



# Carmel Climate Change Committee: Monterey Regional Waste Management District

**Tim Flanagan**  
General Manager  
[tflanagan@mrwmd.org](mailto:tflanagan@mrwmd.org)



# Monterey Regional Waste Management District

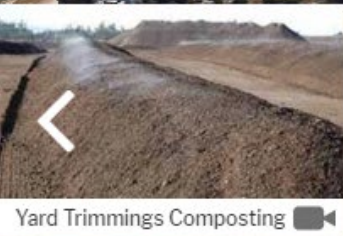


## *Turning Waste into Resources*

- 69-year history (formed in 1951)
- Publicly owned/operated
- \$38 million operating budget
- Regional recycling, processing & disposal facility (470-acre site)
- Landfill: 75-100 year capacity
- 114 employees
- 9 appointed board members
- Serving Central Coast Region  
(Monterey, Santa Cruz, & San Benito Counties)



# The District Site Today: An Integrated Approach



Yard Trimmings Composting



Materials Recovery Facility



Landfill Gas to Energy

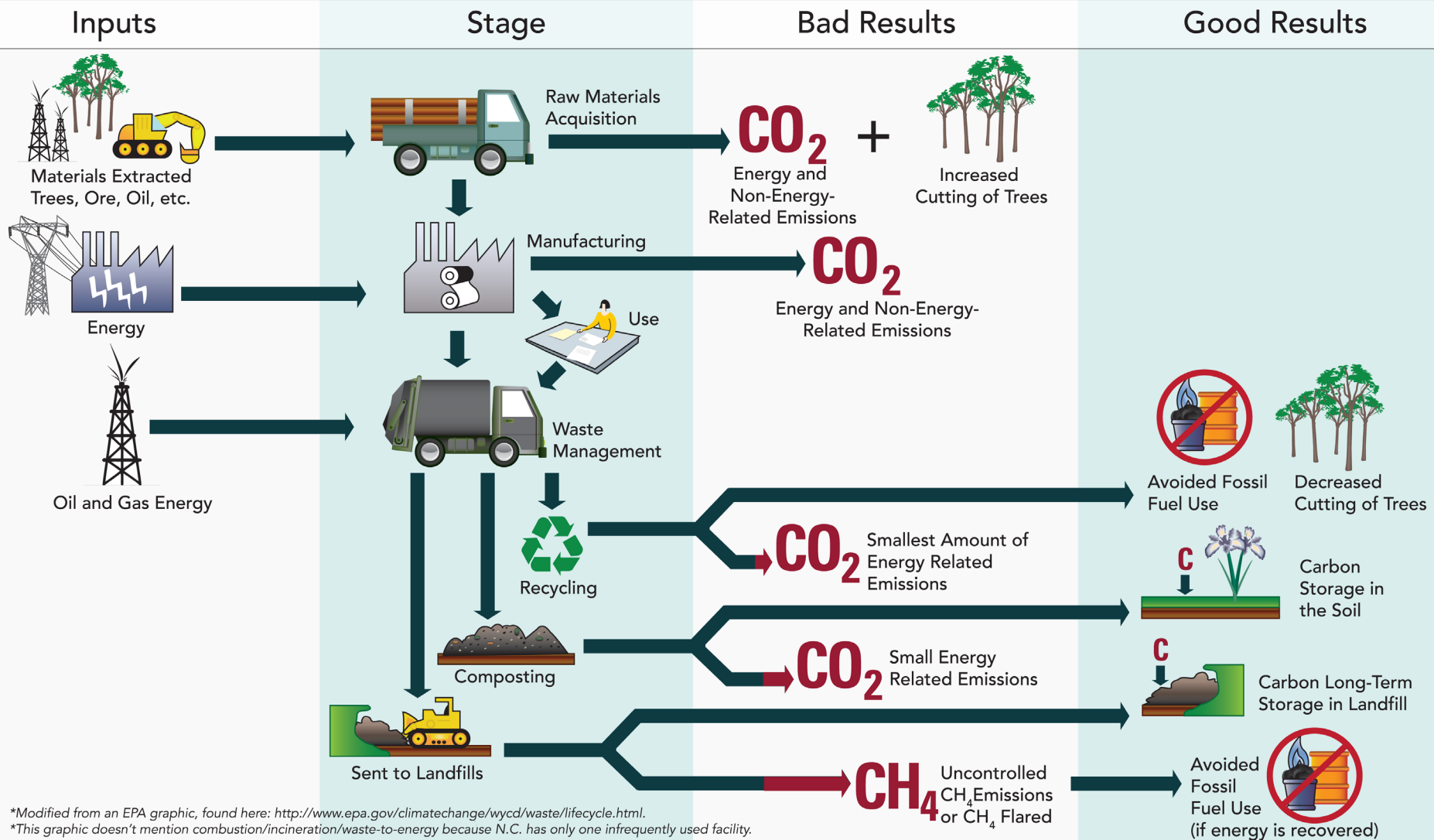


Hazardous Waste Collection



Last Chance Mercantile

# Waste and Its Link to Greenhouse Gas Emissions



\*Modified from an EPA graphic, found here: <http://www.epa.gov/climatechange/wyccd/waste/lifecycle.html>.  
 \*This graphic doesn't mention combustion/incineration/waste-to-energy because N.C. has only one infrequently used facility.



# Circular Economy



# Recycling Saves Energy: MRF 2.0 (2018)



Energy using recycled materials over raw virgin materials:

- Aluminum cans 85% savings
- Recycled steel 75% savings
- Recycled paper 70-85% savings
- Recycled glass and certain plastics 50% savings



# Organics in Landfills Creates Methane Gas





# Landfill Gas Renewable Energy Production (1983)





# Landfill Gas Renewable Energy Production





# Landfill Gas to CNG Vehicle Fuel





# HOW DOES COMPOSTING HELP THE ENVIRONMENT?



## GREENHOUSE GASES TRAP HEAT IN THE ATMOSPHERE

Greenhouse gases can contribute to the depletion of the protective ozone layer and cause climate change.

## HUMAN ACTIVITY HAS INCREASED GREENHOUSE GAS EMISSIONS OF:

- carbon dioxide (CO<sub>2</sub>)
- methane (CH<sub>4</sub>)
- nitrous oxide (N<sub>2</sub>O)
- fluorinated gases

*The best way we can help decrease methane emissions is to compost!*

## COMPOSTING DECREASES THE GREENHOUSE GAS, METHANE



Composting = recycling organic, decomposable, biodegradable waste into nutrient-rich fertilizer for our crops.

- + aerobic nature of composting produces very little methane
- + composting decreases the amount of trash that goes into landfills
- + composting decreases methane emissions

**Methane** is a greenhouse gas that is, over the course of 20 years, **72 times more potent than CO<sub>2</sub>**

*What are some everyday items that can be composted?*

- + Vegetable, fruit scraps
- + Leaves, grass
- + Shredded paper
- + Paper towels
- + Eggshells
- + Coffee grounds, filters
- + Bread, grains, pasta
- + Tea bags

## LANDFILLS ARE THE LARGEST HUMAN-MADE CONTRIBUTOR OF METHANE INTO THE ATMOSPHERE



When organic waste is disposed of in the trash, instead of composted, it ends up in a landfill. As the landfill is filled and covered, no air can pass through, causing anaerobic conditions. In these conditions, the decomposition of organic waste produces methane within the landfill that needs to be released.

*aerobic = air  
anaerobic = no air*

For more composting and environmental information, visit [www.recyclemorenc.org](http://www.recyclemorenc.org).



# Yard Trimmings Composting



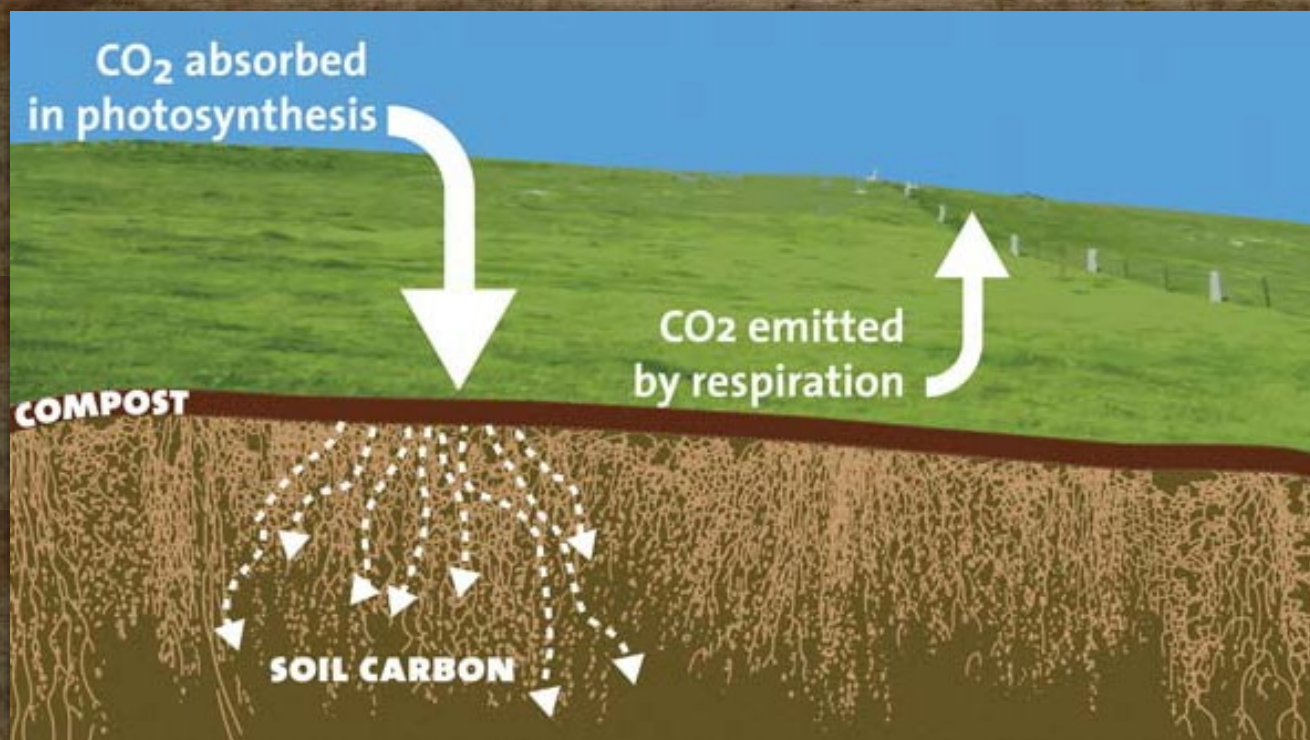
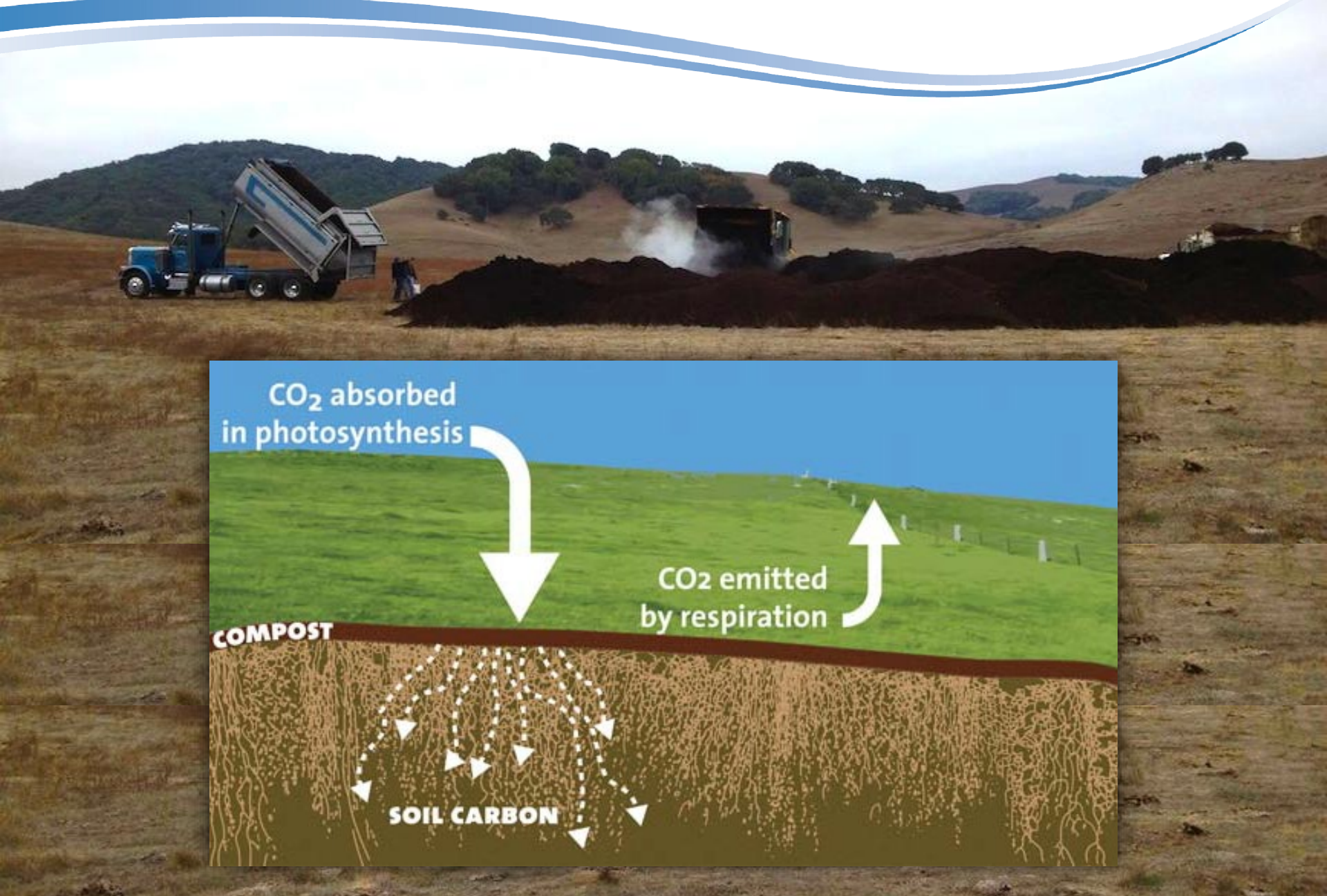


# Windrow Composting (late 1980s)





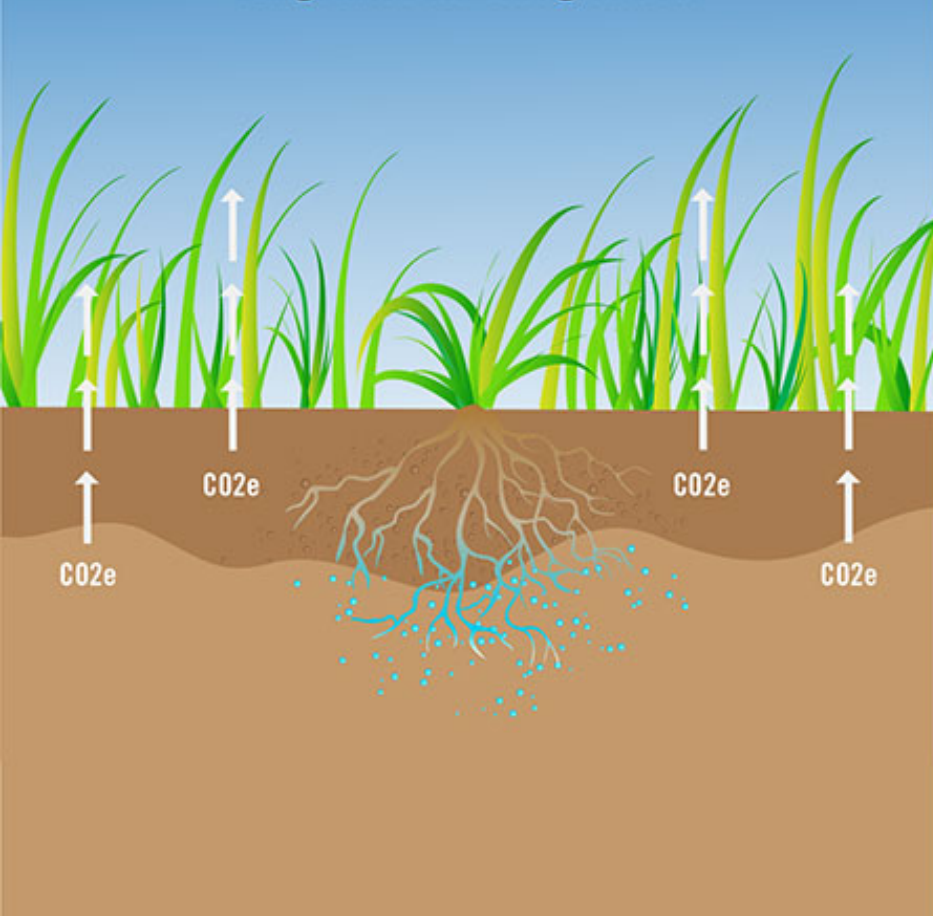
# A Solution: The California Carbon Project



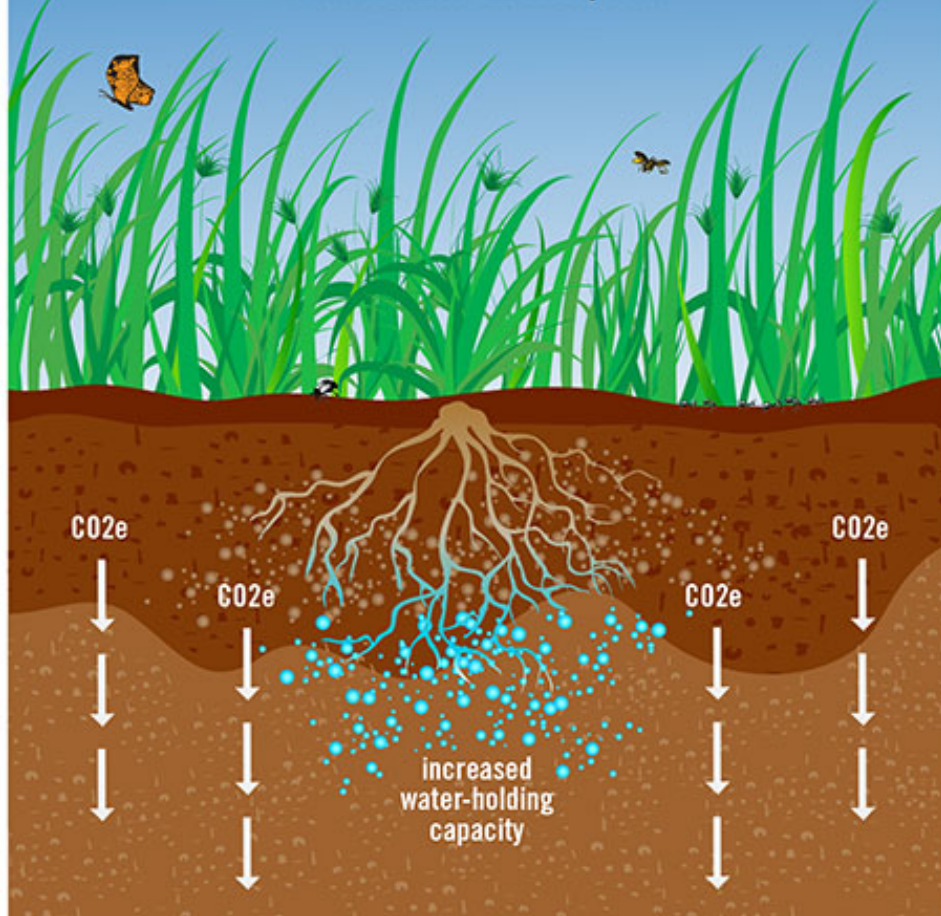




### Rangelands are losing carbon.



### The benefits of compost!



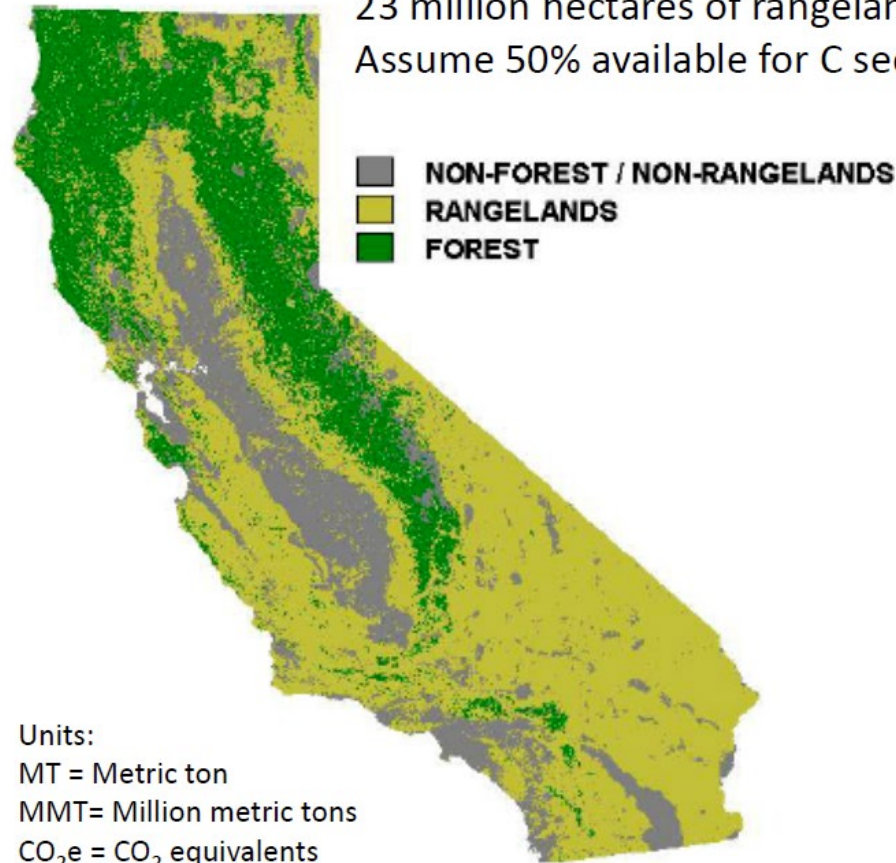
## IMPLICATIONS

Sequestration of just 1 Mg C ha<sup>-1</sup> y<sup>-1</sup> (or one metric ton per hectare) on half the rangeland area in California would offset 42 million metric tons of CO<sub>2</sub>e, an amount equivalent to the annual GHG emissions from energy use for commercial and residential sectors in California.

# A Solution: The California Carbon Project

## California Grasslands and Carbon Sequestration

23 million hectares of rangeland statewide  
Assume 50% available for C sequestration



Units:

MT = Metric ton

MMT= Million metric tons

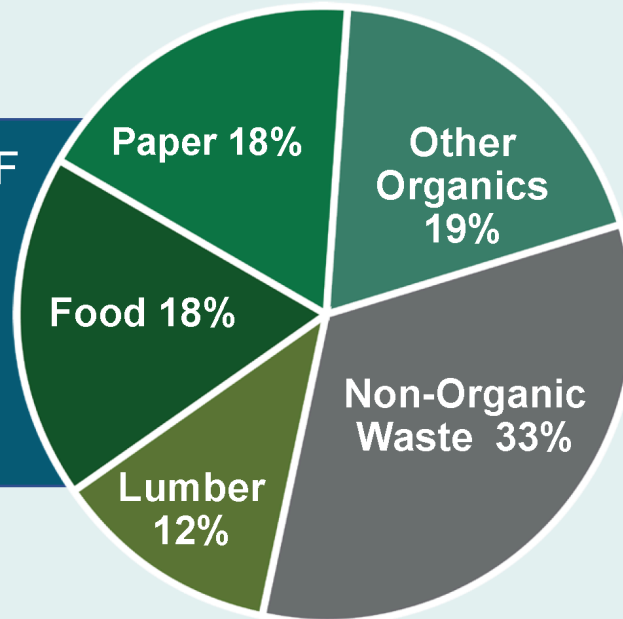
CO<sub>2</sub>e = CO<sub>2</sub> equivalents

MT=Mg=Metric ton



# Organic Waste Is the Largest Waste Stream in California

CALIFORNIA DISPOSED OF APPROXIMATELY 27 MILLION TONS OF ORGANIC WASTE IN 2017



California's Waste Stream

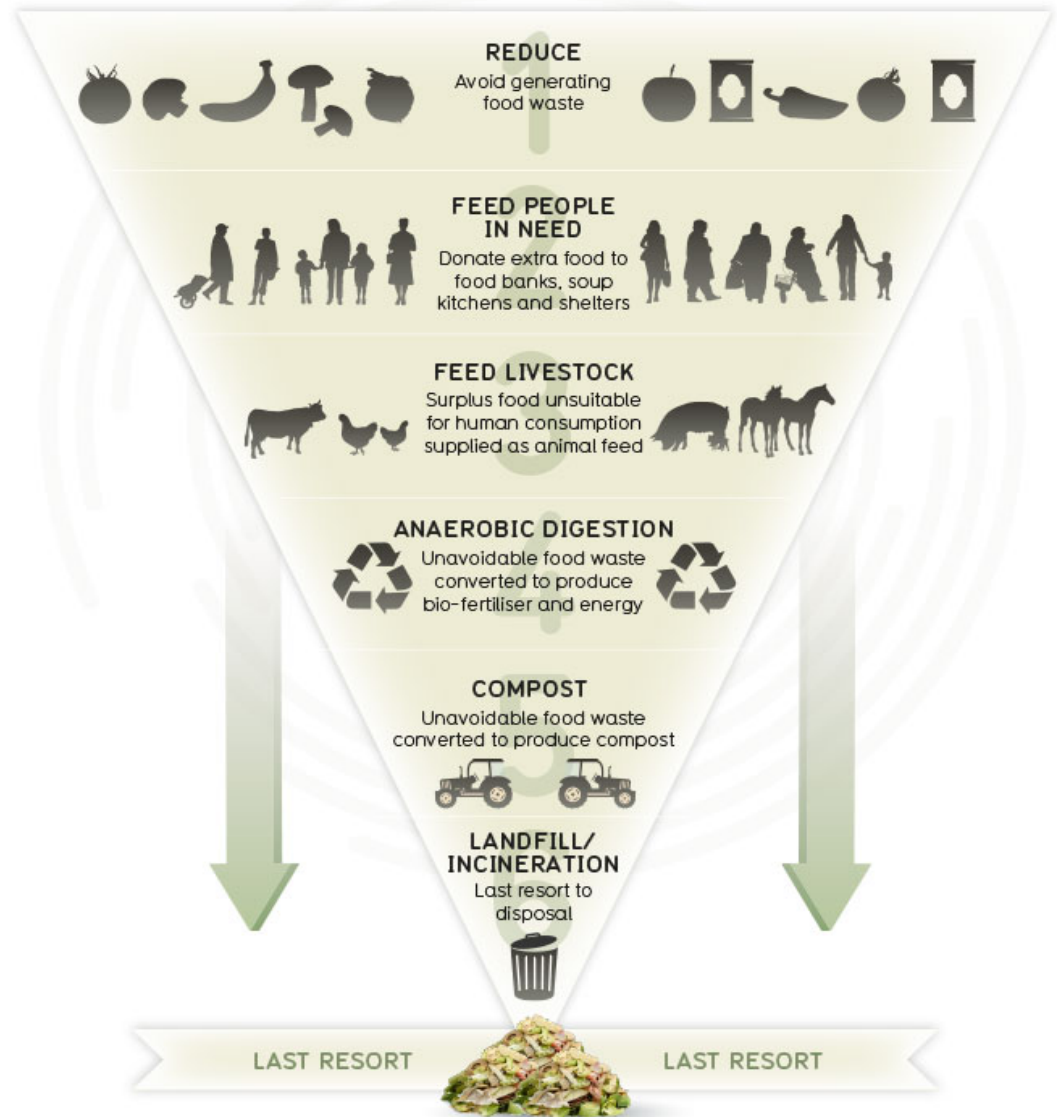
IN CALIFORNIA, MILLIONS ARE **FOOD INSECURE**

1 IN 8 CALIFORNIANS  
1 IN 5 CHILDREN



CALIFORNIA THROWS AWAY **MORE THAN 6 MILLION TONS** OF FOOD WASTE EVERY YEAR!

# Food Recovery Hierarchy







# Organics Legislation Guiding Our Mission

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**AB1826 - 2014**  
Mandatory Commercial  
Organics Recycling

**SB1383 - 2016**  
Short-Lived Climate  
Pollutant Reduction Strategy





# The Future of Organics



**75%**

reduction in statewide disposal of organic waste (from the 2014 level) by 2025

**20%**

of edible food that is currently disposed of is recovered for human consumption by 2025

SB 1383 (LARA) - 2025 TARGETS



# The Future of Organics





# The Future of Organics

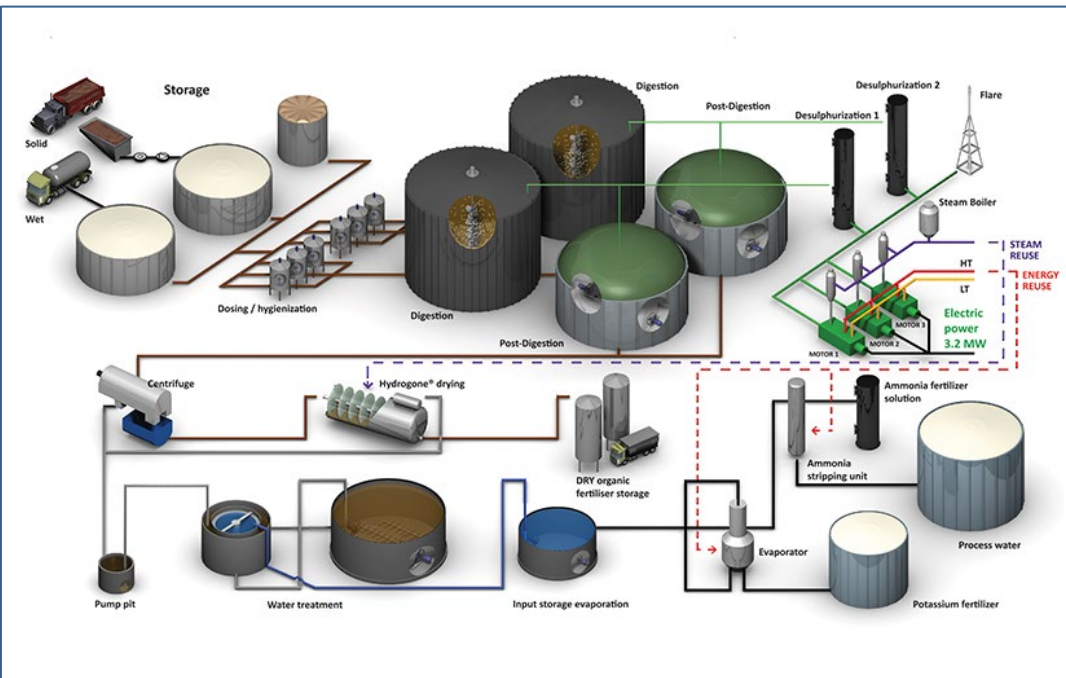




# Windrow Composting



# Wet Fermentation Anaerobic Digestion





# Dry Fermentation Anaerobic Digestion



Past  
(2013-19)



Future



# *Turning Waste into Resources*

Thank You

