Date: 26 August 2010

SECTION D. Application of a monitoring methodology and plan

D.1. Name and reference of approved monitoring methodology applied to the project activity:

The methodology applied to EPLGP is AM0003, version 3, called "Simplified Financial Analysis for Landfill Gas Capture Projects".

D.2. Justification of the choice of the methodology and why it is applicable to the project activity:

The chosen methodology is applicable to project activities that reduce greenhouse gas emissions through landfill gas capture and destruction of the methane by flaring and/or generation of electricity. In the case of EPLGP, such destruction will occur through flaring only. Moreover, the baseline methodology for the project is also AM0003, in accordance with the monitoring methodology. Therefore, AM0003 is fully applicable to EPLGP.

D.2. 1. Option 1: Monitoring of the emissions in the project scenario and the baseline scenario

D.2.1.1. Data to be collected in order to monitor emissions from the project activity, and how this data will be archived:

ID number *(Please use numbers to ease cross-referencing to D.3)*	Data variable	Source of data	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment

D.2.1.2. Description of formulae used to estimate project emissions (for each gas, source, formulae/algorithm, emissions units of CO_2 equ.)

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D.2.1.3. Relevant data necessary for determining the baseline of anthropogenic emissions by sources of GHGs within the project boundary and how such data will be collected and archived :

ID number *(Please use numbers to ease cross-referencing to table D.3)*	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e),	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment

D.2.1.4. Description of formulae used to estimate baseline emissions (for each gas, source, formulae/algorithm, emissions units of CO_2 equ.)

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D. 2.2. Option 2: Direct monitoring of emission reductions from the project activity (values should be consistent with those in section E).

D.2.2.1. Data to be collected in order to monitor emissions from the project activity, and how this data will be archived:

ID number *(Please use numbers to ease cross-referencing to D.3)*	Data variable	Source of data	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
1	Amount of landfill gas to flares	Volume	Nm^3	m	Continuous	100%	Electronic	Normal cubic meters represent the gas volume in cubic meters at standard conditions (0 ºC and 1.013 bar). Data will be aggregated daily, monthly and yearly.
4	Flare efficiency	Efficiency	%	m and c	Quarterly	n/a	Electronic	Methane and Oxygen content of flare exhaust gas.
5	Methane fraction in the landfill gas	Composition	%	m	Continuous	100%	Electronic	Measured by continuous gas quality analyzer.
11	Regulatory requirements relating to landfill gas projects	Internal / Third party company	Test	n/a	Annually	100%	Electronic	Required for any changes to the adjustment factor (AF) or directly $MD_{reg,y}$

The flare temperature and flare working hours do not need to be monitored in this case because no complementary method is used here, just the direct measure of the above mentioned gas properties (to be measured by a continuous quality analyzer and flow meter, in accordance with AM0003).

D.2.2.2. Description of formulae used to calculate project emissions (for each gas, source, formulae/algorithm, emissions units of CO_2 equ.):

Project emissions will be measured directly at the site.

D.2.3. Treatment of leakage in the monitoring plan

D.2.3.1. If applicable, please describe the data and information that will be collected in order to monitor leakage effects of the project activity

ID number *(Please use numbers to ease cross-referencing to table D.3)*	Data variable	Source of data	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
3.1	Total amount of electricity used for gas pumping from the grid	Electricity	MWh	m	Continuous	100%	Electronic	
3.2	Total amount of electricity used for gas pumping from the diesel fuelled generator	Electricity	MWh	m	Continuous	100%	Electronic	
4.1	Greenhouse gas emissions per kWh of electricity used	Emission factor	tCO_2e/kWh	c	Once for each crediting period	100%	Electronic	CO_2 emission intensity of the electricity being purchased from the grid will be determined through an approved baseline methodology, which is ACM0002 version 2. This data will be updated at the baseline renewal, in accordance with the considered methodology. Please refer to annex 3 – baseline determination, for how the emission factor will be determined. Data will be kept for two years after the end of the

								crediting period.
4.2	Greenhouse gas	Emission factor for diesel generation	tCO_2/kWh	e	Once for each crediting period	100%	Electronic	CO_2 emission intensity of the electricity being generated by diesel generator will be determined through an approved small scale methodology, which is AMS I.D version 13, Table I.D.1 This data will be updated at the baseline renewal, in accordance with the considered methodology. Data will be kept for two years after the end of the crediting period.

D.2.3.2. Description of formulae used to estimate leakage (for each gas, source, formulae/algorithm, emissions units of CO_2 equ.)

Considering leakage is the emissions occurring due to energy generation for on-site machinery feeding, the formula used is:

$Leakage = E * EF$, where E is the energy consumed by the gas extraction and flaring facility and EF is the emission factor associated with this energy generation.

D.2.4. Description of formulae used to estimate emission reductions for the project activity (for each gas, source, formulae/algorithm, emissions units of CO_2 equ.)

$Emission\_reductions = \Pr oject\_emissions - baseline\_emissions - leakage$

D.3. Quality control (QC) and quality assurance (QA) procedures are being undertaken for data monitored		
Data *(Indicate table and ID number e.g. 3.-1.; 3.2.)*	Uncertainty level of data (High/Medium/Low)	Explain QA/QC procedures planned for these data, or why such procedures are not necessary.
Table D.2.2.1 item 1	*Low*	Flow meter is subject to a regular maintenance and testing regime to ensure accuracy.
Table D.2.3.1 Items 3.1 and 3.2	*Low*	Two calibrated electricity meters are installed to measure electricity consumption from the grid and from diesel fuelled generators. Those meters are subject to annual calibration to ensure accuracy.
Table D.2.2.1. item 4	*Low*	Regular maintenance will ensure optimal operation of flares. Flare efficiency will be checked quarterly[1].

[1] ESTRE are conducting exhaust gas analyses every three months, in accordance with the AM0003 version 3 page 5 of the monitoring methodology.

Table D.2.2.1 item 5	*Low*	The gas analyzer will be subject to a regular maintenance and testing regime to ensure accuracy. It has also been calibrated yearly.

D.4 Please describe the operational and management structure that the project operator will implement in order to monitor emission reductions and any leakage effects, generated by the project activity

There will be a team assigned to monitor emission reductions from the project. They will be responsible for collecting and archiving the pertinent data according to the monitoring plan.

D.5 Name of person/entity determining the monitoring methodology:

Econergy is the entity determining the monitoring methodology. Econergy is not a project participant in this project. Contact information:

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Annex 4

MONITORING PLAN

As stated in section D of this document, the following variables need to be measured as to determine and account for emission reductions due to EPLGP.

- The amount of landfill gas being sent to flares;
- The amount of methane in the landfill gas;
- Total amount of electricity used for gas pumping from the grid;
- Total amount of electricity used for gas pumping from the diesel fuelled generator.
- The flares' efficiencies;
- Regulatory requirements relating to landfill gas projects;

The first four will be measured on a continuous basis, through proper meters and analyzers for such purposes. The fifth one is to be carried out on an often basis, quarterly. The last one is verified every year, during the crediting period and two years after.

Considering EPLGP's facilities will count on computer-based equipment, generating data continuously, such equipment will be used for generating data relevant for the annual emission reduction verification report. The summary table for such report will be filled in, with the metered data provided as background.

Table 2. Summary worksheet for EPLGP

DAY	A	B	C = A. B	D	E	F	G = C . F	H	I
	Collected biogas (Nm3)	Methane content (%)	Methane collected (N.m³)	Flare 1 temperature (°C)	Flare 1 operating hours	Flare efficiency (%)	Methane Destroyed (Nm3)	Electricity consumed from the grid (MWh)	Electricity consumed from diesel generators (MWh)

2

Also, ESTRE Paulinia's project has 5 flares nowadays (the number of flares may change), however for the purpose of this summary only one was represented in this table.

Landfill gas into flares and methane content in the landfill gas are metered through a flow meter and a gas analyzer installed at the facility and monitored electronically through a programmable logic control system. After that, once the flow, as well as flares' efficiencies, become inputs for the sheet, the amount flared is calculated. The sum of both quantities is the total methane destroyed. Discounting such number by 20% (Effectiveness Adjustment Factor), the emission reductions from the project are determined.

The sheets will be presented to the verifier as the collected and stored data for verification purposes.

The PP will also keep electronic information on the flares' efficiencies, as tests are carried out accordingly.