

Alternative Technologies

for Processing Post-source Separated Municipal Solid Waste

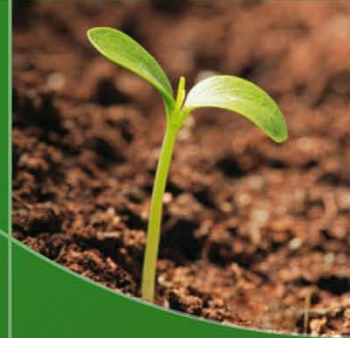
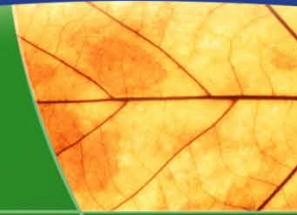
Evaluating Alternative Technologies for The City of Los Angeles' Black Bin Waste

CITY OF LOS ANGELES



SANITATION

DEPARTMENT OF
PUBLIC WORKS



Alternative Technologies

for Processing Post-source Separated Municipal Solid Waste



Alternative Technologies in LA

BACKGROUND



CITY OF LOS ANGELES



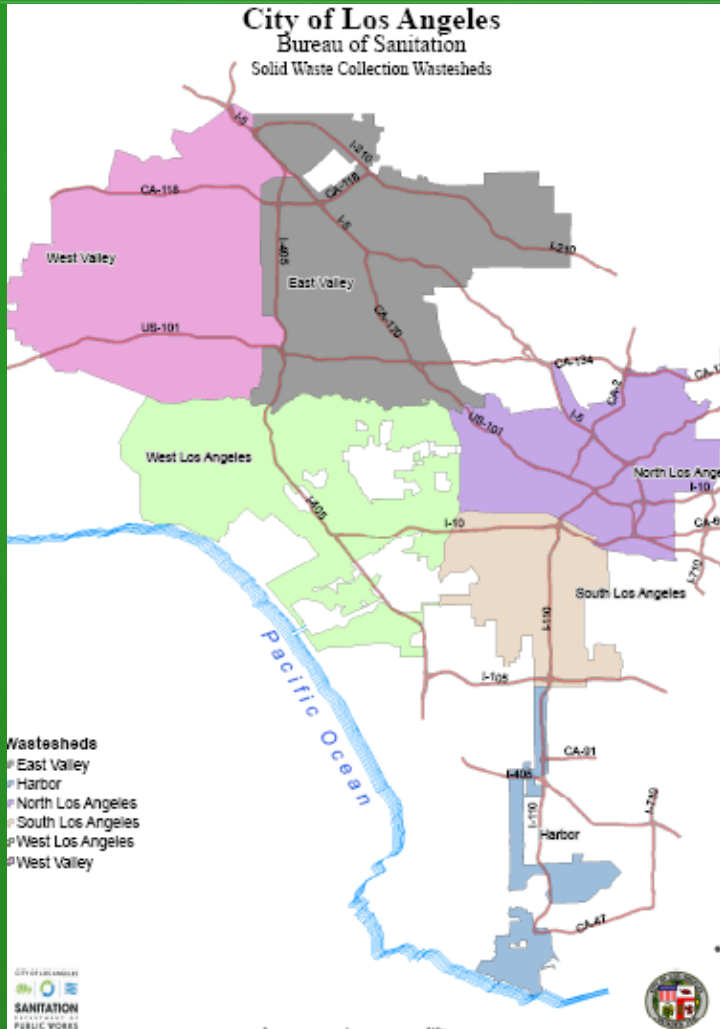
SANITATION
DEPARTMENT OF
PUBLIC WORKS

Alternative Technologies

for Processing Post-source Separated Municipal Solid Waste



L.A. has six collection “wastesheds”



- Each “wasteshed” generates approximately 200 to 900 tons of waste per day from single-family households
- Blue bin materials sent to recycling markets
- Green bin materials recycled into mulch and compost
- The majority of black bin waste is disposed of at Sunshine Canyon Landfill, a local landfill.

CITY OF LOS ANGELES



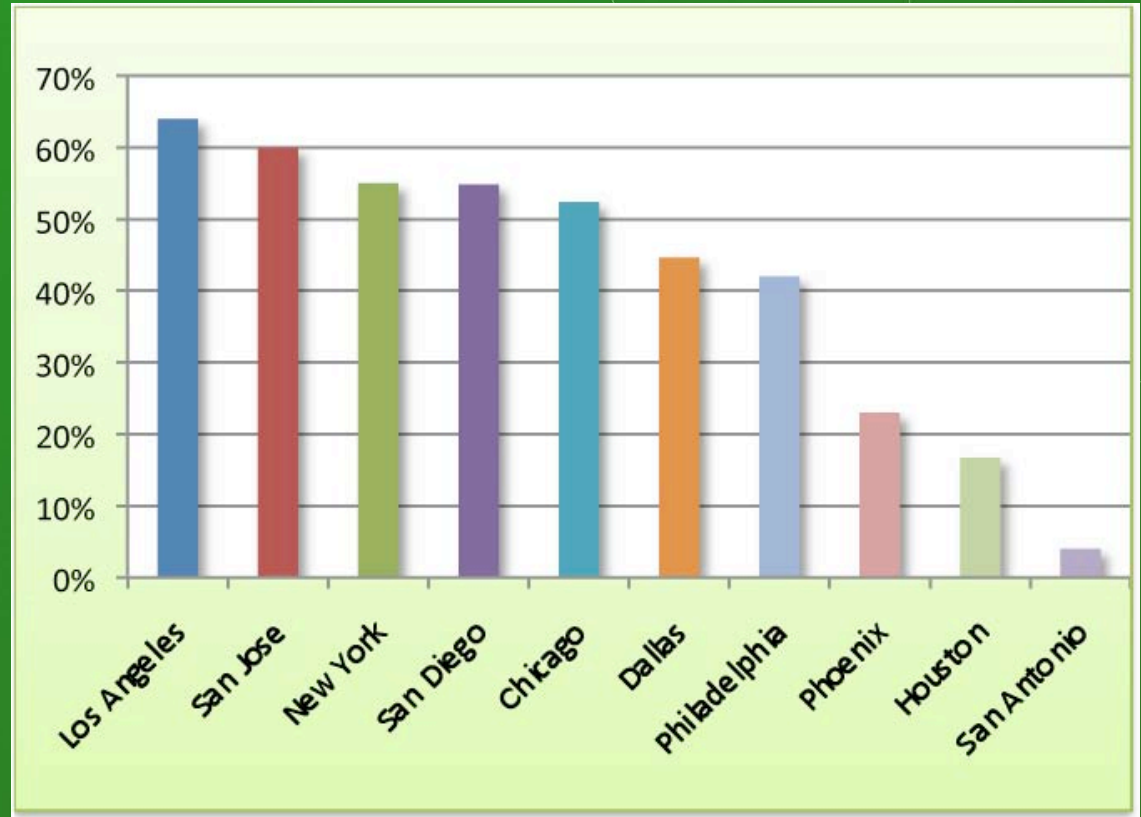
SANITATION
DEPARTMENT OF
PUBLIC WORKS

Alternative Technologies

for Processing Post-source Separated Municipal Solid Waste

Big City Leader

- Leader in recycling among large US cities
- Currently diverts 64 percent from landfills
- 12 percent higher than the state average
- 25 percent higher than the national average



CITY OF LOS ANGELES



SANITATION
DEPARTMENT OF
PUBLIC WORKS



Drivers for New Technology

■ Mayor Villaraigosa's Goal

- The Bureau of Sanitation is to establish alternative technology facilities to assist with the diversion of 75% of material out of urban landfilling by 2013.

■ RENEW LA

- 12 Goals: Blueprint to Zero Waste
- Adopted February 2006

■ Green LA

- Reduce greenhouse gas emissions to 35 percent below 1990 levels by 2030.

■ City Council Goal

- Phase out urban landfilling



Achieving Zero Waste

SWIRP - Solid Waste Integrated Resources Plan

- Stakeholder driven planning process
- Develop long-range strategy for achieving zero waste in 20 years
- Regional meetings in each wasteshed to identify locally acceptable policies and programs that reduce waste and develop new infrastructure
- The draft policy, program, and facility plan is due to be completed in late Spring 2009
- Citywide conference to be held May 30th, 2009



Vision for New Technology

- **RENEW LA - Recovering Energy, Natural Resources, and Economic Benefit from Waste for Los Angeles: (authored by Councilman Greig Smith)**
 - Blueprint for LA's resource management
 - Goal of 90+ percent diversion by 2025
 - Long-term goal of zero waste
 - Calls for an Alternative Technology facility in each of the city's six wastesheds as well as one located outside of the city's boundaries
 - All communities to process their waste locally and equitably



LA's Solid Waste Challenges

- LA generates over 10 million tons of solid waste per year
- After recycling, approximately 3,600 tons of black bin waste goes to local urban landfills every day
- The City has made a commitment to phase out of urban landfilling



Sunshine Canyon Landfill

LA's Solid Waste Challenges cont'd

- Landfills emit greenhouse gases
 - Accounts for 25 percent of U.S. methane emissions
 - Contaminates the air and groundwater
- Hauling LA's waste to other communities is expensive
- By 2030, the city's population will increase by 360,000 residents*, thereby also increasing our solid waste



*As estimated by the Southern California Association of Governments

CITY OF LOS ANGELES



SANITATION
DEPARTMENT OF
PUBLIC WORKS

Alternative Technologies (AT) Program Milestones

- March 2003: Released RFQ for consultants to evaluate AT
- October 2004: Conducted preliminary AT site visit to Europe
- September 2005: Completed final report on evaluation of AT solid waste processing facilities
- February 2007: Released RFP for AT processing facilities for commercial scale and emerging technologies
- August 2007: Received 13 proposals
- February 2008: Conducted interviews with potential vendors
- June – October 2008: Visited reference facilities in Spain, Germany, France, Japan, Israel, Canada, and the US
- Summer 2009: Short list recommendation of vendors to City Council

Alternative Technologies

for Processing Post-source Separated Municipal Solid Waste

Evaluation Criteria

EVALUATION CRITERIA
Landfill Diversion
Service Fee
Reference Facilities
Operational Experience
Engineering
Credibility
Marketing Experience
Environmental Impacts

CITY OF LOS ANGELES



SANITATION
DEPARTMENT OF
PUBLIC WORKS

Alternative Technologies

for Processing Post-source Separated Municipal Solid Waste

Alternative Technologies in LA

WHAT ARE THE NEW TECHNOLOGIES?



CITY OF LOS ANGELES



SANITATION
DEPARTMENT OF
PUBLIC WORKS

Alternative Technologies

for Processing Post-source Separated Municipal Solid Waste

Technology Options Proposed in Response to City of LA's RFP

- Biological
 - Anaerobic Digestion
 - Composting
- Thermal
 - Waste to Energy (second generation Advanced Thermal Recycling)
 - Gasification
 - Pyrolysis / Gasification
 - Plasma Arc /Gasification
 - Biomass to Energy
- Municipal Solid Waste is converted into energy or other recoverable by-products



Residual Waste from AT can be used for road base/road construction

CITY OF LOS ANGELES



SANITATION
DEPARTMENT OF
PUBLIC WORKS

Alternative Technologies

for Processing Post-source Separated Municipal Solid Waste

Biological Technology Process



CITY OF LOS ANGELES



SANITATION
DEPARTMENT OF
PUBLIC WORKS

Alternative Technologies

for Processing Post-source Separated Municipal Solid Waste

Anaerobic Digestion



Food waste digester in Europe



Biosolids digesters at LA's Terminal Island Wastewater Treatment Plant

CITY OF LOS ANGELES



SANITATION
DEPARTMENT OF
PUBLIC WORKS

Alternative Technologies

for Processing Post-source Separated Municipal Solid Waste

Thermal Technology Process



CITY OF LOS ANGELES



SANITATION
DEPARTMENT OF
PUBLIC WORKS



Advanced Thermal Recycling



**Southeast Refuse
Recovery Facility
(Long Beach, CA)**



**Advanced Thermal Facility
(Isle of Man)**

Alternative Technologies

for Processing Post-source Separated Municipal Solid Waste



Gasification and Plasma Arc Gasification



Gasification facility in Japan



Plasma Arc torch

CITY OF LOS ANGELES



SANITATION
DEPARTMENT OF
PUBLIC WORKS

Alternative Technologies

for Processing Post-source Separated Municipal Solid Waste



Energy Benefits

- A 1,000 tons/per day AT facility produces up to 30 MW of electricity
 - Enough to supply up to 25,000 households daily
- Some technologies qualify as “renewable” energy under state law
 - Anaerobic digestion
 - Biomass to energy
- Reduces the use of fossil fuels



CITY OF LOS ANGELES



SANITATION
DEPARTMENT OF
PUBLIC WORKS

Alternative Technologies

for Processing Post-source Separated Municipal Solid Waste



Environmental Benefits

- Keeps waste out of landfills
- Reduces greenhouse gases
- Reduces groundwater contamination
- Minimizes truck vehicle miles traveled



CITY OF LOS ANGELES



SANITATION
DEPARTMENT OF
PUBLIC WORKS

Community Benefits

- Creates local “green” jobs
- Produces marketable products (energy + recyclables)
- Finances local community improvements
 - Infrastructure
 - Streetscape
 - Community amenities

Alternative Technologies

for Processing Post-source Separated Municipal Solid Waste



Alternative Technologies in LA LAND USE AND SITE SELECTION

CITY OF LOS ANGELES



SANITATION
DEPARTMENT OF
PUBLIC WORKS

Alternative Technologies

for Processing Post-source Separated Municipal Solid Waste

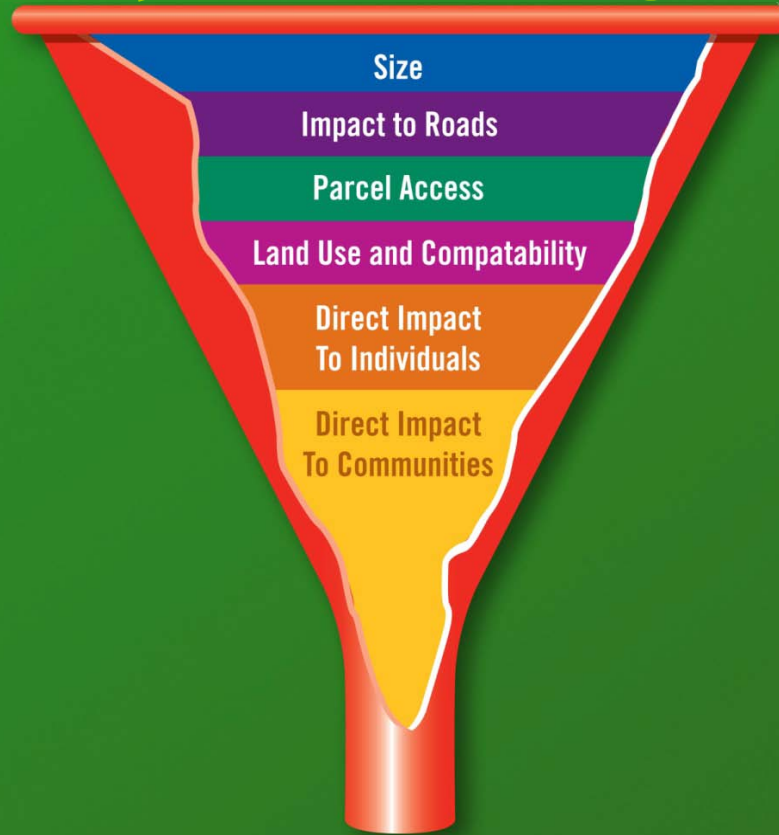
Site Selection Process



PF M2 M3

Zoning
Requirements
(800+ parcels)

Evaluation
Criteria



Potential Sites

CITY OF LOS ANGELES



SANITATION
DEPARTMENT OF
PUBLIC WORKS

Alternative Technologies

for Processing Post-source Separated Municipal Solid Waste



Alternative Technologies in LA

NEXT STEPS

CITY OF LOS ANGELES



SANITATION
DEPARTMENT OF
PUBLIC WORKS



Project Timeline

- Summer 2009: Report to Mayor, City Council and the Board of Public Works
 - Proposal Evaluation Report
 - Selection of Technology/Vendor
 - Request authority to negotiate with recommended vendor(s)
- 2009: Initiate environmental permitting process
- 2009/2010: Engineering and design
- 2011: Construction
- 2012: Facility commissioning
- Public education and outreach will continue throughout the project

Alternative Technologies

for Processing Post-source Separated Municipal Solid Waste



Project Contact Information

Miguel Zermeno, Bureau of Sanitation Project Manager

Phone: (213) 485-3611

E-mail: Miguel.Zermeno@lacity.org

Web: www.alternativetechnology.lacity.org

CITY OF LOS ANGELES



SANITATION
DEPARTMENT OF
PUBLIC WORKS