insects. $12 M awarded in early 2023

- Supports NWL CSS Croplands Solutions A and I

Conservation Agriculture Planning Grant Program (CAPGP): including Organic System Plans and NRCS TSP consulting: $13 M awarded in early 2023

- Supports Scoping Plan Organic Recommendation (20% of cultivated acres by 2045)

Organic Transition Pilot Program (OTP): for farmers with acres to transition to organic management, covering certain equipment and soil amendment costs: $5 M to be awarded in late 2023

- Stronger Equity focus, reaching 50% Socially Disadvantaged Farmers and Ranchers
- Supports Scoping Plan Organic Recommendation (20% of cultivated acres by 2045)

Cannabis Appellations Program

Sustainable CA Grown Cannabis Program

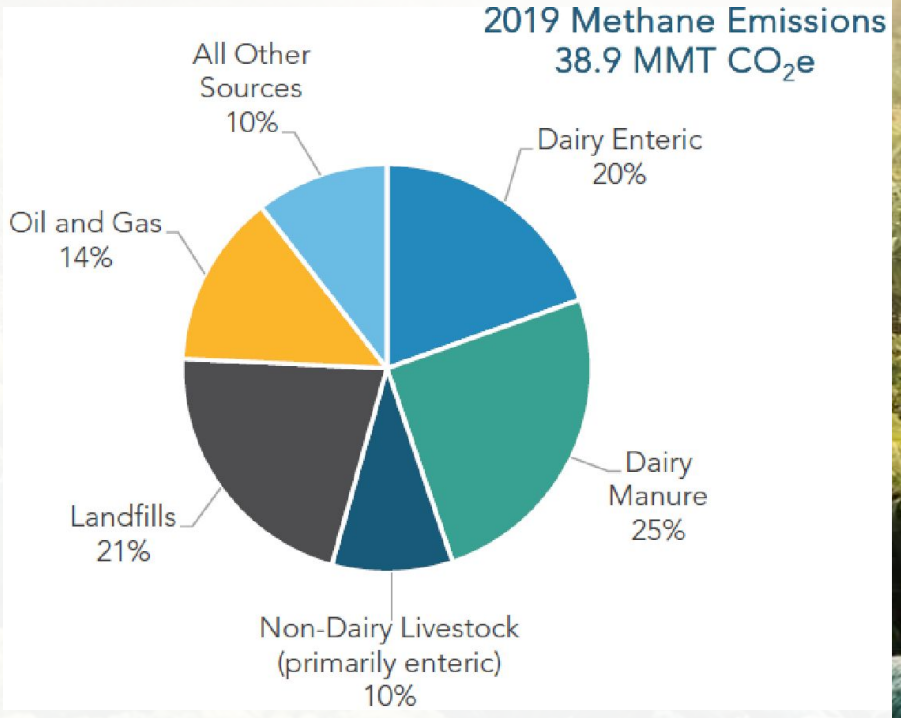
•Google "OEFI CDFA" to see our main webpage, from where you can navigate to each program: https://www.cdfa.ca.gov/oefi/

Block Grant Model

- Non-profits, local organizations and certain governmental bodies manage incentive money
  - Have relevant expertise, local knowledge and local presence
  - Receive applications and choose farmers "transparently"
  - Disburse funds
  - Manage technical assistance and follow-up
  - Report results to CDFA
- WETA, OTPP, Pollinator Habitat, and Technical Assistance Program were designed exclusively as block grant programs.
- HSP and SWEEP are expected to disburse part of their funds through Block Grants in 2023

SB 1383, Methane, and Ag

- SB 1383 (2016) set 40% by 2030 goal for methane
- Much influence on solid waste sector (landfills), oil and gas, and dairies
- *Recent* Manure Recycling and Innovative Products Task Force convened by CDFA
- CDFA incentivizes:
  - Manure Biodigesters for RNG (DDRDP)
    - highest ROI, with help of LCFS
    - High cost-sharing, must be above 50%
    - $19 M in 2022 and will have more in 2023
  - "Alternative Manure Management" (AMMP) such as:
    - Solid Separators
    - Sweeping systems
    - Compost-Bedded Pack Barns
    - "De-watering" system
    - $19 M in 2022 and will have more in 2023
- "Enteric" is likely the next frontier for mitigation programs
  - Some food additives shown to reduce gut-derived methane



END

2022 Scoping Plan: Croplands Recommendations

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Non-binding Recommendations were agreed to, include these "headlines" for Agriculture:

- **Conserving croplands** (at least 8,000 acres a year, permanently)
  - principally through CA Farmland Conservancy Program and Sustainable Agricultural Lands Conservation Program
  - "…pair land conservation projects with management plans that increase carbon sequestration, where feasible."
  - Over 250,000 acres have been conserved to date, including rangelands
  - would reach 2.5% of croplands by 2045, not counting what is already preserved
  - *not including* Multi-Benefit Land Repurposing, which removes land from agricultural use if it is permanent
  - *not including* "30 x 30" lands

- **Restoring wetlands:** at least 60,000 acres, or 15 percent of Delta wetlands
  - most currently under agricultural use

- **Increasing organic agriculture** to at least **20 percent** of cultivated acres by 2045
  - farmed croplands are currently around 5% organic
  - manure and compost diversion would need to be maximized, if they are to supply the N necessary

- Increasing **climate smart agricultural practices** by at least 78,000 acres adopted a year (and preserved for 20 years)
  - Mainly through Healthy Soils Program, to be discussed next

2022 Scoping Plan: "Appendix I" Acreage Targets

Scoping Plan Action (NRCS-defined Conservation Practice)	**Scoping Plan Target** (Acres/year)	**HSP 2022 Round** Acres Initiated
Cover cropping (legumes)	9,617	*2,864*
Cover cropping (non-legumes)	9,617	*2,864*
No Till	5,383	3,285
Reduced Till	13,830	896
Compost Amendment	40,142	65,157
Riparian Forest Buffers	56	39
Alley Cropping	17	N/A
Windbreaks/Shelterbelts	17	3
Trees and Shrubs in Croplands	12	15
Hedgerows	65	26

- Scoping Plan Target and Modeling is based on "20-year adoption," not accounting for loss of practice-acres before or after 2045.
- These levels were deemed feasible with State action, not counting on local or federal funds.
- Healthy Soils Program awarded $66M in 2022, and expects next two years to be similar.
- Linear practices appear low in part due to the quantity needed to "fill" an acre.
- Cover Cropping levels were *proportionally* 3x higher in 2020.
- This and Organic target assume Municipal and Manure Compost at maximum supply (with current population)

Healthy Soils Program Practices (unmodeled and untargeted By 2022 Scoping Plan)

Healthy Soils Practice (NRCS-defined Conservation Practice)	Acres by HSP 2022 Round
Prescribed Grazing	7,825
Range Planting	3,972
Nutrient Management (15% reduced N application)	2,980
Mulching	947
Whole Orchard Recycling	757
Filter Strip	213
Field Border	212
Forage and Biomass Planting	210
Conservation Cover	87
Riparian Herbaceous Cover	6
Silvopasture	1
Conservation Crop Rotation	1
Herbaceous Wind Barrier	0.1

- These practices were not modeled for the 2022 Scoping Plan
- But they are quantified by Comet-Planner using DayCent for HSP reporting to GGRF.
- HSP Incentives are roughly 100% of statewide average cost of implementing a practice for 2 years, sometimes more.
- Linear practices appear low in part due to the quantity needed to “fill” an acre.

Natural and Working Lands Climate Smart Strategy

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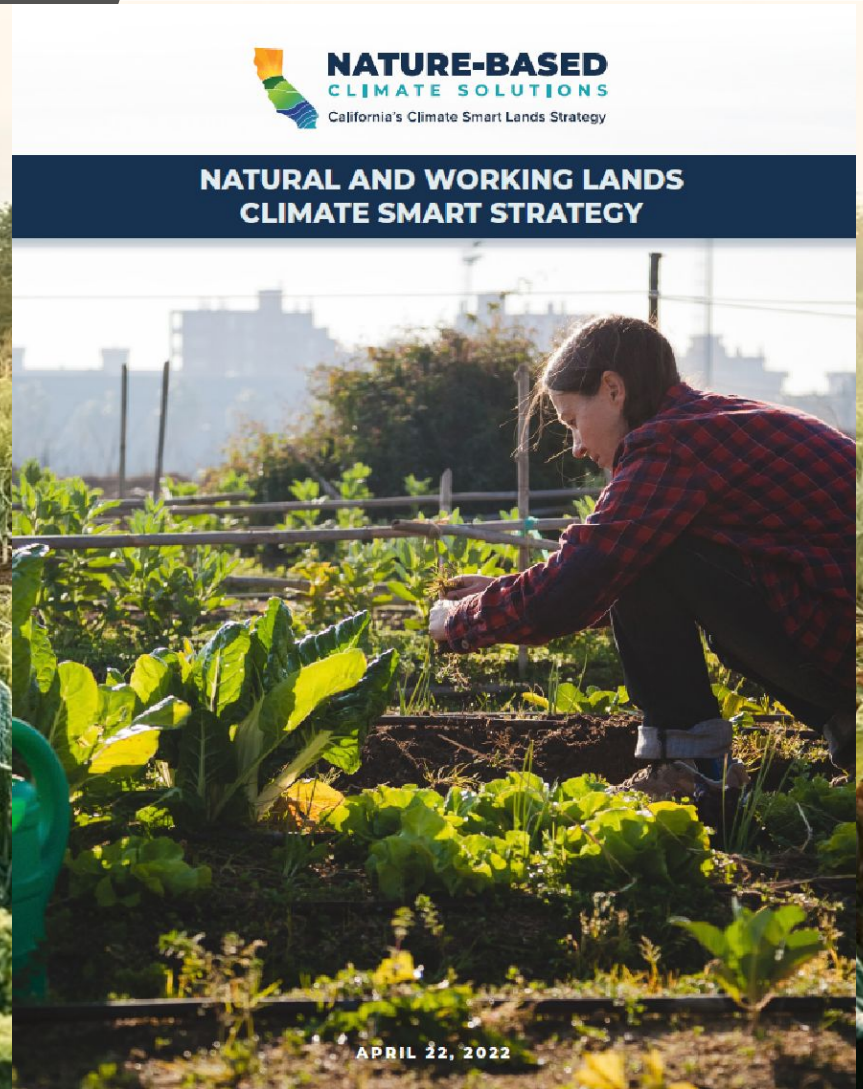
- Produced in response to Executive Order by Gov. Newsom (N-82-20), and approved in 2022
- More principle-based than the Scoping Plan:
  - not modeled
  - no practice targets
- Emphasis on "Nature-Based Solutions" caused some Ag practices to be left out, especially regarding livestock
- Many practices fed into 2022 Scoping Plan; let's take a look for croplands and grasslands (next slide)



Natural and Working Lands Climate Smart Strategy: Croplands Solutions

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A. Scale up soil health practices for carbon storage, greenhouse gas emission reduction from soils, climate resiliency, soil water retention, improved water and air quality, and more, while supporting socially disadvantaged farmers…

B. Protect at-risk agricultural lands from development through conservation easements, Williamson Act contracts, and agricultural zoning.

C. Increase water and nutrient use efficiency, including through installation of climate smart irrigation systems.

D. Increase **managed groundwater recharge** on working croplands that capture rain and storm runoff…

E. Repurpose cropland retired or fallowed due to lack of water supply for environmental, cultural and societal benefits…

F. Enhance circular economies for organic waste utilization which prioritize ecosystem and biological health.

G. Facilitate … and sustain culturally and historically significant **food crops [of] California Native American tribes**.

H. Reactivate flood plains on working croplands, including rice fields…

I. Scale up the use of integrated pest management…

Natural and Working Lands Climate Smart Strategy: Grasslands Solutions

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A. Increase climate smart and regenerative practices on grasslands, such as range planting, riparian restoration, grazing management regimes that work to support positive ecological outcomes and to increase the amount of deep rooted, quality rangeland grasses for improved vegetation for feed, carbon and water storage, and fire resiliency.

B. Preserve and restore native grasslands to improve carbon storage, biodiversity, and connectivity.

C. Protect grasslands from development and conversion to more intensive agricultural production.

D. Apply compost in ecologically appropriate contexts to grasslands to enhance carbon sequestration and storage, increase water quality and availability, and support the overall health of grazed or historically degraded grasslands.

E. Increase adoption of compost production on farms and application of compost in appropriate grassland settings for improved vegetation and carbon storage, and to deliver waste diversion goals through nature-based solutions.

And in general: **Increase workforce development opportunities** in this sector that connect Californians, **particularly frontline youth,** with access to jobs and career pathways needed to deliver an equitable, resilient, and carbon-neutral California.

Farmer- and Rancher-Led Climate Change Listening Sessions

- Also following EO N-82-20
- Cited as a source of ideas and recommendations by the 2022 Scoping Plan
- Carried out by CDFA in February 2021, posted in draft; comments accepted; finalized in November
- Two meetings for each of three sectors (Annuals, Perennials, Dairy)
- Scope was broad, allowing criticism of current programs and imagining new ones.
- 43 pages of recommendations
  - summarized at the end in a consolidated table.
  - with initial "cost" categories, timeframes and partner agencies noted
  - "Research topics" section
- CDFA plans to develop more formal responses to a number of the requests
- Available at https://www.cdfa.ca.gov/oefi/climate/docs/cdfa_farmer_and_rancher-led_climate_solutions_meetings_summary.pdf

AB 1757 Expert Advisory Committee

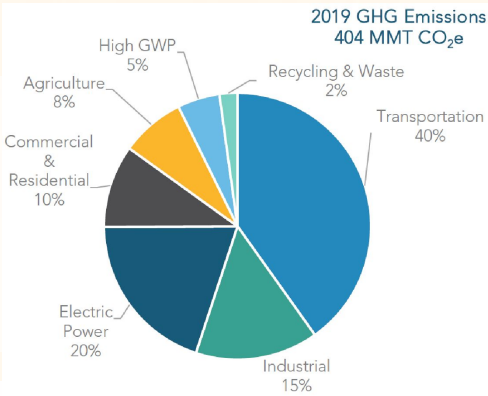
- Passed in 2022, expressing some frustration in Legislature with 2022 Scoping Plan's form
- Expert Advisory Committee defined to include modeling experts, practitioners, and tribal representative(s)
- Can propose more "ambitious targets" for Scoping Plan
  - Not to overhaul the "-4%" for NWL overall
- Can propose additional practices
- Can propose changes to modeling approaches
- Committee was recently chosen and has had one initial meeting (15 people, with 5 connected to Ag and rangelands)
- Will last until end of 2024
- Scoping Plan receives more pressure for expansion and refinement before the 2027 Update
- *We may see requests for information from the Committee*.

SB 27 (2021) and Carbon Registry

"… the Natural Resources Agency shall establish and maintain a registry called the California Carbon Sequestration and Climate Resiliency Project Registry for the purposes of identifying and listing projects in the state that drive climate action on the state's natural and working lands and are seeking funding from state agencies or private entities."

- In the first year(s), it appears that the Registry will include projects that:
  - completed CARB-approved Quantification Methodologies
  - indicated interest in third-party funding
  - were not granted state funding
- Because of their carbon sequestration benefits, unfunded Healthy Soils projects would be clear candidates.
- Non-CO_2 benefits are under discussion for the future (implying methane in manure projects, nitrous oxide in irrigation projects).

Agricultural Sector GHG Emissions



- Agriculture is responsible for 9% of yearly GHG Emissions, broken down in graphic on left (although old)
- Consider the scale of Agricultural carbon, broken out in graphic on right for Year 2020