

TO: HONORABLE CITY COUNCIL
ATTENTION: POLICY AND SERVICES COMMITTEE

FROM: CITY MANAGER DEPARTMENT: PUBLIC WORKS

DATE: APRIL 28, 2008 CMR:219:08

SUBJECT: RECOMMENDATION TO REFER COMPOSTING FEASIBILITY STUDY RESULTS AND CONSIDERATION OF AN ELECTION THAT COULD ALLOW COMPOSTING TO CONTINUE ON A PORTION OF THE LANDFILL AFTER CLOSURE TO THE POLICY AND SERVICES COMMITTEE

RECOMMENDATION

Staff recommends that the Policy and Services Committee provide input on the Compost Feasibility Study Results and recommend to the City Council to direct staff to begin preparations for an election that would ask Palo Alto voters to continue green material composting operations on dedicated parkland atop the municipal landfill after it is capped and certified closed by the State of California Integrated Waste Management Board (CIWMB).

BACKGROUND

The City currently owns and operates a 7.5 acre green material compositing facility at the Byxbee Park 126-acre landfill which is scheduled to close in 2011. The existing green material composting facility is a conventional windrow operation that processes 21,000 tons of green material per year. The material managed at the facility includes source separated yard waste such as lawn clippings, leaves, tree and shrub clippings, brush, and other vegetative materials generated through landscape maintenance activities. In addition, leaves accumulated through the City's street sweeping operations "selected screened loads" and clean tree trunk/limb wood grindings (1 to 2 inch chips) are also deposited at the facility.

Nearly all of the green material delivered to the City's composting facility is generated within the City limits. Approximately 63% is delivered from the Palo Alto Sanitation Company's (PASCO's) curbside and debris box collection operation, 14% from commercial landscape maintenance companies and contractors, 13% from City tree trimming or (leaf) sweeper operations, 7% from City contractors and 3% from residential self-haul.

On August 6, 2007, Council directed staff to:

- 1) Quantify the reduction in greenhouse gas emissions that would result from maintaining a composting facility in Palo Alto.
- 2) Compare the financial costs of composting in Palo Alto versus transporting green material off-site.
- 3) Compare the pros and cons of in-vessel composting with windrow compositing, with particular attention paid to land acreage needed and overall cost.

- 4) Explore potential locations for a composting facility, including the current landfill site, other land in the vicinity of the Palo Alto Regional Water Quality Control Plant (RWQCP), the unused portion of the Palo Alto Airport bordering Embarcadero Road, and the Los Altos Water Treatment Plant.
- 5) Analyze the impact on Byxbee Park of maintaining a composting facility near the RWQCP.

The Council directive was prompted by a Colleagues' Memo dated August 6, 2007 (Attachment A). To begin addressing these issues, Council approved a work plan on January 22, 2008 (CMR:116:08). This report represents the results of that work for Council consideration of further direction to staff. The major component of the approved work plan was the preparation of a Municipal Compost Facility Feasibility Study. This report summarizes the Feasibility Study and recommends Council actions based on economic factors and greenhouse gas impacts.

DISCUSSION

The study team consisted of staff members from the Planning, Public Works and Utilities departments and groups including Environmental Compliance, Resource Management, Refuse, Engineering, Planning, and the City Manager's Office Sustainability Team. The final Municipal Compost Facility Feasibility Study (Attachment B) analyzed the environmental, financial and technical implications of two different composting operational scenarios: (1) a new City-owned and operated municipal compost facility and (2) utilization of one or more compost facilities outside the City of Palo Alto.

Staff evaluated available composting technologies, capital and operating cost estimates, the feasibility and implications of adding other organic feedstock to the composting operation and evaluated the market price for finished compost products. In addition, staff evaluated four potential sites to determine the suitability for locating and developing a new composting facility in Palo Alto including zoning/land use, permitting implications and environmental impacts.

Alternate Facility Location Analysis

Given the built conditions of the community and the value the community places on open space, all locations have challenges. Composting at the alternate sites identified in the Colleague's Memo is unlikely to be permitted due to issues such as vector control and odor concerns. There are also other issues associated with the identified alternate sites. Therefore, Location 1, the existing site at Byxbee Landfill is currently the preferred site.

Location 1, on the existing site at Byxbee Landfill is suitable in terms of size, odor control and compatible adjacent uses. However, because the site reverts to parkland following landfill closure, the continuing use as a composting site would require a vote of the people and an amendment to the Baylands Master Plan.

Location 2, on RWQCP property is problematic because of its small size, proximity to wetlands, and the impacts on future plant expansion opportunities. The impact on future plant expansion is especially problematic because the RWQCP is an existing regional facility. Dedication of a portion of the property to a Palo Alto composting operation could raise questions from the partner agencies. Staff at the RWQCP has also expressed concerns about additional odors from a composting operation next to the plant. Having two adjacent operations that could potentially cause odor complaints will create potential conflicts and difficulties in differentiating and addressing the

potential odor sources.

Location 3, the airport site, is a highly visible Baylands location and the current airport land use plan does not allow new structures. Location 3 is currently part of a lease still held by Santa Clara County. The lease expires in 2017; however per Council action on November 13, 2007, staff is currently negotiating early lease termination options (CMR:418:07). Large buildings to house the composting operation would be required to control dust and odors. Composting buildings would likely be taller than airplane hangars, and therefore, cause similar or worse visual impacts to the Baylands from Embarcadero Road as additional hangars that were proposed by Santa Clara County.

Location 4, the Los Alto Treatment Plant (LATP) site has environmental contamination and wetland impact concerns. The net usable area of the site is not yet known due to currently undefined wetland impact mitigation ratios. Numerous potential uses for the site have been identified including a new animal shelter, a new recycling center and household hazardous waste (HHW) drop-off, waste transfer station for City operations, utility pole storage, dewatering area for spoils from sanitary sewer and storm drain vacuum trucks, and as a staging area for City contractors. Staff will be presenting a workplan to Council in late May for preparing a Master Plan for the LATP site.

The table below summarizes some of the key land use considerations analyzed during the study.

TABLE 1 - LAND USE CONSIDERATIONS

	Can be done without Voter Approval	Neighbors greater than 1000' away	Conforms to Comprehensive Plan	Limits future expansion of other facilities
Location 1 – Landfill	NO	YES	NO	NO
Location 2 – RWQCP	YES	NO	YES	YES
Location 3 – Airport	YES	NO	YES	YES
Location 4 – LATP	YES	NO	YES	MAYBE

Greenhouse Gas Impact

Staff has estimated that an additional 1,100 metric tons of carbon dioxide would be emitted through increased vehicle emissions were the City to utilize a regional composting facility in the future. The additional emissions were based on the assumptions that all of the City’s green materials would need to be hauled to nearby transfer stations [for example, the Sunnyvale Materials Recovery and Transfer (SMaRT[®]) Station], then ground up and hauled to regional composting facilities in the South County. To put the increased emission number in context, one could compare it to the City’s entire vehicle fleet that emits approximately 1,900 metric tons of carbon dioxide per year. Other air pollutants, including nitrogen oxides, carbon monoxide and particulate matter would also be emitted during the transportation. If Council decides to minimize greenhouse gas emissions, staff recommends that Council begin taking action that would allow conventional windrow composting of green material to continue at the current landfill site.

Technology Analysis

The study thoroughly examined three composting technologies: windrow composting, ag-bag/static pile composting, and in-vessel composting. These technologies and others are more fully described in Attachment B. Alternate composting technologies types were found to be less economically feasible than conventional windrow composting due to the initial capital costs needed for

development. Due to extreme differential settlement issues on the top of the landfill, alternative composting technologies that require buildings or other solid equipment foundations are not recommended. However, open windrow composting could continue on top of the landfill without the need for a stable foundation.

The table below shows where each technology would be appropriate based on the various site locations being considered.

TABLE 2 - COMPOSTING TECHNOLOGIES

	Windrow Composting	Ag-Bag/aerated static pile	In-Vessel
Location 1 – Landfill	YES	MAYBE	NO
Location 2 – RWQCP	NO	NO	YES
Location 3 – Airport	NO	NO	YES
Location 4– LATP	NO	NO	YES

Windrow composting is most appropriate for the landfill location due to the large area (7.5 acres) required. Ag-bag/aerated static pile composting is possible but would be more expensive because of the need for an air compressor facility and a well compacted pad. In-vessel technology could be feasible at Locations 2, 3 and 4. However the technology requires a significant initial capital cost with buildings covering about 60,000 square feet.

Economic Analysis

Site development costs for each location were developed based on the appropriate and least expensive technologies. These cost estimates are preliminary and conceptual in nature and are provided solely for the purposes of relative comparisons between the alternatives. They are not intended as final cost estimates for budgetary or financing actions and should not be utilized for those purposes. Costs will change depending on final design, conditions of permitting and approval, and actual year of construction.

TABLE 3 - CAPITAL COST CONSIDERATIONS (x 1,000)

	Election Costs	Design and CEQA	Permitting	Comp Plan Amendment	Facility Construction ¹	TOTAL
Location 1 – Landfill	\$200	\$20	\$15	\$15	\$500	\$750
Location 2 – RWQCP	\$0	\$300	\$50	\$0	\$6,700	\$7,050
Location 3 – Airport	\$0	\$300	\$50	\$0	\$6,700	\$7,050
Location 4 – LATP	\$0	\$300	\$50	\$0	\$6,700	\$7,050
Regional Facility	\$0	\$0	\$0	\$0	\$0	\$0

NOTES:

1. Except for the landfill location, all other sites would require in-vessel technology. The In-vessel facility costs include large building construction to help control dust and vector problems. Construction costs for windrow composting at Location 1 would be absorbed into the landfill closure.

One of the most significant costs relating to Location 1 is the cost to conduct the election. Although higher than the cost for an election, the facility design, permitting and construction costs for

Location 1 relate primarily to anticipated additional storm water controls that would be incorporated into and constructed during the landfill closure capping process. The City already owns the specialized mechanical equipment for operating windrow composting (e.g. scarab, grinder, screener, etc.). Location 1 is remote from other land uses, so odor control equipment would not be required. No odor controls exist for the current operation.

Locations 2, 3, and 4 would incur large costs for design, environmental studies, permitting and actual facility construction. Facility construction costs are very significant for these locations due to the large buildings and odor control equipment required. For a 15 to 20-year facility life cycle, this initial capital investment results in significantly higher per ton costs for compost compared to Location 1 or the regional facility (SMaRT Station) approach. The table below summarizes the projected operation costs based on current tonnages (21,000 tons per year processed at City Facility or 17,400 tons per year of City-controlled green material sent to SMaRT from PASCO collection and City operations). The numbers below are derived in Attachment B, Table 3. The unit costs below include annualized capital costs, transportation costs, tipping fees, revenue, and ongoing operation and maintenance costs.

TABLE 4 – UNIT COST SUMMARY

	Windrows Green Material (City Facility)	SMaRT Green Material (Regional Facility)	In-Vessel Green Material (City Facility)	In-Vessel Mixed Organics (City Facility)
Total Unit Cost	\$54/ton	\$41/ton	\$124/ton	\$81/ton
Land Rent to GF (\$100,00 per acre per year)	\$750,000	\$0	\$300,000	\$300,000
Unit Cost not including Rent	\$17.86/ton	\$41/ton	\$109/ton	\$72/ton

Impact on Byxbee Park

The operation of a composting facility in Byxbee Park currently creates a visual impact. The piles of compost are clearly visible from East Bayshore Road, Highway 101, and West Bayshore Road. The visibility of the compost piles will continue if Location 1 is selected but, staff will explore various screening options.

Other impacts include dust, litter, vectors and odor. During screening operations, dust generated is sometimes mistaken for smoke from a fire. Litter mixed in with green material can be blown from the operation area and onto the public park area and also attracts vectors such as flies and rodents. On days when wind blows from the east, the composting operation can produce a noticeable and distinctive earthy odor on East and West Bayshore Roads.

Timing

Assuming that a ballot measure can be placed on election within 18 months time, a revised permit for a continued composting operation on the landfill could be obtained by early 2011. In-vessel technology implemented at the alternative sites would require nearly the same amount of time for completion. The table below summarizes the project scheduling assumptions.

TABLE 5 - TIME REQUIRED (months)

	Voter Approval Process	Design and CEQA	Permitting	Comp Plan Amendment	Facility Construction	TOTAL	End date based on start date of 7/1/2008
Location 1 – Landfill	18	3	6	3	1	31	February-2011
Location 2 – RWQCP	0	12	12	0	8	32	March-2011
Location 3 – Airport	0	12	12	0	8	32	March-2011
Location 4 – LAMP	0	12	12	0	8	32	March-2011
Regional Facility	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Summary

Staff has determined that a composting operation (very similar to current operations and in the current location) is an economic and practical solution for retaining a municipal composting facility in Palo Alto. However, when land rental to the General Fund is included in the analysis, a regional facility approach, at current fuel rates, is slightly more economical than the windrow composting option. However, use of a regional facility would result in a significant increase in greenhouse gas emissions due to transportation impacts.

In addition to minimizing vehicle emissions, other benefits of retaining a composting operation in Palo Alto include having readily available compost for City parks and landscaping operations, regular compost give aways for Palo Altans, and revenue from the sale of compost to nurseries, material yards, landscapers and private residents. The composting operation could also be viewed as an educational opportunity and an example of how waste generated locally can be processed and renewed locally. As fuel costs and traffic congestion increase, regional facilities become less cost effective. Keeping composting in Palo Alto could be viewed as a more sustainable solution.

RESOURCE IMPACT

Based on staff’s recommendation, the expected resource impacts are:

- Additional workload for City Clerk’s Office. The Clerk’s Office would need to conduct and coordinate an election to request a change in park usage.
- Funding the election would impact the Refuse Fund. An election would cost approximately \$200,000. Actual costs depend on how many other measures are on the ballot and when the election is conducted. An election is not currently budgeted or planned in the upcoming budget for fiscal year 2008-09.

ENVIRONMENTAL REVIEW

Preparation of the Municipal Compost Facility Feasibility Study is exempt under section 15262 of the California Environmental Quality Act (CEQA) Guidelines. All required environmental review will be done accordingly when the project is defined.

POLICY IMPLICATIONS

The recommendation reflects a need to compromise between existing City policies. The

recommendation is consistent with Council priorities relating to reducing greenhouse gas emissions. The recommendation also fits well with the Council sustainability guidelines. However, the Zero Waste Plan recommends the use of a regional facility for composting both green material and other organics like food wastes after landfill closure in 2011. Additionally, the Baylands Master Plan indicates the landfill site will become pastoral park after landfill closure. Conversion of a portion of that proposed pastoral park usage back to a municipal composting operation would require a vote of the people per the 1965 Park Dedication Ordinance.

ATTACHMENTS

Attachment A: Colleagues Memorandum dated August 6, 2007

Attachment B: Final Municipal Compost Facility Feasibility Study dated April 2008

PREPARED BY:

MATTHEW A. RASCHKE
Senior Engineer

APPROVED BY:

GLENN S. ROBERTS
Director of Public Works

CITY MANAGER APPROVAL:

EMILY HARRISON
Assistant City Manager