

## Zero Waste

### Overview

Zero Waste is a goal that is ethical, economical, efficient and visionary, to guide people in changing their lifestyles and practices to emulate sustainable natural cycles, where all discarded materials are designed to become resources for others to use.

As defined by the Grass Roots Recycling Network, Zero Waste is a philosophy and a design principle for the 21st Century. It includes “recycling” but goes beyond to address the reduction of “upstream” waste created through mining, extraction, and manufacturing of products. Zero waste maximizes recycling, minimizes waste, reduces consumption and encourages the development of products that are made to be reused, repaired or recycled back into nature or the marketplace.

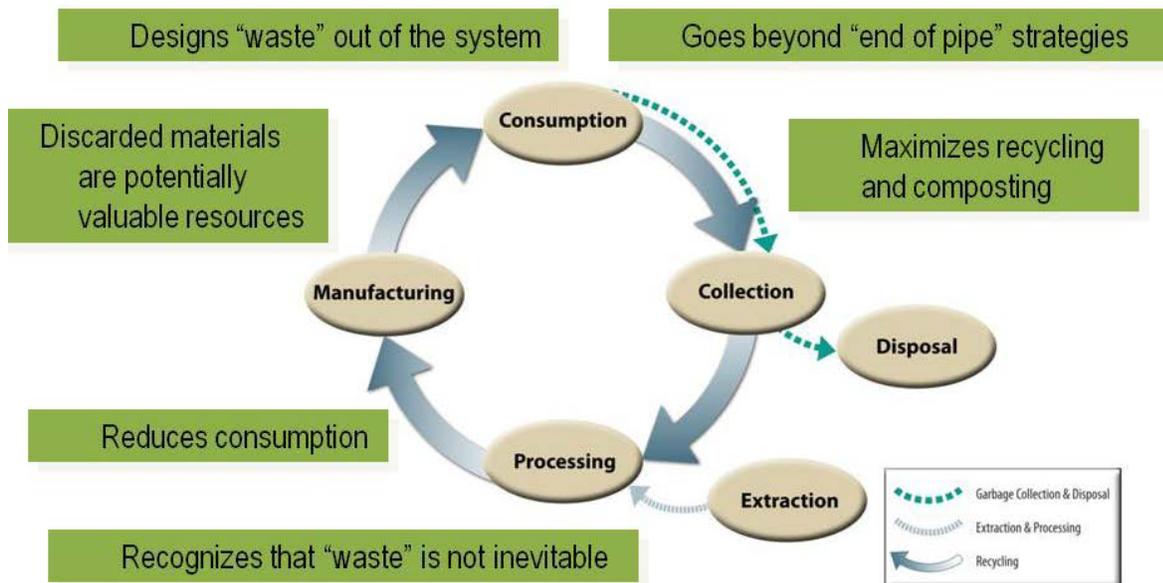
Zero waste:

- Recognizes that “waste” is not inevitable
- Discarded materials are potentially valuable resources
- Goes beyond “end of the line” strategies
- Maximizes recycling and composting
- Reduces materials consumption

(Source: City of Los Angeles is developing the Solid Waste Integrated Resources Plan, [http://www.zerowaste.lacity.org/files/info/fact\\_sheet/SWIRPFAQS.pdf](http://www.zerowaste.lacity.org/files/info/fact_sheet/SWIRPFAQS.pdf) Retrieved 09/29/2011)

It is an overarching concept that encompasses all waste reduction and diversion options. Certain components of this philosophy are more easily implemented at a local governmental level; others, involve large scale societal and industrial changes in such things as mining and manufacturing. Advocates for zero waste acknowledge that there will likely always be some waste that will require disposal. Figure 1 is a graphic illustration developed from several other zero waste plans prepared by HDR Engineering, Inc (HDR).

**Figure 1 - What is Zero Waste**



Components of the zero waste concept will be discussed in other topical papers including those on:

- Source Reduction
- Product Stewardship
- Household Hazardous Waste (HHW)
- Recycling
- Organics Composting
- Yard Waste Management
- Waste Conversion Technologies

### **Current Programs**

Within the Planning Area there are a wide range of programs that would be considered a part of the zero waste strategy/plan. This includes programs that target waste reduction, recycling and composting, hazardous materials reduction and diversion, as well reduction in material consumption. These programs include both physical facilities as well as educational initiatives. Examples of City/County programs include:

- public drop-off recycling centers
- lawn waste composting
- wood waste management
- household hazardous material collection events
- various education initiatives (publications, website, educational tours, etc.)
- support to private initiatives

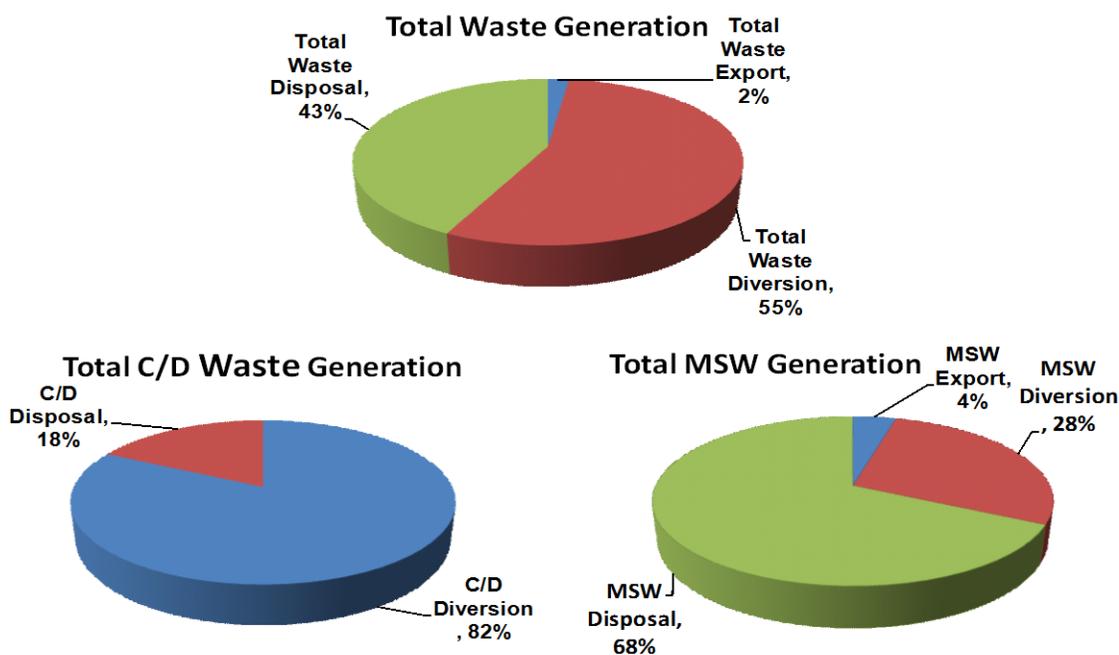
Private business also offers a variety of programs including:

- Curbside recycling for residents and recyclables collection services business (subscription based)
- Buyback centers
- There are also private firms that will accept and recycle or provide for proper management of the following potentially discards items:
  - Appliances
  - Automobiles
  - Automobile batteries
  - Rechargeable batteries
  - Button batteries
  - Computer equipment
  - Clean asphalt and concrete
  - Compact florescent bulbs
  - Fire extinguishers
  - Hearing aids
  - Oil
  - Tires
  - Plastic grocery bags
  - Plastic Pharmacy bottles
  - Propane tanks
  - Televisions
  - Toner cartridges
  - Wood waste
  - Metal cans

### **Generation and Diversion**

It is estimated that approximately 68 percent of the municipal solid waste (MSW) generated in the Planning Area (which excluding concrete, asphalt, and tires) is disposed in the Bluff Road Landfill, another 4 percent is exported to out-of-county landfills and the remaining 28 percent is diverted by reuse, recycling, composting or related techniques(see Figure 2). This may underestimate the diversion rate since there is no reliable source of information to estimate the rate of reuse (e.g., materials that never enter the stream of materials requiring management as a waste product).

**Figure 2 - 2010 Waste Disposal and Diversion, by Percentage**



If the quantities of the concrete, asphalt, and tires are included in the total waste generation, then approximately 43 percent of the generated waste is disposed in City landfills, another 2 percent is exported to out-of-county landfills, and the remaining 55 percent is diverted by reuse, recycling, composting or related techniques.

Although C/D waste diversion efforts have made great strides in the past two decades, there are still opportunities for increased diversion. Options for increasing MSW and C/D diversion will be key areas of focus in the planning effort.

### **Program (Facility/System) Options**

Zero waste initiatives include the following:

- Waste reduction at the source of generation (Source Reduction)
- Changes in manufacturing design to enhance recycling and reuse (Product Stewardship)
- Producer responsibility at the end of product life (Extended Producer Responsibility)
- Consumer responsibility in product selection (Consumer awareness)
- Program opportunities for material recovery and diversion rather than disposal (Recycling/composting)
- Markets for materials recovered for society's discards (Market development)
- Changes in purchasing practices that can be viewed as inhibiting the reuse of recovered materials (Modification of procurement specifications)
- Energy and resource recovery, as well as volume reduction (Conversion technologies)

Many of these initiatives will be discussed in more detail as separate topics as part of the planning process. There are many different initiatives underway nationwide and worldwide. While reduce, reuse and recycle are important resource conservation practices and reduction options, they only represent a fraction of all the opportunities available to conserve resources.

The USEPA provides additional ideas in their Sustainable Materials Management website (<http://www.epa.gov/wastes/conservesmm/index.htm>).

Some of the zero waste ideas that may deserve further consideration in the Solid Waste Plan 2040 planning effort include the follows:

- Better establish and promote Solid Waste Program information as it relates to Source Reduction
- Expand education in the schools, businesses and institutions
- Increase Waste Audits to Planning Area businesses
- Expansion of Material Reuse Center/Waste Exchange, including such items as: construction materials, household furnishings and cleaning supplies
- Development/Expansion of ReUse Centers to help provide a second-life option for various materials (e.g. used electronics, building material) currently targeted for disposal
- Increased Special Waste Diversion Programs for items such as Electronics and Medical Wastes
- Increase residential recycling
- Increase commercial, institutional and industrial recycling
- Develop composting capacity for other organic waste
- Institute bans on materials that have significant resource value and that may be difficult to recycle or pose problems with disposal
- Target programs to reduce the quantity of plastics in the waste stream, especially film plastics and single use containers
- Promote Product Stewardship and Extended Producer Responsibility legislation
- Mandate and/or Incentivize Recycling programs, such as:
  - Volume-based waste collection programs to provide additional price based incentive to encourage more waste reduction and recycling
  - Pay-as-you-throw rate structures for yard waste to encourage reduction
  - Requiring recycling services be universally available to all waste generators in the Planning Area (residential, commercial, industrial and institutional generators)
- Strategies to improve local markets for recyclable and composted materials
- Promote purchasing policies that minimize waste

## Options Evaluation

As noted above, most of the options that might be implemented at a local (Planning Area) level will be addressed in separate evaluations. Also, because zero waste encompasses a holistic approach to waste, with strategies and principles that encompass changing lifestyles and societal changes and go beyond recycling to address the reduction of “upstream” waste created through mining, extraction, and manufacturing of products, they are not easily evaluated based on the criteria established for use in the Solid Waste Plan 2040 planning process (e.g., technical requirements, environmental impacts, economics, implementation/viability). These criteria will be applied, as appropriate to individual system, facility and program options, which may be components of zero waste, considered in other evaluation topic papers (e.g., source reduction, recycling, yard waste, etc.).

Again, it is important to emphasize that zero waste is an overarching concept that encompasses all waste diversion options.

## **Relationship to Guiding Principles and Goals**

As it relates to the Guiding Principles and Goals of the Solid Waste Plan 2040, zero waste would be directly applicable as further noted below:

- Emphasize the waste management hierarchy: zero waste is directly related to the waste management hierarchy in that it places maximum emphasis on reduce, reuse, recycle and would employ recovery to avoid or prevent the need to generate and manage residuals.
- Encourage public/private partnerships: zero waste requires participation by both public and private stakeholders, nationally, state-wide and locally.
- Ensure system capacity: zero waste requires the necessary infrastructure and system approaches to ensure that material will not be discarded and can be recycled and composted and returned to beneficial use. It goes beyond the end of the line disposal.
- Engage the community: zero waste requires an engaged community because it ultimately seeks to change the current management/disposal ethos by including lifestyles and societal changes.
- Embrace sustainable principles: zero waste is based on sustainability principles in emphasizing that waste is not inevitable and in considering environmental, economic, and social dimensions in managing and using resources.

## **Summary**

Zero Waste is a goal that is ethical, economical, efficient and visionary, to guide people in changing their lifestyles and practices to emulate sustainable natural cycles, where all discarded materials are designed to become resources for others to use. Zero Waste is a philosophy and a design principle that maximizes recycling, minimizes waste, reduces consumption and encourages the development of products that are made to be reused, repaired or recycled back into nature or the marketplace. It is an overarching concept that encompasses all waste diversion options, many of which will be addressed as separate topical discussion in the development of the Solid Waste Plan 2040. Certain components of this philosophy are more easily implemented at a local governmental level; others, involve large scale societal and industrial changes in such things as mining and manufacturing.