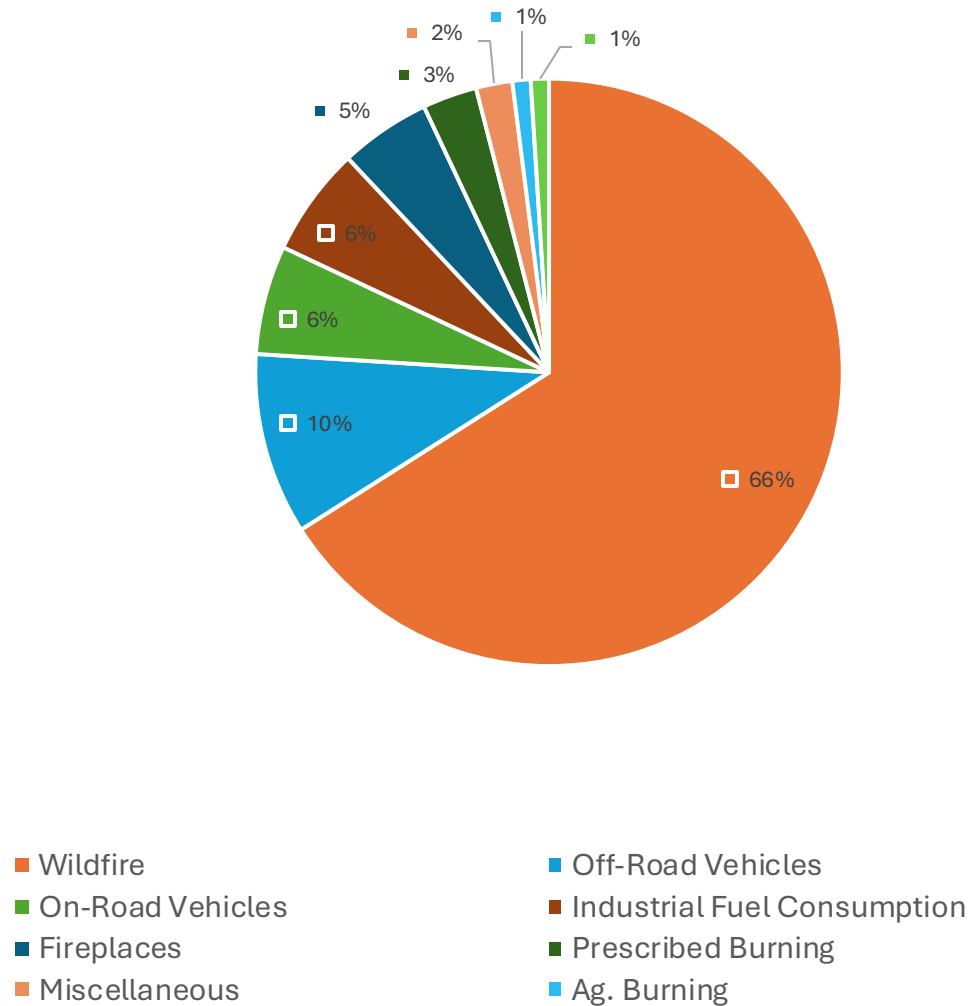


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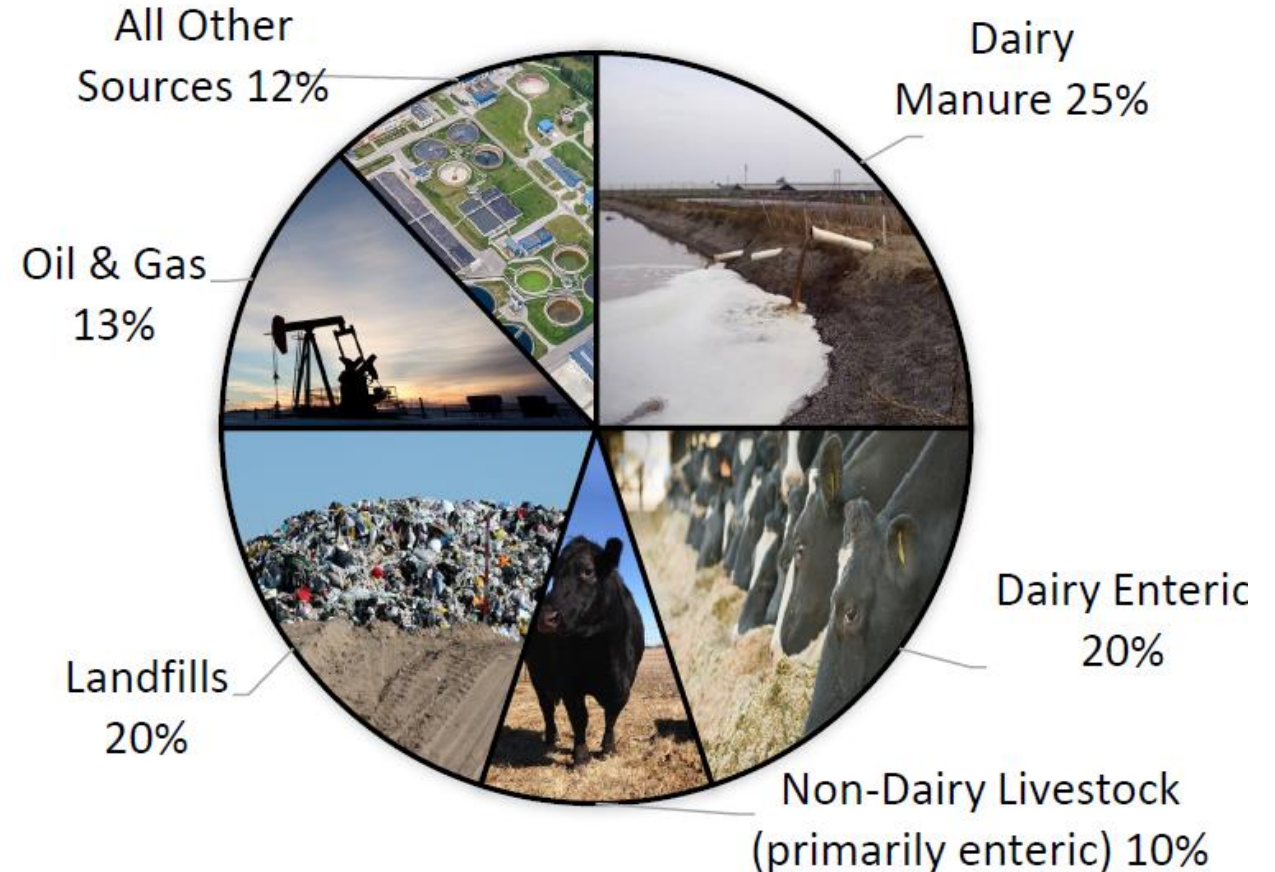


Black Carbon Sources in CA



BC is 3,200x more damaging to climate than CO2 over 20 years

Methane Sources in CA



Methane is 84x more damaging to climate than CO2 over 20 years

Bioenergy = biggest opportunity for carbon negative emissions

BECCS can provide 2/3 of all carbon negative emissions needed to achieve carbon neutrality

- Natural and Working Lands



25 MT/year

- Waste Biomass Conversion to Fuels with CO₂ Storage



83 MT/year

- Direct Air Capture with CO₂ Storage



17 MT/year

Estimated Average GHG Reduction Cost Is High With Wide Variation Across Programs

Estimated Average Cost Per Ton of Reduction Varies Greatly

Program	Cost Per Ton ^a
Organics and recycling loans	\$4
Forest health	4
Dairy digester research and development program	8
Organics composting/digestion grants	9
Forest legacy	10
Recycling manufacturing	15
Delta and coastal wetlands restoration	30
State water and efficiency and enhancement program	33
Clean vehicle rebates	46
Sustainable agricultural lands conservation	59
Mountain meadow ecosystems restoration	113
Urban and community forestry	116
Water-energy grant program	141
Affordable housing and sustainable communities	191
Single-family solar photovoltaics ^b	209
Transit and intercity rail capital	259
Single-family energy efficiency and solar water heating ^b	282
Large multifamily energy efficiency and renewables ^b	343
Enhanced fleet modernization program "plus-up"	414
Truck and bus voucher incentives	452
Incentives for public fleets pilot project for DACs	725
Overall Average	\$57

^a Calculated as the amount of cap-and-trade funds awarded to a program divided by the total estimated greenhouse gas (GHG) emission reductions from the projects that receive cap-and-trade funds.

^b Assumes GHG reductions at the midpoint of the administration's estimated range.
DACs = disadvantaged communities.

- Administration's data suggests average cost of \$57 per ton reduced.

Bioenergy and Wildfire

CPUC:

- Wildfire is biggest cause of increasing electricity rates
- Bioenergy mitigates wildfire impacts by reducing need for controlled burns, pile burning and pile decay

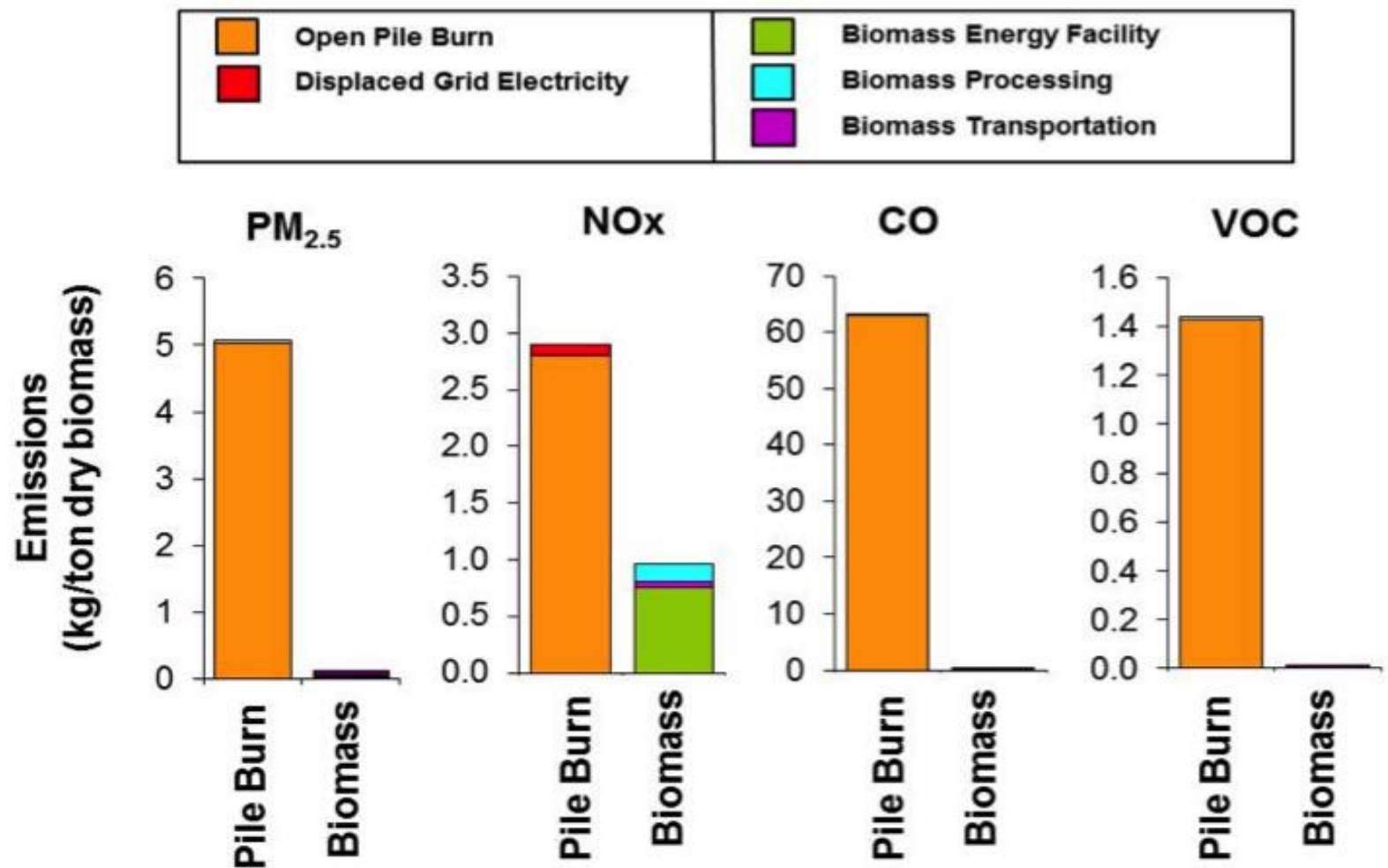
CalFire, Bd of Forestry, CNRA:

- Forest biomass to energy cuts wildfire risks and reduces carbon/air pollution from controlled burns and pile burning

ACWA:

- Bioenergy increases energy reliability for essential services, including water pumping for fire fighting, and protects water quality and supply from wildfire





Biomass Reduces:

- **PM_{2.5} and black carbon by 99%**
- **Methane and other VOC's by 95-99%**
- **NO_x by 40-70%**
(using a combustion engine)

Source: Placer County Air Pollution Control District and the California Association of Air Pollution Control Officers