

MSW LFG ENERGY PROJECT SUCCESS STORY

Ciudad Juarez Landfill

Ciudad Juarez, Chihuahua, Mexico

Biogas de Juarez, S.A. de C.V.

OVERVIEW OF LANDFILL GAS (LFG) ENERGY PROJECT

Ciudad Juarez Landfill, a controlled landfill which began filling in 1995, is owned by the City of Ciudad Juarez and operated by Promotora Ambiental. S.A.. The Ciudad Juarez Landfill Gas to Energy Project, developed by Biogas de Juarez, S.A. de C.V., began gas collection in 2007 and electricity production started on May 20, 2011 with a 2MW output. The cell used for this project, which closed in 2008, has a designed area of waste placement totaling 3 hectares and 9 million tons of waste in place with an average waste depth of 30 meters.

The gas collection system is connected to a flare station and LFG control plant. This project was installed in 2 phases. Phase I comprised installation of 8 Horizontal extraction wells, a condensate management system, leachate de-watering pumps in selected extraction wells, and an electricity generation plant with a generator-set of 6.4 MW installed capacity (comprised of 4 generator engines) connected via transmission line to the local grid. Phase II incorporated 2 additional horizontal extraction wells and a new generator-set of 14.4 MW (comprised of 9 generator engines).

ACTUAL ANNUAL EMISSION REDUCTIONS: 124,000 MMTCO₂E



ENVIRONMENTAL BENEFITS

The gas collection and flaring systems, installed in 2007, have the opportunity to collect and destroy an average of 15.6 million cubic meters of methane annually over the next 15 years. This is equivalent to emission reductions of more than 117,000 tonnes of CO₂ annually.

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Tonnes CO₂eq from LFG Energy Project	124,113	118,563	124,726	119,411	124,847	119,775	124,606	119,774	124,099	119,501	115,170	111,086	107,230	103,584	100,134

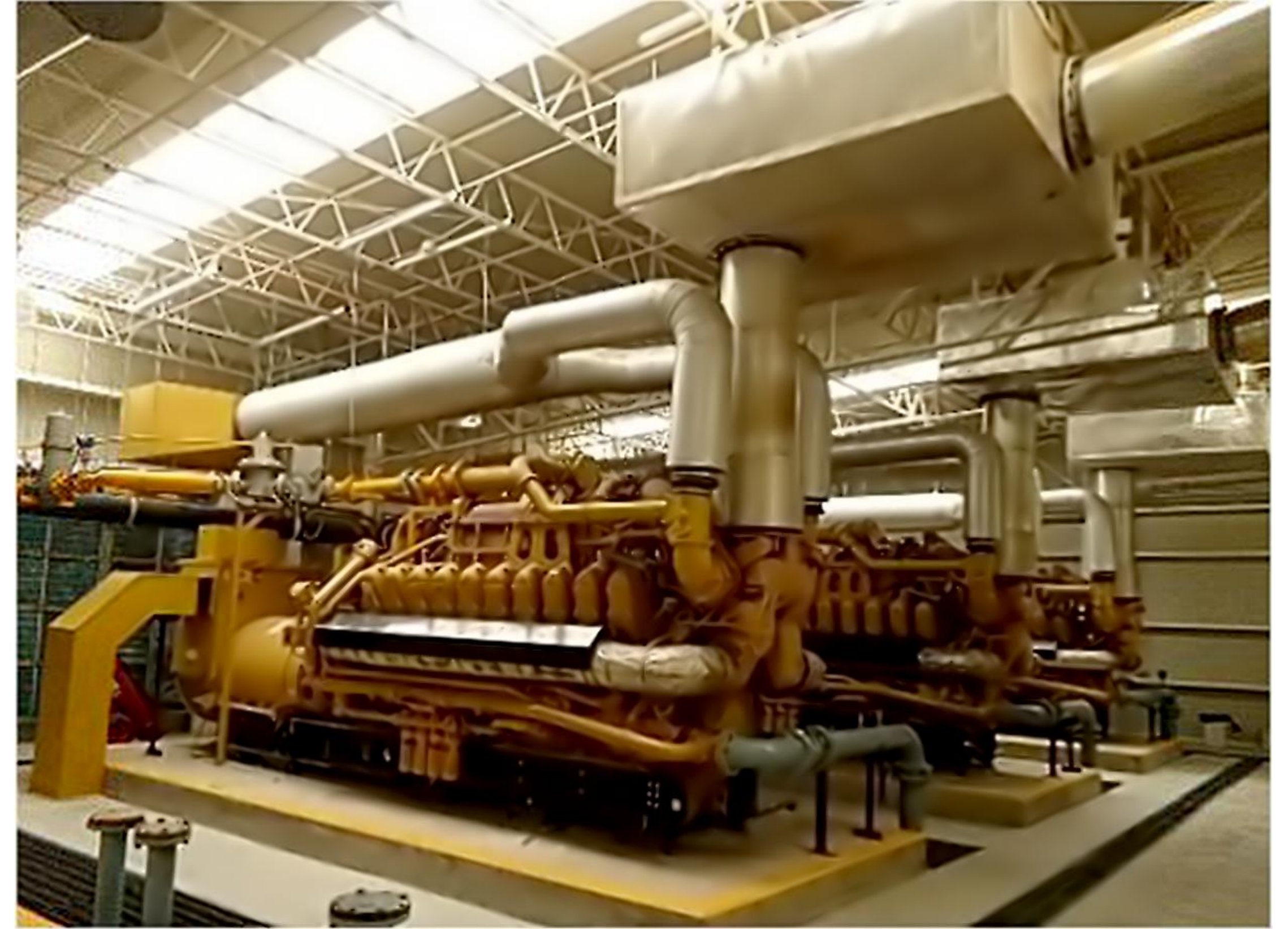
DISCLAIMER: The information and predictions contained within this poster are based on the data provided by the site owners and operators and site visits conducted by U.S. EPA. The Global Methane Initiative (GMI) cannot take responsibility for the accuracy of these data. It should be noted that conditions 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.

LFG AND ENERGY GENERATION

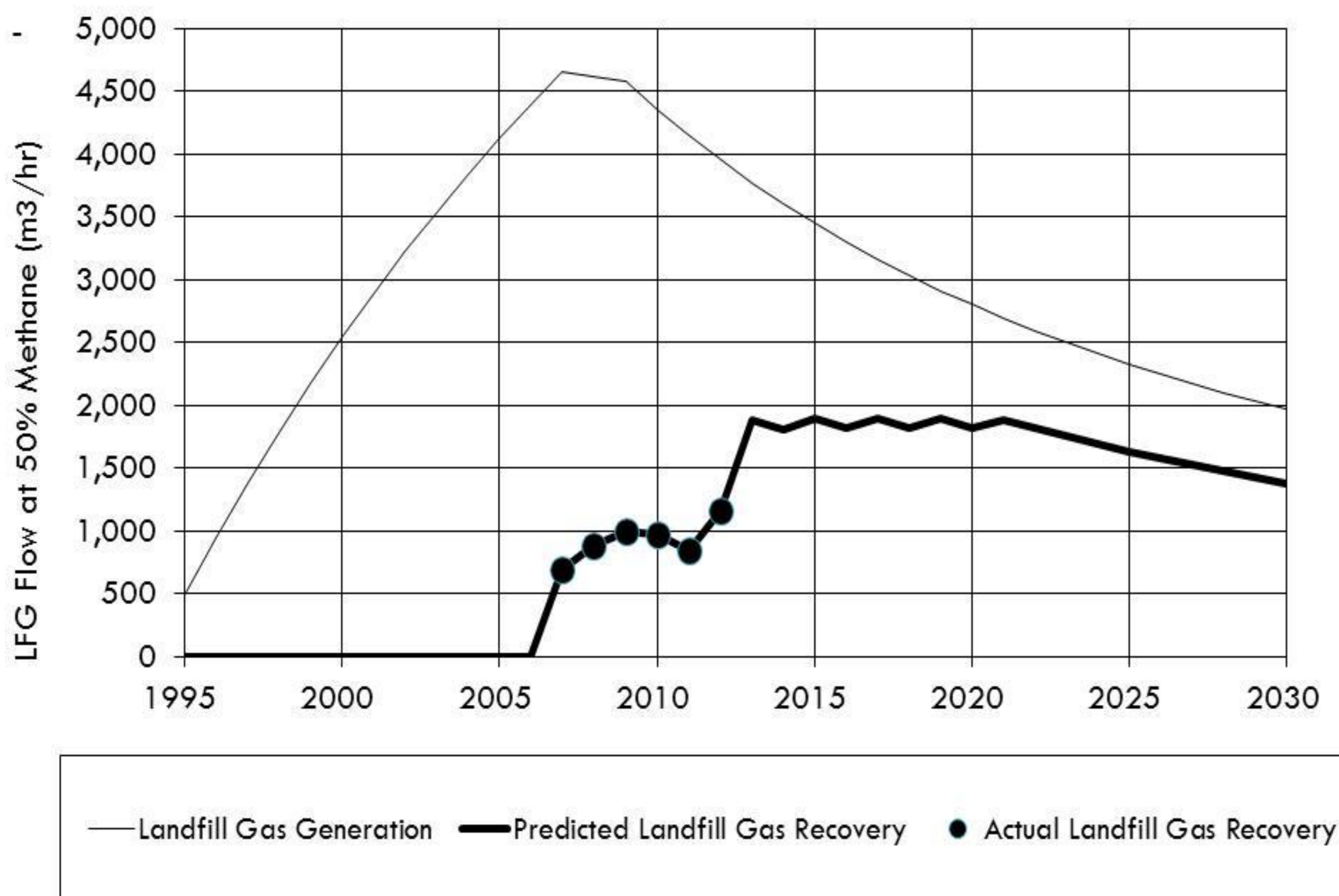
Under contract to the U.S. EPA, SCS Engineers estimated the amount of biogas generated by the Ciudad Juarez Landfill using the GMI Mexico LFG model. Model input data for the preliminary assessment of a landfill methane capture and use project were provided by Biogas de Juarez, S.A. de C.V. and collected during EPA site visits.

Biogas Modeling Inputs:

- CH₄ generation potential (Lo): 69 - 202 m³/Mg
- CH₄ generation rate constant (k):
0.100 for fast-decay organic waste (e.g., food)
0.020 for medium-decay organic waste (e.g., paper)
0.010 for slow-decay organic waste (e.g., rubber)
- Percent methane: 50%



Landfill Gas Generation and Recovery Projection
Ciudad Juarez Landfill, Ciudad Juarez, Chihuahua



PROJECT ECONOMICS

- **Estimated cost (US\$/year):** **US\$1,800,000.00**

FOR MORE INFORMATION

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