Agenda Item No._____

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CITY OF SANTA BARBARA

COUNCIL AGENDA REPORT

AGENDA DATE: January 10, 2012

TO: Mayor and Councilmembers

FROM: Environmental Services Division, Finance Department

SUBJECT: Update On Conversion Technology Project

RECOMMENDATION:

That Council receive a report from staff regarding the status of the conversion technology project.

EXECUTIVE SUMMARY:

For the past several years, the County, in concert with the City of Santa Barbara and neighboring jurisdictions, has investigated various conversion technologies as alternatives to disposal. In 2009, the County released a request for proposals to solicit potential alternatives. Two companies, Plasco Energy Group and Mustang Renewable Power Ventures, were deemed as finalists. Plasco Energy Group proposed plasma gasification, a process that uses high temperatures and steam to process waste. Mustang Renewable Power Ventures submitted two proposals. The first, the "base proposal," would first sort the waste in a material recovery facility (MRF) to remove inert recyclables and then would digest remaining organic material in an anaerobic digester, with residual waste landfilled. Mustang included an alternate proposal that added gasification technology to the base proposal to further process the residual waste.

While Plasco and Mustang gasification would result in the highest diversion rates (85-95%), the technology is not currently used in the United States at a commercial scale for processing municipal solid waste and, therefore, information on air emissions is not known as it would be with other waste management technologies. As a result, both proposals could be difficult to permit and would likely receive less support from community stakeholders. For these reasons, staff from participating agencies has chosen the Mustang base proposal as a "first phase" solution while additional information on gasification can be gathered. It should be noted that anaerobic digestion of sewage sludge and livestock manure is common in California and the United States. However, anaerobic digestion of municipal solid waste, as proposed by Mustang, is not in use anywhere in the United States.

According to the vendor, the Mustang base proposal would increase diversion of the waste that is currently landfilled by 50-60%. Staff is working to verify the reasonableness of this proposed level of performance. If achieved, the increased diversion would add approximately eight to ten more years of permitted capacity to the Tajiguas Landfill. Similar to current practice, tipping fees for the proposed facility would be paid by affected ratepayers (residential and commercial) through rates for franchised trash and recycling services. If the City were to formally commit its tonnage to the project, it would enter an agreement with the vendor and with the other participating agencies that would incorporate negotiated business terms such as the project location, financing, contract term, diversion mandates, tipping fees, revenue sharing for recyclables, energy generation and tonnages above minimum delivery thresholds, tonnage commitments and financial penalties for failing to remain within the agreed upon range of tonnages to be delivered to the facility.

A separate agreement would also be developed between the County and the participating agencies to formalize the roles and responsibilities of each agency as a stakeholder in the regional project. Staff is developing the structure and content of this agreement, which will be discussed with Council at a future date.

During the next several months, staff will work with its regional counterparts on the following tasks: 1) finalize the tonnage commitments and attendant size of the facility; 2) initiate environmental review of the project; 3) develop the legal structure that would govern and define the roles and responsibilities of each participating agency; and, 4) complete the due diligence investigation of the vendor's proposal and subsequent representations. Staff will bring these items to Council for consideration and action several times over the next several months.

DISCUSSION:

History of Conversion Technology Project

The Tajiguas Landfill, owned and operated by the County of Santa Barbara, is the primary disposal facility for all waste generated by the cities of Santa Barbara, Goleta, Buellton and Solvang as well as portions of the unincorporated county located on the south coast. In May of 2003, the County received approval from the State of California to expand the permitted capacity of the Tajiguas Landfill in order to maintain at least 15 years of disposal capacity pursuant to State law.

Concurrent with the landfill expansion, the County's Multi-Jurisdictional Solid Waste Task Group (MJSWTG) began investigating long-term alternatives to landfill disposal. The MJSWTG is comprised of elected officials from the County and all cities within the County and is charged with conducting regional solid waste management planning. In February of 2003, the MJSWTG published a report titled "Alternatives to Disposal Final

Report[1]", which recommended consideration of development of a "conversion technology" facility as part of the long-term waste management strategy for the Tajiguas waste shed. In the report, conversion technology (CT) is defined as:

> *"The processing, through non-combustion thermal means, chemical means, or biological means, of mixed municipal solid waste from which recyclable materials have been substantially diverted and/or removed to produce electricity, alternative fuels, chemicals, or other products that meet quality standards for use in the marketplace, with minimum amount of residuals remaining after processing."*

Previous Council Involvement

In July of 2005, Council approved a framework for inclusion of conversion technology in the City's solid waste strategic plan. In 2007, the City began working in earnest with the County to evaluate the feasibility of conversion technology on the south coast. On February 27, 2007, Council authorized staff to solicit proposals for a CT project manager and to draft a memorandum of understanding (MOU) between the City and the County outlining the roles and responsibilities of each jurisdiction in a CT procurement process. On January 29, 2008, Council approved the criteria that would be used to evaluate CT vendors as well as the broader goals that would guide the future procurement process. These goals included the following:

- Increase diversion of post-recycled municipal solid waste (MSW) for affected jurisdictions
- Reduce environmental impacts of landfilling MSW
- Provide financial feasibility and sustainability
- Produce green energy and other marketable products
- Provide a humane work environment
- Result in a long-term waste disposal plan

In August of 2009, Council adopted a resolution to commit the City's residual waste to a CT project provided that the facility and the vendor met the selection criteria and project goals described above.

Procurement Process

In October 2009, the County released a request for proposals (RFP) to formally solicit various CT projects. The RFP included input from ARI, the project consultant, as well as from staff from each participating jurisdiction. Prior to release, the RFP was presented

[1] Obtained from the world wide web at: http://www.countyofsb.org/pwd/mjswtg/TAC/ObsoleteSubgroups/AlterntoDispSubgroup/Alt%20to%20Disposal%20Final%20Report%2009-22-03.doc

to a working group of elected officials representing the participating agencies. In June of 2010, a summary of four companies and five different proposals, each deemed responsive to the RFP, were presented to the MJSWTG. Eventually, staff narrowed the field to two viable vendors – Mustang Renewable Power Ventures and Plasco Energy.

Description of Technologies

Plasco Energy Group (Plasco) submitted one proposal that relies solely upon a technology called plasma gasification to process incoming MSW. Plasma Gasification is a process that uses very high heat, pressure, and steam to convert materials directly into a gas called "syngas" that can be used to generate electricity. Because of its affinity for any waste materials that contain energy value, plasma gasification only excludes materials lacking energy value such as metal, glass and rubble. As a result, diversion rates can reach 86-95% while generating approximately 15.3 megawatts of energy; enough to power approximately 15,000 homes.

Mustang Renewable Power Ventures (Mustang) submitted two separate proposals. The base proposal, included two separate components, a material recovery facility (MRF) and an anaerobic digester (AD). A MRF uses mechanical sorters, magnets and air blowers to separate recyclable materials, including paper, cardboard, glass, metals and plastics from the remaining trash. Recovered commodities are then baled and sent to market.

Any materials not captured by the MRF would be sent from the MRF to the AD facility where organic material (e.g. green waste, plant material, food and soiled paper) are broken down by bacteria anaerobically (i.e., in the absence of oxygen). This biological process is similar to that used at wastewater treatment plants to digest sewer sludge. The process generates methane that can be used to generate approximately one megawatt of electricity; enough to power approximately 1,000 homes. The vendor estimates that the base proposal would divert approximately 50-60% of the waste stream that is currently landfilled.

Sewage treatment plants in the United States have long used anaerobic digestion to digest sewage sludge. Moreover, other countries such as Japan and others in Europe have used anaerobic digesters to digest portions of their waste stream such as green material and foodscraps. The State of California has officially adopted a strategic initiative to increase organics processing capacity statewide and recently developed and circulated an EIR to assist jurisdictions to site new or expand existing composting facilities. However, it should be noted that according to a February 2011 report by the California Department of Resources Recycling and Recovery (CalRecycle), large-scale anaerobic digestion of municipal solid waste does not yet exist in the United States.[2]

[2] Obtained from the world wide web at:
http://www.calrecycle.ca.gov/SWFacilities/Compostables/AnaerobicDig/PropFnlPEIR.pdf

Other jurisdictions such as the City of San Jose have recently signed contracts to construct a MRF and AD facility similar to the Mustang proposal. However, the facility will not be fully constructed for a few years. Therefore, performance data on this technology applied to California waste profiles does not currently exist.

Besides the base proposal, Mustang also submitted an alternative proposal, which added a gasification component to the base proposal. Similar to the Plasco proposal, Mustang gasification would use high temperatures and steam to extract energy from the residual materials to produce electricity. However, both power generation (10.5 megawatts) and diversion rates (85-90%) would be lower than the Plasco proposal.

The cost to ratepayers for these technologies will be discussed in greater detail later in this report. However, it should be noted that the tipping fee, or the fee charged for each ton of material processed, of the Mustang base proposal is the least expensive option. The tipping fees of Mustang alternative proposal and the Plasco proposal, which both include gasification, are approximately 31% and 70% higher respectively, than the Mustang base proposal, which proposes a material recovery facility and anaerobic digestion only. .

Selection of Preferred Vendor and Technologies

Throughout the procurement process, County staff have met with and presented information regarding both the Plasco and Mustang proposals to a variety of stakeholders and community groups. These groups include the city managers of the participating jurisdictions, the Community Environmental Council, the Environmental Defense Center, the League of Women Voters, Sierra Club, the Gaviota Coast Conservancy, the Chamber of Commerce, and others. While there was general and conceptual support for the project, there were concerns expressed over the environmental and health effects of gasification. In addition, given the lack of emissions data, gasification technology in any form could be difficult to permit and could potentially delay construction of the project.

For these reasons, staff from the County and participating agencies felt that a prudent course of action would be to recommend the Mustang base proposal while more information on gasification is developed over the next several years. While not considered for the immediate future, gasification would still be considered as an alternative in the environmental review document that would be prepared pursuant to the California Environmental Quality Act (CEQA).

Summary of Project and Contract Terms

The Mustang base proposal offers some attractive benefits such as: 1) additional diversion; 2) a doubling of the remaining permitted site life at Tajiguas Landfill depending upon when the facility commenced operation; 3) a defined tipping fee with defined CPI adjustments for the 20 year contract period; 4) reduction of greenhouse gas emissions

when compared to current landfilling disposal; and, 5) generation of renewable energy. Should the City choose to formally commit its residual waste to a CT facility, the City would first enter into an agreement with the vendor and with the other participating agencies. The contract would specify the following terms and conditions and would likely yield the following outcomes:

- Project Location: Tajiguas Landfill. Alternative sites would be evaluated in the CEQA document.

- Project Financing: The vendor would finance and own the facility. Participating jurisdictions would have no rights or obligations regarding facility financing and ownership. However, the participating jurisdictions would have the right to purchase the facility at the end of the contract term.

- Contract term: 20 years

- Anticipated Diversion Rate: According to Mustang, the base proposal would increase diversion of the waste that is currently landfilled by 50-60%. Staff is working to verify this level of performance. If achieved, the increased diversion would double permitted landfill capacity at project onset, based upon current disposal rates. For example, if the CT facility were operational by 2016, an additional ten years of permitted capacity would be gained at Tajiguas Landfill.

- Formal tonnage commitment: The City would commit to deliver a fixed range of waste tonnage, including a minimum and maximum, to the facility in exchange for a set tipping fee.

- "Put or Pay" provision: The City would be contractually obligated to pay the vendor for the minimum volume of waste committed as the vendor's financing is dependent upon receiving revenue from this minimum volume. If the City delivered less material to the facility, then ratepayers would experience no rate relief.

- Tipping Fees: The exact tipping fees to be charged by the vendor would depend upon a number of factors; however, the primary driver of the tipping fee will be the ultimate size of the facility, which will be determined based upon tonnage commitments of the participating agencies as described below.

  The RFP requested only one tipping fee that would apply to all materials entering the facility. Since receipt of proposals, staff has explored additional options with the vendor including: 1) processing of source-separated commingled recyclables that are currently sent to Gold Coast Recycling in Ventura; and, 2) separate processing of the City's source separated foodscraps. If these deal points could be resolved with the vendor, then up to three separate tipping fees would be charged: one for trash (black bin); one for commingled recyclables (blue bin); and, one for foodscraps (yellow bin). One significant difference between the City and the other

participating jurisdictions is the City's foodscraps collection program for the business sector. Mustang has indicated that it would provide a discount to the base tipping fee for source-separated foodscraps. Staff is still evaluating whether this discount would be equal to or lower than the current $54 per ton that the City currently pays to its compost vendor, Engel and Gray in Santa Maria.

It is interesting to note that according to Mustang representatives, delivery of source-separated foodscraps in the business sector and co-collection of foodscraps and greenwaste from the residential sector by all participating jurisdictions in the region would be highly desirable. Not only do source-separated organics increase methane production and thus improve electrical generation, the digestate is easily converted into a high quality agricultural grade compost.

In addition to the base tipping fee, it should be noted that the County intends to apply an additional charge of approximately $24 per ton to some or all of the materials delivered to the facility. Funds generated by the "site lease fee" would be used to provide needed funding for: 1) environmental monitoring and reporting as required by regulatory agencies; 2) to service debt incurred as part of the 2003 landfill expansion; and, 3) to satisfy state-mandated funding requirements of closure and post-closure costs associated with the County's landfills, including Tajiguas. According to County staff, this funding is currently captured in the existing tipping fee charged at Tajiguas Landfill.

In addition to the contractual terms with the vendor, a separate agreement would also be needed to formalize the roles and responsibilities of each of the participating agencies in the context of the regional project. Between a memorandum of understanding, a joint powers agreement or a joint powers authority, staff is currently proposing the creation of a joint powers authority (Authority). An Authority is a recognized and commonly used legal entity with a separate board. The specific details of the how an authority will be structured will be discussed with Council in the coming months.

Next Steps:

During the second half of the fiscal year, City staff will continue to work with County staff to complete the following remaining tasks:

1. Determine the size of facility (December 2011 – January 2012): Each of the participating agencies is evaluating historic disposal and diversion data in order to forecast anticipated disposal tonnages throughout the contract term. Variables that influence trash generation include economic forces, recyclable commodity prices, government regulation (e.g. packaging laws and "take-back" requirements) and existing and future diversion programs administered by the City.

   With the elimination of gasification from practical consideration, achievable diversion rates fall from approximately 85-95% to approximately 50-60%. For this

reason, the Mustang base proposal re-establishes the importance of traditional diversion programs. Moreover, monetary and other incentives for City residents and businesses to recycle through the curbside collection program would play a significant role in the City's tonnage commitments and should therefore be carefully considered in light of MarBorg's current proposal to service Zone I and Zone 2 through 2023. Staff will discuss existing and future City diversion programs with the Sustainability Committee and Council between January and March 2012.

2. Enter into an exclusive right to negotiate and develop a "term sheet" that establishes key business terms between Mustang and the jurisdictions (January - April 2012).

3. Initiate CEQA Review: The Board of Supervisors will consider staff's recommendation to initiate review of the Mustang proposal, tentatively scheduled for January 17, 2012. This action would include authorization to procure the services of a consultant to assist with the CEQA process and preparation of the actual environmental document.

4. Development of Joint Powers Agreement among participating jurisdictions (2012)

5. Complete Due Diligence Investigation (Winter 2011/Spring 2012): A number of unresolved issues remain which staff is continuing to investigate and evaluate including: 1) verifying various operational and technological assumptions related to the Mustang proposal; 2) understanding the basis for and application of the site lease fee; and, 3) verifying anticipated diversion rates.

BUDGET/FINANCIAL INFORMATION:

As described above, under the Mustang base proposal, the City would pay the vendor a tipping fee for each qualifying ton delivered to the facility. Similar to tipping fees charged at Tajiguas Landfill, the CT tipping fee would be applied to residential and business sector trash and recycling rates to cover the cost of processing waste and disposing of the residual. Also similar to current practice, these costs would be "passed through" to the City's franchised waste hauler and ultimately paid by ratepayers. Exact tipping fees to be charged by the vendor and the impact to residential and business sector customers will be determined once the ultimate size of the facility is known, most likely in spring of 2012.

SUSTAINABILITY IMPACT:

Implementation of the Mustang base proposal could significantly increase the City's diversion rate of its franchised solid waste. Such an increase would double the remaining permitted capacity of the Tajiguas Landfill depending upon disposal rates and when the facility became operational. The project would also reduce greenhouse gas emissions when compared to current landfill disposal and would generate renewable energy.

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