

Urban Biomass

(that's jargon for tree trimmings)



Managing Woody Waste in a Changing World

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California Bioresources Alliance Symposium

November 2, 2016

A bit of history to begin

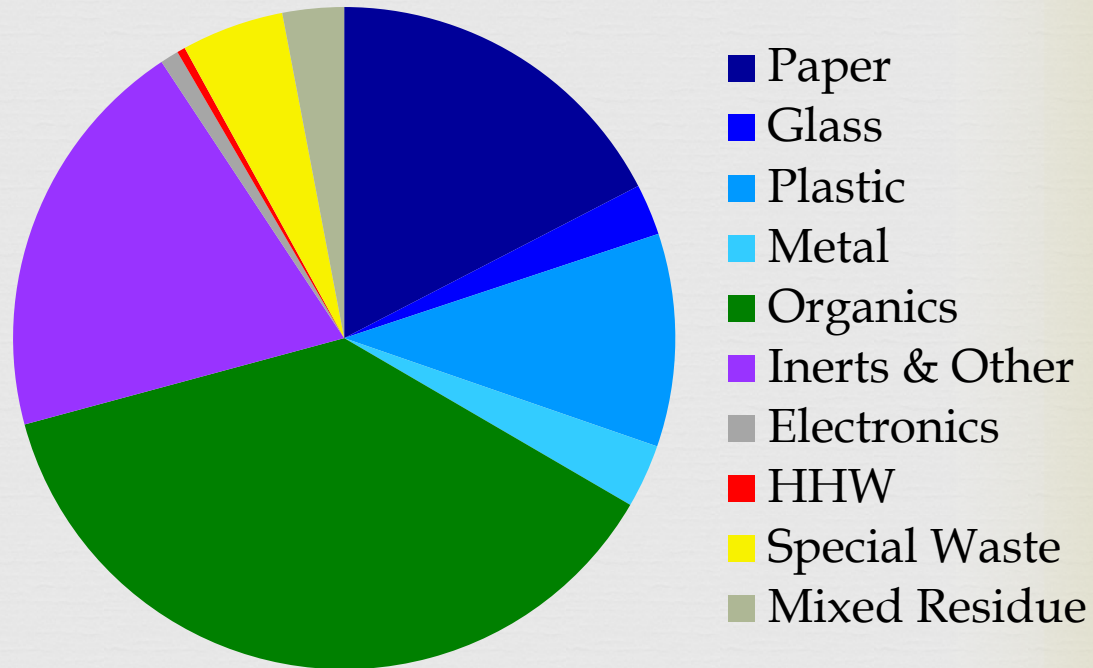


- ❧ On the third day, God created the grass of the field, the herbs, and the trees...
- ❧ And there He put the man that He had formed, to tend the garden...
- ❧ And we are still working on where to take all those trimmings!
- ❧ Fast forward to 21st Century California, with waste diversion mandates.

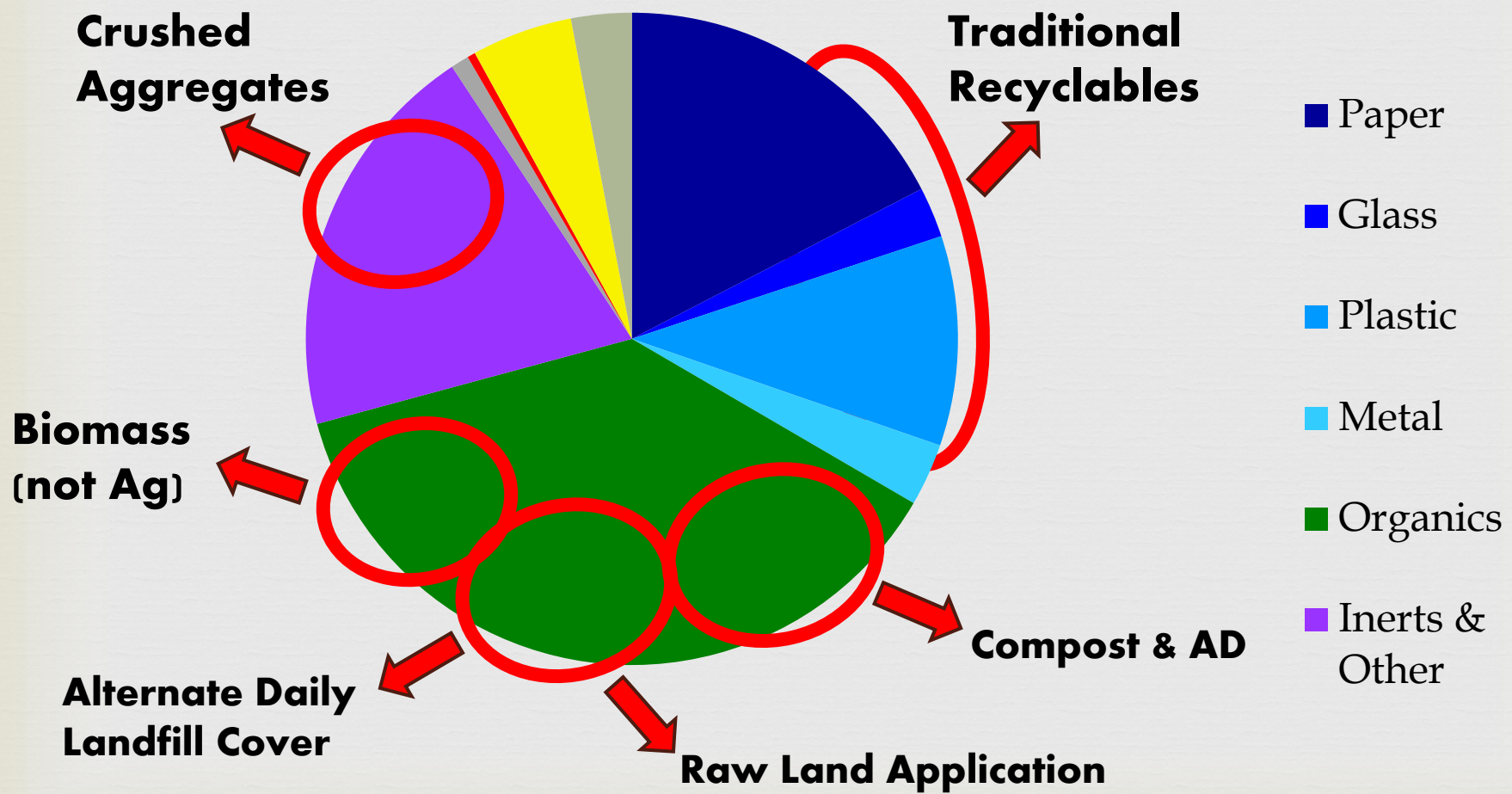
California State Recycling Goals vs. Waste Content



CalRecycle Waste Study



Main Methods for Recycling



So, What's the Problem?



California's Organic



**Alternate Daily
Landfill Cover**

Land Application

So, What's the Problem?



California's Organic Recycling Success



~~Alternate Daily
Landfill Cover~~

Compost
and AD

Raw Land Application

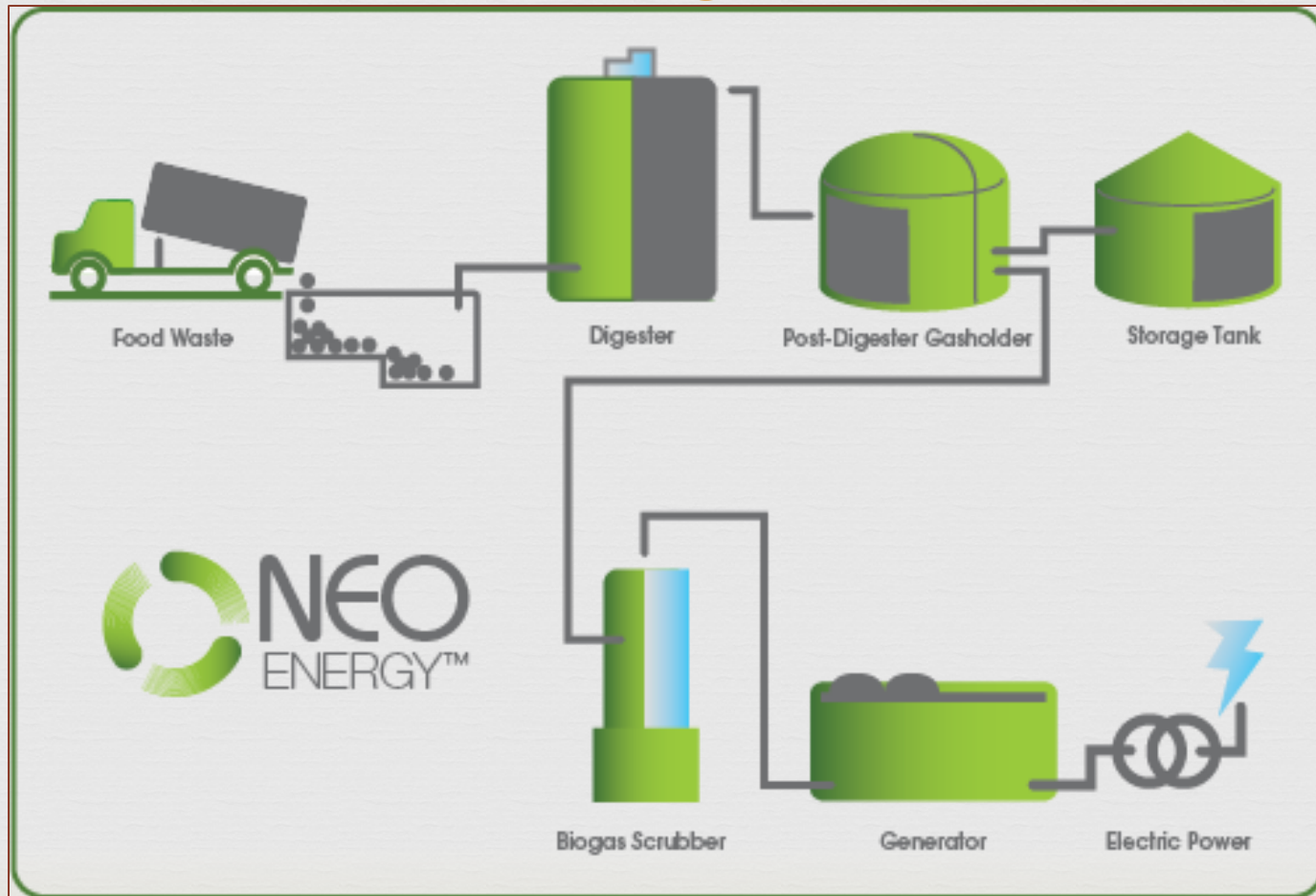
~~Biomass~~

Composting – Good for the Soil But Too Much Wood Spoils the Recipe



So...
Composting can only absorb
limited amounts of excess
wood.

Anaerobic Digestion Not Suitable for Woody Waste



Greenwaste Landfilled as Alternate Daily Cover (ADC)

Mostly a Southern California Approach



But...
AB 1826 stops
recycling credit
for greenwaste
landfill cover
in 2020.

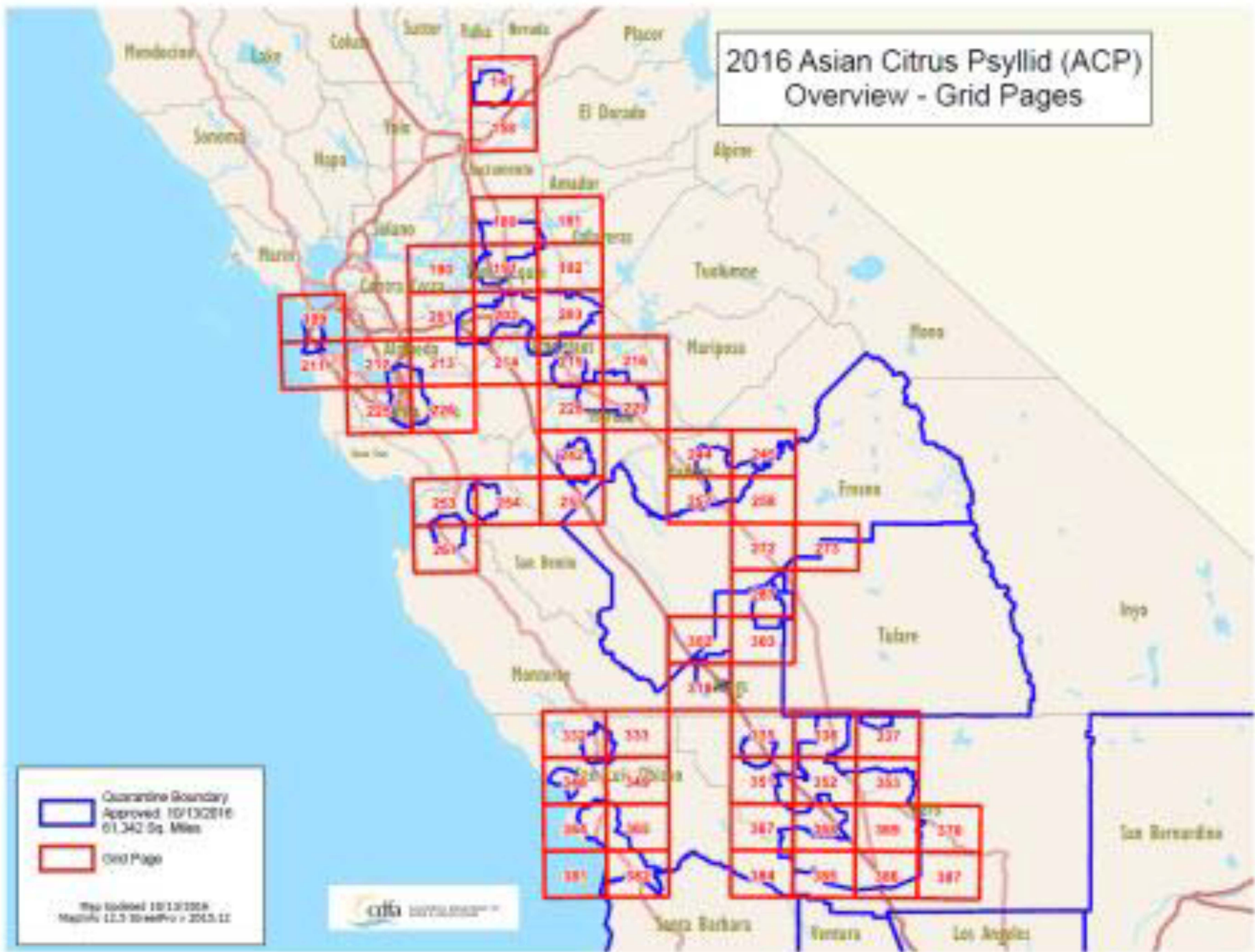
Raw Land Application (Un-composted Soil Amendment)



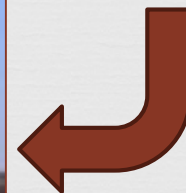
Helpful, but has
some limitations:

- ❧ Ag Pest
Quarantine Zones
- ❧ No Pathogen Kill
- ❧ Woody Carbon
Uses Up Nitrogen
Fertilizers

2016 Asian Citrus Psyllid (ACP) Overview - Grid Pages



Good Old 90s Solution Ag and Urban Wood Made Electricity



But Now, Cheap Solar Power is In! Displacing Existing Wood-to-Energy Systems



Discounts and Tax
Credits to Start



No Responsibility for
End-of-Life Costs



- Business Journals are forecasting high legacy costs.
- DTSC is beginning to address hazmat issue.

Unintended Consequences



- ❧ \$100 million subsidy to use excess forest fuel
- ❧ Open burning of orchard wood
- ❧ Spread of ag pests via raw land application
- ❧ Drain on California agriculture economy
- ❧ More energy and water to compost excess wood
- ❧ Economics favor landfilling
- ❧ Future legacy costs for old solar panels

Options are Limited



- ❧ ADC - No more recycling credit
- ❧ Raw Land App - Pest and pathogen issues
- ❧ Composting - Shortage of facility capacity
- ❧ Open Burning - Air pollution
- ❧ New Small Scale Power Plants - Let's hope!

New Energy Projects



- ❧ Wood to Ethanol Research (didn't pencil in the '90s)
- ❧ Renewable Portfolio Increase
- ❧ Biomat Tariff for Small Projects < 3 Megawatt
- ❧ Syngas for Distributed Generation
- ❧ Burn Box Potential
- ❧ Flux Capacitor (coming in 2015)...stay tuned

Contact Info



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Free wood chips – Get'em while they last.