



# A Vision for Zero Waste Leadership in San Diego

## Zero Waste: Executive Summary

The culture of the City of San Diego includes a love for the environment. It is fitting that the City lead in providing a sustainable future for its residents. An important part of that future is the prevention and management of discarded materials to make the best use of such resources, reduce greenhouse gas emissions, create local "green jobs", and reduce the need for disposal facilities.

A 2020 goal of 75% diversion of discarded materials from landfill disposal with the achievement of Zero Waste by 2040 is possible. The City, working with the assistance of its employees, industry partners, businesses and residents, can accomplish this goal through six bold strategies:

1. Policy and regulatory initiatives;
2. Developing and enhancing current partnerships;
3. Informing and incentivizing behavior;
4. Enhancing and implementing new collection programs;
5. Enhancing post-collection systems; and,
6. Developing funding strategies that support a sustainable rather than a disposal-based system.

The cost of implementing these strategies is modest compared to continuance of the current annual disposal of more than **\$54 million** in discarded materials.

The benefits include:

- Reductions to the use of virgin resources for products;
- Reduction in greenhouse gas emissions and local smog forming emissions;
- Creation of local green jobs; and,
- Extension of the life of local disposal facilities. Extending the life of facilities prevents the need for development of new facilities or the costly and environmentally damaging prospect of hauling these materials to other distant landfills.

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# Zero Waste: A Worldwide Response

## Designing for Reduced Waste

Zero Waste is a design principle that focuses on reducing waste, reusing products, and then recycling and composting them at the end of their life cycle. Worldwide governmental and non-governmental organizations have recognized that the prevention and management of discarded materials is essential to achieving an economically, environmentally, and socially sustainable future.



"For the first time in history, the majority of the planet's population now lives in cities...thus creating a new set of environmental challenges and opportunities."

**UN Urban Environmental Accords**



"A zero waste future is not only possible, it's also critical to solving today's climate crisis and other environmental challenges."

**Vancouver, Canada**



Policy Statement: "...to manage waste in an effective, efficient, economical way ensuring elevated protection for the environment and communities."

**The Treviso Priula Consortium, Italy**



"The Containers and Packaging Recycling Law and the Waste Emergency Declaration, encouraged the reduction of waste through enhanced cooperation among citizens."

**Nagoya, Japan**

"The overall goal of urban solid waste management is to collect, treat and dispose of solid wastes ...in an environmentally and socially satisfactory manner using the most economical means available."



**The World Bank**



"The Green exchange was introduced in 1990, this scheme was to encourage the poor to recycle their waste in return for food produce or bus transport tickets. This has proved to be a valuable service for the poor as they live in favelas which are hard for the recycling team to access."

**Curitiba, Brazil**



"Through collaboration, education, advocacy and financial incentives, Zero Waste SA is stimulating innovative practices to drive resource efficiency and help South Australians meet South Australia's Strategic Plan target."

**Zero Waste South Australia**



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# Zero Waste: A National Response

Nationally, cities are adopting Zero Waste policies and strategies to achieve their vision of a sustainable future for their communities.



"Avoiding the creation of waste or discards in the first place is the most economically efficient and environmentally sustainable resource management strategy."

**Boulder Office of Environmental Affairs**

"Anaerobic digestion of food scraps is about to become a reality! Biogas will be used on site at the Water Treatment Facility."

**San Jose Environmental Services**



"Zero Waste Washington has focused on producer responsibility as a tool to decrease toxicity in products and increase recycling...manufacturers are responsible for the products they make from cradle-to-cradle."

**Seattle Foundation**

"The City of Portland and Multnomah County's objective [is] to reduce carbon emissions by 40 percent by 2030, and 80 percent by 2050."

**City of Portland and Multnomah County**



"... [The city is to adopt] a policy promoting the highest and best use of discarded materials."

**San Francisco Environment**

"We must make changes at every stage of our waste system-reducing the amount we generate, reusing more of it, recovering more resources from it, and more efficiently disposing of what we can't eliminate. We must also change how we think about our waste-not as a by-product to be disposed, but as a resource that can generate energy, create jobs, and spur economic development."

**New York City Office of the Mayor**



"Collection strategies will include making collection of food waste, Styrofoam, hazardous waste, and more plastic and metal materials easier."

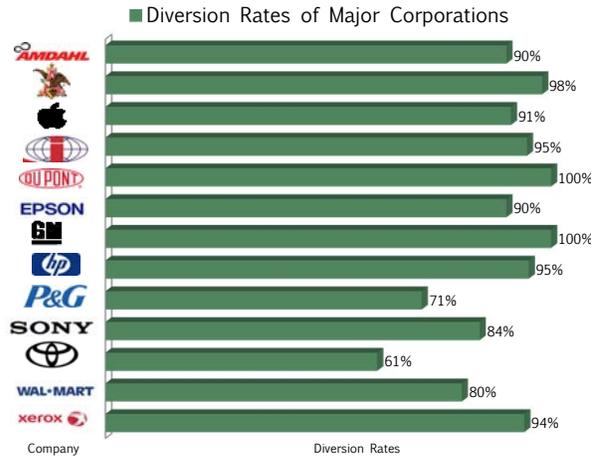
**Austin Resource Recovery Department**

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## Zero Waste: A Corporate Response

Corporations as diverse as Apple, Anheuser-Busch, General Motors, Sony, and HP are adopting Zero Waste design principles to profitably conserve resources.



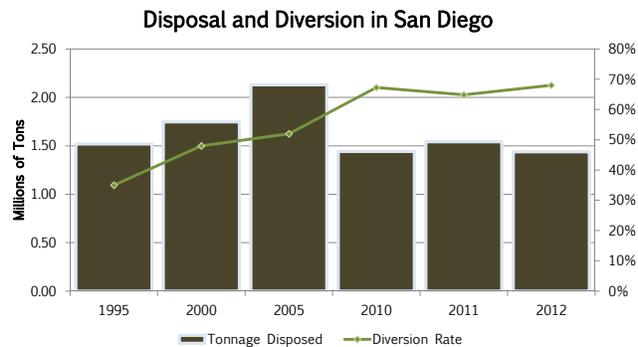
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### Zero Waste Improves the Bottom Line:

- **GM:** added **\$1 billion** in revenue annually from byproduct recycling and reuse.
- **Amdahl:** saved **\$300,000** in waste hauling costs over four years by switching to recycling.
- **Hewlett-Packard:** saved almost **\$5.1 million** a year through reuse and avoided waste disposal costs.
- **San Diego Wild Animal Park:** saved over **\$1 million** annually in tipping and hauling fees.

## Zero Waste in San Diego: The Opportunity

Currently, the City is achieving a **68% diversion rate**—well above the state requirements and favorable when compared to many large cities. It does so through adoption of policies such as the City Recycling Ordinance (CRO), C&D Ordinance. Additionally, the city benefits from public education, adoption of diversion programs in city facilities, and, provision and partnership with others in offering collection and post collection diversion services to the City's residents and businesses. Despite this high achievement, we still dispose of more than **1,291,000 tons** of materials annually.



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## Zero Waste in San Diego: The Cost of Wasting

### The Benefits

The benefits from a Zero Waste approach to these remaining materials is dramatic.

Based on the composition of waste materials going to landfills, recovery would equate to up to **\$54 million** in value disposed annually.

### Goldmine Going to Landfill



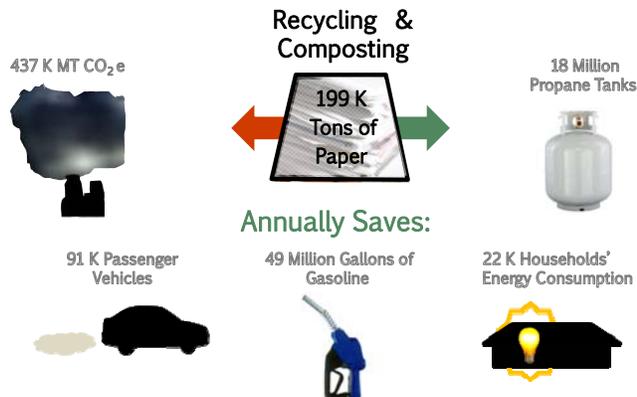
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## Zero Waste in San Diego: Potential for Paper

### Zero Waste Means Resource Conservation and Emissions Reduction

San Diego disposed of 213,000 tons of paper last year. Of these, 129,000 tons were recyclable and 70,000 tons were compostable. By combining these two diversion methods, San Diego can prevent 437,000 metric tons of CO<sub>2</sub> equivalent from entering the atmosphere. This is equal to emissions from 91,000 passenger vehicles, 49 million gallons of gasoline, the energy use of 22,000 households, and 18 million propane tanks.



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## Zero Waste in San Diego: Potential for Metal

### Zero Waste Means Resource Conservation and Emissions Reduction

San Diego disposed of approximately 44,000 tons of metal last year. 32,000 of these tons are recoverable. If San Diego recycled these materials instead of sending them to the landfill, the city could prevent 93,000 metric tons of CO<sub>2</sub> equivalent from entering the atmosphere. This is comparable to avoiding the use of 19,500 passenger vehicles, 10.5 million gallons of gasoline, the energy use of 4,500 households, and 4 million propane tanks.



## Zero Waste in San Diego: Potential for Glass

### Zero Waste Means Resource Conservation and Emissions Reduction

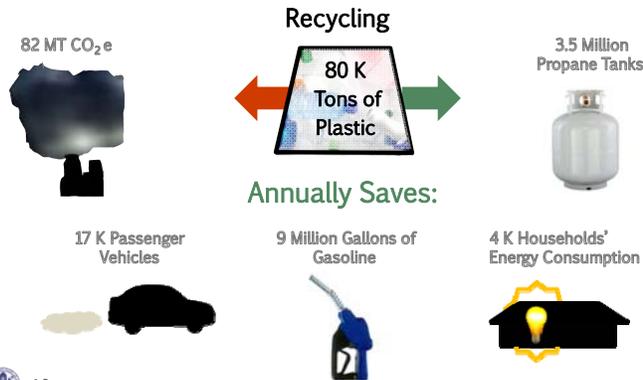
San Diego disposed of 22,000 tons of glass last year. 12,000 of these tons are recyclable. Saving this valuable commodity can prevent 4,000 metric tons of CO<sub>2</sub> equivalent from being released in the atmosphere. This is the equal to 794 passenger vehicles, 427,000 gallons of gasoline, the energy use of 190 households, and 159,000 propane tanks.



## Zero Waste in San Diego: Potential for Plastic

### Zero Waste Means Resource Conservation and Emissions Reduction

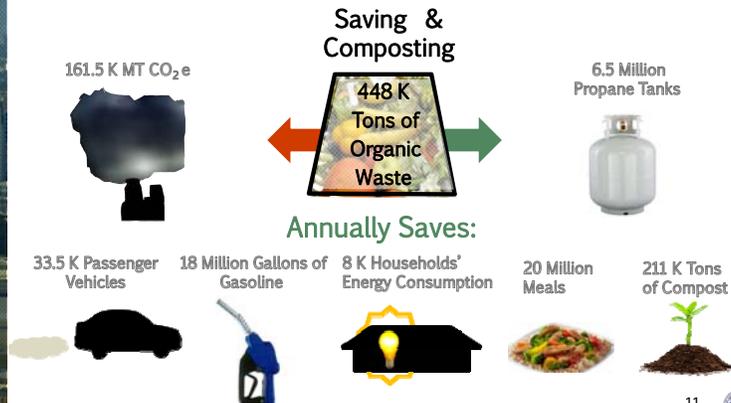
San Diego disposed of approximately 113,000 tons of plastic last year. 80,000 of these tons are recyclable. If San Diego prevented plastic from going to the landfill, the city could prevent 82,000 metric tons of CO<sub>2</sub> equivalent from entering the atmosphere. This is equal to emissions from 17,000 passenger cars, 9 million gallons of gasoline, the energy use of 4,000 households, and 3.5 million propane tanks.



## Zero Waste in San Diego: Potential for Organics

### Zero Waste Means Resource Conservation and Emissions Reduction

San Diego disposed of approximately 500,000 tons of organic material last year. 448,000 of these tons could have been salvaged; 12,000 of these tons could have been made into 20 million meals. 422,000 of these tons could have been made into 211,000 tons of compost. Source reducing and composting this material can prevent 161,500 Metric Tons of CO<sub>2</sub> equivalent from entering the atmosphere. This is the equal to 33,500 passenger cars, 18 million gallons of gasoline, the energy usage of 8,000 homes, and 6.5 million propane tanks.



# Zero Waste in San Diego: Total Potential

## Recycling can Save:

EPA WARM Model GHG Equivalencies			
	Recyclables going to Landfills	771,500	Tons/Year
	GHG Emissions	777,500	MT CO <sub>2</sub> e/Year
<b>Equivalencies</b>			
	Passenger Vehicles	236,000	Vehicles/Year
	Gallons of Gasoline	87,000,000	Gallons/Year
	US Home Electricity Use	39,000	Homes/Year
	Propane Tanks	32,500,000	Tanks/Year



# Zero Waste in San Diego: Potential

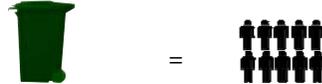
## Zero Waste Means Jobs

Our reuse of these materials can generate as many as 75 new green jobs and recycling can create 10 new green jobs for every 100,000 tons of material diverted.

### Disposal



### Recycling



### Material Reuse



## Zero Waste in San Diego: 6 Bold Steps Toward Zero Waste

We have identified six key strategies to achieve these benefits:

1. Developing funding strategies that are compliant, sustainable, predictable, and incentivize desired behavior (e.g., charging for non-disposal services, providing discounted rates for separated recyclable and compostable materials).
2. Advocating Zero Waste policies (e.g., extended producer responsibility); implementing regulatory initiatives (e.g., the CRO and the Plastic Bag Reduction Ordinance); and, focusing on local Zero Waste achievements (e.g., the Annual Waste Reduction and Recycling Award ceremonies).
3. Enhancing existing and developing new partnerships to reduce, reuse, recycle and compost disposed materials (e.g., social and environmental non-profits, franchise haulers).
4. Informing, supporting and incentivizing businesses and residents in their reduction and diversion of discarded materials (through programs such as Commercial Food Scrap Composting Program and Backyard Compost Voucher Program).
5. Enhancing existing collection programs (e.g., citywide weekly yard waste/food scraps collection, weekly recycling collection, and bi-weekly refuse collection).
6. Implementing new approaches post-collection processing of discarded materials (e.g., at Resource Recovery Center and enhanced composting technology at the Greenerly).

Develop funding strategies to support Zero Waste-based systems

Implement Zero Waste policies and regulations

Develop and evaluate existing partnerships to reduce and recycle

Inform and Incentivize reduction

Enhance collection systems to optimize diversion

Enhance post collection diversion programs

75% by 2020,  
Zero Waste by 2040!



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## Zero Waste in San Diego: Honoring Our Community's Leaders

The implementation of these strategies, including the identification of specific programs and facilities, will be done in a manner that honors our residents, businesses, and community partners.



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## Zero Waste in San Diego: Honoring Labor

The implementation of these strategies, including the identification of specific programs and facilities will be done in a manner that honors the **workers** who will be on the front line of Zero Waste in the communities they serve.

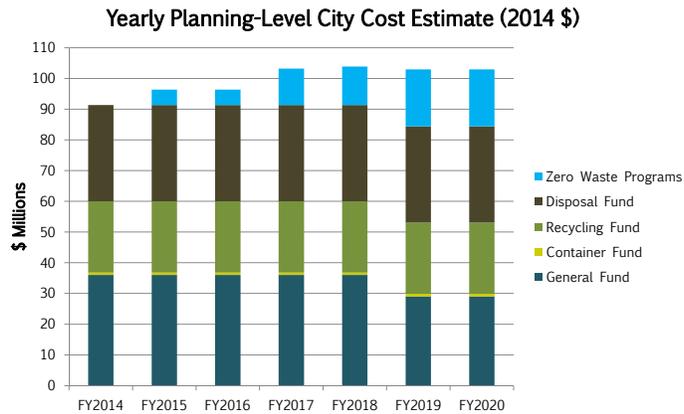


## Zero Waste in San Diego: Honoring Our Industry Partners

The implementation of these strategies, including the identification of specific programs and facilities will be done in a manner that honors our **partners in discarded materials management.**



## Zero Waste in San Diego: Planning-Level City Cost Estimate



## Zero Waste in San Diego Will:

Enhance the City's Relationship Within its Communities and Among its Partners

Dramatically Reduce the Reusable, Recyclable, and Compostable Materials that would otherwise be Buried in the City Landfill

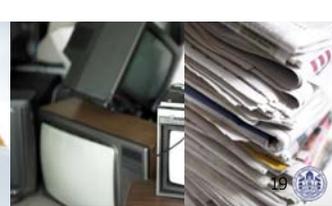
Extend Miramar Landfill Life and Delay the Need for Replacement Facilities



Enhance the City's Relationship Within its Communities and Among its Partners

Dramatically Reduce the Reusable, Recyclable, and Compostable Materials that would otherwise be Buried in the City Landfill

Extend Miramar Landfill Life and Delay the Need for Replacement Facilities





# End Notes

- A Worldwide Response
  - **UN Environmental Accords:**
    - » [http://www.ci.berkeley.ca.us/Planning\\_and\\_Development/Energy\\_and\\_Sustainable\\_Development/UN\\_Environmental\\_Accords.aspx](http://www.ci.berkeley.ca.us/Planning_and_Development/Energy_and_Sustainable_Development/UN_Environmental_Accords.aspx)
  - **The World Bank**
    - » <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTURBANDEVELOPMENT/EXTUSWM/0,,menuPK:463847~pagePK:149018~piPK:149093~theSitePK:463841,00.html>
  - **The Treviso Priula Consortium**
    - » International Case Studies (quote edited to standard English)
  - **Nagoya, Japan**
    - » International Case Studies
    - » <http://geic.hq.unu.edu/ENV/files/InnComm%20Report/case%20study%207%20Japan.pdf>
  - **Vancouver, Canada**
    - » <http://vancouver.ca/green-vancouver/zero-waste.aspx>
  - **Curitiba, Brazil**
    - » International Case Studies
  - **Zero Waste South Africa**
    - » <http://www.zerowaste.sa.gov.au/>

# End Notes

- A National Response:
  - **Boulder Office of Environmental Affairs**
    - » <http://www.greencitybluelake.org/images/economy/Boulder>
  - **Seattle Foundation**
    - » <http://www.seattlefoundation.org/npos/Pages/ZeroWasteWashington.aspx>
  - **San Francisco Environment**
    - » [http://www.sfenvironment.org/sites/default/files/editor-uploads/zero\\_waste/pdf/sfe\\_zw\\_zerowaste\\_resolution\\_signed\\_by\\_mayor.pdf](http://www.sfenvironment.org/sites/default/files/editor-uploads/zero_waste/pdf/sfe_zw_zerowaste_resolution_signed_by_mayor.pdf)
  - **Austin Resource Recovery Department**
    - » <http://austintexas.gov/news/city-launches-curb-side-organics-collection-pilot-program>
  - **San Jose Environmental Services**
    - » HF&H Interview with Jeff Anderson
  - **Portland Water Bureau**
    - » <http://www.portlandoregon.gov/bps/article/268612>
  - **New York City Office of the Mayor**
    - » [http://nytelecom.vo.llnwd.net/o15/agencies/planyc2030/pdf/planyc\\_2011\\_solid\\_waste.pdf](http://nytelecom.vo.llnwd.net/o15/agencies/planyc2030/pdf/planyc_2011_solid_waste.pdf)

# End Notes

- A Corporate Response:
  - **Dupont**
    - » [http://www2.dupont.com/Surfaces/en\\_US/sustainable\\_design/DuPont\\_Zero\\_Landfill.html](http://www2.dupont.com/Surfaces/en_US/sustainable_design/DuPont_Zero_Landfill.html)
  - **Apple Computers**
    - » <http://www.apple.com/environment/our-footprint/>
  - **Procter & Gamble**
    - » [http://www.pg.com/en\\_US/sustainability/environmental\\_sustainability/](http://www.pg.com/en_US/sustainability/environmental_sustainability/)
  - **General Motors**
    - » [http://media.gm.com/media/us/en/gm/news.detail.html/content/Pages/news/us/en/2012/Oct/1019\\_Landfill-FreeBlueprint.html](http://media.gm.com/media/us/en/gm/news.detail.html/content/Pages/news/us/en/2012/Oct/1019_Landfill-FreeBlueprint.html)
  - **Amdahl**
    - » <http://www.wasterecyclingnews.com/article/19950612/NEWS99/306129948/amdahl-s-recycling-pays-off-hauling-bill-drops-300-000-in-4-years>
  - **Hewlett-Packard**
    - » <http://www.hp.com/hpinfo/globalcitizenship/09gcreport/enviro/operations/waste.html>
  - **San Diego Wild Animal Park**
    - » <http://www.grrn.org/page/zero-waste-business-profiles>
- **The Opportunity**
  - Calrecycle Reports on Disposal Tonnage and Diversion Rates. See Calrecycle.com;
  - <http://www.calrecycle.ca.gov/LGCentral/Reports/DRS/Destination/JurDspFa.aspx>
  - <http://www.calrecycle.ca.gov/LGCentral/reports/diversionprogram/JurisdictionDiversionPost2006.aspx>

# End Notes

- **Goldmine Going to Landfill**
  - Analysis based on Draft\_ Overall City of San Diego Disposal Waste (provided by City Staff) and Commodity Pricing as of 4-30-2013 document (HF&H document)
- **Potential for Paper, Potential for Metal, Potential for Glass, Potential for Plastics,**
  - Analysis based on documents provided by City Staff and the following websites
    - » GHG emissions calculation: [http://epa.gov/epawaste/conserves/tools/warm/Warm\\_Form.html](http://epa.gov/epawaste/conserves/tools/warm/Warm_Form.html)
    - » Equivalencies: <http://www.epa.gov/cleanenergy/energy-resources/calculator.html>
- **Potential for Organics**
  - Analysis based on Analysis based on documents provided by City Staff and the following websites
    - » [http://epa.gov/epawaste/conserves/tools/warm/Warm\\_Form.html](http://epa.gov/epawaste/conserves/tools/warm/Warm_Form.html)
    - » Meals: <http://www.biocycle.net/2013/03/19/food-recovery-in-san-diego/>
- **Jobs Analysis**
  - Analysis based on USEPA statistics on job creation per 10,000 tons per year of materials management.
    - » <http://www.epa.gov/region9/newsletter/feb2011/greenjobs.html>

