



CR&R



A HIGHER STANDARD OF RESPONSIBILITY
WASTE & RECYCLING SERVICES



Service, Stewardship and Sustainability



SANITATION DISTRICTS OF LOS ANGELES COUNTY



Environmental Services



WESTHOFF, CONE
& HOLMSTEDT



WHY BIOENERGY ?

- Lowest Carbon Transportation
- Baseload renewable energy
- Reduce petroleum dependence, air and water pollution, GHG emissions
- Reduce landfilling
- Reduce toxic air contaminants, environmental justice impacts from diesel pollution
- Reduce wildfire risks and impacts
- Provide jobs and economic development in every region of the state



Organic Waste in California



- More than 500 WWTP's
- 278 landfills
- 1600 dairies
- 16 million tons of organic waste landfilled per year
- Organic waste = 3 out of 5 top methane sources in CA
- Wildfire causes 52% of all black carbon emissions in CA

Diverted Organic Waste – Food, yardwaste, FOG, construction, soiled paper

- Could produce **492 million gge's of carbon negative fuels or 450 MW**



Landfill Gas

- Could produce 457 million gge's or 330 MW



Livestock Waste



- Could produce **102 million gge's** or **500 MW**



Wastewater Treatment Facilities



- Could produce **50-150 million gge's or 150-450 MW**

Agricultural and Forest Waste

- Could generate **982 million gge's or > 600 MW**



Bioenergy in CA can provide:

- 243 Billion cubic feet of renewable gas
- 2.1 Billion gallons of fuel (gge)
- Enough to replace 2/3 of all the diesel used in CA vehicles
- More than 10% of CA's total electricity or natural gas needs
- Lowest carbon transportation of any kind



Gasoline	99.18
Diesel	98.3
Hydrogen from natural gas	98
Biodiesel from Midwest soy beans	83.25
Corn ethanol	74.70 to 120.99
Natural Gas	68
Sugarcane ethanol	58.4 to 78.94
Hydrogen	39.42
Electric vehicles	30.80
Renewable Diesel	19 to 39
Landfill gas	11.26 to 15.56
Dairy Biogas	13.45
Wastewater biogas (large facilities)	7.89
Biogas from diverted food and green waste	- 15



Policy Drivers for Bioenergy

- AB 32 / SLCP's
- LCFS and RINs
- RPS / SB 1122
- Waste reduction goals
- Wildfire risks
- Wastewater treatment





Challenges for Bioenergy

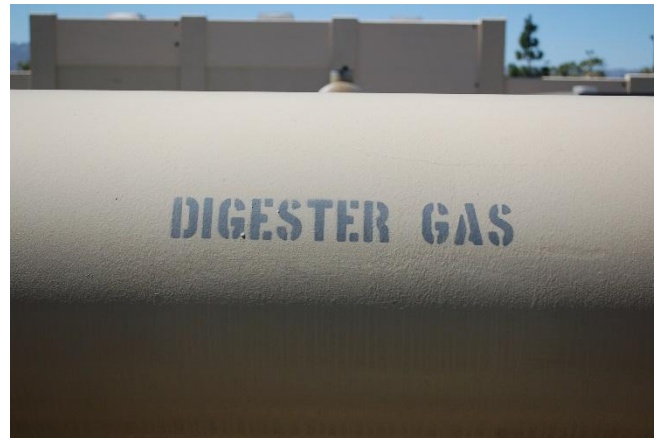
- ☐ Cheap fossil fuel gas
- ☐ Utility Resistance and CPUC rules
- ☐ No long term contracts for LCFS fuels
- ☐ Stringent / expensive pipeline standards





Renewable Gas Standard (RGS)

- Require a percentage of pipeline gas from renewable sources
- Provide market certainty
- Build on proven success of RPS in electricity sector



Renewable Gas Standard (cont'd)

- Recommendation:
 - 1% RGS by 2020
 - 3% RGS by 2023
 - 5% RGS by 2025
 - 10% RGS by 2030
- Applies to all retail gas sellers
- Must meet requirements of AB 2196 (additionality, instate benefits)



THANK YOU

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