Durban Waste to Energy Project

PCF response to the revised Meth Panel recommendations

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Introduction

This document lays out the Durban Waste to Energy Project participants' responses to the changes required and comments made by the CDM Executive Board and its Methodology Panel. Revisions to the text in the draft PDD and its Annexes are introduced. Deletions are indicated with pink and additions with a yellow highlighting color.

Required change 1

"Methodology to justify that electricity displaced is base load and that average emissions rate of the grid is the appropriate for the baseline emissions"

Related comment:
Section 3.b: The application of the methodology to South Africa tends to overestimate the baseline emission factor. The official utility statistics should be compared to independent studies for the same grid, verified again independent studies. So the methodology did not demonstrate that is has resulted in a conservative evaluation of CERs.

PCF response and proposed action

We interpret the above comments as comments regarding the application of the proposed new methodology. Our response thus builds on project and country specific arguments.

Justification that project displaces base load:
The project is expected to displace base load, because

1) the landfill gas generators will run continuously (since switching on and off the engines would result in early deterioration, given the acidic nature of landfill gas)
2) the use of gas in the South African grid is optimized and limited to the role of a shock absorber, due to the high price differential between coal and gas power generation in South Africa. It is reasonable to assume that this role would be unaffected by the project and that Eskom would rather reduce the amount of coal burnt in its power plants operating in the base load using the gas to respond to the rapid changes in demand during peak hours just as they do now.

Justification of average emission rate:
The methodology uses the reported emissions from South Africa's national utility Eskom, which supplies about 95% of the South African power, including to Durban. Using the average emission rate of the grid is an appropriate methodology for the following reasons:

– the information is readily available to the public and published yearly in Eskom's annual report (see **www.eskom.co.za**.). Project developers can update the emission factor at minimal costs.
– it is conservative as it most likely underestimates the real emission reductions achieved:

- Averaging the emissions across all Eskom power plants includes the low emission intensity of more efficient coal-fired plants as well as of power plants that do not use coal. The project however is likely to displace power from the base load plant with highest marginal costs in its territory and hence is likely to displace the least efficient and most emission intensive coal power plant in that region.
- Being located close to the Durban municipality, the project feeds its generated electricity directly into the low voltage municipal grid. Most of Durban's electricity is supplied from the high voltage national grid. By displacing electricity from the high voltage system, the project also reduces the amount of transmission losses that occur over longer distances and at the substations where the voltages are reduced.

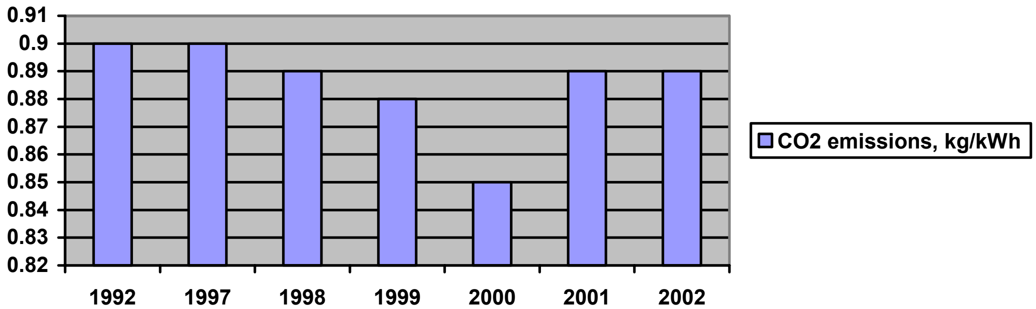
Comparison of the emission factor with other studies
In its initial version, the Meth Panel has made reference to the results of different studies and determined that a conservative emission factor for the South African grid should not exceed 0.85 tCO_2/MWh. However, only the Perseus model in the PROBASE study was explicitly quoted.

The revised version has taken out all references to other studies but still determines that the methodology tends to overestimate the baseline emission factor.

In comparison with other baseline studies, the factor of 0.9327 t CO_2/MWh determined in the project documentation lies in the middle. While the Meth Panel points to studies with lower factors, the recent study from OECD/IEA (2002) defines a combined margin of 0.949 t CO_2/MWh for the South African grid (OECD/IEA: Road-Testing Baselines for GHG Mitigation Projects in the Electric Power Sector, October 2002). The OECD/IEA study seems to be a more relevant comparable study than the Perseus model in PROBASE quoted by the Meth Panel, as the OECD/IEA study uses real data from South African power plants as opposed to a simulation-based calculation underlying the PROBASE results.

Part of the differences between the factor determined in the study and other factors quoted by the Meth Panel can be explained through differences in the **reference year**. The emission intensity of the South African grid has been fairly volatile over the past years (see table below), but only in one year in the last 10 did it get as low as 0.85 kg CO_2/kWh. Due to the reactivation of moth-balled coal power plants and higher load factors on existing coal-fired plants, the emission intensity has gone up in recent years. **Please note that the methodology proposes to update the emission factor on a yearly retroactive basis taking into account the most recent data, as provided in Eskom's annual report. This way, emission reductions can be estimated accurately.**

Figure 1: CO2 emissions from using one kWh of electricity, based on total energy produced by Eskom power stations



Source: Eskom Annual Report 2002, p.133

The emission intensity of production of 1kWh of electricity reported by Eskom lies between 0.85 (2000) and 0.9 (1997). Thus, the official utility statistics do not provide a systematically higher emission factor than the independent studies referred to by the Meth Panel and the PCF has no reason to believe that the official utility statistics are not accurate.

The difference between the grid emission factor calculated in the Durban PDD and the Eskom's reported emission intensity for the same year is due to the following: While the emission factor calculated for Durban is based on the sales of electricity (dividing Eskom's reported emissions by the kWh sold), Eskom calculates the factor based on overall production of electricity which includes the parasitic consumption and losses. As the production of electricity by Eskom is greater than what is actually sold, the emission factor based on sales is always higher than the one based on overall production of electricity.

The question is, which factor does more adequately capture the emission reductions achieved through the project. When the electricity produced by the Durban project is fed into the municipal grid, it directly reduces the amount of electricity that Eskom sells to the municipality of Durban. This, in turn reduces the production of electricity by Eskom by more than the kWh produced by the project due to the parasitic consumption and transmission loss. Thus, the adequate factor to calculate the emission reductions achieved would be the one based on sales rather than on production.

However, in order to demonstrate conservativeness, the PCF agrees to use the production based emission factor published yearly in Eskom's annual report, which is comparable to the results of independent studies.

Revisions to the text

Original text	Revised text
MP, p.13: To calculate the emission factor the emissions from coal-fired power plants in South Africa are averaged. (…) Eskom publicly reported for the year 2001 that it emitted 169,300,000 tons of CO2 from the sales of 181,511,000 MWh of electricity. From this it can be calculated directly that for every MWh sold by Eskom a minimum of 0.9327 tons of CO2 were emitted. It is expected that Eskom	**MP, p.13**: To calculate the emission factor the emissions from coal-fired power plants in South Africa are averaged. (…) Eskom publicly reported for the year 2002 that for every kWh it produced, 0.89 kg of CO2 were emitted (Eskom Annual Report 2002). It is expected that Eskom and any suppliers that may replace Eskom will continue to make this data available in the future, which allows a simple calculation

will continue to make this data available in the future, which allows a simple calculation of the emission reductions achieved by the project from displacement of electricity: **PDD D.2:** For this project, the grid emission rate is determined using Eskom's reported data for annual CO2 emissions and power output. This method averages the coal-fired power plants and other less carbon-intensive power sources in South Africa. In 2001 Eskom publicly reported that it emitted 169,300,000 tons of CO2 from the sales of 181,511,000 MWh that year—an average of 0.9327 tons of CO2. To calculate the emission reduction from displacement of grid electricity by the project, the project's annual power sales (in kWh) will be multiplied with the annual average emission rate for that year (as derived from Eskom reports).	of the emission reductions achieved by the project from displacement of electricity: **PDD D.2:** For this project, the grid emission rate is determined using Eskom's reported data for annual CO2 emissions and power output. This method averages the coal-fired power plants and other less carbon-intensive power sources in South Africa. In 2002 Eskom publicly reported that it emitted 0.89 kg of CO2 per kWh of electricity produced. To calculate the emission reduction from displacement of grid electricity by the project, the project's annual power sales (in kWh) will be multiplied with the annual average emission rate for that year (as derived from Eskom annual reports).

Furthermore, the following addition is made to **PDD, Annex 4, (2) 1.:**

"The methodology assumes that each kWh generated by the project and delivered to the grid or consumed by an auto-generator results in an average equivalent reduction in generation by grid-connected power plants. The methodology is considered a conservative approach for base load displacing projects in countries, where base load is more emission intensive than peak load."

See Required Change 3 for changes in the estimated emission reductions due to the new factor.

Required change 2

"Methodology to clarify whether the emission factor is derived from national or provincial grid."

PCF response and proposed action

In South Africa, the grid is interconnected into a national grid. The emission factor is derived from the national utility's reported emission intensity which supplies 95% of South African electricity. Thus, the emission factor pertains to the national grid.

In terms of power generation in South Africa, one can be distinguish two geographical regions: the eastern and the western region (see PROBASE Final report, pp.74f.). The emission intensity of the eastern region is significantly higher than the one of the western region as most of the nuclear and hydro sources lie in the west. As Durban is located on the eastern shore, the use of a national rather than a provincial grid factor is considered conservative.

No changes in the application of the methodology necessary

Revisions to the text

PDD, Annex 4, (2) 1.:
The methodology can, in principle, be applied to provincial as well as national grids. In the application of the methodology, the choice of the grid should be justified.

Required change 3

"Specify the COP-accepted value for the GWP of methane (21) and, where necessary, perform all calculations accordingly using the correct (21 instead of 23) GWP."

PCF response and proposed action

GWP has been changed to 21 and all calculations have been revised accordingly. However, it is suggested that once/if COP approves 23 as the GWP for methane, this GWP should be used from that point on as well as to revise the number of CERs issued prior to that date. Project Participants seek clarification from the Executive Board on this suggestion.

Revisions to the text

On the following pages:
MP, pages 6, 8, 10
PDD pages 25, 27
Spreadsheets
Emission Reduction Study

Estimated Emission Reductions 2003-2010 original text, PDD page 28

Estimated Emission Reductions 2003-2010, Durban LFG to electricity

Year	Methane ERs from Mariannhill	Methane ERs from Bisasar	Methane ERs from La Mercy	ERs from electricity production Mariannhill	ERs from electricity production Bisasar Road	ERs from electricity production La Mercy	Total	Cumulative Total
2003	12210	73259	55816	0	0	0	**141285**	**141285**
2004	31945	199749	61398	3731	22385	0	**319208**	**460493**
2005	38959	250094	66980	3731	29846	0	**389610**	**850103**
2006	45964	300454	62793	3731	37308	0	**450251**	**1300353**
2007	53601	301906	59165	7462	44770	0	**466904**	**1767257**
2008	60615	301590	56211	7462	44770	7462	**478108**	**2245366**
2009	64124	301613	52303	7462	44770	7462	**477733**	**2723099**
2010	71126	301636	48478	7462	44770	7462	**480934**	**3204032**
Total	**378544**	**2030302**	**463145**	**41039**	**268618**	**22385**	**3204032**	

Estimated Emission Reductions 2003-2010 revised text, PDD page 28

Year	2003	2004	2005	2006	2007	2008	2009	2010
Methane ERs from Mariannhill	11,148	29,167	35,571	41,968	48,940	55,344	58,548	64,942
Methane ERs from Bisasar	66,889	182,379	228,347	274,328	275,654	275,365	275,386	275,407
Methane ERs from La Mercy	50,963	56,059	61,155	57,333	54,021	51,323	47,755	44,263
ERs from electricity production Mariannhill	0	3,560	3,560	3,560	7,120	7,120	7,120	7,120
ERs from electricity production Bisasar Road	0	21,360	28,480	35,600	42,720	42,720	42,720	42,720
ERs from electricity production La Mercy	0	0	0	0	0	7,120	7,120	7,120
Total	**129,000**	**292,526**	**357,113**	**412,788**	**428,454**	**438,992**	**438,649**	**441,571**
Cumulative Total	**129,000**	**421,525**	**778,638**	**1,191,427**	**1,619,881**	**2,058,873**	**2,497,521**	**2,939,093**

Required change 4

"Methodology shall account for reasonably anticipated changes in national policies"

Related comments:
Section 10: A monitoring system for national policy changes is not included

PCF response and proposed action

The reasonably anticipated changes in national policies are changes in the regulations for landfill operators which may in future require methane capture. In that event, the proposed project activity may either fully or in part become the baseline scenario.

The baseline scenario is formulated to include the impact of current regulation and of future regulatory changes, which will be monitored accurately in real time. *Ex post* monitoring of the regulatory aspects of the baseline scenario is justified for the following reasons:

- Because it is impossible to anticipate the timing and impact of future regulatory changes, the methodology would have to make extremely conservative and unnecessary assumptions in order to derive a future baseline scenario that would, under not set of regulatory circumstances, overestimate emission reductions.
- To publicly forecast and assume a drastic tightening of waste manage regulations in South Africa in order to ensure conservativeness of an *ex ante* determined regulatory scenario would be politically insensitive both for Durban municipality or the World Bank.

- Regulatory forecasts and assumptions are unnecessary, because nothing suggests that the landfill operator would not be able to accurately monitor and understand changes in the regulatory system for waste management operations in South Africa and their impact on his waste management operation, including the baseline.

Therefore, the methodology accounts for such reasonably anticipated changes in regulations by including the relevant regulation in the monitoring obligations. The project operator has to continuously monitor the legal framework for landfill operations and in the case of changes, has to adjust the baseline scenario and the emission reduction calculation in light of the impact of the new regulation.

No changes to the methodology required

Passages in the original text requiring the monitoring of policy changes

BLS p.11 The project operator will however need to monitor for changes in the regulations that might eventually require landfill gas capture.

BLS p.17: The above determined baseline scenario may develop and change over time, in particular if (a) (…), and (b) regulatory changes require the collection and flaring of landfill gas. It appears unlikely and therefore not reasonable to anticipate that developments other than those two would occur and result in changes in the baseline scenario and they are therefore not further considered.

(a) (...)

(b) The regulatory framework in South Africa has been discussed above. Although the current operation of the three landfills fully complies with South Africa's landfill regulation, the latter is likely to be tightened over time, in which case more of the landfill gas may have to be collected and flared in the baseline scenario. The monitoring plan will therefore include a requirement to report on relevant regulatory changes and adjust the baseline scenario accordingly

MP p.12 *Regulatory framework for landfill operators*: monitor development of regulatory system and adapt the baseline scenario to changes in the regulation (if collection and flaring of landfill gas is required by law) and adjust impact of regulation on emission reduction calculation, e.g. by reassigning production wells as baseline wells.

PDD B.3 The baseline scenario, as determined above, is the continuation of the current practice of limited collection and flaring of methane from the landfills in compliance with applicable regulations. Given the long-run calculation performed in the baseline study, the BAU baseline is likely to be valid for the duration of the 21-year crediting period selected for this project. However, the BAU baseline includes the possibility that future South African waste management regulations will require the treatment of landfill gas, in which case the baseline scenario would have to reflect such new obligations. The baseline scenario therefore incorporates regulatory changes that would require a change in the current, business-as-usual operation of the landfill sites. In keeping with conditions C above, the project will monitor any regulatory changes that impact waste management in South Africa and adjusts the baseline scenario, for instance by re-designating some landfill gas production wells to safety/baseline wells.

PDD Annex 3, p.41 The methodology takes national and sectoral regulations into account in that the baseline scenario must be in compliance with existing regulation and must be updated to comply with new regulations and evolving economic/sectoral conditions. Project participants shall justify that the ex post monitoring of regulatory changes and their application to the baseline scenario is appropriate for the project and its circumstances.

Required change 5

“Methodology should clearly indicate appropriateness of using long run marginal costs (LRMC) as the economic value of electricity produced in the financial analysis used to justify project additionality.”

Related comment:
Section 8: Economic analysis to identify economically attractive course of action is internal to investor and not verifiable.

PCF response and proposed action

We interpret the comment as follows: “Methodology should clearly indicate appropriateness of using LRMC in the analysis to justify project additionality”

The methodology bases the additionality argument on the fact that – in the absence of carbon credits – the project investor would have an economically more attractive option at hand than to invest in the project. If one assumes a rational investor and a project,that is not the most attractive option, the project would be unlikely to happen in the absence of the CDM activity and can not be considered the baseline.

Following this rationale, the costs of producing electricity through the project have been compared with the situation in which the Durban municipality continues to purchase electricity from Eskom. According to the methodology, whichever option provides the investor (Durban municipality) with electricity at the lowest costs can be considered the baseline.

The parameters that go into the methodology are, inter alia, the current and future prices of electricity (tariff). In order to assess whether the investment in the project is economically attractive, one has to build expectations regarding the future development of the electricity tariff for Durban. In the absence of perfect information and foresight, the LRMC have been introduced as a **proxy for the development of future electricity prices**. As Eskom will have to sell the electricity at prices covering its costs, but being a parastatal utility will presumably not sell at prices much exceeding the costs, the LRMC seem to be a good proxy for the electricity prices. Furthermore, as a large customer Durban municipality is likely to profit from preferential prices which are closer to Eskom’s real generation costs.

Please note that for the purpose of the methodology, LRMCs are a more conservative proxy than expected average generation costs. As the marginal costs are systematically higher than the average costs, less projects would qualify as additional using LRMCs (as the project’s generation costs need to exceed the tariff represented by Eskom’s costs).

As for the related comment in Section 8 that economic analysis to identify the economically attractive course of action is internal to the investor and not verifiable, we would like to point out the following:

- UNFCCC Parties have chosen this approach in 48b M&P, on which the methodology builds, after considering the difficulties involved.
- The analysis of investment decisions discloses the data, expectations and assumptions on the basis of which investment decision are made, in a detailed way not found in any other methodology. Once disclosed, data, expectations and assumptions can be confirmed as facts or as reasonable, usual and conservative or can be questioned by the Operational Entity.

– Commercial bank's, other lenders (including development agencies such as the World Bank) and private investors typically analyze the facts, assumptions and expectations that are at the basis of an investment decisions before making a commitment. Financial due diligences is standard practice and not contested in the industry.

Therefore, the statement that economic analysis is internal to the investor and not verifiable may not be entirely correct. On the contrary, methodologies that build on 48b M&P, such as the one proposed here, may come closest in providing transparency, and objectivity and verifiable criteria for an investment decision. This being said, it is acknowledged that future developments may not confirm investor expectations and assumptions that were thought to be reasonable at the outset, or that other than financial motives may contribute to a particular investment decision. However, failed speculations and idiosyncratic motives appear to be outside of any baseline methodology, nor can they be included in a "project additionality" test.

Revisions to the text

PDD, Annex 3, 2.2, p.38

(1) Future electricity prices can be forecast using different methods and depending on the relevant sector and project circumstances. One methodology would be to identify the likely future capacity expansion and the associated long run marginal cost (LRMC) of the system using official expansion plans or by modeling system expansion and then use the increase in generation costs as an indicator of price increases. Another method would be to use or forecast price increases as reflected in long-term power purchase agreements that may for instance use price escalator clauses and the like.

(2) LRMCs are systematically higher than average future generation costs. For the purpose of assessing additionality of the project, the LRMC are thus a more conservative proxy for future tariffs than average future costs, as the project's generation costs need to exceed the expected future tariff for purchasing electricity from the grid.

(3) LRMC can be considered an appropriate proxy for the development of the project operator's future tariff, if a) tariffs in the sector are not excessively higher than generation costs or b) the investor is a large customer.

Required changes for monitoring methodology

"Monitoring of compliance with legislation in the baseline situation should be properly addressed"

Related comments:

- *Section 2.2*: The methodology uses as the baseline the current recovery rate of biogas which is supposed to ensure compliance with current legislation. The link between the legislation aimed at limiting the methane concentration in the area and the recovery rate in the landfill is not adequately described. The methodology claims that it doesn't need to know what is emitted in the baseline. This is not acceptable unless the methane recovered to comply with national regulations is more clearly calculated
- *Section 3.c:* The calculation of the methane that would have to be extracted to ensure compliance with national laws in the baseline situation should be done using a transparent and conservative methodology. In the case of Durban LFG, it is not demonstrated that a 7.4% extraction rate would ensure compliance with the DWAF regulatory requirement in the future.
- *Section 8:* Transparency in relation to the 7.4% baseline could be better presented and the link to 1% CH_4 regulation already required by Government at landfill sites.

PCF response and proposed action

The required change for the monitoring methodology is similar to the Required Change 4. Please refer to our response under Required Change 4.

With regard to the related comments, please note that the selected baseline scenario is defined as the continued operation of the existing wells plus any additional methane capture that becomes mandatory in future (not foreseeable at this point). The baseline is **not** defined as a percentage rate (7.4%), as the comment in Section 8 suggests. Rather, the 7.4% represent the current efficiency of the existing collection system (the existing wells extract about 7.4% of the overall gas), which exceeds the current regulatory requirements However, this percentage will decline continuously as the gas in the parts of the landfill where the existing wells are located, exhausts over time. A landfill expert has calculated the expected gas flow from the existing wells for the project lifetime based on the GasSim model. The real extraction of the baseline wells will however be **monitored** during the crediting period.

The comments in section 2.2 and 3.c maintain that the link between the legislation aimed at limiting the methane concentration in the area and the current recovery rate in the landfill is not adequately described and that the methane recovered to comply with national regulations should be calculated in a transparent manner. **Please note that current legislation does not require any methane recovery or flaring**. The DWAF regulations simply state that the concentration of methane shall not exceed 1% by volume in air inside and outside the waste disposal area. This obligation can be fulfilled by passive venting, without any gas capture. As the future regulations are currently unforeseeable (although no indication exist towards a tightening of the law), it is impossible to make a reasonable assumption regarding the recovery rate necessary to comply with future laws and the most reasonable approach seems to monitor future regulations.

In sum, the baseline is defined by the regulatory framework and taking into account current practice. Given that the national regulation currently does not require any methane capture and current practice clearly exceeds legal requirements, this approach is more conservative than just looking at the regulatory framework alone.

It should also be mentioned that it is not reasonable to assume that the project operator DSW would have expanded the collection system further in the absence of the project. When the existing wells were put in place, the situation differed from today's in two important aspects:

1) The landfill did not possess a lining system, so that wells were installed to prevent migration of gas to neighboring residential areas. Today, the landfill has been lined with passive gas vents and odor control spray outlets located on top of the lining system. Gas capturing wells are no longer necessary to control for odor nuisances or to guarantee local safety
2) Some of the existing wells have been put in place to investigate the use of the gas for electricity production. As it turned out that this option was uneconomical, DSW has abandoned all schemes. In addition, the municipal budget has been cut back drastically since 2000 and does not allow for any further experiments of that kind.

No changes to the monitoring methodology required. For clarification purposes, the explanation below has been added

Revisions to the text

PDD, B3, p.10:

Note on the clarification of the baseline scenario:
The baseline is defined as the scenario, in which the currently existing wells continue to operate with a declining efficiency, but no further wells would be installed, unless national legislation tightens. This is a reasonable assumption for the following reasons:

- Current legislation does not require any methane capture.
- When the existing wells were put in place, the situation differed from today's in two important aspects: 1) The landfill did not possess a lining system, so that wells were installed to prevent migration of gas to neighboring residential areas. Today, the landfill has been lined with passive gas vents and odor control spray outlets located on top of the lining system. Gas capturing wells are no longer necessary to control for odor or guarantee local safety 2) Some of the existing wells have been put in place to investigate the use of the gas for electricity production. As it turned out that this option was uneconomical, DSW has abandoned all schemes. In addition, the municipal budget has been cut back drastically since 2000 and does not allow for any further experiments of that kind.

Other comments, unrelated to Required Changes

Section 6:

"Baseline methane should be calculated transparently and conservatively ex ante to be confirmed by monitored methane used in electricity generation."

PCF response and proposed action

Ex ante estimation of baseline methane is complex and very uncertain, given that methane generation in landfills is determined by the interaction of numerous factors (organic composition of the waste, temperature, humidity, pressure, etc.). Computer models exists that forecast the gas yield in landfills under certain assumptions, and were used in the analysis of this project. However, these models are not very accurate for the reasons mentioned above.

Ex post monitoring of the emissions captured and destroyed by the landfill gas to energy system is justified for the following reasons:

- In projects that capture and destroy emissions that are directly released into the atmosphere, such as landfill projects, emission reductions can directly be observed and measured. This includes the measurement of emissions that are flared in the baseline scenario. The concept of calculating emission reductions as the difference between total emissions in the baseline and project scenarios from the landfill site is therefore unnecessary complicated for such projects and produces less certain results. Total baseline emissions would have to be estimated as well as the project emissions that are not captured and destroyed, because measuring the latter would be impractical.
- *Ex post* direct monitoring of emission reductions is the more accurate approach as compared to *ex ante* projection of baseline emissions. An *ex ante* assessment of baseline emissions would require making unreasonable and unnecessarily conservative assumptions to guarantee that emission reductions are not overestimated.
- Nothing suggests that the project operator would not be able to fulfill his real time monitoring obligations.

The MP provides for two approaches to calculate the real emission reductions as they occur: From electricity generation and flow meters at the flares and from flow meters installed at the wells. The system has built in redundancy for quality assurance purposes. If one measurement system fails, another can back up. This approach seems more appropriate than an ex ante cap on the emission reductions that can be earned, based on very uncertain assumptions.

No changes required

Section 6:

"No reference should be made to "environmental additionality", but simply "additionality as defined in the CDM M&P."

PCF response and proposed action

References to "environmental additionality" have been removed from the draft PDD and its Annexes. The term "environmental additionality" has been replaced by the term "additionality".

Section 7:

"Leakage in the baseline wells and in the system feeding the auto-generators should be proved to be insignificant"

PCF response and proposed action

Please see added clarifications below.

No changes to the methodology required.

Revisions to the text

BLS p. 17: In the case of the Durban landfill-gas-to-energy-project no significant negative leakage is identified, neither for the waste nor for the electricity related part of the project. The baseline wells and the system feeding the auto-generators (pipelines) are not likely to be the source of any leakage as the majority of the system is under negative pressure. If there are leaks in the pipeline, oxygen gets into the system which reduces the efficiency of the engines. Therefore, the project operator has a strict interest in reducing the amount of leakage. The oxygen content of the landfill gas is monitored on a routine basis. If any oxygen shows up in the sample, the project operator will search for the leak and fix it. In any event, no significant amounts of methane should leak from the system due to the negative pressure. In the shorter positive pressure part of the system between the methane evacuation pump and the engines the normal site monitoring for ambient methane would quickly identify and leaks and any such leaks would be rapidly found and repaired. If air enters into the system this will not affect the accuracy of the measurements using the output of the engines. Furthermore, the MP includes a regular monitoring of the composition of landfill gas.

PDD, E.2: Emissions associated with on-site construction activities are not considered significant. The baseline wells and the system feeding the auto-generators (pipelines) are not likely to be the source of any leakage as the majority of the system is under negative pressure. If there are leaks in the pipeline, oxygen gets into the system which reduces the efficiency of the engines.

Therefore, the project operator has a strict interest in reducing the amount of leakage. The oxygen content of the landfill gas is monitored on a routine basis. If any oxygen shows up in the sample, the project operator will search for the leak and fix it. In any event, no significant amounts of methane should leak from the system due to the negative pressure. In the shorter positive pressure part of the system between the methane evacuation pump and the engines the normal site monitoring for MBIENT methane would quickly identify and leaks and any such leaks would be rapidly found and repaired. If air enters into the system this will not affect the accuracy of the measurements using the output of the engines. Furthermore, the MP includes a regular monitoring of the composition of landfill gas.