

## **Resource Plan to Reduce Greenhouse Gases and Reduce Landfill Disposal**

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Applying the EPA WARM model to the current statewide waste characterization data (CIWMB 2004) shows a potential reduction of 16 million tons of CO<sub>2</sub> equivalents. According to the CIWMB's data, Californians annually bury resources valued at more than \$1.4 billion, and pay another \$1.2 billion to landfill them.<sup>1</sup>

CRRA's Recyclers Global Warming Council is proposing a new 25% landfill disposal reduction goal for the State. The concept is simple, There exists today ample opportunity to reduce, reuse, recycle and compost residential, commercial, and self-haul materials. Rather than managing waste, we propose managing resources statewide. Rather than focusing on local government diversion rates, we propose reducing landfilling. Rather than focusing on managing methane at landfills, we propose focusing on reducing GHG emissions before they are in the landfill.

AB 939 stimulated significant recycling efforts in the early 1990's. California's landfill disposal fell from over 40 million tons in 1990 to 33 million in 1996. By 2003, however, disposal was again over 40 million tons, and has continued climbing. Meanwhile, diversion rates climbed from under 20% in 1990 to 52% in 2005.

A new approach is needed to now to focus on reducing greenhouse gases by reducing disposal of valuable resources. The upstream benefits from reuse, recycling and composting resources result in a stronger economy and healthier eco-system; but in addition there are substantial energy savings from reusing the embodied energy and materials in products, and recycling materials into new products. Composting helps avoid methane creation in landfills, creates healthy soils, sequesters significant amounts of elemental carbon and may reduce the need for, and increase the effectiveness of, energy intensive and GHG-producing fertilizers and pesticides, essential in a time of climate change.

The new 25% landfill reduction goal for the State proposes CIWMB leadership to capture materials more effectively. The approach is to focus on materials and generators, capturing valuable materials for which we already have substantial collection, processing

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<sup>1</sup> CIWMB 2004 statewide disposal characterization, adjusted for 2005 disposal, was used to determine tonnage. U.S. EPA WASTE Reduction Model (WARM) was used to determine MCTE avoidance. Recycled materials values reflect current market conditions.

and market infrastructure, or which are too toxic to continue to landfill. Cities and counties were responsible for the first 50%. Now, the State needs to rise to this challenge.

The sum of reducing current landfilling by over 5.2 million tons would be a 12.4% reduction from existing disposal. Avoided landfill costs could be as much as \$157 million, in addition to greenhouse gas reduction of 2.5 million metric tons of carbon equivalence. Over \$255 million of resources would be recycled back into the economy.

- Over 2 million tons of cardboard is currently disposed from all sources. Recycling 25% of this disposed tonnage would reduce GHG by 490,000 MTCE and saves \$58 million in material value
- 866 thousand tons of newspaper is currently landfilled from residential and commercial sources. If only an additional 25 percent of this was recycled, instead of disposed, an additional 164,861 MTCE could be avoided and California would save \$17 million
- Over 2 million tons of mixed paper generated by residents and self-haul could be saved from landfills, reducing GHG by 487,500 MTCE and saving another \$36 million
- Over 1.5 million tons of major appliances (from commercial and self-haul) and ferrous metals (all sources) are disposed now. Reusing and recycling them would reduce GHG by 568,643 MTCE and save \$20 million
- If commercial, residential, and self-haul lumber and yard trimming were reused and/or composted at a 25% rate, along with commercial and residential food scraps, another 765,000 MTCE of GHG would be reduced
- Aluminum cans, PETE containers and glass bottle recycling at a 25% rate would result in 113,000 MTCE reductions and save nearly \$125 million

Compost created from residential and commercial yard debris and food scraps is a valuable soil amendment for California agriculture. Not only is compost a better use of organic matter than disposal, compost is also a beneficial addition to soil that improves soil health, reduces topsoil erosion and may reduce the use of synthetic fertilizers and water. Nitrogen-based fertilizers are extremely energy intensive to produce. These synthetic fertilizers break down in soil and lead to the formation of nitrous oxide, a powerful GHG. Evidence from the Energy Information Administration illustrates that fertilizers used in agriculture are the number one cause of N<sub>2</sub>O emissions in the U.S. Regular use of compost can reduce the use and improve the effectiveness of Nitrogen-based fertilizers.<sup>2</sup> Additionally, the use of compost is considered a mitigation measure for the expected decline in soil quality due to climate change. Using compost naturally sequesters elemental carbon, one of the most important ways to mitigate the impacts of GHG in the atmosphere.

## **Resource Plan to Reduce Greenhouse Gases**

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<sup>2</sup> USDA research indicates that compost usage can reduce fertilizer requirements by at least 20% (Ligon, 1999), thereby significantly reducing net GHG emissions”

The focus of the proposed Resource Plan is on materials and generators that can yield significant greenhouse gas reduction through a series of early actions, while minimizing the need for additional legislative mandates. Commercial, residential, and self-haul generators would be subject to information, incentives, new rules and programs to divert selected materials.

The CIWMB's role would be to increase awareness of greenhouse gas reduction from increased recycling and composting; to promote recycling and composting of the selected materials; and to adopt policies to increase facility and program capacity and effectiveness. Immediate legislative authority would be needed in two areas. The rest is a matter of will.

25% Measures include the following:

- Generator understanding and awareness is essential. With collection, processing and market opportunities abounding, wasting continues. Interviews, observation, pilot solutions, focus groups, and effective outreach are needed. The State needs to lead this effort, not rely on disparate approaches by cities and counties.
- Statewide programs should be generator and material specific, based on open and candid assessment from recyclers, composters, haulers, local government, industry, and trade groups.
- Landfill salvage is key to reuse and recycling self-haul material. The CIWMB needs the legislative authority to require effective reuse, recycling and composting operations at transfer stations and landfills. A blanket statewide permit revision allowing transfer station and landfill salvage is needed as soon as possible. Removing 25% of self-hauled lumber, major appliances, metal, cardboard and landscape material is demonstrably achievable now via simple and effective landfill and transfer station based salvage programs.
- Support is needed for recycling and compost processing R&D, and then for adapting improved fiber recovery and food composting technology to existing, new and expanded facilities.
- CIWMB should seek the legislative authority for a landfill surcharge to finance reuse equipment and facility construction, MRF equipment installation and construction, compost facility expansion and upgrades, and landfill salvage. A \$3 to \$6/ton landfill disposal surcharge would generate over \$125 to \$250 million per year now. The money should be used for technology grants, and for 0% loans. Recovered materials value, combined with avoided disposal savings, would easily meet the debt service revenue stream and provide operator profit incentives. CIWMB's experience with tire commercialization, RMDZ, and SB 20 reimbursement are models for the program, as is the CRV market development grant program.
- Composting and more specifically, compost use, is key to greenhouse gas reduction. The use of Alternative Daily Cover with organic material should be eliminated in favor of a revitalized statewide composting network, recognizing the local and global benefits of compost use:
  - Reducing landfill methane generation

- Sequestering carbon in soil
- Reducing water use and increasing soil water holding capacity
- Improving soil health
- Mitigating soil damage caused by climate change
- Reducing N<sub>2</sub>O emissions from agricultural chemical fertilizers use
- A new focus on materials reuse should begin with dimensional lumber, recovered at MRFs, transfer stations, compost facilities, and landfills.
- Extended Producer Responsibility and Product Stewardship approaches need to become part of the next 50%, beginning with elimination of toxic materials and local government relief from handling costs. Manufacturing for reuse, repair and recycling needs to be the next step. No product sold in California should be destined for a landfill because of its design. Landfill surcharge funding should be available to assist take-back program initiations for industries agreeing to self-impose fees necessary to pay for on-going collection, operation and processing operating costs thereafter.
- Expanded generator knowledge, enhanced recovery and processing, and smart product design will yield results beyond the 25% strategy. We expect that the new Statewide approach would be able to recover more than the initial 25% of selected materials; that the landfill surcharge would reinvigorate market development as well, if used for private activity; and that reuse combined with EPR and Product Stewardship will invent new ways for Californians to reach Zero Waste by 2025.