CLEAN DEVELOPMENT MECHANISM

ACM0025

Large-scale Consolidated Methodology

Construction of a new natural gas power plant

Version 01.0

Sectoral scope(s): 01

United Nations
Framework Convention on
Climate Change

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1. Introduction

1. The following table describes the key elements of the methodology:

Table 1. Methodology key elements

Typical project(s)	Installation of a natural-gas-fired power plant that supplies electricity to a grid and/or an electricity to a consuming facility
Type of GHG emissions mitigation action	Low carbon electricity: Displacement of electricity that would be provided by more-carbon-intensive means

2. Scope, applicability, and entry into force

2.1. Scope

2. This methodology is applicable to project activities that implement new power generation plants that use natural gas as fuel, and displace electricity from the electric power grid or from a specific baseline power generation technology.

2.2. Applicability

3. This methodology is applicable under the following conditions:

(a) The project activity is the construction and operation of a new natural gas fired power plant that supplies electricity: (i) to the electric power grid; or (ii) to the electric power grid and to an electricity consuming facility(ies);

(b) If the project activity power plant co-generates heat, no emission reductions can be claimed for the generated heat;

(c) Natural gas is used as main fuel in the project power plant. Small amounts of other start-up or auxiliary fuels can be used, but they shall not comprise more than one per cent of total fuel used annually, on an energy basis;

(d) Natural gas is sufficiently available in the region or country, e.g. future natural gas based power capacity additions, comparable in size to the project activity, are not constrained by the use of natural gas in the project activity.[1]

[1] In some situations, there could be price-inelastic supply constraints (e.g. limited resources without possibility of expansion during the crediting period) that could mean that a project activity displaces natural gas that would otherwise be used elsewhere in an economy, thus leading to possible leakage. Hence, it is important for the project participants to document that supply limitations will not result in significant leakage as indicated here.

4. In the case that the project plant supplies electricity to an existing electricity consuming facility(ies), the sources of electricity as well as average historical energy consumption should be presented in the CDM-PDD.

5. In the case the project plant supplies electricity to an electricity consuming facility(ies) electricity should be supplied through a dedicated transmission line(s) which is not used for other purposes.

6. Electricity consuming facility(ies) shall be clearly identified in the CDM-PDD prior to the implementation of the project activity.

2.3. Entry into force

7. The date of entry into force is the date of the publication of the EB 83 meeting report on 16 April 2015.

3. Normative references

8. This baseline and monitoring methodology is based on the following proposed new and approved methodologies:

   (a) "AM0029: Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas";

   (b) "AM0087: Construction of a new natural gas power plant supplying electricity to the grid or a single consumer";

   (c) "NM0080-rev:Baseline methodology for grid connected generation plants using non-renewable and less GHG intensive fuel submitted by Torrent Power Generation Limited (TPGL) and assisted by PricewaterhouseCoopers (PwC);

   (d) "NM0153:Baseline methodology for grid connected electricity generation plants using Natural Gas (NG)/Liquiefied Natural Gas (LNG) as fuels" submitted by Reliance Energy Limited (REL);

   (e) "NM0322: Provision of natural gas-based electricity to a single user from a new plant owned and operated by the power supplier" submitted by PT Carbon Partners Asiatica.

9. This methodology also refers to the latest approved versions of the following methodological tools:

   (a) "Tool to calculate the emission factor for an electricity system";

   (b) "Tool to determine the baseline efficiency of thermal or electric energy generation systems";

   (c) "Tool for the demonstration and assessment of additionality";

   (d) "Tool to determine the remaining lifetime of equipment";

   (e) "Upstream leakage emissions associated with fossil fuel use";

(f) "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period";

(g) "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion".

10. For more information regarding the proposed new methodologies and the tools as well as their consideration by the Executive Board of the clean development mechanism (CDM) (hereinafter referred to as the Board) please refer to <http://cdm.unfccc.int/goto/MPappmeth>.

3.1. Selected approach from paragraph 48 of the CDM modalities and procedures

11. "Emissions from a technology that represents an economically attractive course of action, taking into account barriers to investment".

4. Definitions

12. The definitions contained in the Glossary of CDM terms shall apply.

13. For the purpose of this methodology, the following definitions apply:

(a) **New power plant** - is a newly constructed power plant with no operational history;

(b) **Electricity consuming facility** - is an industrial or commercial facility that meets its electricity demand under the project activity for electricity from: (i) the project activity power plant and, where applicable, in addition from; (ii) a captive power plant operated at the site of the electricity consuming facility and/or (iii) the electric power grid;

(c) **Captive power plant** - is a power plant operated at the site of the electricity consuming facility, including any back-up power generators;

(d) **Natural gas** - is a gas which is consisting primarily of methane and which is generated from: (i) natural gas fields (non-associated gas); (ii) associated gas found in oil fields; and/or (iii) coal bed methane. It may be blended up to 1 per cent on a volume basis with gas from other sources, such as, inter alia, biogas generated in biodigesters, landfill gas, gas which is gasified from solid fossil fuels, etc.[2]

14. In addition, the definitions in the latest approved version of the "Tool to calculate the emission factor for an electricity system" apply.

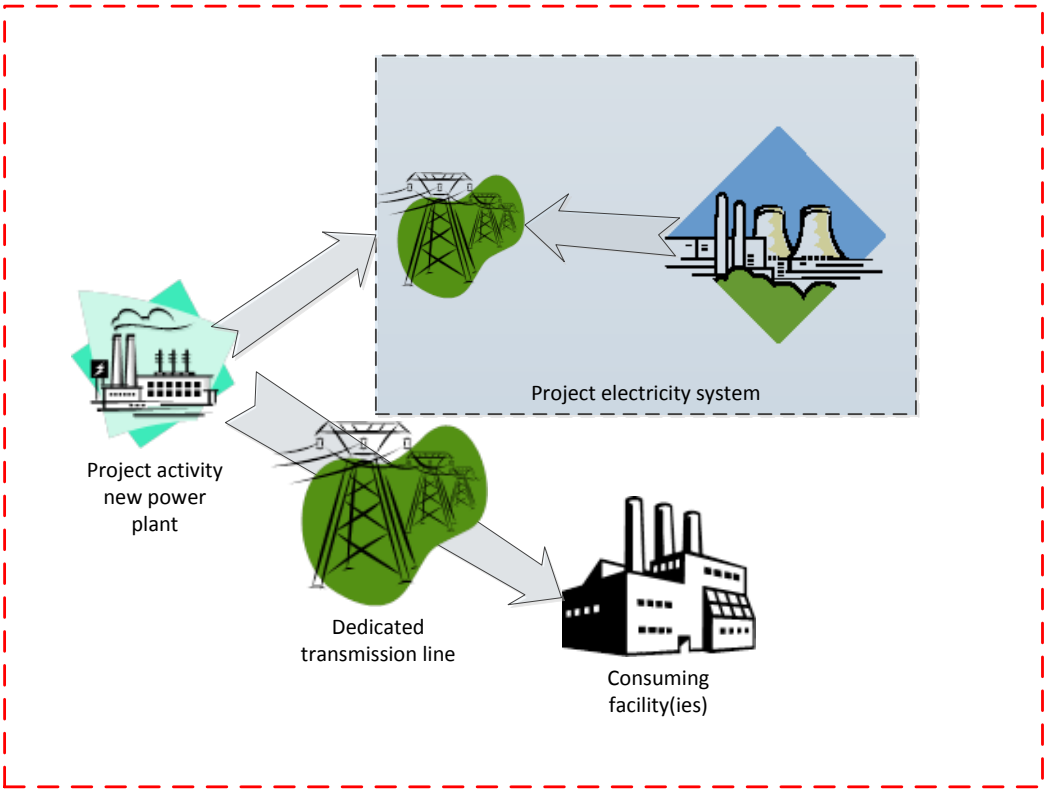
[2] This limitation is included because the methodology does not provide procedures to estimate the GHG emissions associated with the production of gas from these other sources.

5. Baseline methodology

5.1. Project boundary

15. The spatial extent of the project boundary includes the project power plant, all power plants connected physically to the project electricity system as defined in the "Tool to calculate the emission factor for an electricity system" and the electricity consuming facility(ies) in the case that the project activity power plant exports electricity to a consuming facility(ies).

Figure 1. Project boundary



16. In the calculation of project emissions, only CO_2 emissions from fossil fuel combustion in the project power plant are considered. In the calculation of baseline emissions, only CO_2 emissions from fossil fuel combustion in power plant(s) in the baseline are considered.

17. The greenhouse gases included in or excluded from the project boundary are shown in Table 2.

Table 2. Emission sources included in or excluded from the project boundary

Source		Gas	Included	Justification/Explanation
Baseline	Power generation	CO_2	Yes	Main emission source
		CH_4	No	Excluded for simplification. This is conservative
		N_2O	No	Excluded for simplification. This is conservative
Project activity	Fuel combustion in the project plant	CO_2	Yes	Main emission source
		CH_4	No	Excluded for simplification
		N_2O	No	Excluded for simplification

5.2. Procedure for the selection of the baseline scenario

5.2.1. Identification of the plausible alternative baseline scenarios

18. Identify plausible alternative baseline scenarios by applying Step 1 of the latest version of the "Tool for the demonstration and assessment of additionality".

19. When applying "Sub-step 1a" of the tool, alternatives to be analysed by the project proponent should include, inter alia:

    (a) P1: The construction of one or several other power plant(s) using natural gas, but technologies other than the project activity;

    (b) P2: The construction of one or several other power plant(s) using fossil fuels other than natural gas;

    (c) P3: The construction of one or several other power plant(s) using renewable power generation technologies;

    (d) P4: The proposed project activity undertaken without being registered as a CDM project activity;

20. All alternatives do not need to consist solely of power plants of the same capacity, load factor and operational characteristics (i.e. several smaller plants, or the share of a larger plant may be a reasonable alternative to the project activity), however they should deliver similar services (e.g. peak- vs. base-load power). Ensure that all relevant power plant technologies that have recently been constructed or under construction or being planned by the project participants are included as plausible alternatives.

21. A clear description of each baseline scenario alternative, including information on the technology, such as the efficiency and technical lifetime, shall be provided in the CDM-PDD.

5.2.2. Identification of the economically most attractive baseline scenario alternative

22. The economically most attractive baseline scenario alternative is identified using an investment comparison analysis, by applying Step 2 (Option II) of the latest version of the "Tool for the demonstration and assessment of additionality".

23. The investment analysis shall be based on the unit cost of service (e.g. levelized cost of electricity production in $/kWh).

5.3. Procedure for the demonstration of additionality

24. Additionality shall be demonstrated by applying the latest version of the "Tool for the demonstration and assessment of additionality".

25. Step 3 (Barrier analysis) of the tool is not applicable under this methodology.

5.4. Baseline emissions

26. Baseline emissions (BE_y) are calculated as a sum of two components: emissions from electricity generated and supplied by the project power plant to the grid and to the electricity consuming facility(ies). Each component is determined by multiplying the amount of electricity ($EG_{PJ,grid,y}$, $EG_{PJ,facility,i,y}$) with a respective baseline emission factor ($EF_{BL,grid,CO2,y}$, $EF_{BL,facility,CO2,i,y}$).

$$BE_y = EG_{PJ,grid,y} \times EF_{BL,grid,CO2,y} + \sum_i EG_{PJ,facility,i,y} \times EF_{BL,facility,CO2,i,y} \quad \text{Equation (1)}$$

Where:

BE_y	=	Baseline emissions in year *y* (t CO_2)
$EG_{PJ,grid,y}$	=	Quantity of electricity generated in the project power plant and supplied to the grid in year *y* (MWh)
$EF_{BL,grid,CO2,y}$	=	Baseline CO_2 emission factor for electricity supplied to the grid in the year *y* (t CO_2/MWh)
$EG_{PJ,facility,i,y}$	=	Quantity of electricity generated in the project power plant and supplied to the electricity consuming facility(ies) *i* in year *y* (MWh)
$EF_{BL,facility,CO2,i,y}$	=	Baseline CO_2 emission factor for electricity supplied to the electricity consuming facility(ies) *i* in year *y* (t CO_2/MWh)
I	=	Electricity consuming facility

5.4.1. Determination of baseline CO_2 emission factors $EF_{BL,grid,CO2,y}$ and $EF_{BL,facility,CO2,i,y}$

27. For construction of large new power capacity additions under the CDM, there is a considerable uncertainty relating to which type of other power generation is substituted by the power generation of the project plant. As a result of the project, the application of an alternative power generation technology(ies) could be avoided, or the construction of a series of other power plants could simply be delayed. Furthermore, if the project were installed sooner than these other projects might have been constructed, its near-term impact could be largely to reduce electricity generation in existing plants. This depends on many factors and assumptions (e.g. whether there is a supply deficit) that are difficult to determine and that change over time. Similarly, in the case of new power plants supplying electricity to an electricity consuming facility there is high level of uncertainty

on whether the new power plant would displace an existing or new to be built captive power plant or electricity from the electric power grid. In order to address this uncertainty in a conservative manner, project participants shall use the following emission factors to determine parameters $EF_{BL,grid,CO2,y}$ *and* $EF_{BL,facility,CO2,i,y}$ as per the procedures in steps 5.4.1.1 and 5.4.1.2 respectively:

(a) EF1: The build margin, calculated according to the latest version of the "Tool to calculate the emission factor for an electricity system" ($EF_{BL,grid,CO2,y} = EF_{grid,BM,y}$);

(b) EF2: The combined margin, calculated according to the latest version of the "Tool to calculate the emission factor for an electricity system", using a 50/50 OM/BM weight ($EF_{BL,grid,CO2,y} = EF_{grid,CM,y}$) for the first crediting period and 25/75 for the subsequent ones;

(c) EF3: The emission factor of the technology and fuel ($EF_{BL,Tech,CO2}$), identified as a most attractive baseline scenario among alternatives P1 to P4. The emission factor EF3 is be calculated as follows:

$$EF_{BL,Tech,CO2} = \frac{EF_{BL}}{\eta_{BL}} \times 3.6 \qquad \text{Equation (2)}$$

Where:

$EF_{BL,Tech,CO2}$ = Emission factor of the baseline technology and fuel (t CO_2/MWh)

EF_{BL} = CO_2 emission factor of the baseline fuel (t CO_2/GJ)

η_{BL} = The efficiency of the baseline technology (ratio)

3.6 = Conversion factor from GJ to MWh (GJ/MWh)

(d) EF4: If applicable, the emission factor of the existing electricity source at the site of the existing electricity consuming facility(ies). If the existing electricity source is the power grid, the combined margin emission factor of the respective power grid shall be used. If the existing electricity source is a captive power plant, the emission factor shall be determined using equation (2). If multiple sources are used, the minimum emission factor among these sources shall be used.

5.4.1.1. Determination of $EF_{BL,grid,CO2,y}$

28. The baseline emission factor for electricity supplied to the grid shall be determined as the minimum among emission factors EF1, EF2 and EF3 from the list above (paragraph 27(a)–(c)).

29. The EF3 shall be determined once at the validation stage based on an ex ante assessment. The parameter η_{BL} corresponds to the maximum efficiency of the baseline technology at the optimal operating conditions, as provided by the manufacturer of this technology.

30. The determination of the emission factors EF1 or EF2 shall be done ex post as described in the "Tool to calculate the emission factor for an electricity system".

5.4.1.2. Determination of $EF_{BL,facility,CO2,y}$

31. The baseline emission factor for electricity supplied to the existing electricity consuming facility(ies) shall be determined as the minimum among emission factors EF1, EF2, EF3 and EF4 from the list (paragraph 27(a)–(d)) above.

32. The EF3 shall be determined following the procedure contained in paragraph 29 above. The EF4 is to be made once at the validation stage based on an ex ante assessment. The parameter η_{BL} corresponds to the maximum efficiency of the baseline technology at the optimal operating conditions, as provided by the manufacturer of this technology. The remaining lifetime of the existing equipment at the existing consuming facility(ies) shall be taken into account. It shall be determined using the latest version of the "Tool to determine the remaining lifetime of equipment". Where the remaining lifetime of the existing equipment at the existing consuming facility(ies) is shorter than the crediting period(s), the baseline emission factor shall be determined as the minimum among emission factors EF1, EF2 and EF3.

33. The determination of the emission factors EF1 or EF2 shall be done ex post as described in the "Tool to calculate the emission factor for an electricity system".

5.5. Project emissions

34. Project emissions result from the combustion of natural gas and small amounts of other start-up or auxiliary fuels for the generation of electricity in the project power plant. To calculate the project emissions (PE_y), the latest approved version of the "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion" is to be applied. The parameter PE_y corresponds to $PE_{FC,j,y}$ in the tool, where *j* is the combustion of natural gas and small amounts of other start-up or auxiliary fuels in the project activity power plant.

5.6. Leakage

35. Leakage may result from fuel extraction, processing, liquefaction, transportation, re-gasification and distribution of fossil fuels outside of the project boundary.

36. For the purpose of estimating leakage, project participants should multiply the quantity of natural gas consumed by the project power plant in year *y* with an emission factor for upstream emissions ($EF_{NG,upstream}$) from natural gas consumption and subtract the emissions occurring from fossil fuels used in the baseline (i.e. due to electricity supplied to the grid and/or to the electricity consuming facility(ies)), as follows:

$$LE_y = \left[FC_{NG,y} \times NCV_{NG,y} \times EF_{NG,upstream} - EG_{PJ,grid,y} \times EF_{BL,us,grid,y} - \sum_i EG_{PJ,facility,i,y} \times EF_{BL,us,facility,i,y} \right] \quad \text{Equation (3)}$$

Where:

LE_y = Leakage emissions in year *y* (t CO_2e)

$FC_{NG,y}$	=	Quantity of natural gas combusted in the project plant in year *y* (m³)
$NCV_{NG,y}$	=	Average net calorific value of the natural gas combusted during the year *y* (GJ/m³)
$EF_{NG,upstream}$	=	Emission factor for upstream emissions of natural gas (t CO_2/GJ)
$EG_{PJ,grid,y}$	=	Quantity of electricity generated in the project power plant and supplied to the grid in year *y* (MWh)
$EF_{BL,us,grid,y}$	=	Emission factor for upstream emissions occurring in the baseline due to electricity supplied to the grid (t CO_2/MWh)
$EG_{PJ,facility,i,y}$	=	Quantity of electricity generated in the project power plant and supplied to the electricity consuming facility(ies) *i* in year *y* (MWh)
$EF_{BL,us,facility,i,y}$	=	Emission factor for upstream emissions occurring in the baseline due to electricity supplied to the consuming facility (t CO_2/MWh)

37. The emission factor for upstream emissions from natural gas ($EF_{NG,upstream}$) shall be determined using the latest version of the tool "Upstream leakage emissions associated with fossil fuel use".

38. Determination of emissions occurring from fossil fuels used in the baseline is optional, i.e. the project participants can decide whether to include this source for leakage determination. In case emissions occurring from fossil fuels used in the baseline are included, the following guidance shall be used.

39. The emission factor for upstream emissions occurring in the baseline ($EF_{BL,us,grid,y}$ or $EF_{BL,us,facility,i,y}$) shall be calculated consistent with the baseline emission factor (i.e. *EF1, EF2, EF3*) selected above, as follows:

EF1
$$\mathrm{EF}_{\mathrm{BL,us,grid,y}}, or \mathrm{EF}_{\mathrm{BL,us,facility,y}} = \frac{\sum_{\mathrm{j}}\sum_{k}\mathrm{FF}_{\mathrm{j,k,y}} \times \mathrm{NCV}_{\mathrm{j,k,y}} \times \mathrm{EF}_{\mathrm{k,upstream,CH4}}}{\sum_{\mathrm{j}}\mathrm{EG}_{\mathrm{j,y}}} \times GWP_{CH4} \qquad \text{Equation (4)}$$

EF2
$$\mathrm{EF}_{\mathrm{BL,us,grid,y}} = \left[0.5 \times \frac{\sum_{\mathrm{j}}\sum_{\mathrm{k}}\mathrm{FF}_{\mathrm{j,k,y}} \times \mathrm{NCV}_{\mathrm{j,k,y}} \times \mathrm{EF}_{\mathrm{k,upstream,CH4}}}{\sum_{\mathrm{j}}\mathrm{EG}_{\mathrm{j,y}}} + 0.5 \times \frac{\sum_{\mathrm{i}}\sum_{\mathrm{k}}\mathrm{FF}_{\mathrm{i,k,y}} \times \mathrm{NCV}_{\mathrm{i,k,y}} \times \mathrm{EF}_{\mathrm{k,upstream,CH4}}}{\sum_{\mathrm{i}}\mathrm{EG}_{\mathrm{i,y}}}\right] \times GWP_{CH4} \qquad \text{Equation (5)}$$

EF3
$$\mathrm{EF}_{\mathrm{BL,us,grid,y}}, or \mathrm{EF}_{\mathrm{BL,us,facility,y}} = \frac{\mathrm{EF}_{\mathrm{k,upstream,CH4}}}{\eta_{\mathrm{BL}}} \times 3.6 \times GWP_{CH4} \qquad \text{Equation (6)}$$

Where:

$EF_{BL,us,grid,y}$	=	Emission factor for upstream emissions occurring in the baseline due to electricity supplied to the grid (t CO_2/MWh)
$EF_{BL,us,facility,y}$	=	Emission factor for upstream emissions occurring in the baseline due to electricity supplied to the consuming facility (t CO_2/MWh)
j	=	Plants included in the build margin
$FF_{j,k,y}$	=	Quantity of fuel type k (a coal or oil type) combusted in power plant j included in the build margin in year y (mass or volume units)
$NCV_{j,k,y}$	=	Average net calorific value of fuel type k (a coal or oil type) combusted in power plant j included in the build margin in year y (GJ/mass or volume units)
$EF_{k,upstream,CH4}$	=	Emission factor for upstream fugitive methane emissions from production of the fuel type k (a coal or oil type) (tCH_4/GJ)
$EG_{j,y}$	=	Electricity generation in the plant j included in the build margin in year y (MWh)
i	=	Plants included in the operating margin
$FF_{i,k,y}$	=	Quantity of fuel type k (a coal or oil type) combusted in power plant i included in the operating margin in year y (mass or volume units)
$NCV_{i,k,y}$	=	Average net calorific value of fuel type k (a coal or oil type) combusted in power plant i included in the operating margin in year y (GJ/mass or volume units)
$EG_{i,y}$	=	Electricity generation in the plant i included in the operating margin in year y (MWh)
η_{BL}	=	The energy efficiency of the baseline technology (ratio)
GWP_{CH4}	=	Global warming potential of methane (t CO_2e/t CH_4)

40. The determination of $EF_{BL,us,grid,y}$ and $EF_{BL,us,facility,i,y}$ shall be based on the source of baseline emission factor (e.g. for EF1 - technology and fuel used by power plants included in the build margin) and is to be made once at the validation stage based on an ex ante assessment and shall be determined using the latest version of the tool "Upstream leakage emissions associated with fossil fuel use".

41. Where the baseline emission factors $EF_{BL,grid,CO2,y}$ and/or $EF_{BL,facility,CO2,i,y}$ are/is determined as EF1 or EF2 the calculation should be consistent with the calculation of CO_2 emissions in the build margin and the combined margin, i.e. the same cohort of plants and data on fuel combustion and electricity generation should be used, and the values for *FF* and *EG* should be those already determined through the application of "Tool to calculate the emission factor for an electricity system".

42. Where total net leakage effects are negative (LE_y<0), project participants should assume LE_y= 0.

5.7. Emission reductions

43. Annual emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y \quad \text{Equation (7)}$$

Where:

ER_y	=	Emissions reductions in year y (t CO_2e)

BE_y = Baseline emissions in year *y* (t CO_2)

PE_y = Project emissions in year *y* (t CO_2)

LE_y = Leakage emissions in year *y* (t CO_2e)

5.8. Changes required for methodology implementation in 2nd and 3rd crediting periods

44. Refer to the tool "Assessment of the validity of the original/current baseline and to update of the baseline at the renewal of the crediting period".

45. In addition, while determining EF2 (combined margin), the OM/BM weight shall be updated to 25/75.

5.9. Data and parameters not monitored

46. In addition to the parameters listed in the tables below, the provisions on data and parameters not monitored in the tools referred to in this methodology apply.

Data / Parameter table 1.

<table>
<tr><td>Data / Parameter:</td><td>EF_{BL}</td></tr>
<tr><td>Data unit:</td><td>t CO_2/GJ</td></tr>
<tr><td>Description:</td><td>CO_2 emission factor of the baseline fuel</td></tr>
<tr><td>Source of data:</td><td>The following data sources may be used if the relevant conditions apply:
<table>
<tr><th>Data source</th><th>Conditions for using the data source</th></tr>
<tr><td>(a) Values provided by the fuel supplier in invoices</td><td>This is the preferred source in the case of an existing captive power plant</td></tr>
<tr><td>(b) Measurements by the project participants</td><td>Applicable to existing captive power plants if (a) is not available</td></tr>
<tr><td>(c) Regional or national default values</td><td>For new power plants or if (a) is not available

These sources can only be used for liquid fuels and should be based on well-documented, reliable sources (such as national energy balances)</td></tr>
<tr><td>(d) IPCC default values at the lower limit of the uncertainty at a 95 per cent confidence interval as provided in table 1.4 of Chapter1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories</td><td>For new power plants or if (a) is not available</td></tr>
</table></td></tr>
</table>

Measurement procedures (if any):	For (a) and (b): measurements should be undertaken in line with national or international fuel standards
Any comment:	For (a): if the fuel supplier does provide the NCV value and the CO_2 emission factor on the invoice and these two values are based on measurements for this specific fuel, this CO_2 factor should be used. If another source for the CO_2 emission factor is used or no CO_2 emission factor is provided, options (b), (c) or (d) should be used

Data / Parameter table 2.

Data / Parameter:	η_{BL}
Data unit:	ratio
Description:	The efficiency of the baseline technology
Source of data:	Manufacturer of this technology in case of new power plant
Measurement procedures (if any):	-
Any comment:	In the case of existing captive power plants, use the latest version of the "Tool to determine the baseline efficiency of thermal or electric energy generation systems". The tool should be used to determine a constant efficiency and not a load-efficiency-function. In the case of new power plants, use the maximum efficiency of the baseline technology at the optimal operating conditions, as supported by the manufacturer of this technology

Data / Parameter table 3.

Data / Parameter:	$FF_{j,k,y}$
Data unit:	mass or volume units
Description:	Quantity of fuel type *k* (a coal or oil type) combusted in power plant *j* included in the build margin in year *y*
Source of data:	Plant records
Measurement procedures (if any):	-
Any comment:	-

Data / Parameter table 4.

Data / Parameter:	$FF_{i,k,y}$
Data unit:	mass or volume units
Description:	Quantity of fuel type *k* (a coal or oil type) combusted in power plant *i* included in the operating margin in year *y*
Source of data:	Plant records
Measurement procedures (if any):	-
Any comment:	-

Data / Parameter table 5.

Data / Parameter:	$NCV_{j,k,y}$
Data unit:	GJ/mass or volume units
Description:	Average net calorific value of fuel type *k* (a coal or oil type) combusted in power plant *j* included in the build margin in year *y*
Source of data:	Plant records
Measurement procedures (if any):	-
Any comment:	-

Data / Parameter table 6.

Data / Parameter:	$NCV_{i,k,y}$
Data unit:	GJ/mass or volume units
Description:	Average net calorific value of fuel type *k* (a coal or oil type) combusted in power plant *i* included in the operating margin in year *y*
Source of data:	Plant records
Measurement procedures (if any):	-
Any comment:	-

Data / Parameter table 7.

Data / Parameter:	$EG_{i,y}$
Data unit:	MWh
Description:	Electricity generation in the plant *j* included in the build margin in year *y*
Source of data:	Plant records
Measurement procedures (if any):	-
Any comment:	-

Data / Parameter table 8.

Data / Parameter:	$EG_{i,y}$
Data unit:	MWh
Description:	Electricity generation in the plant *i* included in the operating margin in year *y*
Source of data:	Plant records
Measurement procedures (if any):	-
Any comment:	-

6. Monitoring methodology

47. Describe and specify in the CDM-PDD all monitoring procedures, including the type of measurement instrumentation used, the responsibilities for monitoring and QA/QC procedures that will be applied. Where the methodology provides different options (e.g. use of default values or on-site measurements), specify which option will be used. All meters and instruments should be calibrated regularly as per industry practices.

48. All data collected as part of monitoring should be archived electronically and be kept at least for two years after the end of the last crediting period. One hundred per cent of the data should be monitored if not indicated differently in the comments in the tables below.

49. In addition, the monitoring provisions in the tools referred to in this methodology apply. Accordingly, $FC_{NG,y}$ and $NCV_{NG,y}$ should be determined as per the "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion".

6.1. Data and parameters monitored

Data / Parameter table 9.

Data / Parameter:	$EG_{PJ,grid,y}$
Data unit:	MWh
Description:	Quantity of electricity generated in the project power plant and supplied to the grid in year *y*
Source of data:	Direct measurements
Measurement procedures (if any):	Use electricity meters installed at the grid interface for electricity export to grid
Monitoring frequency:	Continuously, aggregated at least annually
QA/QC procedures:	Cross check measurement results with records for sold electricity
Any comment:	-

Data / Parameter table 10.

Data / Parameter:	$EG_{PJ,facility,i,y}$
Data unit:	MWh
Description:	Quantity of electricity generated in the project power plant and supplied to the electricity consuming facility(ies) *i* in year *y*
Source of data:	Direct measurements
Measurement procedures (if any):	Use electricity meters installed at the entrance of the electricity consuming facility(ies)
Monitoring frequency:	Continuously, aggregated at least annually
QA/QC procedures:	Cross check measurement results with records for sold electricity
Any comment:	-

Data / Parameter table 11.

Data / Parameter:	GWP_{CH4}
Data unit:	t CO_2e/t CH_4

Description:	Global warming potential of methane
Source of data:	Relevant CMP decision
Measurement procedures (if any):	-
Monitoring frequency:	-
QA/QC procedures:	-
Any comment:	-

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