Assessment of Infrastructure for the Integrated Waste Management Zero Waste Strategic Plan Development, November 2008, Appendix B

Summarizes the City's current waste management infrastructure including all landfills, transfer stations, and waste processing facilities used by the City.

Opportunities for Alternative Revenue Generating Mechanisms for the Integrated Waste Management Zero Waste Strategic Plan Development, October 2008, Appendix C

Evaluates funding and financing mechanisms for General Fund solid waste related revenues and for funding future zero waste programs.

Stakeholder Engagement Processes, November 2008, Appendix D

Describes the process that the City undertook to solicit feedback from stakeholders for the commercial solid waste system redesign and carryout bag policy initiatives.

Energy Conversion Technologies & Facilities, November 2008, Appendix E

Describes conversion technologies that the City could consider for future implementation and outlines evaluation criteria.

Zero Waste Policies

This section describes policies that support the City in achieving 75 percent diversion by 2013 and zero waste by 2022. These policies include:

- Environmentally Preferable Procurement
- Extended Producer Responsibility and Product Stewardship
- Disposable Packaging Reduction
- Reducing Single-Use Carryout Bag Initiative

Paper at Green Waste Recovery Baled for Market

Environmentally Preferable Procurement

In 2001, the City adopted the Environmentally Preferable Procurement Policy (EP3) to use environmentally preferable goods and services where possible to demonstrate leadership and help move the market toward more environmentally sound commerce. The EP3 Steering Committee establishes policy which is implemented by the EP3 Implementation Team.

The Green Vision adopted by San José focused the City's purchasing goals on renewable energy, energy conservation, green building, alternative fuel for the municipal fleet, and zero emission street lighting.

The City's EP3 multi-year strategic plan includes the following goals:

- Fully incorporate EP3 into all contracting processes
- Disseminate information about green products to all City contractors, grantees, and City departments, and also establish an EP3 liaison program
- Review one-third of commodities procured by the Finance Department annually to identify green product and service alternatives and incorporate EP3 specifications into upcoming solicitations for the reviewed commodities
- Incorporate EP3 into the City's construction, operations, and maintenance activities
- Use benefits calculators (such as those that quantify the environmental benefits of computer and recycled paper purchases) to track the City's progress in reducing the environmental impacts of purchasing
- Identify performance measures to monitor progress.

Electronic Waste

The City received recognition for its recent successes in environmental procurement. In October 2007, the U.S. Environmental Protection Agency recognized the City as a Green Electronics Champion for its early adoption of the national EPEAT environmental standard for computers. In April 2008, the City's environmental purchasing efforts were recognized with a Green California Leadership Award at the Green California Summit in Sacramento.

Next Steps for EP3

In 2008-2009 the City plans to continue implementing the EP3 multi-year strategic plan, which entails the following actions:

1. Incorporate EP3 into the City's grants manual
2. Revise landscaping specifications to incorporate Integrated Pest Management and to support use of mulch and compost
3. Develop a schedule to discontinue the use of disposable, toxic or non-renewable products as outlined in the Urban Environmental Accords
4. Develop meaningful, understandable, and achievable performance measures

5. Continue to collaborate with City departments and outside agencies
6. Continue to implement the Green Fleet Administrative Policy
7. Analyze incorporating Extended Producer Responsibility into the City's procurement practices

Extended Producer Responsibility

Extended Producer Responsibility (EPR) and product stewardship combine strategies to promote the integration of environmental costs associated with products throughout their life-cycles into the market price of products. This effort shifts the costs of managing waste products from a government-funded and ratepayer-financed system, to an open market system. The shift can include cooperation from distributors and retailers to create a convenient, closed-loop system in which consumers can return products at the end of life for recycling or re-use. This EPR effort also aims to create incentives for manufacturers to further design products to minimize environmental impact.

In October 2008, the Transportation & Environment Committee accepted a report on the City's EPR work plan to:

- Establish EPR as a Legislative Guiding Principle of the City
- Support the work of the Product Stewardship Institute and the California Product Stewardship Council
- Promote engagement and partnering with businesses to implement EPR
- Incorporate EPR policies into the City's product procurement practices
- Return with an implementation plan for pharmaceutical take-back programs

Plastic Bags Create Litter

The City supports the California Product Stewardship Council's efforts to implement EPR initiatives statewide. After considering the possible negative impacts of adopting local EPR regulations, the City opted to prioritize regional EPR efforts instead. A good example of a regional EPR effort is the City's leadership in developing a countywide carryout bag regulation.

Next Steps for EPR

1. Work with area hospitals and pharmacies to establish household pharmaceuticals collection systems for their customers
2. Work with State and Federal legislators to amend regulations to facilitate

establishment of household pharmaceutical collection stations

3. Identify area pharmacies willing to take-back medicines and sharps from their customers for proper disposal
4. Identify retail outlets willing to take back Universal Wastes such as batteries, electronics, and compact fluorescent lights
5. Identify a retail partner willing to accept packaging (such as polystyrene blocks or film plastic) returned by its customers
6. Promote EPR partnerships through website links and City directories
7. Formally recognize San José businesses that showcase exemplary EPR practices
8. Continue to support State and Federal legislation that implements EPR practices

Disposable Packaging Reduction

The City has pledged through its Green Vision to "divert 100 percent of the waste from our landfill and convert waste to energy"; and through the Urban

Environmental Accords to "adopt a citywide program that reduces the use of a disposable, toxic, or non-renewable product category by at least 50 percent in seven years." As part of meeting both of these pledges, the City is researching strategies to reduce the consumption of single-use carryout bags and food packaging.

Litter, including disposable packaging, is a problem for the City and its watershed. Despite comprehensive litter management programs, the City, County, and State have failed to reduce litter generation and accumulation in local creeks and streams to an acceptable level. As a result, the City may face millions of dollars in mandatory capital improvements to the stormwater system to reduce the build up of litter that flows into the watershed, such as plastic bags and foam food packaging. Stormwater system improvements alone will not eliminate these waste products from City creeks. Plastic debris, including foam and bags, comprises 60 percent of litter in streams in the San Francisco Bay Area. Much of this debris is carried into San Francisco Bay and the Pacific Ocean where it accumulates. Single-use plastic carryout bags and foam food packaging do not degrade in the marine environment and substantially affect marine life.

Litter Pollutes the Guadalupe River

Next Steps for Reducing Disposable Packaging

1. Create outreach material for City food establishments describing the types of take-out packaging that can be recycled or composted by the City.
2. Discuss the reduction of other hard-to-recycle food packaging, such as foam food containers, with stakeholders, and consider the following enforcement measures:
   - Impose a citywide ban such as Portland, San Francisco, Oakland, Millbrae and other cities
   - Support legislation addressing recyclability or compostability of food packaging
3. Investigate banning the use of foam food packaging purchased by or used at City facilities.
4. Work with restaurants near City Hall to phase out take-out foam food packaging, thus developing synergy with the City Hall composting program.

Reducing Single-Use Carryout Bags

Plastic bags are easily carried by wind and water throughout the City and to distant locations with serious environmental consequences. Plastic bags can take up to 1,000 years to decompose, causing serious harm to aquatic animals and ecosystems. Paper bags are resource-intensive. While they are compostable, the manufacturing process and the recycling of paper bags use a large amount of energy and natural resources.

The City is working on a countywide solution to address this issue with the Santa Clara County Recycling and Waste Reduction Commission (Commission), the Santa Clara County Cities Association, and other local jurisdictions. The goal of this effort is to create a consistent regional approach for businesses and customers. A regional approach will also have a greater positive impact on the environment by conserving energy and materials, reducing greenhouse gases and other air pollutants, reducing litter in streets, storm drains and creeks; and reducing the cost of litter control and recycling programs.

City staff and stakeholder groups are collaborating with the Commission to develop a model ordinance. The Commission provided policy direction regarding key components for ordinance language at its October 2008 meeting. The Commission directed county staff and its Technical Advisory Committee (TAC) to present the model ordinance to the Commission at the December 2008 meeting. City staff will also continue to conduct stakeholder outreach to the San José retail and grocer community and work with chambers and business groups. City stakeholders including bag manufacturers, retailers, and consumers are already involved in policy development and identifying issues, including the type of regulation including which stores to regulate,

the bag types to be regulated, and the performance standards to adopt.

Next Steps for Reducing Single-Use Carryout Bags

1. Subcommittee to draft recommendations for a model ordinance to be submitted to the Santa Clara County Recycling and Waste Reduction Commission, the County Board of Supervisors, and all local jurisdictions for consideration- Spring/Summer 2009
2. Implementation of a "Bring Your Own Bag" campaign in San José in partnership with other similar Bay Area efforts. This initiative could include the provision of reusable bags at reduced or no cost to City residents in partnership with other organizations. - Spring 2009
3. Support state legislation in the upcoming legislative cycle that reduces the use of single-use carryout bags and other problem waste material, including packaging
4. Engage stakeholders to address carryout bags at restaurants and food establishments

Policy Leadership

Many potential policies or legislative actions impacting zero waste are actively being discussed at regional and statewide levels. San José has taken the lead in analyzing and promoting these actions. Many of these planning initiatives align with the City of San José 2009 Legislative Guiding Principles that support:

- Innovation and employment
- Producer responsibility and sustainable product design
- Sustainable development
- Preservation of natural resources
- Environmental protection
- Climate protection
- Energy innovation

The City adopted the following phased approach to zero waste implementation.

Phase 1 – Voluntary actions, education, and creation of incentives

Phase 2 – New programs and advocacy

Phase 3 – Bans, mandates, and legislation

San José has been active over the years in phase one and two activities, but to meet zero waste goals, the City may need to focus on bans, mandates, advocacy, and legislation.

Landfill Regulations & Material Bans

Material bans at landfills are common across the country for easily divertible materials such as yard trimmings and cardboard. In California, state law prohibits many hazardous materials from disposal in landfills, including needles and sharps, asbestos, treated wood, pesticides and household chemicals, automotive chemicals, mercury-containing items, universal wastes (batteries, used motor oil and paint), tires, and some electronic wastes.

Typically, bans are implemented statewide or at publicly owned facilities such as those in Fresno, Santa Cruz and Sonoma County. The Alameda County Solid Waste Management Authority and Source Reduction and Recycling Board (Stopwaste.org) is currently evaluating bans that could target yard trimmings and cardboard at the private landfills within Alameda County. The City and Stopwaste.org have discussed regional implementation of disposal bans to ensure that materials do not move from one jurisdiction to another.

Key considerations for material disposal bans include:

- Ensure adequate opportunities exist for all waste generators to divert the materials proposed to be banned (self-haul, construction and demolition, and commercial generators).
- Phase in the requirements over an appropriate term, beginning with education, followed by a notice of violation, followed by enforcement.
- Consider illegal dumping impacts that can result from poorly implemented material bans and affect costs for City clean up, enforcement, and disposal.
- Evaluate the value of synchronizing bans with local adoption of generator mandates.

Another key factor in landfill use is the cost of disposal. Large low cost regional landfills, such as Republic Services' Potrero Hills Landfill in Solano County, act as a magnet for waste from San José. City garbage dumped at these facilities negatively impact both revenues and financial incentives that the City has set up to encourage recycling. These landfills also create an incentive for haulers to truck waste 70 or more miles from San José creating a larger carbon foot print than local disposal. As a result, staff is exploring regional and statewide approaches to address the impact of low-cost, out-of-county disposal.

Next Steps for Landfill Regulations

1. Assess the opportunities for regional solutions using material bans with Stopwaste.org and others - ongoing
2. Engage stakeholders to ascertain the level of acceptance of bans or mandates - 2012-2013.
3. Analyze impacts of potential illegal dumping on City services and low income neighborhoods where material bans could affect proper disposal.
4. Evaluate a fee for all wastes exported from San José. San Mateo County is currently considering such a fee, among other options, to address impact of low cost out-of-county landfill fees.
5. Support legislation to adopt a statewide landfill surcharge with an exemption for locally-enacted landfill fees or other statewide solution for low cost regional landfill issue.

Alternative Daily Cover

By state law, the use of approved materials as

Alternative Daily Cover (ADC) currently counts as diversion and counts toward the 50% diversion requirements. However, there are concerns that ADC may be over-used and that the materials being used as ADC could be diverted and used for other higher and better uses. In addition, during the planning period (through 2040), many landfills will close, affecting both waste disposal and the potential for ADC use.

ADC use in San José has ranged from 100,000 tons per year to nearly 240,000 tons per year over the last six years. In 2006, 165,086 tons of ADC was used totaling nearly 9% of the overall waste generation.

The key materials used as ADC include Construction and Demolition Debris (C&D) and green waste. The City has already set policy to minimize use of these recoverable materials as ADC in order to ensure the highest and best use.

For example, the City's residential contracts do not allow green waste to be used for landfill activities, and require yard trimmings haulers to process material for compost or mulch, rather than ADC. The same policy will be recommended for the commercial solid waste system redesign.

Because much of the current ADC applications in San José are C&D waste, the City will also evaluate the most environmentally sustainable uses for this material as part of the 2009 comprehensive review of the C&D program.

City staff is participating on a CIWMB-organized task force to create long-term recommendations about ADC use statewide. San José has supported legislation to remove green waste from the landfill by eliminating the diversion credit for green waste ADC, or charging fees for green waste. Pending future legislation, San José will continue to lead by voluntarily minimizing the affects of ADC use.

ADC Next Steps

1. Prepare a comprehensive ADC analysis that examines long-term trends and forecasts of ADC use, summary of the haulers delivering various material types ADC to landfills, alternatives to ADC that are available to landfills, and medium and long-term capacity projections for ADC with upcoming landfill closures. This may be completed as part of the upcoming CDDD program review and the commercial redesign process.

San Jose ADC Type	Tonnage 2006
C&D Debris	105,059
Green Waste	41,818
Sludge	1,257
Mixed Waste	16,875
Other	77
Total ADC	**165,086**

2. Continue utilizing City policies and contract practices that minimize ADC use.
3. Participate as a model city in development of the CIWMB Organics Roadmap to minimize green waste disposed of in the landfill, such as compost market development, compost specification and use requirements.
4. Analyze and comment on potential legislation that reduces the use of green waste as ADC through removal of diversion credit, fees or other mechanisms.

Generator Mandates

Several communities in California have adopted or are considering mandatory requirements for source-separation of waste for recycling, including Santa Cruz County, Palo Alto, Sacramento, San Diego, and San Francisco. Mandatory requirements for source-separation include:

- Extensive outreach and education to inform generators of the new requirements.
- Phase-in of the requirements over a number of years, beginning with education, followed by a notice of violation, and enforcement.

Next Step for Generator Mandates

- Study generator mandates in other communities. Review model ordinances, effective education materials, and enforcement procedures from other jurisdictions.
- Determine the impact of generator mandates on other possible actions such as landfill material bans.

Climate Protection

The Urban Environmental Accords, adopted by the City of San José in 2005, include a goal for signatory cities to reduce greenhouse gas (GHG) emissions by 25 percent by 2030 (Action 3). Assembly Bill (AB) 32, together with Executive Order S-3-05, set a statewide goal of reducing GHG emissions to 1990 levels by 2020 and 80 percent below 1990 levels by 2050. In 2007, the San José City Council also adopted municipal GHG reductions to bring City GHG emissions below 1990 levels as follows:

Goal to bring GHG emissions below 1990 levels	
By Year	**Percentage Below 1990 Levels**
2012	25%
2015	30%
2020	35%
2030	50%
2045	80%

In its AB 32 Proposed Scoping Plan, the California Air Resources Board (CARB) has determined that 1990 may not be a realistic baseline for local government due to data availability and set a goal of 15 percent reduction from current GHG emissions levels instead. CARB also acknowledges that waste management practices help reduce the GHG emissions that contribute to climate change.

In addition to the other environmental benefits of diverting waste from the landfill, the City's progress toward zero waste will also result in a reduction of GHG emissions. For example, by composting and recycling all of the waste that is recoverable under current City community recycling programs, there is potential to reduce carbon dioxide (CO2) emissions by over 537,000 tons (CO2 equivalent).[1] This amount is equivalent to reducing annual GHG emissions from over 98,000 passenger vehicles or from electricity used by over 71,000 homes.[2] As additional alternatives to landfilling are developed, the amount of GHG reduced could be greater.

City staff has provided comments on CARB's Proposed Scoping Plan, which is slated for adoption on December 11, 2008. The plan includes "Recycling and Waste" recommendations that specifically advocate for the following:

- Improved landfill methane control and capture.
- High recycling/ zero waste activities including increased commercial recycling, production and markets for compost, anaerobic digestion, extended producer responsibility and environmentally preferable purchasing.

In order to qualify carbon offsets, the California Climate Action Registry (CCAR) has protocols to certify emission reductions related to livestock, forest, landfill and urban forest projects. CCAR is also completing a protocol for local governments and evaluating standardized protocols related to organic waste diversion, such as composting and anaerobic digestion.

City staff is developing a baseline GHG inventory and emissions reduction plan for municipal operations as well as citywide community emissions. The City is working with Joint Ventures Silicon Valley and Sustainable Silicon Valley to determine how a regional community climate action plan might benefit both San José and the surrounding communities. Other portions of the Plan elaborate on the City's current activities related to increasing commercial recycling, exploring anaerobic digestion and increasing Extended Producer Responsibility and Environmentally Preferable Purchasing. In line with City and statewide goals to reduce GHG emissions, additional steps may be

[1] Based on 51% recoverable materials identified in the *Needs Assessment for the Integrated Waste Management Zero Waste Plan Development*, Appendix B, and emissions figures calculated with the U.S. Environmental Protection Agency (EPA)'s Waste Reduction Model (WARM) calculator, http://www.epa.gov/WARM.
[2] EPA's Greenhouse Gas Equivalencies Calculator, http://www.epa.gov/cleanenergy/energy-resources/calculator.html

taken to reduce those emissions that are associated with the City's waste management practices.

Next Steps for Climate Protection

1. Continue to participate in the development of climate change and carbon offset protocols, plans and regulations being developed by State and other agencies, such as the California Air Resources Board and CCAR, to ensure that recycling, composting and anaerobic digestion are appropriately measured for their climate change impacts.
2. Pursue the verification of carbon credits for City projects under new or existing California Climate Action Registry protocols.
3. Advocate for legislation such as AB 32 that will raise the profile of the City's waste reduction and recycling programs and their role in reducing GHG emissions
4. Ensure that waste management programs are adequately represented in San José's Climate Action Plan.
5. Work with neighboring jurisdictions to evaluate and consider regional landfill bans, particularly for organic materials such as food waste and yard trimmings that contribute to methane generation at landfills.

Green Jobs

The Green Vision includes the creation of green jobs in San José. These are jobs created by businesses and organizations that improve environmental quality and sustainability.

The new green economy can help lift people out of poverty while improving the environment. The City's recycling programs and related policies are a catalyst for green jobs in the City and the region. The Institute for Local Self-Reliance has estimated that every 10,000 tons of materials discarded per year can create the following full-time jobs:

- 1 job at a landfill, or
- 4 jobs at a compost facility, or
- 10 jobs at a recycling facility, or
- 25 jobs at a recycling-based manufacturer, or
- 75 to 250 jobs at a reuse facility

Recycling Creates Jobs

The following recent City programs created new green jobs in San José:

Special event and City facility recycling — The City is working with 150 members and staff of the San José Conservation Corps to

implement recycling at special events and City facilities.

Multi-family and City facility recycling and composting — The City is working with local private waste management companies to create green jobs processing and composting waste materials from multi-family residential complexes and City facilities.

Next Steps for Green Jobs

1. Expand, attract, and support green businesses.
2. Continue to support the development of green jobs through investment in zero waste programs and infrastructure.
3. Continue to provide outreach to the City's youth and other job-seekers, educate them about opportunities in green jobs and new technology.
4. Provide information on training opportunities and journey level positions at local green businesses.

Recycling Market Development

Encouraging sustainable local markets for the post-consumer materials that end up in landfills is essential to any recycling program. It is not possible to reach the City's diversion goals without viable markets for recycled end products. However, financial barriers to businesses interested in manufacturing recyclables have often been too great to overcome. The California Integrated Waste Management Board designated the City a Recycling Market Development Zone (RMDZ) to encourage market creation and development. The RMDZ program provides attractive loans to fund recycling-based manufacturing businesses. Due to the progressive and ever changing nature of this industry, alternate loan funding is essential as many conventional lenders are apprehensive about these projects due to the limited track records.

Scrap Metal Ready for Recycling

In an effort to achieve the Green Vision, San José is positioning itself to become a leader in this program. As new technologies develop, San José would like to leverage the resources of RMDZ to encourage infrastructure development locally. Due to the CIWMB program's current narrow scope, only a small percentage of businesses are eligible for this funding. Also, the maximum loan amounts may not be enough to encourage large scale operations. San José will work with the RMDZ staff to evaluate current program restrictions and help ensure more funding is available for more projects.

Next Steps for RMDZ

1. Continue to work with stakeholders to identify areas for program improvement.
2. Continue to collaborate with other jurisdictions to increase RMDZ program funding at the State level.

Finances & Funding

Recycling programs have historically been funded from fees on solid waste that is disposed at landfills. The City's fee for the residential collection programs is used to pay for garbage, recycling, and yard trimmings collection as well as street sweeping services. Commercial haulers pay a franchise fee based on the volume of solid waste collected for disposal. Also, the City receives General Fund revenue from the Disposal Facility Tax assessed on landfills within the City. Over the medium to long-term, as the City's zero waste programs become more successful in reducing the need for disposal, City revenues will decrease and there will be a need to identify alternative means of funding.

The City conducted a survey of its fee structures, and revenue alternatives which is included as Appendix D "Opportunities for Alternative Revenue Generating Mechanisms." The report describes several City fees and taxes and how they will change over time. Revenues discussed include:

- Disposal Facility Tax
- Commercial Solid Waste Collection Franchise Fee
- Commercial Source Reduction and Recycling Fee
- County Planning Fee

The report also discusses possible alternative fees, including:

- Solid Waste Development Impact Fees
- Vehicle Impact Fees
- Street Sweeping Fees
- Host Fees
- Extended Producer Responsibility Fees
- Advanced Disposal/Recycling Fees
- Revenues from the Sale of Carbon Credits

Additional review must occur before these fees can be recommended.

Next Steps for Finances & Funding

- Develop alternative fee based options and/or alternative fees to address the impact of waste diversion activities on the General Fund and Integrated Waste Management Fund - 2009-2010.
- Examine the remaining capacity at local landfills and incoming tonnage to estimate when the City would need to replace the Disposal Facility Tax revenue with an alternative funding mechanism and evaluate revenue options— 2010.
- Continue to support a statewide landfill surcharge to fund local programs and facilities.
- Ensure that the redesign of the commercial, residential, and construction and demolition programs will phase-in cost recovery.