DRAFT 14 (8-7-05)

Palo Alto Zero Waste Strategic Plan

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Cover graphic based on diagram from Eco-Cycle August, 2004, www.ecocycle/zerowaste/zwsystem

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1. Introduction

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The City of Palo Alto has long been a leader in recycling and sustainability, and has developed many innovative and comprehensive programs. On April 2, 2001 Palo Alto City Council adopted a Sustainability Policy and on November 15, 2004, the Palo Alto City Council directed City staff to prepare a Zero Waste Plan for Palo Alto.[1]

This Zero Waste Strategic Plan has been developed as the first step in planning to achieve Zero Waste in Palo Alto. As City staff plans to complete a detailed waste characterization study in the fall of 2005 comparable to those done in 1990 and 1997, it was decided that it would be best if this Zero Waste Plan focused on policies and services needed as a Strategic Plan, and that a more detailed Zero Waste Operations Plan be developed later.

1.1 What is Zero Waste?

The Zero Waste International Alliance broadly defines Zero Waste as:

> "A philosophy and visionary goal that emulates natural cycles, where all outputs are simply an input for another process. It means designing and managing materials and products to conserve and recover all resources and not destroy or bury them, and eliminate discharges to land, water or air that do not contribute productively to natural systems or the economy."[2]

For Palo Alto, although the intent of this Plan is to strive for ***Zero*** Waste, practically if we divert at least 90 percent of the waste generated by all sources (residential, business, schools, and institutions), we will be well on our way to Zero Waste and the program will be deemed a success.

Unlike our current system of ***managing*** waste, Zero Waste seeks to ***eliminate*** waste wherever possible by encouraging a systems approach that avoids the creation of waste in the first place. A Zero Waste systems approach turns material outputs from one process into resources for other processes.

For every ton of waste buried in municipal solid waste landfills, about 71 tons of manufacturing, mining, oil and gas exploration, agricultural, coal combustion and other wastes are produced along the way.[3] If materials are buried in a landfill or burned in an incinerator, we have to extract and process new virgin materials to make new products. It's as if there is a long shadow of depleted resources and wastes left for every product and package we use that is much larger

[1] CMR:470:04
[2] http://www.zwia.org/standards.html
[3] Brenda Platt and Neil Seldman, Wasting and Recycling in the United States 2000, prepared by the Institute for Local Self-Reliance for the GrassRoots Recycling Network, page 13.

than the product or package itself. This is the reason that eliminating waste is so important, so that these resources are not wasted to begin with.

1.2 Zero Waste Strategic Plan Purpose and Objectives

This Zero Waste Strategic Plan is intended to provide Council and City Staff with high-level guidance in the planning & decision making process to achieve Zero Waste goals.

The objectives of this Zero Waste Strategic Plan are to identify:

- Opportunities for improved management of materials discarded in Palo Alto.
- Policies and incentives to help achieve Zero Waste in Palo Alto.
- Services needed to achieve Zero Waste and recommendations to consider in evaluating specific programs and facilities for implementation.

1.3 Community involvement with Strategic Plan

On January 13, 2005, a task force of residents and businesses was formed by City staff to assist in the creation of a Zero Waste Policy and Plan for Palo Alto. The Zero Waste Task Force met eight times over six months, and meetings were open to public participation. Gary Liss & Associates (GLA) [4] was hired to create this "Zero Waste Strategic Plan" for the Task Force and the City to adopt.

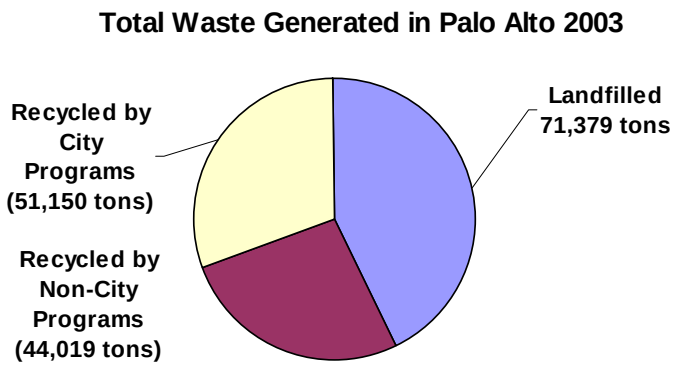
This Zero Waste Strategic Plan includes input from a wide cross-section of the community. Public meetings were held. Surveys were sent to at least 1,000 businesses throughout Palo Alto. In addition, surveys were sent to over 400 reuse, recycling and composting service providers throughout the San Francisco Bay Area. All residents received information about a residential survey in their May utility bills and many responded. Both commercial and residential surveys were posted on the City's website.[5]

Other local participation was encouraged through news releases, attending local business meetings,[6] door-to-door visits with Palo Alto service providers, a special zero waste web site (www.city.palo-alto.ca.us/zerowaste/), newspaper ads, Community Recycler newsletter, Utility bill inserts, flyers (at local libraries, May Fete parade, and the City landfill), and the Recycling Center kiosk.

[4] See www.garyliss.com for background.
[5] See Appendix B for summaries of the surveys.
[6] Including the Stanford Shopping Center, Chamber Government Affairs Committee, Stanford Research Park, and food generating businesses.

2. Background and Analysis

In this Section:
- **How much waste is there?**
- **Where is waste from?**
- **Where does waste go?**
- **Major Issues and Events**
- **Types of Materials Landfilled in 1997**
- **Priority Service Needs**
- **Funding for Zero Waste**



2.1 How much waste is there?

In 2003, the California Integrated Waste Management Board (CIWMB) estimated that the City of Palo Alto generated 166,548 tons of waste annually.[7] Of this total generated tonnage:

- 71,379 tons were landfilled
- 95,169 tons were diverted from disposal through source reduction, reuse, recycling, and composting activities, including:
  - 51,150 tons were diverted through City operated reuse, recycling and composting programs, including:
    - The City composting facility at the Palo Alto landfill processed 16,890 tons of green waste.
    - The City's recycling drop-off center at the Palo Alto landfill processed 15,130 tons of recyclable materials (paper, glass, metal, and plastic) and some household hazardous wastes from residents and businesses.
    - The SMaRT[8] station diverted another 9,480 tons of recyclables (~13% of the total amount of mixed wastes sent from Palo Alto), after source separation programs.
    - The City also obtained another 6,470 tons from recycling at the City Landfill, and 2,510 tons from recycling of construction and demolition debris.
    - A single-stream recycling pilot recovered another 1,670 tons of recyclables, and resulted in the citywide expansion of this program beginning July 2005.
    - The City's Household Hazardous Waste (HHW) program collects about 270 tons per year of HHW from both its recycling drop-off center and its HHW collection events that operate out of the Water Quality Control Plant.

[7] The latest detailed data for Palo Alto is from a 1997 waste generation study conducted for the City of Palo Alto. More recent data was obtained only on a statewide, and estimates were calculated by the State for each jurisdiction to use for general planning purposes.

[8] Sunnyvale Material Recovery and Transfer (SMaRT) station, see http://sunnyvale.ca.gov/Departments/Public+Works/Solid+Waste+and+Recycling/SMaRT+Station

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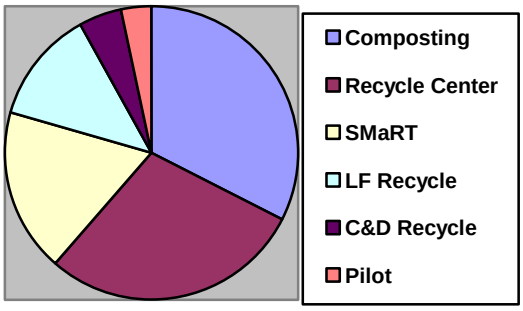
2

Table 1 - City Recycling Programs[9]

Program	Tons
Composting	16,890
Recycling center	15,130
SMaRT station diversion	9,480
Recycling at City Landfill	6,470
C& D debris box recycling	2,510
Single stream recycling pilot	1,670

Chart 2 - City Recycling Programs



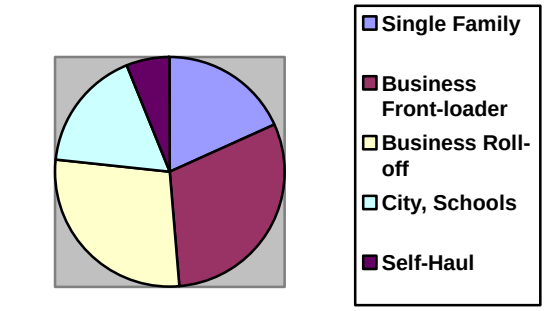
- 44,019 tons were diverted through non-City programs - See Appendix B for summary of a survey reporting material types and tonnages diverted in 1997 from non-City programs.

The combination of the City and non-City programs resulted in the CIWMB calculating a 57% diversion rate for Palo Alto for calendar year 2003.

2.2 Where does Palo Alto's waste come from?

Single-family residents create only 18.3% of all Palo Alto discarded materials currently landfilled.[10] Over 58% of discarded materials come from businesses (30.3% front-loader collection and 28% collected in roll-offs). However, the numbers for commercial include, by definition, discarded materials from apartment buildings in the City. Another 17.3% comes from City and other institutional operations, including the Community Improvement Project and schools. Only 6% is hauled directly to the Palo Alto landfill by residents and businesses.

Chart 3 - Sources of Waste



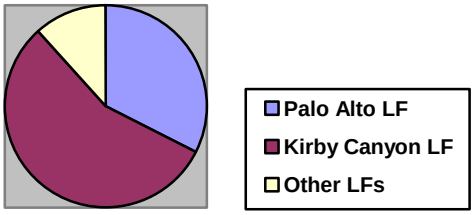
2.3 Where does Palo Alto's waste go?

The City of Palo Alto (City) owns and operates a municipal solid waste landfill that includes a 7.5-acre composting facility and a 1.5-acre recycling drop-off center within the property boundary. The recycling drop-off center accepts recyclable materials (paper, glass, metal, and plastic) and some household hazardous wastes from residents and businesses.

[9] Additional information about City programs and their history can be found in the 2003 City's Annual Recycling Report at: http://www.city.palo-alto.ca.us/zerowaste/graphics/2003_Annual_Report.pdf.
[10] All the data in this paragraph based on email from Russell Reiserer to Bob Wenzlau, June 10, 2005.

The CIWMB reported that 71,379 tons of City waste was disposed of in 2003, 23,230 of which were disposed of at the Palo Alto Landfill, 39,846 tons at the Kirby Canyon Landfill and 8,303 tons at other landfills in California.

Chart 4 - Palo Alto Wastes Landfilled



The Palo Alto Landfill final closure is scheduled to occur in 2011.[11] All facilities operating there will be removed and the public passive Byxbee Park will be completed.

In addition to these facilities, the City partnered with the cities of Mountain View and Sunnyvale for the operation of the Sunnyvale Materials Recovery and Transfer (SMaRT) station. The SMaRT Station receives about 2/3 of Palo Alto's waste, diverts about 19% of it and disposes the remainder at the Kirby Canyon Landfill through an agreement with Waste Management Inc.

2.4 Major Issues and Events Impacting on Design of Zero Waste System

Probably the most significant issue identified to date that could be an impediment to Zero Waste in Palo Alto are the "Put or Pay" contracts the City has with Waste Management, Inc. and Green Team/Zanker for accepting waste at the Kirby Canyon Landfill and SMaRT Station. Today, the City is obligated to deliver a set amount of waste annually to the SMaRT station and the Kirby Canyon Landfill or pay a fee per ton for each ton short of the City's commitment. Palo Alto committed to approximately a minimum of 27% of its waste stream, so it would only be able to get to 73% waste diversion before these contractual obligations impact the City. If Palo Alto actually had no waste to landfill, then it could cost the City up to several million dollars per year if it had to pay this contractual provision.

City Council leadership will be required to spearhead regional cooperation, and the highest caliber of City negotiations to renegotiate these commitments before 2007. Until these negotiations are completed, this remains a major disincentive to Zero Waste.

Although Zero Waste is the goal, it will not be achieved overnight, and therefore well-designed and operated landfills need to be viewed as a scarce resource to be optimized and conserved as long as possible. Landfills are also one of the largest contributors to greenhouse gas emissions in North America, and many landfills have leaked toxins underground to neighboring properties, causing major liabilities for the owners. In fact, USEPA staff acknowledged that all landfills will leak,[12] and that the problems are just being postponed to some point in the future. Due to such major potential liabilities, all landfills used by Palo Alto residents and businesses need to meet the highest environmental standards, and reflect their full past, present and reasonably anticipated future costs in their user fees and/or in budget analyses.

[11] More details on this are on page 6.
[12] EPA in the Federal Register of Aug. 30, '88 stated: "[E]ven the best liner and leachate collection systems will ultimately fail due to natural deterioration…"

In addition, four major events will significantly impact Palo Alto's ability to change its solid waste and recycling system and the timing of such changes. These events need to be factored into the design of any Zero Waste system for Palo Alto:

- Palo Alto's agreement with Palo Alto Sanitation Company/ Waste Management Inc. for solid waste and recyclable material handling services could terminate on July 1, 2007. If the City extends for two additional years in 2005, then the City will need to decide by the summer of 2007 how to structure a competitive procurement process to be completed by July 1, 2009.

- Palo Alto's City-owned landfill on Byxbee Park will close in 2011. By 2007, the City will need to decide if it wants to continue to operate a Recycling Center like the existing facility and where that should be located. If the City chooses to continue to operate a Recycling Center in Palo Alto, a design for that facility needs to be prepared, environmental review completed, permits obtained, and construction completed by the time the landfill closes.

- Palo Alto's Memorandum of Understanding (MOU) with Sunnyvale and Mountain View to use the SMaRT station will terminate on October 15, 2021.

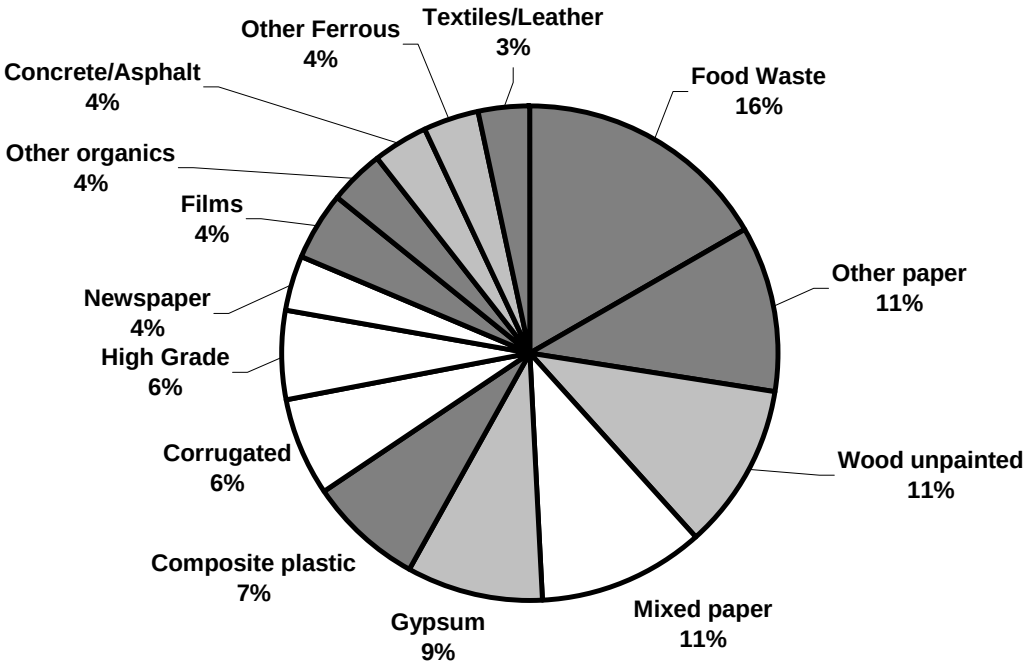
- Palo Alto's agreement with Waste Management Inc. to use the Kirby Canyon Landfill will terminate on October 7, 2021. At that time, the City will have the option to extend the term for an additional 10 years.

2.5 Types of Materials Landfilled in 1997

One of the key tools to identify priorities for Zero Waste policies and programs is an analysis of the 12 master categories of materials that are still being landfilled. As Palo Alto does not have accurate current data, this Plan reviewed the latest data from 1997, to identify the largest volume and most toxic materials to be designated as targets to reduce or eliminate to achieve Zero Waste. Once identified, additional analysis was then done (see next section) to consider the likely changes in the amounts of these materials resulting from City policies and programs implemented since 1997. Although this data is outdated, it provides some valuable insight until the City completes a new waste generation study.

Chart 5 is a pie chart that highlights the top 14 materials still disposed in landfills in 1997 when considering the entire waste stream (all four sectors: residential, commercial, roll-off and self-haul). The total amount of waste reported landfilled in 1997 was 85,357 tons for the year.

Chart 5 - Top 14 Materials Landfilled in Palo Alto 1997



2.6 Priority Service Needs

Gary Liss & Associates (GLA) extensively evaluated reuse, recycling and composting services in the Palo Alto area. A companion report was developed[13] which details how this analysis was done, and different methodologies used to determine priorities for services needed in Palo Alto. Priority service needs were identified for material types where no or low services were found to be available and where the specific material type was found to be a significant weight percent of disposed waste.

Table 2 (below) summarizes the materials where priority services may be needed. Chart 5 also highlights the priority services, with the darkest areas on Chart 5 being primary service needs and the light gray areas on Chart 5 being secondary service needs. A discussion for each of the major types of materials discarded in Palo Alto is also included in Appendix C. Please note that service priorities could be met by eliminating these materials instead of adding new services to collect them: The determination of whether to focus on eliminating them or adding new services would be dependent on the availability of markets for those materials, or the possibility of developing new markets for those materials.

[13] Toni Stein, *Palo Alto Service Needs Analysis*, Gary Liss & Associates, August 2005, see [include URL once posted to City's website]

Table 2 - Priority Service Needs

Primary Service Needs for all Palo Alto waste streams
♦ Food Wastes
♦ Other Paper[14]
♦ Composite Plastics[15]
♦ Film Plastics
♦ Textiles and Leather
Secondary Service Needs for all Palo Alto waste streams
♦ Wood unpainted
♦ Gypsum wallboard
♦ Other Ferrous

2.7 Funding for Zero Waste

If the City were to try to accomplish Zero Waste by itself, it could be a costly venture. However, funding for Zero Waste initiatives may come from a wide variety of sources. Stakeholders and service providers may be willing to assist with the expansion of solid waste, reuse, recycling and composting services in Palo Alto without public investments. Other local businesses might want to invest in new Zero Waste ventures (such as a Resource Recovery Park), or self-finance the expansion of new reuse, recycling and/or composting services by diversifying existing unrelated businesses. Properly designed avoided collection and disposal costs can become the economic engine that drives the system to Zero Waste.

If state and national legislation is adopted requiring retailers and/or producers to assume responsibility for their products and packaging, these businesses will incorporate the costs of reuse, recycling and/or composting within the purchase price of the products. This becomes a self-funding system, and is one of the most powerful opportunities that exist to move towards Zero Waste, particularly for products and packaging items currently difficult to recycle.

Socially responsible investors will be interested in investing in projects like a Resource Recovery Park and new reuse, recycling and composting ventures. There is strong interest in investments in sustainable development and Zero Waste certainly qualifies as a tool to achieve a sustainable local economy. Gil Friend, CEO of Natural Logic, Berkeley, CA, estimates that there is over $5 billion now available for investment in such sustainable development enterprises from the private sector. A report was developed for this project that identifies funding sources for public, private and non-profit initiatives to provide the services needed to move Palo Alto to achieve Zero Waste.[16]

[14] Nonrecyclable but potentially compostable paper, according to 1997 Palo Alto Waste Generation Study.
[15] In Palo Alto 1997 Waste Generation Study, this category was for all plastics other than film plastics, PET and HDPE containers
[16] Neil Seldman, "Funding of Zero Waste Initiatives in Palo Alto," 2005, Gary Liss & Associates and Institute for Local Self-Reliance.

3. Recommendations

In this Section:
- The Vision of Zero Waste
- Zero Waste Goal
- Zero Waste Objectives and Strategies
- Zero Waste Timeline

The Task Force envisions that policies formulated in the pursuit of Zero Waste should be within the context of a larger set of coordinated City economic and environmental sustainability policies. Apart from servicing individual homeowners, the role of the City is likely to change over time. As public policies harness and engage the forces of the marketplace, it is believed that business waste generators and service providers will be brought together to work out details of how to most efficiently reduce, reuse, and recycle or compost their materials without the traditional reliance on the City to arrange such services. This is the essence of "Strategic Recycling," in which government plays the role as a catalyst, providing information, creating incentives and setting the rules, but not in directly providing services to all.

The most critical policy step for the City is to adopt both a long-range Zero Waste goal and intermediate target(s) and to mobilize all community stakeholders to participate in working to achieve them.

The Task Force believes that stakeholders should be initially encouraged through rate-based incentives to pursue Zero Waste, rather than resorting to waste reduction mandates that invoke fines or assessments for non-performance. Policies and incentives need to be applied to restructure rates and fees to provide a clear price signal to reward those who waste less and recycle more. In this way the City will help those who eliminate and recycle waste, and let those who choose to waste, pay higher fees for those services.

Palo Alto will need to clearly differentiate policies and programs for the various types of business sectors, particularly: multi-tenant buildings, downtown businesses, strip malls, restaurants and hospitality industry, and major industrial areas (e.g., Stanford Research Park).

The Task Force was particularly clear that the City must work with other communities in the San Francisco Bay Area to coordinate policies that will generate and maintain adequate recycling and composting capacity for the region while we work to eliminate wastes and keep recyclable materials from being landfilled. The City needs to expand existing reuse, recycling and composting activities by working to site one or more Resource Recovery Parks[17] in the region. Adding services will mean adding businesses to Palo Alto and the region.

This section is intended to provide the path forward to implement a Zero Waste Vision.

[17] A Resource Recovery Park co-locates reuse, recycling and composting processing, manufacturing and retail businesses. For Palo Alto, it might include: a drop-off/purchase of used furniture, appliances, building materials; a recycling buy-back and/or drop-off center; a permanent residential and small business hazardous waste drop-off program; yard trimmings and discarded food drop-off center; compost sales; construction and demolition debris recycling; other reuse activities; an assistance/education center.

3.1 The Vision of Zero Waste

To create a discerning and environmentally sustainable community of mutually supportive residents and businesses that strives to use all discarded materials productively and eliminate wasting and pollution.

Zero Waste will help maintain a healthy City and regional environment through the elimination of harmful discards to air, water and land; the conversion of the City landfill to parkland; and reducing future City landfill liabilities to ensure the long range economic vitality of Palo Alto.

3.2 Zero Waste Goal

Divert 73% of discarded materials from landfills or incinerators by 2011 and strive for Zero Waste by 2021.

3.3 Zero Waste Objectives and Strategies

The following objectives and strategies have been identified to provide a framework to guide City officials and the community in the planning and decision making process towards achieving Zero Waste. To accomplish the goal of Zero Waste, the Task Force recommends that the City will:

Objective 1 - Work with Residents and Businesses to Eliminate Waste

- **Strategy 1:**
  Expand City educational and technical assistance programs –

  1, Encourage residents and businesses to eliminate wastes on a voluntary basis..

  2. Provide technical assistance to local businesses to adopt sustainable best business practices to minimize waste and avoid landfill and incineration. . Designate and prioritize materials that need to be eliminated, reused, recycled, or composted, and provide information and assistance as needed for implementation.

  3. Promote and incentivize Palo Alto businesses to create and market products and services that utilize processes and means that reduce the volume and toxicity of waste and materials.

  4. Educate and engage the community to support Zero Waste initiatives by:
     - Developing and implementing a public education and communications program concurrent with the design of new waste diversion programs.
     - Implementing new education and outreach in advance of the implementation of any new programs.

- Coordinate outreach programs for sustainability and pollution prevention with Zero Waste, waste prevention and recycling programs.
- Implement comprehensive community-based social marketing programs to more actively engage residents and businesses.
- Over the next five years, the City should sponsor a "Zero Waste Leadership Awards" (as part of Earth Day or other event) to recognize businesses that are either 1) models of one or more Zero Waste Business Principles[18], 2) show significant measured progress (perhaps 10 basis points or more) in moving toward ZW, or 3) exceed the City interim targeted 2011 milestone percentage diversion goal.

- **Strategy 2**
  Establish rate-based Incentives and Disincentives to reduce Landfilling

1. Seek ways to incentivize local businesses to adopt Zero Waste goals and to develop Zero Waste plans. Consider granting any business that measurably exceeds the interim 2011 Zero Waste goal before 2011 favorable rate status (discounts) beyond those established in the normal rate structure. The size of the rate discount should be tied to both volume and percentage reduction of designated materials and target criteria.

2. In the first year of this plan, create a progressive multi-stage rate structure tied to measurable material reduction goals to ensure that both residents and businesses that waste less pay less. Communicate the rollout of the program to the public of material reduction targets at least three months in advance of year two implementation.

3. Beginning in year two, implement first stage rate structure incentives, targeted at high priority waste materials to be reduced. Put into place an effective and credible monitoring procedure and system to assess progress toward operational goals and provide progress report both at mid-year (6 months) and at year end on the City's Zero Waste website. Evaluate mid-year progress and move to stage two rate structures if no significant progress has been achieved.

4. Beginning in year three, if progress meets two-year operational reduction targets, then maintains rate structures. If not, then advance to higher stage rate structures for another six-month trial, reporting back, twice each year until year five.

5. If, by the end of year five, designated materials have not been decreased by more than 50% from 2005 levels, following implementation of progressive rate structure and periodic reporting, then consider adopting bans or mandates with fines to require proper handling of those materials which have not been successfully reduced.

[18] For copy of the Principles, go to: http://www.grrn.org/zerowaste/business/

Objective 2 - Develop Infrastructure Beyond Recycling

- **Strategy 1**
  Renegotiate "Put or Pay" Contracts[19]

  Undertake a coordinated effort with regional cooperation, to negotiate with Waste Management, Inc. and GreenTeam/Zanker to significantly reduce or eliminate the current minimum financial obligations in the present service contracts that pose a barrier to waste reduction. Mobilize all possible State and regional resources and alliances to ensure a successful negotiated outcome before 2007.

- **Strategy 2**
  Adopt Business Investment Policies to Expand Service Provider Base–

  1. Encourage the cost effective development and expansion of reuse, recycling and composting services for all materials discarded in Palo Alto. Establish minimum qualifications for service vendors to provide such services as appropriate to ensure public health and safety. Establish mandatory service vendor reporting requirements to accurately capture quantities and weights of diverted materials.

  2. Implement policies that penalize the discharge of toxic materials into the environment.

  3. Increase public and private reuse, recycling and composting collection and processing services on an open, competitive basis, and help develop new businesses that add value to materials recovered, minimizing residues which require disposal.

  4. Encourage innovative services to be added by the private sector and nonprofit groups so the City does not have to invest in those activities. Encourage different types of services to be provided for different types of businesses.

  5. Develop new uniform requirements for owners and managers of multi-family dwellings and multi-tenanted commercial buildings that ensure that all tenants have reasonable access to services and premises-based facilities comparable to single-family dwellings and small businesses. Engage community and economic development staff to make it a priority to expand associated services for reuse, recycling, and composting.

[19] Until 2021, the City is obligated to deliver a set amount of waste annually to the SMaRT station and the Kirby Canyon Landfill or pay a fee per ton for each ton short of the City's commitment.

♦ **Strategy 3**
Develop New Priority Services and Material Diversion Targets

1. Discarded food and food-soiled paper should be the highest next priority for new services in Palo Alto for both the residential and commercial sectors.

2. Expand of opportunities for reusable building materials. Monitor and provide annual reports on the City's Zero Waste website on progress of material waste reduction associated with the 2004 City Construction Debris Recycling Ordinance.

3. Develop and communicate to the public a list of the highest priority materials for waste reduction, such as used plastic toys (many of the remainder/composite plastics category), and other reusables (including textiles and leather), and film plastics and include these materials in drop-off locations.

4. At a minimum, maintain one or more recycling drop-off centers within the City limits once the City's landfill closes in 2011, not on City parklands unless consistent with the Baylands Master Plan.

♦ **Strategy 4**
Promote Voluntary Takebacks

1. Encourage retailers and their suppliers to take-back products and packaging that are currently difficult to reuse, recycle or compost in Palo Alto.[20]

2. Publicize take-back programs by posting all cooperating retailers on City's Zero Waste website and regularly include articles and/or ads about this program in area newsletters and newspapers.

♦ **Strategy 5**
Develop Resource Recovery Park

1. Develop or help cause to be developed one or more resource recovery parks within Palo Alto City limits or nearby (but not on City parklands) to provide location(s) for expansion of reuse, recycling and composting businesses.

2. Support other regional recycling centers used by Palo Alto residents and businesses to help them expand and provide additional services needed.

[20] Like Ottawa, Canada program, see:
http://www.city.ottawa.on.ca/gc/takeitback/index_en.shtml

Objective 3 -Lead by Example and Advocate Zero Waste

- **Strategy 1**
  Maintain a Public Advisory Review Body for Zero Waste Policy

  1. Continue the Zero Waste Task Force or alternatively, empanel an advisory body made up of community representatives to serve for limited duration to review the staff prepared Zero Waste Operations Plan and advise the Council on its implementation of and changes to associated City Zero Waste policies.

- **Strategy 2**
  Maintain Active State and Regional Profile on Zero Waste Public Policy

  1. Coordinate with other environmental and sustainability programs in the City to help them achieve Zero Waste.

  2. Work with State and Federal legislators from the San Francisco Bay Area to encourage other communities in the region to adopt similar Zero Waste goals and plans. Work with them where appropriate to remove and resolve mutual obstacles.

- **Strategy 3**
  Make City a Zero Waste Model

  1. Require all City departments to implement Zero Waste in all City buildings and programs with milestone targets and annual progress reports, no less than that which is voluntary requested from businesses or other community institutions.

  2. Arrange for the City auditor to independently review City diversion progress at least twice over the next six years.

  3. Develop measurable Zero Waste goals in job descriptions and annual performance evaluations of all staff. Post major accomplishments and highlights of progress for all departments on the City Zero Waste Web site on an annual basis.

  4. Develop and implement standard specifications to govern waste handling and diversion procedures for contractors involved in operating City waste, capital and repair projects, as well as recycling and sustainability programs.

- **Strategy 4**
  Minimize long-term landfill liabilities

  1. Ensure that the full capital and operating, closure, post-closure and post-post-closure costs are factored into current rates and financial assurances, particularly for private landfills.

2. Establish a budgetary target to reflect the benefits of avoiding these future liabilities as an avoided disposal cost, which will help in evaluating the economic viability of City investment in waste reduction programs.

3. Work actively with City landfill contractor and regulators to include new mechanisms for financial assurance that will address post-post-closure liabilities.

♦ **Strategy 5**
Provide Funding to Implement Zero Waste Plan

1. Consider funding of community Zero Waste initiatives with fees levied on the transport, transfer and disposal of wastes and by leveraging the investments of the private sector.

2. Identify and support proposals for state, federal and foundation grants and loans for Palo Alto businesses and service providers.

Objective 4 - Update Waste Data and **Develop Zero Waste Operations Plan**

♦ **Strategy 1**
Update Waste Data

1. Proceed promptly with a "Waste Generation Study" this year to report updated information using the 12 master categories, and include additional analysis of different segments of the commercial and industrial sectors, and institutions (including restaurants, medical services, retail, offices, multi-family dwellings and schools).[21]

2. The "Waste Generation Study" should clearly identify reusables from all other categories of the 12 master ones, and clearly identify by line item, composite materials, such as bulky goods and brown goods.

♦ **Strategy 2**
Develop Zero Waste Operations Plan (ZWOP)

1. Following the completion of the City "Waste Generation Study", the City must move promptly to develop a Zero Waste Operations Plan (ZWOP) that should:

a) Detail priorities for facilities to be developed by and for the City, including an assessment of appropriate public vs. private roles;

b) Evaluate the market value of reusables, recyclables and compostables still being landfilled;

[21] This could be accomplished through informal visual assessments of randomly selected businesses.

c) Identify public or private programs necessary to reduce, reuse, recycle or compost the materials identified from the waste characterization study;

d) Recommend how to proceed with the service opportunities identified in this Strategic Plan;

e) Identify the appropriate role for SMaRT in Zero Waste, and explore whether more diversion could take place at this facility or nearby, or if residue from SMaRT could be processed in a composting operation before being landfilled;

f) Identify location candidates for other new public and private facilities that might be required, with a conceptual basis for how to pursue the development of those facilities, while honoring the Task Force's recommendations to not use park land for such facilities, especially any park land in the Baylands;

g) Evaluate the economics of different potential public and private landfill problems and develop a budgetary target to establish what diversion programs are "cost effective;"

h) Assess the cost impacts from proposed changes to be negotiated for the SMaRT Station and Kirby Canyon Landfill;

i) Recommend policies and incentives to implement consistent with those outlined in this Strategic Plan;

j) Estimate jobs expected to be created and financial benefits from implementing the Zero Waste Operations Plan;

k) Identify which financing tools might be most helpful to local businesses to expand services needed to achieve Zero Waste in Palo Alto, working with the City's Economic Development/Redevelopment agency; and.

l) Determine what funding, staffing and authority will be needed for staff to implement a Zero Waste goal in Palo Alto.

3.4 Timeline

The following timeline is provided to highlight some of the next steps required to implement this Zero Waste Strategic Plan. "Short-term" refers to priorities for the next 2-3 years; "Interim Goal" refers to priorities to be accomplished by 2011. This timeline will only be possible to achieve if sufficient funding, staffing and authority are provided to staff, and recommended policies are adopted. What will be required to implement this Zero Waste Strategic Plan will be detailed in the Zero Waste Operations Plan.

Objectives and Strategies	Priority
1. Adopt a Zero Waste Goal.	
• Set target dates, intermediate and zero waste goals, in adoption of Zero Waste policy and resolution. (Draft to be attached in Appendix F).	Short-term
2. Work with Residents and Businesses to Eliminate Wastes	
Education and Technical Assistance	
• Promote positive Zero Waste buying power and behavior with existing promotional materials.	Short-term
• Develop new Zero Waste promotional materials.	Short-term
• Post local Zero Waste models on City's website and link to other examples.	Short-term
• Work with industry groups to promote Sustainable Business and Green Business programs.	Short-term
• Work with School District and local colleges to develop the "message" to promote Zero Waste locally.	Short-term
• Designate material targets to be eliminated.	Short-term
Incentives, Bans and Mandates	
• Identify waste management fees that need to be adjusted to reflect the true cost of wasting.	Short-term
• Draft Ordinances to provide incentives for waste generators.	Short-term
• Change City contracts for franchisee to apply Zero Waste principles and to provide greater incentives for Zero Waste.	Short-term
• Draft Ordinances to provide incentives for other service providers for Zero Waste.	Short-term
• Consider bans on materials as an alternative if other policies and incentives are not successful.	Interim Goal
• Phase in policies detailed in strategies in Section 3.3 above.	Interim Goal
3. Develop Infrastructure Beyond Recycling	
• Renegotiate "Put or Pay" Contract with SMaRT.	Short-term
• Renegotiate "Put or Pay" Contract for WM Kirby Canyon landfill.	Short-term
• Help School District and interested businesses to start food waste composting pilot program.	Short-term
• Add more reusables to Palo Alto Recycling Center working with local reuse nonprofits and businesses.	Short-term
• Encourage all providers of Zero Waste services to offer their services in Palo Alto on an open, competitive basis.	Short-term
• Target providers of Zero Waste services for economic development assistance using existing local tools.	Short-term
• Improve local source reduction, reuse, recycling and composting program infrastructure.	Short-term

• Encourage retailers to takeback products and packaging.	Short-term
• Encourage patronage of local businesses that takeback products and packaging.	Short-term
• Explore sites in region for potential Resource Recovery Park.	Short-term

4. <u>Lead by Example and Advocate Zero Waste</u>

• Maintain Zero Waste Task Force.	Short-term
• Brief all City departments on Zero Waste and explore opportunities for collaboration.	Short-term
• Collaborate nationally, regionally and with neighboring cities to avoid duplicating the work of others.	Short-term and ongoing
• Support state and national efforts to adopt extended producer responsibility, deposit programs, funding of Zero Waste initiatives through statewide or regional landfill surcharges and product charges, full cost accounting for waste disposal, packaging levies (e.g., on plastic bags), minimum recycled content standards for additional products, design for the environment programs, green procurement and Green Building guidelines for the public sector, and national measuring, monitoring and reporting in achieving zero waste goals.	Short-term and ongoing
• City set goal to be a Zero Waste Leader in the community.	Short-term
• Adopt and implement additional green procurement guidelines.	Short-term
• Join in initiatives that support Zero Waste and collaborate with other organizations to enhance purchasing power.	Short-term
• Establish budgetary target for the full avoided disposal costs to be basis for evaluating economics of Zero Waste programs and policies.	Short-term
• Support new mechanisms for financial assurance for post-post-closure liabilities.	Short-term and ongoing
• Incorporate new financial assurance mechanisms in contracts for private landfill services to minimize environmental impacts and City liabilities from wasting.	Interim Goal
• Create a Zero Waste fund to encourage local innovation and participation.	Short-term

1

5. <u>Update Waste Data/Develop Zero Waste Operations Plan</u>

Update Waste Data

• Conduct new waste characterization study	• Short-term
• Monitor, measure and keep the community informed of progress and results.	• Post Annual Report on Zero Waste on website

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Develop Zero Waste Operations Plan

• Educate and engage the community to support Zero Waste initiatives and to suggest new policies and programs needed.	• Short-term
• Develop programs to address service needs identified in Strategic Plan	• Short-term
• Consider and prioritize new, expanded programs and facilities (including public vs. private; local vs. regional; locations).	• Short-term
• Design different programs for different types of waste generating segments of the community that recognize their different service needs.	• Short-term
• Identify what funding, staffing and authority are required to implement ZWOP.	• Short-term
• Set priorities and milestones for specific programs and policies.	• Short-term
• Continue to involve residents and businesses in the planning process.	• Short-term
• Build alliances (public and political support) share and celebrate successes.	• Short-term

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Appendix A - Palo Alto Zero Waste Task Force Members

Task Force Co-Chairs	Organization/Affiliation
Walt Hays	Resident
Bud Mission	Roche Palo Alto
Name	**Organization/Affiliation***
Michael Closson	Acterra / Z.W. Taskforce of Santa Clara and San Mateo Counties
Karen Holman	Resident
Scott Nixon	Agilent Technologies
Tom Moutoux	Foundation For Global Community
James Kao	Green Citizen
Anna Payne	Hewlett Packard
Irene Sampson	League of Women Voters
Frank Rocha	Lockheed Martin
Eric Hassett	Palo Alto Hardware
Michael Kearney	PAUSD
Walt Hays	Resident
Emily Renzel	Resident, Parks representative
Bob Wenzlau	Resident, Terradex (small Palo Alto business)
Bud Mission	Roche Palo Alto
Greg Mize (alternate)	Roche Palo Alto
Ann Schneider	Sierra Club Zero Waste Committee
Alyssa Rice Wilson (alternate)	Sierra Club Zero Waste Committee
Julie Garcia	Simons Operations- Stanford Shopping Center
Ramsey Shuayto	Stanford Management Co.
Barbara Pressman	Stanford Terrace Inn
Henry Clark	TIBCO Software Inc
Mirna Cintron	Stanford Hospital/Packard Children's Hospital
Melissa Stai	Palo Alto Medical Foundation
Consultant	
Gary Liss	Zero Waste Consultant
City Staff attending Task Force meetings	
Susan Arpan	City of Palo Alto Economic Resources Department representing City Manager's office
Jim Burch	City of Palo Alto Mayor
Russell Reiserer Annette Puskarich Wendy Hediger Robert Le	City of Palo Alto Public Works- Refuse
Julie Weiss Dan Firth Joe Afong (alternate for Dan Firth)	City of Palo Alto Public Works Environmental Compliance/City of PA Sustainability Committee City of Palo Alto Fire Dept./City of PA Sustainability Committee.
* Each organization has one member on Task Force; subsequent members are alternates.	

Appendix B – Summary of 1997 Waste Generation Study Data

(By Sector, in tons per year)

Material	Residential	Commercial	Roll-off	Self haul	Combined
PAPER					34.6%*
Corrugated	722	2688	1606	88	5104
High Grade	792	2698	431	56	3977
Newspaper	828	1700	38	43	2609
Magazines	659	574	25	34	1292
Mixed paper	2756	3287	1478	204	7725
Other paper	1598	3646	2497	83	7824
METALS					5.3%
Aluminum Cans	66	118	8	3	195
other non-ferrous	51	107	2	27	187
Steel Food and Bev Cans	154	187	4	8	353
Other Ferrous	188	534	2471	134	3327
Comp. Bulky Items	0	0	53	217	270
GLASS					0.2%
Recyclable glass	452	1006	234	31	0
Remainder/composite glass	39	68	113	38	195
TEXTILES					2.8%
Textiles and Leather	492	629	1045	134	2300
PLASTICS					11.8%
HDPE containers	209	215	52	12	488
PET containers	80	93	22	4	199
Film Plastics	706	1915	302	66	2989
Remainder/composite plastic	833	3073	1984	195	6085
PLANT DEBRIS					3.5%
Leaves and Grass	535	383	52	261	1231
Branches and Brush	730	109	71	761	1671
PUTRESCIBLES					19.1%
Food Waste	5007	5649	586	260	11502
Diapers	696	262	6	36	1000
Other organics	282	232	2516	181	3211
WOOD					9.9%
Wood	147	875	5362	1736	8120
C&D CERAMICS					12.5%
inert solids	582	323	7874	1508	10287
SOILS					0%
CHEMICALS					1.0%
HHW	113	156	3	6	278
Brown Goods	19	338	72	81	510
TOTAL	18717	30527	28835	6126	82419

* All shaded numbers in this column are percentages of that material for the combined waste stream in 1997.

The following are pie charts prepared for each of the four sectors that highlight 11 of the 12 major categories of materials that were still landfilled as of 1997. There was no data available for the 12th category: reusables.

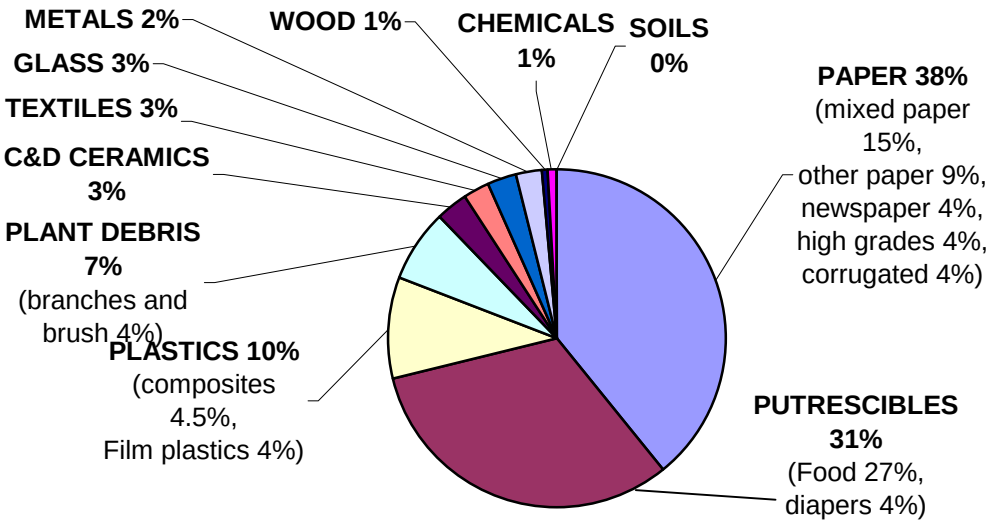

Chart 6 - Residential Waste Stream Composition
Total residential waste 18736 tons, Palo Alto 1997 WCS

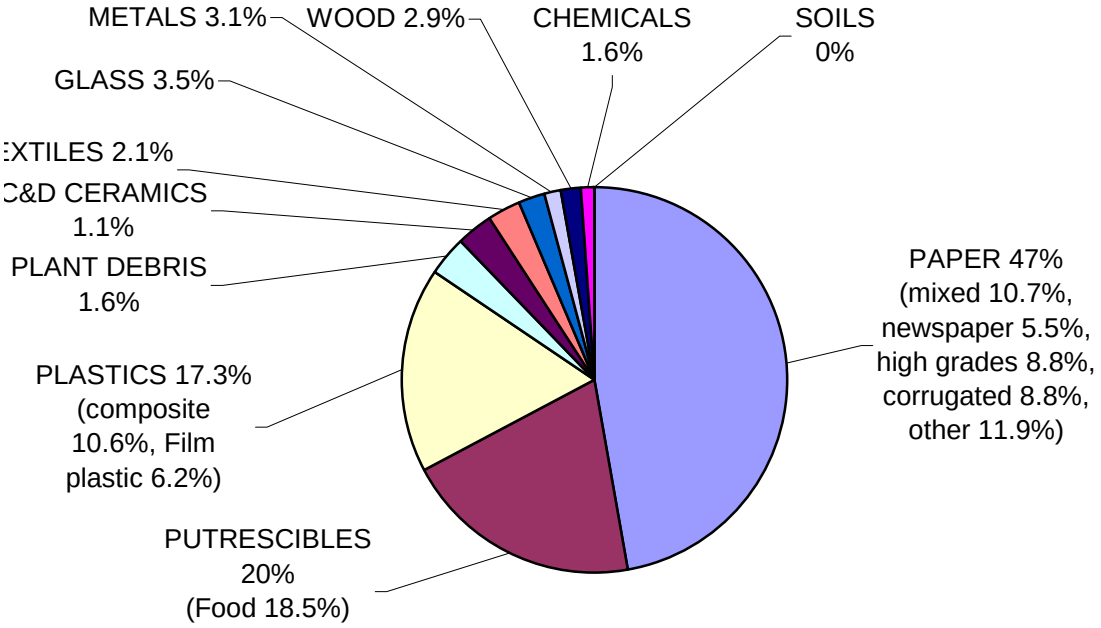

Chart 7 - Commercial Waste Stream Composition
Total commercial waste 30527 tons, Palo Alto 1997 WCS

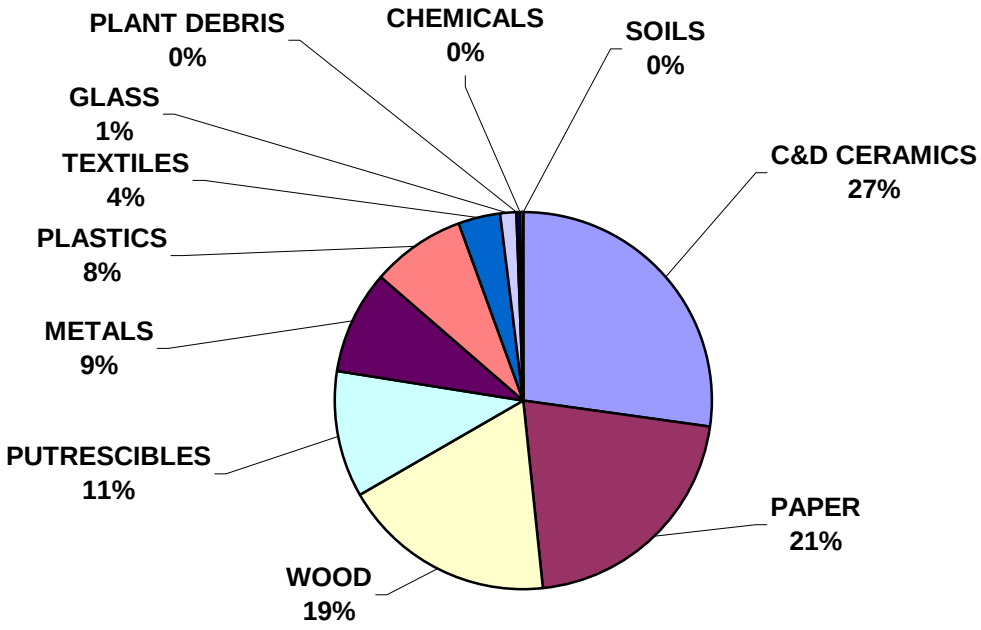

Chart 8 - Roll-off Waste Stream Composition*
Total roll off waste 28835 tons, Palo Alto 1997 WCS

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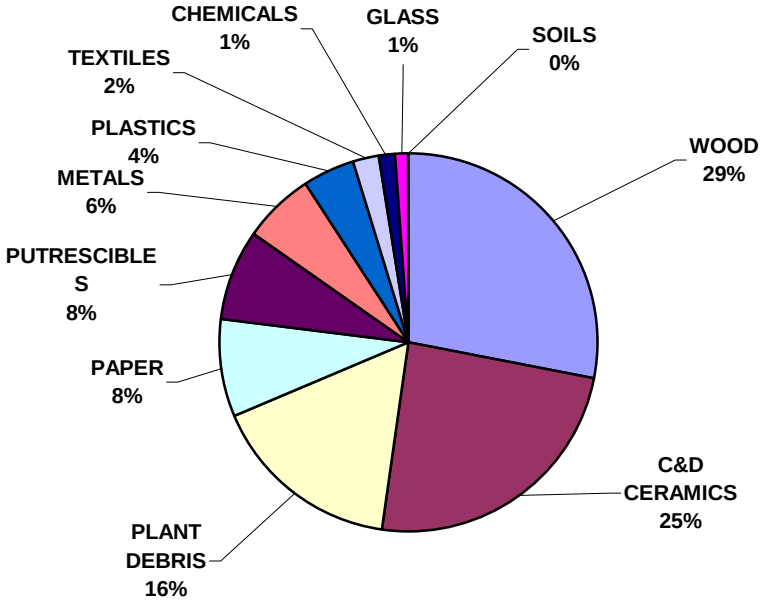

Chart 9 - Self Haul Waste Stream Composition
Total self haul 6126 tons, Palo Alto 1997 WCS

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* Roll-offs are large metal boxes that are used to store large quantities of materials, and are collected by trucks that use a winch to roll the boxes onto the bed of the truck.

Tables 3.2 and 3.3 from the 1997 study highlight specific amounts of materials documented being collected by recycling businesses (service providers) and reported by business recyclers (waste generating businesses). In addition to these documented amounts, the CIWMB estimated additional amounts were recycled to calculate a total waste generation amount, then subtracted the documented City recycling programs from that and calculated the total of 44,019 tons diverted through non-City programs. [Need to get original of tables 3.2 and 3.3 electronically]

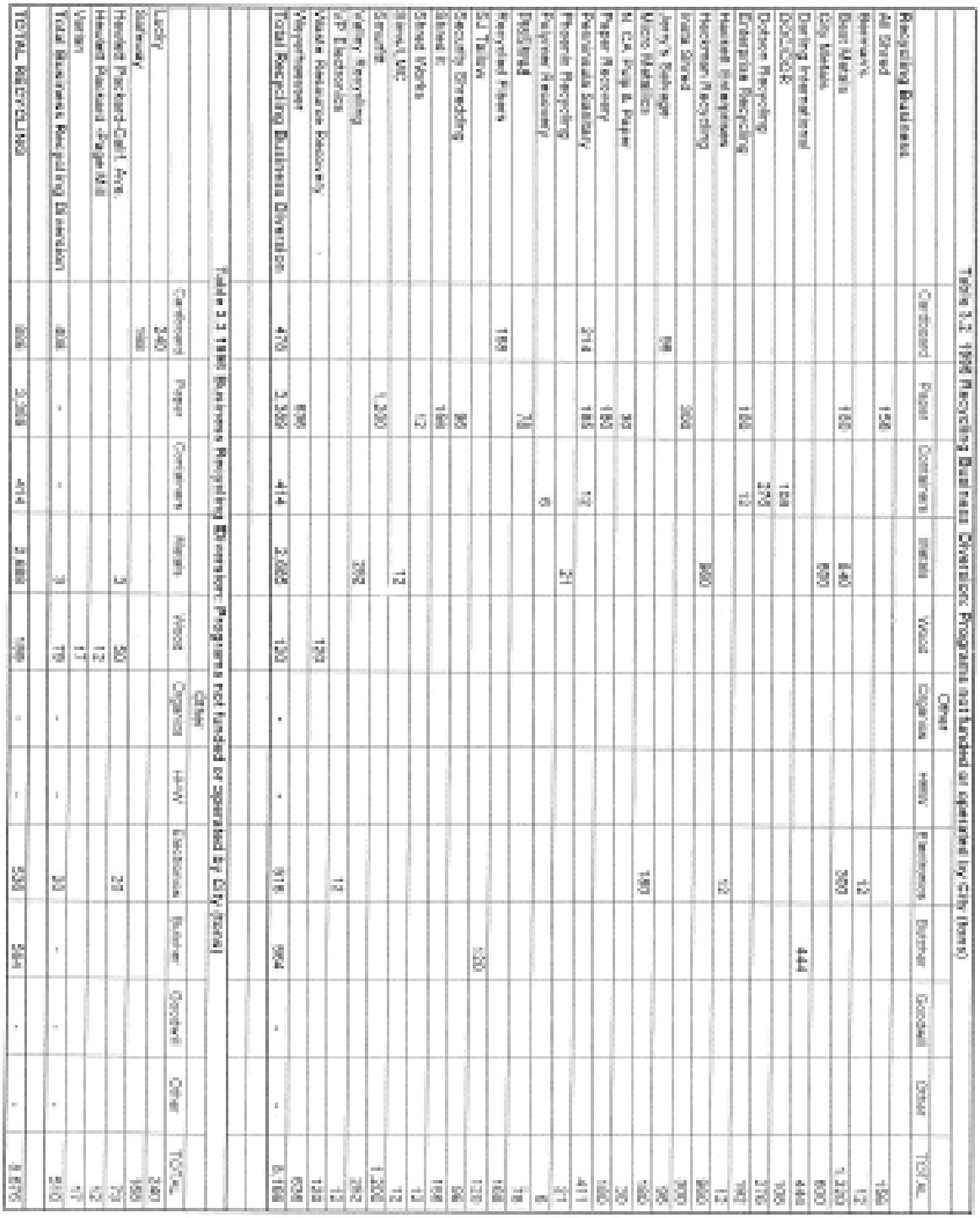

Table 3.2 1996 Recycling Business Diversion: Programs not funded or operated by City (tons)

Recycling Business	Cardboard	Paper	Containers	Metals	Wood	Other Organics	HHW	Electronics	Rubber	Glass	Other	TOTAL
All Shred		196										196
Bean Metals		180		180								360
City Markets				600								600
Darling International (DARLOC)			144						444			588
Defense Recycling Enterprise Recycling		180	120									300
Hanson Enterprises			12									12
Hoffman Recycling		600										600
Iron Gland		300										300
Jerry's Salvage												
Micro Metallic	84											84
N. Ca. Pulp & Paper		180						180				360
Peter Recovery		180										180
Peninsula Sanitary	214	180										394
People Recycling			12									12
Polymer Recovery												
Portland		72	6									78
Recycled Fibers	189											189
SJ Tallow									600			600
Security Shredding		96										96
Steel Works		168										168
Stine Lbr.		12										12
Smurfit	1,200			12								1,212
Valley Recycling				288								288
VP Electronics								12				12
Waste Resource Recovery					120							120
Weyerhaeuser	696											696
Total Recycling Business Diversion	470	3,360	414	2,868	120	-	-	192	984	-	-	8,408

Table 3.3 1996 Business Recycling Diversion: Programs not funded or operated by City (tons)

	Cardboard	Paper	Containers	Metals	Wood	Other Organics	HHW	Electronics	Rubber	Glycols	Other	TOTAL
Lucky	240											240
Safeway	168											168
Hewlett Packard-Calif. Ave.				3	60			23				86
Hewlett Packard -Page Mill					12							12
Varian					17							17
Total Business Recycling Diversion	408	-	-	3	89	-	-	23	-	-	-	523
TOTAL RECYCLED	878	3,360	414	2,868	209	-	-	215	984	-	-	8,931

Appendix C – Service Needs by Type of Material

The following is a description of the service needs and opportunities that were identified for each of the 12 master categories of materials discarded in Palo Alto.

1. **Reusables**.
   - Materials in the reuse category were assessed as a high priority need because there were limited services found and because reuse is above recycling on the integrated waste management hierarchy. Facilities selectively take certain grades of reusable materials, primarily the high end.
   - A limited number of facilities accept and process reusable materials like large appliances, mattresses and reusable building and construction materials. Only a few organizations have pickup services, and those process a limited set of materials.
   - There are no facilities for used building materials in Palo Alto and nearby facilities are very limited in what they accept (e.g., have many specifications for what grade, type or age of materials they accept).
   - The Palo Alto website could also promote other reuse services (e.g., Free-cycle, Cal-Max, e-Bay, Resource Area for Teachers, and Craig's list).
   - The City of Palo Alto and the State waste characterization studies do not provide any data on reusables found in disposed waste to help determine priority of reusable service needs.

2. **Paper.**
   - Adequate services are provided for most types of paper in Palo Alto. However, there are no services available in the vicinity of Palo Alto that accept plasticized paper/paperboard and the Palo Alto Recycling Center does not accept waxed corrugated (only juice and milk boxes).
   - The Palo Alto waste characterization study from 1997 did not provide itemization of waxed cardboard, however the "other paper" category did appear as a top 10 material type representing 13% of the waste stream. Also because there is some evidence that there has been a significant increase in use of this type of material in product packaging since 1997, this category was included, as a priority service need.
   - There are services that recycle source separated high-grade office paper from commercial sectors, which provides more value to generators.[22] Such high-grade paper recycling was therefore not noted to be a high priority service need, but rather a "niche opportunity."
   - There is a lack of services for recycling thermal paper but it is not indicated as a priority as it is not a large quantity of materials disposed (and likely decreasing in importance over time).
   - There are services to accept blueprints, however education is needed (e.g., a brochure and website info) to explain these services to architectural businesses, and residents that dispose of blueprints.

[22] If white paper is kept separate from other colors and types of paper, it commands a higher price in the marketplace. Large businesses that generate such material can sell it and generate some net revenue. Although they could also recycle that as mixed paper, they would not get the revenue from that material.

- More detailed information is also needed on the website for services that take waxed or plasticized coated paper.

3. **Glass.**
   - Adequate services are provided for mixed glass containers. Service is needed for recycling glass for higher and better uses (e.g., wine bottles back to wine bottles, clear glass back to clear glass). None of the glass categories were found to be high in quantity in disposed waste. As a result, even though the following lacks of services were noted, none of these are priority.
   - Due to the close proximity of Palo Alto to wine country wine bottle reuse represents another niche opportunity if a market could be developed.
   - Very few beverage container redemption depots[23] exist in Palo Alto.
   - Other services needed include: plate glass recycling in or near Palo Alto aside from debris box services where they may likely be broken and contaminated and services to recycle non-fluorescent light bulbs, Pyrex, ceramics, and composites. These may be niche opportunities.

4. **Metals**.
   - Services are adequate for most metals recycling. None of the metals categories were found to be high in quantity in the disposed waste stream from the 1997 study so the following lack of services are not considered high priority.
   - There is a need for more information on scrap metal services to all sectors. Although scrap metal is accepted at curbside for residential customers, there is no dedicated container to separate this material to inform residents of its acceptance.
   - No scrap metal curbside services are offered to business and multi-family sectors and they are noted as a niche opportunity especially since there are strong markets for scrap metal.
   - As noted above, Palo Alto lacks adequate beverage container redemption depots, which also creates a niche opportunity for aluminum can recycling.
   - A new mattress recycling service exists, but needs more publicity.
   - Information on Automobile reuse and recycling (including automobile donation services) will be helpful to list in the Recyclopedia.

5. **Plant Debris**.
   - Adequate services exist for most plant debris. Branches and brush were found in significant quantities (12%) in disposed self haul waste in 1997 however it is not noted as a priority since specific green waste policies have been implemented since 1997 that are expected to have resulted in a major decrease in the disposal of these materials.
   - Better signage and information is needed to direct self-haulers to the recycling of plant debris section at the landfill and to clarify that this material is not buried in the landfill.
   - More information about grasscycling and on-site composting is needed.

[23] Facilities that would redeem containers under the AB2020 recycling system (see http://www.consrv.ca.gov/DOR/gpi/FactSheet04New.pdf)

6. **Putrescibles (Food Wastes).**
   - The 1997 waste characterization study identified food wastes as significant in quantity, 26.5% in residential and 13% in all sectors combined. There are NO services for drop off or pick up of all types of putrescibles. As a result discarded food collection and composting services are noted as a top priority for services needed for residential and commercial food waste.
   - Vegetative and food contaminated paper may be composted on-site but there is limited information about on-site composting for all sectors. The Recyclopedia does not provide information about on-site composting services and the Palo Alto website does not provide a brochure on these services.
   - Commercial generators of excess edible food need to be advised of the "Good Samaritan" law that allows them to donate such food to the needy without incurring any liability.

7. **Wood**.
   - Unpainted wood was found in significant quantities in disposed waste in 1997. Unpainted wood was seen in significant quantities in roll off (17%) and self haul (24%) streams in 1997. However, unpainted wood is anticipated to be significantly lower in the roll-off stream today because of the recent C&D ordinance requiring recycling of large projects. Its unclear if unpainted wood remains in the self-haul waste streams that may be from small-scale generators (e.g., small remodels). Because there are adequate recycling services for these materials outside of Palo Alto and because Palo Alto has a C&D ordinance in place for large projects, the service need for unpainted wood is considered 2nd priority and needs to be reconsidered with updated waste characterization data.
   - Information on best practices to recycle wood from remodeling and demolition projects will be helpful. Wood mixed into a debris box may become inseparable for recycling when mixed with soil concrete and other items.
   - Limited services and information are available on drop off recycle locations for painted and unpainted lumber and wood (including pallets) in or near Palo Alto.

8. **Construction & Demolition Debris/Ceramics**.
   - Gypsum wallboard was found in significant quantities (7%) in the overall waste stream in 1997. Because the analysis shows that gypsum wallboard is primarily brought into the disposed stream from roll-off containers, it is not identified as a priority service need but needs to be restudied closely to see if significant quantities remain in the roll-off stream from projects that are not triggered by the requirements of the C&D ordinance.
   - More information is needed on best practice procedures to recycle C&D materials. These materials may become contaminated and inseparable in debris boxes.
   - No drop of or pick up service is in place for carpet and carpet padding recycling in or near Palo Alto, nor is there a way to conveniently recycle gypsum wallboard, porcelain, brick, and composite roofing from small building improvement projects not required to recycle these materials by ordinance.

9. **Soils.**
   - Rock and soil were not found to be disposed of in significant quantities in the 1997 study and are therefore not considered a top priority. With the adoption of a construction and

demolition (C&D) ordinance an updated waste study may find that rock and soil are now adequately serviced in Palo Alto.

10. **Plastics**.

- There are very limited services available for film plastics and composite plastics, both of which were identified to be in significant quantities (3.5% and 6% respectively) in the overall waste stream. Additionally there is some evidence that since 1997 these materials have increased in quantity due to their increased use in packaging and products. As a result both film plastics and composite plastics are considered a top priority service need.

- The Palo Alto Recycling Center accepts #6 foam containers and Styrofoam blocks that are used to ship products. Foam containers are not identified in significant quantities in disposed waste from the 1997 characterization study, however the State waste study from 1999 did identify restaurants as one of the top 4 waste generators in the commercial sector. As take-out food is commonly sold in #6 foam containers, when restaurants are surveyed, the City should get a better estimate of the quantities of these wastes generated and discarded.

11. **Textiles**.

- The 1997 waste characterization study found textiles to be enough of a quantity of the overall disposed waste stream at 2.7% to be considered a priority for review.
- There are no services provided near or in Palo Alto for recycling of textile products including cotton and wool (which have relatively stable markets).
- There are only a few organizations that pick up textiles with a primary intent of processing these items for reuse.

12. **Chemicals**.

- Information and services are limited for recycling of pharmaceuticals and treated medical waste (such as needles), or for the proper handling and disposal of treated wood. These materials present possible health protection issues, and they may contain toxic constituents even though they may not be regulated as hazardous wastes.
- With the successful implementation of SB 20 in 2005, there is a need for increased free and convenient drop off services for recycling of TVs, computer monitors and other hazardous electronics to discourage dumping or hiding these toxic items in disposal especially in anticipation of greater high density TV sales.

Appendix D – Results of Task Force Discussions

The Task Force spent several meetings reviewing a wide variety of incentives and policies that could be adopted to restructure the marketplace to encourage waste prevention, reuse, recycling & composting. Some of the proposed incentives and policies would require changes in policies and definitions in:

- RFPs & Contracts
- Rates, Ordinances
- Land Use Permits
- Facility Permits
- Zoning

The Task Force also considered how the City structures its fees and taxes, which it recognized could have a significant influence on corporate actions. The Task Force considered how the Zero Waste Strategic Plan could change the economic choices made in the community, so that waste prevention, reuse, recycling & composting programs that were marginal in the past would become economic and cost-effective. The Task Force explored how to reward businesses more that design wastes out and eliminate materials from being wasted. The Task Force explored the impacts on the producer of the materials (residential and commercial waste generators), the waste haulers and recyclers and the facilities that will receive these materials.

The Task Force also explored how the City pays for garbage and recycling services to contractors. It considered restructuring such payments so that the City pays more for what it wants (waste prevention, reuse, recycling & composting), and much less for wasting. This would recognize wasting as a symptom of inefficiency, waste that is landfilled as a failure of the system, and harness the forces of the marketplace to achieve the public policy goal of Zero Waste.

As the City plays a critical role in education and outreach responsibilities in the current Palo Alto system, the Zero Waste Task force also explored policies and incentives for improved education and outreach by both the City and service providers. The Task Force explored how service providers could help more to implement Zero Waste programs cost effectively and efficiently, and to process and market high quality products for their highest and best use. The Task Force explored how this could help reinvest those resources into the local economy whenever possible.

After review and discussion, the City's Zero Waste Task Force selected policies that initially encouraged and provided incentives for the pursuit of Zero Waste in Palo Alto, rather than mandating policies and requiring participation in programs. The Task Force wants to create a partnership among all the stakeholders involved, and work together positively to achieve the many benefits that Zero Waste offers. The Task Force also wants to revise the City's thinking of this as a waste disposal problem to solve, and view it more as an economic development opportunity to create new jobs and businesses in the area, and to make Palo Alto businesses "Greener," more "Sustainable," and more cost competitive. Following are the policy options selected by the Task Force to be included in the Zero Waste Strategic Plan.

1. Adopt Zero Waste (ZW) as a community goal by 2020 and set a goal for the City to divert from landfill at least 75% of all materials generated by 2010. Adopt in strategic Zero Waste Action Plan (ZWAP) in July 2005, and in the City's Sustainability Plan and the City's -General Plan.
2. Develop Zero Waste Operations Plan to detail priorities for facilities to be developed for the City as a whole after the City updates its detailed waste characterization study. Develop Zero Waste Implementation Plan to detail City's priorities for facilities to be developed after the City updates its detailed waste characterization study[24]
3. Consider Zero Waste, waste prevention, reuse, recycling and composting to be economic development priorities to make Palo Alto businesses more sustainable and globally competitive. Leverage community reinvestment and economic development strategies to help expand needed services.
4. Recognize businesses that are models of one or more Zero Waste Business Principles.[25]
5. Expand City's waste audit and technical assistance services for businesses, coordinating with Pollution Prevention Program of Environmental Compliance Division with Integrated Environmental Audits (like with Green Business Certification programs), to provide detailed analyses like the Alameda County StopWaste Partnership Program.[26]
6. More actively promote Bay Area Green Business Program and recruit Palo Alto businesses to participate. List Palo Alto Green Businesses on City's website with contact information and URL links to websites of those business to encourage the public to patronize them. For Palo Alto businesses certified as Green Businesses, provide discounted development fees and prioritize applications for permits by the Palo Alto Development Center.
7. Train businesses and City staff on how to truly achieve a "paperless office," using the latest technologies (e.g., extensive use of electronic mail and electronic document storage and retrieval systems[27]) to reduce wastes and desktop "mini-bin" programs to recycle >80% of discarded materials in offices.[28] Work with all government offices (including courts) to be able to accept electronic submittal of all applications and required submittals. Provide wireless Internet throughout downtown and other major commercial areas.
8. Promote material exchanges, including CalMax, EBay, Resource Area for Teachers (RAFT) and FreeCycle. Work to develop South San Francisco Bay Area computerized matching system for donations of excess inventory materials and products to local nonprofits (as done by LA Shares in Los Angeles).[29]
9. Require PASCO to offer recycling services at no additional cost to businesses (without monthly bin rental fee).
10. Review performance of construction, renovation and demolition (C&D) Ordinance one year after its implementation, to confirm that 90% of inerts and 50% of other C&D debris is actually diverted from landfill. If target goals are not met, require deposits be paid to ensure implementation, to be refunded if waste diversion requirements are met, as a condition of building or demolition permits.[30]
11. Require all new private construction and major renovation projects in Palo Alto to be LEED-certified Green Buildings or meet comparable Green Building policies already adopted for public facilities.[31] Require all construction and major renovation of facilities leased by the City, to be LEED-certified Green Buildings, if not covered already by existing City Green Building policy.
12. Adopt adaptive reuse as a priority in City building standards for both residential and commercial construction.

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[24] Scheduled for FY2005-2006.

[25] For copy of the Principles, go to: http://www.grrn.org/zerowaste/business/

[26] See http://www.stopwaste.org/home/index.asp?page=9

[27] For example, President Bush called for national adoption of electronic medical records in his recent state of the union address (http://www.actalliance.org/onlinehealth.htm). Dr. Paul Tang at the Palo Alto Medical Foundation is a pioneer in using such electronic medical records (http://www.pamf.org/news/2003/0403_hipaa.html).

[28] Brenda Platt, *Mini Bins Help Office Settings Reduce Waste 50 Percent and More*, Institute for Local Self-Reliance, July 2002, see http://www.ciwmb.ca.gov/LGLibrary/Innovations/MiniBins/

[29] http://www.lashares.org/

[30] Chapter 5.24 of the Palo Alto Municipal Code requires that all covered projects shall divert at least ninety percent of inert solids and at least fifty percent of the remaining project-related construction and demolition waste to an approved facility or by salvage.

[31] The Leadership in Energy and Environmental Design (LEED) Green Building Rating System® is a voluntary, consensus-based national standard for developing high-performance, sustainable buildings. For more info, see http://www.usgbc.org/DisplayPage.aspx?CategoryID=19

13. Ask businesses to adopt Zero Waste goals and plans.
14. Set environmentally preferable purchasing and recycled content as "defaults" for departments to use in departmental purchases of supplies and equipment not centrally procured. Use fees from solid waste system to help fund staff in Purchasing and Contract Administration Division to monitor and implement environmentally preferable purchasing program.[32]
15. Require PASCO to reuse, recycle and/or compost at least 50% of the materials collected in City Clean-up Day. Consider alternative ways of collecting so usable materials are not compacted on route.[33]
16. Implement comprehensive community-based social marketing programs to more actively engage residents and businesses to commit to preventing waste, reusing, recycling and composting. Work on region wide development of messages and promotions for events such as Earth Day (April 22), World Environment Day (June 1-5, 2005), Second Chance Week (September) and America Recycles Day (November 15).
17. Identify and involve existing businesses and nonprofits that could provide waste prevention, reuse, recycling and composting services.
18. Structure payments to PASCO to be paid inversely to the amount landfilled.
19. Facilitate and/or provide equipment, containers, land, building space and financing support to make waste prevention, reuse, recycling and composting more economic.
20. Build on existing private and nonprofit waste prevention, reuse, recycling and composting operations to minimize public investments.
21. Solicit other companies to provide collection and transport services for Recyclable Materials[34] and/or solid waste from Commercial/Industrial Premises as non-exclusive franchises. This would allow additional haulers to compete within the City and the City could require detailed reporting and performance requirements, including requiring one or more of the following recycling policies as a condition of franchise to do business in Palo Alto.
22. Provide recycling services to multi-family residential dwellings (MFDs) at least equal to those of single-family curbside recycling services. Compile data on MFDs to establish clear baseline to measure progress.
23. Require haulers to achieve a waste diversion goal for their overall operations (e.g., 50% initially and 10% more each year).
24. Set substantially lower rates for clean source-separated materials from residents going to Palo Alto compost area. Establish greater discount for clean source-separated materials from businesses going to Palo Alto compost area
25. Provide areas at Palo Alto Landfill and SMART station for drop-off of reusable furniture, appliances, toys, pallets, mattresses, and used building materials, in conjunction with local nonprofits and/or reuse businesses.
26. Require source separation of all materials that can be reused, recycled or composted. Charge penalties for all designated materials found in loads
27. Encourage retailers and their suppliers to takeback products and packaging that are currently difficult to reuse, recycle or compost in Palo Alto (like Ottawa, Canada program). Post all cooperating retailers on City's Zero Waste website and regularly include articles and/or ads about this program in area newsletters and newspapers.

[32] With leadership from the City's Sustainable Purchasing Committee, the City is already expanding the purchase of environmentally preferable products. Currently in use are chlorine-free, 100% recycled content papers, low-mercury fluorescent lights, and recycled carpet tiles in high traffic areas, and uses 20% bio-diesel fuel in all heavy equipment. Source: http://www.cityofpaloalto.org/fire/sustainability/pdf/citygreenbuscert.pdf

[33] See "Community Cleanups" case study prepared by Gary Liss & Associates for the CIWMB with alternative ways that different communities are accomplishing that at: http://www.ciwmb.ca.gov/LGLibrary/Innovations/CleanUps/

[34] As defined in Attachments No. 1 and 2 of the "Agreement for Solid Waste and Recyclable Materials Handling Services," 1999 between the City of Palo Alto and PASCO.

Appendix E - Summary Of Zero Waste Community Surveys 2005

Residential and Commercial Surveys[35]

The City received 61 responses to the Commercial Survey and 111 responses to the Residential Survey. The responses provided support and suggestions for the issues posed. However, these numbers do not represent a statistically valid sample and should only be considered as one part of the input provided through this Zero Waste planning process.

Of those responding to the Surveys, more than half indicated support for Zero Waste, and would like more information about how to pursue that. Strong support (> 50%) was also indicated from those responding to the Surveys for the following:

Garbage And Recycling Rates - Keep current structure (Garbage rates structured so businesses that prevent waste, reuse, and recycle can reduce their garbage bill by reducing their level of service. Provides recycling collection, at no additional cost. Recycling and garbage rate are rolled into one monthly rate.)

Recycling Center - Operate and maintain a recycling center within the city limits.

Resource Recovery Park - Establish a Resource Recovery Park within Palo Alto City limits or nearby.

Require Tenant Access - Require property management companies to provide tenants (e.g., apartment complexes, office buildings) with access to City's Recycling Program.

Commercial Yard Waste Collection - Implement a landscape/plant debris collection program for commercial customers.

Implement Food Waste Collection - Expand collection services to include separated food waste for composting.

Require Compostable Packaging And Containers - Ban disposable food-service containers and require compostable food-service containers only.

Those responding to the Residential Survey also strongly supported the following:

Establish Zero Waste Refuse Rate - Establish a reduced refuse rate for residents that generate less waste than the Mini-can (20 gallon) level of service. Rate would still include costs for other programs/services funded by Refuse rates (e.g., Household Hazardous Waste Program, street sweeping).

Adopt Product Life-Cycle Regulations - Encourage Palo Alto elected officials to advocate for the adoption of legislation, on a State or National level that would require Producer Responsibility, financial and physical, for the take-back of products and packaging they produce at the end of the product's useful life.

Implement Green Building - Implement a Green Building Program for new construction and major renovations.

Implement Food Waste Collection - Expand collection services to include separated food waste (including food-soiled paper like pizza boxes, waxy cardboard, and frozen food boxes) for composting.

Landfill Ban on Recyclable Materials - Ban materials from the Palo Alto Landfill that are recyclable, such as, cardboard, paper, metal, bottles and cans and construction and demolition debris. The Palo Alto Landfill receives waste for disposal from debris boxes, residents/businesses self-hauling garbage.

Ban on Recyclables in Garbage - Ban materials from garbage pick-up that are recyclable, such as, cardboard, paper, bottles and cans.

Adopt Precautionary Principle - Require the City to adopt the Precautionary Principle as a strategy in conducting business (e.g. city operations, program and service offerings). The Precautionary Principle

[35] For full details of these surveys, go to: http://www.city.palo-alto.ca.us/zerowaste/graphics/ZW_Survey/Business_survey_results_summary_final.pdf and http://www.city.palo-alto.ca.us/zerowaste/graphics/ZW_Survey/Residential_survey_results_summary_final.pdf

requires analysis of materials and processes to eliminate the risks of environmental and human health before problems occur,

Respondents also overwhelmingly supported a goal of Zero Waste, and 95 percent would either adopt a goal for themselves now, or would do so with more information provided. In general, the response to the survey of residents suggested a more aggressive set of policies be adopted than recommended by either the respondents to the Commercial Survey or the Zero Waste Task Force.

Palo Alto Service Providers

This survey was prepared to better understand what services are provided in the area, and to get suggestions of what additional services local businesses could provide to help move towards Zero Waste in Palo Alto. To achieve Zero Waste, Palo Alto would like to build on the investments and interests of everyone in the community that are working to reduce, reuse, recycle or compost waste. Palo Alto wanted to make sure that existing activities are included in Plans, and include any new endeavors that may be contemplated. Palo Alto also wanted to know if businesses were interested in participating in the development of a Resource Recovery Park.

Over 400 surveys were sent by email to lists of service providers found throughout the San Francisco Bay Area that could provide services in Palo Alto. Although only 17 firms responded, they provide some interesting insights into the types of services currently available, new services being offered, and interest in developing a Resource Recovery Park. Clearly many are interested, and some are willing to invest their own resources to make it happen.

Companies Responding (17)

Auction BDI,
FP International,
Granite Rock Company
GreenTeam/Zanker
Hackett Electronics
Harbor Sand & Gravel
Home Composting Education Program
Palo Alto Music Boosters
Flea Market
PASCO (WM)
Peninsula Center for the Blind
Peninsula Sanitary Services, Inc. (PSSI)
RAFT
Sonrise Consolidated
Students Recycling Used Technology (StRUT)
Synergis Waste Management Services
Zero Waste Solutions.

One company also responded confidentially (which removes and processes CFC-11 from refrigerator walls).

Services Firms Provide

Reduce: _3_Waste Audits __ Process and Product Redesigns
Reuse: _6_Collection Services _5_ Drop-off Locations _4_ Retail Sales _3_ Assets Liquidation _1_ Computerized Matching
Recycle: _7__Paper _8_ Metals _6_ Wood _7_ Plastics _7_ Glass _6_ C&D _3_ Tires _4_Other: EPS, Concrete & Asphalt (2), Vendor Management
Compost: _3_ Collect Yard Waste (YW) _1_ YW Drop-off Locations _4_ Collect Food Waste (FW)__ On-Site FW Composting _1_ YW Composting Facility _1_ FW Composting Facility _1_Education Program _1_ Vendor Management
Hazardous Wastes: __ ABOP __ HHW _1_ SQG _4_ Ewaste _2_Other: excess electronic inventory
Procurement: 7 Sell Recycled Products __ Sell Envt. Pref. Products __ Precautionary Principle Analyses __ Zero Waste Services: _1_Takeback Programs __ Leasing __ Highest & Best Use Analyses _1_ Pollution Prevention Services __ Reverse

Logistics/Supply Chain Management __ GRI or ISO Reporting Services _1_ Consulting _2_ Resource Management Incentives/Performance Based Contracting _1_ Green Certification__ Sustainable Development or Investing __ Resource Recovery Park Development __ Other: Stormwater, Electronic Equipment (specifically computers for schools)

Affiliations (Organizations, business/trade associations, in which businesses participate)

_2_PA Chamber of Commerce _3_Rotary _2_Silicon Valley Manufacturing Group (SVMG) _2_CA Refuse Removal Council _5_CA Resource Recovery Assn. Other: Independent Recyclers Council (CRRA), Redwood City Chamber of Commerce, Seaport Industry Association, Silicon Valley Toxics Coalition, Northern CA Recycling Association (NCRA), International Facilities Management Association (IFMA), US Environmental Protection Agency (1 mentioned generally, and another mentioned EPA's Waste Wise Program), United Nations Task Force on Global Warming.

Services and Programs Offered

In addition to the services noted above, some of the companies underscored their capabilities and interest in providing the following services and programs in Palo Alto: Ewaste, baled expanded polystyrene plastics (EPS), concrete/asphalt recycling (including portable unit), food waste composting (commercial and residential), home composting, flea market, reuse of excess materials for teacher to use, mixed construction and demolition debris, deconstruction, demolition, business technical assistance and performance based contracting; ongoing solid waste assessments and best practices.

Most indicated that they already offer these services, or could start them quickly in Palo Alto.[36] Many indicated that these services have been offered for 10-15 years, although there were a number of new services (e.g., ewaste and zero waste consulting services).

Eight of the firms indicated an interest in investing buildings, land, money or time in private or nonprofit ventures to expand reuse, recycling and/or composting services to Palo Alto residents and businesses. Nine of the firms indicated an interest in helping to develop a Resource Recovery Park for reuse, recycling and composting activities in Palo Alto or surrounding areas.

Of particular note, the current franchised hauler, PASCO (a Waste Management company) said "PASCO is committed to assisting the City in achieving its admirable goals of additional diversion and Zero Waste. Based on our experience, Palo Alto is a very proactive community and we look forward to partnering with them in these efforts."

[36] For full details of the survey, go to http://www.city.palo-alto.ca.us/zerowaste/graphics/ZW_Survey/Service_Provider_Survey_Summary_071805.pdf.

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Appendix F - Zero Waste Policy And Resolution

WHEREAS:

- The placement of materials in waste disposal facilities, such as landfills and incinerators, wastes natural resources and inappropriately transfers liabilities to future generations, and
- The elimination of designated types of waste for disposal will protect the City of Palo Alto from potential future liabilities from landfills or incinerators, and
- The City of Palo Alto currently assumes the cost of collecting, recycling, and disposing of all discarded materials and products, and
- Subsidies for wasting and mining of raw materials send the wrong economic signals to both consumers and producers, and
- A resource management based economy will lead to a more sustainable community, and
- Increasingly governments are adopting policies that provide economic incentives for eliminating wastes, and reusing, recycling or composting of discarded materials, and
- Producers and retailers of products are increasingly assuming physical and/or financial responsibility for collecting, recycling, and/or properly disposing of their products, and
- Producers can design products to ensure that they can be safely recycled back into the marketplace or nature, and
- Many waste products can be eliminated through better design of manufacturing or retail practices, and
- Government is ultimately responsible for establishing criteria needed to eliminate waste, so that manufacturers produce and businesses sell products that can be safely reused, recycled or composted,

THEREFORE, BE IT RESOLVED THAT

The City of Palo Alto, California hereby:

1. Adopts a goal to divert 73% of discarded materials from landfills or incinerators by 2011 and to strive for Zero Waste by 2021.
2. Adopts the Zero Waste Strategic Plan to provide Council and City Staff with high-level guidance in the planning & decision making process to achieve Zero Waste goals.
3. Directs staff to develop a Zero Waste Operations Plan by July 2006 to detail how to implement this Zero Waste goal.