

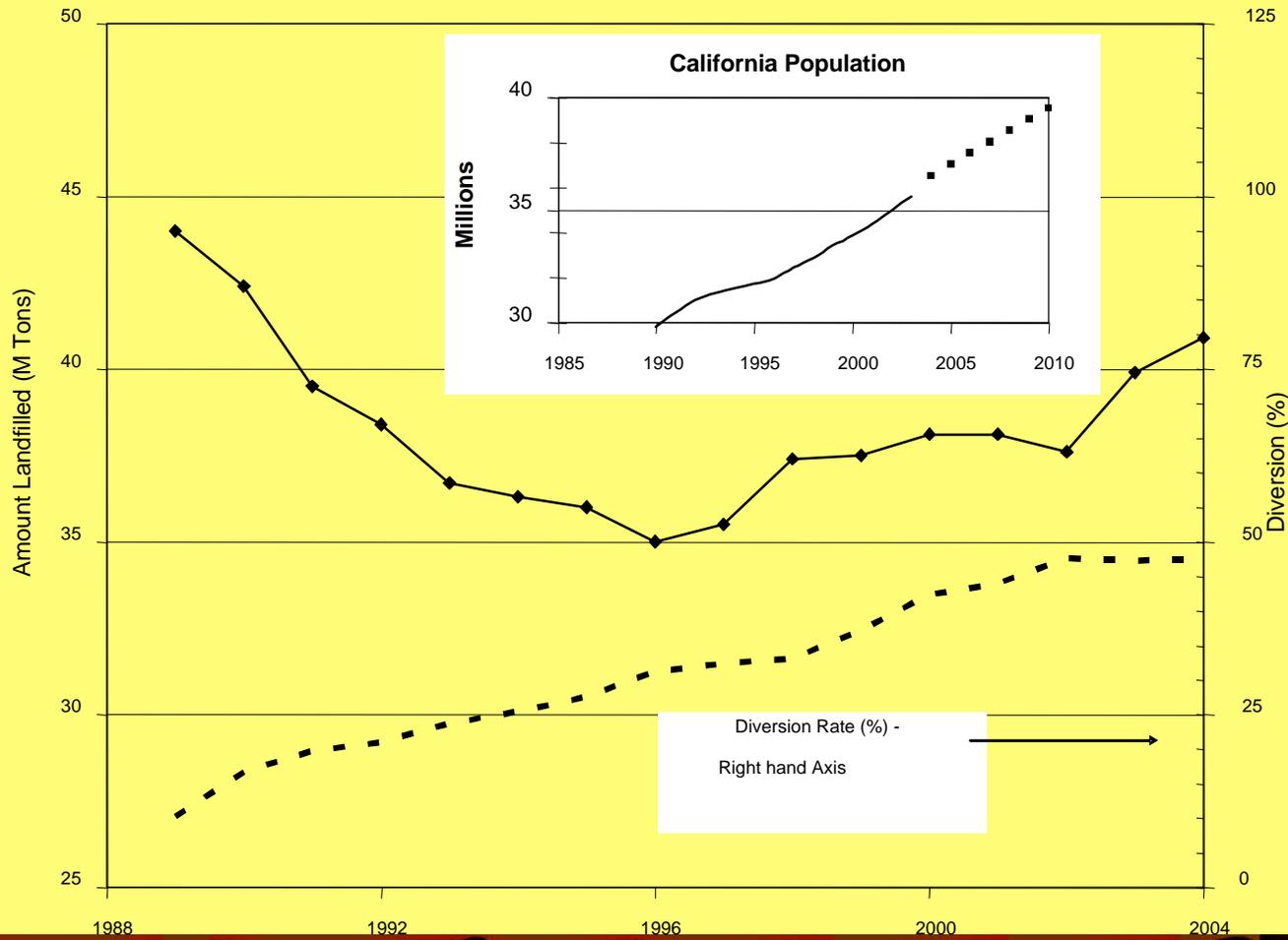
Harvesting Emerging Technologies

*Sowing the Seeds of
Change*

Statewide Policy Drivers

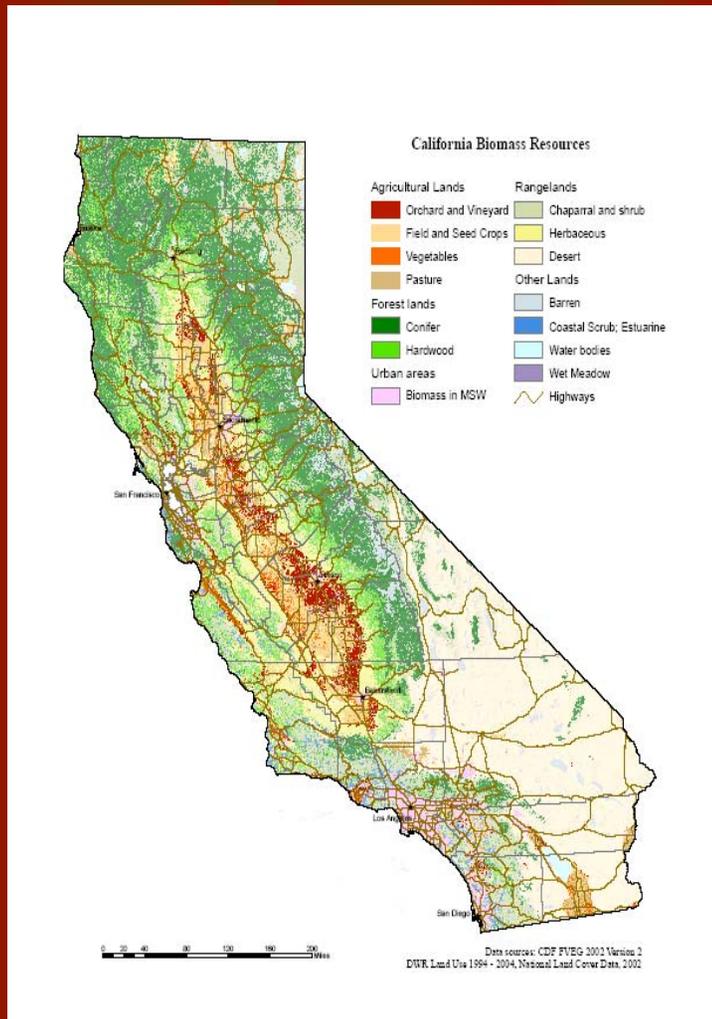
- Integrated Waste Management Act
- Strategic Directive 6.1
- Strategic Directive 8.4
- Strategic Directive 9.0

Total Disposal vs. Statewide Diversion



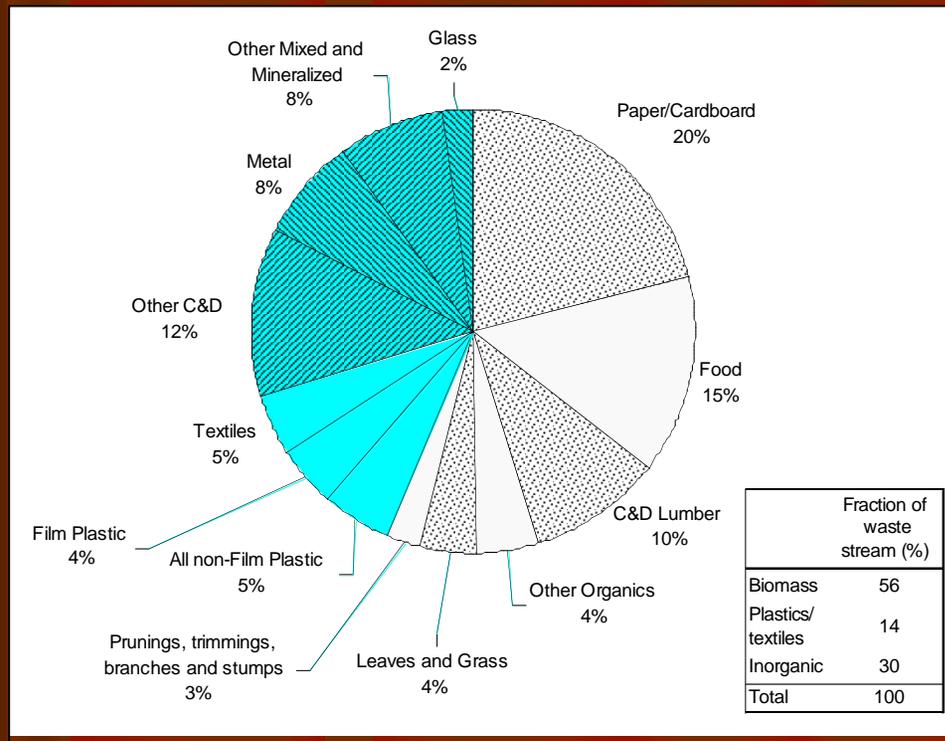
Source: Rob Williams, California Biomass Collaborative

Biomass Resources in California



- Gross resources are 80 million bone dry tons annually
- Three principal resources are agriculture, forestry, and waste
- Forestry in northern and central mountains
- Agriculture in Central Valley
- Waste in Los Angeles and San Francisco Bay Area

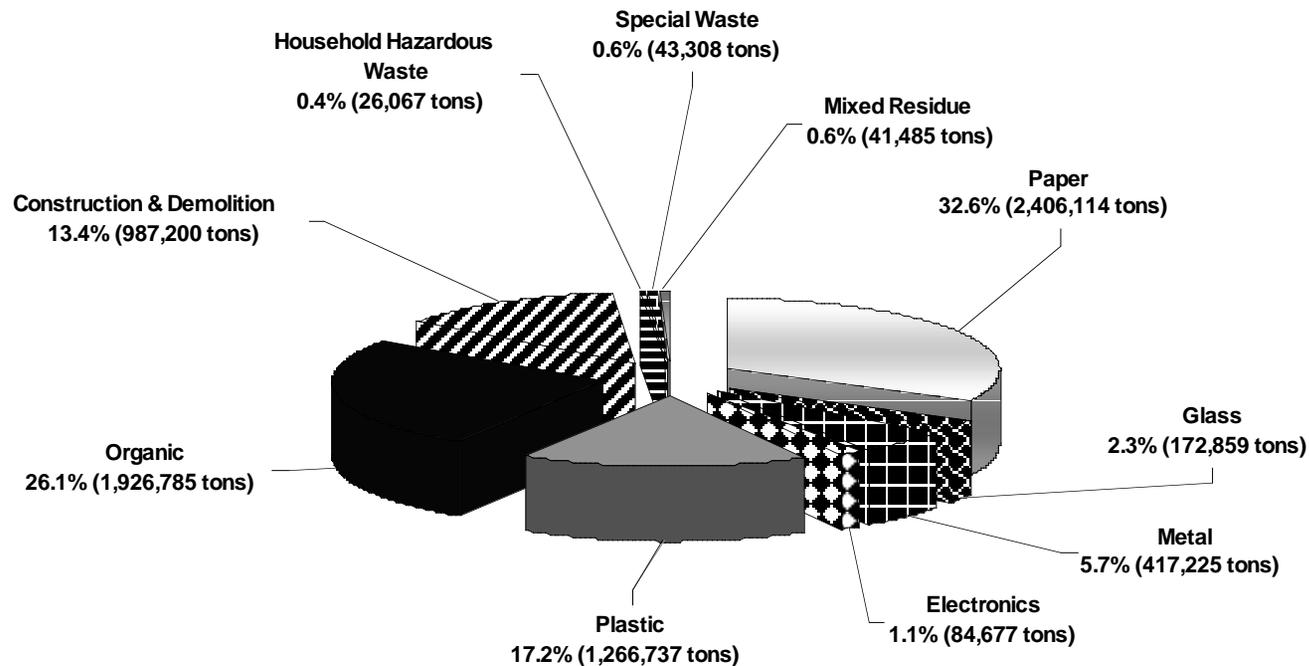
Waste Characterization in California



- 42 million tons disposed in 2005
- 23 million tons biological in origin
- 5.7 tons plastic and textiles

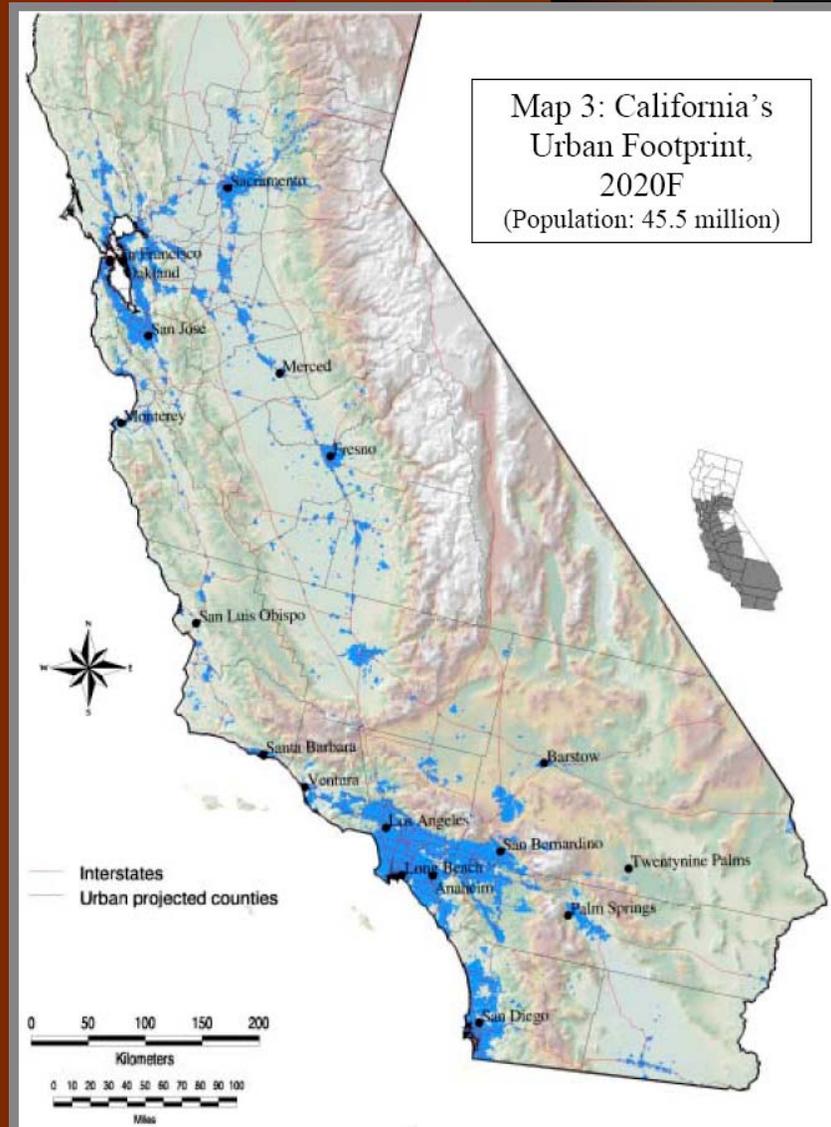
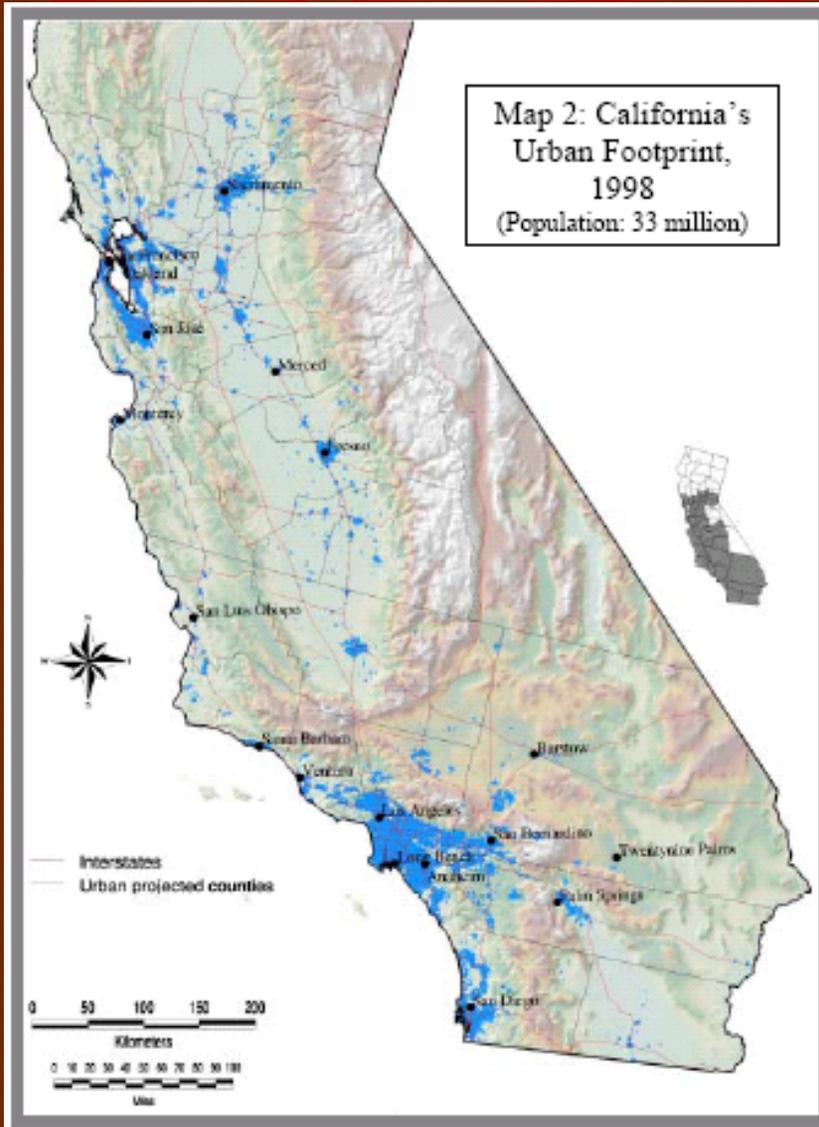
Available Residuals – Overall (7.4 Million Tons)

Figure J
Summary of Composition of Residuals - Overall MRFs, 2005

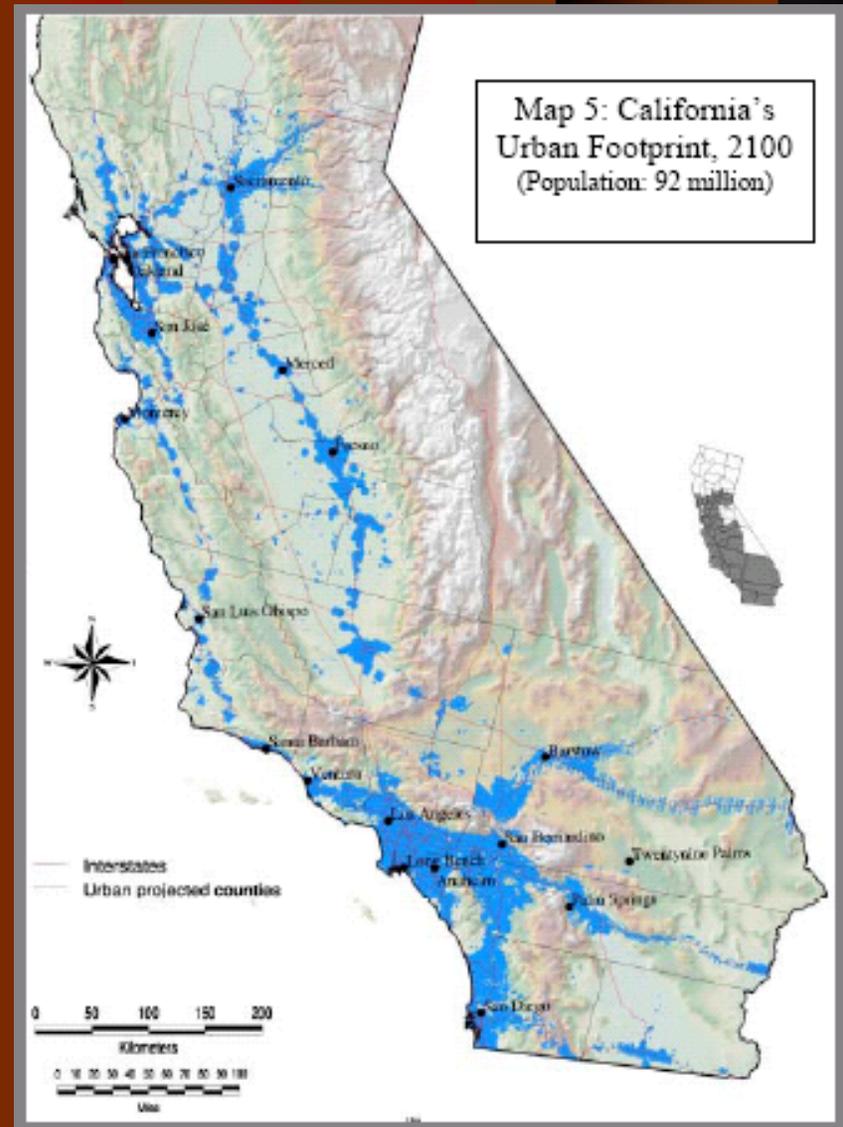
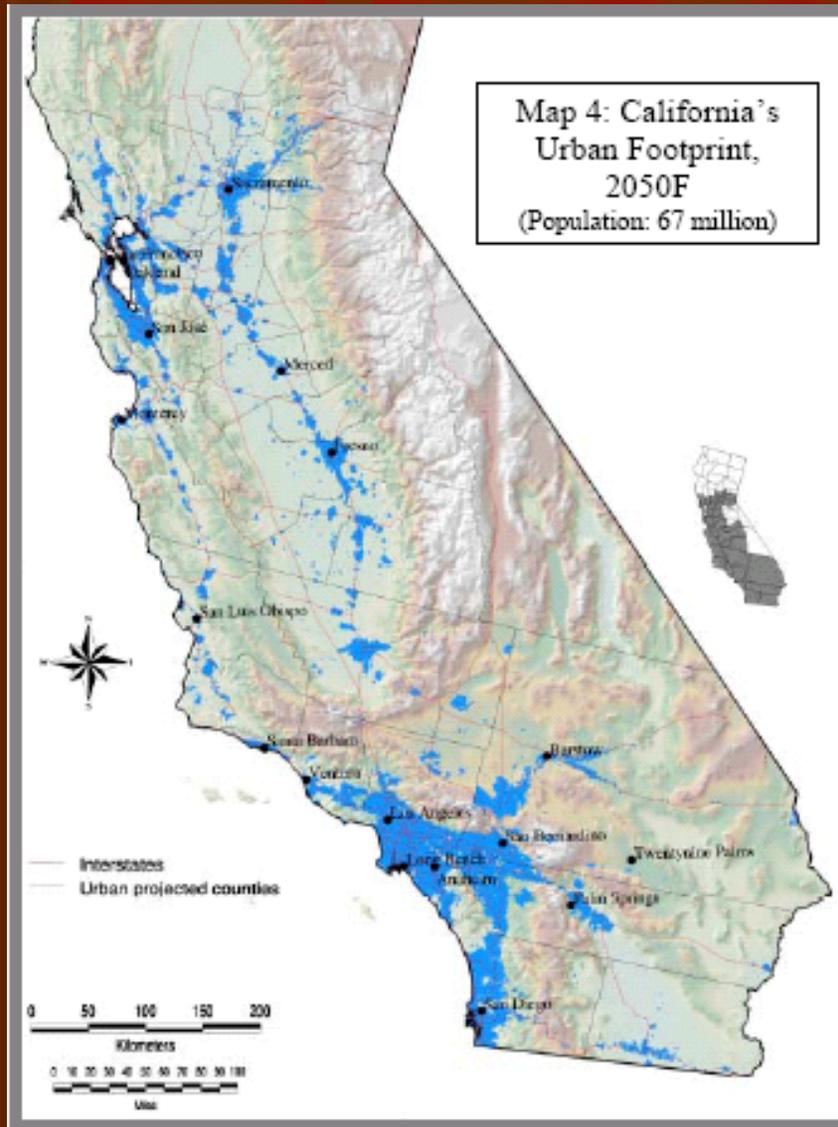


Total Residual Weight is 7,372,456 tons

Note: Percentages calculated by weight as the average proportion of each material type to the total residual weight



Source: Landis, 2004



Source: Landis, 2004

Energy Potential

Table 1 California annual disposed waste characterization (wet basis) and potential energy. *

	Landfilled ^a 2004 (million tons)	wt % of Total	Moisture ^b (%wb)	Landfilled (million dry tons)	Ash / mineral matter (million tons)	HHV ^b (BTU/dry lb)	Chemical Energy			Electricity Potential ^d		
							Potential (PJ) ^c	Equivalent barrels of oil (millions)	Fraction of total (%)	(MWe)	(GWh y-1)	(rank)
Paper/Cardboard	8.6	19.7	10	7.7	0.5	7650	125	20.2	30	791	6928	1
Food	6.0	13.7	70	1.8	0.3	6000	23	3.7	6	204	1790	6
C&D Lumber	3.9	9.0	12	3.5	0.2	6450	14	2.3	3	384	771	8
Prunings, trimmings, branches, stumps and green ADC ^e	3.7	8.4	40	2.2	0.1	8175	9	1.5	2	240	371	9
Other Organics	1.8	4.1	4	1.7	0.1	3800	38	6.1	9	88	2105	5
Leaves and Grass	1.7	3.9	60	0.7	0.2	8300	61	9.8	15	42	3365	3
Biomass Components of MSW Total^e	25.7	59.0		17.6	1.3		269	43.6	65.1	1750	15,330	
All non-Film Plastic	2.1	4.8	0.2	2.1	0.0	9475	42	6.8	10	264	2313	4
Film Plastic	1.8	4.1	0.2	1.8	0.1	19400	73	11.9	18	466	4083	2
Textiles	1.8	4.2	10	1.7	0.1	8325	29	4.7	7	184	1614	7
Non-Biomass Organic Components of MSW Total	5.7	13.2		5.5	0.22		144	23.4	34.9	914	8011	
Other C&D	4.9	11.3		4.9	4.9	-	-	-	-	-	-	-
Metal	3.1	7.2		3.1	3.1	-	-	-	-	-	-	-
Other Mixed and Mineralized	3.1	7.1		3.1	3.1	-	-	-	-	-	-	-
Glass	0.9	2.2		0.9	0.9	-	-	-	-	-	-	-
Inorganic Components of MSW Total	12.1	27.8		12.1	12.1	0	-	-	-	-	-	-
Totals^e	43.5	100	19	35.2	13.7	(ave.) 5300	413	67	100	2664	23,341	

Source: Rob Williams, California Biomass Collaborative

Energy from Solid Waste

Technology/Fuel Source	Number of Facilities	Gross Capacity (MW)
Solid Fuel Combustion (includes 3 MSW facilities)	30	640
Landfill Gas-to-Energy	60	275
Wastewater Treatment	20	64
Animal and Food Waste Digestion	22	6
Total	132	985

Perception of Technologies

- Some technologies labeled “Incinerators in Disguise”
- Technologies will harm existing recycling infrastructure
- Technologies less efficient than recycling

Strategic Directive 6.1

Reduce Amount of Organics in Waste Stream by 50% by 2020.

Strategic Directive 8.4

Enforcement/Permitting

1. Regulations are grounded in the best available science
2. Address changing market conditions
3. Take advantage of developing technologies.

Strategic Directive 9

Research/Development of Technology

1. Develop a focused process to coordinate research activities
2. Encourage the development of alternative energy and bio-fuels.
3. Play an active role in the Bio-Energy Inter-Agency Working Group.
4. Actively participate in Climate Action Team

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