

**MONITORING REPORT FORM (F-CDM-MR)**  
**Version 02.0****MONITORING REPORT**

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|--|---|
| <b>Title of the project activity</b>   | Sudokwon Landfill Gas Electricity Generation Project (50MW)   |
| <b>Reference number of the project activity</b>  | 0941  |
| <b>Version number of the monitoring report</b>   | 1.0   |
| <b>Completion date of the monitoring report</b>  | 18/09/2012  |
| <b>Registration date of the project activity</b>   | 30/04/2007  |
| <b>Monitoring period number and duration of this monitoring period</b>   | 6 <sup>th</sup> monitoring period<br>(01/01/2011 – 31/12/2011)  |
| <b>Project participant(s)</b>  | <ul style="list-style-type: none"><li>- Sudokwon Landfill Site Management Corporation (SLC)</li><li>- Rhodia Energy GHG</li></ul>   |
| <b>Host Party(ies)</b>   | Republic of Korea   |
| <b>Sectoral scope(s) and applied methodology(ies)</b>  | <ul style="list-style-type: none"><li>- Sectoral Scopes: 1, 13</li><li>- Applied Methodologies:<ul style="list-style-type: none"><li>· ACM0001 “Consolidated baseline methodology for landfill gas project activities” (Version 04) and,</li><li>· ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”, (Version 06)</li></ul></li></ul> |
| <b>Estimated amount of GHG emission reductions or net anthropogenic GHG removals by sinks for this monitoring period in the registered PDD</b> | 1,286,969 tCO <sub>2</sub> e  |
| <b>Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period</b>                            | 886,678 tCO <sub>2</sub> e  |

## SECTION A. Description of project activity

### A.1. Purpose and general description of project activity

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Sudokwon landfill is one of the largest landfill in the world, which area is 19.79 million m<sup>2</sup> with total capacity of 228 million m<sup>3</sup>, and consists of 4 landfills. The 1<sup>st</sup> landfill was reclaimed from 1992 to 2000 and 2<sup>nd</sup> landfill has been in use for waste reclamation since 2000. The 3<sup>rd</sup> and 4<sup>th</sup> landfill will be used one after another.

About 50% of landfill gas (LFG) is composed of methane (CH<sub>4</sub>), which is one of major greenhouse gases and has 21 times higher global warming potential (GWP) compare to carbon dioxide (CO<sub>2</sub>). Thus, Sudokwon Landfill Gas Electricity Generation Project (50MW) was designed to minimize greenhouse gas emission by enhancing capture efficiency of LFG and utilizing it as a fuel of 50MW power plant.

For enhancing capture efficiency, lots of capturing pipelines and several LFG suction blowers were installed. The blower installation works had been finalized in 11/2007. Pipeline extension works will be continued until 2015 or more, the expected reclamation lifetime of 2<sup>nd</sup> landfill.

In order to treat LFG and generate renewable energy, renewable energy generation facility (50MW power plant) was constructed. This power plant is mainly composed of 2 boilers which generate steam and 1 steam turbine. The construction of power plant was finished in 15/12/2006 and it has been under commercial run since 15/03/2007.

Lastly, this is the 6<sup>th</sup> monitoring period covering 12 months from 01/01/2011 to 31/12/2011 (365 days) and monitored emission reductions are 886,678 tCO<sub>2</sub>e.

### A.2. Location of project activity

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#58 Baekseok Dong, Seo Gu, Incheon, Republic of Korea

GPS Coordinate: Latitude 37.55000° ~ 61667°, Longitude 126.55000° ~ 666667°

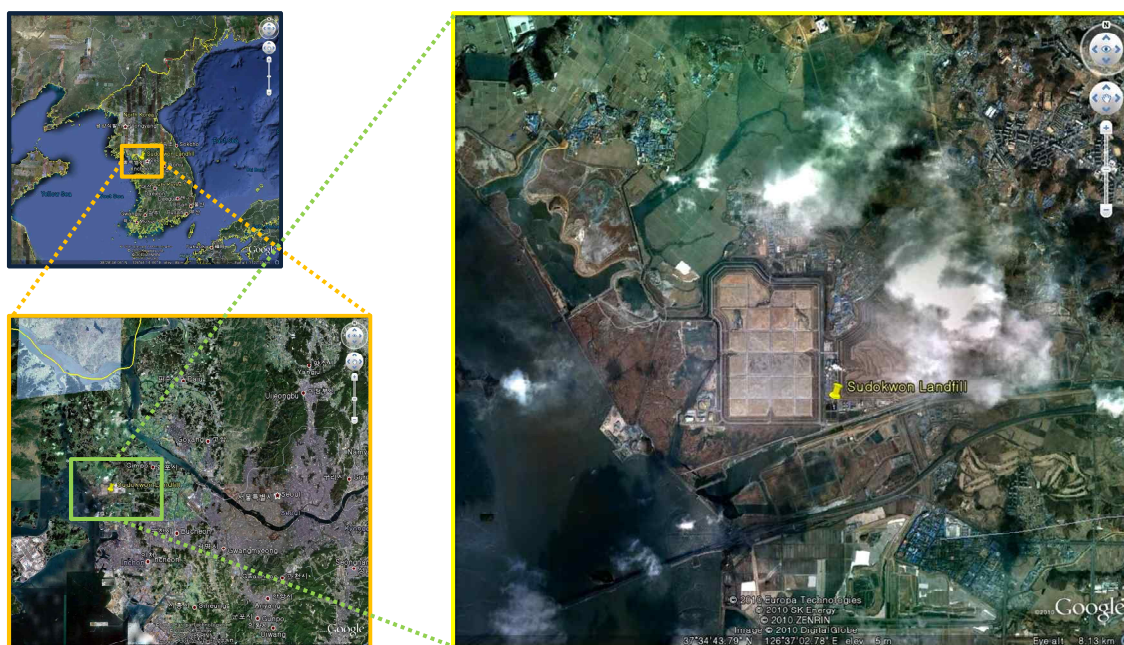


Figure 1 Location of the project activity (SLC)

**A.3. Parties and project participant(s)**

| <b>Party involved<br/>(host) indicates a host Party)</b> | <b>Private and/or public<br/>entity(ies) project participants<br/>(as applicable)</b> | <b>Indicate if the Party involved<br/>wishes to be considered as<br/>project participant (Yes/No)</b> |
|--|---|---|
| Republic of Korea (host)                                 | Public entity<br>Sudokwon Landfill Site<br>Management Corporation (SLC)               | No  |
| France   | Private entity<br>Rhodia Energy GHG   | No  |

**A.4. Reference of applied methodology**

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ACM0001 “Consolidated baseline methodology for landfill gas project activities” (Version 04)

[http://cdm.unfccc.int/UserManagement/FileStorage/CDMWF\\_AM\\_TX29WGSXE4781NKGQGCDPTHM2F3V3D](http://cdm.unfccc.int/UserManagement/FileStorage/CDMWF_AM_TX29WGSXE4781NKGQGCDPTHM2F3V3D)

ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (Version 06)

[http://cdm.unfccc.int/UserManagement/FileStorage/CDMWF\\_AM\\_BW759ID58ST5YEEV6WUCN5744MN763](http://cdm.unfccc.int/UserManagement/FileStorage/CDMWF_AM_BW759ID58ST5YEEV6WUCN5744MN763)**A.5. Crediting period of project activity**

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The start date of this project is 30/04/2007 and crediting period chosen is 10 years (fixed).

## SECTION B. Implementation of project activity

### B.1. Description of implemented registered project activity

The 50MW power plant has been under commercial run since 15/03/2007. Other facilities such as LFG blower and central flaring facility has been also under operational before the start date of crediting period (30/04/2007).



**Figure 2 1<sup>st</sup> landfill site and 50MW LFG power plant**

As expected in PDD, the amount of LFG captured was decreased continuously. From 15/04/2010 to 20/06/2010, the 50MW power plant lowered its output due to the lack of LFG. In addition, since 02/04/2010, the LFG which fed to flaring facilities were flared less than 600°C of flaring temperature and the efficiency of flare regarded as 0%. Therefore several measures were taken in order to enhance (or expand) LFG collection system.

As part of the enhancement (or expansion) of the LFG collection system, thorough inspection of LFG transferring pipes which installed in the midst of 2<sup>nd</sup> landfill were made. After the inspection, most of transferring pipes (679 of 699 lines, which total length of 194.6 km) were re-installed at the top of 2<sup>nd</sup> landfill. Especially, 509 lines were re-installed at the end of 2011 (November and December), intensively.

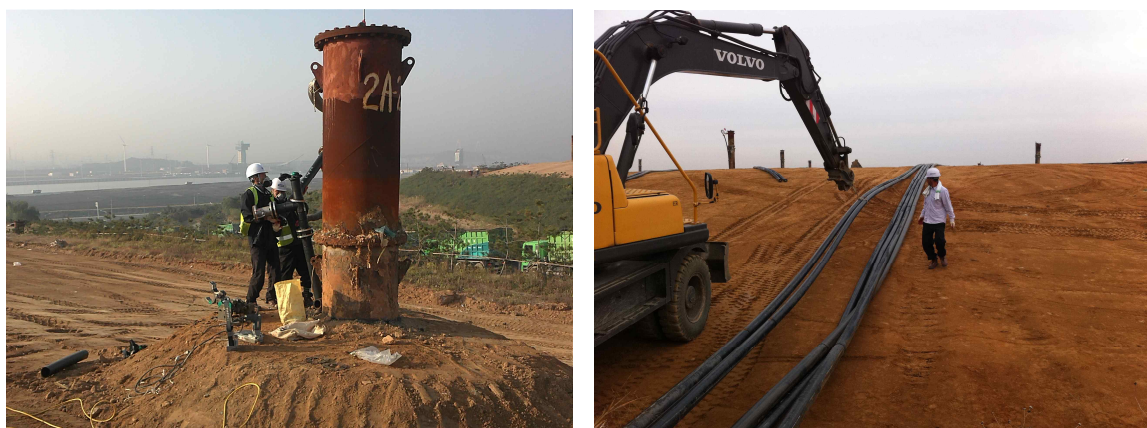
As a result, captured amount of LFG were increased and, therefore, the flaring temperature was recovered above 600° since 25/04/2011. Due to the intensive works at the end of 2011, flaring amount of LFG was dramatically increased. Detailed enhancement works are as follows;

| Item   | Number (ea) | Reasons for enhancement  | Note   |
|--|-------------|--|--|
| LFG transferring pipes re-installation             | 170         | Planned work for regular maintenance (from 01/04/2010 to 30/11/2011)   |  |
|  | 407         | Installation of additional LFG transferring pipes (laying type) for malfunctioning ones in accordance with the inspection. (from 01/11/2011 to 31/12/2011)   |  |
|  | 102         | Installation of additional LFG transferring pipes (exposure type) for malfunctioning ones in accordance with the inspection. (from 01/11/2011 to 31/12/2011) | For recently reclaimed sites (in order to avoid subsidence effect) |
| Check point installation in LFG transferring pipes | 699         | Check the operational status of LFG transferring pipes   |  |



|                            |    |   |  |
|----------------------------|----|---|--|
| Flexible pipes replacement | 87 | Occurrence of pin-hole, which may cause possible influx of oxygen |  |
| Steel pipes replacement    | 2  | Occurrence of hole caused by rust                                 |  |

**Table 1 Detailed enhancement of LFG collection system**



**Figure 3 Installation of check point and additional LFG transferring pipes (exposure type)**

The information regarding the actual operation of the project activity in this monitoring period is as follows;

| Date       | Duration  | Operation events  | Note |
|------------|-----------|---|------|
| 01/01/2011 |           | Operated with full load (50MW)  |      |
| 06/03/2011 | 139 hours | Periodic maintenance of 50MW power plant. During this period, all flares were ignited in order to treat LFG.  |      |
| 12/03/2011 | 14 hours  | After the periodic maintenance, LFG fed to boilers of 50MW power plant. Consequently, each flare was stopped sequentially. During the boilers run, however, system error occurred and boilers were stopped and restarted 9 hours later. |      |
| 09/04/2011 | 9 hours   | Due to periodic safety check by KESCO (Korea Electricity Safety Corporation), all facilities were shut-down (except LFG capture facilities of 2nd landfill and 50MW power plant) and power plant reduced its output from 50MW to 17MW.  |      |
| 16/04/2011 | 11 hours  | Due to unexpected transmission line failure, 50MW power plant stopped and restarted. The boilers of 50MW power plant were ignited 5 hours later.  |      |
| 25/04/2011 | 1 hour    | Owing to the change of operational condition, the 50MW power plant lowered its output from 50MW to 46MW.  |      |
| 11/05/2011 | 1 hour    | 50MW power plant increased its output from 46MW to 47MW   |      |
| 08/06/2011 | 1 hour    | 50MW power plant decreased its output from 47MW to 46MW   |      |
| 12/06/2011 | 377 hours | 50MW power plant stopped in order to perform periodic maintenance. During this period, all flares ignited in order to treat LFG.  |      |
| 28/06/2011 | 15 hours  | In order to undergo the electricity safety inspection by KESCO, 50MW power plant restarted its boilers and therefore LFG flow of 50MW power plant and each flare were changed.  |      |
| 28/06/2011 | 6 hours   | After the inspection by KESCO, the plant generated electricity and increased its output to 50MW.  |      |



|            |           |   |  |
|------------|-----------|---|--|
| 04/07/2011 | 3 hours   | 50MW power plant decreased its output from 50MW to 30MW.  |  |
| 03/10/2011 | 142 hours | 50MW power plant stopped in order to perform periodic maintenance.  |  |
| 10/12/2011 | 5 hours   | The output of 50MW power plant was adjusted regarding the amount of LFG (50MW -> 18MW -> 50MW).   |  |
| 24/12/2011 | 37 hours  | Periodic maintenance of 50MW power plant. During this period, #4 flare was ignited in order to treat LFG. The output of 50MW power plant was adjusted regarding the amount of LFG(50MW -> 45MW, until 26/12/2011)         |  |
| 26/12/2011 | 171 hours | Periodic maintenance of 50MW power plant. During this period, all flares were ignited in order to treat LFG. The output of 50MW power plant was adjusted regarding the amount of LFG(45MW -> 8MW -> 20MW -> 17MW -> 50MW) |  |

**Table 2 Operational events of 50MW power plant**

| Date       | Duration | Operation events  | Note |
|------------|----------|---|------|
| 01/01/2011 |          | #6 flare operated for treating LFG which is not treated by 50MW power plant   |      |
| 12/01/2011 | 7 hours  | In order to increase LFG capturing efficiency, test run of additional gas collection at 2nd landfill was made. LFG flow and flaring temperature of #6 flare were increased.   |      |
| 22/01/2011 | 2 hours  | Due to connect failure of pressure meter (PT-05), pressure of LFG fed to flares did not recorded.   |      |
| 29/01/2011 | 2 hours  | LFG flow of #6 flare decreased.   |      |
| 30/01/2011 | 1 hour   | LFG flow of #6 flare decreased.   |      |
| 31/01/2011 | 1 hour   | LFG flow of #6 flare decreased.   |      |
| 05/02/2011 | 8 hours  | 50MW power plant stopped due to technical problem (booster blower oil pump failure). LFG flow of 2nd landfill temporally decreased and all flares ignited in order to treat LFG. Flaring temperature of each flares were increased, however, only LFG flow of #6 flare was recorded as flow meters for other flares were detached for manufacturer's calibration. |      |
| 08/02/2011 | 2 hours  | Due to maintenance of monitoring system, the computer was temporally shut down and LFG flow of #6 flare was decreased.  |      |
| 09/02/2011 | 6 hours  | Due to maintenance of monitoring system, the computer was temporally shut down and LFG flow of #6 flare was decreased.  |      |
| 18/02/2011 | 1 hour   | Operational flare changed from #6 to #5 flare   |      |
| 28/02/2011 | 50 hours | Due to technical problem on monitoring system (PLC remote I/O sensor failure), flow and methane fraction of LFG from 1st landfill and temperature and pressure of LFG fed to flares were not recorded. After sensor replacement the system restored.  |      |
| 07/03/2011 | 25 hours | Due to problem of backfire arrester (housing crack), #1 flare stopped. It restarted after the maintenance.  |      |
| 08/03/2011 | 2 hours  | #2 flare stopped and restarted in order to clean backfire arrester.   |      |
| 08/03/2011 | 3 hours  | #3 flare stopped and restarted in order to clean backfire arrester.   |      |
| 08/03/2011 | 8 hours  | #4 flare stopped and restarted in order to clean backfire arrester.   |      |
| 09/03/2011 | 2 hours  | #6 flare stopped and restarted in order to clean backfire arrester.   |      |
| 09/03/2011 | 3 hours  | Due to exhaust gas sampling work, LFG flow of #5 and #6 flare were temporally decreased.  |      |
| 11/03/2011 | 2 hours  | #6 flare stopped and restarted in order to clean backfire arrester.   |      |
| 12/03/2011 | 14 hours | After the periodic maintenance, LFG fed to boilers of 50MW  |      |



|            |           |  |  |
|------------|-----------|--|--|
|            |           | power plant. Consequently, each flare was stopped sequentially. Former stopped #1, #3 and #5 flare temporally re-ignited in order to treat LFG.  |  |
| 13/03/2011 | 1 hour    | Due to the temporal communication problem in monitoring system, some data were not recorded.   |  |
| 17/03/2011 | 3 hours   | LFG flow of #6 flare temporally increased owing to exhaust gas test and flaring temperature was also increased.  |  |
| 21/03/2011 | 1 hour    | LFG flow of #6 flare temporally increased due to LFG pipeline test and flaring temperature was also increased. The test finished owing to safety reasons and therefore LFG flow of #6 flare decreased accordingly. |  |
| 01/04/2011 | 76 hours  | Operational flare changed from #6 to #5 flare  |  |
| 06/04/2011 | 1 hour    | Due to exhaust gas sampling, LFG flow of #6 flare and its flaring temperature temporally increased.  |  |
| 11/04/2011 | 2 hours   | Due to exhaust gas sampling, LFG flow of #6 flare and its flaring temperature temporally increased.  |  |
| 08/06/2011 | 23 hours  | Operational flare changed from #6 to #5 flare in order to perform backfire arrester cleansing.   |  |
| 13/06/2011 | 6 hours   | Due to maintenance of LFG header pipeline, all LFG blowers and flares were stopped and restarted.  |  |
| 14/06/2011 | 6 hours   | Due to backfire arrester problem of #6 flare, flared amount of LFG at #6 flare and captured amount of LFG from 2nd landfill lowered.   |  |
| 15/06/2011 | 4 hours   | #6 flare stopped in order to perform backfire arrester cleansing. After the work, flared amount of LFG at #6 flare and captured amount of LFG from 2nd landfill increased.   |  |
| 21/06/2011 | 10 hours  | Due to maintenance of LFG capturing pipeline, all LFG blowers were shut-down and, therefore, all flares were stopped.  |  |
| 28/06/2011 | 15 hours  | In order to undergo the electricity safety inspection by KESCO, 50MW power plant restarted its boilers and therefore LFG flow of 50MW power plant and each flare were changed.                                     |  |
| 28/06/2011 | 6 hours   | After the inspection by KESCO, the plant generated electricity and increased its output to 50MW. All flares except #6 flare were stopped accordingly.  |  |
| 30/06/2011 | 6 hours   | Operational flare changed from #6 to #2, and from #2 to #6 flare due to temporal maintenance.  |  |
| 04/07/2011 | 3 hours   | 50MW power plant decreased its output from 50MW to 30MW. During this period, LFG flow of #6 flare increased and #5 flare temporally ignited in order to treat LFG.   |  |
| 28/07/2011 | 1 hour    | System server of LFG management centre was shut-down and restarted. Decreased flow gas of FT-01, FT-02 and FT-09   |  |
| 05/08/2011 | 2 hours   | LFG flow of #4 flare temporally increased owing to exhaust gas test and flaring temperature was also increased.  |  |
| 30/09/2011 | 9 hours   | Operational flare changed from #6 to #5 flare after the backfire arrester cleansing.   |  |
| 03/10/2011 | 142 hours | 50MW power plant stopped in order to perform periodic maintenance. During this period, all flares ignited in order to treat LFG  |  |
| 01/12/2011 | 1 hour    | Due to increase of LFG flow, #4 flare ignited.   |  |
| 03/12/2011 | 1 hour    | Due to decrease of LFG flow, #4 flare was stopped.   |  |
| 04/12/2011 | 1 hour    | Due to increase of LFG flow, #4 flare ignited.   |  |



|            |           |  |  |
|------------|-----------|--|--|
| 05/12/2011 | 1 hour    | Due to decrease of LFG flow, #4 flare was stopped.   |  |
| 10/12/2011 | 3 hours   | Due to change of electric transformer, some facilities' power was knocked out in SLC.<br>During this period, LFG management centre and all flares were stopped and several data were not recorded. |  |
| 13/12/2011 | 1 hour    | Due to increase of LFG flow, #4 flare ignited.   |  |
| 16/12/2011 | 141 hours | Operational flare changed from #5 to #6 flare  |  |
| 23/12/2011 | 2 hours   | #4 flare stopped and restarted in order to clean backfire arrester.<br>Operational flare changed from #4 to #2 flare   |  |
| 24/12/2011 | 37 hours  | Periodic maintenance of 50MW power plant. During this period, #4 flare was ignited in order to treat LFG.  |  |
| 26/12/2011 | 171 hours | Periodic maintenance of 50MW power plant. During this period, all flares were ignited in order to treat LFG.   |  |

Table 3 Operational events of central flaring facility

**B.2. Post registration changes****B.2.1. Temporary deviations from registered monitoring plan or applied methodology**

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| Date       | Duration | Deviations and its reason  | Corrective actions on data and its conservativeness   |
|------------|----------|--|---|
| 16/01/2011 | 2 hours  | Due to condensing water removal work of gas analyzer (GA-02) suction line, methane fraction of 2nd landfill did not recorded.  | Most conservative value in entire 6th monitoring period (41.0%) applied.  |
| 22/01/2011 | 2 hours  | Due to connect failure of pressure meter (PT-05), pressure of LFG fed to flares did not recorded   | Most conservative value in entire 6th monitoring period (0 mmAq) applied.   |
| 10/02/2011 | 19 hours | Due to the temporal problem on electricity surveillance system, electricity from 'EL-imp_2nd_LF' was not recorded.   | Most conservative value in entire 6th monitoring period (465.6 kWh) applied.  |
| 28/02/2011 | 51 hours | Due to technical problem on monitoring system (PLC remote I/O sensor failure), flow and methane fraction of LFG from 1st landfill and temperature and pressure of LFG fed to flares were not recorded. After sensor replacement the system restored. | For methane fraction(weighted), temperature and pressure, most conservative values in entire 6th monitoring period(43.63%, 66.0 °C And 0mmAq Respectively) applied.<br>For LFG flow, following equation used to calculate;<br>- LFG_1st = LFG_50MW + LFG_Flare<br>- LFG_2 <sup>nd</sup> = 0 |
| 13/03/2011 | 1 hour   | Due to the temporal communication problem in monitoring system, some data were not recorded.   | Most conservative value in entire 6th monitoring period applied.  |
| 09/04/2011 | 9 hours  | Due to periodic safety check by KESCO (Korea Electricity Safety Corporation), all facilities were shut-down(except LFG capture facilities of 2nd landfill and 50MW power plant) and power plant reduced its output from 50MW to 17MW.                | As 50MW power plant was running with capacity of 17MW and most conservative methane fraction of captured LFG in entire monitoring period were 41% (2nd landfill), captured LFG was calculated as follows;   |





|            |          |  |  |
|------------|----------|--|--|
|            |          | During this period, only data from power plant related meter (FT-10, TT-04 & PT-06) were recorded and watt-hour meters (WH-05 & WH-06) were replaced with calibrated new ones. | LFG flow;<br>- LFG_2nd_LF = LFG_50MW,<br>LFG_1st_LF = 0 Nm <sup>3</sup> ;<br>Methane fraction; 41%(2nd landfill)<br>Temperature & pressure of LFG:<br>most conservative value in entire 6th monitoring period (66°C & 0 mmAq respectively) applied.  |
| 14/04/2011 | 4 hours  | Due to maintenance of inlet line of gas analyzer (GA-01), methane fraction of 1st landfill did not recorded  | Most conservative value in entire 6th monitoring period (35.0%) applied.   |
| 30/04/2011 | 1 hour   | Due to communication problem in monitoring system, electricity imported to LFG management centre was not recorded.   | For conservativeness, most conservative value in entire 6th monitoring period (406.7 kWh) applied.   |
| 30/04/2011 | 11 hours | Due to communication problem in monitoring system, electricity imported to LFG management centre was not recorded.   |  |
| 14/05/2011 | 1 hour   | Due to temporal system error of monitoring system, only data from power plant related meter (FT-10, TT-04 & PT-06) and watt-hour meters were recorded.                         | Most conservative value in entire 6th monitoring period (41.0%) applied.   |
| 25/05/2011 | 3 hours  | Due to maintenance of inlet line of gas analyzer (GA-01), methane fraction of 1st landfill did not recorded  | Most conservative value in entire 6th monitoring period (35.0%) applied.   |
| 10/07/2011 | 10 hours | Due to the network instability of electricity system, electricity from 'EL-imp_LFG mgt. centre' and 'EL-imp_2nd_LF' were not recorded.   | Most conservative value (EL-imp_2 <sup>nd</sup> _LF) in entire 6th monitoring period (465.6 kWh) applied. (In LFG management centre, Accumulated data of electricity consumptions was recorded automatically when the network was at time of restoration.)   |
| 27/07/2011 | 14 hours | Due to the lightening damage, FT-10 broken. In order to prevent the measuring gap, reserve flow meter of FT-03 installed at the same pipeline.                                 | Most conservative value in entire 6th monitoring period applied.<br>The minimum ratio(methane input per electricity generation in 50MW) in normal operation condition is calculated 0.0946 tCH <sub>4</sub> /MWh.<br>LFG_50MW = EL_exp * 0.0946 tCH <sub>4</sub> /MWh / CH <sub>4</sub> density / wCH <sub>4</sub> |
| 28/07/2011 | 1 hour   | System server of LFG management centre was shut-down and restarted, decreased flow gas of FT-01, FT-02 and FT-09   | Where CH <sub>4</sub> fraction of 1st landfill LFG was lower than that of 2nd landfill, following equation used to calculate LFG flow in order to keep conservative approach;<br>- LFG_1st = LFG_50MW + LFG_Flare  |



|            |           |  |  |
|------------|-----------|--|--|
|            |           |  | - LFG_2nd = 0 Nm <sup>3</sup>  |
| 13/08/2011 | 7 hours   | Due to communication problem in monitoring system, electricity imported to 2nd Landfill blower system was not recorded.            | Most conservative value in entire 6th monitoring period (465.6 kWh) applied.   |
| 06/09/2011 | 23 hours  | Due to communication problem in server system, electricity imported to blower system was not recorded                              |  |
| 06/09/2011 | 1 hour    | Due to communication problem in monitoring system, electricity imported to LFG management centre was not recorded.                 | Most conservative value in entire 6th monitoring period (406.7 kWh) applied.   |
| 08/09/2011 | 463 hours | Due to conduct the 3rd party calibration, DPT-02, DPT-09, PT-01, PT-02, TT-01 and TT-02 were detached.                             | For LFG flow, following equation used to calculate;<br>- LFG_2nd = LFG_50MW + LFG_Flare - LFG_1st.<br>TT-01 and TT-02 were attached after 315 hours.   |
| 07/10/2011 | 1 hour    | Due to cleaning of flow meter sensor(FT-01), LFG flow of 1st landfill recorded extraordinary value.                                | Most conservative value in entire 6th monitoring period (0 Nm <sup>3</sup> /hr) applied.   |
| 12/10/2011 | 2 hours   | Due to maintenance of board of flow meter (FT-10), LFG flow of 50MW power plant was not recorded.                                  | Most conservative value in entire 6th monitoring period applied.<br>The minimum ratio(methane input per electricity generation in 50MW) in normal operation condition is calculated 0.0946 tCH <sub>4</sub> /MWh.<br>LFG_50MW = EL_exp * 0.0946 tCH <sub>4</sub> /MWh / CH <sub>4</sub> density / wCH <sub>4</sub> |
| 13/10/2011 | 430 hours | Due to conduct the 3rd party calibration, PT-06 was detached.  | Most conservative value in entire 6th monitoring period (-487.16 mmAq) applied..   |
| 19/10/2011 | 1 hour    | Due to conduct the 3rd party calibration, the flow meter(FT-01) was detached.(until 15/12/2011) During this period, 900A was used. | Where CH <sub>4</sub> fraction of 1st landfill LFG was lower than that of 2nd landfill, following equation used to calculate LFG flow in order to keep conservative approach;<br>- LFG_1st = LFG_50MW + LFG_Flare<br>- LFG_2nd = 0 Nm <sup>3</sup>   |
| 01/11/2011 | 147 hours | Due to maintenance of pressure meter(PT-06), pressure meter(PT-06) did not recorded  | Most conservative value in entire 6th monitoring period (-487.16 mmAq) applied   |
| 02/11/2011 | 2 hours   | Due to maintenance of flow meter(FT-10), LFG flow of 50MW power plant was decreased  | Most conservative value in entire 6th monitoring period applied.<br>The minimum ratio(methane input per electricity generation in 50MW) in normal operation condition is calculated 0.0946 tCH <sub>4</sub> /MWh.<br>LFG_50MW = EL_exp * 0.0946  |



|            |           |  | tCH <sub>4</sub> /MWh / CH <sub>4</sub> density / wCH <sub>4</sub>  |
|------------|-----------|--|---|
| 03/11/2011 | 115 hours | Due to conduct the 3rd party calibration, GA-01 and GA-02 were detached.   | During this period, other gas analyzer(GA-03(Reserve), Reserve GA) was used.<br>For conservativeness, most conservative value(GA-02) in entire monitoring period (41.0%) applied.   |
| 07/11/2011 | 1 hour    | Due to temporal problem of gas analyzer (Reserve GA), methane fraction of 2nd landfill did not recorded.           | Most conservative value in entire 6th monitoring period (41.0%) applied.  |
| 17/11/2011 | 2 hours   | Due to the temporal communication problem in monitoring system, some data were not recorded.                       | Most conservative methane fraction of captured LFG in entire monitoring period were 35% (1st landfill) and 41% (2nd landfill), captured LFG was calculated as follows;<br>LFG flow;<br>- LFG_1st_LF = LFG_50MW,<br>LFG_2nd_LF = 0 Nm <sup>3</sup> ;<br>Methane fraction;<br>- 1st landfill = 35%, 2nd landfill = 0%<br>Temperature & pressure of LFG:<br>most conservative value in entire 6th monitoring period (66°C & 0 mmAq respectively) applied.. |
| 28/11/2011 | 77 hours  | Due to temporal problem of gas analyzer (GA-01), methane fraction of 1st landfill did not recorded.                | Most conservative value in entire 6th monitoring period (35.0%) applied.  |
| 01/12/2011 | 2 hours   | Due to the temporal problem on electricity surveillance system, electricity from 'EL-imp_2nd_LF' was not recorded. | Most conservative value in entire 6th monitoring period (465.6 kWh) applied.  |
| 15/12/2011 | 3 hours   | Due to maintenance of board of flow meter (FT-10), 50MW power plant did not recorded.                              | Most conservative value in entire 6th monitoring period applied.<br>The minimum ratio(methane input per electricity generation in 50MW) in normal operation condition is calculated 0.0946 tCH <sub>4</sub> /MWh.<br>LFG_50MW = EL_exp * 0.0946<br>tCH <sub>4</sub> /MWh / CH <sub>4</sub> density / wCH <sub>4</sub>   |
| 17/12/2011 | 11 hours  | Due to low temperature, flow meter of 1st landfill recorded extraordinary values                                   | Where CH <sub>4</sub> fraction of 1st landfill LFG was lower than that of 2nd landfill, following equation used to calculate LFG flow in order to keep conservative approach;<br>- LFG_1st = LFG_50MW +<br>LFG_Flare<br>- LFG_2nd = 0 Nm <sup>3</sup>   |
| 22/12/2011 | 1 hour    | Due to low temperature, flow meter of 1st landfill recorded extraordinary values                                   |   |
| 22/12/2011 | 13 hours  | Due to low temperature, flow meter of 1st landfill recorded extraordinary values                                   |   |
| 23/12/2011 | 1 hour    | Due to temporal system error of monitoring system, monitoring data   | Most conservative methane fraction of captured LFG in entire monitoring   |

|            |          |  |   |
|------------|----------|--|---|
|            |          | did not recorded   | period were 35% (1st landfill) and 41% (2nd landfill), captured LFG was calculated as follows;<br>LFG flow;<br>- LFG_1st_LF = LFG_50MW,<br>LFG_2nd_LF = 0 Nm <sup>3</sup> ;<br>Methane fraction;<br>- 1st landfill = 35%, 2nd landfill = 0%<br>Temperature & pressure of LFG:<br>most conservative value in entire 6th monitoring period (66°C & 0 mmAq respectively) applied.. |
| 25/12/2011 | 11 hours | Due to low temperature, flow meter of 1st landfill recorded extraordinary values | Where CH <sub>4</sub> fraction of 1st landfill LFG was lower than that of 2nd landfill, following equation used to calculate LFG flow in order to keep conservative approach;<br>- LFG_1st = LFG_50MW + LFG_Flare<br>- LFG_2nd = 0 Nm <sup>3</sup>  |
| 25/12/2011 | 12 hours | Due to low temperature, flow meter of 1st landfill recorded extraordinary values |   |
| 26/12/2011 | 10 hours | Due to low temperature, flow meter of 1st landfill recorded extraordinary values |   |
| 27/12/2011 | 1 hour   | Due to low temperature, flow meter of 1st landfill recorded extraordinary values |   |
| 30/12/2011 | 5 hours  | Due to low temperature, flow meter of 1st landfill recorded extraordinary values |   |
| 30/12/2011 | 2 hours  | Due to low temperature, flow meter of 1st landfill recorded extraordinary values |   |

**Table 4 Operational events of monitoring system and corrective actions**

### B.2.2. Corrections

>>

All facilities were already installed and fully operational as per PDD description except the 9.88MW power plant. It had not been operated since 03/2007 due to the technical problem. Therefore, the rest of LFG which is not treated in 50MW power plant was destroyed by central flaring facility only.

Regarding the stoppage of 9.88MW power plant, the request for review was made by CDM Executive Board during 1<sup>st</sup> request for issuance. In accordance with the request for review of CDM Executive Board, emissions from the electricity generated by the existing 9.88MW power plant are regarded as baseline emissions and therefore should deducted from emission reductions generated by the project activity.

For conservativeness, maximum theoretical output of 9.88MW power plant (78,760MWh/yr or 215.79MWh/day, approx. 91% of total capacity) has been chosen for additional baseline emission calculation. Since this monitoring period is 1 year (365 days), total of 44,628 tCO<sub>2</sub> (215.79MWh × 365 days × 0.5666tCO<sub>2</sub>/MWh) is deducted from emission reductions.

The request was raised in 18/02/2010. Joint response from SLC & DOE (TÜV-SÜD) was made in 05/03/2010 and approved on 53<sup>th</sup> EB meeting. Related documents are available on the UNFCCC website.

**Issuance Request for Review**

<http://cdm.unfccc.int/Projects/DB/DNV-CUK1171534717.86/iProcess/TUEV-SUED1208270995.94/Review/PTFL27IU6U3QJIMC9WF8MZSN4F0HM7/display>

**Joint response from project participant and DOE**

<http://cdm.unfccc.int/UserManagement/FileStorage/CSV DHT7LAQW60Z8B5MKI4YN9RFPO2G>

**Paragraph 83 (d) of CDM EB meeting report**

<http://cdm.unfccc.int/EB/053/eb53rep.pdf>

**B.2.3. Permanent changes from registered monitoring plan or applied methodology**

>>

Not applicable

**B.2.4. Changes to project design of registered project activity**

>>

Not applicable

**B.2.5. Changes to start date of crediting period**

>>

According to the PDD, the crediting period started the 01/04/2007 for a period of 10 years. In accordance with the Conference of the Parties decision 17/CP.7, however, the start date of the crediting period has been changed to the date of registration, 30/04/2007.

**B.2.6. Types of changes specific to afforestation or reforestation project activity**

>>

Not applicable

## SECTION C. Description of monitoring system

&gt;&gt;

### Data Collection Procedures

Monitoring and emission reductions calculation are made in accordance with monitoring plan in PDD, internal data handling procedure as well as approved methodologies.

All continuously measured parameters (flow and CH<sub>4</sub> fraction of LFG, flaring temperature, amount of exported & imported electricity, etc.) were recorded electronically via a data logger such as Citect MMI and Honeywell Hyperion DCS, which have the capacity to aggregate and print collected data at fixed frequencies.

The data are measured and collected at each control system of the 50MW power plant, central flaring facility and internal electricity monitoring system. Data aggregation and emission reductions calculation has been made on a daily basis. The result of calculation is reported monthly and raw data are archived every two months. In order to inspect the status of capturing facility, composition, flow, pressure and temperature of each capturing facility checked on daily basis. Gas flow and other related parameters are recorded electronically on hourly basis. Every recorded electronic data are also recorded in handwritten form.



**Figure 4 The control room of 50MW power plant**

### LFG flow

Total of 9 continuous flow meters were installed for monitoring LFG flow. Captured LFG is monitored by FT-01 & FT-02, which installed at the end of the 1<sup>st</sup> and 2<sup>nd</sup> landfill gas recovery line respectively. Combusted LFG is checked by FT-04 ~ 10, where FT-04 ~ 09 is for each flare (total of 6) and FT-10 is for 50MW power plant. Several temperature and pressure meters were also installed in order to check the system stability and (or) to convert unit from ACM (Actual Cubic Meter) to NCM (Normal Cubic Meter).



## Related meters

| ID          | Serial Number               | Manufacturer             | Description   | Remarks  |
|-------------|-----------------------------|--------------------------|---|--|
| FT-01       | 27051601                    | EPI                      | 1 <sup>st</sup> landfill                                  | Thermal mass type  |
| FT-02       | 9C03490109D<br>HFV-20041004 | Endress Hauser<br>Hitrol | 2 <sup>nd</sup> landfill                                  | V-cone type  |
| FT-04       | 28031701                    | EPI                      | #1 flare  | Thermal mass type  |
| FT-05       | 28012903                    | EPI                      | #2 flare  |  |
| FT-06       | 28042402                    | EPI                      | #3 flare  |  |
| FT-07       | 28042401                    | EPI                      | #4 flare  |  |
| FT-08       | 28012904                    | EPI                      | #5 flare  |  |
| FT-09       | 28031702                    | EPI                      | #6 flare  |  |
| FT-10       | 465                         | GE Panametrics           | 50MW power plant  | Ultrasonic type  |
| FT-03       | 28012905                    | EPI                      | Reserve meter for all EPI meters                          | Thermal mass type  |
| 700A        | 28031703                    | EPI                      |   |  |
| 900A        | 26050201                    | EPI                      |   |  |
| FT-08 (old) | A1F3913T                    | Fuji Electrics           | Reserve meter for #5 flare (DPT)                          | Pitot-tube type  |
| FT-09 (old) | A5H2952T                    | Fuji Electrics           | Reserve meter for #6 flare (DPT)                          |  |
| TT-02       | WS1025016                   | Wise                     | Temperature of LFG captured from 2 <sup>nd</sup> landfill | For system stability check and (or) unit conversion from ACM(Actual Cubic Meter) to NCM(Normal Cubic Meter), if needed |
| TT-03       | A6B3331T                    | Fuji Electrics           | Temperature of LFG which fed to flares                    |  |
| TT-04       | 099169                      | KONICS                   | Temperature of LFG which fed to 50MW power plant          |  |
| TT-10       | WS1025017                   | Wise                     | Temperature of LFG which fed to 50MW power plant          |  |
| PT-02       | APT3200-3940244             | AUTROL                   | Pressure of LFG captured from 2 <sup>nd</sup> landfill    |  |
| PT-05       | A4J4159T                    | Fuji Electrics           | Pressure of LFG which fed to flares                       |  |
| PT-06       | 0447-04111204003            | Honeywell                | Pressure of LFG which fed to 50MW power plant             |  |
| PT-10       | WS1025015                   | Wise                     | Pressure of LFG which fed to 50MW power plant             |  |

CH<sub>4</sub> fraction

The fraction of CH<sub>4</sub> in LFG was measured by using continuous infra-red type gas analysers (total of 2). Data were recorded every hour in electronic method. Only CH<sub>4</sub> is considered as GHG emission in the CDM monitoring procedure.

## Related meters

| ID    | Serial Number | Manufacturer   | Description              | Remarks   |
|-------|---------------|----------------|--------------------------|---|
| GA-01 | A2B4359T      | Fuji Electrics | 1 <sup>st</sup> landfill | GA-03(Reserve, S/N N6E2427T) was operation from 01/12/2011 to 17/02/2012. |
| GA-02 | A4J0063T      | Fuji Electrics | 2 <sup>nd</sup> landfill |   |



|                    |          |                |   |   |
|--------------------|----------|----------------|---|---|
| GA-03<br>(Reserve) | N6E2427T | Fuji Electrics | Reserve meter for<br>1 <sup>st</sup> landfill | After detachment of GA-01 (S/N: A2B4359T) for periodic calibration, GA-03(Reserve) was installed at GA-01's location from 01/12/2011 to 17/02/2012. During this period, GA-01, which calibrated, was regarded as reserve meter. |
| Reserve GA         | A4M0708T | Fuji Electrics | Reserve meter for<br>2 <sup>nd</sup> landfill |   |

### Electricity exported & imported

The amount of imported electricity which used for LFG capturing and flaring was recorded electronically by internal electricity surveillance system of SLC. Imported electricity for 50MW power plant was monitored by watt-hour meter which managed and monthly invoiced by Korea Electric Power Corporation (KEPCO).

EL<sub>EX.LPG</sub>, mentioned in PDD B.7.1 as total amount of electricity exported out of the project boundary, is a typing error of EL<sub>EX.LFG</sub>. The amount of exported electricity was recorded electronically by watt-hour meter which is connected to Korea Power Exchange (KPX) and cross-checked by relative documents from KPX.

### Related meters

| ID    | Serial Number  | Manufacturer                    | Description   | Remarks                         |
|-------|----------------|---------------------------------|---|---------------------------------|
| WH-01 | PR-0411A055-02 | Seochang Electric Communication | Exported electricity (50MW power plant)                         | Cross-checked with KPX document |
| WH-03 | 6063941        | Seochang Electric Communication | Imported electricity (50MW power plant)                         |                                 |
| WH-05 | MFR0411001F    | KDT                             | Imported electricity (2 <sup>nd</sup> landfill blower facility) |                                 |
| WH-06 | 2KLM001A       | KDT                             | Imported electricity (LFG mgt. centre)                          |                                 |

### Flare efficiency

Applied methodology ACM0001 (Version 04) stipulates that efficiency of flare (FE) shall be measured in a yearly basis if enclosed flare is used and in case the yearly measurement of FE is not performed, default value of 90% should be used.

Since the flare exhaust gas analysis with KOLAS accreditation was made in quarterly, analysis results on 17/12/2010 were applied as FE respectively if the flaring temperature exceeds 600°C. If the flaring temperature recorded less than 600°C, the efficiency was regarded as 0% for conservativeness.

Considering the operational condition, the content analysis of each flare's exhaust gas was conducted by 3<sup>rd</sup> party (Institute of Industrial Pollution Co. Ltd) in 18/03/2011, 22/06/2011, and 14/10/2011. Furthermore, additional analysis was made in 16/08/2011 and 16/12/2011, for commonly used flare of #4, #5 and #6. Detailed results and FE application are as follows;



|          | Date of analysis      | Result of analysis<br>(ppm CH <sub>4</sub> ) | FE application over 600°C |       |
|----------|-----------------------|--|---------------------------|-------|
| #1 Flare | 17/12/2010 (at 603°C) | 21.9   | 01/01/2011 ~ 17/03/2011   | 99.9% |
|          | 18/03/2011 (at 605°C) | 28.8   | 18/03/2011 ~ 21/06/2011   |       |
|          | 22/06/2011 (at 603°C) | 15.0   | 22/06/2011 ~ 13/10/2011   |       |
|          | 14/10/2011 (at 598°C) | 15.9   | 14/10/2011 ~ 31/12/2011   |       |
| #2 Flare | 17/12/2010 (at 581°C) | 112.4  | 01/01/2011 ~ 17/03/2011   | 99.9% |
|          | 18/03/2011 (at 600°C) | 68.9   | 18/03/2011 ~ 21/06/2011   |       |
|          | 22/06/2011 (at 604°C) | 12.2   | 22/06/2011 ~ 13/10/2011   |       |
|          | 14/10/2011 (at 601°C) | 9.1  | 14/10/2011 ~ 31/12/2011   |       |
| #3 Flare | 17/12/2010 (at 599°C) | 55.9   | 01/01/2011 ~ 17/03/2011   | 99.9% |
|          | 18/03/2011 (at 608°C) | 6.3  | 18/03/2011 ~ 21/06/2011   |       |
|          | 22/06/2011 (at 608°C) | 21.6   | 22/06/2011 ~ 13/10/2011   |       |
|          | 14/10/2011 (at 602°C) | 7.4  | 14/10/2011 ~ 31/12/2011   |       |
| #4 Flare | 17/12/2010 (at 600°C) | 51.2   | 01/01/2011 ~ 17/03/2011   | 99.9% |
|          | 18/03/2011 (at 602°C) | 22.9   | 18/03/2011 ~ 21/06/2011   |       |
|          | 22/06/2011 (at 598°C) | 154.0  | 22/06/2011 ~ 15/08/2011   |       |
|          | 16/08/2011 (at 601°C) | 14.3   | 16/08/2011 ~ 13/10/2011   |       |
|          | 14/10/2011 (at 602°C) | 31.2   | 14/10/2011 ~ 31/12/2011   |       |
| #5 Flare | 17/12/2010 (at 599°C) | 7.7  | 01/01/2011 ~ 17/03/2011   | 99.9% |
|          | 18/03/2011 (at 610°C) | 4.4  | 18/03/2011 ~ 21/06/2011   |       |
|          | 22/06/2011 (at 610°C) | 6.7  | 22/06/2011 ~ 13/10/2011   |       |
|          | 14/10/2011 (at 599°C) | 4.0  | 14/10/2011 ~ 15/12/2011   |       |
|          | 16/12/2011 (at 604°C) | 28.9   | 16/12/2011 ~ 31/12/2011   |       |
| #6 Flare | 17/12/2010 (at 599°C) | 4.6  | 01/01/2011 ~ 17/03/2011   | 99.9% |
|          | 18/03/2011 (at 606°C) | 10.2   | 18/03/2011 ~ 21/06/2011   |       |
|          | 22/06/2011 (at 610°C) | 4.0  | 22/06/2011 ~ 13/10/2011   |       |
|          | 14/10/2011 (at 603°C) | 8.5  | 14/10/2011 ~ 15/12/2011   |       |
|          | 16/12/2011 (at 601°C) | 2.2  | 16/12/2011 ~ 31/12/2011   |       |

Table 5 Summary of flare exhaust gas analysis results

In ACM0001 (Version 04), FE should be calculated by analyzing methane contents of the flare emissions at least on a yearly basis for enclosed flares. Considering the frequency stipulated in methodology, above FEs are appropriately applied. Furthermore, as explained earlier, FE of 0% applied when the temperature is below 600°C even the above results provide that there were no methane at 600°C of flaring temperature and this is conservative approach.

#### Related meters

| ID    | Serial Number | Manufacturer | Description                     | Remarks |
|-------|---------------|--------------|---------------------------------|---------|
| TC-01 | 07014281      | Wise         | Flaring temperature of #1 flare |         |
| TC-02 | 07014283      | Wise         | Flaring temperature of #2 flare |         |
| TC-03 | 07014280      | Wise         | Flaring temperature of #3 flare |         |
| TC-04 | 07014282      | Wise         | Flaring temperature of #4 flare |         |
| TC-05 | 07014284      | Wise         | Flaring temperature of #5 flare |         |
| TC-06 | 07014285      | Wise         | Flaring temperature of #6 flare |         |

#### Calibration of meters

All meters were calibrated by authorized 3<sup>rd</sup> party or manufacturer. In case the calibration was made after the required calibration frequency, paragraph 238 of “Clean Development Mechanism Validation and



Verification Standard (Version 02.0)” was applied during the corresponding period. Detailed information is as follows;

| ID              | Date of Last Calibration | Calibration Due Date | Date of Calibration | Remarks  |
|-----------------|--------------------------|----------------------|---------------------|--|
| FT-01           | 16/12/2009               | 16/12/2010           | 02/02/2011          | P 238 (a)* applied from “calibration due date” to “date of calibration”  |
|                 | 02/02/2011               | 02/02/2012           | 09/12/2011          |  |
| FT-02 (DPT)     | 06/05/2010               | 06/05/2011           | 26/09/2011          | P 238 (a)* applied from “calibration due date” to “date of calibration”. |
| FT-04           | 03/11/2009               | 03/11/2010           | 02/02/2011          | P 238 (a)* applied from “calibration due date” to “date of calibration”. |
|                 | 02/02/2011               | 02/02/2012           | 09/12/2011          |  |
| FT-05           | 16/12/2009               | 16/12/2010           | 02/02/2011          | P 238 (a)* applied from “calibration due date” to “date of calibration”. |
|                 | 02/02/2011               | 02/02/2012           | 09/12/2011          |  |
| FT-06           | 03/11/2009               | 03/11/2010           | 02/02/2011          | P 238 (a)* applied from “calibration due date” to “date of calibration”. |
|                 | 02/02/2011               | 02/02/2012           | 09/12/2011          |  |
| FT-07           | 03/11/2009               | 03/11/2010           | 02/02/2011          | P 238 (a)* applied from “calibration due date” to “date of calibration”. |
|                 | 02/02/2011               | 02/02/2012           | 09/12/2011          |  |
| FT-08           | 16/12/2009               | 16/12/2010           | 02/02/2011          | P 238 (a)* applied from “calibration due date” to “date of calibration”. |
|                 | 02/02/2011               | 02/02/2012           | 29/09/2011          |  |
| FT-09           | 03/11/2009               | 03/11/2010           | 02/02/2011          | P 238 (a)* applied from “calibration due date” to “date of calibration”. |
|                 | 02/02/2011               | 02/02/2012           | 09/12/2011          |  |
| FT-10           | 24/11/2010               | 24/11/2011           | 07/10/2011          |  |
| FT-03 (Reserve) | 16/12/2009               | 16/12/2010           | 02/02/2011          | P 238 (a)* applied from “calibration due date” to “date of calibration”. |
|                 | 02/02/2011               | 02/02/2012           | 29/09/2011          |  |
| 700A            | 16/12/2009               | 16/12/2010           | 02/02/2011          | P 238 (a)* applied from “calibration due date” to “date of calibration”. |
|                 | 02/02/2011               | 02/02/2012           | 29/09/2011          |  |
| 900A            | 03/11/2009               | 03/11/2010           | 02/02/2011          | P 238 (a)* applied from “calibration due date” to “date of calibration”. |
|                 | 02/02/2011               | 02/02/2012           | 29/09/2011          |  |
| FT-08 (old)     | 25/11/2010               | 25/11/2011           | 27/10/2011          |  |



|                 |                                |                                |                                |  |
|-----------------|--------------------------------|--------------------------------|--------------------------------|--|
| FT-09 (old)     | 25/11/2010                     | 25/11/2011                     | 26/09/2011                     |  |
| GA-01           | 17/11/2010                     | 17/11/2011                     | 14/11/2011                     |  |
| GA-02           | 17/11/2010                     | 17/11/2011                     | 14/11/2011                     |  |
| GA-03 (Reserve) | 17/11/2010                     | 17/11/2011                     | 14/11/2011                     |  |
| Reserve GA      | 17/11/2010                     | 17/11/2011                     | 14/11/2011                     |  |
| TT-02           | 06/07/2010                     | 06/07/2011                     | 20/09/2011                     | P 238 (a)* applied from “calibration due date” to “date of calibration”. |
| TT-03           | 12/11/2010(S)<br>13/12/2010(T) | 12/11/2011(S)<br>13/12/2011(T) | 24/10/2011(S)<br>24/10/2011(T) | (S): sensor<br>(T): transmitter  |
| TT-04           | 15/06/2009                     | 15/06/2010                     |                                |  |
| TT-10           | 06/07/2010                     | 06/07/2011                     | 24/10/2011                     | P 238 (a)* not applied   |
| PT-02           | 25/11/2010                     | 25/11/2011                     | 26/09/2011                     |  |
| PT-05           | 12/11/2010                     | 12/11/2011                     | 27/10/2011                     |  |
| PT-06           | 12/11/2010                     | 12/11/2011                     | 27/10/2011                     |  |
| PT-10           | 01/07/2010                     | 01/07/2011                     | 25/10/2011                     | P 238 (a)* not applied   |
| WH-01           | 11/07/2007                     | 11/01/2011                     | 28/06/2010                     |  |
| WH-03           | 17/08/2006                     | 17/08/2013                     |                                | Meter maintenance including calibration is under control of KEPCO.       |
| WH-05           | 01/05/2005                     | 01/05/2012                     | 15/04/2011                     |  |
| WH-06           | 01/10/2003                     | 01/10/2010                     | 04/05/2011                     | P 238 (a)* applied from “calibration due date” to “date of calibration”. |
| TC-01           | 12/11/2010                     | 12/11/2011                     | 20/09/2011                     |  |
| TC-02           | 12/11/2010                     | 12/11/2011                     | 20/09/2011                     |  |
| TC-03           | 12/11/2010                     | 12/11/2011                     | 21/10/2011                     |  |
| TC-04           | 12/11/2010                     | 12/11/2011                     | 21/10/2011                     |  |
| TC-05           | 12/11/2010                     | 12/11/2011                     | 21/10/2011                     |  |
| TC-06           | 12/11/2010                     | 12/11/2011                     | 20/09/2011                     |  |

\* Paragraph 238 (a) of “Clean Development Mechanism Validation and Verification Standard (Version 02.0)”

[http://cdm.unfccc.int/Reference/Standards/accr\\_stan02.pdf#page=48](http://cdm.unfccc.int/Reference/Standards/accr_stan02.pdf#page=48)

### Fossil fuel usage

The purchased amount of LPG, which evidenced by invoices from 2010 to 2011, was regarded as LPG usage. In case there was no purchased amount in 2010, invoice for 2009 applied for conservativeness.

### Data Management

The accumulated data from control station was analyzed for the verification of this project. All required guides were stated in SLC’s internal procedure. These include data handling protocol, monitoring procedure, operation & maintenance guide, problem solving procedure, etc.

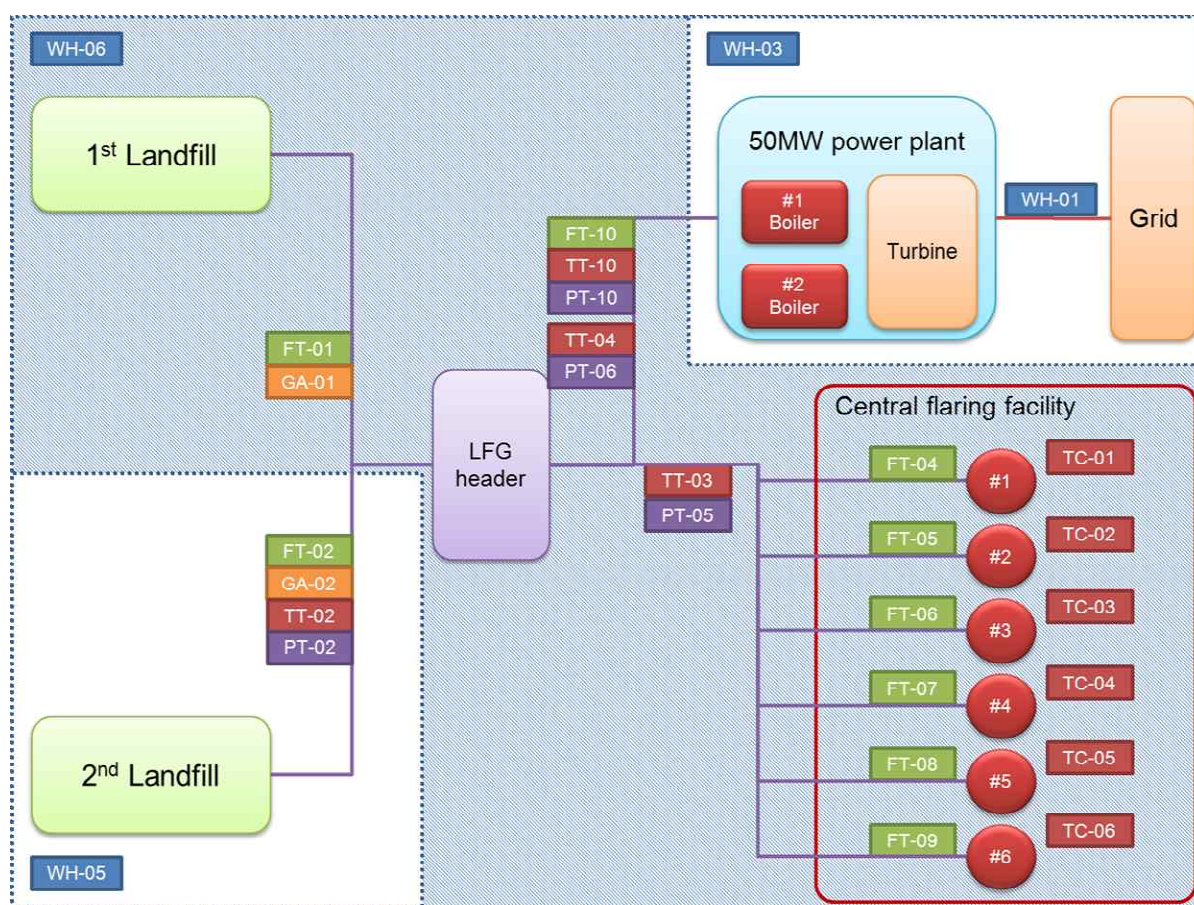


Figure 5 Line Diagram of Monitoring Points

## Organizational Structure

SLC is responsible for all CDM monitoring related works. It supervises the private operator of 50MW power plant, Ecoenergy, which also commissioned to operate central flaring facility and LFG capturing system of 1<sup>st</sup> and 2<sup>nd</sup> landfill from SLC.

Ecoenergy is responsible for operation of 50MW power plant, central flaring facility and LFG capturing system of 1<sup>st</sup> and 2<sup>nd</sup> landfill.

## Roles and Responsibilities of Personnel

| Organization | Department                               | Position | Name         | Roles   |
|--------------|--|----------|--------------|---|
| SLC          | CEO                                      |          | Chunkoo CHO  | Approval of monthly calculation result & monitoring report                |
|              | Executive Director (Project Development) |          | Nakbin KIM   | Approval calculation result & monitoring report                           |
|              | Climate Change Business Division         | Head     | Jongwan KIM  | Approval calculation result & monitoring report                           |
|              |  | Manager  | Lae Bong HAN | Approval of daily calculation result & supervision of facility management |





|           |                            |                   |                |   |
|-----------|----------------------------|-------------------|----------------|---|
|           |                            | Staff             | WonGu HWANG    | Data analysis, calculation & arrangement of monitoring report         |
|           |                            | Assistant Manager | HyunSeong SHIN | Data aggregation & facility management                                |
| Ecoenergy | CEO                        |                   | DongIl CHO     | Management & operation of 50MW power plant & central flaring facility |
|           | Power Generation Div.      | Team manager      | KyungYong SONG | Management & operation of 50MW power plant                            |
|           | Facility Management Centre | Part manager      | YongMin KIM    | Management & operation of central flaring facility                    |

Table 6 Major responsible personnel and its rules

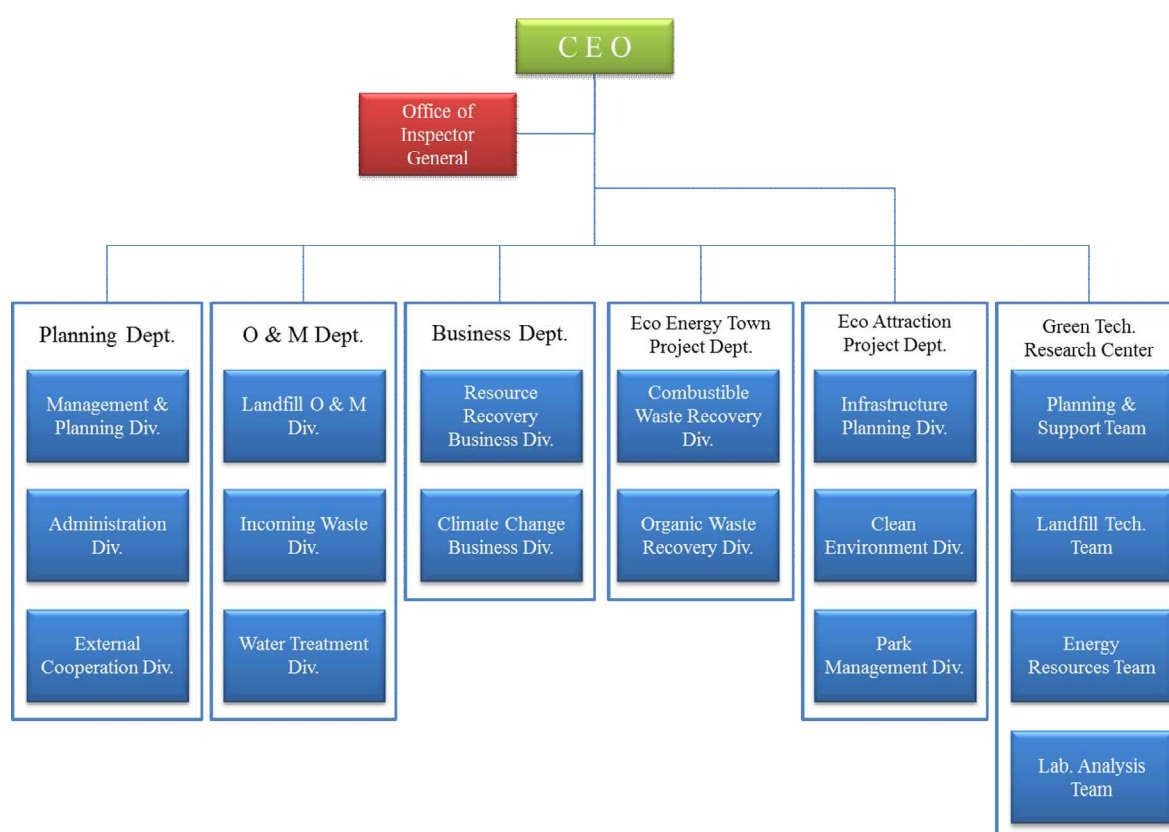


Figure 6 Organization Chart of SLC

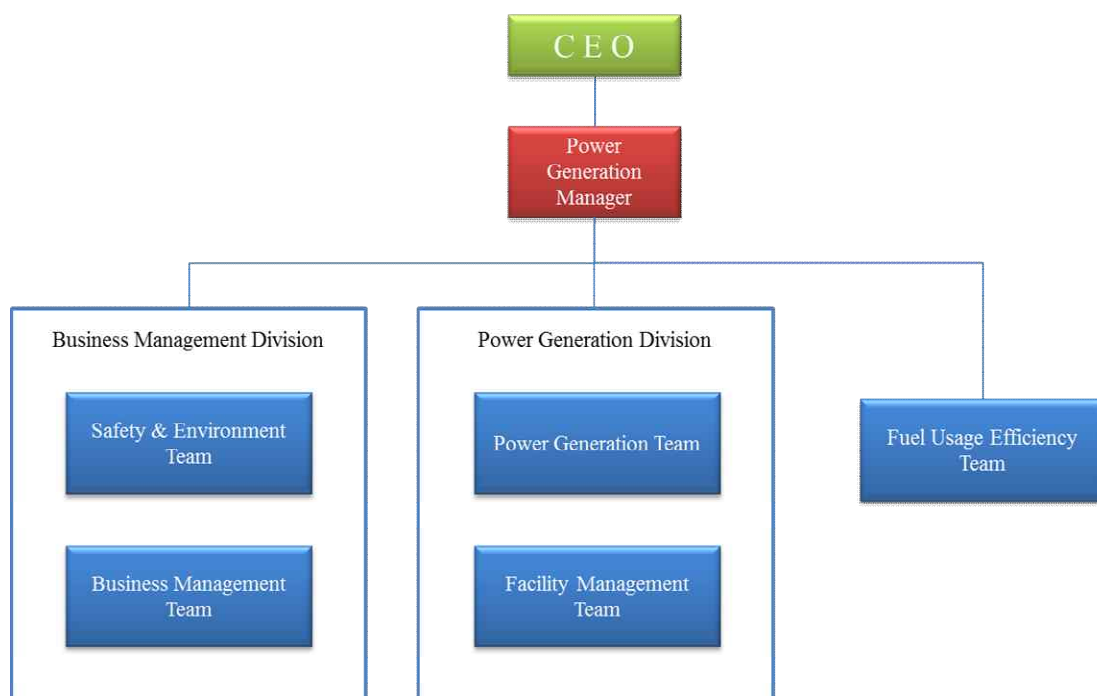


Figure 7 Organization Chart of Ecoenergy

## Emergency Procedures

In order to handle emergency situations, SLC prepares internal ‘Emergency Procedures’, which updated every year to compensate changes of site conditions.

For emergency in 50MW power plant, Ecoenergy includes emergency plan in its ‘Maintenance & Operational Plan’ which also updated and reported to SLC on a yearly basis.

|                 | Fire  | LFG leakage   |
|-----------------|---|---|
| Duty            | Prevent fire expansion and extinguishing  | Prevent fire and (or) explosion   |
| Report system   | Discoverer -> Managing Partner -> General manager -> CEO  | Discoverer -> General manager -> Executive Director -> CEO  |
| Countermeasures | <ul style="list-style-type: none"> <li>- Use fire extinguisher located nearby road</li> <li>- Stop LFG capture</li> <li>- Use watering cart</li> <li>- Use soil to prevent O<sub>2</sub> supply</li> <li>- Contact neighbouring fire station (Geom am 032-568-7119, Seo bu 032-565-8119)</li> </ul> | <ul style="list-style-type: none"> <li>- Stop LFG capture</li> <li>- Isolate leaking part from other capturing pipeline</li> <li>- Isolate leaking part from flammable things</li> <li>- Contact neighbouring fire station (Geom am 032-568-7119, Seo bu 032-565-8119) if needed</li> </ul> |
| Check frequency | Per Day   | Per month   |

Table 7 Typical emergency cases and its countermeasures

**SECTION D. Data and parameters****D.1. Data and parameters fixed ex ante or at renewal of crediting period**

|                           |   |
|---------------------------|---|
| <b>Data/Parameter</b>     | <b>GWP<sub>CH4</sub></b>                                |
| <b>Unit</b>               | <b>tCO<sub>2</sub>/tCH<sub>4</sub></b>                  |
| <b>Description</b>        | Global warming potential for methane (CH <sub>4</sub> ) |
| <b>Source of data</b>     | Default value in IPCC & ACM0001 (Version 04)            |
| <b>Value(s) applied</b>   | 21  |
| <b>Purpose of data</b>    | Calculation of baseline emissions                       |
| <b>Additional comment</b> | N/A   |

|                           |  |
|---------------------------|--|
| <b>Data/Parameter</b>     | <b>AF</b>  |
| <b>Unit</b>               | <b>%</b>   |
| <b>Description</b>        | Adjustment factor for calculating baseline emission.                                     |
| <b>Source of data</b>     | PDD  |
| <b>Value(s) applied</b>   | 61.15  |
| <b>Purpose of data</b>    | Calculation of baseline emissions  |
| <b>Additional comment</b> | Ex-ante calculation in accordance with ACM0001 (Version 04) for entire crediting period. |

|                           |  |
|---------------------------|--|
| <b>Data/Parameter</b>     | <b>EF</b>  |
| <b>Unit</b>               | <b>tCO<sub>2</sub>/MWh</b>   |
| <b>Description</b>        | Grid CO <sub>2</sub> emission factor   |
| <b>Source of data</b>     | PDD  |
| <b>Value(s) applied</b>   | 0.5666   |
| <b>Purpose of data</b>    | Calculation of baseline emissions  |
| <b>Additional comment</b> | Ex-ante calculation in accordance with ACM0002 (Version 06) for entire crediting period. |

|                           |                                       |
|---------------------------|---------------------------------------|
| <b>Data/Parameter</b>     | <b>D<sub>CH4</sub></b>                |
| <b>Unit</b>               | <b>tCH<sub>4</sub>/Nm<sup>3</sup></b> |
| <b>Description</b>        | Density of methane                    |
| <b>Source of data</b>     | Default value in ACM0001 (Version 04) |
| <b>Value(s) applied</b>   | 0.0007168                             |
| <b>Purpose of data</b>    | Calculation of baseline emissions     |
| <b>Additional comment</b> | N/A                                   |



## D.2. Data and parameters monitored

| Data/Parameter  | LFG <sub>total,y</sub>   |   |               |         |
|---|--|---|---------------|---------|
| Unit  | Nm <sup>3</sup>  |   |               |         |
| Description   | Total amount of landfill gas captured in year y  |   |               |         |
| Measured/Calculated /Default  | Measured by flow meters (total of 2)   |   |               |         |
| Source of data  | MMI data;<br>The two flow meters, FT-01 and FT-02 are continuously measure the captured LFG from 1 <sup>st</sup> and 2 <sup>nd</sup> landfill. |   |               |         |
| Value(s) of monitored parameter   |  | Measured Value  | Applied Value | Remarks |
|   | Jan 2011   | 23,972,098  | 22,511,251    |         |
|   | Feb  | 20,951,935  | 19,433,145    |         |
|   | Mar  | 20,893,570  | 19,293,110    |         |
|   | Apr  | 21,869,983  | 19,807,737    |         |
|   | May  | 23,641,420  | 21,341,988    |         |
|   | Jun  | 20,477,807  | 19,393,715    |         |
|   | Jul  | 23,598,200  | 20,398,450    |         |
|   | Aug  | 24,306,413  | 21,303,298    |         |
|   | Sep  | 25,068,484  | 22,058,796    |         |
|   | Oct  | 27,211,639  | 26,560,570    |         |
|   | Nov  | 28,563,151  | 26,159,139    |         |
|   | Dec  | 29,856,496  | 28,140,011    |         |
|   | Total  | 290,411,196   | 266,401,210   |         |
|   | For measured value, please refer to the worksheet of ‘04_LFG’ of ‘SLC CDM Data Workbook Phase 6 (Raw)’.  |   |               |         |
| For applied value, please refer to the worksheet of ‘04_LFG’ of ‘SLC CDM Data Workbook Phase 6 (Version 0.41)’. |  |   |               |         |
| Monitoring equipment  | Item name  | FT-01   |               |         |
|   | Coverage   | LFG flow of 1 <sup>st</sup> landfill from 01/01/2011 to 09/10/2011 and from 15/12/2011 to 31/12/2011  |               |         |
|   | Type   | Thermal mass type flow meter  |               |         |
|   | Accuracy class   | ±[1% RDG +(0.5%FS + 0.02%/°C)]  |               |         |
|   | Serial number  | 27051601  |               |         |
|   | Calibration frequency  | 1 year  |               |         |
|   | Date of last calibration   | 02/02/2011, 09/12/2011  |               |         |
|   | Validity   | Valid from 02/02/2011 to 08/12/2012   |               |         |
|   | Item name  | 900A  |               |         |
|   | Coverage   | LFG flow of 1 <sup>st</sup> landfill from 11/09/2011 to 15/12/2011 (temporally installed in order to prevent measuring gap caused by 3 <sup>rd</sup> party calibration) |               |         |
|   | Type   | Thermal mass type flow meter  |               |         |
|   | Accuracy class   | ±[1% RDG +(0.5%FS + 0.02%/°C)]  |               |         |
|   | Serial number  | 26050201  |               |         |
|   | Calibration frequency  | 1 year  |               |         |



|   |  |   |
|---|--|---|
|   | Date of last calibration   | 02/02/2011, 29/09/2011  |
|   | Validity   | Valid from 02/02/2011 to 28/09/2012   |
|   | Item name  | FT-02: DPT-02 (new)<br>from 01/01/2011 to 08/09/2011 and from<br>27/09/2011 to 31/12/2011 |
|   | Coverage   | LFG flow of 2 <sup>nd</sup> landfill  |
|   | Type   | V-cone type flow meter  |
|   | Accuracy class   | ±0.075%   |
|   | Serial number  | 9C03490109D   |
|   | Calibration frequency  | 1 year  |
|   | Date of last calibration   | 06/05/2010 , 26/09/2011   |
|   | Validity   | Valid from 06/05/2010 to 05/05/2011 and<br>from 26/09/2011 to 25/09/2012                  |
| Measuring/Reading/<br>Recording frequency | Continuous measuring & reading, hourly recording   |   |
| Calculation method<br>(if applicable)     | (FT-01) + (FT-02) or (900A) + (FT-02)  |   |
| QA/QC procedures                          | State-check is made by responsible staff of SLC on a daily basis<br>Regular maintenance is made by staff of Ecoenergy<br>Periodically calibrated by approved 3 <sup>rd</sup> party authority or manufacturer |   |
| Purpose of data                           | Calculation of baseline emissions  |   |
| Additional comment                        |  |   |



| Data/Parameter  | LFG <sub>flare,y</sub>  |                                     |               |         |
|---|---|-------------------------------------|---------------|---------|
| Unit  | Nm <sup>3</sup>   |                                     |               |         |
| Description   | Amount of landfill gas which flared in year y   |                                     |               |         |
| Measured/Calculated /Default  | Measured by flow meters (total of 6)  |                                     |               |         |
| Source of data  | MMI data;<br>The six flow meters, FT-04 to FT-09 are continuously measure the LFG flow of each flare    |                                     |               |         |
| Value(s) of monitored parameter   |   | Measured Value                      | Applied Value | Remarks |
|   | Jan 2011  | 2,050                               | 2,048         |         |
|   | Feb   | 39,903                              | 39,863        |         |
|   | Mar   | 2,965,890                           | 2,962,924     |         |
|   | Apr   | 539,999                             | 539,459       |         |
|   | May   | 2,167,244                           | 2,165,077     |         |
|   | Jun   | 10,955,343                          | 10,944,388    |         |
|   | Jul   | 2,074,104                           | 2,069,439     |         |
|   | Aug   | 2,354,253                           | 2,351,899     |         |
|   | Sep   | 2,214,692                           | 2,212,477     |         |
|   | Oct   | 6,728,503                           | 6,721,775     |         |
|   | Nov   | 4,027,855                           | 4,012,640     |         |
|   | Dec   | 8,170,512                           | 8,155,600     |         |
|   | Total   | 42,240,348                          | 42,177,589    |         |
|   | For measured value, please refer to the worksheet of ‘04_LFG’ of ‘SLC CDM Data Workbook Phase 6 (Raw)’. |                                     |               |         |
| For applied value, please refer to the worksheet of ‘04_LFG’ of ‘SLC CDM Data Workbook Phase 6 (Version 0.41)’. |   |                                     |               |         |
| Monitoring equipment  | Item name   | FT-04                               |               |         |
|   | Coverage  | LFG flow of #1 flare                |               |         |
|   | Type  | Thermal mass type flow meter        |               |         |
|   | Accuracy class  | ±[1% RDG +(0.5%FS + 0.02%/°C)]      |               |         |
|   | Serial number   | 28031701                            |               |         |
|   | Calibration frequency   | 1 year                              |               |         |
|   | Date of last calibration  | 02/02/2011, 09/12/2011              |               |         |
|   | Validity  | Valid from 02/02/2011 to 08/12/2012 |               |         |
|   | Item name   | FT-05                               |               |         |
|   | Coverage  | LFG flow of #2 flare                |               |         |
|   | Type  | Thermal mass type flow meter        |               |         |
|   | Accuracy class  | ±[1% RDG +(0.5%FS + 0.02%/°C)]      |               |         |
|   | Serial number   | 28012903                            |               |         |
|   | Calibration frequency   | 1 year                              |               |         |
|   | Date of last calibration  | 02/02/2011, 09/12/2011              |               |         |
|   | Validity  | Valid from 02/02/2011 to 08/12/2012 |               |         |
|   | Item name   | FT-06                               |               |         |
|   | Coverage  | LFG flow of #3 flare                |               |         |
|   | Type  | Thermal mass type flow meter        |               |         |
|   | Accuracy class  | ±[1% RDG +(0.5%FS + 0.02%/°C)]      |               |         |
|   | Serial number   | 28042402                            |               |         |





|  |                          |  |
|--|--------------------------|--|
|  | Calibration frequency    | 1 year   |
|  | Date of last calibration | 02/02/2011, 09/12/2011   |
|  | Validity                 | Valid from 02/02/2011 to 08/12/2012  |
|  | Item name                | FT-07  |
|  | Coverage                 | LFG flow of #4 flare   |
|  | Type                     | Thermal mass type flow meter   |
|  | Accuracy class           | $\pm[1\% \text{ RDG} + (0.5\% \text{ FS} + 0.02\% / ^\circ\text{C})]$                      |
|  | Serial number            | 28042401   |
|  | Calibration frequency    | 1 year   |
|  | Date of last calibration | 02/02/2011, 09/12/2011   |
|  | Validity                 | Valid from 02/02/2011 to 08/12/2012  |
|  | Item name                | FT-08  |
|  | Coverage                 | LFG flow of #5 flare<br>from 01/01/2011 to 19/10/2011 and from<br>15/12/2011 to 31/12/2011 |
|  | Type                     | Thermal mass type flow meter   |
|  | Accuracy class           | $\pm[1\% \text{ RDG} + (0.5\% \text{ FS} + 0.02\% / ^\circ\text{C})]$                      |
|  | Serial number            | 28012904   |
|  | Calibration frequency    | 1 year   |
|  | Date of last calibration | 02/02/2011, 29/09/2011   |
|  | Validity                 | Valid from 02/02/2011 to 28/09/2012  |
|  | Item name                | FT-08 (reserve)  |
|  | Coverage                 | LFG flow of #5 flare (reserve)<br>from 30/09/2011 to 15/12/2011                            |
|  | Type                     | Pitot-tube type flow meter   |
|  | Accuracy class           | $\pm 0.1\%$  |
|  | Serial number            | A1F3913T   |
|  | Calibration frequency    | 1 year   |
|  | Date of last calibration | 25/11/2010, 27/10/2011   |
|  | Validity                 | Valid from 25/11/2010 to 26/10/2012  |
|  | Item name                | FT-09  |
|  | Coverage                 | LFG flow of #6 flare   |
|  | Type                     | Thermal mass type flow meter   |
|  | Accuracy class           | $\pm[1\% \text{ RDG} + (0.5\% \text{ FS} + 0.02\% / ^\circ\text{C})]$                      |
|  | Serial number            | 28031702   |
|  | Calibration frequency    | 1 year   |
|  | Date of last calibration | 02/02/2011, 09/12/2011   |
|  | Validity                 | Valid from 02/02/2011 to 08/12/2012  |



|  |  |
|--|--|
| <b>Measuring/Reading/Recording frequency</b> | Continuous measuring & reading, hourly recording   |
| <b>Calculation method (if applicable)</b>    | (FT-04) + (FT-05) + (FT-06) + (FT-07) + (FT-08 or DPT-08) + (FT-09 or FT-08)   |
| <b>QA/QC procedures</b>                      | State-check is made by responsible staff of SLC on a daily basis<br>Regular maintenance is made by staff of Ecoenergy<br>Periodically calibrated by approved 3 <sup>rd</sup> party authority or manufacturer |
| <b>Purpose of data</b>                       | Calculation of baseline emissions  |
| <b>Additional comment</b>                    |  |



|   |  |                                     |   |         |
|---|--|-------------------------------------|---|---------|
| Data/Parameter  | LFG <sub>electricity,y</sub>   |                                     |   |         |
| Unit  | Nm <sup>3</sup>  |                                     |   |         |
| Description   | Amount of landfill gas which fed to 50MW power plant in year y   |                                     |   |         |
| Measured/Calculated /Default  | Measured by flow meter   |                                     |   |         |
| Source of data  | DCS data:<br>The flow meter, FT-10 is continuously measure the LFG flow of the 50MW power plant  |                                     |   |         |
| Value(s) of monitored parameter   |  | Measured Value                      | Applied Value   | Remarks |
|   | Jan 2011   | 23,970,048                          | 22,509,203  |         |
|   | Feb  | 20,912,032                          | 19,393,282  |         |
|   | Mar  | 17,927,680                          | 16,330,186  |         |
|   | Apr  | 21,329,984                          | 19,268,278  |         |
|   | May  | 21,474,176                          | 19,176,911  |         |
|   | Jun  | 9,522,464                           | 8,449,327   |         |
|   | Jul  | 21,524,096                          | 18,329,012  |         |
|   | Aug  | 21,952,160                          | 18,951,399  |         |
|   | Sep  | 22,853,792                          | 19,846,318  |         |
|   | Oct  | 20,483,136                          | 19,838,796  |         |
|   | Nov  | 24,535,296                          | 22,146,498  |         |
|   | Dec  | 21,686,464                          | 19,984,411  |         |
|   | Total  | 248,171,328                         | 224,223,621   |         |
|   | Monitoring equipment   | Item name                           | FT-10<br>from 01/01/2011 to 31/12/2011 except 5 days(from 27/07/2011 to 28/07/2011 and from 05/10/2011 to 09/10/2011) |         |
| Coverage  |  | LFG flow of 50MW power plant        |   |         |
| Type  |  | Ultrasonic type flow meter          |   |         |
| Accuracy class  |  | ±1%                                 |   |         |
| Serial number   |  | 465                                 |   |         |
| Calibration frequency   |  | 1 year                              |   |         |
| Date of last calibration  |  | 24/11/2010, 07/10/2011              |   |         |
| Validity  |  | Valid from 24/11/2010 to 06/10/2012 |   |         |
| For measured value, please refer to the worksheet of ‘04_LFG’ of ‘SLC CDM Data Workbook Phase 6 (Raw)’.         |  |                                     |   |         |
| For applied value, please refer to the worksheet of ‘04_LFG’ of ‘SLC CDM Data Workbook Phase 6 (Version 0.41)’. |  |                                     |   |         |
| Measuring/Reading/ Recording frequency  | Continuous measuring & reading, hourly recording   |                                     |   |         |
| Calculation method (if applicable)  | Not applicable   |                                     |   |         |
| QA/QC procedures  | State-check is made by responsible staff of SLC on a daily basis<br>Regular maintenance is made by staff of Ecoenergy<br>Periodically calibrated by approved 3 <sup>rd</sup> party authority |                                     |   |         |
| Purpose of data   | Calculation of baseline emissions  |                                     |   |         |
| Additional comment  |  |                                     |   |         |



|  |   |  |               |         |
|--|---|--|---------------|---------|
| Data/Parameter   | W <sub>CH4,y</sub>  |  |               |         |
| Unit   | % (Nm <sup>3</sup> CH <sub>4</sub> / Nm <sup>3</sup> LFG)   |  |               |         |
| Description  | Methane fraction of LFG in year y   |  |               |         |
| Measured/Calculated /Default   | Measured by methane gas analyzers (total of 2)  |  |               |         |
| Source of data   | MMI data:<br>The methane gas analyzers, GA-01 and GA-02 are continuously measure the methane concentration of LFG from 1 <sup>st</sup> and 2 <sup>nd</sup> landfill |  |               |         |
| Value(s) of monitored parameter  |   | Measured Value   | Applied Value | Remarks |
|  | Jan 2011  | 45.0   | 44.8          |         |
|  | Feb   | 45.6   | 45.3          |         |
|  | Mar   | 46.9   | 46.5          |         |
|  | Apr   | 46.8   | 46.7          |         |
|  | May   | 47.8   | 47.6          |         |
|  | Jun   | 48.2   | 48.1          |         |
|  | Jul   | 51.2   | 50.9          |         |
|  | Aug   | 50.2   | 50.0          |         |
|  | Sep   | 46.7   | 46.5          |         |
|  | Oct   | 45.9   | 45.9          |         |
|  | Nov   | 46.8   | 46.4          |         |
|  | Dec   | 46.0   | 45.4          |         |
|  | Average   | 47.3   | 47.0          |         |
|  | For measured value, please refer to the worksheet of ‘05_wCH4’ of ‘SLC CDM Data Workbook Phase 6 (Raw)’.  |  |               |         |
| For applied value, please refer to the worksheet of ‘05_wCH4’ of ‘SLC CDM Data Workbook Phase 6 (Version 0.41)’. |   |  |               |         |
| Monitoring equipment   | Item name   | GA-01  |               |         |
|  | Coverage  | CH <sub>4</sub> fraction of LFG at 1 <sup>st</sup> landfill from 01/01/2011 to 03/11/2011 and 08/11/2011 to 01/12/2011 |               |         |
|  | Type  | Infrared gas analyser  |               |         |
|  | Accuracy class  | Linearity: ±1% of FS<br>Repeatability: ±0.5% of FS   |               |         |
|  | Serial number   | A2B4359T   |               |         |
|  | Calibration frequency   | 1 year   |               |         |
|  | Date of last calibration  | 17/11/2010, 14/11/2011   |               |         |
|  | Validity  | Valid from 17/11/2010 to 13/11/2012.   |               |         |
|  | Item name   | GA-02  |               |         |
|  | Coverage  | CH <sub>4</sub> fraction of LFG at 2 <sup>nd</sup> landfill from 01/01/2011 to 03/11/2011 and 08/11/2011 to 31/12/2011 |               |         |
|  | Type  | Infrared gas analyser  |               |         |
|  | Accuracy class  | Linearity: ±1% of FS<br>Repeatability: ±0.5% of FS   |               |         |
|  | Serial number   | A4J0063T   |               |         |
|  | Calibration frequency   | 1 year   |               |         |
|  | Date of last calibration  | 17/11/2010, 14/11/2011   |               |         |



|                                       |  |   |
|---------------------------------------|--|---|
|                                       | Validity   | Valid from 17/11/2010 to 13/11/2012.  |
|                                       | Item name  | GA-03(reserve)  |
|                                       | Coverage   | CH <sub>4</sub> fraction of LFG at 1 <sup>st</sup> landfill from 03/11/2011 to 08/11/2011 and 01/12/2011 to 17/02/2012(reserve) |
|                                       | Type   | Infrared gas analyser   |
|                                       | Accuracy class   | Linearity: ±1% of FS<br>Repeatability: ±0.5% of FS  |
|                                       | Serial number  | N6E2427T  |
|                                       | Calibration frequency  | 1 year  |
|                                       | Date of last calibration   | 17/11/2010, 14/11/2011  |
|                                       | Validity   | Valid from 17/11/2010 to 13/11/2012 .   |
|                                       | Item name  | Reserve GA  |
|                                       | Coverage   | CH <sub>4</sub> fraction of LFG at 2 <sup>nd</sup> landfill from 03/11/2011 to 08/11/2011 (reserve)                             |
|                                       | Type   | Infrared gas analyser   |
|                                       | Accuracy class   | Linearity: ±1% of FS<br>Repeatability: ±0.5% of FS  |
|                                       | Serial number  | A4M0708T  |
|                                       | Calibration frequency  | 1 year  |
|                                       | Date of last calibration   | 17/11/2010, 14/11/2011  |
|                                       | Validity   | Valid from 17/11/2010 to 13/11/2012.  |
| Measuring/Reading/Recording frequency | Continuous measuring & reading, hourly recording   |   |
| Calculation method (if applicable)    | $\frac{(FT - 01) \times (GA - 01) + (FT - 02) \times (GA - 02)}{LFG_{total}}$  |   |
| QA/QC procedures                      | State-check is made by responsible staff of SLC on a daily basis<br>Regular maintenance is made by staff of Ecoenergy<br>Periodically calibrated by approved 3 <sup>rd</sup> party authority |   |
| Purpose of data                       | Calculation of baseline emissions  |   |
| Additional comment                    |  |   |



|                                 |   |  |  |
|---------------------------------|---|--|--|
| Data/Parameter                  | FE  |  |  |
| Unit                            | %   |  |  |
| Description                     | Efficiency of flare   |  |  |
| Measured/Calculated /Default    | Calculated based on laboratory analysis result  |  |  |
| Source of data                  | Test report made by 3 <sup>rd</sup> party authority which mentioning the result of exhaust gas analysis for each flares.<br>Thermocouples installed in order to measure flaring temperature in each flares (total of 6)               |  |  |
| Value(s) of monitored parameter | <b>0% or 99.9%</b><br>- <b>0%</b> , in case flaring temperature is below 600°C<br>- <b>99.9%</b> , in case flaring temperature is above 600°C and the result of exhaust gas analysis is appropriate (below 250 ppm CH <sub>4</sub> ). |  |  |
| Monitoring equipment            | Item name   | FE   |  |
|                                 | Coverage  | Flaring efficiency of each flares  |  |
|                                 | Type  | Accredited 3 <sup>rd</sup> party laboratory analysis result  |  |
|                                 | Accuracy class  | -  |  |
|                                 | Serial number   | Certification No. 39062201, 10031101, 10071201, 10082701, 10120901<br>* For detailed results, please refer to Table 7 in page 18 |  |
|                                 | Calibration frequency   | -  |  |
|                                 | Date of last calibration  | -  |  |
|                                 | Validity  |  |  |
|                                 | Item name   | TC-01, 02, 06  |  |
|                                 | Coverage  | Flaring temperature of each flares   |  |
|                                 | Type  | Thermocouple, k-type   |  |
|                                 | Accuracy class  | ±(B) 0.3 class   |  |
|                                 | Serial number   | TC-01: 07014280 TC-02: 07014281<br>TC-06: 07014285   |  |
|                                 | Calibration frequency   | 1 year   |  |
|                                 | Date of last calibration  | 12/11/2010, 20/09/2011   |  |
|                                 | Validity  | Valid from 12/11/2010 to 19/09/2012.   |  |
|                                 | Item name   | TC-03~05   |  |
|                                 | Coverage  | Flaring temperature of each flares   |  |
|                                 | Type  | Thermocouple, k-type   |  |
|                                 | Accuracy class  | ±(B) 0.3 class   |  |
|                                 | Serial number   | TC-03: 07014282 TC-04: 07014283<br>TC-06: 07014285   |  |
|                                 | Calibration frequency   | 1 year   |  |
|                                 | Date of last calibration  | 12/11/2010, 24/10/2011   |  |
|                                 | Validity  | Valid from 12/11/2010 to 23/10/2012.   |  |
|                                 | Measuring/Reading/ Recording frequency  | Periodic analysis was made for flare exhaust gas<br>Continuous measuring & reading, hourly recording for TC-01 to TC-06          |  |
|                                 | Calculation method (if applicable)  | Not applicable   |  |





|                           |  |
|---------------------------|--|
| <b>QA/QC procedures</b>   | State-check is made by responsible staff of SLC on a daily basis<br>Regular maintenance is made by staff of Ecoenergy<br>Periodically calibrated by approved 3 <sup>rd</sup> party authority |
| <b>Purpose of data</b>    | Calculation of baseline emissions  |
| <b>Additional comment</b> |  |



|  |   |   |
|--|---|---|
| <b>Data/Parameter</b>                  | <b>T</b>  |   |
| <b>Unit</b>                            | °C  |   |
| <b>Description</b>                     | Temperature of LFG  |   |
| <b>Measured/Calculated/Default</b>     | Measured  |   |
| <b>Source of data</b>                  | MMI / DCS data<br>The temperature transmitters, TT-02, 03, 04 and TT-10 are continuously measure the temperature of LFG for the flow normalization.   |   |
| <b>Value(s) of monitored parameter</b> | <b>0 ~ 66.0</b><br><br>For measured value, please refer to the worksheet of '08-1_T_flare' and '08-2_T_50MW' of 'SLC CDM Data Workbook Phase 6 (Raw)'.<br>For applied value, please refer to the worksheet of '08-1_T_flare' and '08-2_T_50MW' of 'SLC CDM Data Workbook Phase 6 (Version 0.41)'. |   |
| <b>Monitoring equipment</b>            | <b>Item name</b>  | TT-02   |
|  | <b>Coverage</b>   | Temperature of LFG captured from 2 <sup>nd</sup> landfill                                       |
|  | <b>Type</b>   | PT 100Ω   |
|  | <b>Accuracy class</b>   | ±0.2%   |
|  | <b>Serial number</b>  | WS1025016   |
|  | <b>Calibration frequency</b>  | 1 year  |
|  | <b>Date of last calibration</b>   | 06/07/2010, 20/09/2011  |
|  | <b>Validity</b>   | Valid from 06/07/2010 to 05/07/2011 and from 20/09/2011 to 19/09/2012                           |
|  | <b>Item name</b>  | TT-03   |
|  | <b>Coverage</b>   | Temperature of LFG which fed to flares  |
|  | <b>Type</b>   | PT 100Ω   |
|  | <b>Accuracy class</b>   | Transmitter : ±0.1%<br>RTD: ±0.1%   |
|  | <b>Serial number</b>  | A6B3331T  |
|  | <b>Calibration frequency</b>  | 1 year  |
|  | <b>Date of last calibration</b>   | Sensor: 12/11/2010, 24/10/2011<br>Transmitter: 13/12/2010, 24/10/2011                           |
|  | <b>Validity</b>   | Sensor: valid from 12/11/2010 to 23/10/2012<br>Transmitter: valid from 13/12/2010 to 23/10/2012 |
|  | <b>Item name</b>  | TT-04   |
|  | <b>Coverage</b>   | Temperature of LFG which fed to 50MW power plant  |
|  | <b>Type</b>   | Thermocouple E  |
|  | <b>Accuracy class</b>   | ±0.5%   |
|  | <b>Serial number</b>  | 099169  |
|  | <b>Calibration frequency</b>  | 1 year  |
|  | <b>Date of last calibration</b>   | 15/06/2009  |
|  | <b>Validity</b>   | Valid from 15/06/2009 to 14/06/2010   |



|  |  |   |
|--|--|---|
|  | Item name  | TT-10   |
|  | Coverage   | Temperature of LFG which fed to 50MW power plant                      |
|  | Type   | PT 100Ω   |
|  | Accuracy class   | ±0.2%   |
|  | Serial number  | WS1025017   |
|  | Calibration frequency  | 1 year  |
|  | Date of last calibration   | 06/07/2010, 24/10/2011  |
|  | Validity   | Valid from 06/07/2010 to 05/07/2011 and from 24/10/2011 to 23/10/2012 |
| <b>Measuring/Reading/Recording frequency</b> | Continuous measuring & reading, hourly recording   |   |
| <b>Calculation method (if applicable)</b>    | Not applicable   |   |
| <b>QA/QC procedures</b>                      | State-check is made by responsible staff of SLC on a daily basis<br>Regular maintenance is made by staff of Ecoenergy<br>Periodically calibrated by approved 3 <sup>rd</sup> party authority |   |
| <b>Purpose of data</b>                       | Calculation of baseline emissions  |   |
| <b>Additional comment</b>                    |  |   |



| Data/Parameter                  | P  |  |
|---------------------------------|--|--|
| Unit                            | mmAq   |  |
| Description                     | Pressure of LFG  |  |
| Measured/Calculated /Default    | Measured   |  |
| Source of data                  | MMI / DCS data<br>The pressure transmitters, PT-05 and PT-06 are continuously measure the pressure of LFG for the flow normalization.  |  |
| Value(s) of monitored parameter | <b>-487.16 ~ 2103.48</b><br><br>For measured value, please refer to the worksheet of '09-1_P_flare' and '09-2_P_50MW' of 'SLC CDM Data Workbook Phase 6 (Raw)'.<br>For applied value, please refer to the worksheet of '09-1_T_flare' and '09-2_T_50MW' of 'SLC CDM Data Workbook Phase 6 (Version 0.41)'. |  |
| Monitoring equipment            | Item name  | PT-02  |
|                                 | Coverage   | Pressure of LFG captured from 2 <sup>nd</sup> landfill |
|                                 | Type   | Smart gauge pressure transmitter                       |
|                                 | Accuracy class   | ±0.075% at span  |
|                                 | Serial number  | APT3200-3940244  |
|                                 | Calibration frequency  | 1 year   |
|                                 | Date of last calibration   | 25/11/2010, 26/09/2011                                 |
|                                 | Validity   | Valid from 03/12/2009 to 25/09/2012                    |
|                                 |  |  |
|                                 | Item name  | PT-05  |
|                                 | Coverage   | Pressure of LFG which fed to flares                    |
|                                 | Type   | Absolute pressure transmitter                          |
|                                 | Accuracy class   | ±0.5%  |
|                                 | Serial number  | A4J4159T   |
|                                 | Calibration frequency  | 1 year   |
|                                 | Date of last calibration   | 12/11/2010, 27/10/2011                                 |
|                                 | Validity   | Valid from 03/12/2009 to 26/10/2012                    |
|                                 |  |  |
|                                 | Item name  | PT-06  |
|                                 | Coverage   | Pressure of LFG which fed to 50MW power plant          |
|                                 | Type   | Absolute pressure transmitter                          |
|                                 | Accuracy class   | ±0.5%  |
|                                 | Serial number  | 0447-04111204003                                       |
|                                 | Calibration frequency  | 1 year   |
|                                 | Date of last calibration   | 12/11/2010, 27/10/2011                                 |
|                                 | Validity   | Valid from 12/11/2010 to 26/10/2012                    |
|                                 |  |  |
|                                 | Item name  | PT-10  |
| Coverage                        | Pressure of LFG which fed to 50MW power plant  |  |
| Type                            | Absolute pressure transmitter  |  |
| Accuracy class                  | ±0.5%  |  |
| Serial number                   | WS1025015  |  |
| Calibration frequency           | 1 year   |  |



|  |  |   |
|--|--|---|
|  | Date of last calibration   | 01/07/2010, 25/10/2011  |
|  | Validity   | Valid from 01/07/2010 to 30/06/2011 and from 25/10/2011 to 24/10/2012 |
| <b>Measuring/Reading/Recording frequency</b> | Continuous measuring & reading, hourly recording   |   |
| <b>Calculation method (if applicable)</b>    | Not applicable   |   |
| <b>QA/QC procedures</b>                      | State-check is made by responsible staff of SLC on a daily basis<br>Regular maintenance is made by staff of Ecoenergy<br>Periodically calibrated by approved 3 <sup>rd</sup> party authority |   |
| <b>Purpose of data</b>                       | Calculation of baseline emissions  |   |
| <b>Additional comment</b>                    |  |   |



|  |  |   |               |         |
|--|--|---|---------------|---------|
| Data/Parameter                         | EL <sub>EX,LFG</sub>   |   |               |         |
| Unit                                   | MWh  |   |               |         |
| Description                            | Total amount of electricity exported out of the project boundary   |   |               |         |
| Measured/Calculated /Default           | Measured   |   |               |         |
| Source of data                         | Log sheet & KPX data<br>The watt-hour meter, WH-01 is continuously measure the exported electricity and written in log sheet by operators  |   |               |         |
| Value(s) of monitored parameter        |  | Measured Value  | Applied Value | Remarks |
|  | Jan 2011   | 33,948.8  | 33,948.8      |         |
|  | Feb  | 30,174.3  | 30,174.3      |         |
|  | Mar  | 27,038.2  | 27,038.2      |         |
|  | Apr  | 31,586.6  | 31,586.6      |         |
|  | May  | 31,615.3  | 31,615.3      |         |
|  | Jun  | 13,813.8  | 13,813.8      |         |
|  | Jul  | 33,934.7  | 33,934.7      |         |
|  | Aug  | 33,944.4  | 33,944.4      |         |
|  | Sep  | 32,879.2  | 32,879.2      |         |
|  | Oct  | 27,287.0  | 27,287.0      |         |
|  | Nov  | 33,037.7  | 33,037.7      |         |
|  | Dec  | 29,413.3  | 29,413.3      |         |
|  | Total  | 358,673.3   | 358,673.3     |         |
|  | For measured value, please refer to the worksheet of '06-1_EL_exp' of 'SLC CDM Data Workbook Phase 6 (Raw)'.<br>For applied value, please refer to the worksheet of '06-1_EL_exp' of 'SLC CDM Data Workbook Phase 6 (Version 0.41)'. |   |               |         |
|  | Monitoring equipment   | Item name   | WH-01         |         |
| Coverage                               |  | Electricity exported from 50MW power plant  |               |         |
| Type                                   |  | Electronic watt-hour meter  |               |         |
| Accuracy class                         |  | 0.2 class   |               |         |
| Serial number                          |  | PR-0411A055-02  |               |         |
| Calibration frequency                  |  | 3.5 ± 0.5 years (according to the Operational Directive of Korean Electricity Market controlled by KPX) |               |         |
| Date of last calibration               |  | 11/07/2007, 28/06/2010  |               |         |
| Validity                               |  | Valid from 11/07/2007 to 26/12/2013   |               |         |
| Measuring/Reading/ Recording frequency | Continuous measuring & reading, hourly recording   |   |               |         |
| Calculation method (if applicable)     | Not applicable   |   |               |         |
| QA/QC procedures                       | State-check is made by responsible staff of SLC on a daily basis<br>Regular maintenance is made by staff of Ecoenergy<br>Periodically calibrated by approved 3 <sup>rd</sup> party authority   |   |               |         |
| Purpose of data                        | Calculation of baseline emissions  |   |               |         |
| Additional comment                     |  |   |               |         |



| Data/Parameter                  | EL <sub>IMP</sub>   |  |                |         |
|---------------------------------|---|--|----------------|---------|
| Unit                            | MWh   |  |                |         |
| Description                     | Total amount of electricity imported to the project boundary  |  |                |         |
| Measured/Calculated /Default    | Measured  |  |                |         |
| Source of data                  | SLC’s internal electricity surveillance system & KEPCO data<br>Total of 3 watt-hour meters are installed to monitor electricity imported. WH-03 is for imported electricity in 50MW power plant. WH-05 is for LFG blower of 2 <sup>nd</sup> landfill and WH-06 is for central flaring facility.   |  |                |         |
| Value(s) of monitored parameter |   | Measured Value   | Applied Value  | Remarks |
|                                 | Jan 2011  | 411.9  | 412.4          |         |
|                                 | Feb   | 380.1  | 382.0          |         |
|                                 | Mar   | 543.3  | 543.8          |         |
|                                 | Apr   | 374.7  | 378.4          |         |
|                                 | May   | 362.8  | 362.8          |         |
|                                 | Jun   | 634.4  | 634.4          |         |
|                                 | Jul   | 348.7  | 349.6          |         |
|                                 | Aug   | 356.5  | 357.2          |         |
|                                 | Sep   | 351.1  | 351.8          |         |
|                                 | Oct   | 529.3  | 529.3          |         |
|                                 | Nov   | 360.5  | 360.5          |         |
|                                 | Dec   | 449.0  | 449.1          |         |
|                                 | <b>Total</b>  | <b>5,102.1</b>   | <b>5,111.4</b> |         |
|                                 | For measured value, please refer to the worksheet of ‘06-2_EL_imp_50MW’, ‘06-3_EL_imp_LFG_mgt_centre’ and ‘06-4_EL_imp_2 <sup>nd</sup> _LF’ of ‘SLC CDM Data Workbook Phase 6 (Raw)’. For applied value, please refer to the worksheet of ‘06-2_EL_imp_50MW’, ‘06-3_EL_imp_LFG_mgt_centre’ and ‘06-4_EL_imp_2 <sup>nd</sup> _LF’ of ‘SLC CDM Data Workbook Phase 6 (Version 0.41)’. |  |                |         |
| Monitoring equipment            | Item name   | WH-03  |                |         |
|                                 | Coverage  | Electricity imported to the 50MW power plant                       |                |         |
|                                 | Type  | Electronic watt-hour meter   |                |         |
|                                 | Accuracy class  | 0.5 class  |                |         |
|                                 | Serial number   | 6063941  |                |         |
|                                 | Calibration frequency   | 7 years (according to the national standard)                       |                |         |
|                                 | Date of last calibration  | 17/08/2006   |                |         |
|                                 | Validity  | Valid from 17/08/2006 to 16/08/2013                                |                |         |
|                                 | Item name   | WH-05  |                |         |
|                                 | Coverage  | Electricity imported to the LFG blower of 2 <sup>nd</sup> landfill |                |         |
|                                 | Type  | Electronic watt-hour meter   |                |         |
|                                 | Accuracy class  | 0.5 class  |                |         |
|                                 | Serial number   | MFR0411001F  |                |         |
|                                 | Calibration frequency   | 7 years (according to the national standard)                       |                |         |



|  |                                       |   |
|--|---------------------------------------|---|
|  | Date of last calibration              | 01/05/2005, 15/04/2011  |
|  | Validity                              | Valid 05/2005 to 05/04/2018   |
|  | Item name                             | WH-06   |
|  | Coverage                              | Electricity imported to the central flaring facility  |
|  | Type                                  | Electronic watt-hour meter  |
|  | Accuracy class                        | 0.5 class   |
|  | Serial number                         | 2KLM001A  |
|  | Calibration frequency                 | 7 years (according to the national standard)  |
|  | Date of last calibration              | 01/10/2003, 05/04/2011  |
|  | Validity                              | Valid from 01/10/2003 to 30/09/2010 and from 05/04/2011 to 03/04/2018   |
|  |                                       | In order to deal with the uncertainty caused by delayed calibration, 0.5% of maximum permissible error applied in accordance with “Guidelines for assessing compliance with the calibration frequency requirements (version 01)” from 01/01/2011 to 03/05/2011. |
|  | Measuring/Reading/Recording frequency | Continuous measuring & reading, hourly recording  |
|  | Calculation method (if applicable)    | (WH-03) + (WH-05) + (WH-06)   |
|  | QA/QC procedures                      | WH-03: Under control of KEPCO<br>WH-05 and WH-06;<br>State-check is made by responsible staff of SLC on a daily basis<br>Regular maintenance is made by staff of Ecoenergy<br>Periodically calibrated by approved 3 <sup>rd</sup> party authority               |
|  | Purpose of data                       | Calculation of baseline emissions   |
|  | Additional comment                    |   |





| Data/Parameter                        | Regulatory requirements relating to landfill gas projects           |
|---------------------------------------|---|
| Unit                                  | Not applicable  |
| Description                           | Regulatory requirements relating to landfill gas projects           |
| Measured/Calculated/Default           | Not applicable  |
| Source of data                        | Investigation of legislation by CDM monitoring staff (Lae Bong HAN) |
| Value(s) of monitored parameter       | Not applicable  |
| Monitoring equipment                  | Not applicable  |
| Measuring/Reading/Recording frequency | Annually recorded   |
| Calculation method (if applicable)    | Not applicable  |
| QA/QC procedures                      | Not applicable  |
| Purpose of data                       | Not applicable  |
| Additional comment                    |   |

| Data/Parameter                        | Hours  |
|---------------------------------------|--|
| Unit                                  | Hours  |
| Description                           | Operation of the energy plant (50MW power plant)               |
| Measured/Calculated/Default           | Calculated   |
| Source of data                        | Generated (exported) amount of electricity by 50MW power plant |
| Value(s) of monitored parameter       | 7,724  |
| Monitoring equipment                  | Same as above 'EL <sub>EXLFG</sub> '                           |
| Measuring/Reading/Recording frequency | Continuous measuring & reading, hourly recording               |
| Calculation method (if applicable)    | Electricity exported to grid > 0 kWh                           |
| QA/QC procedures                      | Not applicable   |
| Purpose of data                       | Not applicable   |
| Additional comment                    |  |



|  |  |
|--|--|
| <b>Data/Parameter</b>                        | <b>LPG</b>   |
| <b>Unit</b>                                  | Kg   |
| <b>Description</b>                           | The amount of LPG used for start-up (ignition) of 50MW power plant and each flares                                   |
| <b>Measured/Calculated/Default</b>           | Calculated   |
| <b>Source of data</b>                        | Log sheets and invoices  |
| <b>Value(s) of monitored parameter</b>       | <b>130 Kg</b><br><br>Please refer to the worksheet of '10_PE_LPG' of 'SLC CDM Data Workbook Phase 6 (Version 0.41)'. |
| <b>Monitoring equipment</b>                  | Not applicable   |
| <b>Measuring/Reading/Recording frequency</b> | Monthly recorded   |
| <b>Calculation method (if applicable)</b>    | Not applicable   |
| <b>QA/QC procedures</b>                      | Not applicable   |
| <b>Purpose of data</b>                       | Calculation of project emissions   |
| <b>Additional comment</b>                    |  |

**D.3. Implementation of sampling plan**

&gt;&gt;

Not applicable

**SECTION E. Calculation of emission reductions or GHG removals by sinks****E.1. Calculation of baseline emissions or baseline net GHG removals by sinks**

&gt;&gt;

According to applied methodology ACM0001 (Version 04), emission reductions are calculated by following equation (page 2).

## Emission Reduction

The greenhouse gas emission reduction achieved by the project activity during a given year “y” ( $ER_y$ ) are estimated as follows:

$$ER_y = (MD_{project,y} - MD_{reg,y}) * GWP_{CH_4} + EL_y * CEF_{electricity,y} - ET_y * CEF_{thermal,y} \quad (1)$$

where:

|                       |  |
|-----------------------|--|
| $ER_y$                | is emissions reduction, in tonnes of CO <sub>2</sub> equivalents (tCO <sub>2</sub> e).   |
| $MD_{project,y}$      | the amount of methane that would have been destroyed/combusted during the year, in tonnes of methane (tCH <sub>4</sub> )   |
| $MD_{reg,y}$          | the amount of methane that would have been destroyed/combusted during the year in the absence of the project, in tonnes of methane (tCH <sub>4</sub> )   |
| $GWP_{CH_4}$          | Global Warming Potential value for methane for the first commitment period is 21 tCO <sub>2</sub> e/tCH <sub>4</sub>   |
| $EL_y$                | net quantity of electricity exported during year y, in megawatt hours (MWh).   |
| $CEF_{electricity,y}$ | CO <sub>2</sub> emissions intensity of the electricity displaced, in tCO <sub>2</sub> e/MWh. This can be estimated using either ACM0002 or AMSI.D, if the capacity is within the small scale threshold values, when grid electricity is used or displaced. |
| $ET_y$                | incremental quantity of fossil fuel, defined as difference of fossil fuel used in the baseline and fossil use during project, for energy requirement on site under project activity during the year y, in TJ.  |
| $CEF_{thermal,y}$     | CO <sub>2</sub> emissions intensity of the fuel used to generate thermal/mechanical energy, in tCO <sub>2</sub> e/TJ   |

Figure 8 Emission reduction equation in ACM0001 (Version 04) (page 2)

As there are no consideration about project emissions and leakage in ACM0001 (Version 04), above equation can be used to calculate baseline emissions;

$$BE = (MD_{project} - MD_{reg}) * GWP_{CH_4} + EL * CEF_{electricity} + ET * CEF_{thermal}$$

Where this project does not include thermal energy displacement and  $MD_{reg}$  is calculated by AF (Adjustment factor), above equation can be simplified as below, which could be divided into two steps, baseline emissions from methane avoidance and from electricity generation;

$$BE = (MD_{project} * AF) * GWP_{CH_4} + (EL_{exp} - EL_{imp}) * EF$$

## Baseline emissions from methane avoidance

In accordance with applied methodology ACM0001 (Version 04), captured amount of LFG and treated amount of LFG should be compared and smaller value ( $LFG_{selected}$ ) should be used to determine the amount of methane destruction.

Next, weighted average of methane fraction from 1<sup>st</sup> and 2<sup>nd</sup> landfill multiplied in order to calculate methane content and global warming potential and AF applied to calculate baseline emissions.

$$BE_{methane\_avoidance} = (LFG_{selected} * W_{CH_4} * D_{CH_4} * AF) * GWP_{CH_4}$$

|              | LFG <sub>selected</sub><br>(Nm <sup>3</sup> ) | W <sub>CH4</sub><br>(%) | CH <sub>4</sub> <sub>treated</sub><br>(Nm <sup>3</sup> ) | BE from CH <sub>4</sub><br>avoidance<br>(tCO <sub>2</sub> e) | AF applied BE<br>(tCO <sub>2</sub> e) |
|--------------|---|-------------------------|--|--|---------------------------------------|
| Jan 2011     | 22,511,250.6                                  | 44.8                    | 10,078,855.7   | 151,715.0  | 58,941                                |
| Feb          | 19,433,144.6                                  | 45.3                    | 8,801,429.3  | 132,486.2  | 51,471                                |
| Mar          | 19,293,110.0                                  | 46.5                    | 8,962,511.6  | 134,910.9  | 52,413                                |
| Apr          | 19,807,737.3                                  | 46.7                    | 9,244,790.2  | 139,160.0  | 54,064                                |
| May          | 21,341,988.1                                  | 47.6                    | 10,165,734.8   | 153,022.8  | 59,449                                |
| Jun          | 19,393,714.9                                  | 48.1                    | 9,334,378.6  | 140,508.5  | 54,588                                |
| Jul          | 20,398,450.3                                  | 50.9                    | 10,385,022.2   | 156,323.7  | 60,732                                |
| Aug          | 21,303,298.1                                  | 50.0                    | 10,649,393.2   | 160,303.2  | 62,278                                |
| Sep          | 22,058,795.7                                  | 46.5                    | 10,239,039.8   | 154,126.2  | 59,878                                |
| Oct          | 26,560,570.4                                  | 45.9                    | 12,209,063.1   | 183,780.6  | 71,399                                |
| Nov          | 26,159,138.5                                  | 46.4                    | 12,144,275.8   | 182,805.4  | 71,020                                |
| Dec          | 28,140,011.4                                  | 45.4                    | 12,781,661.1   | 192,399.8  | 74,747                                |
| <b>Total</b> | <b>266,401,209.9</b>                          | <b>47.0</b>             | <b>124,996,155.3</b>                                     | <b>1,881,542.1</b>   | <b>730,979</b>                        |

\* The above data, sum of each month, may not be equal to calculation. Calculation of emission reductions is more accurate than the above data because it was calculated on daily basis and especially, CH<sub>4</sub><sub>treated</sub> on hourly basis. Please refer calculation spread sheet file for more detailed calculation.

### Baseline emissions from electricity generation

In accordance with methodology, the amount of net generation and CO<sub>2</sub> emission factor of grid (EF) shall be used to calculate baseline emissions.

$$BE_{\text{electricity\_generation}} = (EL_{\text{exp}} - EL_{\text{imp}}) \times EF$$

|              | Elec. exported<br>(MWh) | Elec. imported<br>(MWh) | Net generation<br>(MWh) | BE from elec. generation<br>(tCO <sub>2</sub> e) |
|--------------|-------------------------|-------------------------|-------------------------|--|
| Jan 2011     | 33,948.8                | 412.4                   | 33,536.4                | 19,002   |
| Feb          | 30,174.3                | 382.0                   | 29,792.4                | 16,880   |
| Mar          | 27,038.2                | 543.8                   | 26,494.3                | 15,012   |
| Apr          | 31,586.6                | 378.4                   | 31,208.2                | 17,683   |
| May          | 31,615.3                | 362.8                   | 31,252.4                | 17,708   |
| Jun          | 13,813.8                | 634.4                   | 13,179.4                | 7,467  |
| Jul          | 33,934.7                | 349.6                   | 33,585.1                | 19,029   |
| Aug          | 33,944.4                | 357.2                   | 33,587.2                | 19,031   |
| Sep          | 32,879.2                | 351.8                   | 32,527.4                | 18,430   |
| Oct          | 27,287.0                | 529.3                   | 26,757.7                | 15,161   |
| Nov          | 33,037.7                | 360.5                   | 32,677.3                | 18,515   |
| Dec          | 29,413.3                | 449.1                   | 28,964.2                | 16,411   |
| <b>Total</b> | <b>358,673.3</b>        | <b>5,111.4</b>          | <b>353,561.9</b>        | <b>200,328</b>                                   |

\* The above data, sum of each month, may not be equal to calculation because emission reductions are calculated with several decimal places i.e. it is calculated in kWh unit instead of MWh for accuracy. Please refer calculation spread sheet file for more detailed calculation.

**Baseline emissions from 9.88MW power plant**

As described in B. 1, however, request for review was made by CDM Executive Board during 1<sup>st</sup> request for issuance of the project regarding the stoppage of 9.88MW power plant. In accordance with the request for review of CDM Executive Board, emissions from the electricity generated by the existing 9.88MW power plant are regarded as baseline emissions and should be deducted from calculated baseline emissions. It is calculated as follows;

$$BE_{9.88MW} = \text{Maximum theoretical output of 9.88MW power plant} \times \text{monitoring period} \times EF$$

|              | Maximum theoretical output of 9.88MW<br>(MWh) | Monitoring<br>period (days) | EF<br>(tCO <sub>2</sub> /MWh) | BE <sub>9.88MW</sub><br>(tCO <sub>2</sub> ) |
|--------------|---|-----------------------------|-------------------------------|---|
| <b>Total</b> | 215.79  | 365                         | 0.5666                        | 44,628                                      |

**E.2. Calculation of project emissions or actual net GHG removals by sinks**

&gt;&gt;

Project emissions calculation is included in E.1 Emission reductions calculation, e.g. electricity usage is included in  $EL_{imp}$  except project emissions from fossil fuel usage, which is not included in above emission reductions calculation equation.

Project emissions from fossil fuel (LPG) usage are calculated as following equation:

$$PE_{LPG} = Usage(Kg) \times 0.509 Nm^3 / Kg \times 57.8 MJ / Nm^3 \times 20.2 CKg / GJ \times 10^{-6} \times \frac{44}{12} CO_2 / C$$

|              | Usage of 50MW power plant<br>(Kg) | Usage of central flaring facility<br>(Kg) | PE <sub>LPG</sub> (tCO <sub>2</sub> e) |
|--------------|-----------------------------------|---|--|
| 2009         | 0                                 | 60  | 0.13074                                |
| 2010         | 50                                | 0   | 0.10895                                |
| 2011         | 0                                 | 20  | 0.04358                                |
| <b>Total</b> | <b>50</b>                         | <b>80</b>                                 | <b>0.28328</b>                         |

For conservativeness, 1 tCO<sub>2</sub>e applied though calculated project emissions from LPG usage were 0.28328 tCO<sub>2</sub>e.

**E.3. Calculation of leakage**

&gt;&gt;

There was no leakage in this monitoring period (in accordance with applied methodologies, leakage considered as zero (0) in PDD).

**E.4. Summary of calculation of emission reductions or net anthropogenic GHG removals by sinks**

| Time Period  | Baseline emissions or baseline net GHG removals by sinks (tCO <sub>2</sub> e) | Project emissions or actual net GHG removals by sinks (tCO <sub>2</sub> e) | Leakage (tCO <sub>2</sub> e) | Emission reductions or net anthropogenic GHG removals by sinks (tCO <sub>2</sub> e) |
|--------------|---|--|------------------------------|---|
| <b>Total</b> | 886,679   | 1  | 0                            | 886,678   |

**E.5. Comparison of actual emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD**

| Item   | Values estimated in ex-ante calculation of registered PDD | Actual values achieved during this monitoring period |
|--|---|--|
| <b>Emission reductions or GHG removals by sinks (tCO<sub>2</sub>e)</b> | 1,286,969   | 886,678  |

**E.6. Remarks on difference from estimated value in registered PDD**

&gt;&gt;

Claimed actual emission reductions are about 68.9% of estimated ones in PDD. This is mainly owing to the difference between estimated LFG generation by MELF model in PDD and actual amount of treated LFG which caused by model's own limitation and change of characteristics of reclaimed waste (portion of degradable organic waste decreased).

It seems that the ratio increased compare to 1<sup>st</sup> monitoring period (50.1%), but this is mainly because there was long overhaul period (90 days of stoppage for maintenance) of 50MW power plant in 1<sup>st</sup> monitoring period. Considering 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> monitoring period, which ratio was 69.05%, 70.4%, 71.4% and 61.6% respectively, monitored emission reductions in this period can be regarded as reasonable and normal.

In addition, compare to other landfill projects listed in CDM Pipeline (dated 01/06/2012) which issuance success rate is about 45%, however, the performance of this project is not extraordinary.

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## ANNEX I : Daily Calculation Results

| Date       | LFG <sub>selected</sub><br>(Nm <sup>3</sup> /day) | W <sub>CH4</sub> weighted<br>(%) | CH <sub>4</sub> combusted<br>(Nm <sup>3</sup> /day) | ER from<br>CH <sub>4</sub> combusted<br>(tCO <sub>2</sub> ) | AF adjusted<br>BE<br>(tCO <sub>2</sub> ) | Net elec.<br>Generation<br>(MWh) | ER from<br>generation<br>(tCO <sub>2</sub> ) | Total ER<br>(tCO <sub>2</sub> ) |
|------------|---|----------------------------------|---|---|--|----------------------------------|--|---------------------------------|
| 2011-01-01 | 740,988.9   | 44.1                             | 326,946.2   | 4,921.5   | 1,912.0                                  | 1,080.6                          | 612.2  | 2,524.2                         |
| 2011-01-02 | 735,732.6   | 44.4                             | 326,542.5   | 4,915.4   | 1,909.6                                  | 1,079.9                          | 611.9  | 2,521.5                         |
| 2011-01-03 | 729,172.9   | 44.7                             | 326,101.3   | 4,908.7   | 1,907.0                                  | 1,079.1                          | 611.4  | 2,518.4                         |
| 2011-01-04 | 728,936.8   | 44.8                             | 326,638.1   | 4,916.8   | 1,910.2                                  | 1,079.0                          | 611.4  | 2,521.6                         |
| 2011-01-05 | 727,905.2   | 44.5                             | 323,828.3   | 4,874.5   | 1,893.8                                  | 1,079.5                          | 611.7  | 2,505.4                         |
| 2011-01-06 | 730,075.1   | 44.4                             | 324,140.6   | 4,879.2   | 1,895.6                                  | 1,079.5                          | 611.6  | 2,507.2                         |
| 2011-01-07 | 726,507.0   | 44.7                             | 324,834.2   | 4,889.7   | 1,899.6                                  | 1,079.4                          | 611.6  | 2,511.2                         |
| 2011-01-08 | 721,796.0   | 44.9                             | 323,968.9   | 4,876.6   | 1,894.6                                  | 1,079.8                          | 611.8  | 2,506.4                         |
| 2011-01-09 | 735,444.5   | 44.4                             | 326,227.6   | 4,910.6   | 1,907.8                                  | 1,080.2                          | 612.1  | 2,519.9                         |
| 2011-01-10 | 730,518.6   | 44.2                             | 322,712.2   | 4,857.7   | 1,887.2                                  | 1,080.0                          | 611.9  | 2,499.1                         |
| 2011-01-11 | 720,215.5   | 44.6                             | 321,510.4   | 4,839.6   | 1,880.2                                  | 1,081.4                          | 612.7  | 2,492.9                         |
| 2011-01-12 | 726,746.4   | 44.2                             | 321,363.6   | 4,837.4   | 1,879.3                                  | 1,082.7                          | 613.5  | 2,492.8                         |
| 2011-01-13 | 724,844.4   | 44.2                             | 320,206.6   | 4,820.0   | 1,872.6                                  | 1,083.4                          | 613.9  | 2,486.4                         |
| 2011-01-14 | 719,211.1   | 44.2                             | 317,912.1   | 4,785.5   | 1,859.2                                  | 1,083.6                          | 614.0  | 2,473.1                         |
| 2011-01-15 | 727,068.2   | 44.8                             | 325,869.0   | 4,905.2   | 1,905.7                                  | 1,084.1                          | 614.2  | 2,519.9                         |
| 2011-01-16 | 726,487.4   | 44.4                             | 322,395.8   | 4,853.0   | 1,885.4                                  | 1,083.6                          | 614.0  | 2,499.3                         |
| 2011-01-17 | 727,086.8   | 44.2                             | 321,562.8   | 4,840.4   | 1,880.5                                  | 1,083.2                          | 613.7  | 2,494.2                         |
| 2011-01-18 | 724,235.9   | 44.6                             | 322,754.9   | 4,858.4   | 1,887.5                                  | 1,083.0                          | 613.6  | 2,501.1                         |
| 2011-01-19 | 723,249.5   | 44.8                             | 324,306.1   | 4,881.7   | 1,896.5                                  | 1,083.3                          | 613.8  | 2,510.4                         |
| 2011-01-20 | 723,623.6   | 45.0                             | 325,691.5   | 4,902.6   | 1,904.6                                  | 1,083.3                          | 613.8  | 2,518.4                         |
| 2011-01-21 | 721,506.1   | 45.3                             | 326,586.9   | 4,916.0   | 1,909.9                                  | 1,083.4                          | 613.9  | 2,523.7                         |
| 2011-01-22 | 721,833.1   | 45.4                             | 327,579.7   | 4,931.0   | 1,915.7                                  | 1,083.6                          | 614.0  | 2,529.7                         |
| 2011-01-23 | 715,914.4   | 45.5                             | 325,808.9   | 4,904.3   | 1,905.3                                  | 1,084.0                          | 614.2  | 2,519.5                         |
| 2011-01-24 | 726,391.2   | 45.1                             | 327,646.3   | 4,932.0   | 1,916.1                                  | 1,083.1                          | 613.7  | 2,529.8                         |
| 2011-01-25 | 731,405.9   | 45.3                             | 331,269.2   | 4,986.5   | 1,937.3                                  | 1,082.9                          | 613.6  | 2,550.9                         |
| 2011-01-26 | 731,954.2   | 45.6                             | 333,549.0   | 5,020.8   | 1,950.6                                  | 1,081.3                          | 612.7  | 2,563.3                         |
| 2011-01-27 | 725,057.1   | 46.0                             | 333,616.9   | 5,021.9   | 1,951.0                                  | 1,081.1                          | 612.6  | 2,563.6                         |
| 2011-01-28 | 721,894.5   | 45.4                             | 327,700.0   | 4,932.8   | 1,916.4                                  | 1,081.5                          | 612.8  | 2,529.2                         |
| 2011-01-29 | 722,807.7   | 44.9                             | 324,896.7   | 4,890.6   | 1,900.0                                  | 1,082.3                          | 613.2  | 2,513.2                         |
| 2011-01-30 | 726,181.2   | 44.6                             | 323,820.4   | 4,874.4   | 1,893.7                                  | 1,082.6                          | 613.4  | 2,507.1                         |
| 2011-01-31 | 716,458.9   | 44.8                             | 320,868.9   | 4,830.0   | 1,876.4                                  | 1,081.8                          | 612.9  | 2,489.4                         |
| 2011-02-01 | 708,181.7   | 45.0                             | 318,520.3   | 4,794.6   | 1,862.7                                  | 1,083.2                          | 613.8  | 2,476.5                         |
| 2011-02-02 | 706,618.0   | 45.0                             | 318,284.6   | 4,791.1   | 1,861.3                                  | 1,084.1                          | 614.2  | 2,475.6                         |
| 2011-02-03 | 708,394.5   | 45.2                             | 320,529.5   | 4,824.9   | 1,874.5                                  | 1,083.6                          | 613.9  | 2,488.4                         |
| 2011-02-04 | 703,883.5   | 45.2                             | 317,876.9   | 4,784.9   | 1,858.9                                  | 1,083.7                          | 614.0  | 2,473.0                         |
| 2011-02-05 | 451,375.4   | 45.7                             | 206,297.3   | 3,105.4   | 1,206.4                                  | 559.7                            | 317.1  | 1,523.6                         |
| 2011-02-06 | 706,766.2   | 45.3                             | 320,323.9   | 4,821.8   | 1,873.3                                  | 1,081.6                          | 612.9  | 2,486.1                         |
| 2011-02-07 | 688,880.4   | 45.6                             | 314,377.1   | 4,732.3   | 1,838.5                                  | 1,084.0                          | 614.2  | 2,452.7                         |
| 2011-02-08 | 683,262.3   | 45.7                             | 311,957.7   | 4,695.8   | 1,824.3                                  | 1,084.4                          | 614.4  | 2,438.8                         |
| 2011-02-09 | 694,119.1   | 45.7                             | 317,002.2   | 4,771.8   | 1,853.8                                  | 1,084.0                          | 614.2  | 2,468.0                         |
| 2011-02-10 | 696,486.5   | 45.9                             | 319,781.8   | 4,813.6   | 1,870.1                                  | 1,083.7                          | 614.0  | 2,484.1                         |
| 2011-02-11 | 704,799.9   | 45.9                             | 323,254.9   | 4,865.9   | 1,890.4                                  | 1,083.7                          | 614.0  | 2,504.4                         |
| 2011-02-12 | 716,779.1   | 45.4                             | 325,570.9   | 4,900.8   | 1,903.9                                  | 1,084.8                          | 614.6  | 2,518.6                         |
| 2011-02-13 | 713,111.1   | 45.4                             | 323,399.3   | 4,868.1   | 1,891.2                                  | 1,084.6                          | 614.5  | 2,505.8                         |
| 2011-02-14 | 713,481.0   | 45.4                             | 323,721.5   | 4,872.9   | 1,893.1                                  | 1,083.7                          | 614.0  | 2,507.1                         |
| 2011-02-15 | 712,486.8   | 45.4                             | 323,502.4   | 4,869.6   | 1,891.8                                  | 1,083.2                          | 613.7  | 2,505.6                         |
| 2011-02-16 | 699,286.9   | 46.0                             | 321,558.0   | 4,840.3   | 1,880.5                                  | 1,083.4                          | 613.9  | 2,494.4                         |
| 2011-02-17 | 695,339.0   | 46.0                             | 320,115.8   | 4,818.6   | 1,872.0                                  | 1,083.5                          | 613.9  | 2,486.0                         |
| 2011-02-18 | 708,707.5   | 45.5                             | 322,636.9   | 4,856.6   | 1,886.8                                  | 1,083.3                          | 613.8  | 2,500.6                         |
| 2011-02-19 | 711,815.5   | 45.5                             | 324,074.5   | 4,878.2   | 1,895.2                                  | 1,083.2                          | 613.7  | 2,508.9                         |
| 2011-02-20 | 706,391.7   | 45.5                             | 321,205.3   | 4,835.0   | 1,878.4                                  | 1,083.9                          | 614.1  | 2,492.5                         |
| 2011-02-21 | 706,137.1   | 45.4                             | 320,762.9   | 4,828.4   | 1,875.8                                  | 1,082.8                          | 613.5  | 2,489.3                         |
| 2011-02-22 | 704,694.1   | 45.7                             | 321,713.4   | 4,842.7   | 1,881.4                                  | 1,083.0                          | 613.6  | 2,495.0                         |
| 2011-02-23 | 700,553.5   | 45.8                             | 320,769.0   | 4,828.5   | 1,875.9                                  | 1,083.0                          | 613.6  | 2,489.5                         |
| 2011-02-24 | 704,787.2   | 45.5                             | 320,917.0   | 4,830.7   | 1,876.7                                  | 1,083.5                          | 613.9  | 2,490.6                         |



| Date       | LFG <sub>selected</sub><br>(Nm <sup>3</sup> /day) | WCH <sub>4</sub> weighted<br>(%) | CH <sub>4</sub> combusted<br>(Nm <sup>3</sup> /day) | ER from<br>CH <sub>4</sub> combusted<br>(tCO <sub>2</sub> ) | AF adjusted<br>BE<br>(tCO <sub>2</sub> ) | Net elec.<br>Generation<br>(MWh) | ER from<br>generation<br>(tCO <sub>2</sub> ) | Total ER<br>(tCO <sub>2</sub> ) |
|------------|---|----------------------------------|---|---|--|----------------------------------|--|---------------------------------|
| 2011-02-25 | 716,186.0   | 44.8                             | 320,994.1   | 4,831.9   | 1,877.2                                  | 1,083.1                          | 613.7  | 2,490.9                         |
| 2011-02-26 | 706,111.0   | 44.8                             | 316,103.0   | 4,758.2   | 1,848.6                                  | 1,081.4                          | 612.7  | 2,461.3                         |
| 2011-02-27 | 711,507.4   | 45.2                             | 321,539.1   | 4,840.1   | 1,880.4                                  | 1,082.3                          | 613.3  | 2,493.6                         |
| 2011-02-28 | 653,002.3   | 40.5                             | 264,639.9   | 3,983.6   | 1,547.6                                  | 1,064.0                          | 602.9  | 2,150.5                         |
| 2011-03-01 | 600,915.5   | 43.6                             | 262,179.4   | 3,946.5   | 1,533.2                                  | 1,083.6                          | 614.0  | 2,147.2                         |
| 2011-03-02 | 640,682.8   | 39.5                             | 253,262.2   | 3,812.3   | 1,481.1                                  | 1,082.9                          | 613.6  | 2,094.7                         |
| 2011-03-03 | 697,295.4   | 46.1                             | 321,362.9   | 4,837.4   | 1,879.3                                  | 1,082.7                          | 613.5  | 2,492.8                         |
| 2011-03-04 | 697,175.3   | 45.8                             | 319,098.7   | 4,803.3   | 1,866.1                                  | 1,082.9                          | 613.6  | 2,479.7                         |
| 2011-03-05 | 692,356.6   | 45.8                             | 317,240.0   | 4,775.3   | 1,855.2                                  | 1,082.9                          | 613.6  | 2,468.8                         |
| 2011-03-06 | 577,593.2   | 46.3                             | 267,620.3   | 4,028.4   | 1,565.0                                  | 483.8                            | 274.1  | 1,839.2                         |
| 2011-03-07 | 508,412.1   | 46.9                             | 238,373.1   | 3,588.2   | 1,394.0                                  | -11.8                            | -6.7   | 1,387.3                         |
| 2011-03-08 | 459,307.2   | 47.3                             | 217,107.9   | 3,268.1   | 1,269.6                                  | -10.8                            | -6.1   | 1,263.5                         |
| 2011-03-09 | 612,866.5   | 47.2                             | 289,012.5   | 4,350.4   | 1,690.1                                  | -12.5                            | -7.1   | 1,683.1                         |
| 2011-03-10 | 309,713.0   | 48.3                             | 149,680.8   | 2,253.1   | 875.3                                    | -7.6                             | -4.3   | 871.0                           |
| 2011-03-11 | 515,866.6   | 49.7                             | 256,225.7   | 3,856.9   | 1,498.4                                  | -10.9                            | -6.2   | 1,492.2                         |
| 2011-03-12 | 498,754.1   | 48.8                             | 243,294.8   | 3,662.3   | 1,422.8                                  | 176.2                            | 99.9   | 1,522.6                         |
| 2011-03-13 | 651,765.5   | 47.7                             | 310,712.0   | 4,677.1   | 1,817.0                                  | 1,087.4                          | 616.1  | 2,433.2                         |
| 2011-03-14 | 648,041.4   | 47.8                             | 309,964.0   | 4,665.8   | 1,812.7                                  | 1,086.9                          | 615.8  | 2,428.5                         |
| 2011-03-15 | 657,296.0   | 47.2                             | 310,483.5   | 4,673.6   | 1,815.7                                  | 1,086.7                          | 615.7  | 2,431.5                         |
| 2011-03-16 | 651,994.1   | 47.3                             | 308,581.7   | 4,645.0   | 1,804.6                                  | 1,087.1                          | 615.9  | 2,420.5                         |
| 2011-03-17 | 655,360.0   | 47.4                             | 310,884.2   | 4,679.7   | 1,818.1                                  | 1,086.7                          | 615.7  | 2,433.8                         |
| 2011-03-18 | 647,290.9   | 47.3                             | 306,026.0   | 4,606.5   | 1,789.6                                  | 1,086.5                          | 615.6  | 2,405.3                         |
| 2011-03-19 | 649,556.3   | 46.5                             | 301,890.2   | 4,544.3   | 1,765.5                                  | 1,086.8                          | 615.8  | 2,381.3                         |
| 2011-03-20 | 654,157.7   | 46.4                             | 303,429.6   | 4,567.5   | 1,774.5                                  | 1,086.8                          | 615.8  | 2,390.3                         |
| 2011-03-21 | 655,074.4   | 46.2                             | 302,583.3   | 4,554.7   | 1,769.5                                  | 1,086.3                          | 615.5  | 2,385.0                         |
| 2011-03-22 | 667,545.7   | 46.2                             | 308,195.0   | 4,639.2   | 1,802.3                                  | 1,086.0                          | 615.3  | 2,417.7                         |
| 2011-03-23 | 659,125.0   | 46.3                             | 304,967.2   | 4,590.6   | 1,783.5                                  | 1,085.7                          | 615.2  | 2,398.6                         |
| 2011-03-24 | 662,360.3   | 46.4                             | 307,160.9   | 4,623.6   | 1,796.3                                  | 1,085.6                          | 615.1  | 2,411.4                         |
| 2011-03-25 | 669,574.4   | 46.1                             | 308,577.4   | 4,645.0   | 1,804.6                                  | 1,085.6                          | 615.1  | 2,419.7                         |
| 2011-03-26 | 663,370.2   | 46.2                             | 306,346.8   | 4,611.4   | 1,791.5                                  | 1,085.8                          | 615.2  | 2,406.7                         |
| 2011-03-27 | 660,530.9   | 46.2                             | 305,478.9   | 4,598.3   | 1,786.4                                  | 1,086.2                          | 615.4  | 2,401.9                         |
| 2011-03-28 | 661,276.9   | 46.3                             | 305,892.9   | 4,604.5   | 1,788.9                                  | 1,085.9                          | 615.3  | 2,404.1                         |
| 2011-03-29 | 661,266.5   | 46.6                             | 307,859.7   | 4,634.2   | 1,800.4                                  | 1,086.4                          | 615.6  | 2,415.9                         |
| 2011-03-30 | 650,833.5   | 46.7                             | 303,701.3   | 4,571.6   | 1,776.0                                  | 1,086.5                          | 615.6  | 2,391.7                         |
| 2011-03-31 | 655,751.8   | 46.6                             | 305,318.7   | 4,595.9   | 1,785.5                                  | 917.9                            | 520.1  | 2,305.6                         |
| 2011-04-01 | 659,582.4   | 45.9                             | 302,748.4   | 4,557.2   | 1,770.5                                  | 1,086.4                          | 615.6  | 2,386.0                         |
| 2011-04-02 | 664,089.8   | 45.5                             | 302,014.6   | 4,546.2   | 1,766.2                                  | 1,086.7                          | 615.7  | 2,381.9                         |
| 2011-04-03 | 668,089.9   | 45.2                             | 301,833.2   | 4,543.4   | 1,765.1                                  | 1,086.9                          | 615.8  | 2,381.0                         |
| 2011-04-04 | 670,458.1   | 44.9                             | 300,816.6   | 4,528.1   | 1,759.2                                  | 1,085.9                          | 615.3  | 2,374.5                         |
| 2011-04-05 | 671,235.5   | 45.5                             | 305,463.1   | 4,598.1   | 1,786.4                                  | 1,085.9                          | 615.3  | 2,401.6                         |
| 2011-04-06 | 669,050.9   | 47.0                             | 314,309.8   | 4,731.2   | 1,838.1                                  | 1,085.2                          | 614.9  | 2,453.0                         |
| 2011-04-07 | 665,844.7   | 47.2                             | 314,575.7   | 4,735.2   | 1,839.6                                  | 1,085.6                          | 615.1  | 2,454.7                         |
| 2011-04-08 | 665,446.4   | 46.2                             | 307,524.6   | 4,629.1   | 1,798.4                                  | 1,085.6                          | 615.1  | 2,413.5                         |
| 2011-04-09 | 478,411.1   | 46.2                             | 221,261.6   | 3,330.6   | 1,293.9                                  | 761.5                            | 431.4  | 1,725.4                         |
| 2011-04-10 | 647,952.5   | 47.9                             | 310,585.9   | 4,675.2   | 1,816.3                                  | 1,087.8                          | 616.3  | 2,432.6                         |
| 2011-04-11 | 656,307.5   | 47.3                             | 310,656.0   | 4,676.2   | 1,816.7                                  | 1,086.8                          | 615.8  | 2,432.5                         |
| 2011-04-12 | 655,041.6   | 47.1                             | 308,801.5   | 4,648.3   | 1,805.9                                  | 1,087.2                          | 616.0  | 2,421.9                         |
| 2011-04-13 | 654,589.9   | 47.4                             | 310,255.3   | 4,670.2   | 1,814.4                                  | 1,087.1                          | 616.0  | 2,430.3                         |
| 2011-04-14 | 651,056.4   | 47.1                             | 306,772.4   | 4,617.8   | 1,794.0                                  | 1,087.0                          | 615.9  | 2,409.9                         |
| 2011-04-15 | 661,947.1   | 47.2                             | 312,205.4   | 4,699.6   | 1,825.8                                  | 1,086.7                          | 615.7  | 2,441.5                         |
| 2011-04-16 | 563,118.2   | 46.7                             | 263,114.4   | 3,960.6   | 1,538.7                                  | 712.4                            | 403.7  | 1,942.4                         |
| 2011-04-17 | 617,990.3   | 47.7                             | 294,916.8   | 4,439.3   | 1,724.7                                  | 929.3                            | 526.5  | 2,251.2                         |
| 2011-04-18 | 667,477.1   | 47.1                             | 314,326.7   | 4,731.5   | 1,838.2                                  | 1,088.5                          | 616.8  | 2,454.9                         |
| 2011-04-19 | 672,957.3   | 46.5                             | 312,993.5   | 4,711.4   | 1,830.4                                  | 1,088.4                          | 616.7  | 2,447.1                         |
| 2011-04-20 | 676,300.5   | 45.9                             | 310,203.3   | 4,669.4   | 1,814.1                                  | 1,088.1                          | 616.5  | 2,430.6                         |
| 2011-04-21 | 663,067.2   | 46.9                             | 310,820.3   | 4,678.7   | 1,817.7                                  | 1,088.1                          | 616.5  | 2,434.2                         |
| 2011-04-22 | 668,174.0   | 47.3                             | 316,289.6   | 4,761.0   | 1,849.7                                  | 1,087.4                          | 616.1  | 2,465.8                         |
| 2011-04-23 | 667,415.9   | 47.0                             | 313,623.1   | 4,720.9   | 1,834.1                                  | 1,088.2                          | 616.6  | 2,450.7                         |





| Date       | LFG <sub>selected</sub><br>(Nm <sup>3</sup> /day) | WCH <sub>4</sub> weighted<br>(%) | CH <sub>4</sub> combusted<br>(Nm <sup>3</sup> /day) | ER from<br>CH <sub>4</sub> combusted<br>(tCO <sub>2</sub> ) | AF adjusted<br>BE<br>(tCO <sub>2</sub> ) | Net elec.<br>Generation<br>(MWh) | ER from<br>generation<br>(tCO <sub>2</sub> ) | Total ER<br>(tCO <sub>2</sub> ) |
|------------|---|----------------------------------|---|---|--|----------------------------------|--|---------------------------------|
| 2011-04-24 | 666,705.7   | 46.9                             | 312,739.5   | 4,707.6   | 1,828.9                                  | 1,089.1                          | 617.1  | 2,446.0                         |
| 2011-04-25 | 689,384.8   | 46.7                             | 321,643.9   | 4,841.6   | 1,881.0                                  | 1,033.7                          | 585.7  | 2,466.7                         |
| 2011-04-26 | 698,911.9   | 47.1                             | 329,199.5   | 4,955.4   | 1,925.2                                  | 993.4                            | 562.9  | 2,488.1                         |
| 2011-04-27 | 703,210.8   | 46.4                             | 326,418.0   | 4,913.5   | 1,908.9                                  | 993.4                            | 562.8  | 2,471.7                         |
| 2011-04-28 | 710,560.0   | 46.3                             | 329,316.2   | 4,957.1   | 1,925.8                                  | 993.0                            | 562.6  | 2,488.5                         |
| 2011-04-29 | 704,296.3   | 46.6                             | 328,311.4   | 4,942.0   | 1,920.0                                  | 993.1                            | 562.7  | 2,482.6                         |
| 2011-04-30 | 699,063.5   | 47.4                             | 331,049.9   | 4,983.2   | 1,936.0                                  | 969.7                            | 549.4  | 2,485.4                         |
| 2011-05-01 | 686,505.0   | 47.2                             | 324,258.7   | 4,881.0   | 1,896.3                                  | 993.1                            | 562.7  | 2,459.0                         |
| 2011-05-02 | 686,320.9   | 47.3                             | 324,359.5   | 4,882.5   | 1,896.9                                  | 992.6                            | 562.4  | 2,459.3                         |
| 2011-05-03 | 682,898.4   | 47.4                             | 323,848.0   | 4,874.8   | 1,893.9                                  | 993.0                            | 562.6  | 2,456.5                         |
| 2011-05-04 | 684,331.2   | 47.3                             | 323,660.1   | 4,872.0   | 1,892.8                                  | 993.0                            | 562.6  | 2,455.4                         |
| 2011-05-05 | 683,006.2   | 47.3                             | 323,335.3   | 4,867.1   | 1,890.9                                  | 993.0                            | 562.7  | 2,453.5                         |
| 2011-05-06 | 686,712.7   | 47.6                             | 326,658.8   | 4,917.1   | 1,910.3                                  | 992.8                            | 562.5  | 2,472.8                         |
| 2011-05-07 | 693,955.7   | 47.2                             | 327,630.7   | 4,931.8   | 1,916.0                                  | 992.8                            | 562.5  | 2,478.5                         |
| 2011-05-08 | 690,255.0   | 47.1                             | 325,086.4   | 4,893.5   | 1,901.1                                  | 992.5                            | 562.4  | 2,463.5                         |
| 2011-05-09 | 693,220.6   | 47.7                             | 330,862.2   | 4,980.4   | 1,934.9                                  | 989.9                            | 560.9  | 2,495.7                         |
| 2011-05-10 | 694,398.4   | 47.5                             | 329,632.3   | 4,961.9   | 1,927.7                                  | 990.8                            | 561.4  | 2,489.1                         |
| 2011-05-11 | 689,337.8   | 48.0                             | 330,947.2   | 4,981.7   | 1,935.4                                  | 998.8                            | 565.9  | 2,501.3                         |
| 2011-05-12 | 685,516.1   | 48.0                             | 329,382.0   | 4,958.1   | 1,926.2                                  | 1,017.8                          | 576.7  | 2,502.9                         |
| 2011-05-13 | 688,827.4   | 47.9                             | 329,639.2   | 4,962.0   | 1,927.7                                  | 1,018.2                          | 576.9  | 2,504.7                         |
| 2011-05-14 | 688,766.3   | 47.3                             | 325,637.2   | 4,901.8   | 1,904.3                                  | 1,018.5                          | 577.1  | 2,481.4                         |
| 2011-05-15 | 690,567.9   | 47.6                             | 328,565.1   | 4,945.8   | 1,921.5                                  | 1,018.3                          | 576.9  | 2,498.4                         |
| 2011-05-16 | 689,209.1   | 47.8                             | 329,692.5   | 4,962.8   | 1,928.0                                  | 1,018.2                          | 576.9  | 2,504.9                         |
| 2011-05-17 | 685,921.5   | 48.0                             | 329,448.3   | 4,959.1   | 1,926.6                                  | 1,018.1                          | 576.8  | 2,503.5                         |
| 2011-05-18 | 690,148.4   | 47.7                             | 329,322.4   | 4,957.2   | 1,925.9                                  | 1,016.3                          | 575.9  | 2,501.7                         |
| 2011-05-19 | 694,318.5   | 47.5                             | 330,011.9   | 4,967.6   | 1,929.9                                  | 1,014.3                          | 574.7  | 2,504.6                         |
| 2011-05-20 | 696,735.0   | 48.1                             | 335,358.7   | 5,048.1   | 1,961.2                                  | 1,014.7                          | 574.9  | 2,536.1                         |
| 2011-05-21 | 697,168.7   | 48.3                             | 337,036.9   | 5,073.3   | 1,971.0                                  | 1,016.8                          | 576.1  | 2,547.1                         |
| 2011-05-22 | 688,476.6   | 48.2                             | 332,112.5   | 4,999.2   | 1,942.2                                  | 1,017.5                          | 576.5  | 2,518.7                         |
| 2011-05-23 | 686,034.4   | 48.5                             | 332,904.4   | 5,011.1   | 1,946.8                                  | 1,016.3                          | 575.8  | 2,522.7                         |
| 2011-05-24 | 682,096.6   | 48.3                             | 329,358.8   | 4,957.8   | 1,926.1                                  | 1,016.5                          | 575.9  | 2,502.0                         |
| 2011-05-25 | 681,030.1   | 48.1                             | 327,488.4   | 4,929.6   | 1,915.2                                  | 1,015.2                          | 575.2  | 2,490.4                         |
| 2011-05-26 | 686,980.7   | 48.1                             | 330,332.5   | 4,972.4   | 1,931.8                                  | 1,015.8                          | 575.6  | 2,507.4                         |
| 2011-05-27 | 685,433.4   | 47.6                             | 326,187.1   | 4,910.0   | 1,907.5                                  | 1,015.5                          | 575.4  | 2,482.9                         |
| 2011-05-28 | 685,143.9   | 47.1                             | 322,619.0   | 4,856.3   | 1,886.7                                  | 1,016.2                          | 575.8  | 2,462.5                         |
| 2011-05-29 | 683,522.0   | 46.9                             | 320,404.7   | 4,823.0   | 1,873.7                                  | 1,015.1                          | 575.2  | 2,448.9                         |
| 2011-05-30 | 688,524.1   | 46.8                             | 322,103.2   | 4,848.6   | 1,883.7                                  | 1,015.2                          | 575.2  | 2,458.9                         |
| 2011-05-31 | 696,625.3   | 47.1                             | 327,850.7   | 4,935.1   | 1,917.3                                  | 1,015.5                          | 575.4  | 2,492.7                         |
| 2011-06-01 | 694,194.3   | 47.4                             | 329,237.0   | 4,955.9   | 1,925.4                                  | 1,015.0                          | 575.1  | 2,500.5                         |
| 2011-06-02 | 688,459.1   | 47.5                             | 326,895.2   | 4,920.7   | 1,911.7                                  | 1,015.5                          | 575.4  | 2,487.1                         |
| 2011-06-03 | 687,236.9   | 47.6                             | 326,896.5   | 4,920.7   | 1,911.7                                  | 1,015.8                          | 575.5  | 2,487.2                         |
| 2011-06-04 | 686,338.0   | 47.3                             | 324,763.4   | 4,888.6   | 1,899.2                                  | 1,015.0                          | 575.1  | 2,474.3                         |
| 2011-06-05 | 680,876.9   | 47.4                             | 323,064.2   | 4,863.0   | 1,889.3                                  | 1,015.5                          | 575.4  | 2,464.7                         |
| 2011-06-06 | 685,056.5   | 47.3                             | 323,805.6   | 4,874.2   | 1,893.6                                  | 1,016.4                          | 575.9  | 2,469.5                         |
| 2011-06-07 | 683,427.8   | 47.3                             | 323,429.7   | 4,868.5   | 1,891.4                                  | 1,016.7                          | 576.1  | 2,467.5                         |
| 2011-06-08 | 702,489.4   | 47.1                             | 330,567.0   | 4,976.0   | 1,933.2                                  | 1,012.7                          | 573.8  | 2,506.9                         |
| 2011-06-09 | 697,779.9   | 47.0                             | 327,699.3   | 4,932.8   | 1,916.4                                  | 997.5                            | 565.2  | 2,481.6                         |
| 2011-06-10 | 694,160.9   | 47.0                             | 326,342.6   | 4,912.4   | 1,908.5                                  | 1,008.4                          | 571.4  | 2,479.8                         |
| 2011-06-11 | 684,550.8   | 46.7                             | 319,551.0   | 4,810.1   | 1,868.7                                  | 1,008.4                          | 571.4  | 2,440.1                         |
| 2011-06-12 | 572,438.3   | 47.0                             | 268,858.2   | 4,047.1   | 1,572.3                                  | 451.6                            | 255.9  | 1,828.1                         |
| 2011-06-13 | 374,627.0   | 48.5                             | 181,703.7   | 2,735.1   | 1,062.6                                  | -7.2                             | -4.1   | 1,058.5                         |
| 2011-06-14 | 630,439.9   | 47.6                             | 300,321.8   | 4,520.7   | 1,756.3                                  | -11.5                            | -6.5   | 1,749.8                         |
| 2011-06-15 | 617,642.7   | 47.5                             | 293,400.5   | 4,416.5   | 1,715.8                                  | -11.4                            | -6.4   | 1,709.4                         |
| 2011-06-16 | 644,828.5   | 47.4                             | 305,536.8   | 4,599.2   | 1,786.8                                  | -11.6                            | -6.6   | 1,780.2                         |
| 2011-06-17 | 636,050.3   | 47.0                             | 298,931.1   | 4,499.8   | 1,748.2                                  | -11.6                            | -6.6   | 1,741.6                         |
| 2011-06-18 | 643,324.0   | 47.5                             | 305,736.1   | 4,602.2   | 1,787.9                                  | -11.5                            | -6.5   | 1,781.4                         |
| 2011-06-19 | 644,116.2   | 47.3                             | 304,880.1   | 4,589.3   | 1,782.9                                  | -11.6                            | -6.5   | 1,776.4                         |
| 2011-06-20 | 659,970.4   | 47.2                             | 311,494.6   | 4,688.9   | 1,821.6                                  | -11.7                            | -6.6   | 1,815.0                         |



| Date       | LFG <sub>selected</sub><br>(Nm <sup>3</sup> /day) | WCH <sub>4</sub> weighted<br>(%) | CH <sub>4</sub> combusted<br>(Nm <sup>3</sup> /day) | ER from<br>CH <sub>4</sub> combusted<br>(tCO <sub>2</sub> ) | AF adjusted<br>BE<br>(tCO <sub>2</sub> ) | Net elec.<br>Generation<br>(MWh) | ER from<br>generation<br>(tCO <sub>2</sub> ) | Total ER<br>(tCO <sub>2</sub> ) |
|------------|---|----------------------------------|---|---|--|----------------------------------|--|---------------------------------|
| 2011-06-21 | 352,037.6   | 48.9                             | 172,208.6   | 2,592.2   | 1,007.1                                  | -6.9                             | -3.9   | 1,003.2                         |
| 2011-06-22 | 661,369.0   | 48.7                             | 321,910.0   | 4,845.6   | 1,882.5                                  | -11.6                            | -6.6   | 1,875.9                         |
| 2011-06-23 | 662,890.4   | 48.6                             | 321,880.7   | 4,845.2   | 1,882.4                                  | -11.7                            | -6.6   | 1,875.8                         |
| 2011-06-24 | 664,289.0   | 48.4                             | 321,689.8   | 4,842.3   | 1,881.2                                  | -11.7                            | -6.6   | 1,874.6                         |
| 2011-06-25 | 665,969.4   | 49.6                             | 330,372.0   | 4,973.0   | 1,932.0                                  | -11.7                            | -6.6   | 1,925.4                         |
| 2011-06-26 | 664,376.0   | 50.8                             | 337,688.7   | 5,083.2   | 1,974.8                                  | -11.6                            | -6.6   | 1,968.2                         |
| 2011-06-27 | 661,776.6   | 50.0                             | 331,140.3   | 4,984.6   | 1,936.5                                  | -11.6                            | -6.6   | 1,929.9                         |
| 2011-06-28 | 689,346.3   | 50.2                             | 345,974.6   | 5,207.9   | 2,023.3                                  | -11.5                            | -6.5   | 2,016.8                         |
| 2011-06-29 | 692,493.7   | 51.0                             | 353,353.0   | 5,319.0   | 2,066.4                                  | 982.3                            | 556.6  | 2,623.0                         |
| 2011-06-30 | 671,159.1   | 51.4                             | 345,046.5   | 5,193.9   | 2,017.8                                  | 785.0                            | 444.8  | 2,462.6                         |
| 2011-07-01 | 658,543.1   | 51.1                             | 336,759.2   | 5,069.2   | 1,969.4                                  | 1,082.6                          | 613.4  | 2,582.8                         |
| 2011-07-02 | 664,265.8   | 51.1                             | 339,673.4   | 5,113.0   | 1,986.4                                  | 1,083.6                          | 614.0  | 2,600.4                         |
| 2011-07-03 | 666,696.9   | 51.5                             | 343,134.2   | 5,165.1   | 2,006.7                                  | 1,083.8                          | 614.1  | 2,620.7                         |
| 2011-07-04 | 658,977.3   | 50.9                             | 335,221.9   | 5,046.0   | 1,960.4                                  | 1,054.8                          | 597.6  | 2,558.0                         |
| 2011-07-05 | 669,806.2   | 51.8                             | 346,864.3   | 5,221.3   | 2,028.5                                  | 1,085.6                          | 615.1  | 2,643.5                         |
| 2011-07-06 | 672,250.4   | 51.7                             | 347,804.6   | 5,235.4   | 2,034.0                                  | 1,085.7                          | 615.2  | 2,649.1                         |
| 2011-07-07 | 684,208.0   | 51.5                             | 352,261.9   | 5,302.5   | 2,060.0                                  | 1,085.8                          | 615.2  | 2,675.2                         |
| 2011-07-08 | 678,918.8   | 51.2                             | 347,912.0   | 5,237.0   | 2,034.6                                  | 1,085.4                          | 615.0  | 2,649.6                         |
| 2011-07-09 | 682,715.0   | 50.8                             | 346,890.7   | 5,221.7   | 2,028.6                                  | 1,085.4                          | 615.0  | 2,643.6                         |
| 2011-07-10 | 678,783.9   | 50.8                             | 344,662.9   | 5,188.1   | 2,015.6                                  | 1,083.8                          | 614.1  | 2,629.7                         |
| 2011-07-11 | 679,709.6   | 50.7                             | 344,900.0   | 5,191.7   | 2,017.0                                  | 1,084.2                          | 614.3  | 2,631.3                         |
| 2011-07-12 | 667,060.5   | 52.0                             | 347,097.4   | 5,224.8   | 2,029.8                                  | 1,085.1                          | 614.8  | 2,644.7                         |
| 2011-07-13 | 658,946.7   | 52.0                             | 342,981.3   | 5,162.8   | 2,005.8                                  | 1,085.6                          | 615.1  | 2,620.8                         |
| 2011-07-14 | 669,350.1   | 52.6                             | 352,068.6   | 5,299.6   | 2,058.9                                  | 1,085.1                          | 614.8  | 2,673.7                         |
| 2011-07-15 | 680,480.4   | 52.1                             | 354,402.4   | 5,334.7   | 2,072.5                                  | 1,084.0                          | 614.2  | 2,686.8                         |
| 2011-07-16 | 661,276.8   | 52.2                             | 344,907.5   | 5,191.8   | 2,017.0                                  | 1,084.3                          | 614.4  | 2,631.4                         |
| 2011-07-17 | 652,986.5   | 52.0                             | 339,316.3   | 5,107.7   | 1,984.3                                  | 1,084.9                          | 614.7  | 2,599.0                         |
| 2011-07-18 | 651,023.5   | 51.5                             | 335,110.2   | 5,044.3   | 1,959.7                                  | 1,084.9                          | 614.7  | 2,574.4                         |
| 2011-07-19 | 659,608.6   | 50.5                             | 333,347.5   | 5,017.8   | 1,949.4                                  | 1,085.0                          | 614.8  | 2,564.2                         |
| 2011-07-20 | 667,717.1   | 49.9                             | 333,508.8   | 5,020.2   | 1,950.4                                  | 1,084.9                          | 614.7  | 2,565.0                         |
| 2011-07-21 | 671,717.9   | 49.6                             | 332,868.9   | 5,010.6   | 1,946.6                                  | 1,084.0                          | 614.2  | 2,560.8                         |
| 2011-07-22 | 682,192.4   | 49.4                             | 337,125.8   | 5,074.7   | 1,971.5                                  | 1,084.3                          | 614.4  | 2,585.9                         |
| 2011-07-23 | 679,596.8   | 49.2                             | 334,355.9   | 5,033.0   | 1,955.3                                  | 1,083.6                          | 614.0  | 2,569.3                         |
| 2011-07-24 | 681,934.1   | 49.8                             | 339,647.7   | 5,112.6   | 1,986.3                                  | 1,083.8                          | 614.1  | 2,600.3                         |
| 2011-07-25 | 672,875.3   | 49.9                             | 335,741.6   | 5,053.9   | 1,963.4                                  | 1,083.2                          | 613.7  | 2,577.1                         |
| 2011-07-26 | 676,687.3   | 50.0                             | 338,062.4   | 5,088.8   | 1,977.0                                  | 1,083.4                          | 613.8  | 2,590.8                         |
| 2011-07-27 | 625,856.6   | 50.0                             | 313,212.9   | 4,714.7   | 1,831.7                                  | 1,083.0                          | 613.6  | 2,445.3                         |
| 2011-07-28 | 365,597.9   | 47.9                             | 175,024.4   | 2,634.6   | 1,023.5                                  | 1,083.6                          | 613.9  | 1,637.5                         |
| 2011-07-29 | 660,494.0   | 50.9                             | 336,292.9   | 5,062.1   | 1,966.6                                  | 1,083.8                          | 614.1  | 2,580.7                         |
| 2011-07-30 | 652,078.5   | 51.0                             | 332,655.4   | 5,007.4   | 1,945.4                                  | 1,083.9                          | 614.2  | 2,559.5                         |
| 2011-07-31 | 666,094.2   | 51.2                             | 341,209.3   | 5,136.2   | 1,995.4                                  | 1,083.9                          | 614.1  | 2,609.5                         |
| 2011-08-01 | 657,138.9   | 51.4                             | 337,933.7   | 5,086.8   | 1,976.2                                  | 1,083.5                          | 613.9  | 2,590.1                         |
| 2011-08-02 | 665,602.3   | 51.0                             | 339,493.6   | 5,110.3   | 1,985.4                                  | 1,083.4                          | 613.8  | 2,599.2                         |
| 2011-08-03 | 675,590.6   | 50.7                             | 342,564.7   | 5,156.6   | 2,003.3                                  | 1,083.2                          | 613.7  | 2,617.1                         |
| 2011-08-04 | 694,054.2   | 51.0                             | 353,631.2   | 5,323.1   | 2,068.0                                  | 1,083.3                          | 613.8  | 2,681.8                         |
| 2011-08-05 | 705,523.0   | 50.6                             | 357,149.8   | 5,376.1   | 2,088.6                                  | 1,083.3                          | 613.8  | 2,702.4                         |
| 2011-08-06 | 697,169.8   | 50.2                             | 349,984.2   | 5,268.2   | 2,046.7                                  | 1,083.8                          | 614.1  | 2,660.8                         |
| 2011-08-07 | 696,596.2   | 50.1                             | 349,199.5   | 5,256.4   | 2,042.1                                  | 1,084.5                          | 614.5  | 2,656.6                         |
| 2011-08-08 | 706,313.9   | 50.3                             | 354,983.8   | 5,343.5   | 2,075.9                                  | 1,083.9                          | 614.1  | 2,690.1                         |
| 2011-08-09 | 698,315.5   | 50.0                             | 349,319.7   | 5,258.2   | 2,042.8                                  | 1,083.7                          | 614.0  | 2,656.8                         |
| 2011-08-10 | 697,159.9   | 49.9                             | 347,559.9   | 5,231.8   | 2,032.5                                  | 1,083.4                          | 613.9  | 2,646.4                         |
| 2011-08-11 | 692,539.1   | 50.0                             | 346,465.3   | 5,215.3   | 2,026.1                                  | 1,083.6                          | 614.0  | 2,640.1                         |
| 2011-08-12 | 701,735.0   | 49.7                             | 348,669.9   | 5,248.5   | 2,039.0                                  | 1,083.5                          | 613.9  | 2,653.0                         |
| 2011-08-13 | 700,360.2   | 50.1                             | 350,864.5   | 5,281.5   | 2,051.9                                  | 1,083.1                          | 613.7  | 2,665.6                         |
| 2011-08-14 | 698,518.8   | 50.0                             | 348,973.1   | 5,253.0   | 2,040.8                                  | 1,083.5                          | 613.9  | 2,654.7                         |
| 2011-08-15 | 697,927.2   | 49.9                             | 348,409.6   | 5,244.5   | 2,037.5                                  | 1,083.9                          | 614.1  | 2,651.6                         |
| 2011-08-16 | 699,317.6   | 50.4                             | 352,200.1   | 5,301.6   | 2,059.7                                  | 1,083.4                          | 613.9  | 2,673.5                         |
| 2011-08-17 | 696,251.1   | 50.0                             | 348,346.4   | 5,243.6   | 2,037.1                                  | 1,083.8                          | 614.1  | 2,651.2                         |



| Date       | LFG <sub>selected</sub><br>(Nm <sup>3</sup> /day) | WCH <sub>4</sub> weighted<br>(%) | CH <sub>4</sub> combusted<br>(Nm <sup>3</sup> /day) | ER from<br>CH <sub>4</sub> combusted<br>(tCO <sub>2</sub> ) | AF adjusted<br>BE<br>(tCO <sub>2</sub> ) | Net elec.<br>Generation<br>(MWh) | ER from<br>generation<br>(tCO <sub>2</sub> ) | Total ER<br>(tCO <sub>2</sub> ) |
|------------|---|----------------------------------|---|---|--|----------------------------------|--|---------------------------------|
| 2011-08-18 | 688,376.5   | 49.7                             | 342,340.4   | 5,153.2   | 2,002.0                                  | 1,083.7                          | 614.0  | 2,616.0                         |
| 2011-08-19 | 685,844.0   | 49.9                             | 342,266.1   | 5,152.1   | 2,001.6                                  | 1,083.6                          | 614.0  | 2,615.6                         |
| 2011-08-20 | 684,721.1   | 50.1                             | 343,300.2   | 5,167.6   | 2,007.6                                  | 1,083.3                          | 613.8  | 2,621.4                         |
| 2011-08-21 | 681,340.9   | 49.8                             | 339,602.8   | 5,112.0   | 1,986.0                                  | 1,083.5                          | 613.9  | 2,599.9                         |
| 2011-08-22 | 683,943.2   | 49.7                             | 339,676.7   | 5,113.1   | 1,986.4                                  | 1,083.7                          | 614.0  | 2,600.4                         |
| 2011-08-23 | 678,041.0   | 49.8                             | 337,440.6   | 5,079.4   | 1,973.4                                  | 1,084.8                          | 614.7  | 2,588.0                         |
| 2011-08-24 | 674,035.7   | 49.7                             | 334,756.4   | 5,039.0   | 1,957.7                                  | 1,083.7                          | 614.1  | 2,571.7                         |
| 2011-08-25 | 672,731.4   | 49.8                             | 335,225.3   | 5,046.1   | 1,960.4                                  | 1,083.7                          | 614.0  | 2,574.4                         |
| 2011-08-26 | 674,434.1   | 49.7                             | 335,450.4   | 5,049.5   | 1,961.7                                  | 1,083.5                          | 613.9  | 2,575.6                         |
| 2011-08-27 | 676,699.1   | 49.7                             | 336,242.8   | 5,061.4   | 1,966.4                                  | 1,083.2                          | 613.8  | 2,580.1                         |
| 2011-08-28 | 676,311.7   | 49.3                             | 333,137.9   | 5,014.7   | 1,948.2                                  | 1,083.0                          | 613.6  | 2,561.8                         |
| 2011-08-29 | 680,540.1   | 49.1                             | 334,352.1   | 5,032.9   | 1,955.3                                  | 1,082.5                          | 613.3  | 2,568.6                         |
| 2011-08-30 | 682,493.7   | 49.1                             | 335,408.0   | 5,048.8   | 1,961.5                                  | 1,082.2                          | 613.2  | 2,574.7                         |
| 2011-08-31 | 683,672.5   | 48.9                             | 334,444.6   | 5,034.3   | 1,955.8                                  | 1,081.8                          | 612.9  | 2,568.8                         |
| 2011-09-01 | 685,848.2   | 48.8                             | 334,375.9   | 5,033.3   | 1,955.4                                  | 1,082.6                          | 613.4  | 2,568.8                         |
| 2011-09-02 | 690,619.0   | 48.3                             | 333,712.9   | 5,023.3   | 1,951.6                                  | 1,083.2                          | 613.8  | 2,565.3                         |
| 2011-09-03 | 696,331.2   | 48.5                             | 337,476.8   | 5,080.0   | 1,973.6                                  | 1,084.7                          | 614.6  | 2,588.1                         |
| 2011-09-04 | 698,987.2   | 48.4                             | 338,641.8   | 5,097.5   | 1,980.4                                  | 1,086.2                          | 615.4  | 2,595.8                         |
| 2011-09-05 | 699,808.8   | 48.7                             | 340,647.1   | 5,127.7   | 1,992.1                                  | 1,086.4                          | 615.5  | 2,607.6                         |
| 2011-09-06 | 709,188.4   | 48.5                             | 343,640.9   | 5,172.8   | 2,009.6                                  | 1,084.8                          | 614.7  | 2,624.3                         |
| 2011-09-07 | 715,715.5   | 48.1                             | 344,089.9   | 5,179.5   | 2,012.2                                  | 1,085.6                          | 615.1  | 2,627.3                         |
| 2011-09-08 | 719,652.4   | 47.8                             | 343,636.1   | 5,172.7   | 2,009.6                                  | 1,084.9                          | 614.7  | 2,624.3                         |
| 2011-09-09 | 727,292.9   | 47.4                             | 345,002.0   | 5,193.2   | 2,017.6                                  | 1,084.3                          | 614.4  | 2,631.9                         |
| 2011-09-10 | 717,813.8   | 47.6                             | 341,956.1   | 5,147.4   | 1,999.8                                  | 1,084.5                          | 614.5  | 2,614.2                         |
| 2011-09-11 | 719,216.4   | 47.4                             | 341,194.1   | 5,135.9   | 1,995.3                                  | 1,084.4                          | 614.4  | 2,609.7                         |
| 2011-09-12 | 717,204.9   | 47.5                             | 340,883.3   | 5,131.2   | 1,993.5                                  | 1,083.5                          | 613.9  | 2,607.4                         |
| 2011-09-13 | 715,789.3   | 47.2                             | 338,206.5   | 5,091.0   | 1,977.8                                  | 1,083.7                          | 614.0  | 2,591.9                         |
| 2011-09-14 | 721,338.9   | 47.2                             | 340,287.5   | 5,122.3   | 1,990.0                                  | 1,082.5                          | 613.4  | 2,603.4                         |
| 2011-09-15 | 724,137.2   | 46.7                             | 338,117.7   | 5,089.6   | 1,977.3                                  | 1,082.5                          | 613.4  | 2,590.7                         |
| 2011-09-16 | 724,555.4   | 47.1                             | 341,014.7   | 5,133.2   | 1,994.3                                  | 1,082.4                          | 613.3  | 2,607.5                         |
| 2011-09-17 | 733,288.9   | 46.5                             | 341,253.9   | 5,136.8   | 1,995.7                                  | 1,082.3                          | 613.2  | 2,608.9                         |
| 2011-09-18 | 741,527.7   | 46.1                             | 341,922.1   | 5,146.9   | 1,999.6                                  | 1,085.0                          | 614.8  | 2,614.3                         |
| 2011-09-19 | 752,694.8   | 46.0                             | 346,180.4   | 5,211.0   | 2,024.5                                  | 1,085.9                          | 615.3  | 2,639.7                         |
| 2011-09-20 | 755,065.2   | 45.9                             | 346,307.3   | 5,212.9   | 2,025.2                                  | 1,087.5                          | 616.2  | 2,641.4                         |
| 2011-09-21 | 763,981.5   | 45.3                             | 346,360.1   | 5,213.7   | 2,025.5                                  | 1,087.2                          | 616.0  | 2,641.5                         |
| 2011-09-22 | 772,670.1   | 44.7                             | 345,683.7   | 5,203.5   | 2,021.6                                  | 1,086.0                          | 615.3  | 2,636.9                         |
| 2011-09-23 | 770,127.1   | 44.3                             | 341,119.9   | 5,134.8   | 1,994.9                                  | 1,085.3                          | 614.9  | 2,609.8                         |
| 2011-09-24 | 768,505.1   | 44.0                             | 338,368.3   | 5,093.4   | 1,978.8                                  | 1,082.7                          | 613.5  | 2,592.3                         |
| 2011-09-25 | 772,650.9   | 43.8                             | 338,554.5   | 5,096.2   | 1,979.9                                  | 1,083.1                          | 613.7  | 2,593.5                         |
| 2011-09-26 | 771,113.4   | 44.0                             | 339,669.8   | 5,113.0   | 1,986.4                                  | 1,082.5                          | 613.4  | 2,599.8                         |
| 2011-09-27 | 771,598.7   | 43.6                             | 336,654.4   | 5,067.6   | 1,968.8                                  | 1,082.7                          | 613.5  | 2,582.2                         |
| 2011-09-28 | 767,872.8   | 44.6                             | 342,249.6   | 5,151.8   | 2,001.5                                  | 1,082.0                          | 613.0  | 2,614.5                         |
| 2011-09-29 | 768,716.9   | 45.2                             | 347,488.9   | 5,230.7   | 2,032.1                                  | 1,083.0                          | 613.6  | 2,645.7                         |
| 2011-09-30 | 765,483.1   | 45.0                             | 344,343.8   | 5,183.3   | 2,013.7                                  | 1,086.0                          | 615.3  | 2,629.1                         |
| 2011-10-01 | 764,313.0   | 45.0                             | 343,571.5   | 5,171.7   | 2,009.2                                  | 1,088.3                          | 616.6  | 2,625.8                         |
| 2011-10-02 | 763,301.8   | 44.9                             | 342,350.9   | 5,153.3   | 2,002.1                                  | 1,088.8                          | 616.9  | 2,619.0                         |
| 2011-10-03 | 713,260.8   | 44.8                             | 319,667.4   | 4,811.9   | 1,869.4                                  | 484.7                            | 274.7  | 2,144.1                         |
| 2011-10-04 | 682,118.2   | 44.8                             | 305,576.7   | 4,599.8   | 1,787.0                                  | -15.9                            | -9.0   | 1,778.0                         |
| 2011-10-05 | 684,040.3   | 45.0                             | 307,882.9   | 4,634.5   | 1,800.5                                  | -15.7                            | -8.9   | 1,791.6                         |
| 2011-10-06 | 684,653.7   | 44.8                             | 306,459.5   | 4,613.1   | 1,792.2                                  | -15.7                            | -8.9   | 1,783.3                         |
| 2011-10-07 | 680,302.0   | 44.6                             | 303,183.2   | 4,563.8   | 1,773.0                                  | -15.8                            | -9.0   | 1,764.0                         |
| 2011-10-08 | 689,166.1   | 43.8                             | 302,016.5   | 4,546.2   | 1,766.2                                  | -15.8                            | -8.9   | 1,757.3                         |
| 2011-10-09 | 758,531.3   | 44.2                             | 335,569.0   | 5,051.3   | 1,962.4                                  | 333.7                            | 189.1  | 2,151.5                         |
| 2011-10-10 | 860,826.7   | 44.5                             | 383,287.1   | 5,769.5   | 2,241.5                                  | 1,087.1                          | 615.9  | 2,857.4                         |
| 2011-10-11 | 856,929.7   | 44.9                             | 384,627.4   | 5,789.7   | 2,249.3                                  | 1,089.9                          | 617.5  | 2,866.8                         |
| 2011-10-12 | 784,139.7   | 45.3                             | 355,086.1   | 5,345.0   | 2,076.5                                  | 1,090.7                          | 618.0  | 2,694.5                         |
| 2011-10-13 | 894,483.0   | 45.5                             | 407,402.2   | 6,132.5   | 2,382.5                                  | 1,089.5                          | 617.3  | 2,999.8                         |
| 2011-10-14 | 933,086.9   | 45.6                             | 425,675.3   | 6,407.6   | 2,489.4                                  | 1,089.8                          | 617.5  | 3,106.8                         |



| Date       | LFG <sub>selected</sub><br>(Nm <sup>3</sup> /day) | WCH <sub>4</sub> weighted<br>(%) | CH <sub>4</sub> combusted<br>(Nm <sup>3</sup> /day) | ER from<br>CH <sub>4</sub> combusted<br>(tCO <sub>2</sub> ) | AF adjusted<br>BE<br>(tCO <sub>2</sub> ) | Net elec.<br>Generation<br>(MWh) | ER from<br>generation<br>(tCO <sub>2</sub> ) | Total ER<br>(tCO <sub>2</sub> ) |
|------------|---|----------------------------------|---|---|--|----------------------------------|--|---------------------------------|
| 2011-10-15 | 931,511.4   | 45.7                             | 425,291.5   | 6,401.8   | 2,487.1                                  | 1,089.3                          | 617.2  | 3,104.3                         |
| 2011-10-16 | 930,508.4   | 45.7                             | 424,999.5   | 6,397.4   | 2,485.4                                  | 1,089.4                          | 617.2  | 3,102.6                         |
| 2011-10-17 | 931,860.6   | 45.6                             | 425,113.5   | 6,399.1   | 2,486.1                                  | 1,091.2                          | 618.2  | 3,104.3                         |
| 2011-10-18 | 924,822.1   | 46.5                             | 430,220.4   | 6,476.0   | 2,515.9                                  | 1,091.4                          | 618.4  | 3,134.3                         |
| 2011-10-19 | 925,530.3   | 46.5                             | 430,028.9   | 6,473.1   | 2,514.8                                  | 1,091.2                          | 618.3  | 3,133.1                         |
| 2011-10-20 | 926,773.6   | 46.6                             | 432,074.0   | 6,503.9   | 2,526.8                                  | 1,090.6                          | 617.9  | 3,144.7                         |
| 2011-10-21 | 926,215.4   | 47.4                             | 438,676.3   | 6,603.3   | 2,565.4                                  | 1,090.9                          | 618.1  | 3,183.5                         |
| 2011-10-22 | 929,698.0   | 47.3                             | 439,440.3   | 6,614.8   | 2,569.9                                  | 1,089.7                          | 617.5  | 3,187.3                         |
| 2011-10-23 | 933,164.2   | 46.6                             | 435,184.6   | 6,550.7   | 2,545.0                                  | 1,090.0                          | 617.6  | 3,162.6                         |
| 2011-10-24 | 930,774.2   | 47.3                             | 440,276.9   | 6,627.4   | 2,574.7                                  | 1,089.3                          | 617.2  | 3,192.0                         |
| 2011-10-25 | 927,844.3   | 47.0                             | 435,707.5   | 6,558.6   | 2,548.0                                  | 1,090.4                          | 617.8  | 3,165.8                         |
| 2011-10-26 | 932,826.2   | 46.9                             | 437,540.6   | 6,586.2   | 2,558.7                                  | 1,090.4                          | 617.8  | 3,176.6                         |
| 2011-10-27 | 932,714.4   | 47.1                             | 439,162.0   | 6,610.6   | 2,568.2                                  | 1,090.1                          | 617.6  | 3,185.9                         |
| 2011-10-28 | 929,659.8   | 47.1                             | 438,107.3   | 6,594.7   | 2,562.1                                  | 1,089.7                          | 617.4  | 3,179.5                         |
| 2011-10-29 | 929,397.9   | 47.3                             | 439,146.3   | 6,610.4   | 2,568.1                                  | 1,090.3                          | 617.8  | 3,185.9                         |
| 2011-10-30 | 934,529.7   | 47.0                             | 438,838.0   | 6,605.7   | 2,566.3                                  | 1,090.3                          | 617.8  | 3,184.1                         |
| 2011-10-31 | 933,586.5   | 46.8                             | 436,899.7   | 6,576.6   | 2,555.0                                  | 950.0                            | 538.3  | 3,093.3                         |
| 2011-11-01 | 884,881.8   | 47.1                             | 416,647.9   | 6,271.7   | 2,436.6                                  | 1,089.5                          | 617.3  | 3,053.9                         |
| 2011-11-02 | 801,997.8   | 46.7                             | 374,156.0   | 5,632.1   | 2,188.1                                  | 1,089.5                          | 617.3  | 2,805.4                         |
| 2011-11-03 | 854,401.4   | 45.5                             | 388,809.6   | 5,852.7   | 2,273.8                                  | 1,088.4                          | 616.7  | 2,890.4                         |
| 2011-11-04 | 851,412.8   | 46.8                             | 398,043.9   | 5,991.7   | 2,327.8                                  | 1,086.9                          | 615.8  | 2,943.6                         |
| 2011-11-05 | 846,263.4   | 47.1                             | 398,339.7   | 5,996.1   | 2,329.5                                  | 1,086.6                          | 615.6  | 2,945.1                         |
| 2011-11-06 | 855,716.7   | 46.7                             | 399,217.0   | 6,009.3   | 2,334.6                                  | 1,088.6                          | 616.8  | 2,951.4                         |
| 2011-11-07 | 853,418.1   | 46.8                             | 399,209.7   | 6,009.2   | 2,334.6                                  | 1,088.9                          | 617.0  | 2,951.5                         |
| 2011-11-08 | 857,282.4   | 47.5                             | 407,498.5   | 6,134.0   | 2,383.1                                  | 1,090.0                          | 617.6  | 3,000.7                         |
| 2011-11-09 | 863,896.0   | 47.1                             | 406,665.7   | 6,121.5   | 2,378.2                                  | 1,090.1                          | 617.6  | 2,995.8                         |
| 2011-11-10 | 867,045.1   | 46.7                             | 405,024.5   | 6,096.8   | 2,368.6                                  | 1,090.4                          | 617.8  | 2,986.4                         |
| 2011-11-11 | 865,522.5   | 46.8                             | 405,106.2   | 6,098.0   | 2,369.1                                  | 1,090.5                          | 617.9  | 2,987.0                         |
| 2011-11-12 | 863,339.6   | 46.5                             | 401,683.2   | 6,046.5   | 2,349.0                                  | 1,091.3                          | 618.3  | 2,967.4                         |
| 2011-11-13 | 865,999.4   | 46.4                             | 401,805.0   | 6,048.3   | 2,349.8                                  | 1,091.0                          | 618.2  | 2,967.9                         |
| 2011-11-14 | 865,069.7   | 45.8                             | 395,863.7   | 5,958.9   | 2,315.0                                  | 1,090.9                          | 618.1  | 2,933.1                         |
| 2011-11-15 | 875,902.0   | 46.7                             | 408,770.8   | 6,153.1   | 2,390.5                                  | 1,090.8                          | 618.1  | 3,008.6                         |
| 2011-11-16 | 879,018.8   | 46.6                             | 409,402.4   | 6,162.7   | 2,394.2                                  | 1,090.3                          | 617.8  | 3,012.0                         |
| 2011-11-17 | 865,806.8   | 45.7                             | 395,652.6   | 5,955.7   | 2,313.8                                  | 1,090.9                          | 618.1  | 2,931.9                         |
| 2011-11-18 | 876,161.4   | 46.5                             | 407,214.7   | 6,129.7   | 2,381.4                                  | 1,088.7                          | 616.9  | 2,998.3                         |
| 2011-11-19 | 885,332.4   | 46.6                             | 412,666.8   | 6,211.8   | 2,413.3                                  | 1,089.4                          | 617.3  | 3,030.6                         |
| 2011-11-20 | 903,754.5   | 45.8                             | 413,532.2   | 6,224.8   | 2,418.3                                  | 1,089.9                          | 617.5  | 3,035.9                         |
| 2011-11-21 | 894,951.5   | 46.5                             | 416,549.6   | 6,270.2   | 2,436.0                                  | 1,089.0                          | 617.0  | 3,053.0                         |
| 2011-11-22 | 900,828.5   | 47.2                             | 425,473.0   | 6,404.6   | 2,488.2                                  | 1,089.3                          | 617.2  | 3,105.4                         |
| 2011-11-23 | 892,385.4   | 46.7                             | 416,309.6   | 6,266.6   | 2,434.6                                  | 1,088.7                          | 616.9  | 3,051.5                         |
| 2011-11-24 | 895,889.1   | 46.9                             | 419,776.5   | 6,318.8   | 2,454.9                                  | 1,088.5                          | 616.7  | 3,071.6                         |
| 2011-11-25 | 888,550.8   | 46.3                             | 411,481.0   | 6,193.9   | 2,406.3                                  | 1,088.4                          | 616.7  | 3,023.0                         |
| 2011-11-26 | 888,199.8   | 46.5                             | 413,292.0   | 6,221.2   | 2,416.9                                  | 1,089.0                          | 617.0  | 3,034.0                         |
| 2011-11-27 | 882,575.1   | 46.3                             | 408,272.6   | 6,145.6   | 2,387.6                                  | 1,088.4                          | 616.7  | 3,004.3                         |
| 2011-11-28 | 878,691.3   | 45.2                             | 397,200.7   | 5,979.0   | 2,322.8                                  | 1,087.2                          | 616.0  | 2,938.8                         |
| 2011-11-29 | 874,580.2   | 45.0                             | 393,556.6   | 5,924.1   | 2,301.5                                  | 1,087.9                          | 616.4  | 2,917.9                         |
| 2011-11-30 | 880,264.3   | 45.1                             | 397,054.2   | 5,976.8   | 2,322.0                                  | 1,088.3                          | 616.6  | 2,938.6                         |
| 2011-12-01 | 880,081.6   | 46.3                             | 407,246.0   | 6,130.2   | 2,381.6                                  | 1,088.9                          | 617.0  | 2,998.5                         |
| 2011-12-02 | 900,648.0   | 47.1                             | 424,371.0   | 6,388.0   | 2,481.7                                  | 1,088.8                          | 616.9  | 3,098.6                         |
| 2011-12-03 | 904,303.8   | 46.7                             | 422,118.6   | 6,354.1   | 2,468.6                                  | 1,089.1                          | 617.1  | 3,085.6                         |
| 2011-12-04 | 914,279.3   | 45.6                             | 416,675.9   | 6,272.1   | 2,436.7                                  | 1,088.3                          | 616.6  | 3,053.3                         |
| 2011-12-05 | 912,862.8   | 45.7                             | 417,532.1   | 6,285.0   | 2,441.7                                  | 1,087.1                          | 615.9  | 3,057.7                         |
| 2011-12-06 | 885,591.0   | 46.5                             | 412,172.0   | 6,204.3   | 2,410.4                                  | 1,088.5                          | 616.7  | 3,027.1                         |
| 2011-12-07 | 884,081.3   | 46.5                             | 411,149.2   | 6,188.9   | 2,404.4                                  | 1,088.7                          | 616.9  | 3,021.3                         |
| 2011-12-08 | 892,815.7   | 45.4                             | 405,434.0   | 6,102.9   | 2,371.0                                  | 1,087.2                          | 616.0  | 2,987.0                         |
| 2011-12-09 | 887,564.8   | 44.9                             | 398,636.2   | 6,000.6   | 2,331.2                                  | 1,086.9                          | 615.8  | 2,947.1                         |
| 2011-12-10 | 790,337.1   | 45.1                             | 356,832.3   | 5,371.3   | 2,086.8                                  | 962.8                            | 545.5  | 2,632.3                         |
| 2011-12-11 | 888,982.2   | 44.1                             | 392,418.1   | 5,907.0   | 2,294.9                                  | 1,088.5                          | 616.7  | 2,911.6                         |



| Date       | LFG <sub>selected</sub><br>(Nm <sup>3</sup> /day) | WCH <sub>4</sub> weighted<br>(%) | CH <sub>4</sub> combusted<br>(Nm <sup>3</sup> /day) | ER from<br>CH <sub>4</sub> combusted<br>(tCO <sub>2</sub> ) | AF adjusted<br>BE<br>(tCO <sub>2</sub> ) | Net elec.<br>Generation<br>(MWh) | ER from<br>generation<br>(tCO <sub>2</sub> ) | Total ER<br>(tCO <sub>2</sub> ) |
|------------|---|----------------------------------|---|---|--|----------------------------------|--|---------------------------------|
| 2011-12-12 | 890,793.9   | 44.9                             | 399,724.3   | 6,017.0   | 2,337.6                                  | 1,087.7                          | 616.3  | 2,953.9                         |
| 2011-12-13 | 904,132.3   | 46.1                             | 416,579.8   | 6,270.7   | 2,436.2                                  | 1,088.3                          | 616.6  | 3,052.8                         |
| 2011-12-14 | 908,271.3   | 46.5                             | 421,985.5   | 6,352.1   | 2,467.8                                  | 1,087.8                          | 616.4  | 3,084.1                         |
| 2011-12-15 | 818,243.0   | 45.8                             | 374,865.4   | 5,642.8   | 2,192.2                                  | 1,087.5                          | 616.2  | 2,808.4                         |
| 2011-12-16 | 884,882.2   | 45.7                             | 404,754.4   | 6,092.7   | 2,367.0                                  | 1,087.9                          | 616.4  | 2,983.4                         |
| 2011-12-17 | 886,150.9   | 44.6                             | 394,954.6   | 5,945.2   | 2,309.7                                  | 1,088.1                          | 616.5  | 2,926.2                         |
| 2011-12-18 | 887,793.5   | 46.8                             | 415,720.7   | 6,257.8   | 2,431.1                                  | 1,088.5                          | 616.7  | 3,047.9                         |
| 2011-12-19 | 883,975.7   | 46.3                             | 409,273.9   | 6,160.7   | 2,393.4                                  | 1,087.0                          | 615.9  | 3,009.3                         |
| 2011-12-20 | 888,812.2   | 47.1                             | 418,666.7   | 6,302.1   | 2,448.4                                  | 1,081.0                          | 612.5  | 3,060.9                         |
| 2011-12-21 | 895,520.9   | 47.4                             | 424,895.5   | 6,395.9   | 2,484.8                                  | 1,076.6                          | 610.0  | 3,094.8                         |
| 2011-12-22 | 903,271.9   | 45.4                             | 410,075.2   | 6,172.8   | 2,398.1                                  | 1,076.9                          | 610.2  | 3,008.3                         |
| 2011-12-23 | 938,688.6   | 44.0                             | 412,848.1   | 6,214.5   | 2,414.3                                  | 1,076.2                          | 609.8  | 3,024.1                         |
| 2011-12-24 | 1,024,534.8                                       | 45.0                             | 461,425.2   | 6,945.7   | 2,698.4                                  | 1,059.0                          | 600.0  | 3,298.5                         |
| 2011-12-25 | 924,600.9   | 41.4                             | 382,473.0   | 5,757.3   | 2,236.7                                  | 962.9                            | 545.6  | 2,782.3                         |
| 2011-12-26 | 934,773.1   | 42.4                             | 396,701.5   | 5,971.5   | 2,319.9                                  | 591.5                            | 335.2  | 2,655.1                         |
| 2011-12-27 | 958,205.4   | 42.7                             | 409,311.3   | 6,161.3   | 2,393.7                                  | 386.4                            | 218.9  | 2,612.6                         |
| 2011-12-28 | 974,928.2   | 45.8                             | 446,660.6   | 6,723.5   | 2,612.1                                  | 385.9                            | 218.7  | 2,830.8                         |
| 2011-12-29 | 965,348.2   | 45.7                             | 441,110.0   | 6,639.9   | 2,579.6                                  | 367.9                            | 208.4  | 2,788.1                         |
| 2011-12-30 | 954,821.6   | 44.1                             | 420,657.9   | 6,332.1   | 2,460.0                                  | 204.1                            | 115.6  | 2,575.6                         |
| 2011-12-31 | 970,715.1   | 46.8                             | 454,392.1   | 6,839.9   | 2,657.3                                  | 148.3                            | 84.1   | 2,741.3                         |

\* Above results are only for baseline emissions calculation. BE<sub>9.88MW</sub> & PE<sub>LPG</sub> are separately calculated.

#### History of the document

| Version   | Date                           | Nature of revision   |
|---|--------------------------------|--|
| 02.0  | EB 66<br>13 March 2012         | Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20). |
| 01  | EB 54, Annex 34<br>28 May 2010 | Initial adoption.  |
| <b>Decision Class:</b> Regulatory<br><b>Document Type:</b> Form<br><b>Business Function:</b> Issuance |                                |  |