Project design document form
(Version 11.0)

Complete this form in accordance with the instructions attached at the end of this form.

BASIC INFORMATION	
Title of the project activity	Salkhit Wind Farm
Scale of the project activity	☒ Large-scale ☐ Small-scale
Version number of the PDD	5
Completion date of the PDD	25/05/2020
Project participants	Clean Energy LLC, Swedish Energy Agency
Host Party	Mongolia
Applied methodologies and standardized baselines	ACM0002 Grid-connected electricity generation from renewable sources (version 20.0) Standardized baselines: N/A
Sectoral scopes	Sectoral scope: 01 Energy industries (renewable source)
Estimated amount of annual average GHG emission reductions	190,405 tonnes of CO_2 equivalent (tCO_2e)

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

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"Clean Energy" LLC (the Developer) has installed a wind farm in the area called Salkhit uul, which translates as "windy mountain", about 70 km southeast of the country's capital Ulaanbaatar in Mongolia. The Clean Energy LLC has wind farm a capacity of 49.6 MW and generate (net) 168.5 GWh of electricity per year.

On 25th June 2013, The Salkhit wind farm started commercial operation. The Salkhit wind farm generates renewable electricity using wind power resources and sells the generated output to the Central Energy System (CES, or the grid) on the basis of a power purchase agreement (PPA). In addition, the Salkhit wind farm also aims to lead renewable energy generation from wind in Mongolia, as the Salkhit wind farm was the first grid connected wind farm in Mongolia. The Salkhit wind farm generates greenhouse gas (GHG) emission reductions by avoiding CO_2 emissions from electricity generation by fossil fuel power plants that is supplied to Grid.

Thus, Salkhit wind farm installed capacity is 49.6 MW of renewable energy power generation and supplies to the Grid of 164 GWh of electricity generated from renewable energy annually.

A. Project scenario is the operation of 31 sets of wind turbines with a total capacity of 50MW which will supply an annual generation of 164GWh to grid and replace same amount of electricity generated by fossil fuel-fired power plants connected to grid. According to ACM0002 applied, the project is renewable electricity activity.
B. The baseline scenario of the project is the electricity supply of equal amount as the project from the grid. The baseline scenario of the project is the same as the scenario prior to the start of implementation of project activity.

The Project boundary included the project site and all power plants connected physically to the grid.

As the Grid is dominated by thermal power generation, the Salkhit wind farm activity is leading to greenhouse gas (GHG) emission reductions. The second crediting period for the proposed project is from 24/06/2020 to 23/06/2027 and estimated emission reduction is in the second crediting period are 1,332,835tCO_2e. The average annual emission reduction is estimated by 190,405 tonnes of CO_2 equivalent (tCO_2e) for the 2nd crediting period.

Sustainable development

As the very first wind farm in Mongolia the Salkhit wind farm is greatly assisting the country in stimulating the commercialisation of grid-connected renewable energy technologies and markets. The Salkhit wind farm is helping to reduce GHG emissions versus the coal-dominated business-as-usual scenario. Furthermore, the Salkhit wind farm is improving air quality and local livelihoods and promote sustainable renewable energy industry development.

The specific goals of the project are to:

- generate electricity;
- help to stimulate the implementation of wind power in Mongolia;
- reduce greenhouse gas emissions in Mongolia compared to a business-as-usual scenario;
- create local employment opportunity during the assembly and installation of wind turbines, and for operation of the wind farm;
- reduce other pollutants resulting from the power generation industry, compared to a business-as-usual approach, such as SO_2 and soot.

A.2. Location of project activity

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Host Party: Mongolia

The project is located in Salkhit mountain, Tsagduult and Shar Huviin Nuruu, Sereglen Soum center, Tuv Aimag, approximately 70km southeast of Ulaanbatar.

The area is very remote: 11 km from a paved road, 5 km from a railway line, 13 km from the nearest 35 kV overhead line, and 22 km from the 110 kV grid substation. The nearest residential areas are 5 and 8 km away, where railway station employees and herders live.

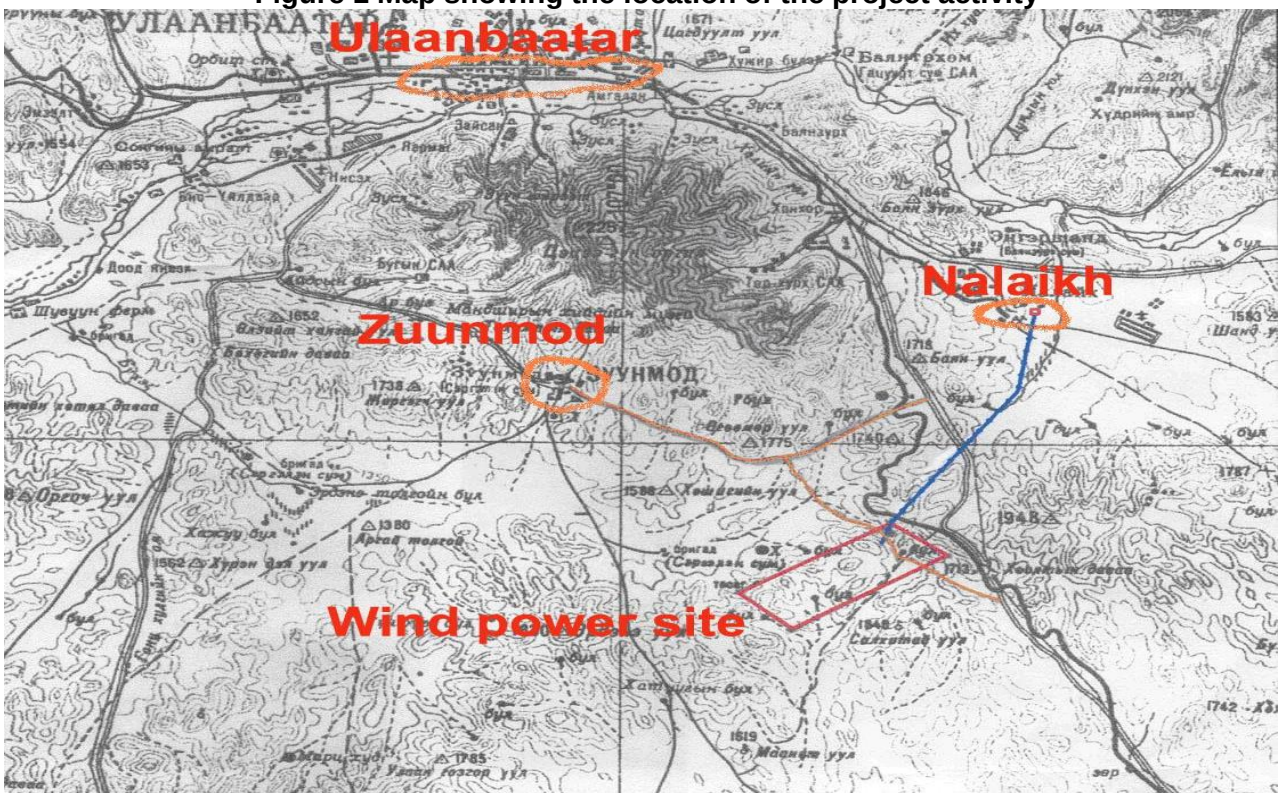
The co-ordinates of the corners of the project area are:

Table 1 Co-ordinates of the corners of the project

ID	N_UTM	E_UTM	Latitude N	Longitude E
1	5261508.314	662393.517	47°29'12.191"	107°9'20.652"
2	5265489.182	659214.379	47°31'23.887"	107°6'50.008"
3	5268588.781	656163.100	47°33'6.894"	107°4'32.148"
4	5273593.598	661484.230	47°35'44.204"	107°8'53.200"
5	5275429.414	663769.396	47°36'41.560"	107°10'45.020"
6	5276076.235	663831.431	47°37'2.440"	107°10'48.860"
7	5275229.964	666055.381	47°36'33.006"	107°12'34.170"
8	5273367.039	669513.437	47°35'29.480"	107°15'17.090"
9	5268415.281	672344.145	47°32'46.518"	107°17'25.532"
10	5268389.831	672234.719	47°32'45.799"	107°17'20.265"
11	5267919.879	672431.300	47°32'30.400"	107°17'29.000"

Figure 1 shows the location of the project.

Figure 1 Map showing the location of the project activity



A.3. Technologies/measures

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The purpose of the Project Activity is the generation of electricity from wind and the supply of this electricity to the Grid. The wind turbine equipment has been selected through competitive bidding and is of good practice. Therefore, the operation of the project activity is promoting technology transfer and utilization of advanced technology in Mongolia.

Table 2 Technology specifications

Manufacturer	GE (General Electric)
Model	GE 1.6xle 82.5
Power rating	1,600 kW
Number of blades	3
Start-up of wind speed	4.5 m/s
Cut-off wind speed	25 m/s
Rotor diameter	82.5 m
Hub height	80 m
Age	7 years
Design lifetime	25 years
Total installed turbines	31 turbines
Rated voltage of generator	690V

All turbines are connected to the 35/110 kV onsite substation. The onsite (Salkhit) substation is connected via a 110 kV double circuit transmission line to the grid (Nalaikh) substation, where it is transferred to the Grid.

The Project Activity is estimated to supply on average approximately 168.5 GWh of renewable electricity per year to the Grid once fully operational according to study. The expected load factor was determined by Global Energy Concepts LLC (GEC) in 2007 using NRG wind measurement equipment using detailed onsite information and long-term local wind data, having carried out wind data collection on site since October 2004, in accordance with EB guidance on plant load factors CDM-PDD-FORM Version 11.0 Page 5 of 42 (EB48 Annex 11). However, this calculation was conducted for small sized turbines of 58 meters height, while the turbine selection changed to a bigger size with 80-meter height. Therefore, a new capacity factor calculation was made by Sgurr Energy Ltd, an independent consulting company, in 2011 as part of the feasibility study. According this study on preliminary energy yield and wind regime report, overall capacity factor is 38.8%.

The generation and consumption of the Project Activity is monitored continuously through an electronic control and monitoring system in the onsite office. For the purpose of invoicing for generation and consumption, electricity meters installed in the grid substation are used. The grid substation is operated by the Grid Company, and data is monitored by the Grid Company and the Developer. The data from the grid substation is used for the calculation of emission reductions, and invoices are used for cross-referencing.

Prior to the implementation of the project activity, the electricity was generated by grid-connected power plants. Without the implementation of the project, this scenario would have continued, and this is considered the baseline scenario. There were no technologies/measures existed prior to the implementation of the project activity.

The project activity is installed 31 units of General Electric wind turbines. The Clean Energy LLC using operation and maintenance manual which is provided from General Electric.

As the Grid is dominated by thermal power generation, the operation of the project activity is leading to greenhouse gas (GHG) emission reductions, estimated following the baseline methodology below.

A.4. Parties and project participants

Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
Mongolia (host Party)	Clean Energy LLC (private entity)	No
Sweden	Swedish Energy Agency (public entity)	No

A.5. Public funding of project activity

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There is no public funding from Parties included in Annex I for the construction of this project. However, Appendix 2 includes some information about the public funds received in the project preparation.

A.6. History of project activity

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The proposed project activity is registered as a CDM project activity.
The proposed project activity is not a project activity that has been deregistered.
The project was not a component project activity (CPA) that has been excluded from a registered CDM PoA, and there is no other registered CDM project activity whose crediting period has or has not expired exists in the same geographical location as the CDM project activity.

Project start date as per the PDD	31/05/2011
Project registration date	30/03/2012
Start of the first crediting period	24/06/2013
End of the first crediting period	23/06/2020

The proposed project activity first crediting period will be expired on 23rd of June 2020. The project activity geographical location has not been changed.

A.7. Debundling

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Not applicable

SECTION B. Application of methodologies and standardized baselines

B.1. References to methodologies and standardized baselines

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Methodology

- The approved methodology applied in the proposed project activity is ACM002 (version 20.0) - "Grid-connected electricity generation from renewable sources", Sectoral scope(s):1.0 (Valid from 28 Nov 19 onwards)

Reference:
https://cdm.unfccc.int/filestorage/A/G/0/AG07ZJQ3EXD42LT5YV9HR16M8KINPO/EB105_repan03_ACM0002.pdf?t=TXl8cWFtZzZ5fDANkUHDOcC7I1I2fsAV-iQy

This methodology refers to the latest approved versions of the following tools:

a) "TOOL05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" Version 03.0;
Reference:
https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-05-v3.0.pdf

b) "TOOL07: Tool to calculate the emission factor for an electricity system" Version 07.0;
Reference:
https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf

c) "TOOL11: Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period" Version 03.0.1;
Reference:
https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-11-v3.0.1.pdf

B.2. Applicability of methodologies and standardized baselines

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This methodology is applicable to grid-connected renewable power generation project activities that:

a) Install a Greenfield power plant;
b) Involve a capacity addition to (an) existing plant(s);
c) Involve a retrofit of (an) existing operating plants/units;
d) Involve a rehabilitation of (an) existing plant(s)/units(s); or
e) Involve a replacement of (an) existing plant(s)/unit(s).

Therefore, the methodology is applicable as the Project Activity is the installation of a Greenfield, grid-connected wind power plant (a).

The methodology is applicable under the following conditions:

Criteria	Applicability	Conclusion
The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit;	The Project Activity is wind power plant.	OK
In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects)the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five	Not applicable. The Project Activity is a Greenfield plant and does not represent a capacity addition,	OK

years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.	retrofit or replacement.	
• In case of hydro power plants, one of the following conditions shall apply: a) The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or b) The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s)is increased and the power density, calculated using equation (7), is greater than 4 W/m2; or c) The project activity results in new single or multiple reservoirs and the power density, calculated using equation (7), is greater than 4W/m2; or d) The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (7), is lower than or equal to 4W/m^2, all of the following conditions shall apply: I. The power density calculated using the total installed capacity of the integrated project, as per equation (8), is greater than 4 W/m^2; II. Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity; III. Installed capacity of the power plant(s)with power densitylower than or equal to 4W/m^2 shall be: a. Lower than or equal to 15MW; and b. Less than 10 per cent of the total installed capacity of integrated hydro power project.	Not applicable. The Project Activity is a wind power plant.	OK
In the case of integrated hydro power projects, project proponent shall: a) Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or b) Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the	Not applicable. The Project Activity is a wind power plant.	OK

specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore, this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum of five years prior to the implementation of the CDM project activity.		
The methodology is not applicable to: a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; b) Biomass fired power plants/units.	Not applicable. The Project Activity does not involve switching from fossil fuels to renewable energy at the site of the project activity.	OK
In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance".	Not applicable. The Project Activity does not involve switching from fossil fuels to renewable energy at the site of the project activity.	OK

In addition, the applicability conditions included in the tools applied and referred to above apply as follows:

Tool	Criteria	Applicability	Conclusion
a) "TOOL05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation";	If emissions are calculated for electricity consumption, the tool is only applicable if one out of the following three scenarios applies of electricity consumption: 1. Scenario A: Electricity consumption from the grid. 2. Scenario B: Electricity consumption from (an) off-grid fossil fuel fired captive power plant(s). or 3. Scenario C: Electricity consumption from the grid and (a) fossil fuel fired captive power plant(s).	The electricity consumption of the project is purchased from the grid.	Applicable
b)			
c) "TOOL05: Baseline, project and/or leakage emissions from electricity consumption	This tool is not applicable in cases where captive renewable power generation technologies are installed to provide electricity in the project	There are no captive renewable power generation technologies installed to provide electricity in the	Applicable

and monitoring of electricity generation”;	activity, in the baseline scenario or to sources of leakage. The tool only accounts for CO2 emissions.	project activity, in the baseline scenario or to sources of leakage.	
d) “TOOL05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation”;	This tool can be referred to in methodologies to provide procedures to monitor amount of electricity generated in the project scenario, only if one out of the following three project scenarios applies to the recipient of the electricity generated: (A) Scenario I: Electricity is supplied to the grid; (B) Scenario II: Electricity is supplied to the consumers/electricity consuming facilities; or (C) Scenario III: Electrcity is supplied to the grid and consumers/electricity consuming facilities.	The electricity generated by the project is supplied to the grid,	Applicable
e) “TOOL07: Tool to calculate the emission factor for an electricity system”;	Tool applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g demand-side energy efficiency project)	The proposed project is operation of wind power plant supplying electricity to the Grid.	Applicable
f) “TOOL07: Tool to calculate the emission factor for an electricity system”;	In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country.	The proposed project electricity system is not located in Annex I country.	Applicable
g) “TOOL11: Assessment of the validity of the original/current baseline and	This tool provides a stepwise procedure to assess the continued validity of the baseline and to update the	The validity of the current baseline is assessed by the project using the following sub-	Applicable.

update of the baseline at the renewal of the crediting period";	Vaseline at the renewal of a crediting period, as required by paragraph 49 (a) of the modalities and procedures of the clean development mechanism. The tool consists of two steps. The first step provides an approach to evaluate whether the current baseline is still valid for the next crediting period. The second step provides an approach to update the baseline in case that the current baseline is not valid anymore for the next crediting period.	steps: Step 1: Assess the validity of the current baseline for the next crediting period; Step 2: Update the current baseline and the data and parameters.	
4.			

B.3. Project boundary, sources and greenhouse gases (GHGs)

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Spatial boundary

The spatial extend of the project boundary includes the project power plants/units and all power plants/units connected physically to the electricity system that CDM project power plant is connected to.

In Tool 07 the project electricity system is defined by the spatial extent of the power plants that are physically connected through transmission and distribution lines to the project activity (i.e. the renewable power plant location) and that can be dispatched without significant transmission constraints. In accordance with Step 1 of Tool 07 the largest grid definition is used, which is the Central Energy System. The Central Energy System is not connected to other systems in the host country[1]. Since the publication for stakeholder comment, the DNA has published a grid emission factor calculation, which confirms the above delineation of the electricity systems.

The project electricity system is connected to grids in other host countries (Russia and China) and electricity transfers from the connected systems are taken into account. Electricity transfers from connected electricity system to the project electricity system are defined as electricity imports and electricity transfers to connected electricity systems are defined as electricity exports. For imports from connected electricity systems located in Annex-I country(ies), the emission factor is 0 tonnes CO_2 per MWh. There are net imports from Russia, but no transfers to/from China.

Emission sources and gases

The greenhouse gases and emission sources included in or excluded from the project boundary are shown in Table 4.

[1] The electric power system in Mongolia consists of four independent electric power systems: Central, Western, Eastern and Altai-Uliastai energy system. The Central Energy System (CES) is the main system that supplies energy to the capital city covering over 90% of the country's total energy consumption. ('In-Depth Review of Energy Efficiency Policies and Programmes: Mongolia', Energy Charter Secretariat, 2011, p.30);

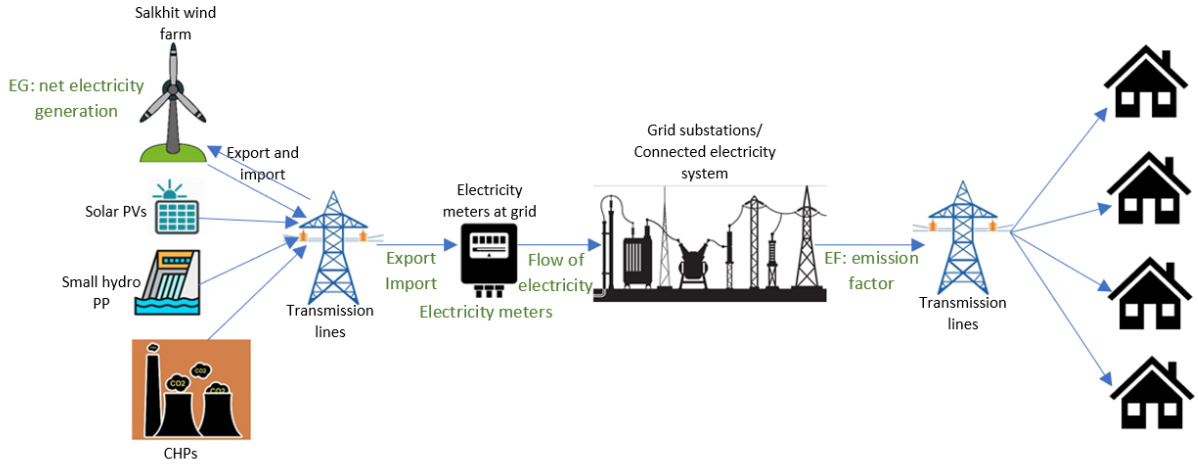
Following the methodology, only CO_2 emissions from electricity generation by fossil fuel fired power plant that is displaced due to the project activity are taken into account for determining the baseline emissions. According to the methodology, project emissions from geothermal, solar thermal and hydro power plants need to be taken into account; there are no project emissions for a wind power plant.

Table 3 Emission sources and GHG included in the project boundary

	Source	GHG	Included?	Justification/Explanation
Baseline	CO2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity.	CO_2	Yes	Main emission source.
		CH_4	No	Minor emission source.
		N_2O	No	Minor emission source.
Project activity	For geothermal power plants, fugitive emissions of CH_4 and CO_2 from non-condensable gases contained in geothermal steam.	CO_2	No	Not applicable to wind
		CH_4	No	Not applicable to wind
		N_2O	No	Not applicable to wind
	CO2 emissions from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plants.	CO_2	No	Not applicable to wind
		CH_4	No	Not applicable to wind
		N_2O	No	Not applicable to wind
	For hydro power plants, emissions of CH_4 from the reservoir.	CO_2	No	Not applicable to wind
		CH_4	No	Not applicable to wind
		N_2O	No	Not applicable to wind

In line with the guidelines for completing the PDD (PDD FORM version 11.0), a flow diagram of the project boundary is presented in Figure 2 below. The flow diagram physically delineates the project boundary, includes the flow of electricity and represents the emissions included (EF: emission factor) and the monitoring variable (EG: net electricity generation).

Figure 2 Flow diagram and the project boundary



B.4. Establishment and description of baseline scenario

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In the registered PDD, the Project Activity is the operation of a grid-connected renewable power plant, and is not a capacity addition, retrofit or replacement of existing grid-connected renewable power plant/unit. Therefore, the baseline scenario according to the methodology is the following:

Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission

factor for an electricity system".

The current baseline complies with all relevant mandatory national and/or sectoral policies. Baseline scenario identified at the validation of the project activity was continuation of the current practice without any investment.

In accordance with "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period" (version 03.0.1), the validity of the current baseline is assessed using the following sub steps:

Step 1: Assess the validity of the current baseline for the next crediting period

Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies
There are no new national and/or sectorial policies that could affect the baseline scenario during the renewal of the crediting period. The baseline scenario of the prosed project activity is still the electricity delivered to the grid by proposed project would have otherwise been generated by the operation of grid-connected power plants and by addition of new generation source. The current baseline still complies with all relevant mandatory national and sectoral policies which have come into effect after the submission of the project activity for validation and are applicable at the time of requesting renewal of the crediting period. Go to step 1.2

Step 1.2: Assess the impact of circumstances
The baseline scenario identified at the validation of the project activity was the continuation of the current practice without any in investment. The investment environment or market characteristics especially the feed-in tariff, the policy in terms of market access permit, these circumstances continue during the second crediting period and therefore, do not have an impact on the current baseline emissions. Hence the current baseline does not need to be updated. Go to step 1.3

Step 1.3: Assess whether the continuation of the use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested
The baseline scenario identified at the validation of the project activity was the continuation of the current practice without any investment, there's no current baseline equipment or an investment, hence the current baseline does not need to be updated. Go to step 1.4

Step 1.4: Assessment of the validity of the data and parameters
Data and parameters that need to be updated are as follows:

$EF_{grid,CM,y}$: the baseline emission factor that determined once for the first crediting period at the time of validation, hence it shall be updated using the latest version of "Tool to calculate the emission factor for an electricity system". Please refer to section B.6 for details.

Step 2: Update the current baseline, data and parameters

Step 2.1: Update the current baseline
As per the analysis in step 1 above, the current baseline does not need to be updated.

Step 2.2: Update the date and parameters
The updated baseline emission factor for the project ($EF_{grid,CM,y}$) is 1.130 tCO_2/MWh.

B.5. Demonstration of additionality

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The project has demonstrated its additionality in the first crediting period and no changes affect the additionality of the project since its registration. As per the CDM Project Standard Version 02.0, para 280, the project participants are not required to reassess the additionality of the project activity and update the section relating to additionality.

B.6. Estimation of emission reductions

B.6.1. Explanation of methodological choices

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Project emissions

According to the methodology**,** for most renewable energy project activities, $PE_y = 0$. However, the methodology prescribes project emission calculations for geothermal, solar thermal and hydro power plant. As a wind power plant, therefore, there are no project emissions according to the methodology:

$$PE_y = 0 \quad (1)$$

Baseline emissions

According to the methodology**,** the baseline emissions include only CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are calculated as follows:

$$BE_y = EG_{PJ,y} \times EF_{grid,CM,y} \quad (2)$$

Where:
BE_y is the baseline emissions in year y (tCO_2/yr).
$EG_{PJ,y}$ is the quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr).
$EF_{grid,CM,y}$ is the combined margin CO_2 emission factor for grid connected power generation in year y calculated using the latest version[2] of the "TOOL07: Tool to calculate the emission factor for an electricity system" (tCO_2/MWh).

Calculation of $EG_{PJ,y}$

As the proposed project activity is the installation of a new grid-connected renewable power plant/unit at a site where no renewable power plant was operated prior to the implementation of the project activity, the following applies:

$$EG_{PJ,y} = EG_{facility,y} \quad (3)$$

Where:
$EG_{PJ,y}$ is the quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr).
$EG_{facility,y}$ is the quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh/yr).

$$EG_{facility,y} = EG_{export,y} - EG_{import,y} \quad (4)$$

Where:
$EG_{export,y}$ =The quantity of electricity exported to the grid by the project in year
$EG_{import,y}$ = The quantity of electricity imported to the grid by the project in year

Calculation of Baseline emission factor $EF_{grid,CM,y}$

In line with the methodology, the baseline emission factor is calculated as a combined margin ($EF_{grid,CM,y}$), consisting of the combination of operating margin ($EF_{grid,OM,y}$) and build margin ($EF_{grid,BM,y}$) factors according to the following steps defined in the "Tool to calculate the emission

[2] See section B.1. for the version.

factor for an electricity system".

Details of the calculations and data are presented in Annex 3 of the PDD and the EF calculation spreadsheet.

Step 1. Identify the relevant electricity systems

The power generated from the Project Activity supplies to the Central Energy System (the grid), which the project activity is connected to.

In AM Tool 07 the project electricity system is defined by the spatial extent of the power plants that are physically connected through transmission and distribution lines to the project activity (i.e. the renewable power plant location) and that can be dispatched without significant transmission constraints. In accordance with Step 1 of AM Tool 07 the largest grid definition is used, which is the Central Energy System. The Central Energy System is not connected to other systems in the host country.

The project electricity system is connected to other grids in other host countries (Russia and China) and electricity transfers from the connected systems are taken into account. Electricity transfers from connected electricity system to the project electricity system are defined as electricity imports and electricity transfers to connected electricity systems are defined as electricity exports. For imports from connected electricity systems located in Annex-I country(ies), the emission factor is 0 tonnes CO_2 per MWh. There are net imports from Russia, and no transfers to/from China.

For the purpose of determining the build margin emission factor, the spatial extent is limited to the project electricity system, as there are no recent or likely future additions to transmission capacity that would enable significant increases in imported electricity; the data in Annex 3 shows that imports are relatively small and have not changed significantly in the period covered. Therefore, the transmission capacity is not considered a build margin source.

Electricity exports are not subtracted from electricity generation data used for calculating and monitoring the electricity emission factors.

Step 2. Choose whether to include off-grid power plants in the project electricity system (optional)

Project participants may choose between the following two options to calculate the operating margin and build margin emission factor:

Option I: Only grid power plants are included in the calculation.
Option II: Both grid power plants and off-grid power plants are included in the calculation.

Option I chosen.

Step 3. Select a method to determine the operating margin (OM)

According to the tool, the calculation of the operating margin emission factor ($EF_{grid,OM,y}$) is based on one of the following methods:

(a) Simple OM; or
(b) Simple Adjusted OM; or
(c) Dispatch data analysis OM; or
(d) Average OM

According to the Tool, the simple OM method (option a) can only be used if low-cost / must-run resources constitute less than 50% of total grid generation in: 1) average of the five most recent

years, or 2) based on long-term averages for hydroelectricity production. This criterion is met (see Annex 3) and therefore the project participants chose to use the simple OM method (option a).

The Simple OM emissions factor can be calculated using either ex-ante or ex-post data vintages. The project participants have chosen to use the ex-ante option, and $EF_{grid,OM,y}$ is fixed for the duration of the second crediting period.

Ex ante option: If the ex-ante option is chosen, the emission factor is determined once at the validation stage, thus no monitoring and recalculation of the emissions factor during the crediting period is required. For grid power plants, use a 3-year generation-weighted average, based on the most recent data available at the time of submission of the CDM-PDD to the DOE for validation.

Step 4. Calculate the operating margin emission factor according to the selected method

(a) Simple OM

The Simple OM emission factor is calculated as the generation-weighted average CO_2 emissions per unit net electricity generation (tCO_2/MWh) of all generating sources serving the system, not including low-cost / must-run power plants / units.

The simple OM may be calculated by one of the following options:

Option A: Based on the net electricity generation and a CO2 emission factor of each power unit; or
Option B: Based on the total net electricity generation of all power plants serving the system and the fuel types and total fuel consumption of the project electricity system.

The fuel consumption and the total electricity generation of the thermal plants connected to the grid are available. Therefore, Option B cannot be used and thus A is chosen.

Option A - Calculation based on average efficiency and electricity generation of each plant

Under this option, the simple OM emission factor is calculated based on the net electricity generation of each power unit and an emission factor for each power unit, as follows:

$$EF_{grid,OMsimple,y} = \Sigma m\ (EG_{m,y} * EF_{EL,m,y}) / \Sigma m\ EG_{m,y} \quad (5)$$

Where:
$EF_{grid,OMsimple,y}$ = Simple operating margin CO_2 emission factor in year y (tCO_2/MWh)
$EG_{m,y}$ = Net quantity of electricity generated and delivered to the grid by power unit m in year y (MWh)
$EF_{EL,m,y}$ = CO_2 emission factor of power unit m in year y (tCO_2/MWh)
m = All power units serving the grid in year y except low-cost / must-run power units
y = The relevant year as per the data vintage chosen in step 3 Either the three most recent years for which data is available at the time of submission of the CDM-PDD to the DOE for validation (ex ante option) or the applicable year during monitoring (ex post option), following the guidance on data vintage in step 2

Determination of $EF_{EL,m,y}$

The emission factor of each power unit m should be determined as follows, using Option A1:

Option A1. If for a power unit m data on fuel consumption and electricity generation is available, the emission factor ($EF_{EL,m,y)}$ should be determined as follows:

$$EF_{EL,m,y} = \Sigma i\ (FC_{i,m,y} * NCV_{i,y} * EF_{CO2,i,y}) / EG_{m,y} \quad (6)$$

Where:
$EF_{EL,m,y}$ = CO_2 emission factor of power unit m in year y (tCO_2/MWh)
$FC_{i,m,y}$ = Amount of fossil fuel type i consumed by power unit m in year y (Mass or volume unit)
$NCV_{i,y}$ = Net calorific value (energy content) of fossil fuel type i in year y (GJ/mass or volume unit)
$EF_{CO2,i,y}$ = CO_2 emission factor of fossil fuel type i in year y (tCO_2/GJ)
$EG_{m,y}$ = Net quantity of electricity generated and delivered to the grid by power unit m in year y (MWh)
m = All power units serving the grid in year y except low-cost/must-run power units
i = All fossil fuel types combusted in power unit m in year y
y = The relevant year as per the data vintage chosen in Step 3 Either the three most recent years for which data is available at the time of submission of the CDM-PDD to the DOE for validation (ex ante option) or the applicable year during monitoring (ex post option), following the guidance on data vintage in step 2.

For this approach (simple OM) to calculate the operating margin, the subscript m refers to the power plants/units delivering electricity to the grid, not including low-cost/must-run power plants/units and including electricity imports to the grid. Electricity imports should be treated as one power plant m.

On the basis of the data available, the three-year (including years 2017, 2018, 2019) average operating margin emission factor is calculated as a full-generation-weighted average of the emission factors:

$EF_{grid,OMsimple,y}$ = 1.212 tCO_2/MWh

Step 5. Calculate the build margin (BM) emission factor

In terms of vintage of data, the project participants chose the ex-ante option (as for the OM calculation), and $EF_{grid,BM,y}$ is fixed for the duration of the second crediting period:

Option 1: ex-ante. For the first crediting period, calculate the build margin emission factor ex-ante based on the most recent information available on units already built for sample group m at the time of CDM-PDD submission to the DOE for validation. ***For the second crediting period, the build margin emission factor should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE.*** *For the third crediting period, the build margin emission factor calculated for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period.*

Capacity additions from retrofits of power plants should not be included in the calculation of the build margin emission factor.

The sample group of power units m used to calculate the build margin should be determined as per the following procedure, consistent with the data vintage selected above:

a) Identify the set of five power units, excluding power units registered as CDM project activities, that started to supply electricity to the grid most recently ($SET_{5\text{-units}}$) and determine their annual electricity generation ($AEG_{SET\text{-}5\text{-}units}$, in MWh);
b) Determine the annual electricity generation of the project electricity system, excluding power units registered as CDM project activities (AEG_{total}, in MWh). Identify the set of power units, excluding power units registered as CDM project activities, that started to supply electricity to the grid most recently and that comprise 20% of AEG_{total} (if 20% falls on part of the generation of a unit, the generation of that unit is fully included in the calculation) ($SET_{\geq 20\%}$) and determine their annual electricity generation ($AEG_{SET\text{-}\geq 20\%}$, in MWh);
c) From $SET_{5\text{-units}}$ and $SET_{\geq 20\%}$ select the set of power units that comprises the larger annual electricity generation (SET_{sample});
Identify the date when the power units in SET_{sample} started to supply electricity to the grid. If

none of the power units in SET_{sample} started to supply electricity to the grid more than 10 years ago, then use SET_{sample} to calculate the build margin. Ignore steps (d), (e) and (f).

Given the small size of the Mongolian Grid, the most recent 5 plant is chosen as this would represent a larger, more representative subset. Indeed, the Central Electricity System consists of 6 plant. Thus $SET_{5\text{-units}}$ comprises the larger annual generation and should be chosen as SET_{sample}, the group of power units when calculating the build margin.

However, the date when the power units in $SET_{5\text{-units}}$ started to supply electricity to the grid is more than 10 years ago. Indeed, the most recent addition was Power station-4, in 1991. Therefore, the following steps are also applied:

d) Exclude from SET_{sample} the power units which started to supply electricity to the grid more than 10 years ago. Include in that set the power units registered as CDM project activity, starting with power units that started to supply electricity to the grid most recently, until the electricity generation of the new set comprises 20% of the annual electricity generation of the project electricity system (if 20% falls on part of the generation of a unit, the generation of that unit is fully included in the calculation) to the extent is possible. Determine for the resulting set ($SET_{sample\text{-}CDM}$) the annual electricity generation ($AEG_{SET\text{-}sample\text{-}CDM}$, in MWh);
If the annual electricity generation of that set comprises at least 20% of the annual electricity generation of the project electricity system (i.e. $AEG_{SET\text{-}sample\text{-}CDM} \geq 0.2 \times AEG_{total}$), then use the sample group $SET_{sample\text{-}CDM}$ to calculate the build margin. Ignore steps (e) and (f).

The most recent addition of capacity on the CES was Power station-4, in 1991. Therefore, when excluding the power units which started to supply electricity to the grid more than 10 years ago, SET_{sample} consists of no plant at all. Also, as there are no operating CDM plant, $SET_{sample\text{-}CDM}$ still consists of no plant at all. Therefore, the following steps are also applied:

e) Include in the sample group $SET_{sample\text{-}CDM}$ the power units that started to supply electricity to the grid more than 10 years ago until the electricity generation of the new set comprises 20% of the annual electricity generation of the project electricity system (if 20% falls on part of the generation of a unit, the generation of that unit is fully included in the calculation);
f) The sample group of power units m used to calculate the build margin is the resulting set ($SET_{sample\text{-}CDM\text{-}>10yrs}$).

The most recent addition of capacity on the CES was Power station-4, in 1991. Power station-4 comprises more than 20% of the annual electricity generation of the project electricity system, CES. Therefore, the sample group of power units m used to calculate the build margin, $SET_{sample\text{-}CDM\text{-}>10yrs}$, is Power station-4 only.

The build margin emissions factor is the generation-weighted average emission factor (tCO_2/MWh) of all power units m during the most recent year y for which electricity generation data is available, calculated as follows:

$$EF_{grid,BM,y} = \sum m \, (EG_{m,y} \times EF_{EL,m,y}) / \sum m \, EG_{m,y} \qquad (7)$$

Where:
$EF_{grid,BM,y}$ is the build margin CO_2 emission factor in year y (tCO_2/MWh)
$EG_{m,y}$ is the net quantity of electricity generated and delivered to the grid by power unit m in year y (MWh)
$EF_{EL,m,y}$ is the CO_2 emission factor of power unit m in year y (tCO_2/MWh)
m is the power units included in the build margin
y is the most recent historical year for which electricity generation data is available

As the sample group of power units m used to calculate the build margin only includes a single power station, Power station-4, formula (6) is simplified to:

$EF_{grid,BM,y} = EF_{EL,m,y}$ (6-simplified)

The CO_2 emission factor of each power unit m ($EF_{EL,m,y}$) should be determined as per the guidance in Step 4 (a) for the simple OM, using options A1, A2 or A3, using for y the most recent historical year for which electricity generation data is available, and using for m the power units included in the build margin. If the power units included in the build margin m correspond to the sample group $SET_{sample\text{-}CDM\text{-}>10yrs}$, then, as a conservative approach, only option A2 from guidance in Step 4 (a) can be used and the default values provided in Annex 1 of the EF Tool shall be used to determine the parameter $\eta_{m,y}$.

Therefore, Option A2 is applied:

$$EF_{EL,m,y} = EF_{CO2,m,i,y} \times 3.6 / \eta_{m,y} \quad (8)$$

Where:
$EF_{EL,m,y}$ = CO_2 emission factor of power unit m in year y (tCO_2/MWh)
$EF_{CO2,m,i,y}$ = Average CO_2 emission factor of fuel type i used in power unit m in year y [3] (tCO_2/GJ)
$\eta_{m,y}$ = Average net energy conversion efficiency of power unit m in year y (ratio), using the default values provided in Annex 1 of the EF Tool, i.e. 37% for sub-critical coal-fired plant.
m = All power units serving the grid in year y except low-cost/must-run power units
y = The relevant year as per the data vintage chosen in Step 3

The build margin emission factor is calculated using this tool:

$EF_{grid,BM,y}$ = 0.885 tCO_2/MWh

Step 6. Calculation of the combined margin emission factor

The calculation of the combined margin (CM) emission factor ($EF_{grid,CM,y}$) is based on one of the following methods:

(a) Weighted average CM; or
(b) Simplified CM.

The weighted average CM method (option a) should be used as the preferred option.

The simplified CM method (option b) can only be used if:

- The project activity is located in a Least Developed Country (LDC) or in a country with less than 10 registered CDM projects at the starting date of validation; and
- The data requirements for the application of step 5 above cannot be met.

Option a is the preferred option. While the proposed project activity takes place in a country with less than 10 registered projects, Option b cannot be used as the data for the application of step 5 above is available. Therefore, option a is chosen.

(a) <u>Weighted average CM</u>

The combined margin emission factor is calculated as follows:

$$EFg_{rid,CM,y} = EF_{grid,OM,y} \times w_{OM} + EF_{grid,BM,y} \times w_{BM} \quad (9)$$

Where

[3] 2006 IPCC Guidelines for National Greenhouse Gas Inventories

$EF_{grid,OM,y}$ is the operating margin CO_2 emission factor in year y (tCO_2/MWh)
w_{OM} is the weighting of operating margin emissions factor (%)
$EF_{grid,BM,y}$ is the build margin CO_2 emission factor in year y (tCO_2/MWh)
w_{BM} is the weighting of build margin emissions factor (%).

According to the Tool, the default values for w_{OM} and w_{BM} for the wind projects in the first crediting period and the subsequent crediting period are: w_{OM} = 0.75 and w_{BM} = 0.25 (owing to their intermittent and non-dispatchable nature).

On the basis of these weights for the second crediting period, the combined margin emission factor is calculated, and fixed ex-ante for the duration of the second crediting period as follows and as shown in Table 5 below:

The most recent addition of capacity on the CES was Power station-4, in 1991. Power station-4 comprises more than 20% of the annual electricity generation of the project electricity system, CES. Therefore, the sample group of power units m used to calculate the build margin, SETsampleCDM>10 years, is Power station-4 only.

$EF_{grid,CM,y}$ = 1.130 tCO_2/MWh

Table 4 Emission factor calculation

	CO_2 emission factor (tCO_2/MWh)	Weighting (%)
Operating margin (see step 4)	1.212	75%
Build margin (see step 5)	0.885	25%
Combined margin	1.130	

These parameters will be recalculated at any renewal of the crediting period.

Baseline emissions (BE_y) now can be calculated as the annual net generation of the Project Activity ($EG_{facility,y}$) multiplied by the combined margin CO_2 emission factor ($EF_{grid,CM,y}$).

Leakage

According to the methodology, no leakage is considered for the Proposed Project Activity.

Emission reductions

Emission reductions are calculated as follows:

$ER_y = BE_y – PE_y$

B.6.2. Data and parameters fixed ex ante

Data/Parameter	$FC_{i,y}$
Data unit	Mass or volume
Description	The amount of fossil fuel i consumed in the project/connected electricity system in year y
Source of data	Ministry of Mineral Resources and Energy
Value(s) applied	See Annex 3
Choice of data or measurement methods and procedures	This is the most accurate data presenting fuel use in the electricity generating sector. Only locally mined lignite is used in the Central Electricity System.
Purpose of data	
Additional comment	

Data/Parameter	$NCV_{i,y}$
Data unit	GJ/mass or volume unit
Description	Net caloric value of fossil fuel type i (only lignite) consumed in the project/connected electricity system in year y
Source of data	Mongolia Second National Communication under the UNFCCC, 2010 (Second National Communication)
Value(s) applied	See Annex 3
Choice of data or measurement methods and procedures	In accordance with AM Tool 07 regional or national average default values are used. The value is reported in the Second National Communication and is inside the normal range for lignite given by IPCC 2006, and therefore is accepted. Only locally mined lignite is used in the Central Electricity System.
Purpose of data	
Additional comment	The NCV of coal (lignite) is reported as 3500 kcal/kg. Using this value, the NCV is equivalent to 14.65 GJ/t, which is within the normal range for lignite according to the IPCC.

Data/Parameter	$EF_{CO2,i,y}$
Data unit	tCO2/GJ
Description	CO2 emission factor of fossil fuel type i (lignite only) in year y
Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories
Value(s) applied	0.091
Choice of data or measurement methods and procedures	The Carbon content of lignite in Mongolia is not reported in official publications. Therefore, the IPCC default values at the lower level of 95% confidence interval, which are the default value in the tool, are applied.
Purpose of data	
Additional comment	The EF of 24.8 tC/TJ is equivalent to 0.091 tCO_2/GJ.

Data/Parameter	EG_y
Data unit	MWh
Description	Net electricity generated and delivered in the project electricity system in year y
Source of data	Ministry of Mineral Resources and Energy, Energy Regulatory Authority
Value(s) applied	See Annex 3
Choice of data or measurement methods and procedures	This is the most accurate data presenting fuel use in the electricity generating sector. Only locally mined lignite is used in the Central Electricity System.
Purpose of data	
Additional comment	

Following EB guidance, data that is calculated with equations provided in the methodology or default values specified in the methodology are not included in this compilation.

B.6.3. Ex ante calculation of emission reductions

>>
In accordance with the methodology, emission reductions are calculated as follows:

$ER_y = BE_y – PE_y$

Where:
ER_y is the emission reductions in year y (tCO_2e/yr)
BE_y is the baseline emissions in year y (tCO_2e/yr)
PE_y is the project emissions in year y (tCO_2e/yr)

Using the formulae 1 and 2 presented in Section B.6.1., the baseline emissions are calculated from the net electricity supplied by the Proposed Project Activity to the grid and the combined margin emission factor of the grid. The annual net generation is estimated by an independent entity on the basis of local wind measurements; the combined margin emission factor is calculated in section B.6.1. above.
The ex-ante calculations of baseline emissions and emission reductions, therefore, are as follows:

$BE_y = EG_{facility,y} \times EF_{grid,CM,y} = 168.5\ GWh/yr \times 1.130\ tCO_2/MWh = 190{,}405\ tCO_2/yr$
$ER_y = BE_y – PE_y = 190{,}405\ tCO_2/yr – 0 = 190{,}405 tCO_2/yr$

The ex-ante calculations are included in the ER calculation spreadsheet.

B.6.4. Summary of ex ante estimates of emission reductions

Year	Baseline emissions ($t\ CO_2e$)	Project emissions ($t\ CO_2e$)	Leakage ($t\ CO_2e$)	Emission reductions ($t\ CO_2e$)
24/06/2020 to 23/06/2021	0	190,405	0	190,405
24/06/2021 to 23/06/2022	0	190,405	0	190,405
24/06/2022 to 23/06/2023	0	190,405	0	190,405
24/06/2023 to 23/06/2024	0	190,405	0	190,405
24/06/2024 to 23/06/2025	0	190,405	0	190,405

24/06/2025 to 23/06/2026	0	190,405	0	190,405
24/06/2026 to 23/06/2027	0	190,405	0	190,405
Total	0	1,332,835	0	1,332,835
Total number of crediting years	7			
Annual average over the crediting period	0	190,405	0	190,405

B.7. Monitoring plan

B.7.1. Data and parameters to be monitored

Data/Parameter	**$EG_{facility,y}$**
Data unit	MWh
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y
Source of data	Electricity meter
Value(s) applied	168.5 GWh/yr
Measurement methods and procedures	**$EG_{facility,y} = EG_{export,y} - EG_{import,y}$** Where: $EG_{export,y}$ =The quantity of electricity exported to the grid by the project in year $EG_{import,y}$ = The quantity of electricity imported to the grid by the project in year **$EG_{export,y}$, $EG_{import,y}$** will be measured by electricity meters. Two electricity meters are installed at the Nalaikh substation which is Grid substation. These two meters are owned by the Grid company. Both meters have the capability to be read remotely through a communication line. The Grid company and Developer have the right to read either meter. Both meters record on memory the accumulated kilowatt-hours. Electricity meter (bi-directional, recording supply and consumption) at the grid sub-station. Continuous measurement and at least monthly recording, both electricity exported and imported calculated from supply to the grid and import from the grid. In the Salkhit substation of Salkhit wind farm, 12 meters are installed and meters 01285029, 01285026, 01285030 and 01285023 are measuring supplied quantity by project. Other 8 meters are installed purpose of measuring transmission loss and internal usage. In the Nalaikh substation, 4 meters are installed, two billing meters (01325612, 01325611) are measuring delivered quantity by project. Remaining 2 meters (01258916, 01258912) are control meters and monitoring 2 billing meters. All installed meters are checked and validated by authority which have right to check and approve validation certification for meters.
Monitoring frequency	Continues measurement complied daily and monthly in daily log and monthly joint reports.

QA/QC procedures	The meter for monitoring of the emission reductions same as used for electricity sales to the grid and the metering data cross-checked with sales data. The meters are maintained according to the appropriate industry standards. The metering equipment are calibrated and checked for accuracy by a qualified third party as described in Annex 4. The frequency of calibrations is in accordance with the manufacturer specifications. The accuracy of the metering equipment is at least 0.2. The monthly net electricity generation supplied to the grid is approved and signed off by the Carbon Finance Specialist and is cross-checked by receipt of sales before being accepted and stored. A back-up meter is installed at the on-site substation.
Purpose of data	Data used for calculating and monitoring the electricity and calculation of baseline emissions.
Additional comment	Tool of Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation (Version 03.0) is used for monitoring the parameter $EG_{facility,y}$

B.7.2. Sampling plan

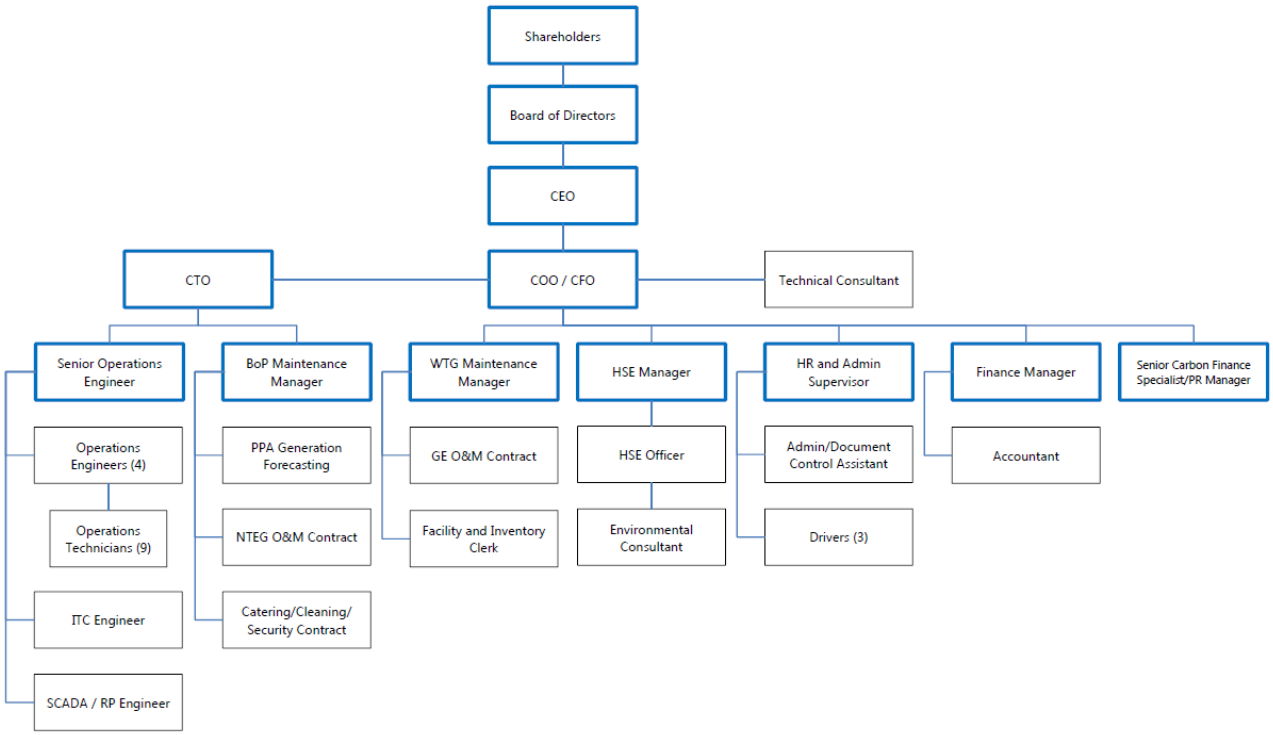
>>
Not applicable.

B.7.3. Other elements of monitoring plan

>>
Overall responsibility for monitoring and carrying out the monitoring following this monitoring plan lies with “Clean Energy” LLC. Technical team directly responsible for monitoring and reporting the net electricity generation and supply. The output from this project is monitored and recorded using two meters which are installed at the grid substation. One is main meter; the other is back up meter. The meters readings are used for both CDM purposes and sales of the electricity generated to the grid company. For details of monitoring plan, please refer to Appendix 5.

The Finance and economy team oversee the monitoring in partnership with the technical and CDM consultant where necessary and with FSA contractor involved in the operation of the wind farm during the few years of operation. Organizational chart and monitoring plan are shown on figure 3.

Figure 3. Organization Chart of Clean Energy LLC and Monitoring Plan



SECTION C. Start date, crediting period type and duration

C.1. Start date of project activity

>>
31/05/2011

The starting date of a CDM project activity is the earliest of the date(s) on which the implementation or construction or real action of a project activity begins/has begun. The starting date of the proposed project activity is the date of the road construction contract as this is the earliest date of real action.

C.2. Expected operational lifetime of project activity

>>
25 years month.

C.3. Crediting period of project activity

C.3.1. Type of crediting period

>>
Renewable crediting period is chosen.
The Project is under the second crediting period.

C.3.2. Start date of crediting period

>>
24/06/2020

C.3.3. Duration of crediting period

>>
7 years 0 months.

SECTION D. Environmental impacts

D.1. Analysis of environmental impacts

>>

A general environment impact assessment (EIA) of the project has been performed by the Ministry of Nature, Environment and Tourism of Mongolia (MNET)in accordance with the law in Mongolia in 2006. A comprehensive Environmental and Social Impact Assessment (ESIA) was conducted in 2008 by Black and Veatch which followed requirements and standards of European Bank for Reconstruction and Development (EBRD) and International Finance Corporation (IFC). Environmental Review was performed on all previous works by Sgurr Energy LLC in 2011 following the Equator Principles and best international practice of the wind sector.

Impact from the project

- The impact of the noise from the project is considered insignificant as the nearest residential area is 4 to 8 km away, where no noise will be observed.
- Any electromagnetic interference of the project is considered insignificant as the nearest residential areas are too far away for such interference to occur.
- The impact of the wind farm on bird populations and migratory birds is minimal. The normal migratory routes are 40-50 km from the site. During the wind resource study period of 3-4 years no migratory bird were spotted in the area.
- Money is set aside for the decommissioning of the wind farm and restoration of the natural environment at the end of the operating period.

Impact reduction from the baseline

- The main impact during operation of the proposed project activity is the displacement of electricity generation by the country's fossil-fuel fired power plants. In this environmental evaluation it was estimated that the project would save approximately 120,000 tonnes of coal, and 150,000 tonnes of CO2 annually. The emission reductions are substation and have been re-calculated in detail in this PDD, following the CDM methodology.
- The second main impact is the reduction in water demand from the power plant. In this environmental evaluation it was estimated that the project would save approximately 1.15 million tonnes of ground water.

Conclusions

The Chief Investigator of the Ministry of Environment, Nature and Tourism of Mongolia, A. Enkhbat, evaluated the proposal and approved the project with conditions.11These conditions include:

- advertise the project to rural residents and the public
- operate the project to international standards, including with regards to labour safety
- obtain approval for the transmission line and substation
- protect soil and plants in the area affected, and restore after construction
- request professional organisations carry out environmental controls during the project

The developer has accepted and complies with all conditions for the approval.

D.2. Environmental impact assessment

>>

As written in the D.1 above, General EIA was approved in 2006 by the MNET following national requirements. Detailed ESIA was conducted in 2008 by Black & Veatch following investors' requirements. Environmental Review was conducted by Sgurr Energy in 2011 for construction and operation stages as part of the feasibility study. Later in 2012 detailed EIA was conducted again following the national requirements set by the Ministry of Environment and Green Development (MEGD -the current name). This final detailed EIA was approved by the MEGD in 2012 with a positive conclusion. All of the plans and requirements set by these EIAs have been thoroughly followed.

SECTION E. Local stakeholder consultation

E.1. Modalities for local stakeholder consultation

>>

As part of the approval for the proposed project activity, the Mongolian government requested that rural residents and the public be fully informed of the project. As part of the project undertaken as a CDM project, the project developer, with the project CDM consultant has undertaken a full stakeholder consultation, by informing stakeholders, receiving comments and responding to stakeholders' concerns.

The project developer organised the stakeholder consultation in July-August 2007. Invitations were sent out to over 100 people and 20 environmental NGOs for the consultation meeting. Invitees included: local government officials, village leaders, herders, and NGOs.

The meeting took place on 10 August 2007 in the Cultural Hall, Sergelen Soum, Tuv Aimag, i.e. the central hall for the community to which the wind farm belongs. In addition, the developer visited around 30households of Sergelen Soum on 19 July to introduce the project and invite them to the meeting. In order to assist stakeholders to be able to take part, given the remoteness of the area, and the fact that the local residents are often nomadic, transport to the meeting was provided.

Over 50 people attended the stakeholder consultation meeting, including the Sergelen Soum governor, a representative of the Ministry of Environment, and 3 NGO representatives.

A questionnaire was also sent out with the invitation.

E.2. Summary of comments received

>>

Comments at the meeting related to further information regarding further explanation of the project itself and the possibility of continued grazing by livestock at the site.

A total of 38 questionnaires were returned, all of which agreed with the building of the project. The results of the questionnaires are as follows:

Question: Do you agree with the building of the project? Answers: Yes: 38; No: 0; I do not know: 0 Remarks: Agree with the building of the windfarm. This will supply locally generated energy. It will have environmentally friendly operation, preserving fresh water supplies, non-renewable coal reserves, and will not have a negative impact on wild animals
Question: Do you think the project will have a positive or negative impact on you? Answers: Positive: 19; Negative: 1*; I do not know: 6 (no answer: 12) Remarks: It is important for the local region and country's development. * The person responding negative did agree with the building of the windfarm, but thought the impact would be negative on nature, in particular because of sight spoiling.
Question: Do you think the project has economic benefits? Answers: Yes: 20; No: 10; I do not know: 7 (no answer: 1) Explanation: Construction jobs (18), operation job (13), electricity supply (23), tourism (17). Remarks: Increased employment opportunity and increased tax income.
Question: Do you think the project will have a negative impact on the environment? Answers: Yes: 6; No: 20; I do not know: 10 (no answer: 2) Explanation: Noise (6), sight spoiling (3), wildlife (3), birds (2). Remarks: No harmful impact if proper infrastructure is built, including road.
Question: Do you think the power lines will have a negative impact on the environment?

Answers: Yes: 6; No: 16; I do not know: 14 (no answer: 2)
Explanation: Noise (7), sight spoiling (2), impact on the national park (1), wildlife (2).
Question: Do you think the government rules or Newcom's business culture guarantees good, safe and clean construction and operation?
Answers: Yes: 25; No: 2; I do not know: 9 (no answer: 2)
Remarks: We believe the operation of the company will be environmentally friendly and support the company and the project.
Final remarks: We support the project and believe the project will provide various benefits to the development of the country and the region.

E.3. Consideration of comments received

>>

All stakeholders responded in favour of the proposed project. However, a number of issues were raised, including noise, sight spoiling and potential impact on wildlife, as well as possibly a negative impact on one stakeholder. The EIA, summarised in Section D above, shows that the impacts will in fact be minimal.

Noise: The EIA shows that the noise will be insignificant, as the nearest residential areas are 4 to 8 km away. While grazing of livestock will continue in the area, the nomadic herders are generally not living in close proximity of the site.

Sight spoiling: While the project may be visible from some distance, this wind farm is located far from the National Park, and far from any habitation centres.

Wildlife/birds: The EIA shows that the impact on wildlife and birds will be insignificant. The migratory routes are far from the site and there are no particular feedings or drinking sites near the proposed wind farm.

The one personal negative impact: related to the impact on nature, in particular sight spoiling. However, the person did agree with the construction of the wind farm.

SECTION F. Approval and authorization

>>

Letter of approval from Mongolian DNA was first issued for the project activity on 10 October 2007 and re-issued on 11 November 2011 before submitting the PDD to the validating DOE. Annex I country LoA issued by Sweden DNA in 2013. All LoAs are shown below.

1. First LoA from Mongolia DNA issued in 2007.

CDM DNA MONGOLIA

Цэвэр Хөгжлийн Механизмийн Үндэсний Товчоо
Clean Development Mechanism Designated National Authority

2007 оны 10-р сарын 10 № 07/01 Улаанбаатар хот

To: Director of NEWCOM LLC
8F, 8 Zovkhis Building
Seoul Street 6/3
Ulaanbaatar 210628
Mongolia

Ref: Letter of Approval for "Salkhit wind park"

Dear Sir/Madam,

The Designated National Authority for the Clean Development Mechanism on behalf of the Government of Mongolia approves "Salkhit wind park" as a Clean Development Mechanism project, with the following remarks:

- Mongolia accepted to the Kyoto Protocol to the United Nations Framework Convention on Climate Change on 15, December, 1999, and is a Party to the Kyoto Protocol.
- The "Salkhit wind park" contributes to the sustainable development in Mongolia
- Newcom LLC is hereby authorized as Mongolia's participant to voluntarily participate in and carry out the project activity.

MONGOLIA CDM DESIGNATED NATIONAL AUTHORITY

Your sincerely,

A.Enkhbat
Head of CDM DNA for Mongolia

2. Renewed LoA Mongolian DNA issued in 2011

CDM DNA MONGOLIA

Цэвэр Хөгжлийн Механизмын Үндэсний Товчоо
Clean Development Mechanism Designated National Authority

Government Bldg 2,
UN Street 5/2
Ulaanbaatar 210646
MONGOLIA

Tel: 976-11-320402
Fax:976-11-321401
e-mail: info@cdm-mongolia.com
Website: www.cdm-mongolia.com

20 11 оны 11 сарын 11 № 111/22 Улаанбаатар хот

11 November 2011

To,
BYAMBASAIKHAN BAYANJARGAL
Chief Executive Officer, Clean Energy LLC
9th Floor, Zovkhis Building
Seoul street 21, Sukhbaatar district
Ulaanbaatar, Mongolia

Sub: Letter of Approval for a project under article 12 of the Kyoto Protocol (CDM)
Name of the project: Salkhit Wind Farm
DNA reference number: MONDNA07-1 (PDD_Ver 2)

The CDM National Bureau, coordinated under the Ministry of Nature, Environment and Tourism, acting as the Mongolian Designated National Authority (DNA) confirms that Mongolia:

1. has ratified the Kyoto Protocol on 15th December 1999
2. approves voluntary participation in the CDM project activity mentioned above.
3. by this letter of approval, also authorizes "Clean Energy LLC" to participate as project proponent to the CDM project activity named above;
4. acknowledges that the above mentioned project contributes to sustainable development of Mongolia

"At your and Newcom's request, we revoke the Letter of Approval issued to Newcom LLC (previous project participant) for project named Salkhit Wind Park (previous project title) in October 2007. The reissuance of the Letter of Approval is based on your assurances that the project has not been substantially changed relative to the project design on the basis of which the earlier Letter of Approval to Newcom was issued.
While we trust the following not to apply to you, please note that the government of Mongolia reserves the right to revoke Letters of Approval when appropriate, for example in case projects are found to be in breach of Mongolian laws and regulations provided such breaches, if notified to the project company, are not remedied within a reasonable time period, or when information provided during the host country approval application appears to be substantially incorrect."

Yours sincerely,

Ms.Tsendsuren Batsuuri
Head of CDM National Bureau

3. LoA Sweden DNA issued in 2013

Swedish Energy Agency

LETTER OF APPROVAL 1 (2)

Date 2013-05-17 Dnr 2013-3840

Letter of Approval

concerning

Swedish Energy Agency

and

Salkhit Wind Farm

PREAMBLE

Whereas:

A. Sweden has ratified the Kyoto Protocol to the United Nations Framework Convention on Climate Change on May 31, 2002.

B. The Swedish Energy Agency has been appointed Designated National Authority for the Clean Development Mechanism.

C. *Swedish Energy Agency* ("the Applicant") has applied to participate in the *Salkhit Wind Farm* ("the Project Activity").

NOW THEREFORE the undersigned as legal and authorized representative of the Government of Sweden declares that:

Swedish Energy Agency

LETTER OF APPROVAL 2 (2)

Date 2013-05-17 Dnr 2013-3840

DECLARATION:

1. Sweden *approves* the Project activity as a Clean Development Mechanism (CDM) project in accordance with Article 12 of the Kyoto Protocol and the relevant rules, decisions, guidelines, modalities, and procedures thereunder and confirms that the participation in the Project is voluntary.

2. Sweden *authorizes* the Applicant to participate in the Project activity in accordance with the Kyoto Protocol, the Marrakech Accords and the relevant rules, decisions, guidelines, modalities, and procedures thereunder.

3. Sweden *affirms* that any public funding for the Project activity does not result in a diversion of Sweden's official development assistance and is separate from and is not counted towards Sweden's financial obligations as a Party.

Stockholm, 2013-05-17

For and on behalf of
The Government of Sweden

.....

Erik Eriksson
Acting Director General

Swedish Energy Agency

Appendix 1. Contact information of project participants

Organization name	Clean Energy LLC
Country	Mongolia
Address	801, 8th floor Naiman Zovkhis Building, Seoul Street 21, Ulaanbaatar, Mongolia
Telephone	976-75951331, 70111331
Fax	976-70111341
E-mail	sukhbaatar@newcom.mn
Website	www.cleanenergy.mn
Contact person	Sukhbaatar Tsegmid

Organization name	Clean Energy LLC
Country	Mongolia
Address	801, 8th floor Naiman Zovkhis Building, Seoul Street 21, Ulaanbaatar, Mongolia
Telephone	976-75951331, 70111331
Fax	976-70111341
E-mail	enkhsaikhan@cleanenergy.mn
Website	www.cleanenergy.mn
Contact person	Enkhsaikhan Tumen-Ulzii

Organization name	Swedish Energy Agency
Country	Sweden
Address	Kungsgatan 43, Eskilstuna
Telephone	+46 (0)165442430
Fax	-
E-mail	christer.gustafsson@energimyndigheten.se
Website	www.swedishenergyagency.se
Contact person	Christer Gustafsson

Organization name	Swedish Energy Agency
Country	Sweden
Address	Kungsgatan 43, Eskilstuna
Telephone	+46 (0)165442430
Fax	-
E-mail	kajsa.paludan@energimyndigheten.se
Website	www.swedishenergyagency.se
Contact person	Kajsa Paludan

Appendix 2. Affirmation regarding public funding

There is no public funding from Parties included in Annex I for the construction of this project. However, some public funds were received during the following stages of project preparation:

PPA negotiations
Being the first proposed wind farm in Mongolia, the IFC provided a grant to co-finance consultant expenses associated with the PPA negotiations and the development of the financial models for the project. The IFC grant does not contribute to the project activity itself.

ESIA report
Government of Luxembourg provided a grant to finance the consultant expenses associated with the Environmental and Social Impact Assessment (ESIA) required by the EBRD, in order for them to take part in negotiations regarding financing the project. This Environmental and Social Impact Assessment was more extensive than the standard EIA required by Mongolian law, which had already been carried out and approved. The Luxembourg grant does not contribute to the project activity itself.

Shareholder agreement with EBRD and convertible grant agreement with FMO
In Dec 2009, EBRD agreed to become a shareholder in the proposed project activity, through participation in the project company “Clean Energy” LLC. Through these shareholders agreement Clean Energy LLC is currently 75% owned by Newcom and 25% by EBRD. Out of 75% owned by Newcom, the company signed a convertible grant agreement with FMO, an entrepreneurial development bank of the Netherlands, in Oct 2010 giving it rights for 24% equity in the project at financial close. Therefore, both agreements do not involve public funding.

MCC grant to the Government of Mongolia
In Dec 2009, the MCC Board approved a fund of USD 10.4 million to the Government of Mongolia on supporting renewable energy development. The fund, provided to NDC and CRETN, will (i) support tariff subsidy to temporarily smooth the difference between the estimated cost of power from the proposed project and the estimated cost of power to be paid by consumers by the end of 2013; (ii) upgrade Nalaikh grid substation; and (iii) upgrade SCADA, a fully automatic control system at NDC. As the funding is provided from the US government through MCC to the Government of Mongolia, it does not involve direct ODA for the proposed project.

Appendix 3. Applicability of methodologies and standardized baselines

BASELINE INFORMATION
Additional information to that presented in section B.6. is given below and in the EF calculation spread sheet.

Step 3. Select a method to determine the operating margin (OM)

There is currently no generation from low-cost/must-run generation, all 6 plants are fossil fuel-fired plant[4]. Therefore, the Simple OM method is applicable to the proposed project.

Table A1. Operating power plant in Central Energy System of Mongolia

	Power station	Capacity (MW)	Commissioned	Fuel
1	Power station-2 (Ulaanbaatar)	24	1961-2015	Lignite
2	Power station-3 (Ulaanbaatar)	198	1968-2014	Lignite
3	Power station-4 (Ulaanbaatar)	683	1983-2015	Lignite
4	Power station of Darkhan	48	1966-1986	Lignite
5	Power station of Erdenet	36	1987-1989	Lignite
6	Power station of Erdenet Factory	53	2012-2017	Lignite

Step 4. Calculate the operating margin emission factor according to the selected method

The operating margin is calculated using Option A1.

Table A2. Fuel consumption

[4] All 6 power plants forming the Central Energy System (CES) are coal burning thermal power plants and are not low-cost/must-run generation as they are (i) dispatched dependently from the seasonal load of the grid, and (ii) do not have low marginal generation cost.

(i) *Statistical Indicators of Energy Sector*, Yearly Bulletin from the Energy Regulatory Authority, 2015-2019.

(ii) *Short-term Energy Sector Technical Assistance on Development of Economic Dispatch Operating Procedure*, Economic Policy Reform and Competitiveness Project by USAID, Apr 2011

	Power station	Year	Fuel consumption for electricity generation (tonnes)
1	Power station-2	2017	241,500
		2018	261,600
		2019	254,100
2	Power station-3	2017	1,275,400
		2018	1,325,100
		2019	1,305,400
3	Power station-4	2017	3,451,200
		2018	3,409,300
		2019	3,495,500
4	Power station of Darkhan	2017	400,800
		2018	401,100
		2019	433,500
5	Power station of Erdenent	2017	326,200
		2018	318,400
		2019	290,100
6	Power station of Erdenent Factory	2017	-
		2018	435,900
		2019	375,700
	Central Energy System	2017	5,695,100
		2018	6,151,400
		2019	6,154,300

Source: "Statistical Indicators for Energy Sector-2019", Energy Regulatory Authority

Table A3. Emissions and emission factor

	Power station	Year	FC lignite (tonnes)	NCV lignite (GJ/t)	EFCO2, lignite (tCO2/GJ)	Emissions (tCO2)	EFEL (tCO2/MWh)
1	Power station-2	2017	241,500	14.65	0.091	321,956	2.46
		2018	261,600			348,752	2.51
		2019	254,100			338,753	2.44
2	Power station-3	2017	1,275,400			1,700,300	1.88
		2018	1,325,100			1,766,557	1.95
		2019	1,305,400			1,740,294	1.98
3	Power station-4	2017	3,451,200			4,600,967	1.38
		2018	3,409,300			4,545,108	1.37
		2019	3,495,500			4,660,026	1.33
4	Power station of Darkhan	2017	400,800			534,327	2.36
		2018	401,100			534,726	2.45
		2019	433,500			577,921	2.22
5	Power station of Erdenent	2017	326,200			434,874	3.31
		2018	318,400			424,475	3.15
		2019	290,100			386,747	2.86
6	Power station of Erdenent Factory	2017	-			-	-
		2018	435,900			581,120	2.22
		2019	375,700			500,864	1.88
	Central Energy System	2017	5,695,100			7,592,423	
		2018	6,151,400			8,200,739	
		2019	6,154,300			8,204,605	

Source: "Statistical Indicators for Energy Sector-2019", Energy Regulatory Authority

NCV is the net calorific value (energy content) of the locally mined lignite. This value is obtained from the Second National Communications. The NCV is stated to be 3500 kcal/kg. This is equivalent to 14.65 TJ/Gg, which is in the normal IPCC range for lignite (the default value being 11.9, and the total range 5.5 to 21.6). The national value, therefore, is used.

EF_{CO2} is the CO_2 emission factor per unit of energy of the fuel, and it can be calculated by multiplying the carbon emission factor (CEF, carbon content) by 44/12. As no local laboratories in Mongolia provide the data on carbon content of the coal and lignite, the IPCC default value at the lower level of 95% confidence interval are used, which is the default value in the tool.

Gross generation as well as internal use percentage for each plant is presented in the ERA and Ministry data[5]. For the OM calculations, net generation (and imports) is calculated in Table A4 below. The project electricity system is not connected to other grids in Mongolia. However, imports from outside the country are taken into account, and are listed in Table A4 below.

Table A4. Gross generation, own consumption rate, and net supply in CES

	Power station	Year	Net generation, EG (MWh)	Gross generation (MWh)	Own consumption (%)
1	Power station-2	2017	131,017	151,499	14%
		2018	138,831	159,962	13%
		2019	138,705	158,665	13%
2	Power station-3	2017	902,159	1,077,977	16%
		2018	903,724	1,082,822	17%
		2019	880,334	1,053,536	16%
3	Power station-4	2017	3,337,716	3,804,966	12%
		2018	3,320,691	3,789,878	12%
		2019	3,492,639	3,972,972	12%
4	Power station of Darkhan	2017	226,349	273,864	17%
		2018	218,018	264,553	18%
		2019	260,044	310,983	16%
5	Power station of Erdenent	2017	131,420	163,153	19%
		2018	134,653	166,115	19%
		2019	135,045	165,012	18%
6	Power station of Erdenent Factory	2017	-	-	0%
		2018	261,219	319,925	18%
		2019	265,868	323,677	18%
	Central Energy System	2017	4,728,660	5,471,459	
		2018	4,977,136	5,783,256	
		2019	5,172,636	5,984,844	
	Net imports from Russia	2017	1,522,500	1,522,500	
		2018	1,683,600	1,683,600	
		2019	1,715,800	1,715,800	
	Total	2017	6,251,160	6,993,959	
		2018	6,660,736	7,466,856	
		2019	6,888,436	7,700,644	

Source: "Statistical Indicators for Energy Sector-2019", Energy Regulatory Authority

Operating Margin Emission Factor calculations

[5] *Statistical Indicators of Energy Sector*, Yearly Bulletin from the Energy Regulatory Authority, 2007-2010. Ministry of Mineral Resources and Energy (MMRE)

Table A5. Operating margin and build margin calculations

	Power station	Year	Net generation, EG (MWh)	EFEL (tCO2/MWh)	Efgrid, OMsimple (tCO2e/MWh)
1	Power station-2	2017	131,017	2.46	0.052
		2018	138,831	2.51	0.052
		2019	138,705	2.44	0.049
2	Power station-3	2017	902,159	1.88	0.272
		2018	903,724	1.95	0.265
		2019	880,334	1.98	0.253
3	Power station-4	2017	3,337,716	1.38	0.736
		2018	3,320,691	1.37	0.682
		2019	3,492,639	1.33	0.676
4	Power station of Darkhan	2017	226,349	2.36	0.085
		2018	218,018	2.45	0.080
		2019	260,044	2.22	0.084
5	Power station of Erdenent	2017	131,420	3.31	0.070
		2018	134,653	3.15	0.064
		2019	135,045	2.86	0.056
6	Power station of Erdenent Factory	2017	-	-	-
		2018	261,219	2.22	0.087
		2019	265,868	1.88	0.073
	Central Energy System	2017	4,728,660		
		2018	4,977,136		
		2019	5,172,636		
	Net imports from Russia	2017	1,522,500	0	0
		2018	1,683,600	0	0
		2019	1,715,800	0	0
	Total	2017	6,251,160		1.21
		2018	6,660,736		1.23
		2019	6,888,436		1.19
	Aggregate (2017-2019)		19,800,332		
	EFgrid, Omsimple (tCO2e/MWh)				1.212

Based on the calculation above, the simple OM emission factor of CES is calculated ex-ante using a 3-year generation-weighted average is 1.212 tCO_2e/MWh.

Step 5. Calculate the build margin (BM) emission factor

As explained in section B.6, the sample group of power units m used to calculate the build margin is determined following procedure in the EF Tool:

a) The set of six power units, $SET_{6\text{-units}}$, includes all power units on the project electricity system. $AEG_{SET\text{-}6\text{-}units}$ for the last year is 5,172,636 MWh;
b) AEG_{total} for the last year is 5,172,636 MWh. The set of power units that started to supply electricity to the grid most recently and that comprise 20% of AEG_{total}, $SET_{\geq 20\%}$, includes only Power station-4. $AEG_{SET\geq 20\%}$ for the last year is 3,492,639 MWh, which is 67% of AEG_{total};
c) $SET_{6\text{-units}}$ comprises the larger annual electricity generation and is set as SET_{sample};

However, the date when the power units in $SET_{6\text{-units}}$ started to supply electricity to the grid is more than 10 years ago. Indeed, the most recent addition was Power station of Erdenet Factory, in 2017. Therefore, the following steps are also applied:

d) The most recent addition of capacity on the CES was Power station of Erdenet Factory, in 2017. Therefore, when excluding the power units which started to supply electricity to the grid more than 10 years ago, SET_{sample} consists of no plant at all. Also, as there are no operating CDM plant, $SET_{sample\text{-}CDM}$ still consists of no plant at all, thus $AEG_{SET\text{-}sample\text{-}CDM}$ is 0 MWh, or 0% of AEG_{total}. Therefore, the following steps are also applied:
e) Include in the sample group $SET_{sample\text{-}CDM}$ the power units that started to supply electricity to the grid more than 10 years ago until the electricity generation of the new set comprises 20%

of the annual electricity generation of the project electricity system. The most recent addition of capacity on the CES was Power station-4, in 2019. Power station-4 comprises more than 20% of the annual electricity generation of the project electricity system, CES.

f) The $SET_{sample\text{-}CDM\text{->}20yrs}$, therefore, used to calculate the build margin is Power station-4 only.

The build margin emissions factor is the generation-weighted average emission factor (tCO2/MWh) of all power units m during the most recent year y for which power generation data is available, calculated as follows:

$EF_{grid,BM,y} = \sum m\ (EG_{m,y} \times EF_{EL,m,y}) / \sum m\ EG_{m,y}$
Where:
$EF_{grid,BM,y}$ is the build margin CO_2 emission factor in year y (tCO_2/MWh)
$EG_{m,y}$ is the net quantity of electricity generated and delivered to the grid by power unit m in year y (MWh)
$EF_{EL,m,y}$ is the CO_2 emission factor of power unit m in year y (tCO_2/MWh)
m is the power units included in the build margin
y is the most recent historical year for which electricity generation data is available

As the sample group of power units m used to calculate the build margin only includes a single power station, Power station of Erdenet Factory, this formula is simplified to:

$EF_{grid,BM,y} = EF_{EL,m,y}$

The CO_2 emission factor of each power unit m ($EF_{EL,m,y}$) should be determined as per the guidance in Step 4 (a) for the simple OM. If the power units included in the build margin m correspond to the sample group $SET_{sample\text{-}CDM\text{->}20yrs}$, then, as a conservative approach, only option A2 from guidance in Step 4 (a) can be used and the default values provided in Annex 1 of the EF Tool shall be used to determine the parameter $\eta_{m,y}$.

Therefore, Option A2 is applied:

$EF_{EL,m,y} = EF_{CO2,m,i,y} \times 3.6 / \eta_{m,y}$

Where:
$EF_{EL,m,y}$ = CO_2 emission factor of power unit m in year y (tCO_2/MWh)
$EF_{CO2,m,i,y}$ = Average CO_2 emission factor of fuel type i used in power unit m in year y (tCO_2/GJ)
$\eta_{m,y}$ = Average net energy conversion efficiency of power unit m in year y (ratio), using the default values provided in Annex 1 of the EF Tool, i.e. 37% for sub-critical coal-fired plant.
m = All power units serving the grid in year y except low-cost/must-run power units
y = The relevant year as per the data vintage chosen in Step 3

The build margin emission factor is calculated using this methodology:

$EF_{grid,BM,y}$ = 0.885 tCO_2e/MWh.

Step 6. Calculation of the combined margin emission factor

Option a – Weighted average CM

On the basis of the default weights for the second crediting period, the combined margin emission factor is calculated, and fixed ex-ante for the duration of the second crediting period as follows and as shown in Table A6 below.

Table A6 Emission factor calculation

	CO_2 emission factor (tCO_2/MWh)	Weighting (%)

Operating margin (see step 4)	1.212	75%
Build margin (see step 5)	0.885	25%
Combined margin	1.130	

Appendix 4. Further background information on ex ante calculation of emission reductions

In accordance with the methodology, emission reductions are ex ante calculated as follows:

$ER_y = BE_y – PE_y$

Where:
ER_y is the emission reductions in year y (tCO_2e/yr)
BE_y is the baseline emissions in year y (tCO_2e/yr)
PE_y is the project emissions in year y (tCO_2e/yr)

Using the formulae 1 and 2 presented in Section B.6.1., the baseline emissions are calculated from the net electricity supplied by the Proposed Project Activity to the grid and the combined margin emission factor of the grid. The annual net generation is estimated by an independent entity on the basis of local wind measurements; the combined margin emission factor is calculated in section B.6.1. above. The ex-ante calculations of baseline emissions and emission reductions, therefore, are as follows:

$BE_y = EG_{facility,y} \times EF_{grid,CM,y} = 168.5\ GWh/yr \times 1.130\ tCO_2/MWh = 190{,}405\ tCO_2/yr$
$ER_y = BE_y – PE_y = 190{,}405\ tCO_2/yr – 0 = 190{,}405\ tCO_2/yr$

The ex-ante calculations are included in the ER calculation spreadsheet.

Appendix 5. Further background information on monitoring plan

I. Responsibility

The responsibility for monitoring lies with “Clean Energy” LLC, who operates the project activity. Technical team has responsible for monitoring and reporting net electricity supplied by the project activity to the grid. Finance and economy team oversees the monitoring in partnership with relevant parties (e.g. grid company, consultants and EPC contractor when necessary). Wind project staffs do monitoring, reporting and compiling records of generated electricity, while the Operation Managers cross-checks results with a receipt of sales before its being accepted, stored and approved.

II. Training

Wind project staffs at Clean Energy are experienced engineers with more than 16 years of work experience in energy sector. They follows guidelines and procedures regarding the monitoring of net electricity as specified in the PPA and PDD.

The Operation Manager is experienced. Operation manager conducts instruction to new engineers and technicians.

A CDM Manual has been compiled within 3 months of registration of the project activity.

III. Data and parameters to be monitored

All meters at Nalaikh substation and Salkhit substation were calibrated by certified body, the Mongolian Agency for Standardization and Metrology. All meters at Nalaikh are checked for accuracy by the National Electricity Grid (NETG or Grid company). 2 meters at Nalaikh Substation and 6 meters at Salkhit substation were calibrated before commercial operation date. The

certificates of Approval for the meters were issued on 06/06/2013 valid for 8 years till 06/06/2021. CE installed 6 meters for internal purposes to calculate internal use and electricity loss on electrical equipment. Those additional electrical meters are not for delivered energy only for internal usage and loss. Those 6 meters were calibrated body, the Mongolian Agency for Standardization and Metrology, after commercial date. The certificates of Approval for 2 meters were issued on 2015/09/16 valid 8 years till 2023/09/16, for another 2 meters issued on 2016/01/28 valid for 8 years till 2024/01/28, and the other 2 meters issued on 2017/01/15 valid for 4 years till 2021/01/15, respectively. Billing meters at Nalaikh substation have been replaced and calibrated in 16th August 2019, valid for 7 years till 2026/12/28.

Both meters at Nalaikh and Salkhit substation will be calibrated in accordance with the national regulations. As specified by the PPA, inspection, testing and calibration should be in accordance with the "Code of Energy Utilization" and other relevant rules and regulations.
The frequency of calibrations is in accordance with the national regulations. A1800 Alpha meters are factory-calibrated and periodically perform self-tests that verify the meter is operating properly[6]. Errors are displayed on the LCD. The detailed information about self-test can be found from "A1800 Alpha Meter" Technical Manual Rev. 02 published in 2011 by Elster Metronica (page 77).
The meters have been maintained according to the appropriate industry standards. No errors were detected during the monitoring period on any meters both at Nalaikh and Salkhit substation. The net electricity generation output registered by the main meter alone is used for the purpose of billing and emission reduction verification as long as the error in the meters is within the agreed limits.

The main and control meters at Nalaikh substation were jointly inspected and sealed on 25 June 2013 on behalf of the parties concerned. On 18 February 2016, Grid company connected meters to computer unit for reading data by remotely and CE had supervised during connection work. After connection work the meters were sealed by both parties with numbers shown in the Table 4.

On 11st of October 2017, Grid company and CE found control meter of Salkhit-A was not sending data by remotely. Grid company and CE has been checked meter connection, removed sealing numbered as E20989 and found connection from main meter of Salkhit-A to control meter of Salkhit-A was loosed. CE has been supervised during tighten loosed connection. After tighten loosed connection, meter was sealed by both parties with number as E20936, shown in the Table 4.

Table 4. Nalaikh Meter Sealing, 11 Oct 2017

Line	Salkhit-B /control/	Salkhit-B	Salkhit-A	Salkhit-A /control/
Meter no.	01258916	01325612	01325611	01258912
Meter model	A1802RAL-P4G-DW-4	A1802RALQ-P4GB1-DW-4	A1805RALQ-P4GB1-DW-4	A1802RAL-P4G-DW-4
CE sealing no.	E20982	028100	028075	E20998
NETG sealing no.	ПХ[7]	ПХ	ПХ	ПХ

The technical team regularly undertakes examinations from the National Dispatch Center to obtain certificates for operating the wind farm under the Central Electricity System. The technical team also attends various operation related trainings for health and safety.

The data and parameters are monitored for the CDM project activity are listed in Section B.7.1. of this PDD:

- $EG_{facility,y}$: Quantity of net electricity generation supplied by the Project plant/unit to the grid in year y, calculated from supply to the grid and imports from the grid using the main meter at the grid sub-station.

[6] Elster Electricity (2005), A1800 Alpha Meter Family Product Bulletin, p. 27

[1] Elster Electricity (2005), A1800 Alpha Meter Family Product Bulletin, p. 27

[7] Or PKh in English.

The emission factor is determined ex-ante and fixed for the duration of the 2nd crediting period in this PDD.

Some parameters are monitored for purposes other than the CDM, in particular for on-going operational and maintenance requirements of the project.

IV. Installation of electricity meters

Both electric meters at Nalaikh and Salkhit substation (shown in Figure 2.1) were read and measured continuously with monthly cross-check. The net on-grid electricity generation was based on the main meter installed at the Nalaikh substation. The monthly compile is recorded through joint reports, signed and approved by both parties. This joint report serves as the basis for invoice and payment. Both main and control meter at Nalaikh substation has been regularly checked and read by both parties; and is owned by Clean Energy. While the main meter of Nalaikh substation will remain the property of Clean Energy, the control meter is property of the Grid company (National Electricity Transmission Grid) as per the PPA. Electricity export and import between the Grid and the Project are continuously measured on both Salkhit and Nalaikh substations. Meters at Salkhit substation measures electricity export and import through the 110 kV Overhead Transmission Line (OTL).

Figure. 2.1 Schematic of metering arrangement (for demonstration purpose only)

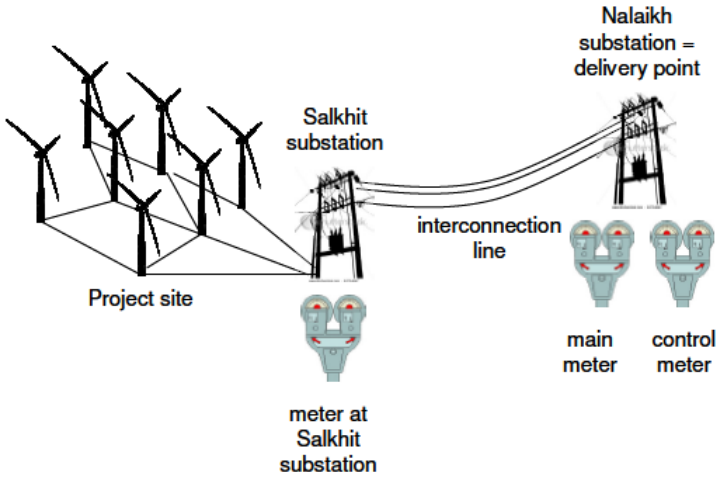
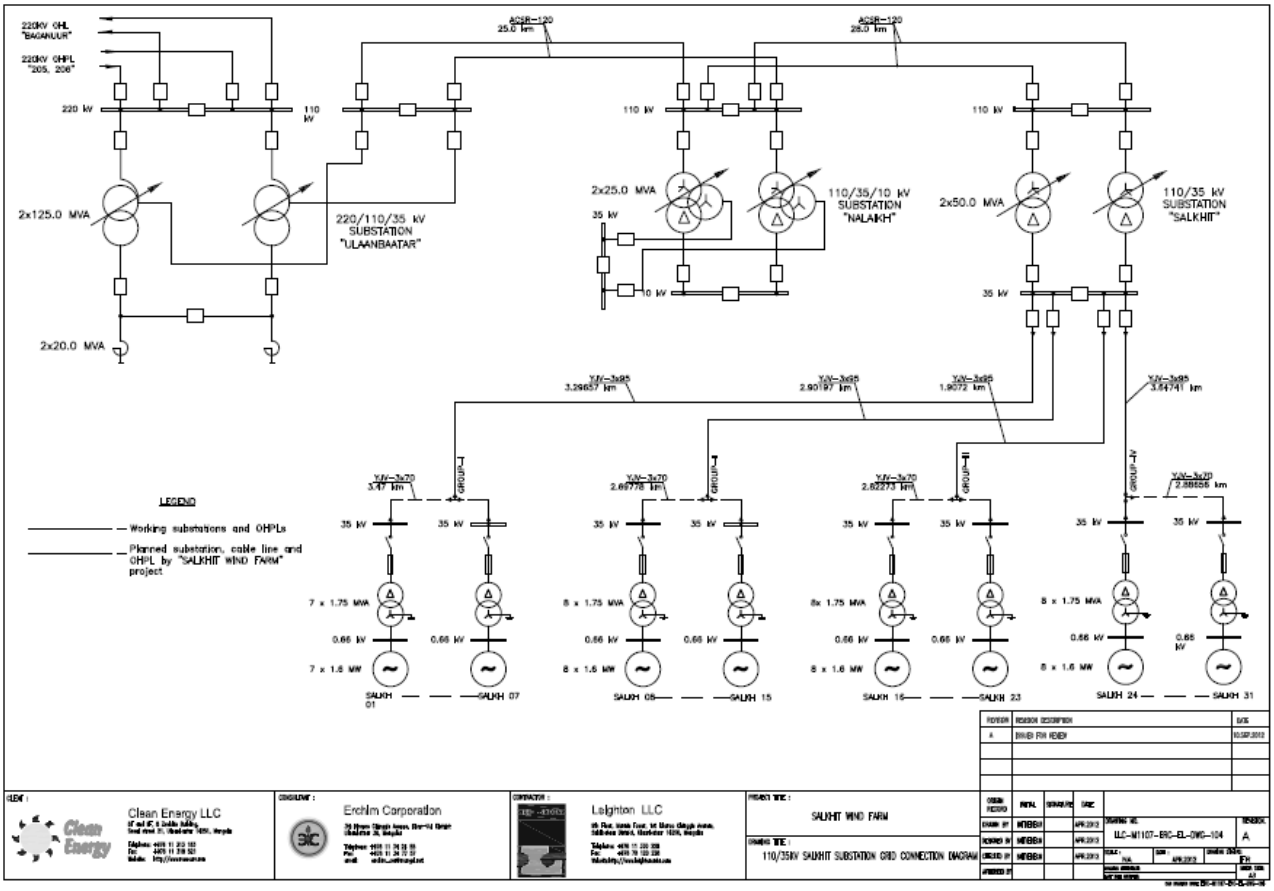


Figure 2.2 Single Diagram of the Salkhit Wind Farm



The detailed monitoring points of the Salkhit Wind Farm can be seen from the Figure 2.2. 31 WTGs are divided into 4 strings (one group with 7 WTGs and three groups with 8 WTGs). They are connected to the 110/35 kV Salkhit substation through 35kV underground cable network. Generated electricity is transmitted from the Salkhit substation through 110kV double circuit high voltage transmission line to 110/35/10 kV Nalaikh substation with further connection to the 220/110/35 kV Ulaanbaatar substation from where the electricity is distributed.

Responsibility, Data Collection Procedures and Quality Control

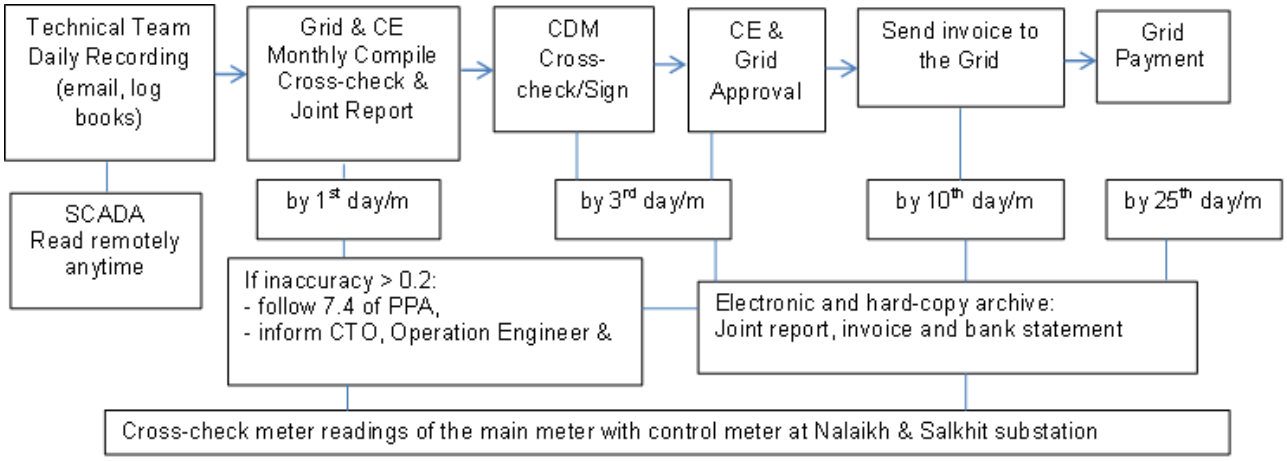
The technical team, comprised of CE engineers and technicians, are in charge of operation and meter reading. The daily logs are archived electronically and in hard-copy with signatures of the shift team and sent through email to the operation team. Meters were read in accordance with the PPA. The monthly compile is completed by engineers from both parties, the electricity seller (CE) and the buyer (Grid company), on the first day of each month. The monthly joint report records the electricity export and import and presents the final confirmed quantities from the main and control meter at Nalaikh substation. The cross-checked results are reported to the Operations Manager for sign-off and approval from the Chief Technical Officer. Only after final double-confirmation, the monthly joint reports are signed and stamped by both parties.

The accuracy of meters is within the required standard of 0.2.

Figure 3.1 describes the monitoring system with tasks, roles and responsibilities. The detailed organizational chart is shown in Figure 3.2. All data were correct and signed off, approved and stored. Regular improvements have been made on the monitoring process.

There are 3 main procedures related with the monitoring system. The monthly meter reading and invoicing procedure approved on 1 Oct 2013 specifies all roles and responsibilities for monthly meter reading, reporting and invoicing with deadlines as shown in the Figure 3.1. Information Exchange Procedure and the Shift Change Procedure specify requirements for daily operation. Emergency procedures are included in the Information Exchange Procedure, but separate Emergency Response Plan has been developed.

Figure 3.1 Monitoring System Diagram: Roles and Responsibilities



Abbreviations

SCADA	Supervisory Control and Data Acquisition
Grid	National Electricity Transmission Grid State Owned Stock Company (old name on the PPA is "Central Regional Electricity Transmission Grid")
CDM	Clean Development Mechanism
m	month
CTO	Chief Technical Officer
OM	Operations Manager

Invoices are sent to the Grid company based on the signed joint report, and payments are made in accordance with the signed joint report and invoice. Finance and accounting team makes sure all payments are transferred on time in accordance with the submitted invoice. Signed monthly joint reports are compiled and archived by the finance team for accounting purpose. All payments from the electricity sale are transferred to the revenue account only; so, the payments can be tracked online against the invoiced amount.

Meter data reading

Meters at Salkhit substation can be read remotely from the site computer through a communication line. Both Grid Company and Clean Energy have been reading meter data by remotely since February 2016. Meters at Salkhit substation can record on memory the accumulated kilowatt-hours. In January 2016, CE installed additional 6 meters at substation for internal use monitoring. Manual meter readings have been used as the main source for invoicing. The meter for monitoring of the emission reductions is the same as used for electricity sales to the Grid and the metering data will be cross-checked with sales data. In 16th of August 2019, CE and NETG have been replaced two billing meters.

Meters and Calibration

A1800 ALPHA meters from Elster were installed at both the Nalaikh and Salkhit substations. These are world-class, highly accurate, robust, system ready meter suited for commercial and substation application. Accuracy class is 0.2.

All meters at Nalaikh substation and Salkhit substation were calibrated by certified body, the Mongolian Agency for Standardization and Metrology. All meters at Nalaikh are checked for accuracy by the National Electricity Grid (NETG or Grid company). 2 meters at Nalaikh Substation and 6 meters at Salkhit substation were calibrated before commercial operation date. The certificates of Approval for the meters were issued on 06/06/2013 valid for 8 years till 06/06/2021. CE installed 6 meters for internal purposes to calculate internal use and electricity loss on electrical equipment. Those additional electrical meters are not for delivered energy only for internal usage and loss. Those 6 meters were calibrated body, the Mongolian Agency for Standardization and Metrology, after commercial date. The certificates of Approval for 2 meters were issued on

2015/09/16 valid 8 years till 2023/09/16, for another 2 meters issued on 2016/01/28 valid for 8 years till 2024/01/28, and the other 2 meters issued on 2017/01/15 valid for 4 years till 2021/01/15, respectively. Billing meters at Nalaikh substation have been replaced and calibrated in 16th August 2019, valid for 7 years till 2026/12/28.

Both meters at Nalaikh and Salkhit substation will be calibrated in accordance with the national regulations. As specified by the PPA, inspection, testing and calibration should be in accordance with the "Code of Energy Utilization" and other relevant rules and regulations.
The frequency of calibrations is in accordance with the national regulations. A1800 Alpha meters are factory-calibrated and periodically perform self-tests that verify the meter is operating properly[8]. Errors are displayed on the LCD. The detailed information about self-test can be found from "A1800 Alpha Meter" Technical Manual Rev. 02 published in 2011 by Elster Metronica (page 77).
The meters have been maintained according to the appropriate industry standards. No errors were detected during the monitoring period on any meters both at Nalaikh and Salkhit substation. The net electricity generation output registered by the main meter alone is used for the purpose of billing and emission reduction verification as long as the error in the meters is within the agreed limits.

The main and control meters at Nalaikh substation were jointly inspected and sealed on 25 June 2013 on behalf of the parties concerned. On 18 February 2016, Grid company connected meters to computer unit for reading data by remotely and CE had supervised during connection work. After connection work the meters were sealed by both parties with numbers shown in the Table 4.

On 11st of October 2017, Grid company and CE found control meter of Salkhit-A was not sending data by remotely. Grid company and CE has been checked meter connection, removed sealing numbered as E20989 and found connection from main meter of Salkhit-A to control meter of Salkhit-A was loosed. CE has been supervised during tighten loosed connection. After tighten loosed connection, meter was sealed by both parties with number as E20936, shown in the Table 4.

Table 4. Nalaikh Meter Sealing, 11 Oct 2017

Line	Salkhit-B /control/	Salkhit-B	Salkhit-A	Salkhit-A /control/
Meter no.	01258916	01325612	01325611	01258912
Meter model	A1802RAL-P4G-DW-4	A1802RALQ-P4GB1-DW-4	A1805RALQ-P4GB1-DW-4	A1802RAL-P4G-DW-4
CE sealing no.	E20982	028100	028075	E20998
NETG sealing no.	ПХ[9]	ПХ	ПХ	ПХ

The technical team regularly undertakes examinations from the National Dispatch Center to obtain certificates for operating the wind farm under the Central Electricity System. The technical team also attends various operation related trainings for health and safety.

The net on-grid electricity generation based on the main meters installed at the Nalaikh substation of the grid. The main meters record export and import. The meters have the capability to be read remotely through a communication line. A control meters are installed at the Nalaikh substation.

Back-Up meters are installed at the Salkhit substation and available at the onsite project office, including meters for each turbine. If in future, additional generating capacity is installed sharing the same transformer, substation and/or transmission line with this proposed project activity, these back-up meters would be used to calculate the share of this proposed project in the total net supply, i.e. supply minus consumption, (and thus emission reductions) at the substation.

[8] Elster Electricity (2005), A1800 Alpha Meter Family Product Bulletin, p. 27

[1] Elster Electricity (2005), A1800 Alpha Meter Family Product Bulletin, p. 27

[9] Or PKh in English.

V. Compilation of the monitored data and dealing with errors

Technical team receives the meter readings from the grid sub-station. The meter readings from the main and back up meters as well as the volumes from the sales receipts are compiled and compared.

Should any previous months reading of the main meter be inaccurate by more than the allowable error, or otherwise functioned improperly, the net generation output shall be determined by (a) first, reading backup meter, unless a test by either party reveals it is inaccurate; (b) if the backup system is not with acceptable limits of accuracy or operation is performed improperly the Developer and grid company shall jointly prepare an reasonable and conservative estimate of the correct reading, and provide sufficient evidence that this estimation is reasonable and conservative for verification by the DOE; and (c) if the grid company and the Developer fail to agree then the matter will be referred for arbitration according to agreed procedures.

VI. Calibration

As specified by the PPA, inspection, testing and calibration ongoing in accordance with the “Code of Energy Utilization” and other relevant rules and regulations.

The net generation output registered by the main meter alone suffice for the purpose of billing and emission reduction verification as long as the error in the meters is within the agreed limits.

The meters are jointly inspected and sealed on behalf of the parties concerned and shall not be interfered with by either party except in the presence of the other party or its accredited representatives.

All the meters shall be tested within 10 days after: the detection of an error; the repair of the meter. If any errors are detected the party owning the meter shall repair, recalibrate or replace the meter giving the other party sufficient notice to allow a representative to attend during any corrective activity.

The Operation Manager also checks the validity of the calibration certificates of the electricity meters. If the data is correct and the meters calibrated, the data is approved, signed off and stored. If any errors are identified, such errors will be described and corrected, prior to approval, sign off and storage of the corrected data and error descriptions.

This internal audit also identify potential improvements to procedures to improve monitoring and reporting in future years.

For the Code of Energy Utilization, please visit through below link.
https://www.legalinfo.mn/annex/showPrint/6218

Meter failure case

In the event of meter failure, the PPA prescribes the course of action to be taken.

VIII. Reporting

The Monitoring Report describes the monitoring procedures, approved and signed off metering data, corrected errors, and the emission reduction calculations.

With the Monitoring Report, the calibration records are presented for verification.

IX. Record keeping

All data collected as part of the monitoring are archived electronically and kept at least until 2 years

after the last CER issuance.

VII. Quality control

Audit

Monthly net electricity supply and consumption data must be approved and signed off by the Operation Manager before it is accepted and stored.

The Operation manager cross-checks meter readings from the main meter received and sales receipts, and also compares the data with the meter reading from the back-up meter. The most conservative of the main meter reading and sales receipt is adopted.

Appendix 6. Summary report of comments received from local stakeholders

Comments at the meeting related to further information regarding further explanation of the project itself and the possibility of continued grazing by livestock at the site.

A total of 38 questionnaires were returned, all of which agreed with the building of the project. The results of the questionnaires are as follows:

Question: Do you agree with the building of the project?
Answers: Yes: 38; No: 0; I do not know: 0
Remarks: Agree with the building of the windfarm. This will supply locally generated energy. It will have environmentally friendly operation, preserving fresh water supplies, non-renewable coal reserves, and will not have a negative impact on wild animals
Question: Do you think the project will have a positive or negative impact on you?
Answers: Positive: 19; Negative: 1*; I do not know: 6 (no answer: 12)
Remarks: It is important for the local region and country's development. * The person responding negative did agree with the building of the windfarm, but thought the impact would be negative on nature, in particular because of sight spoiling.
Question: Do you think the project has economic benefits?
Answers: Yes: 20; No: 10; I do not know: 7 (no answer: 1)
Explanation: Construction jobs (18), operation job (13), electricity supply (23), tourism (17). Remarks: Increased employment opportunity and increased tax income.
Question: Do you think the project will have a negative impact on the environment?
Answers: Yes: 6; No: 20; I do not know: 10 (no answer: 2)
Explanation: Noise (6), sight spoiling (3), wildlife (3), birds (2). Remarks: No harmful impact if proper infrastructure is build, including road.
Question: Do you think the power lines will have a negative impact on the environment?
Answers: Yes: 6; No: 16; I do not know: 14 (no answer: 2)
Explanation: Noise (7), sight spoiling (2), impact on the national park (1), wildlife (2).
Question: Do you think the government rules or Newcom's business culture guarantees good, safe and clean construction and operation?
Answers: Yes: 25; No: 2; I do not know: 9 (no answer: 2)

Remarks: We believe the operation of the company will be environmentally friendly and support the company and the project.
Final remarks: We support the project and believe the project will provide various benefits to the development of the country and the region.

Report on consideration of comments received

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All stakeholders responded in favour of the proposed project. However, a number of issues were raised, including noise, sight spoiling and potential impact on wildlife, as well as possibly a negative impact on one stakeholder. The EIA, summarised in Section D above, shows that the impacts will in fact be minimal.

Noise: The EIA shows that the noise will be insignificant, as the nearest residential areas are 4 to 8 km away. While grazing of livestock will continue in the area, the nomadic herders are generally not living in close proximity of the site.

Sight spoiling: While the project may be visible from some distance, this wind farm is located far from the National Park, and far from any habitation centres.

Wildlife/birds: The EIA shows that the impact on wildlife and birds will be insignificant. The migratory routes are far from the site and there are no particular feeding or drinking sites near the proposed wind farm.

The one personal negative impact: related to the impact on nature, in particular sight spoiling. However, the person did agree with the construction of the wind farm.

Appendix 7. Summary of post-registration changes

There is only one permanent post registration change related to the calibration frequency in section VI. Calibration of the Appendix 5. This was submitted for approval with the second monitoring report. It reflects the actual requirements for Clean Energy LLC with regards to calibration frequency of meters following the national regulations. According to the Project Standard (v.7, p.64), prior Board Approval is not required for the change of calibration frequency for the monitoring equipment not within the control of project participants. The frequency of calibration is per national regulations and industry practice.

PDD has been approved on 7 May 2015 (PRC-5977-001).

The rest of the changes are editorial changes relevant to the requirements of the new PDD form, and do not affect the project design, monitoring plan or applied methodology. These changes include:

- Addition of a Project Participant (Swedish Energy Agency) in the A.4.
- Update of organizational chart in B.7.3.
- Addition of the following sections as per the requirement of the new PDD form (v.5): “Purpose of Data” in B.6.2; “Monitoring frequency” in the B.7.1; EIA in D.2; Section F and Appendix 1.

Start date of crediting period changed from 24/06/2013 to 24/06/2020.
Due to the changed date is no later than one year of the original start date of the Crediting Period, So the PRC report and revised PDD are not needed.
The change of stating date of Crediting Period is approved on the project website in UNFCCC.

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Document information

Version	*Date*	*Description*
11.0	31 May 2019	Revision to: • Ensure consistency with version 02.0 of the "CDM project standard for project activities" (CDM-EB93-A04-STAN); • Make editorial improvements.
10.1	28 June 2017	Revision to make editorial improvement.
10.0	7 June 2017	Revision to: • Improve consistency with the "CDM project standard for project activities" and with the PoA-DD and CPA-DD forms; • Make editorial improvement.
09.0	24 May 2017	Revision to: • Ensure consistency with the "CDM project standard for project activities" (CDM-EB93-A04-STAN) (version 01.0); • Incorporate the "Project design document form for small-scale CDM project activities" (CDM-SSC-PDD-FORM); • Make editorial improvement.
08.0	22 July 2016	EB 90, Annex 1 Revision to include provisions related to automatically additional project activities.
07.0	15 April 2016	Revision to ensure consistency with the "Standard: Applicability of sectoral scopes" (CDM-EB88-A04-STAN) (version 01.0).
06.0	9 March 2015	Revision to: • Include provisions related to statement on erroneous inclusion of a CPA; • Include provisions related to delayed submission of a monitoring plan; • Provisions related to local stakeholder consultation; • Provisions related to the Host Party; • Make editorial improvement.
05.0	25 June 2014	Revision to: • Include the Attachment: Instructions for filling out the project design document form for CDM project activities (these instructions supersede the "Guidelines for completing the project design document form" (Version 01.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for the application of the methodology (ies) to the project activity in B.7.4 and Appendix 1; • Change the reference number from F-CDM-PDD to CDM-PDD-FORM; • Make editorial improvement.

Version	*Date*	*Description*
04.1	11 April 2012	Editorial revision to change version 02 line in history box from Annex 06 to Annex 06b.
04.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the project design document form for CDM project activities" (EB 66, Annex 8).
03.0	26 July 2006	EB 25, Annex 15
02.0	14 June 2004	EB 14, Annex 06b
01.0	03 August 2002	EB 05, Paragraph 12 Initial adoption.

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Business Function: Registration
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