

Pacific Southwest Organic Residuals Symposium

Organics, Air, and Water Challenges and Opportunities

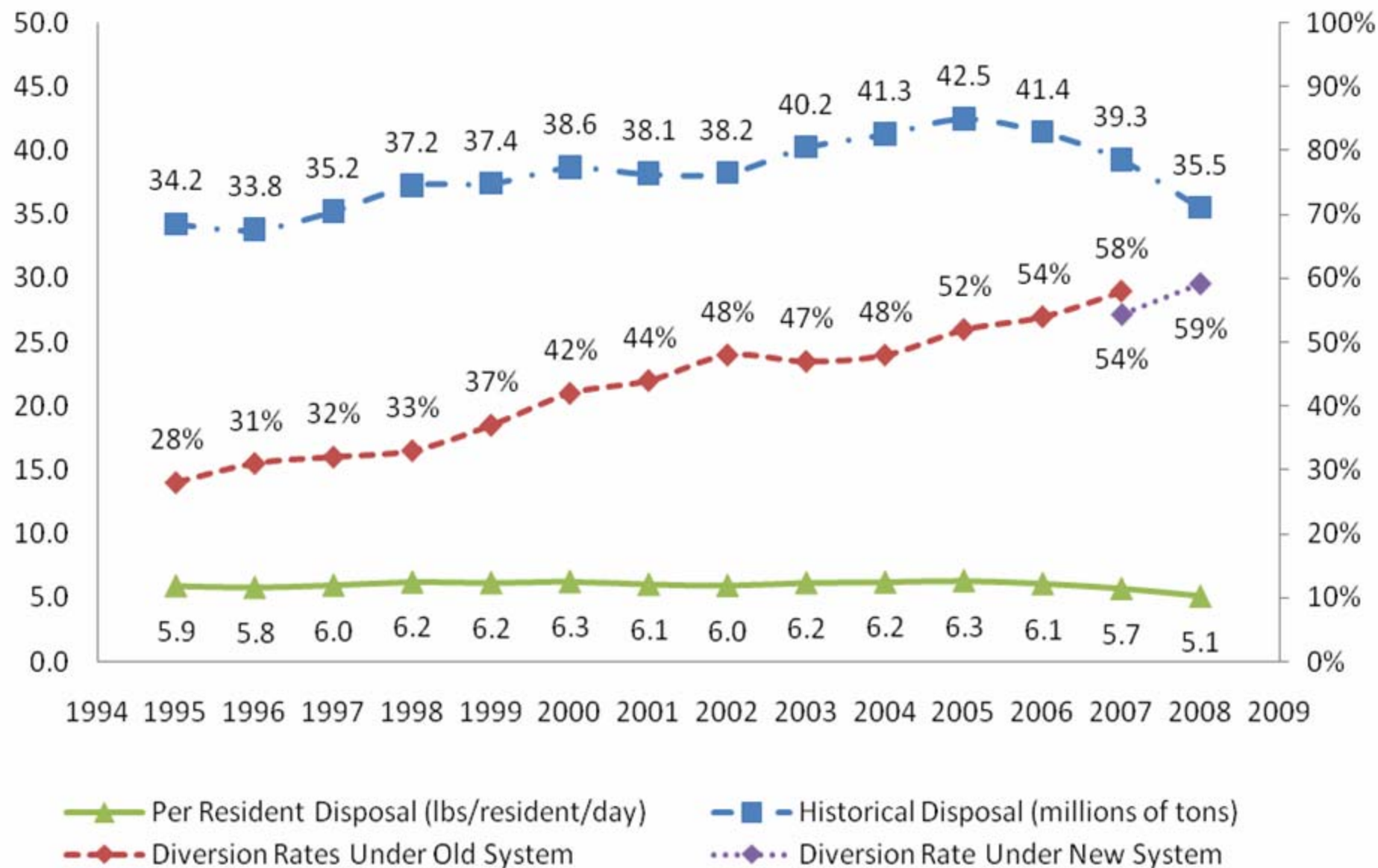
Howard Levenson, CIWMB

September 24, 2009

Integrated Waste Management Act (Assembly Bill 939)

- **Enacted 1989**
- **All cities and counties must reduce solid waste sent to landfills by 50% in 2000 and beyond**
- **Created waste management hierarchy**
- **Still current law in California**
 - **Legislature discussing 75% statewide goal**

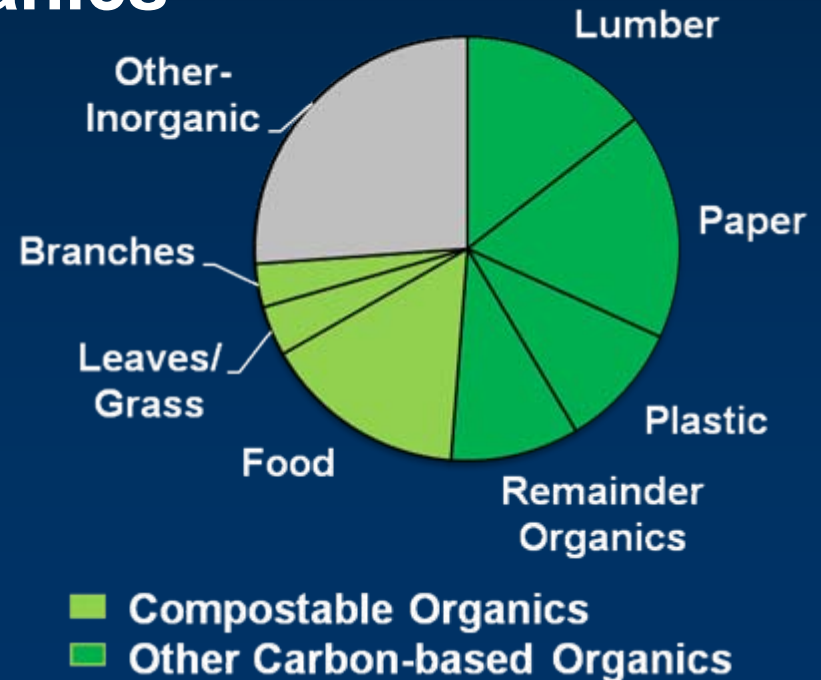
Historical Statewide Disposal, Per Capita Disposal, & Estimated Diversion Rates





Current Landfill Disposal

- 36 Million tons disposed 2008
 - 70% carbon-based organics
 - 15% - food
 - 25% - compostable organics
 - 17% - paper





Compost Benefits

Compost use:

- Provides nutrients
- Improves soil structure, porosity, bulk density
- Improves water holding capacity in sandy soils
- Creates more neutral pH balance in soil
- Provides growing environment for germination, vegetation, & deep root systems



Compost Benefits

Assists with erosion control by:

- Absorbing falling rain, reducing runoff
- Providing environment where seeds can germinate and grow to hold soils in place
- Increasing water penetration into heavy soils
- Encouraging formation of soil aggregates



Before and After Compost Application



Before and After Compost Application





CIWMB Organics Strategic Directive

- Reduce organics disposal 50% by 2020
- Need more capacity - 15 million tons/year
- Dozens of facilities
- Major issues
 - Siting, financing, ADC, regulations, procurement, etc.

CA Composting Facilities

According to latest assessment:

- **Approximately 115 compost facilities and 115 chip / grind facilities**
 - Use > 9 million tons feedstock/year
 - Produce 6 million cubic yards
- **About 30 biomass to energy plants**
 - Consume 5 million bone dry tons annually

Number of Composting Facilities Since 2000

	<u>2000</u>	<u>2003</u>	<u>2008</u>
Facilities in Operation:			
Composters	104	101	115
Processors	65	69	115
	169	170	230



Cross-Media Regulatory Challenges/Issues

- **Air Quality**
 - AQMD regulations re: emissions
- **Water Quality**
 - State/Regional Water Board re: salinity
 - Food safety
- **CDFA**
 - Licensing
 - Diseases/pests
- **Climate Change**

Emissions from Compost Piles

- Compost piles can give off VOCs
- When certain VOCs mix with NO_x in presence of sunlight → photochemical “smog”
- Smog includes ground-level ozone
- Clean Air Act regulates ozone levels, mandates cutting precursors like VOCs



AQMD Regulations

- **Local air quality districts enforce federal Clean Air Act & their own rules**
- **Districts with co-compost rules:**
 - South Coast AQMD
 - Mojave AQMD
 - Antelope Valley AQMD
 - San Joaquin Valley Unified APCD
- **Greenwaste composters next ?!?!
– San Joaquin Valley Unified APCD**



2006 Emissions Studies

City of Modesto Compost Facility

- Composting VOC emissions -- analyzed 100 samples from four compost windrows
- Calculated life-cycle VOC emissions factor for greenwaste and food waste windrows
- Tested emissions-reducing potential of two best management practices

(contact Bob Horowitz: rhorowit@ciwmb.ca.gov)



2009 Emissions Studies

- **San Joaquin Valley-wide Air Pollution Study Agency -- how to manipulate temperature, moisture, pH, or oxygen levels to reduce emissions**
- **CIWMB / UC Davis -- specific VOCs from compost piles, and ozone-forming potential**

Water Issues

- Leachate and/or storm water runoff from composting operations is “designated waste”
- Application on land is “discharge of waste to land”
- State Water Board had statewide order for green waste composting – “waiver” from more prescriptive requirements
- SB 390 terminated existing waivers of WDRs by January 1, 2003
- Statewide green waste order was not reissued
- Facilities now handled on case-by-case basis

Regional Water Boards

- **In lieu of statewide order, Regional Boards:**
 - Case-by-case, sometimes via Title 27
 - Some have proposed region-specific general orders
- **Santa Ana Regional Board emergency waiver**
 - Suspended WDR requirement for compost application on land damaged during 2008 Freeway Complex Fires

Food Safety

- **State Water Board also concerned about food safety**
 - Use of unprocessed dairy manure on crops intended for human consumption
 - Use of compost on food crops
 - Efficacy of regulations on facilities that produce compost



Water Quality Cross-Media Efforts

- **Statewide order for greenwaste composting**
 - Joint public workshop August 2009 to discuss draft Statewide Waiver from WDRs
 - Not waiver from standards, but performance-based provisions as statewide template?
- **Quarterly meetings with State and Regional Boards, Caltrans, CIWMB**
- **Technical Advisory Groups re: food safety**

CDFA Issues

- **AB 856**
 - Licensing of fertilizer products
- **Sudden Oak Death**
 - Past studies - pathogen reduction via composting
- **Light Brown Apple Moth & Citrus Psyllid**
 - New quarantines, pre-processing prior to transport

Organics & Climate Change

- **ARB Scoping Plan adopted December 2008**
 - Measures re: organics and anaerobic digestion
- **Organics beneficial use can reduce methane from landfills and N₂O from agriculture**
- **Debates re: landfill gas collection efficiency, carbon sequestration, lifecycle impacts**

Organics & Climate Change

- **Organics in general**
 - Caltrans specs and workshops
 - Ag specs
 - Review CIWMB regs re: food waste
- **Anaerobic digestion**
 - Links to RPS, LCFS
 - Review CIWMB regs re: AD permitting
 - Programmatic EIR

(contact Ken Decio: kdecio@ciwmb.ca.gov)



Cross-Media Opportunities

- **Cooperation on statewide waiver & identifying cost-effective compost BMPs**
- **Fill data gaps on air emissions**
- **Conduct compost BMP projects**
- **Caltrans/local government workshops on compost specs & applications**
- **Programmatic EIR**