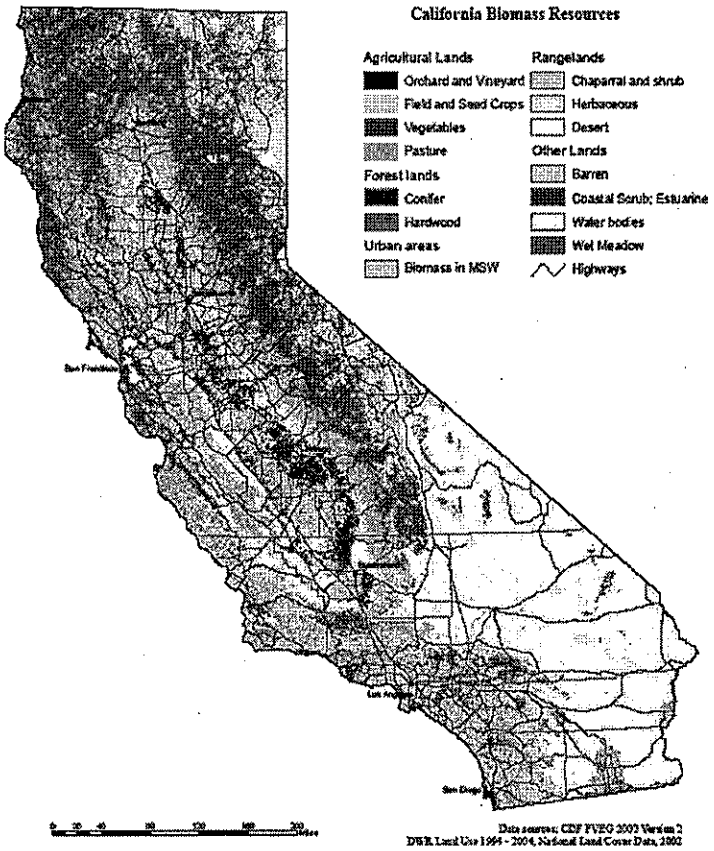
Organics Summit

Background Discussion Paper



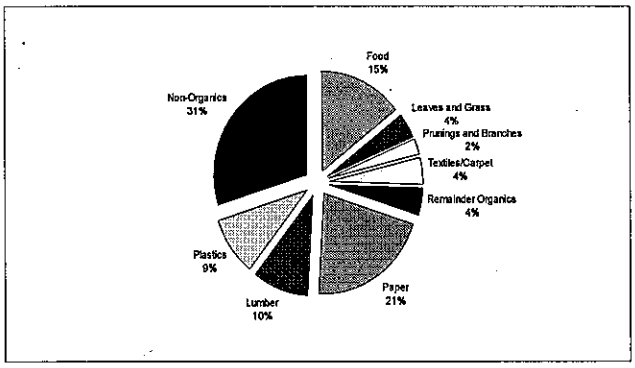
Strategic Policy Development Committee
October 10, 2007

INTEGRATED WASTE MANAGEMENT BOARD

Introduction

Compostable organic materials comprise approximately 25%, or about 10 million tons, of what is disposed in landfills annually, and paper and the woody portion of C&D debris constitute another 13 or so million tons. According to the 2004 Waste Characterization Study, organic materials currently landfilled that are suitable for composting consists of food, leaves and grass, prunings & trimmings, branches & stumps, and manures. Food is one of the largest categories of compostable materials and represents 14.6% (or 6 million tons) of the material landfilled. In addition, approximately 9.6% of the material landfilled consists of lumber, most of it suitable for the production of compost or mulch. Collectively, all of these organic materials could instead be returned to the soil as compost or mulch or used for other beneficial purposes such as energy production.

Figure 1. Percent Disposed by Material Class



Recognizing this, earlier this year the Board adopted several Strategic Directives that may have an effect on methods to manage organic materials. Strategic Directive 6.1 addresses the largest category of disposed material in the waste stream and requires a 50% reduction of organics in the waste stream by 2020. Strategic Directive 8.4 requires the Board to conduct a review of existing regulations to ensure that the Board's regulations are grounded in the best available science, address changing market conditions, and take advantage of developing technologies. This sub-directive ensures that the Board's regulations are up-to-date and reflect changes in the state of scientific knowledge and technology to allow achievement of broader environmental goals, such as the Governor's Climate Change Initiative. Strategic Directive 8.5 requires the Board to assist local decision-makers in long-range planning to help develop the diversion infrastructure to implement SD 6.1 and to ensure that it keeps pace with growth and changes in wastesheds.

While this work and the investment of hundreds of millions of dollars by the public and private sector has significantly expanded organics markets over the last 15 years, millions of tons are still being landfilled. The purpose of this Organics Summit is to have a "compost conversation" between stakeholders and Board Members and staff – to discuss and frame options for how to best focus our efforts to achieve much greater diversion of organics from landfills. The Summit will focus primarily on "compostable organics" and opportunities for increasing compost and related markets. Participants may also delve into the realm of biofuels and bioenergy production, but the Board has already conducted much work on these subjects (including a one-day workshop in July).

The Summit will be organized primarily around four break-out sessions:

- Infrastructure Expansion and Incentives
- Regulatory Issues
- Market Issues and Increasing Procurement
- CIWMB Policy and Legislative Options

There may be considerable overlap among these four sessions. While nobody can attend all of the breakout sessions, the plenary session will include recaps and provide an opportunity for further discussions among stakeholders regarding major barriers and recommendations.

Based on these workshop discussions and other sources of information, staff subsequently will prepare an agenda item that analyzes specific potential legislative, regulatory, and administrative options for the Board's consideration.

Infrastructure Expansion

Composting and Processing (Chip & Grind) facilities

There are approximately 298 composting and organic material processing facilities in California that produced an estimated 10 millions tons of compost and mulch in 2003. Of these, 219 facilities are composters and 79 facilities chip & grind organic materials. There are about 15 composting facilities that are permitted to process food waste and 18 facilities are permitted to compost biosolids.

Composting and Mulch Production

According to a 2003 CIWMB survey, compost and mulch facilities produced about 18.4 million cubic yards (mcy) of organic material products.

Table 1. Quantities and Percent of Products by Type (2003)

Product Type	Cubic Yards	Percent of Total Cubic Yards
Compost	3,011,182	16.3
Mulch	2,325,708	12.6
Boiler Fuel	3,872,983	21.0
ADC	8,482,372	46.0
Beneficial Reuse at Landfills	258,150	1.4
Other	469,843	2.6
Total	**18,420,238**	**100**

* Other includes fines, wood chips, steer manure and bark products. Source: Second Assessment of California's Compost and Mulch-Producing Infrastructure, CIWMB, May 2004.

Biomass Facilities

About 30 solid biomass to energy plants in the state consume approximately 5 million bone dry tons a year (BDT/y) of biomass and have the capacity to generate 600 MW of electricity a year. About 40% or 2 million BDT/y of the feedstock used in these plants is urban-derived woody biomass.

Alternative Daily Cover (ADC)

Between 1998 and 2006 the amount of green materials used as ADC increased from approximately 1 million tons per year to 2.6 million tons per year. In addition, based on preliminary estimates using sample data, 0.15 million tons of green waste may have been used as AIC and 0.44 million tons of green waste may have been used for "other beneficial reuse" in 2006.

Infrastructure capacity needed to meet Strategic Directive 6.1

In order to meet Strategic Directive 6.1, an additional infrastructure capacity to process at least 15 million tons per year (MTY) of organics is needed by 2020. Assuming all material is diverted to compost facilities, this would require about 150 new facilities that process about 320 tons per day (312 operating days, 100,000 ton per year capacity). Only about 33 composting facilities (15%) currently process more than 100,000 tons or more per year per facility. Depending on ADC policy, additional infrastructure capacity of roughly 3 million tons per year might be needed.

Market and Procurement Issues

Existing Markets

The Board's "Second Assessment of California's Compost-and Mulch-Producing Infrastructure, CIWMB, May 2004" determined the percentage of materials sold by composters and processors by market segment. Regional differences exist in the percentage of materials sold by market segment. The largest "market" is ADC with nearly ½ of all materials produced being sent to landfills as ADC. The next largest market is boiler fuel at 21% followed by landscape at 11% and agricultural markets at 10% which dominate throughout the State, especially in the Central Valley.

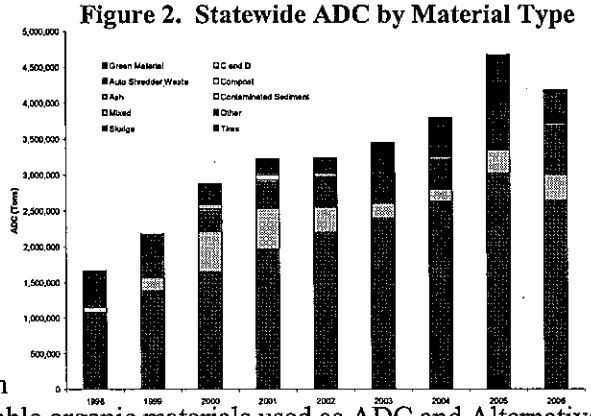
Landscape and Nursery

The amount of compost sold to the landscape and nursery segment is similar in the Southern and Bay Area Regions.

ADC

Composters compete directly for feedstock with ADC users. However, some composters use green waste ADC as a market for materials that are otherwise difficult to market, such as overs from screening or feedstock that is too contaminated to clean up economically.

Figure 2. Statewide ADC by Material Type



Forty six percent of the organic materials processed is used as ADC with a large segment of the ADC market in the Southern California region. The amount of compostable organic materials used as ADC and Alternative Intermediate Cover (AIC) nearly tripled from 1998 to 2005 with varied impacts on jurisdictions diversion rates. According to the Board's Disposal Reporting System, in 2006, landfills used approximately 2.6 million tons of green waste as ADC. In addition, based on preliminary estimates using sample data, 0.15 million tons of green waste may have been used as AIC and 0.44 million tons of green waste may have been used for "other beneficial reuse" in 2006.

If these amounts are combined, then roughly 3.2 million tons of green waste was used at landfills in 2006.

Caltrans
In 2006, Caltrans purchased 50,000 cubic yards of mulch and 20,000 cubic yards of compost. CIWMB staff estimates that Caltrans has the potential to increase their procurement of compost and mulch by about 400,000 cubic yards or 212,000 tons annually.

Agriculture
The most recent statistics show that the agriculture sector used about 330,000 cubic yards (175,000 tons) of compost and mulch, while nurseries used about 60,000 cubic yards (31,800 tons).

Beneficial Reuse
Beneficial reuse at landfills includes alternative intermediate cover and soil amendments for erosion control and landscaping. In 2003, about 60,000 cubic yards (32,400 tons) was used for beneficial reuse at landfills.

Other
About 180,000 cubic yards (99,000 tons) of material produced in 2003 is classified as other. This includes products such as fines, wood chips, steer manure, and bark products.

Boiler Fuel
Existing biomass-to-energy plants consume about 5 million bone dry tons per year of organic materials. According to the California Energy Commission (CEC) report, "A Roadmap for the Development of Biomass in California," it is technically feasible to collect and use about 20 million tons of MSW biomass produced in the State for biofuel production and generating electricity.

Board activities to increase procurement

The Board has taken many actions over the years to increase procurement of compost and mulch. Recent efforts include specifications development and outreach targeting Caltrans and the agricultural sector. The Caltrans project has resulted in specifications for hydroseed, compost blankets, compost (incorporated), biostrips, bioswales, hydroseed, drill seed, soil amendment (backfill), and mulch. Additional specifications under development or review include filter socks and berms. Over 500 people have participated in nine workshops conducted throughout the State during 2006/2007. The agriculture project is in the early stages and crop types are still being determined.

Previous Board activities include establishing an organics management assistance section to aid local jurisdictions with information sharing, workshops, compost producers and source list, and waste prevention alternatives like grasscycling, home composting, xeriscaping, and vermicomposting. Public Resources Code Section (PRC) 42230 identified multiple State agencies to work in cooperation with the Board to promote compost markets.

From 1994 through 2000, the Board dedicated funding to conduct a series of agriculture demonstration projects in partnership with local jurisdictions, universities, agricultural nonprofit organizations, and the University of California Cooperative Extension. The Board provided over $1 million of funding to demonstrate the use of compost and mulch for 15 agriculture demonstration projects. The demonstration projects covered a wide variety of crops including avocado, vineyards, "Elegant Lady" peach orchards, and plots of broccoli, cauliflower, lettuce, onions, potatoes, bell peppers, beets, and watermelon (Appendix 1).

Regulatory and Siting Issues

Current State/History

PRC Section 40191 defines solid waste, which includes organic ("compostable") wastes such as food waste and animal waste, yard waste, manure and biosolids, and other discarded solid wastes. Solid waste facilities include solid waste transfer or processing stations, composting facilities, gasification facilities, transformation facilities, and disposal facilities (PRC Section 40194). They do not include processing sites that handle only source separated material that is further clarified in regulations through the "3-part test[1]."

Prior to 1994, virtually all solid waste handling facilities were required to obtain a "full" solid waste facility permit regardless of size or potential risk posed by the facility. In 1994, the CIWMB adopted regulations implementing a tiered regulatory structure for all solid waste facilities and solid waste handling operations. The structure is designed to be flexible to accommodate the variety of handling methods and provide a level of regulatory oversight commensurate with the impacts associated with the solid waste handling or disposal activity.

Composting activities were not regulated by the CIWMB prior to 1993. At that time, the CIWMB slotted sites handling green material into the regulatory tiers framework. The CIWMB developed comprehensive composting regulations in 1995, which included additional feedstocks and applied to traditional high temperature composting operations that intentionally composted organic materials. In 1997 the CIWMB added minimum standard regulations for chipping and grinding. Then in April 2003, new regulations placed chipping and grinding, storage and screening of compostable materials into the CIWMB's regulatory tiers and simplified the tier placement. The CIWMB is continuing to look at composting/mulch regulations, possibly revisiting metal testing requirements, contamination in (clean) green waste, handling and composting food waste, and how to regulate anaerobic digestion.

Solid waste landfills are required to cover disposed solid waste with a minimum of six inches of compacted earthen material at the end of each operating day to control vectors, fires, odors, blowing litter, and scavenging. Intermediate cover consists of compacted earthen material at least twelve (12) inches placed on all surfaces of the land fill where no additional solid waste will be deposited within 180 days to control vectors, fires, odors, blowing litter, and scavenging. However, not all landfills have ready access to sufficient quantities of soil for cover and transporting soil from other locations can be expensive. To overcome this barrier, less costly alternatives to soil involve using waste materials for ADC and AIC, including compostable organic materials such as processed green waste, compost, and sludge materials that were already being delivered to the landfill. Daily cover and intermediate cover, including ADC and AIC are governed by regulations contained in Title 27, California Code of Regulations (27 CCR), Division 2, Subdivision 1, Chapter 3, Subchapter 4, Article 2[2].

While other states allow the use of green waste as ADC, California is the only state that allows ADC to count toward a local jurisdiction's diversion rate. Using 2004 (the latest year in which the Board's biennial review has been completed), 329 out of approximately 400 jurisdictions used green waste as ADC. Of those, 137 would receive 1% or less of diversion credit from ADC, 89 would receive between 2% and 5% diversion credit, 77 would receive between 6% to

[1] California Code of Regulations, Title 14, Section 17402.5(d)
[2] LEA Advisory #48--Revised March 27, 1998 *Disposal Site Daily and Intermediate Cover Regulations* http://www.ciwmb.ca.gov/LEAAdvisory/48/default.htm

10% diversion credit, and the remaining 25 would get between 11 and 21% diversion credit from ADC.

In 1993, the Board adopted a policy under which ADC would count as diversion. In 1994, the ADC policy was modified and regulations were written to cap the ADC credit at up to 7% of the 50% diversion mandate. However, the Office of Administrative Law rejected the regulations citing the 7% cap as an arbitrary number with no basis for the 7% cap. Assembly Bill 1647 (Chapter, 978, Bustamante, Statutes of 1996) clarified the legislative intent that the use of waste-derived ADC constitutes diversion through recycling. Some stakeholders believe diversion credit for ADC has slowed the development and expansion of composting infrastructure. This may be due to economics because the cost of composting is significantly more than the cost of processing green waste for use as ADC which results in an economic incentive for material to be directed to ADC.

Other types of facilities that handle compostable organics include:

- Landfill facilities – Regulations are specific to handling and disposal of MSW, which includes compostable organics.
- Compost operations and facilities are regulated within regulatory tiers framework along with chipping and grinding operations and facilities.
- Transfer/Processing Facilities are regulated within regulatory tiers framework. Regulations are specific to handling of MSW, which includes compostable organics.
- Construction/Demolition and Inert Debris are also regulated within regulatory tiers framework. A component of this waste stream includes wood waste.
- Biomass facilities do not require a SWFP and their operations are not regulated by the CIWMB (PRC Section 40106). The feedstock for biomass facilities is limited primarily to compostable organics. The amount of material sent to a biomass facility that may "count" as diversion is limited to 10%.
- MSW to-Energy facilities, which receive compostable organics in the waste stream, are regulated by CIWMB as transfer/processing facilities. Only 10% of the material sent for transformation may "count" as diversion.

Barriers

There are a number of cross-media and regulatory issues that challenge the organics industry infrastructure, reduce capacity expansion opportunities, threaten the continued diversion of organics materials from landfills, and threaten markets for finished products.

Cross-Media Barriers

Air Emissions - The South Coast Air Quality Management District (SCAQMD) and San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) have and are proposing additional rules to limit air emissions (volatile organic compounds and ammonia) from composting operations. Depending on the facility type, size, and location, some of these new rules can require on the order of $50-100 million in emission reduction features that include forced aeration, pads, enclosures, biofilters, etc.

Water Quality Regulations – A general Waste Discharge Requirement (WDR) waiver was in effect for compost facilities until 2005 when the waiver sunset. Since that time, the regional water quality control boards (e.g. Central Valley RWQCB) have been considering and drafted new WDRs for composting

that are much more stringent and include requirements such as groundwater wells, liners, retention ponds, etc. Some stakeholders have stated that these proposed WRDs may be onerous and would result in significant costs for compliance.

Odors - Negative public perceptions pose serious challenges to the organics management infrastructure and odor continues to be one of the most prevalent challenges. Urban encroachment and subsequent NIMBYism for landfills, transfer stations, Material Recovery Facilities, composting facilities, and biosolids handling are problems. Odors and the perceived health impacts from composting facilities are also a regulatory challenge for both the Board and for air districts.

Existing Regulations - Existing CIWMB regulations may be outdated and do not take into consideration updated composting technologies or new technologies to process organic materials.

Siting and Permitting - The siting of new facilities or the expansion of existing facilities seems to be becoming more difficult. Even in rural areas, where there tends to be adequate buffer areas, resistance from residents has become a major barrier to the development of new or expanding facilities as well as the continued operation of existing facilities. There may be an informational gap supporting siting and permitting decisions.

Permitting for foodwaste composting - Some stakeholders have stated that the need for a full solid waste facility permit is a barrier to expanded use of foodwaste as a compostable feedstock and may result in continued disposal in landfills.

Feedstock Quality and Market Barriers

Natural & Chemical Threats - Over the years several natural and chemical problems threatened the organics industry infrastructure by creating surges in feedstock materials without the necessary processing infrastructure or by interfering with established feedstock material flows. These include Sudden Oak Death (SODS), bark beetle infestations, and clopyralid (a persistent herbicide). In some cases, quarantines in threatened areas has also impacted marketing of the product because of transportation restrictions for the finished product.

Feedstock Contamination – Contamination of compostable feedstock (e.g. metals, plastics, glass, and treated wood) may affect the quality of the product and reduce its value and marketability.

ADC – A significant number of stakeholders believe increased use of greenwaste as ADC is a barrier to the development of the organics infrastructure. According to the 2004 CIWMB sponsored survey of the organics industry infrastructure, 46% of participating composters reported they lost the ability to obtain feedstock due to competition from ADC and 23% reported that the local landfill tip fee is lower than the tip fee they receive for greenwaste.

Lack of Specifications – There are no specifications for compost quality which may affect the quality of the product and its subsequent marketability.

Production Cost – Landfill tipping fees are lower than tip fees for greenwaste and may result in more material taken to a landfill as ADC rather than composting. According to a 2004 CIWMB sponsored survey of the organics industry infrastructure, 46% of participating composters reported they lost the ability to obtain feedstock due to competition from ADC and 23% reported that the local landfill tip fee is lower than the tip fee they receive for greenwaste.

Potential Policy and Legislative Options

In order to overcome the various barriers and challenges affecting organic materials management a number of policy and legislative options may need be explored. These suggestions are intended to stimulate discussion in the breakout sessions and do not necessarily represent the opinions or policies of the Board.

Infrastructure Policy Options and Opportunities

- Compost production credits and methane avoidance credits could provide non-monetary incentives for expanding the existing organics infrastructure.
- Differential regional tipping fees could provide a monetary incentive to assist compost production.
- A fee on landfilled organics could provide monetary incentives for research and development of alternative infrastructure options.
- Landfill ban on organic materials could move feedstock away from ADC and toward other processing methods such as composting or anaerobic digestion. A ban would require legislative action.
- Investigate the European Union directive on banning of organics from landfills to provide options for alternative processing of organics.
- Review existing regulations for legal certainty, clarity, and potential updating.

Market and Procurement Opportunities and Options

- Promote compost specifications development and outreach through collaborative projects with Caltrans and other compost and mulch purchasers.
- Fund other projects to develop compost specifications and/or expand outreach efforts for other market sectors, such as other governmental agencies and agriculture (project currently under way).
- Increase funding and coordination of research leading to further development of compost specifications and further quantification of the benefits of compost use.
- Increase interaction with sister agencies on cross-media issues related to air, water, and public health to ensure that benefits of organic products such as compost are part of any discussions concerning regulating their production or use.
- Provide line item funding for long-term research that may be necessary to quantitatively define benefits of organic products. For example, the benefits of compost on tree crops can take up to ten years of research.

- Provide funding to assist development and commercialization of new technologies.

- Address competing priorities for organic feedstocks through legislation, regulation, and policy, taking into account the true costs of specific waste management processes.

- Promote co-collection of food and green materials.

- Develop a mobile chipper program.

Potential Regulatory and Siting Options

- Review regulations for composting/mulch facilities. This review could include revisiting metal testing requirements, contamination in green waste, handling and composting food waste, how best to regulate anaerobic digestion, and whether the regulatory structure needs to be more flexible to address specific issues (e.g., urban versus rural).

- Play a more proactive role in providing up-to-date information regarding health and environmental issues and mitigations as well as benefits from facilities handling organic materials to assist with siting decisions for new facilities and expanding facilities that would increase needed infrastructure.

- Fund data collection and research studies to provide new and up-to-date data/information (health and environmental) to assist in the decision making process for siting new facilities, expansion of facilities, and continued operation of existing facilities that use compostable materials; and to ensure that the CIWMB's regulations are grounded in the best available science, address changing market conditions, and take advantage of developing technologies.

Policy Options

- Place a cap on the contribution ADC can make towards the 50% diversion mandate.

- Phase out AB 939 diversion credit for compostable organics used as ADC.

- Maintain current ADC policy.

- Phase in application of IWMA fee for compostable materials used as ADC.

- Reduce regulatory burden on compostable organics composting/processing facilities.

- Support regional compost markets by directing material currently being used as ADC to regional compost facilities.

- Increase availability of feedstock materials for composting by :
    - Promoting co-collection of food materials and green materials
    - Increase statewide diversion goal