

# 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 resources to 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, in cooperation 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 compared to the City of San Diego 2013 Waste Composition Study shows that 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 precludes the need to develop new disposal facilities to mitigate environmentally damaging prospects of hauling these materials to other distant landfills.



# 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**



“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**



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

**Vancouver, Canada**

“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**



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**



# 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**



“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 is to adopt] a policy promoting the highest and best use of discarded materials.”

**San Francisco Environment**



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

**Austin Resource Recovery Department**

“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**



“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**



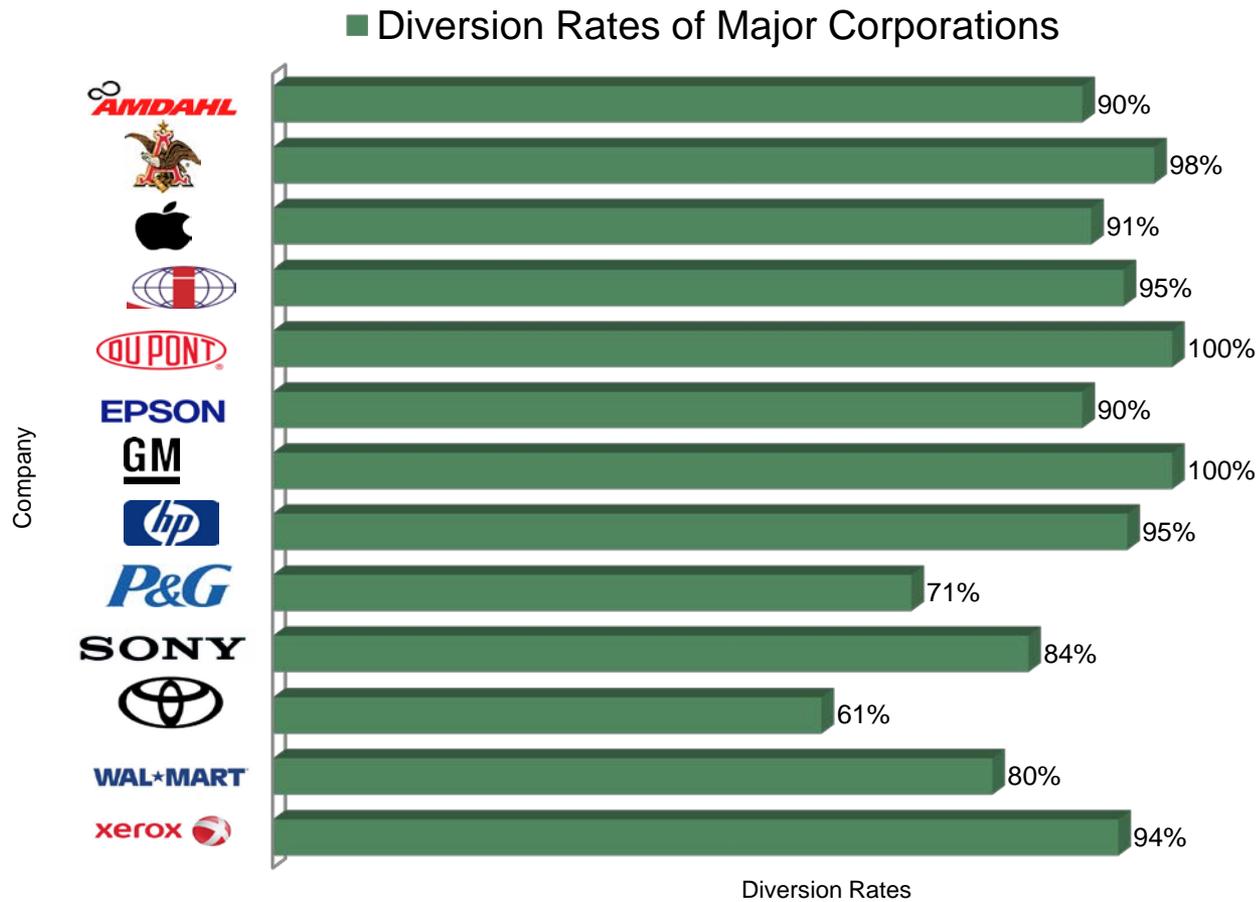
“We must make changes at every stage of our waste system—reducing the amount we generate, reusing more of it, recovering more resources from it, and more efficiently disposing of what we can’t eliminate. We must also change how we think about our waste—not as a by-product to be disposed, but as a resource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

**New York City Office of the Mayor**



# 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.



## Zero Waste Improves the Bottom Line:

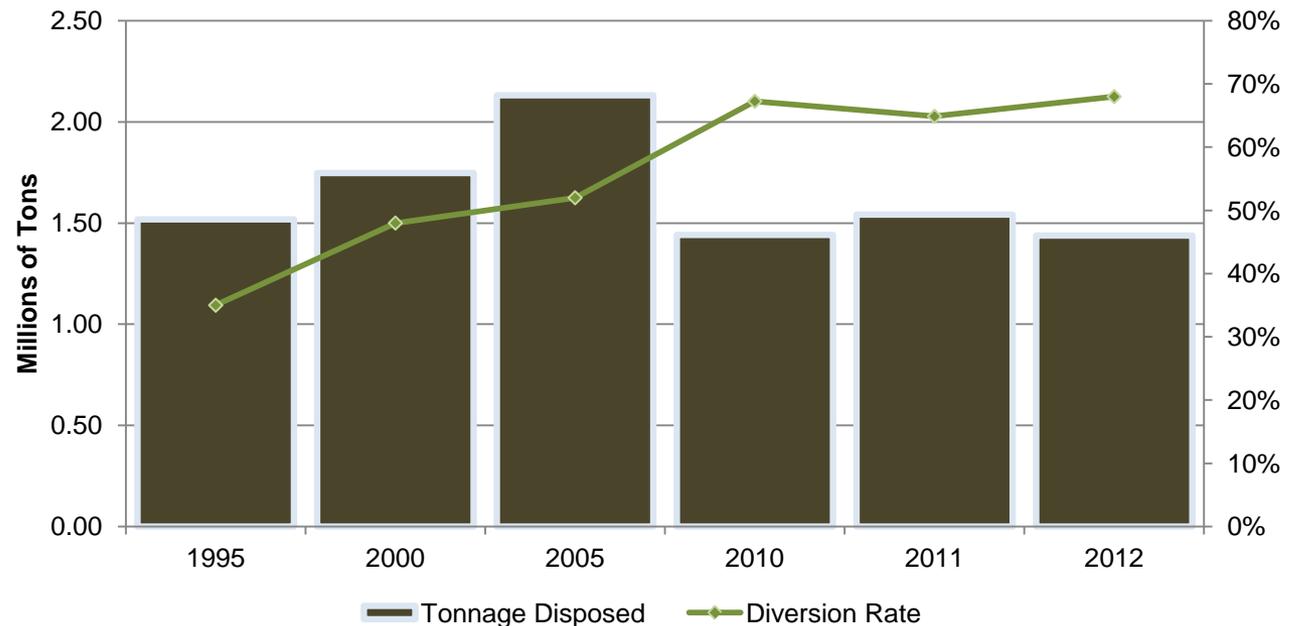
- **GM:** added **\$1 billion** in revenue annually from byproduct recycling and reuse.
- **Amdahl:** saved **\$300,000** in waste hauling costs over four years by switching to recycling.
- **Hewlett-Packard:** saved almost **\$5.1 million** a year through reuse and avoided waste disposal costs.
- **San 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) and the Construction and Demolition Debris Deposit Ordinance. Additionally, the City benefits from public education, adoption of diversion programs in City facilities and partnerships that offer collection and post collection diversion services to City residents and businesses. Despite this high achievement, the City still disposes of more than **1,291,000 tons** of materials annually.

## Disposal and Diversion in San Diego



# Zero Waste in San Diego: The Cost of Wasting

## The Benefits

From a Zero Waste approach, the benefits of these the disposed materials is dramatic.

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

## Goldmine Going to Landfill

Source: 2013 City of San Diego Waste Composition Study



# 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 equivalent to removing annual from 91,000 passenger vehicles; conserving 49 million gallons of gasoline; conserving the energy consumption from 22,000 households, and 18 million propane tanks.

## Recycling & Composting

437 k MT CO<sub>2</sub>e



18 Million Propane Tanks



Annually Saves:

91 k Passenger Vehicles



49 Million Gallons of Gasoline



22 k Households' Energy Consumption

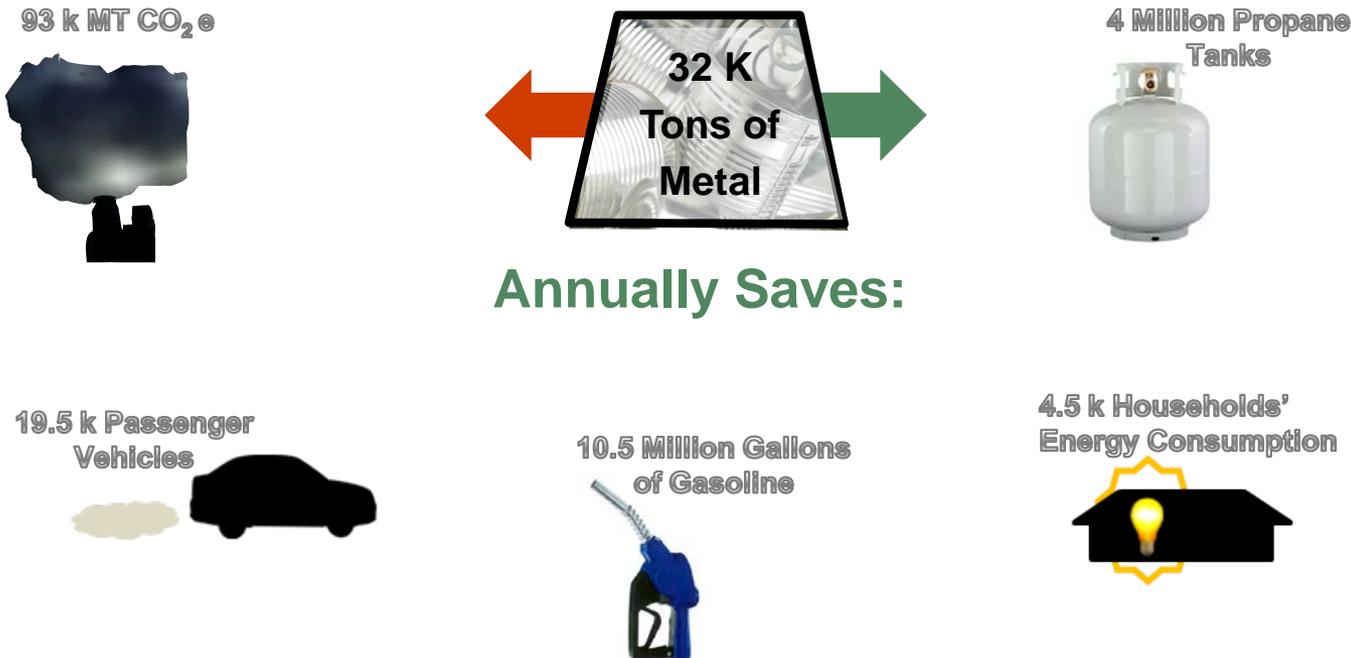


# Zero Waste in San Diego: Potential for Metal

## Zero Waste Means Resource Conservation and Emissions Reduction

San Diego disposed of approximately 44,000 tons of metal last year. Of these, 32,000 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 equivalent to removing annual emissions from 19,500 passenger vehicles; conserving 10.5 million gallons of gasoline; conserving the energy consumption from 4,500 households, and 4 million propane tanks.

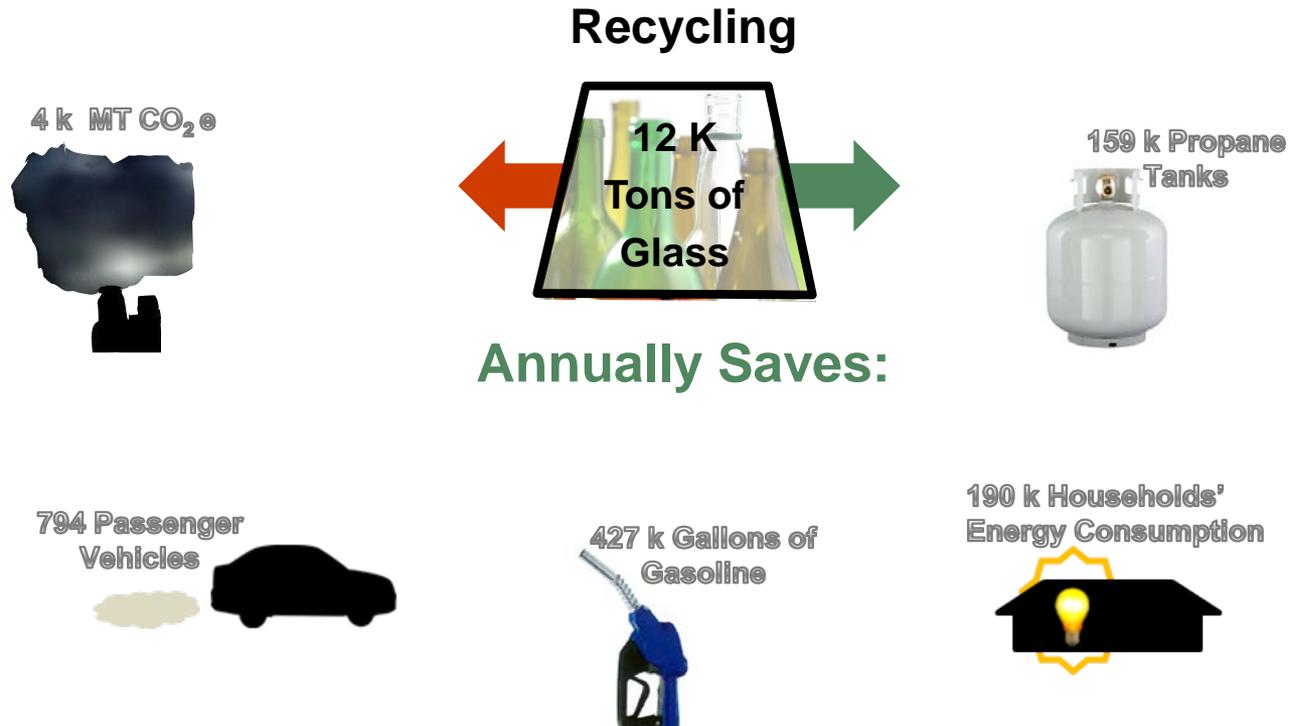
### Recycling



# 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. Of these, 12,000 tons are recyclable. Saving this valuable commodity can prevent 4,000 metric tons of CO<sub>2</sub> equivalent from being released into the atmosphere. This is the equivalent to removing annual emissions from 794 passenger vehicles; conserving 427,000 gallons of gasoline; conserving energy consumption from 190 households, and 159,000 propane tanks.



# Zero Waste in San Diego: Potential for Plastic

## Zero Waste Means Resource Conservation and Emissions Reduction

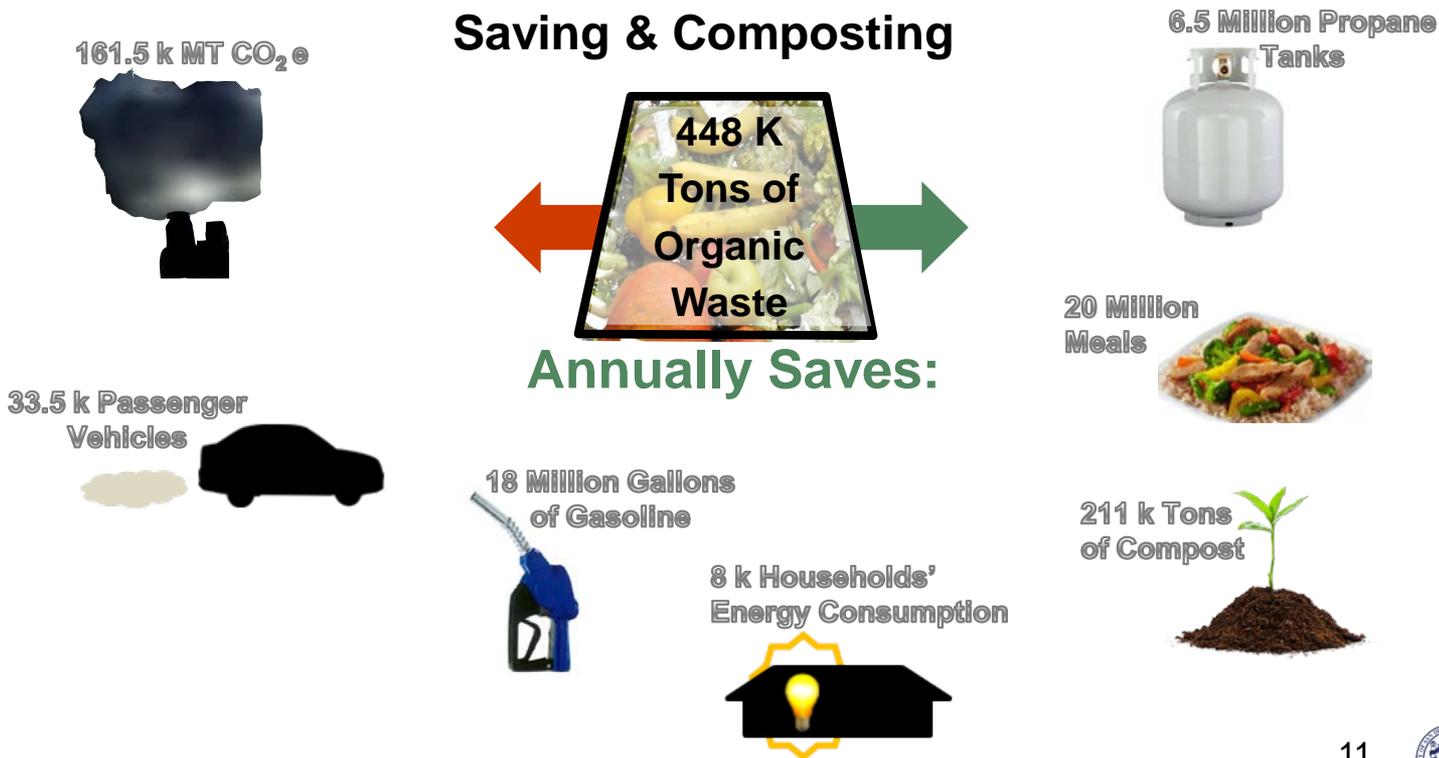
San Diego disposed of approximately 113,000 tons of plastic last year. Of these, 80,000 tons are recyclable. If San Diego prevented plastic from going to the landfill, the city could prevent 82,000 metric tons of CO<sub>2</sub> equivalent from entering the atmosphere. This is the equivalent to removing annual emissions from 17,000 passenger vehicles, conserving 9 million gallons of gasoline; conserving the energy consumption from 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. Of these, 448,000 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 equivalent to removing annual emissions from 33,500 passenger vehicles; conserving 18 million gallons of gasoline; conserving the energy consumption from 8,000 households, 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

### Equivalencies



Passenger Vehicles 236,000 Vehicles/Year



Gallons of Gasoline 87,000,000 Gallons/Year



US Home Electricity Use 39,000 Households/Year



Propane Tanks 32,500,000 Tanks/Year



# Zero Waste in San Diego: Potential

## Zero Waste Means Jobs

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



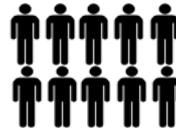
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Recycling



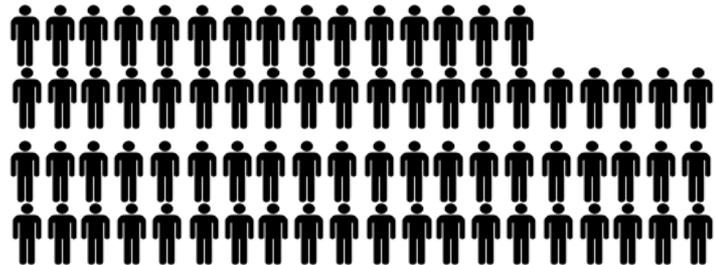
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Material



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# 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 (e.g. social and environmental non-profits, franchise haulers) to reduce, reuse, recycle and compost disposed materials.
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 Bin Voucher Program).
5. Enhancing collection programs (e.g. citywide weekly yard waste/food scraps collection, weekly recycling collection, and bi-weekly refuse collection).
6. Implementing new approaches for post-collection processing of discarded materials (e.g. a Resource Recovery Center and enhanced composting technology at the Greenery).

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 !**



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

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



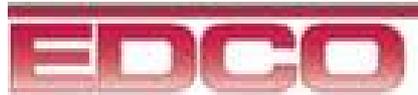
# Zero Waste in San Diego: Honoring Labor

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: Acknowledging 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.**

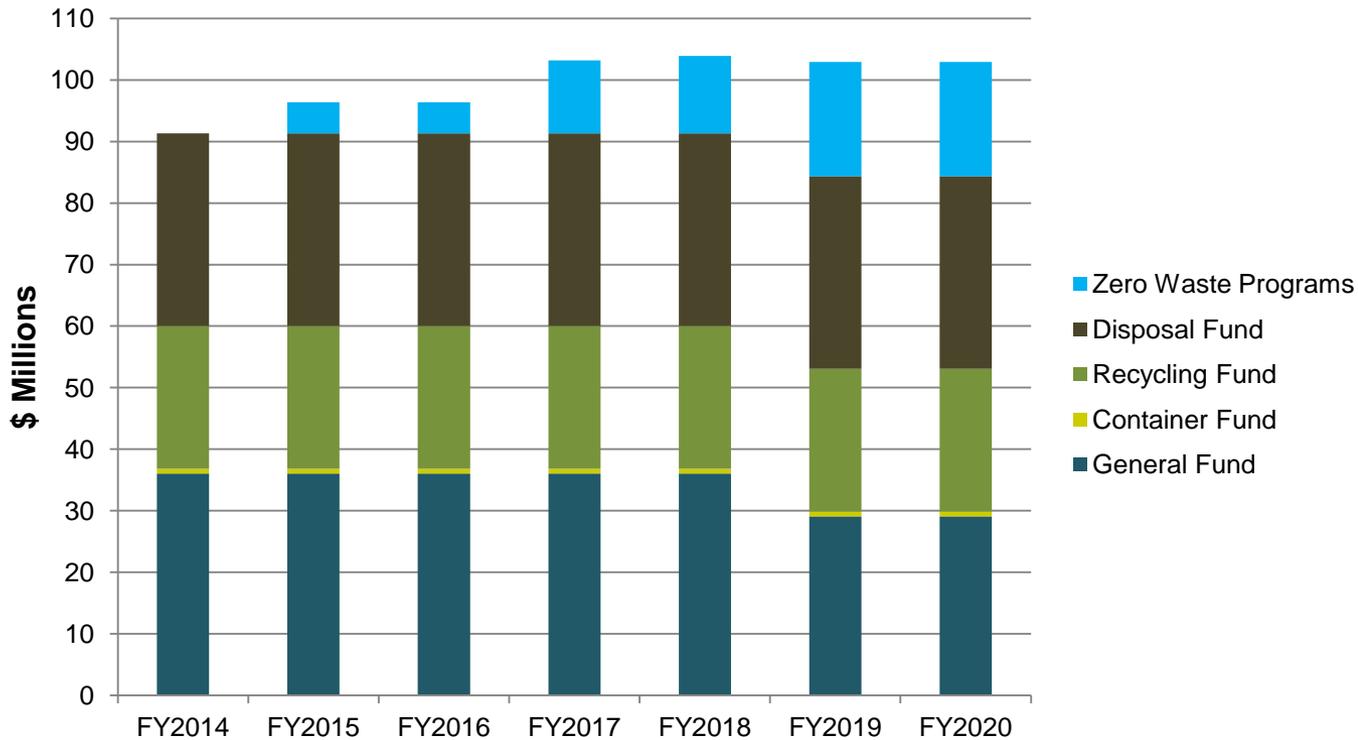


Providing Solid Waste and Recycling Services Since 1968



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

## Yearly Planning-Level City Cost Estimate (2014 \$)





# 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's Landfill

Extend Miramar Landfill Life and Delay the Need for Replacement Facilities



# Zero Waste in San Diego Will:

Reduce GHG and Local Smog-forming Emissions

Create Local Green Jobs

Result in an Economically and Environmentally Sustainable City



Program Resource Recovery Center Household Hazardous Waste Collection Program Waste Composition Studies  
Green Business Network  
Curbside Processing Contract Advocacy EP  
ing Program Zero Waste Construction and Demolition Deposit Ordinance Curbside Recycling Collection  
onmentally Preferable Purchasing Program Environmentally Preferable Purchasing Program Social  
iders Group Curbside Processing Contract Green Students Youth Forum Waste Composition Studies Zero Waste SANDAG Green Business Network  
Materials Reuse City Wide Buy Back Facilities City Recycling Ordinance  
Recycling TAC Earth Awards Zero Waste CAC Website Waste Composition Studies Resource Recovery Center  
Biosolids Zero Waste Social Plastic Bag Ordinance Recycling SDCOE Curbside Recycling Collection  
Community Cleanups Grocery Facility Recycling Climate Action Plan Curbside Yard Waste Collection Greenery Facility  
Recovery Center SCEI CAC VIP Awards Environmentally Preferable Purchasing Program City Wide Buy Back Facilities City Recycling  
al Media CAC Recycling Climate Action Plan SDCOE  
Youth Forum Climate Action Plan Social Media Website Community Outreach  
and Repair Stakeholders Group Community Outreach Curbside Processing Co  
ction and Demolition Materials Reuse  
Waste Reduction and Recycling Awards Program  
s Tree Recycling Dropoff Program TAC  
TAC Earth Awards Media VIP Awards Biosolids Website Advocacy TAC  
Composting Recycling SDCOE  
Plastic Bag Ordinance SANDAG Expanded Polystyrene Ban Climate Action Plan Community Cleanups  
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act City Wide Buy Back Facilities Public Space Recycling Community Cleanups Curbside Yard Waste Collection Solid Waste Franchise Agreements Construction and Demolition Materials Re



# 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.grn.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>



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ZeroWaste  
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CityWideBuyBackFacilities  
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vironmentalPreferablePurchasingProgram  
VIPAwards  
ClimateActionPlan  
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eBiosolids  
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