The Organics Opportunity

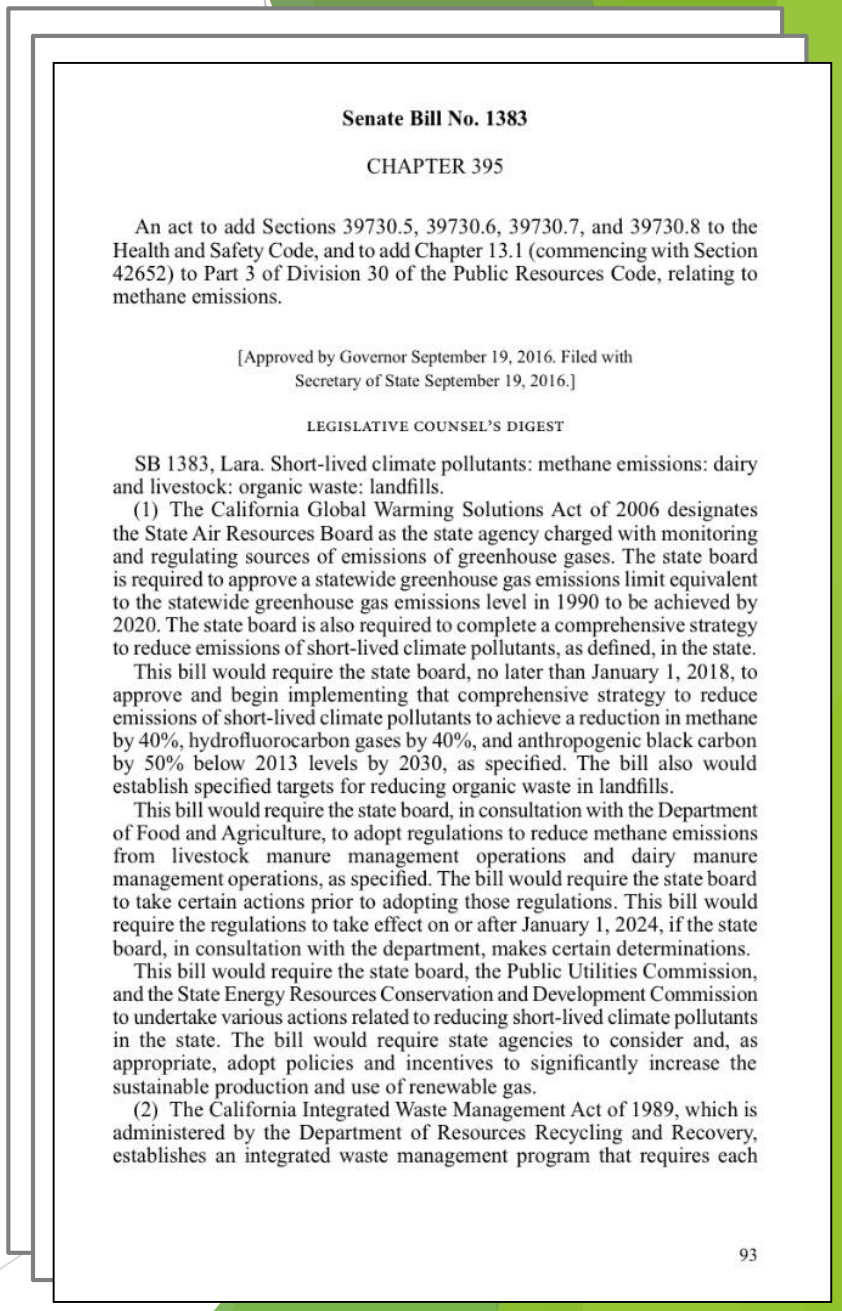
Organics mandates, a changing climate & environmental protection in the San Joaquin Valley

Evan Johnson

Science and Policy Advisor
CalRecycle

SB 1383

- ARB must present plan by January 1, 2018 to reduce short-lived climate pollutant emissions below 2013 levels by 2030 of:
  - Methane by 40%
  - Hydroflourocarbons by 40%
  - Anthropogenic black carbon by 50%
- Plan was approved March 2017
- ARB work with other agencies to meet goals
  - CDFA
  - PUC, CEC
  - CalRecycle



Senate Bill No. 1383

CHAPTER 395

An act to add Sections 39730.5, 39730.6, 39730.7, and 39730.8 to the Health and Safety Code, and to add Chapter 13.1 (commencing with Section 42652) to Part 3 of Division 30 of the Public Resources Code, relating to methane emissions.

[Approved by Governor September 19, 2016. Filed with Secretary of State September 19, 2016.]

LEGISLATIVE COUNSEL'S DIGEST

SB 1383, Lara. Short-lived climate pollutants: methane emissions: dairy and livestock: organic waste: landfills.

(1) The California Global Warming Solutions Act of 2006 designates the State Air Resources Board as the state agency charged with monitoring and regulating sources of emissions of greenhouse gases. The state board is required to approve a statewide greenhouse gas emissions limit equivalent to the statewide greenhouse gas emissions level in 1990 to be achieved by 2020. The state board is also required to complete a comprehensive strategy to reduce emissions of short-lived climate pollutants, as defined, in the state.

This bill would require the state board, no later than January 1, 2018, to approve and begin implementing that comprehensive strategy to reduce emissions of short-lived climate pollutants to achieve a reduction in methane by 40%, hydrofluorocarbon gases by 40%, and anthropogenic black carbon by 50% below 2013 levels by 2030, as specified. The bill also would establish specified targets for reducing organic waste in landfills.

This bill would require the state board, in consultation with the Department of Food and Agriculture, to adopt regulations to reduce methane emissions from livestock manure management operations and dairy manure management operations, as specified. The bill would require the state board to take certain actions prior to adopting those regulations. This bill would require the regulations to take effect on or after January 1, 2024, if the state board, in consultation with the department, makes certain determinations.

This bill would require the state board, the Public Utilities Commission, and the State Energy Resources Conservation and Development Commission to undertake various actions related to reducing short-lived climate pollutants in the state. The bill would require state agencies to consider and, as appropriate, adopt policies and incentives to significantly increase the sustainable production and use of renewable gas.

(2) The California Integrated Waste Management Act of 1989, which is administered by the Department of Resources Recycling and Recovery, establishes an integrated waste management program that requires each

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Elements of Short-Lived Climate Pollutant Plan

- Black Carbon
  - Residential Fireplace and Woodstove Conversion
  - SIP Measures and Clean Energy Goals
- Methane
  - Dairy and Livestock (Manure and Enteric Fermentation)
  - **Organics Diversion from Landfills**
  - Wastewater, Industrial, and Other Sources
  - Oil and Gas
- HFCs

Organic Waste Policy Drivers

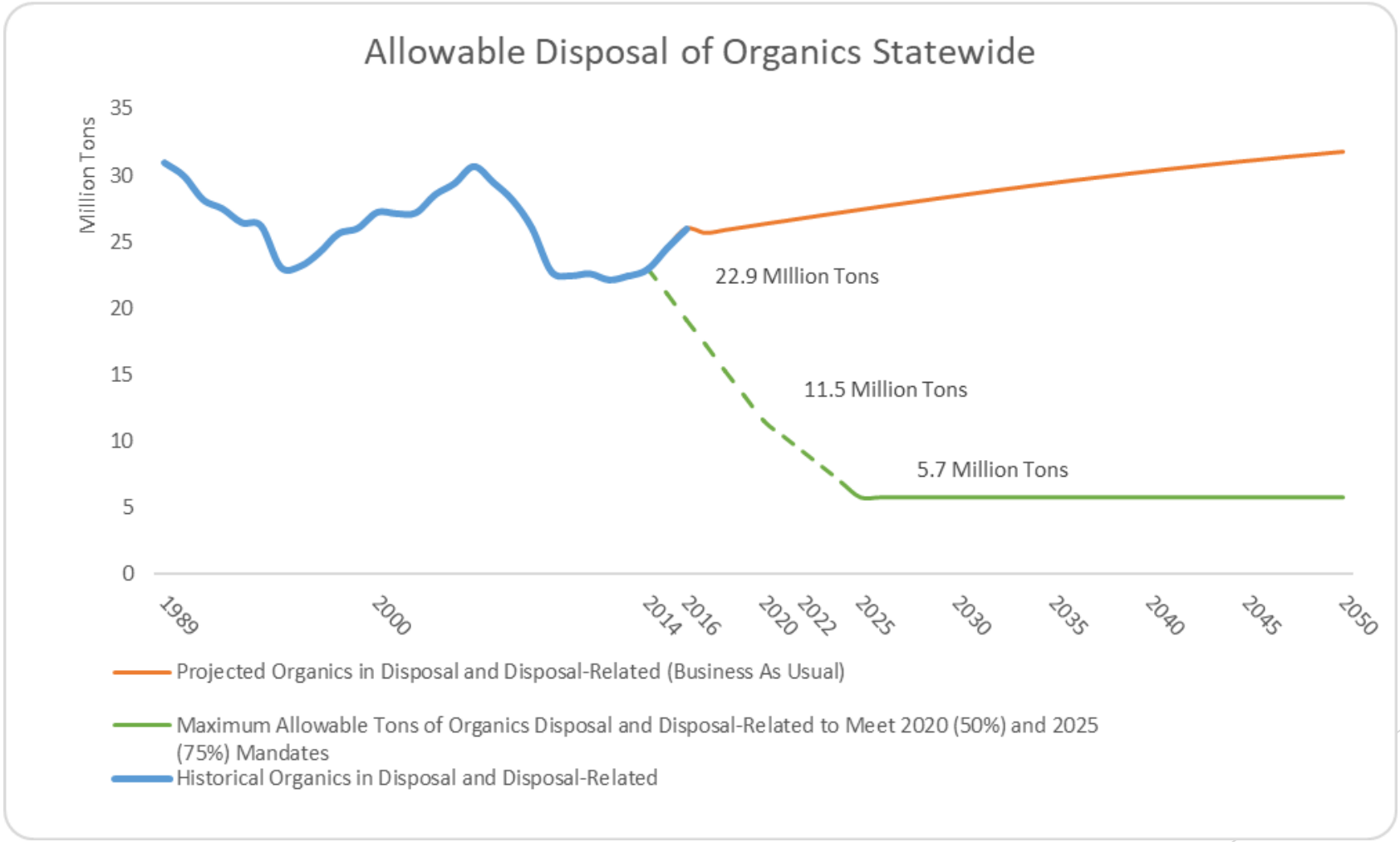
Mandatory Commercial Organics Recycling

Requires the commercial sector to recycle organic materials, such as landscaping waste, food and food-soiled paper. Phased in through 2019.

Short-Lived Climate Pollutants

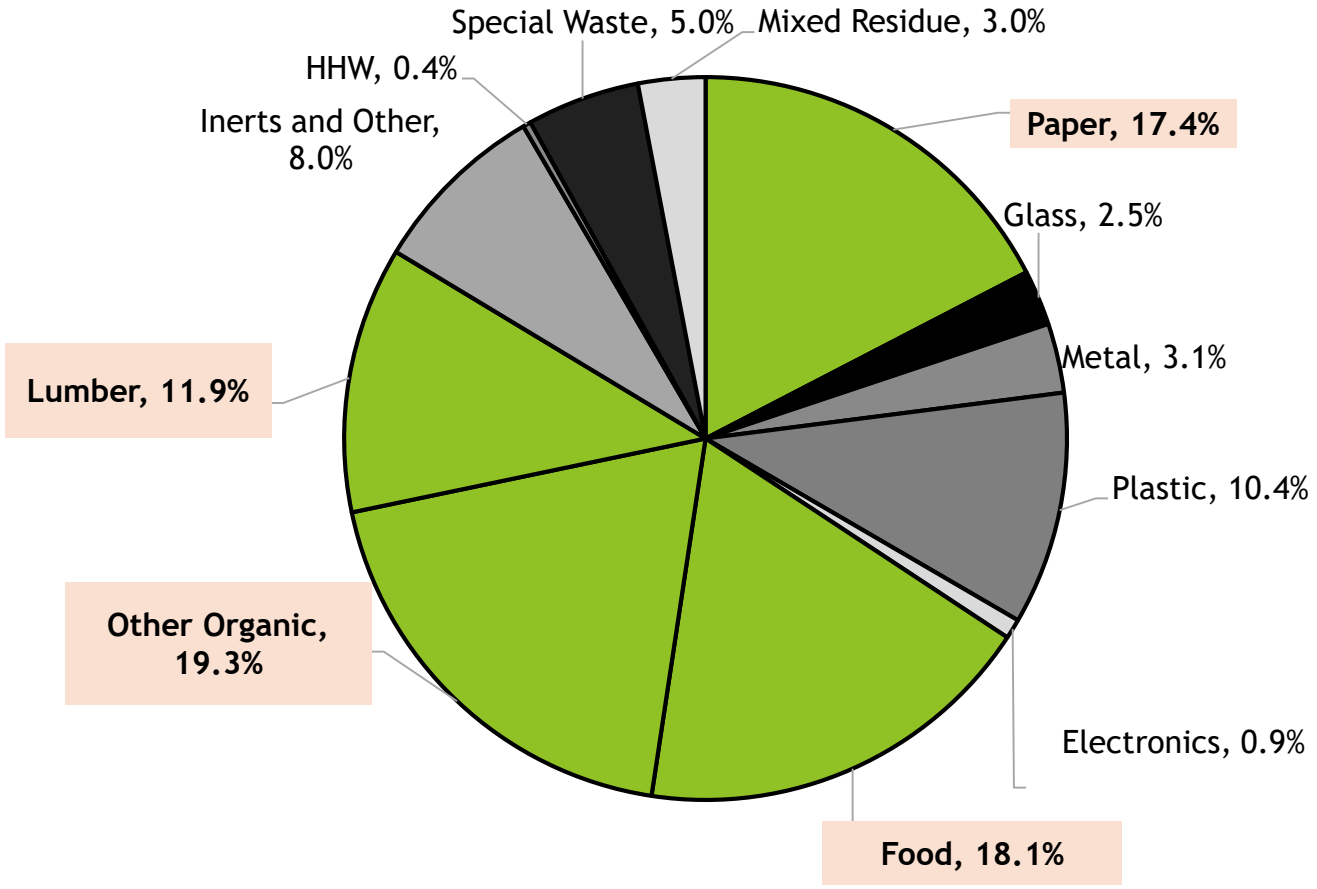
- ⬇ anthropogenic methane emissions 40% by 2030.
- ⬇ organic materials going to landfills by 75% by 2025.
- ⬇ edible food disposed in landfills 20% by 2025.

How Much Material Needs to be Diverted?



2014 Disposal Stream

Organic waste >20 million tons disposed of at landfills



*From CalRecycle's Waste Characterization Study (2015). Does not include biosolids or *alternative* daily cover at landfills.

To Be Clear…

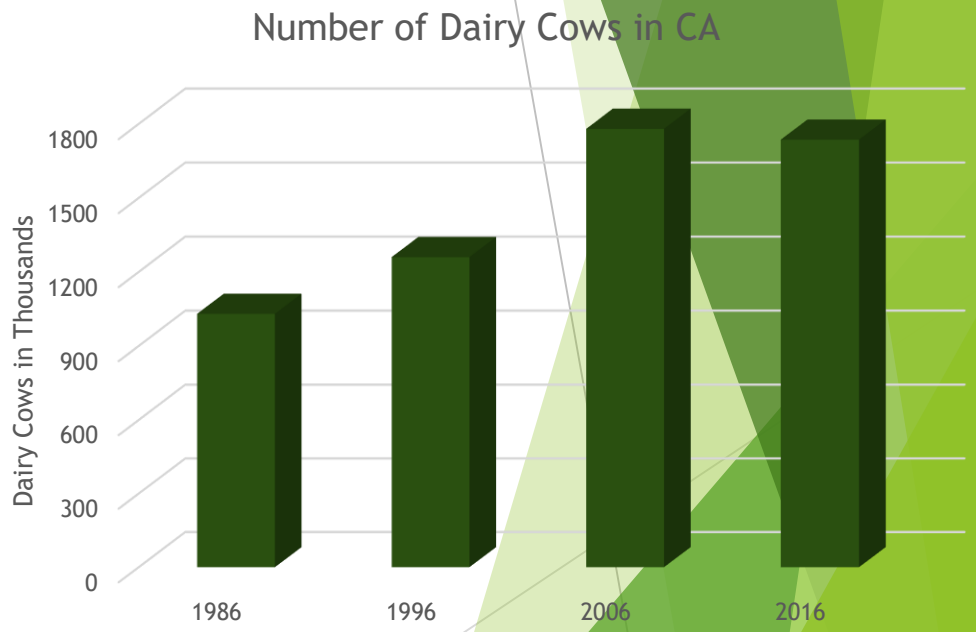
We want LESS of our organic resources wasting away in landfills, not MORE

And yet…

- We are drowning in a sea of woody waste
- Forests being thinned for fire protection
- Bark beetles, shothole borers and other pests will kill millions more trees in forests and in urban areas over coming decade
- Biomass (wood-burning power plants) facing competition from other renewables, such as solar and wind power
- 21 biomass plants operating in CA, down from 63 in the ‘90s
- Millions of tons of wood-burning capacity idled or shut down permanently
- 2016 legislative action mandates utilities purchase 125 MW biomass power; 80% of that must be from forest thinning wastes
- Limited markets for urban-derived wood

Dairy Manure

- CA is the top state in dairy production in US
- $21 billion economic impact
- = ~100,000 tons of dairy manure **per day** statewide
- San Joaquin Valley has 1.54 million milk and dry cows
- ½ of all methane emissions in CA come from dairy and livestock operations
- SB1383: reduce methane from dairies 40% by 2030



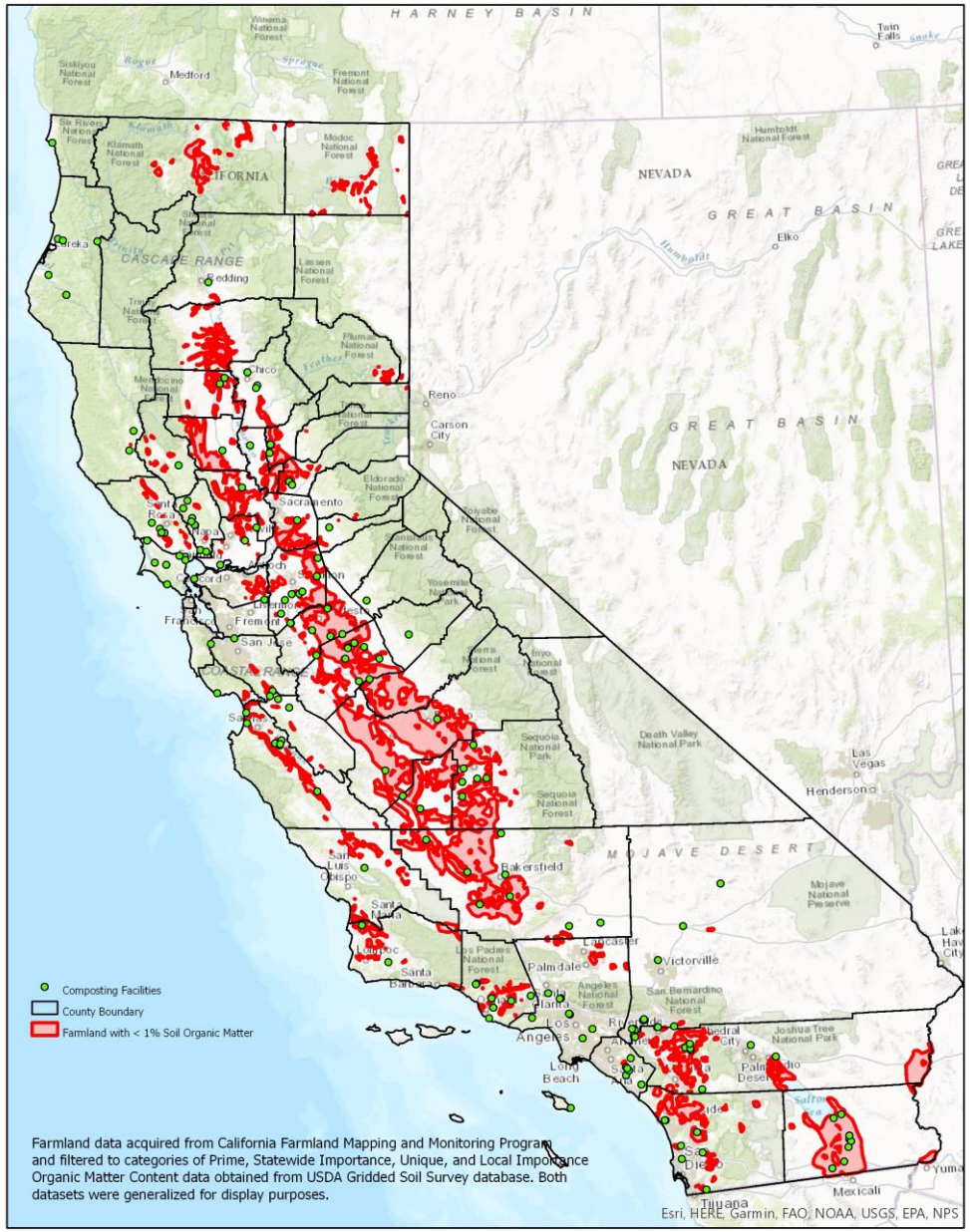
Composting as a Solution

- Manure is a valuable feedstock for composting
- Can stabilize the nitrogen in manure so more is available for uptake by crops
- Reduce potential for nitrogen leaching to groundwater or run off to surface water from raw manures
- Can reduce air emissions of N_2O (greenhouse gas 298x CO_2) and NH_4 (ammonia, precursor for fine particulates) from raw manures
- Manure composts better when mixed with a bulking agent like **ground trees**
- Wood chips are an excellent **biofiltration medium** for composting sites

Healthy Soils: Potential for Improving Air Quality

- Compost and mulch application as a part of a systems approach to natural working lands management can reduce criteria air pollutant emissions
  - PM_{10} ($PM_{2.5}$) emissions from degraded soils
  - VOC emissions by reducing need for pesticide application
  - NOx emissions by reducing need for synthetic fertilizer application
  - Reduce emissions associated with irrigation by decreasing irrigated water needs
- Reduce GHG emissions directly and indirectly
  - Reduce methane emissions from landfills
  - Sequester carbon in roots and surrounding soil through increasing soil organic matter and enhancing plant growth from compost addition

California Farmland with Critically Low Soil Carbon (<1%)



Compost Considerations

- VOCs from composting
  - Most are low reactivity, ubiquitous light alcohols
  - Modern compost methods can capture, destroy VOCs
- NO_x from diesel-powered equipment
  - Electric equipment and aerated static pile technology can reduce emissions
- Water quality impacts
  - Aerated static pile could shrink footprint and lower water protection costs
- Transportation of materials

Win Win Solutions

- Need new compost capacity to legislative goals
- On site or clustered composting around dairies can create valuable soil amendments out of manure
- These sites can also make valuable products out of surplus woody materials and reduce open burning
- Reduce ammonia and N_2O emissions
- Reduce risk of water contamination
- More jobs, healthier soils, more resilient Central Valley

Thank You

Evan Johnson

Science and Policy Advisor
CalRecycle

Evan.Johnson@CalRecycle.ca.gov