

MSW PROJECT OPPORTUNITY

ALTAS MONTANAS REGIONAL LANDFILL

NOGALES, VERACRUZ, MEXICO

ARRENDADORA CONSTRUCTO, S.A. DE C.V.

OVERVIEW OF MSW PROJECT

The Altas Montanas Regional Landfill began operations in 2000, and is owned and operated by Arrendadora Constructo, S.A. de C.V. (private). This landfill is a sanitary landfill with a designed waste footprint of 24 hectares (ha), a total design capacity of 8 million tonnes, and is expected to close in 2030. Currently, there are 2 million tonnes of waste in place with an average waste depth of 25 meters. Landfill gas (LFG) rights have been granted to Cappy and Associates, S.A. de C.V. (private).

PROJECT TYPE: LFG projections indicate that the Altas Montanas Regional Landfill could have several LFG utilization project options. These options include electricity generation, direct use, and flaring only. Assuming start-up of a power plant in 2015, sufficient gas is estimated to be available to support a power plant of 2 MW until 2017. Then it can be increased to 3 MW from 2018 to 2023, and lastly a 4 MW power plant can be supported from 2024 to 2033. The electricity that could be generated by an LFG energy project at the Altas Montanas Regional Landfill could be used by the site itself for its own energy needs or it could be wheeled to any company in Mexico that is seeking to use renewable energy. A direct use project is possible depending on the availability of potential industrial end-users near the landfill.

The feasibility of any of these projects would require additional information from the Landfill and surrounding area, such as exact locations of electricity distribution and transmission lines, natural gas distribution specifications, energy requirements of nearby industrial facilities, and interest in pursuing a LFG energy project.

ESTIMATED PROJECT LIFETIME EMISSION REDUCTIONS: 1.7 MMTCO₂E

LANDFILL LOCATION AND ASSISTANCE REQUESTS



Cappy and Associates seeks the following types of cooperation to advance the development of this project:

- An investor to build, own, and operate LFG and electricity projects
- Technical assistance

Cappy and Associates does not currently have a contract to sell carbon credits, but the option to sell electricity from an LFG energy project.

DISCLAIMER: The information and predictions contained within this poster are based on the data provided by the site owners and operators and site visits conducted by U.S. EPA. The Global Methane Initiative (GMI) cannot take responsibility for the accuracy of these data. It should be noted that conditions on landfills will vary with changes in waste input, management practices, engineering practices, and environmental conditions (particularly rainfall and temperature). GMI does not guarantee the quantity or quality of available landfill gas from the landfill site, which may vary from the values predicted in this report.

LANDFILL GAS AND ENERGY POTENTIAL

Under contract to the U.S. EPA, SCS Engineers estimated the amount of LFG generated by the Altas Montanas Regional Landfill using EPA's Mexico LFG Model v2. Model input data for the preliminary assessment of the LFG capture and use project were obtained from Cappy and Associates, S.A. de C.V.

Other Landfill Physical/Operational Data

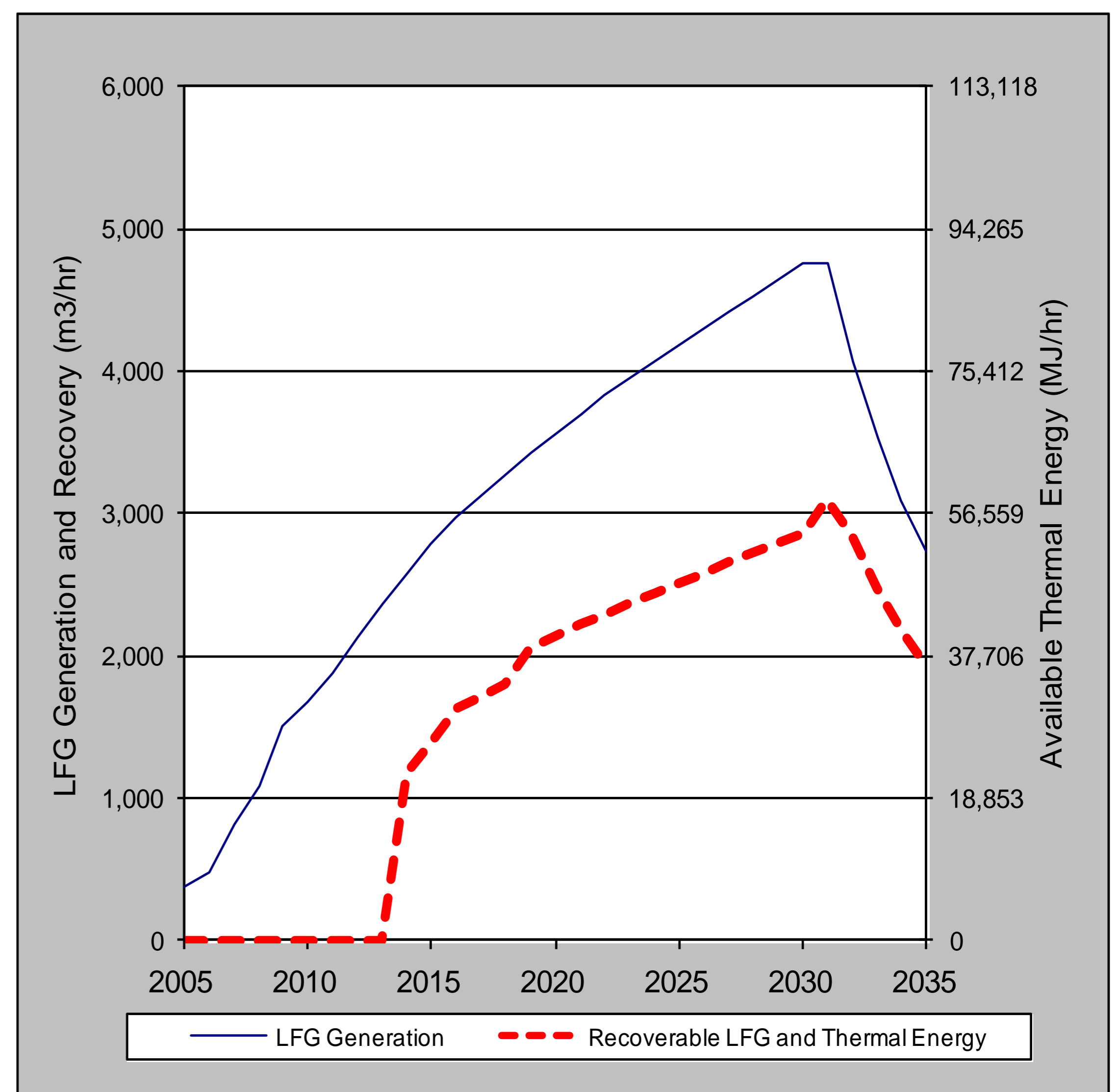
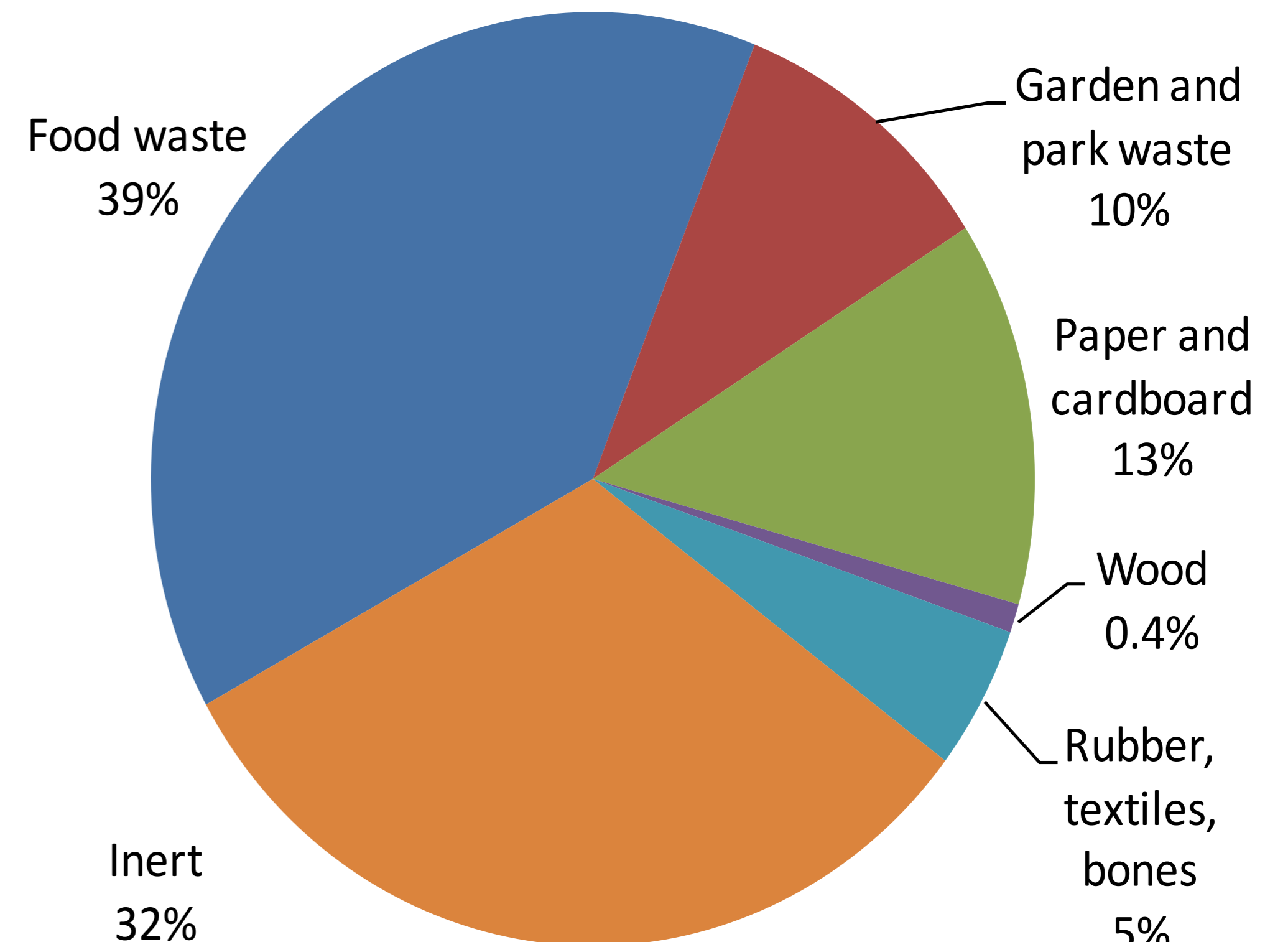
- Estimated annual MSW acceptance rates for 2000 to 2030: ranges from 14,800 to 332,400 tonnes/yr
- Landfill is lined with HDPE geomembrane
- Waste compaction is performed with a bulldozer
- Leachate management: accumulating in standing pools then transported and treated at local wastewater treatment plant
- LFG collection and control system: passive venting wells installed.

Landfill Gas Modeling Inputs:

- CH₄ generation potential (Lo):
69 m³/Mg for very fast-decay organic waste
115 m³/Mg for moderately-fast decay organic waste
214 m³/Mg for moderately-slow decay organic waste
202 m³/Mg for slow-decay organic waste
- CH₄ generation rate constant (k):
0.30 for fast-decay organic waste
0.13 for medium-fast decay organic waste
0.050 for medium-slow decay organic waste
0.025 for slow-decay organic waste
- Percent methane: 50%

Values for these modeling variables have been developed based on the waste composition data and average annual precipitation at Altas Montanas Regional Landfill. It is not feasible to collect all the gas generated at the site for flaring or energy recovery, given site conditions and collection system limitations. Therefore, the amount of recoverable LFG was estimated by applying a gas availability factor to the results of the LFG generation model.

Waste Characterization



Recoverable LFG = 90% Landfill Area Available for Gas Collection x 71% Gas Collection Efficiency = 64%

ENVIRONMENTAL BENEFITS

Assuming that an active gas collection and flaring system is installed in 2014, this LFG capture project has the opportunity to collect and destroy an average of 17.7 million cubic meters of methane annually over the next 13 years. This is equivalent to emission reductions of more than 1.7 million tonnes of CO₂eq over the project lifetime.

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Tonnes CO ₂ eq from Flaring Activities	76,728	91,691	107,307	113,257	118,813	135,335	140,782	146,008	151,055	155,955	160,735	165,415	170,014

FOR MORE INFORMATION

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