

TO: James L. App, City Manager
FROM: Doug Monn, Public Works Director
SUBJECT: Landfill Master Plan
DATE: November 16, 2010

NEEDS: For the City Council to consider a landfill master plan.

FACTS:

1. The City owns a Class III municipal solid waste landfill located near the intersection of Union Road and Highway 46.
2. The 145-acre facility has been in operation since 1970 and is permitted for non-hazardous waste.
3. Paso Robles generates 45,000 tons of solid waste annually, an estimated 32,000 tons of which are buried in the landfill.
4. 28 percent (13,000 tons) of all solid waste is now diverted (recycled); up to 50 percent could be.
5. Ideally, a state of “zero waste” might be achieved wherein all collected solid waste is put to beneficial use (and none is buried in a landfill).

**Analysis &
Conclusion:** **Landfill Master Plan**

Burying 32,000 tons per year of trash is not sensible if the material could otherwise be put to good use. The City commissioned a master plan to explore use options (see **Attachment A** for the master plan executive summary of that document). Ideally, the City could put all collected solid waste to beneficial use. Such an approach presents economic and environmental benefits such as:

1. Minimizing waste by maximizing the reuse value of crop and forest waste (including use as biomass-to-energy fuel source).
2. Extending the life of the landfill through recycling, reduction, and reuse
3. Generating power from garbage
4. Reducing methane emissions

These topics and more are addressed in the “Master Plan of Sustainable Opportunities at the Paso Robles Landfill” prepared by Bryan A. Stirrat & Associates (the entire document can be viewed at www.prcity.com). Adoption of that master plan frames the City’s approach to solid waste management.

POLICY

REFERENCE: Economic Strategy

FISCAL IMPACT: Solid waste is a General Fund service. City Council would need to develop General Fund resources to implement the elements of the Master Plan alternatively, the landfill could be designated an enterprise operation where revenues could be reinvested in elements of the Master Plan.

- OPTIONS:**
- a. Adopt the “Master Plan of Sustainable Opportunities at the Paso Robles Landfill”.
 - b. Amend, modify, or reject the above option.

ATTACHMENTS:

- A. Landfill Master Plan Executive Summary
- B. Resolution 10-xx – Adopt Landfill Master Plan



EXECUTIVE SUMMARY

The City of Paso Robles generates 45,000 tons of solid waste annually. It dumps this waste into its own landfill. Rather than just bury trash and manage the effects of its decay, this Plan identifies options to use waste beneficially.

Ideally, the City could achieve a state of "zero waste" wherein all collected solid waste is put to beneficial use and none is buried in a landfill. Such an approach (illustrated in Figure E-1) presents economic and environmental benefits:

WASTE-TO-ENERGY

Energy generating opportunities include:

Landfill Gas-to-Energy As buried trash decomposes, it releases gases (methane and other). A gas collection and microturbine system could generate 1,100 - 5,500 MWh/yr of electricity.

Solar Energy Twenty acres of land are available for solar panels. In addition, it may be possible to install a flexible solar module (landfill cap with flexible solar covers) on the southern exposed face of the inactive portion of the landfill.

The total energy production could amount to 8,300 MWh/yr. Every additional 8 acres dedicated to solar panel installation may generate an additional 2,200 MWh/yr.

Thermal Conversion Technology A thermal conversion technology facility (50 ton per day gasification plant) could produce 9,855 MWh/yr.

In summary, some energy production is possible - to what degree is a function of technology, cost and impact on other possible beneficial uses.

ZERO WASTE PROGRAMS (DIVERSION)

An estimated 28 percent of all solid waste is now diverted (recycled). This could potentially increase to over 50 percent.

The single largest material type in Paso Robles' residential waste stream is food waste. Food waste could be used in composting or harvested in an anaerobic digester. Paso Robles could arrange for a composting program, or pursue anaerobic digestion of its estimated 100 tons per day of food waste, green waste, etc. Anaerobic digestion at this scale could generate 5,500 MWh/yr.



Recycling, making use of food waste, and other solid waste programs all depend on sorting trash. Paso Robles needs the means to separate recyclables from construction debris, roll-off and self-haul loads.

LANDFILL OPERATIONS

What is the best way to achieve zero waste? – should the City operate its landfill, diversion, and/or energy generation programs? Operational control should be determined based on consideration of public benefit, cost control, value of self-determination/independence, and liability.

ECONOMIC CONSIDERATIONS

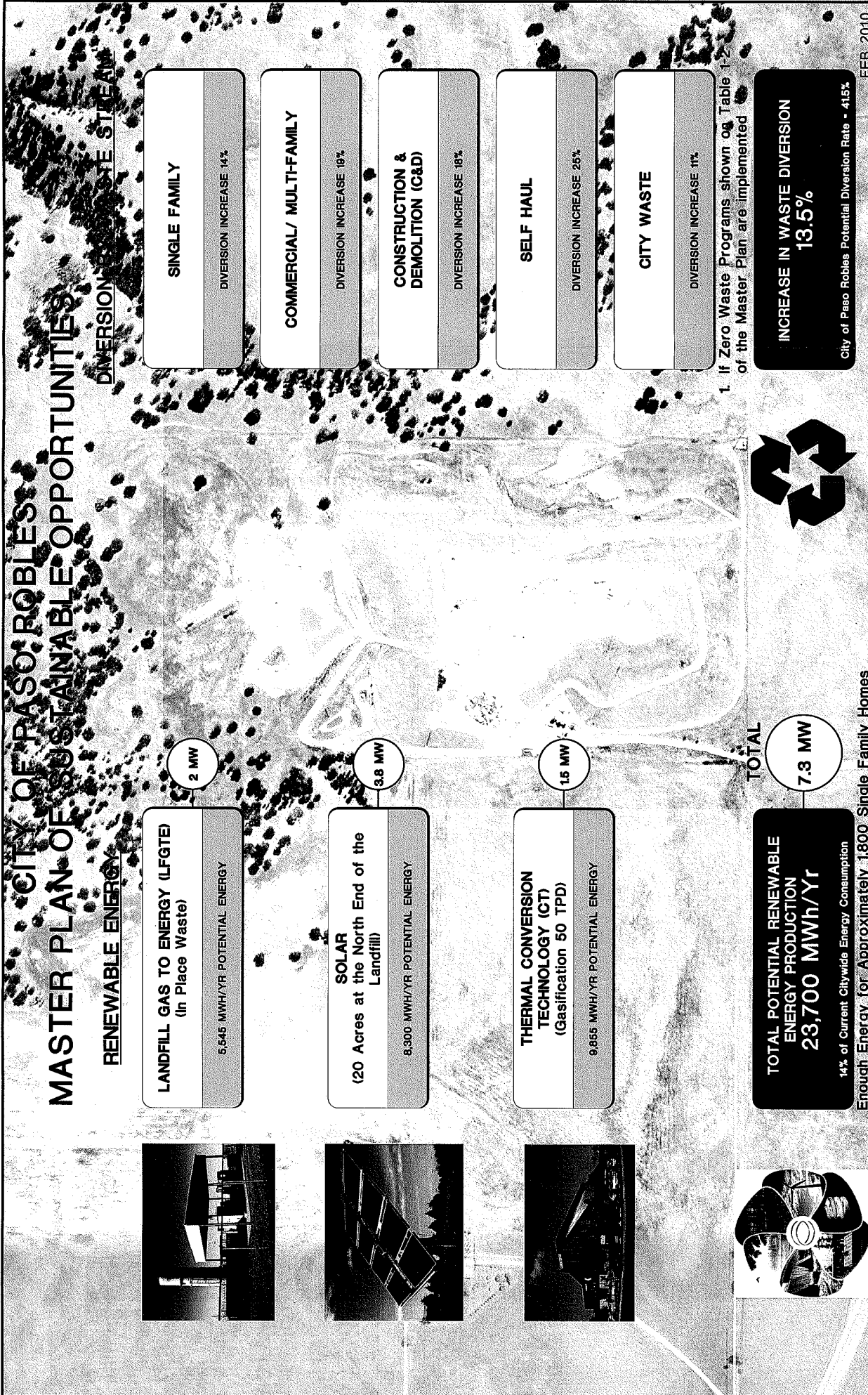
Revenues are declining while mandates and regulations are increasing costs. More revenue is needed to implement and run the programs outlined herein. Potential revenue generating mechanisms include:

Sale of energy	Landfill tipping fees
Hauler fees	Sale of recyclables and compost
Sale of carbon credits	Solid waste development impact fees
Grant opportunities	Street sweeping fees
Host fees assessed on solid waste facilities	Extended producer responsibility
Vehicle impact fees to recover street maintenance costs resulting from waste collection	fees and advanced disposal or advanced recycling fees

NEXT STEPS

1. Promote recycling programs, particularly to commercial and multi-family residential accounts. Establish a recyclables material sorting facility at the landfill;
2. Prepare an updated landfill capital improvement program and operations budget. Proceed with a financial analysis and proposed amended fee structure;
3. Once a sufficient revenue stream is approved, proceed with the solar project;
4. Improve the efficiency of the landfill gas collection system, then make a decision regarding the landfill gas-to-energy projects;
5. Establish feasibility of waste-to-energy conversion technology for the Paso Robles Landfill;
6. Proceed with anaerobic digestion or composting of food waste, green waste, etc.; and
7. Acquire more property as both a buffer and potential solar panel installation.

Prepared by Project Manager for City of El Paso de Robles Christine Halley, PE



FEB. 2010



FIGURE E-1 - POTENTIAL DIVERSION AND ENERGY PRODUCTION - PASO ROBLES LANDFILL

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RESOLUTION NO. 10-xxx

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF PASO ROBLES
ADOPT THE MASTER PLAN OF SUSTAINABLE OPPORTUNITIES AT
THE PASO ROBLES LANDFILL**

WHEREAS, the City of Paso Robles owns and operates a Class III solid waste landfill near the intersection of Union Road and Highway 46 under Solid Waste Facility Permit No. 40-AA-0001 from the California Integrated Waste Management Board; and

WHEREAS, the approximately 80-acre facility has been in operation since 1970, currently accepting an estimated 32,000 tons per year of waste; and

WHEREAS, the citizens of Paso Robles would be better served if all collected solid waste could be put to beneficial use and;

WHEREAS, the increased recycling, composting and energy production proposed by the Landfill Master Plan would result in economic and environmental benefits.

THEREFORE, BE IT RESOLVED AS FOLLOWS:

SECTION 1. The City Council of the City of Paso Robles does hereby adopt the “Master Plan of Sustainable Opportunities at the Paso Robles Landfill” dated May 2010 by Bryan A. Stirrat & Associates.

PASSED AND ADOPTED by the City Council of the City of Paso Robles this 16th day of November 2010 by the following votes:

AYES:

NOES:

ABSTAIN:

ABSENT:

ATTEST:

Duane Picanco, Mayor

Caryn Jackson, Deputy City Clerk