



**Project design document form for  
small-scale CDM project activities  
(Version 08.0)**

**PROJECT DESIGN DOCUMENT (PDD)**

<b>Title of the project activity</b>	Bundled Solar Power Project by EKI Energy Services Limited (EKIESL-CDM.July-14-01)
<b>Version number of the PDD</b>	05
<b>Completion date of the PDD</b>	10/05/2017
<b>Project participant(s)</b>	ReXchange Global Solutions (P75)
<b>Host Party</b>	India
<b>Applied methodology(ies) and, where applicable, applied standardized baseline(s)</b>	Methodology: - "Grid connected renewable electricity generation", AMS I.D. (Version 18)
<b>Sectoral scope(s) linked to the applied methodology(es)</b>	Sectoral Scope 01, Energy Industries (renewable - /non-renewable sources)
<b>Estimated amount of annual average GHG emission reductions</b>	22,909 tCO <sub>2e</sub>

**SECTION A. Description of project activity****A.1. Purpose and general description of project activity**

The proposed project activity is the installation of 13.5 MWp solar power project in the state of Madhya Pradesh and Karnataka in India. The proposed project activity will use technology consisting photovoltaic (PV) modules.

The project activity will generate electrical energy utilising solar energy. The project is a bundle project activity and the details of the same are as follows:

S. No.	Project owner	Capacity	Output Usage	Connected grid	State
1	Birla Corporation Limited	1.5MW	Captive usage	NEWNE	Madhya Pradesh
2	Porwal Auto Components Ltd.	1.5MW	Captive usage	NEWNE	Madhya Pradesh
3	Bidar Solar Power Pvt. Ltd	10 MW	Third party Sale	Southern	Karnataka
4	Gupta Sons	0.5 MW	Third party Sale	NEWNE	Madhya Pradesh
TOTAL CAPACITY= 13.5MWp					

The bundling/co-ordinating entity is ReXchange Global Solutions (P75) while EKI Energy Services Limited is acting as the consultant for the individual investors. As it is a green field project, scenario existing prior to the start of the project activity, baseline scenario, would be electricity generation by the NEWNE/Southern grid connected power plants. Therefore, in the absence of the project activity, the equivalent amount of electricity would have been generated by the grid connected / new power plants in the NEWNE/Southern grid, which are / will be predominantly based on fossil fuels. Thus the project activity would result in avoidance of greenhouse gases (GHGs) emission and contribute to mitigation of global warming. The main emission source in the pre-project scenario is the power plants connected to NEWNE/Southern grid and main GHG involved is CO<sub>2</sub>.

The project participant has placed the purchase orders to supply and install the proposed solar power plant.

**Purpose of the Project Activity:**

- To utilize renewable solar energy for generation of the electricity.
- To sell the generated electricity to the identified consumers (third party) through contractual arrangement(s) and to use the generated electricity for captive demand
- To contribute in mitigating the climate change.

Sectoral Scope: 01 - "Grid connected renewable electricity generation", AMS I.D. (Version 18)

Project Type: (i) - Renewable energy projects

**Pre-project scenario:**

In the absence of the project activity, the equivalent amount of electricity would have been generated by the grid connected / new power plants in the NEWNE/ Southern grid, which are / will be predominantly based on fossil fuels. The main emission source in the pre-project scenario is the power plants connected to the NEWNE grid and main greenhouse gas involved is CO<sub>2</sub>.

**Project scenario:**

The project activity is a renewable source of electricity generation and will supply/wheel the electricity to the NEWNE/ Southern grid. The project activity is a solar power plant of capacity 13.5 MWp based. The

project activity uses solar energy in producing electricity and no other input is being used, therefore, it will not produce any GHG emission during its lifetime.

**Baseline scenario:**

The baseline scenario is the same as the pre-project scenario.

**Reduction of GHGs emissions due to the project activity:**

The project activity harnesses solar energy to generate and supply/Wheel electricity to the NEWNE/Southern grid, regional electricity grid of India. The proposed solar PV technology will convert solar energy into electrical energy and do not use any other fuel as input for electricity generation. The operation of solar power plant is emission free and no GHG emission is produced during the lifetime of the project activity.

The project activity reduces the greenhouse gas emissions by generation of electricity from renewable and clean energy source, solar. The main greenhouse gas that is prevented from being emitted into the atmosphere is CO<sub>2</sub> which would have otherwise been emitted from the fossil fuel fired power plants that are connected to the NEWNE grid.

The project participant has selected the renewable crediting period of seven years. The ex-ante estimates of GHG emission reductions are as follows:

Annual average of GHG emission reductions = 22,909tCO<sub>2</sub>

Total GHG emission reductions for the chosen crediting period of seven years = 160,363tCO<sub>2</sub>

**Contribution of the project activity to sustainable development:**

The National CDM Authority (NCDMA), which is the Designated National Authority (DNA) for the Government of India (GoI) in the Ministry of Environment and Forests (MoEF), has stipulated four indicators for sustainable development in the interim approval guidelines for Clean Development Mechanism (CDM) projects in India 1. The project participant believes that the project activity has contributed to sustainable development in terms of the four indicators as follows:

**Social well-being**

The project activity will generate additional employment opportunities, during construction, operation, and maintenance, which will help in alleviation of poverty and removal of social disparity. Use of a renewable source of energy reduces the dependence on imported fossil fuels and associated price variation thereby leading increased energy security.

**Economical well-being**

The project activity requires temporary and permanent, skilled and semi-skilled manpower at the solar power station. Hence, this will create additional employment opportunities. It will also provide business opportunities for local vendors, contractors and suppliers.

**Environmental well-being**

The project activity involves use of renewable energy source for electricity generation instead of fossil fuel based electricity generation which would have emitted gaseous, liquid and/or solid effluents / wastes.

**Technological well-being**

In this project activity, technology being used is environmentally safe and well proven technology of power generation from solar resource and does not create any pollution. It will demonstrate harnessing solar power potential in the region and encourages setting up more projects in near future.

**A.2. Location of project activity****A.2.1. Host Party**

India

**A.2.2. Region/State/Province etc.**

State: Madhya Pradesh and Karnataka

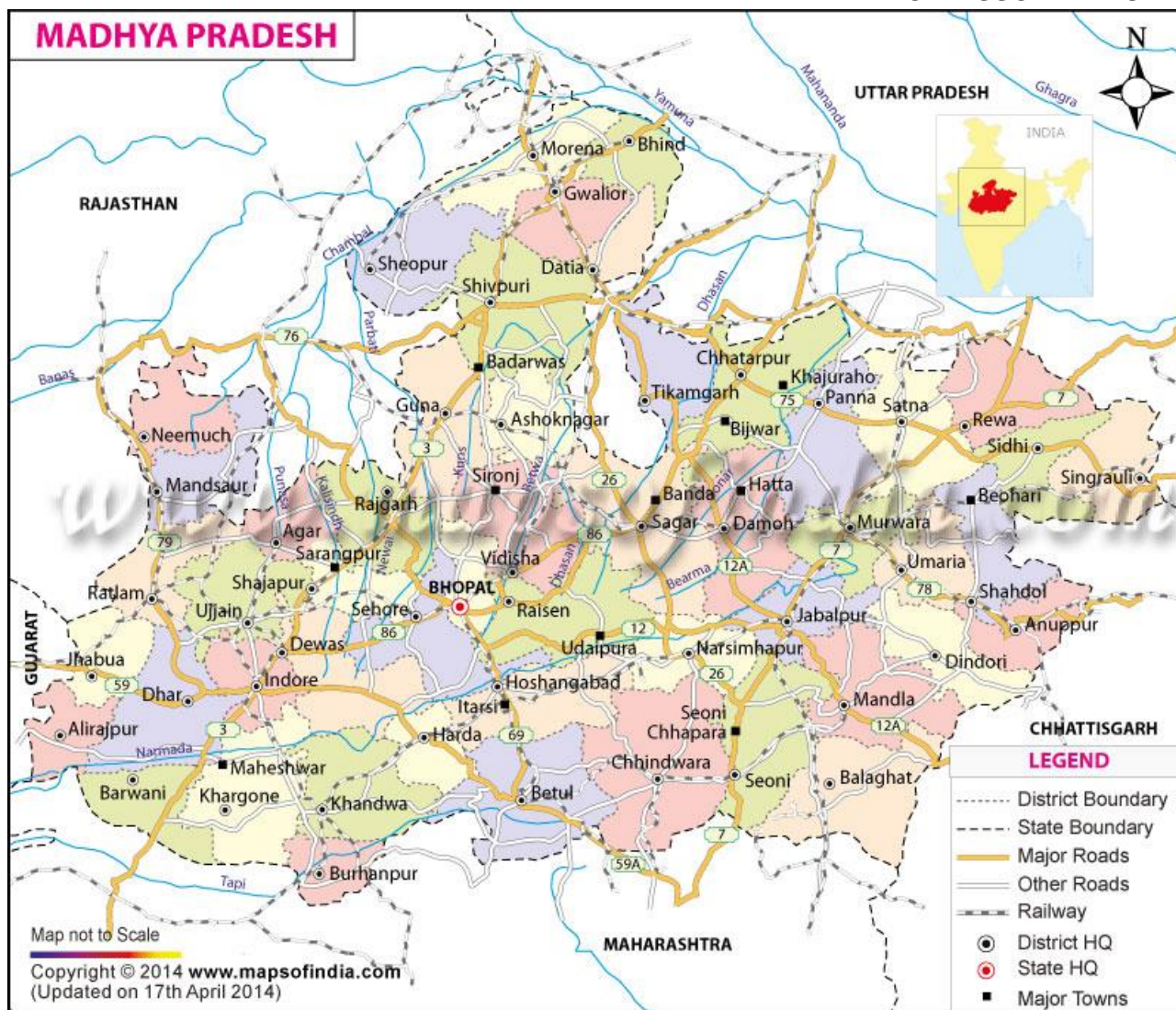
**A.2.3. City/Town/Community etc.**

S. No.	Project owner	Capacity	City/Town/Community
1	Birla Corporation Limited	1.5 MW	Satna, Madhya Pradesh
2	Porwal Auto Components Ltd	1.5 MW	Ujjain District, Madhya Pradesh
3	Bidar Solar Power Pvt Ltd	10 MW	Bidar, Karnataka
4	Gupta Sons	0.5 MW	Rajgarh District, Madhya Pradesh

**A.2.4. Physical/Geographical location**

S. No.	Project owner	Capacity	City/Town/Community	Lat and Long
1	Birla Corporation Limited	1.5MW	Satna, Madhya Pradesh	24° 35' 3.80" N & 80° 51' 31.98" E
2	Porwal Auto Components Ltd	1.5MW	Ujjain District, Madhya Pradesh	23° 50" N & 76° 10" E
3	Bidar Solar	10 MW	Bidar, Karnataka	17.45° N & 77.18° E
4	Gupta Sons Power Pvt Ltd.	0.5 MW	Rajgarh District, Madhya Pradesh	23.59° N & 76.44° E





### A.3. Technologies and/or measures

The technical details for Birla Corporation Limited plant is as follows:

Module	Wp	240
Module Quantity	Nos.	7004
Module Make		Tata BP solar
Inverter	kW	630
Inverter Quantity	Nos.	3
Inverter Make		ABB
Transformer	kVA	1250 (2 no.)

The technical details for Porwal Auto Components Ltd. plant is as follows

Module	Wp	235
Module Quantity	Nos.	7072
Module Make		PV Power - PVQ3
Inverter	kW (AC)	800
Inverter Quantity	Nos.	2
Inverter Make		Bonfiglioli
Transformer	kVA	1800

The technical details for Bidar Solar Power Pvt Ltd. plant is as follows

Module	Wp	250
Module Quantity	Nos.	44,446
Module Make		Canadian Solar CS6P-250P
Inverter	kW	630
Inverter Quantity	Nos.	16
Inverter Make		Schneider
Transformer	kVA	1500 (8 number), 12500 ( 1 number), 100 (1 number)
Transformer Quantity	Nos.	Total 10 (8+1+1)

The technical details for Gupta Sons is as follows

Module	Wp	245
Module Quantity	Nos.	2160
Module Make		Vikram Solar
Inverter	kW	500
Inverter Quantity	Nos.	1
Inverter Make		AEG
Transformer	kVA	750

For monitoring equipment, their location and technical specifications, refer Section B.7.3. For Plant Load Factor, please refer Section B.6.3.

#### Baseline Scenario:

As the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following as per applied methodology:

*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” 5.0.*

Hence, pre-project scenario and baseline scenario are the same.

#### A.4. Parties and project participants

Party involved (host) indicates host Party	Private and/or public entity(ies) project participants (as applicable)	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
India (Host country)	ReXchange Global Solutions (P75)	No

#### A.5. Public funding of project activity

There is no public funding from Annex-I countries and also there is no diversion of Official Development Assistance (ODA) for the project activity.

## A.6. Debundling for project activity

According to paragraph 2 of “Guidelines on assessment of de-bundling for SSC project activities”, a small-scale project activity shall be deemed to be a de-bundled component of a large project activity if there is a registered small-scale CDM project activity or an application to register another small-scale CDM project activity:

- With the same project participants;
- In the same project category and technology/measure; and
- Registered within the previous 2 years; and
- Whose project boundary is within 1 km of the project boundary of the proposed small-scale activity at the closest point

The project participant has neither registered nor applied for registration of any other small-scale CDM project activity. Also, the project activity does not fall under any of the above mentioned criterion; hence it is not a de-bundled component of a large scale project activity.

## SECTION B. Application of selected approved baseline and monitoring methodology and standardized baseline

### B.1. Reference of methodology and standardized baseline

**Title:** Grid Connected Renewable Electricity Generation

**Reference:** AMS I.D. (Version 18)<sup>1</sup>

The approved methodology also refers to latest approved versions of

- Tool to calculate the emission factor for an electricity system, version 05.<sup>2</sup> (EB 87, Annex 09)
- Guidelines on demonstration and assessment of the Prior consideration of the CDM (EB 62 Annex 13)
- Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion (EB 41 Annex 11)

### B.2. Project activity eligibility

The project activity is of type (i) - renewable energy projects, as it generates electricity from renewable solar energy. The electricity generated from the project activity is being supplied/Wheeled to the electricity distribution system, NEWNE/ Southern grid. Hence, the project activity falls in the project category – D: Grid connected renewable electricity generation

The capacity of the project activity is 13.5 MW which is less than the maximum qualifying capacity of 15 MW for a small-scale CDM project activity under type-I. The capacity of the project activity will remain within the limit of 15 MW during the whole crediting period. Hence, the project activity falls under the small-scale category.

The proposed CDM project activity is not a CPA that has been excluded from a registered CDM PoA as a result of erroneous inclusion of CPAs.

The project activity comprises renewable energy generation unit's i.e. solar PV modules and supplies/ wheeled the electricity to the NEWNE/ Southern grid. Hence, approved baseline and

<sup>1</sup> <http://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTXFQQOFQQH4SBK>

<sup>2</sup> <http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v5.0.pdf>

monitoring methodology, AMS I.D, Grid connected renewable electricity generation, version 18. is applied to the project activity. The justification for applying AMS I.D is provided below:

Applicability Criterion	Project Case
1. This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass: (a) Supplying electricity to a national or a regional grid. or (b) Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling.	The project activity is a Renewable Energy Project i.e. Solar Power Project which falls under applicability criteria option 1 (b) i.e., "to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling. Hence the project activity meets the given applicability criterion.
2. Illustration of respective situations under which each of the methodology (i.e. AMS-I.D, AMS-I.F and AMS-I.A) applies is included in the appendix of AMS I.D Version 18 (Table 1) <sup>3</sup>	The 3 <sup>rd</sup> options of Table 1 of AMS I.D. Version 18, are applicable (please refer footnote) as project supplies electricity to an identified consumer facility via national/regional grid (through a contractual arrangement such as wheeling)
3. This methodology is applicable to project activities that (a) install a a Greenfield plant ; (b) Involve a capacity addition in (an) existing plant(s); (c) Involve a retrofit of (an) existing plant(s); (d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) Involve a replacement of (an) existing plant(s).	The project is installation of new solar based electricity generation plants (not addition to existing system). Option a is applicable.
4. Hydro power plants with reservoirs. that satisfy at least one of the following conditions are eligible to apply this methodology: <ul style="list-style-type: none"> <li>The project activity is implemented in an existing reservoir with no change in the volume of reservoir;</li> <li>The project activity is implemented in an existing reservoir where the volume of</li> </ul>	The project is solar power project and thus the criterion is not applicable to this project activity.

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	Project type	AMS-I.A	AMS-I.D	AMS-I.F
1	Project supplies electricity to a national/regional grid		√	
2	Project displaces grid electricity consumption (e.g. grid import) and/or captive fossil fuel electricity generation at the user end (excess electricity may be supplied to a grid)			√
3	Project supplies electricity to an identified consumer facility via national/regional grid (through a contractual arrangement such as wheeling)		√	
4	Project supplies electricity to a mini grid system where in the baseline all generators use exclusively fuel oil and/or diesel fuel			√
5	Project supplies electricity to household users (included in the project boundary) located in off grid areas	√		

<p>reservoir is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m<sup>2</sup>;</p> <ul style="list-style-type: none"> <li>The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, is greater than 4 W/m<sup>2</sup>.</li> </ul>	
<p>5. If the new unit has both renewable and non-renewable components (e.g., a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the new unit co-fires fossil fuel the capacity of the entire unit shall not exceed the limit of 15 MW.</p>	<p>The project activity is a 13.5 MW solar electricity generation. Unit does not co-fire fossil fuels. Hence the criterion is not applicable to the project activity.</p>
<p>6. Combined heat and power (co-generation) systems are not eligible under this category.</p>	<p>The Project activity is a renewable solar energy project based on PV technology and is not a combined heat and power system. Hence the criteria is not applicable to the project activity</p>
<p>7. In the case of project activities that involve the capacity addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct<sup>4</sup> from the existing units.</p>	<p>The project activity is Greenfield and there is no existing power generation facility at the site. Hence the criteria is not applicable to the project activity</p>
<p>8. In the case of retrofit, rehabilitation or replacement, to qualify as a small-scale project, the total output of the retrofitted, rehabilitated or replacement power plant/unit shall not exceed the limit of 15 MW.</p>	<p>Not applicable, the solar project is a Green field project activity and this project is not the enhancement or up gradation project.</p>
<p>9. In the case of landfill gas, waste gas, wastewater treatment and agro-industries projects, recovered methane emissions are eligible under a relevant Type III category. If the recovered methane is used for electricity generation for supply to a grid then the baseline for the electricity component shall be in accordance with procedure prescribed under this methodology. If the recovered methane is used for heat generation or cogeneration other applicable Type-I methodologies such as "AMS-I.C.: Thermal energy production with or without electricity" shall be explored.</p>	<p>Not applicable, as the Project activity is a renewable solar energy project.</p>
<p>10. In case biomass is sourced from dedicated plantations, the applicability criteria in the tool "Project emissions from cultivation of biomass" shall apply.</p>	<p>The Project activity is a renewable solar energy project, thus applicability condition for biomass project as per the criteria in the tool, "Project emissions from cultivation of biomass" does not apply.</p>

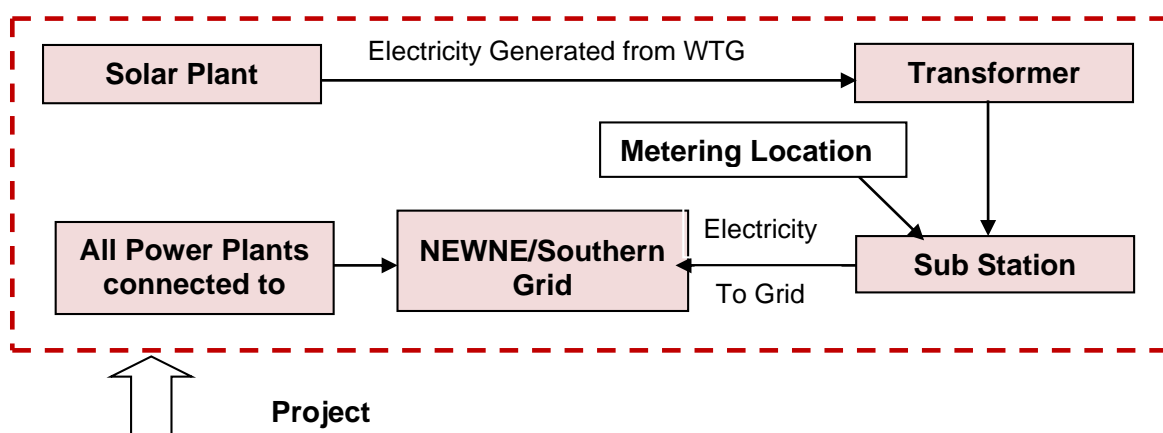
<sup>4</sup> Physically distinct units are those that are capable of generating electricity without the operation of existing units, and that do not directly affect the mechanical, thermal, or electrical characteristics of the existing facility. For example, the addition of a steam turbine to an existing combustion turbine to create a combined cycle unit would not be considered "physically distinct"

### B.3. Project boundary

The greenhouse gases and emission sources included in or excluded from the project boundary are shown below:

	Source	Gas	Included /	Justification / Explanation
Baseline	CO <sub>2</sub> emissions from electricity generation in the power plants connected to NEWNE grid and displaced due to the project activity	CO <sub>2</sub>	Included	Main emission source.
		CH <sub>4</sub>	Excluded	Minor/Neglected emission source.
		N <sub>2</sub> O	Excluded	Minor/Neglected emission source.
Project Activity	Emissions from the project activity	CO <sub>2</sub>	Excluded	The project activity generates electricity using solar energy. Therefore, project emissions should not be considered as per applied methodology.
		CH <sub>4</sub>	Excluded	
		N <sub>2</sub> O	Excluded	

As per Para 18 of the applied small scale methodology, AMS I.D., version 18, the spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to. The project boundary includes the solar PV modules, inverter, metering system and electricity distribution system.



### B.4. Establishment and description of baseline scenario

#### Pre-project scenario:

In the absence of the project activity, the equivalent amount of electricity would have been generated from the connected / new power plants in the NEWNE/ Southern grid, which are / will be predominantly based on fossil fuels. The main emission source in the pre-project scenario is the power plants connected to the NEWNE/Southern grid and main greenhouse gas involved is CO<sub>2</sub>.

#### Project scenario:

The project activity is a renewable source of electricity generation and will supply/ wheeled the electricity to the NEWNE/ Southern grid. The project activity is a solar power plant of capacity 13.5 MWp based on crystalline Silicon photovoltaic (PV) modules. The project activity uses solar energy in producing electricity and no other input is being used, therefore, it will not produce any GHG emission during its lifetime.

#### Baseline scenario:

As per para 19 of AMS I. D, Version 18, “The baseline scenario is that the 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 into the grid”.

The proposed project activity will supply/ Wheeled electricity to the NEWNE/ Southern Grid and completely complies with the Para of 19 of AMS I.D, version 18. Therefore, the baseline scenario is the electricity delivered to the NEWNE/ Southern grid by the project activity would have otherwise been generated by the operation of the grid- connected power plants and by the addition of new generation sources into the NEWNE/ Southern grid. Hence, pre- project scenario and baseline scenario are the same.

As per the Para 22 equation (1) of AMS-I D, version 18, the baseline emissions are the product of electrical energy baseline  $EG_{PJ,y}$  expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor.

The baseline emissions can be evaluated as below:

$$BE_y = EG_{PJ,y} \times EF_{CO_2,grid,y} \quad \dots(1)$$

Where:

- $BE_y$  = Baseline Emissions in year y (tCO<sub>2</sub>)
- $EG_{PJ,y}$  = Quantity of net electricity supplied/Wheeled to the grid as a result of the implementation of the CDM project activity in year y (MWh)
- $EF_{CO_2,grid,y}$  = CO<sub>2</sub> Emission Factor of the grid in year y (tCO<sub>2</sub>e/MWh)

The energy supplied to the grid will be recorded for the entire year and this record will provide the data for electrical energy baseline  $EG_{BL,y}$ . The Host Country has published the CO<sub>2</sub> Baseline Database for calculation of emission factors for the national grid. The latest version of the CO<sub>2</sub> Baseline Database published in January 2014 and available on the Central Electricity Authority (CEA) website has been used for the calculation of  $EF_{CO_2,grid,y}$ .

Emission factor of the grid has been calculated as per the procedures provided in AMS-I.D. As per paragraph 23 of AMS-I.D., version 18, the Emission Factor is calculated in a transparent and conservative manner as follows:

- (a) A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the ‘Tool to calculate the Emission Factor for an electricity system’.
- OR
- (b) The weighted average emissions (in tCO<sub>2</sub>e/MWh) of the current generation mix. The data of the year in which project generation occurs must be used.

Calculations are based on data from an official source (where available) and made publicly available<sup>5</sup>.

The combined margin of the NEWNE grid used for the project activity is as follows:

Parameter	Value	Nomenclature	Source
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<sup>5</sup> [http://cea.nic.in/reports/planning/cdm\\_CO2/cdm\\_CO2.htm](http://cea.nic.in/reports/planning/cdm_CO2/cdm_CO2.htm)

EF <sub>grid,CM,y</sub>	0.9750 tCO <sub>2</sub> /MWh	Combined margin CO <sub>2</sub> emission factor for the project electricity system in year y	Calculated as the weighted average of the operating margin (0.75) & build margin (0.25) values, sourced from Baseline CO <sub>2</sub> Emission Database, Version 9.0 published by Central Electricity Authority (CEA), Government of India
EF <sub>grid,OM,y</sub>	0.9776 tCO <sub>2</sub> /MWh	Operating margin CO <sub>2</sub> emission factor for the project electricity system in year y	Calculated as the last 3 year (2010-11, 2011-12, 2012-13) generation-weighted average, sourced from Baseline CO <sub>2</sub> Emission Database, Version 9.0, published by Central Electricity Authority (CEA), Government of India
EF <sub>grid,BM,y</sub>	0.9673 tCO <sub>2</sub> /MWh	Build margin CO <sub>2</sub> emission factor for the project electricity system in year y	Baseline CO <sub>2</sub> Emission Database, Version 9.0, published by Central Electricity Authority (CEA), Government of India

The combined margin of the Southern grid used for the project activity is as follows:

Parameter	Value	Nomenclature	Source
EF <sub>grid,CM,y</sub>	0.9633 tCO <sub>2</sub> /MWh	Combined margin CO <sub>2</sub> emission factor for the project electricity system in year y	CEA database version 09. Calculated as the weighted average of the operating margin (0.75) & build margin (.25) values, sourced from Baseline CO <sub>2</sub> Emission Database, Version 9.0 published by Central Electricity Authority (CEA), Government of India
EF <sub>grid,OM,y</sub>	0.9675 tCO <sub>2</sub> /MWh	Operating margin CO <sub>2</sub> emission factor for the project electricity system in year y	Calculated as the last 3 year (2010-11, 2011-12, 2012-13) generation-weighted average, sourced from Baseline CO <sub>2</sub> Emission Database, Version 9.0, published by Central Electricity Authority (CEA), Government of India
EF <sub>grid,BM,y</sub>	0.9509 tCO <sub>2</sub> /MWh	Build margin CO <sub>2</sub> emission factor for the project electricity system in year y	Baseline CO <sub>2</sub> Emission Database, Version 9.0, published by Central Electricity Authority (CEA), Government of India

The emission factor calculated ex-ante and will remain same throughout the crediting period.

#### B.5. Demonstration of additionality

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Annexure 3 of the EB 22 states that national and/or sectoral policies and circumstances have to be accounted for when considering the baseline scenario.

Para 7(a) of the same states that, only those national and/or sectoral policies or regulations under paragraph 6(a) i.e. type E+ policy that increase GHG emissions, that have been implemented before adoption of the Kyoto Protocol by the COP (decision 1/CP.3, 11 December 1997), shall be taken into account when developing a baseline scenario. The Electricity Act of 2003 promoted cogeneration and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity (Refer Section 86(1) of Electricity Act 2003). Therefore, it could be seen that the provincial and sectoral policies are E- i.e., policies that decrease GHG emissions and are after November 2001. Hence the baseline scenario is the electricity generation by grid connected fossil fuel dominated power plants confirming to Annex 3 of EB 22.

Further, the baseline alternative mentioned above is in compliance with all the applicable regulatory policies and laws. Additionally, the project participant is under no compulsion to opt for any particular technology or even a renewable mode of power generation. There is no governmental body or EB policy which requires a particular kind of fuel to be chosen and there is no legal requirement to which the above alternative does not conform.

### Prior Consideration of CDM

CDM Project Standard Version 09.0, Section 6.5 states that *“For a proposed CDM project activity with a start date on or after 2 August 2008, project participants shall inform the host Party’s designated national authority (DNA) and the secretariat of their intention to seek CDM status in accordance with the Project cycle procedure”*.

In line with the above guidance, all the project investors have intimated the UNFCCC and host party DNA i.e. National CDM Authority (NCDMA) of its intention to seek CDM for the proposed project activity in a defined F-CDM form within 180 days (refer table below). Hence, it can be clearly established that CDM was seriously considered in the decision to proceed with the proposed project activity.

Project Investor	Purchase Order Date	Commissioning Date	Date of Notification to CDM EB/ NCDMA	Date of Acknowledgement from CDM EB/ NCDMA
Birla Corporation Limited	18-Oct-2012	23-Jul-2013	5-Mar-2013 <sup>6</sup>	5-Mar-2013
Porwal Auto Components Ltd.	19-Jan-2013	27-Dec-2013	3-Jul-2013 <sup>7</sup>	3-Jul-2013
Bidar Solar Power Pvt. Ltd	21-Oct-2013	28-Aug-2014	29-Mar-2014 <sup>8</sup>	31-Mar-2014
Gupta Sons	5-Mar-2012	26-Mar-2012	2-Feb-2012 <sup>9</sup>	2-Feb-2012

### Additionality Assessment

<sup>6</sup> For solar project of Birla Corporation Ltd, the prior consideration notification was given with project title as “Solar Power Project by EKI Energy Services Limited (EKIESL-CDM.March-13-01)” on 05/03/2013.

<sup>7</sup> For Solar project of Porwal Auto Components Ltd., the prior consideration notification was given with project title as “Solar Power Project by Porwal Auto Components Ltd (EKIESL-CDM.July -001-13)” on 03/07/2013.

<sup>8</sup> For Solar project of Bidar Solar Power Pvt. Ltd., the prior consideration notification was given with project title as Renewable energy power Project by EKI Energy Services Limited (EKIESL-CDM-29-March -2014)” on 29/03/2014.

<sup>9</sup> For Solar project of Gupta and Sons, the prior consideration notification was given with project title as “Solar Power Project by M AND B Switchgears Limited” on 02/02/2012.

Specify the methodology, tool, standardized baseline or specific renewable technologies/measures conferring automatic additional microscale CDM project activities proposed by DNAs and approved by the Board, that establish automatic additionality for the proposed project activity (including the version number and the specific paragraph, if applicable).	Methodology: AMS-I.D. Version 18 Guidelines on the Methodological Tool for the demonstration of additionality of small- scale project activities <sup>10</sup> - Version 10.0.0 (EB 83, Annex 14),
Describe how the proposed project activity meets the criteria for automatic additionality in the relevant methodology, tool, standardized baselines or specific renewable technologies/measures conferring automatic additional microscale CDM project activities proposed by a DNA and approved by the Board.	<p>As per the 'Guidance on demonstration of Additionality of small scale Project Activity' (version 10), a positive list of grid-connected renewable electricity generation technologies are listed that are automatically defined as additional, without further documentation of barriers. The positive list comprises of the following grid-connected renewable electricity generation technologies of installed capacity up to 15 MW:</p> <ol style="list-style-type: none"> <li>1) Solar technologies (photovoltaic and solar thermal electricity generation);</li> <li>2) Off-shore wind technologies;</li> <li>3) Marine technologies (wave, tidal).</li> <li>4) Building-integrated wind turbines or household rooftop wind turbines of a size up to 100 kW;</li> </ol> <p>Since the project activity is a solar photovoltaic electricity generation project of capacity 13.5 MW, it can be concluded from the above list that the project activity is automatically additional and does not require demonstration of barriers.</p> <p>Thus, it is well established that the proposed project activity is additional.</p>

## B.6. Emission reductions

### B.6.1. Explanation of methodological choices

#### Baseline emissions:

As per AMS.I.D, Version 18, Paragraph 19, the baseline scenario is that the 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 into the grid.

Also, As per AMS I.D., Version 18, Paragraph 22, The baseline emissions are the product of electrical energy baseline  $EG_{BL,y}$  expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor.

<sup>10</sup> <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-21-v1.pdf>

$$BE_{y,MP} = EG_{PJ,y} \times EF_{CO_2,grid,y}$$

$$BE_{y,KAR} = EG_{PJ,y} \times EF_{CO_2,grid,y}$$

Hence

$$BE_y = BE_{y,MP} + BE_{y,KAR}$$

### Calculation of the grid emissions factor:

The emission factor is calculated as per the paragraph 12 (a) as a conservative estimate of a combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the 'Tool to calculate the emission factor for an electricity system' Version 05.

Combined margin CO<sub>2</sub> emission factor for NEWNE grid ( $EF_{grid, CM, y}$ ) = 0.9750 tCO<sub>2</sub>/MWh

Combined margin CO<sub>2</sub> emission factor for Southern grid ( $EF_{grid, CM, y}$ ) = 0.9633 tCO<sub>2</sub>/MWh

### Project emissions:

As per Paragraph 39 of the methodology, Project Emissions are to be considered only in case of geothermal power plants and from water reservoirs of hydro power projects. In the project activity there is no emissions resulting due to the project. Hence, Project Emission ( $PE_y$ ) = 0

### Leakage Emissions:

As per the AMS-I.D, if the energy generating equipment is transferred from another activity, leakage is to be considered. No equipment transfer of any type is taking place in the project activity, hence the leakage is considered as zero,  $LE_y = 0$ .

### Emission Reductions:

The emission reductions,  $ER_y$ , due to project activity in year  $y$  are estimated as follows:

$$ER_y = BE_y - PE_y - LE_y \quad \dots(10)$$

Where

$ER_y$	= Emission reductions in year $y$ (t CO <sub>2</sub> e)
$BE_y$	= Baseline Emissions in year $y$ (t CO <sub>2</sub> e)
$PE_y$	= Project emissions in year $y$ (t CO <sub>2</sub> )
$LE_y$	= Leakage emissions in year $y$ (t CO <sub>2</sub> )

In case of the project activity,  $PE_y = 0$  &  $LE_y = 0$ , therefore,

$$ER_y = BE_y \quad \dots (11)$$

### B.6.2. Data and parameters fixed ex ante

Data / Parameter	$EF_{grid,OM,y}$
Unit	tCO <sub>2</sub> /MWh
Description	Operating margin CO <sub>2</sub> emission factor for NEWNE & Southern grid in the year $y$
Source of data	"Baseline Carbon Dioxide Emission Database Version 9.0" published by the Central Electricity Authority, Ministry of Power, Government of India.
Value(s) applied	0.9776 for NEWNE 0.9675 for Southern

Choice of data or Measurement methods and procedures	Data are obtained from “CO <sub>2</sub> Baseline Database for Indian Power Sector” version 9.0, published by the Central Electricity Authority, Ministry of Power, Government of India. Calculated as 3-year generation-weighted average of latest three years, 2010-11, 2011-12, 2012-13 as per “Tool to calculate the emission factor for an electricity system, version 5.0”.
Purpose of data	Calculation of baseline emissions
Additional comment	Computed once during PDD finalization (ex-ante) and will remain same throughout the crediting period.

Data / Parameter	<b>EF<sub>grid,BM,y</sub></b>
Unit	tCO <sub>2</sub> /MWh
Description	Build margin CO <sub>2</sub> emission factor for NEWNE & Southern grid in the year y
Source of data	“Baseline Carbon Dioxide Emission Database Version 9.0” published by the Central Electricity Authority, Ministry of Power, Government of India.
Value(s) applied	0.9673 for NEWNE 0.9509 for Southern
Choice of data or Measurement methods and procedures	The build margin CO <sub>2</sub> emission factor of NEWNE grid in the most recent year (2012-13) is taken from “Baseline Carbon Dioxide Emission Database Version 9.0” as per “Tool to calculate the emission factor for an electricity system, ver. 05”.
Purpose of data	Calculation of baseline emissions
Additional comment	Computed once during PDD finalization (ex-ante) and will remain same throughout the crediting period.

Data / Parameter	<b>EF<sub>CO2,grid,y</sub></b>
Unit	tCO <sub>2</sub> /MWh
Description	Combined margin CO <sub>2</sub> emission factor for NEWNE and Southern grid in the year y
Source of data	Baseline Carbon Dioxide Emission Database Version 9.0” published by the Central Electricity Authority, Ministry of Power, Government of India.
Value(s) applied	NEWNE-0.9750 South- 0.9633
Choice of data or Measurement methods and procedures	Calculated ex ante as per “Tool to calculate the emission factor for an electricity system, ver. 5.0” as follows: $EF_{grid,CM,y} = 0.75 \times EF_{grid,OM,y} + 0.25 \times EF_{grid,BM,y}$
Purpose of data	Calculation of baseline emissions
Additional comment	Computed once during PDD finalization (ex-ante) and will remain same throughout the crediting period.

### B.6.3. Ex ante calculation of emission reductions

The baseline emission calculation as per the above formula is as follows:

$$\begin{aligned}
 BE_{y, MP} &= EG_{PJ, y} \times EF_{CO2,grid,y} \\
 &= 7052 \times 0.9750 \\
 &= 6,875 \text{ tCO}_{2e}
 \end{aligned}$$

$$\begin{aligned}
 BE_{y, KAR} &= EG_{PJ, y} \times EF_{CO2,grid,y} \\
 &= 16,644 \times 0.9633 \\
 &= 16,034 \text{ tCO}_{2e}
 \end{aligned}$$

$$\begin{aligned}
 BE_y &= BE_{y, MP} + BE_{y, KAR} \\
 &= 6,875 + 16,034 \\
 &= 22,909 \text{ tCO}_{2e}
 \end{aligned}$$

The project emission for the project activity=0  
 The leakage emission for the project activity=0

Hence Emission reduction for the project activity=22,909 tCO<sub>2e</sub>

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

Year	Baseline emissions (t CO <sub>2e</sub> )	Project emissions (t CO <sub>2e</sub> )	Leakage (t CO <sub>2e</sub> )	Emission reductions (t CO <sub>2e</sub> )
Year 1	22,909	0	0	22,909
Year 2	22,909	0	0	22,909
Year 3	22,909	0	0	22,909
Year 4	22,909	0	0	22,909
Year 5	22,909	0	0	22,909
Year 6	22,909	0	0	22,909
Year 7	22,909	0	0	22,909
Total	160,363	0	0	160,363
Total number of crediting years	7			
Annual average over the crediting period	22,909	0	0	22,909

#### B.7. Monitoring plan

##### B.7.1. Data and parameters to be monitored

##### Monitoring for Madhya Pradesh

Data / Parameter	EG <sub>PJ, y</sub>
Unit	MWh (Mega-watt hour)
Description	Net electricity supplied to the grid by the project activity in year y
Source of data	Energy Account Reports
Value(s) applied	7,052
Measurement methods and procedures	<p>The net electricity supplied to the grid by the project activity will be calculated from the difference of the net energy exported to the grid and the net energy imported from the grid as measured by the bi-directional main energy meter at the grid inter-connection point. A check meter will also be installed as a backup at this point. The meters will be of accuracy class 0.2s.</p> <p>The monitoring will be on a continuous basis and monthly recording will be undertaken. The log-books will be maintained at the project site for this purpose.</p> <p>The net electricity supplied can be checked from the Energy Account Reports which is issued by MPPKVVCL (Madhya Pradesh Paschim Kshetra Vidyut Vitaran Company Limited). The value can be calculated as below:</p> $EG_{BL,y} = EG_{import,y} - EG_{export,y}$ <p>where,            EG<sub>import,y</sub>: Total Energy imported by the grid            EG<sub>export,y</sub>: Total Energy exported from the grid</p>
Monitoring frequency	Monthly

QA/QC procedures	<p>The calibration of the meters will be undertaken once in a five year as per CEA guideline.</p> <p><a href="http://www.powermin.nic.in/whats_new/pdf/Metering_Regulations.pdf">http://www.powermin.nic.in/whats_new/pdf/Metering_Regulations.pdf</a></p> <p>In the event that the main meter is not in service as a result of maintenance, repairs or testing, the check meter will be used.</p> <p>Cross check:</p> <p>The meter readings will also be cross checked with records for electricity sold (invoices in case of third party sale) or consumed (electricity bill detailing wheeled units from solar). The electricity bills (in case of captive) or invoices (in case of third party) may include losses applicable by the transmission grid which varies as per the Discom orders. The net electricity supplied to the grid can be back calculated based on the applicable losses.</p>
Purpose of data	Calculation of baseline emissions
Additional comment	Data shall be archived for the entire crediting period + 2 years

### **Monitoring for Karnataka**

Data / Parameter	$EG_{PJ,y}$
Unit	MWh (Mega-watt hour)
Description	Net electricity supplied to the grid by the project activity in year y
Source of data	GESCOM Form B
Value(s) applied	16,644
Measurement methods and procedures	<p>The net electricity supplied to the grid by the project activity will be calculated from the difference of the net energy exported to the grid and the net energy imported from the grid as measured by the bi-directional main energy meter at the grid inter-connection point. A check meter will also be installed as a backup at this point. The meters will be of accuracy class 0.2s.</p> <p>The monitoring will be on a continuous basis and monthly recording will be undertaken. The log-books will be maintained at the project site for this purpose.</p> <p>The net electricity supplied can be checked from Form B which is issued by GESCOM (Gulbarga Electricity Supply Company Limited). The value can be calculated as below:</p> $EG_{BL,y} = EG_{import,y} - EG_{export,y}$ <p>where,</p> <p><math>EG_{import,y}</math>: Total Energy imported by the grid</p> <p><math>EG_{export,y}</math>: Total Energy exported from the grid</p>
Monitoring frequency	Monthly
QA/QC procedures	<p>The calibration of the meters will be undertaken once in a five year as per CEA guideline</p> <p><a href="http://www.powermin.nic.in/whats_new/pdf/Metering_Regulations.pdf">http://www.powermin.nic.in/whats_new/pdf/Metering_Regulations.pdf</a></p> <p>In the event that the main meter is not in service as a result of maintenance, repairs or testing, the check meter will be used.</p> <p>Cross check:</p> <p>The meter readings will also be cross checked with records for sold electricity (invoices).</p>
Purpose of data	Calculation of baseline emissions
Additional comment	Data shall be archived for the entire crediting period + 2 years

### **B.7.2. Sampling plan**

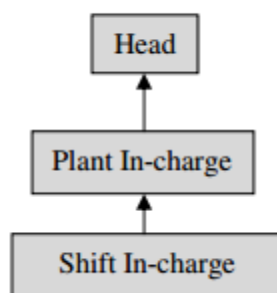
Not applicable

### B.7.3. Other elements of monitoring plan

The monitoring plan is developed in accordance with the modalities and procedures for CDM project activities and is proposed for grid-connected solar power project being implemented in Madhya Pradesh and Karnataka. The monitoring plan, which will be implemented by the project participant describes about the monitoring organisation, parameters to be monitored, monitoring practices, quality assurance, quality control procedures, data storage and archiving.

The authority and responsibility for registration, monitoring, measurement, reporting and reviewing of the data rests with the project participant. PP proposed the following structure for data monitoring, collection, data archiving and calibration of equipments for this project activity. The team comprises of the following members:

#### Organisational Structure for Monitoring



**Responsibilities of Head:** Overall functioning and maintenance of the project activity.

**Responsibilities of Plant In-charge:** Responsibility for Maintains the data records, ensures completeness of data, and reliability of data (calibration of equipments).

**Responsibilities of Shift In-charge:** Responsibility for day to day data collection and maintains day to day log book for monitored data.

#### Data Measurement

The export and import energy will be measured continuously using Main and Check meters located at the substation. Readings of meters shall be taken on monthly basis by authorized officer of DISCOM in the presence of PP or representative of PP. The meter reading will be taken jointly and signed by the representatives of the DISCOM and PP or representative of PP. Based on the readings, invoices will be raised (in case of third party sale) or set off will be provided in the electricity bill (in case of captive consumption). These invoices or electricity bills can be used for cross checking the meter readings taken for the project activity.

#### Data collection and archiving

Readings from meters will be collected in the presence of the plant in-charge. Export and Import data would be recorded and stored in logs as well as in electronic form on a daily basis. The records are checked periodically by the Plant Manager and discussed thoroughly with the plant supervisor. The period of storage of the monitored data will be 2 years after the end of crediting period or till the last issuance of CERs for the project activity whichever occurs later.

#### Emergency preparedness

The project activity will not result in any unidentified activity that can result in substantial emissions from the project activity. No need for emergency preparedness in data monitoring is visualized.

#### Personnel training

In order to ensure a proper functioning of the project activity and a properly monitoring of emission reductions, the staff (CDM team) will be trained. The plant helpers will be trained in equipment operation, data recording, reports writing, operation and maintenance and emergency procedures in compliance with the monitoring plan.

**B.8. Date of completion of application of methodology and standardized baseline and contact information of responsible persons/ entities**

Date of completion of application of methodology and standardized baseline and contact information of responsible persons/ entities is as below. Contact details of project participant is provided in appendix 1 of the PDD.

Mr. Manish Dabkara  
Office No. 201, Enking Embassy,  
Scheme no. No. 78 Part –II  
Near Brilliant Convention Centre,  
Vijay Nagar Indore Madhya Pradesh  
PIN 452010  
Date of compilations: 28/05/2016

**SECTION C. Duration and crediting period****C.1. Duration of project activity****C.1.1. Start date of project activity**

The project is a bundled project, so the earliest date of purchase order, i.e., conclusive evidence of project activity implementation is considered as the start date of the project activity, which is accordance with the Glossary of CDM terms. Hence purchase order issued by Gupta Sons on 05/03/2012 is taken as the start date.

**C.1.2. Expected operational lifetime of project activity**

25 years

**C.2. Crediting period of project activity****C.2.1. Type of crediting period**

Renewable crediting period

**C.2.2. Start date of crediting period**

20/05/2017 or UFCCC registration whichever is later

**C.2.3. Length of crediting period**

07 years 00 months.

**SECTION D. Environmental impacts****D.1. Analysis of environmental impacts**

Solar energy is one of the cleanest sources of renewable energy, with no associated emissions and waste products. As per the Schedule 1 of notification issued by Ministry of Environment and Forests (MoEF), Government of India on September 14, 2006, thirty-nine activities are required to undertake environmental impact assessment studies. It is clarified by Ministry of Environment and Forest, Government of India through its Office Memorandum no. J-11013/41/2006-IA.II(I)

dated 23/05/2011 that the solar photovoltaic power projects are not covered under the ambit of EIA notification, 2006 and no environment clearance is required for such projects under the provisions thereof. The proposed project activity is a solar PV power project and hence no environment clearance is required for the project activity. Thus, no detailed EIA study was conducted.

## **SECTION E. Local stakeholder consultation**

### **E.1. Solicitation of comments from local stakeholders**

The Local Stakeholder Meetings were organized for local stakeholder consultation and informed local stakeholder regarding the meeting. The followings are the local stakeholders for the project activity:

- Local community
- Local village administration
- Technology suppliers
- Local vendors

All the stakeholders have been invited through invitation letters (delivered in hand) and public notice to attend the stakeholders meeting.

In the introductory speech, the representatives of EKI Energy Services Limited (CDM consultant) welcomed the gathering and given a brief about the CDM project activity. Subsequent to the introductory speech, stakeholders were explained about the electricity generation from solar project is an environmental friendly power generation technology contributing to reduction in GHG emissions. They were also explained about the benefits of the solar power projects like, increasing energy availability and improving quality of power and its assistance to the local population by providing employment opportunities to both skilled & unskilled labors.

The Minutes of meeting with commenting sheet from LSH, invitation letter receipt copy shall be submitted to the DOE.

Name of the PP	Invitation Date	Meeting Date	Location of the Local Stakeholder Meeting		
			Village	District	State
Birla Corporation Limited	11/08/2014	25/08/2014	Satna	Satna	Madhya Pradesh
Porwal Auto Components Ltd.	14/08/2014	28/08/2014	Kakodiya	Ujjain	Madhya Pradesh
Bidar Solar Power Pvt. Ltd.	12/08/2014	27/08/2014	Beemal Kheda	Bidar	Karnataka
Gupta Sons	14/08/2014	29/08/2014	Gagorni	Rajgarh	Madhya Pradesh

### **E.2. Summary of comments received**

Stakeholders had no objections from installations of solar power plant; instead they have openly said that solar power projects helped them by:

- Additional revenue generated through land / lease to outsiders like contractors & their employees.
- Job opportunities for day -to - day maintenance and security of project site. .

- Developments of roads.
- No any adverse impact on rains, agriculture.

Further, Stakeholders' exemplified very positive mind-set towards the proposed solar power project in the region and below are the responses from them regarding the general queries.

Stakeholders were very much inquisitive about the Global Warming & its impact on the earth and how Solar power has helped combat the same.

Hence, the following points were discussed & explained:

- What is Global Warming
- Causes of Global Warming
- Possible adverse effects of Global Warming on Earth
- Efforts & Measures being taken to mitigate Global Warming
- Clean Development Mechanism (CDM)
- Propagation of solar power projects

**Apart from the aforementioned general queries, following comments were received:**

- Will there be free supply of power to the local people?
- Is solar energy alternative energy source?
- Does it aid to global warming?
- How the project installation is helpful for the local villagers?
- Does this project require new skills and how are you going to provide them?

**E.3. Report on consideration of comments received**

The stakeholders have given positive feedback and thus no measures were required to be taken.

- **Comments received, from the stakeholders are responded as follows:** The generated power will be fed in the grid. Project promoter can't supply directly power to the local people. They have to get authorized connection from Govt. body. But due to the project activity the supply of power in the area will increase
- Yes, solar Energy is an alternative form of energy resource as it can generate electricity without polluting environment. However energy produced by fossil fuel until this century caused a serious urge for the shift to alternate source of energy generation because of severe decline in the reserve, increase in fossil fuel price due to decline fuel reserve
- It does not release any hazardous GHG gases, thus it do not aid global warming
- Responding to the above question, advantages & future possibilities for employment of local youth were explained to the villagers.
- The engineers and technicians to be employed for the project will undergo enhancement of skill through appropriate training as required for the type of activity to be performed.

**SECTION F. Approval and authorization**

The approval letter from the DNA of the host country (Ministry of Environment and Forests, Government of India) is issued dated 16/11/2015, which is submitted to validating DOE.

## Appendix 1. Contact information of project participants and responsible persons/ entities

Project participant and/or responsible person/ entity	<input checked="" type="checkbox"/> Project participant <input type="checkbox"/> Responsible person/ entity for application of the selected methodology (ies) and, where applicable, the selected standardized baselines to the project activity
Organization name	ReXchange Global Solutions (P75)
Street/P.O. Box	857, Rajagali,
Building	---
City	Mhow
State/Region	Madhya Pradesh
Postcode	453441
Country	India
Telephone	
Fax	
E-mail	<a href="mailto:manish@enkingint.org">manish@enkingint.org</a>
Website	NA
Contact person	Mr. Manish Dabkara
Title	
Salutation	Mr.
Last name	Dabkara
Middle name	
First name	Manish
Department	CDM Services Dept.
Mobile	+91-9907534900
Direct fax	NA
Direct tel.	NA
Personal e-mail	<a href="mailto:manish@enkingint.org">manish@enkingint.org</a>

Project participant and/or responsible person/ entity	<input type="checkbox"/> Project participant <input checked="" type="checkbox"/> Responsible person/ entity for application of the selected methodology (ies) and, where applicable, the selected standardized baselines to the project activity
Organization name	EKI Energy Services Limited
Street/P.O. Box	Office no. 201, Enking Embassy
Building	Schemer No. 78 Part –II, Near Brilliant Convention Centre
City	Indore
State/Region	Madhya Pradesh
Postcode	452 010
Country	INDIA
Telephone	0731-4289086
Fax	0731-4289086
E-mail	<a href="mailto:business@enkingint.org">business@enkingint.org</a> , <a href="mailto:manish@enkingint.org">manish@enkingint.org</a>
Website	<a href="http://www.enkingint.org">www.enkingint.org</a>
Contact person	Mr. Manish Dabkara
Title	CEO
Salutation	Mr.

Last name	Dabkara
Middle name	-
First name	Manish
Department	CDM Services Dept.
Mobile	+91-9907534900
Direct fax	+91-0731-4289086
Direct tel.	+91-0731-4289086
Personal e-mail	<a href="mailto:manish@enkingint.org">manish@enkingint.org</a>

## Appendix 2. Affirmation regarding public funding

No public funding for this project activity was received from annex 1 parties.

## Appendix 3. Applicability of methodology and standardized baseline

Please refer section B of the PDD for the same.

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

From CO<sub>2</sub> database of CEA, Version 09 published by Government of India, Ministry of Power Central Electricity Authority, Government of India.

<b>CENTRAL ELECTRICITY AUTHORITY: CO2 BASELINE DATABASE</b>	
VERSION DATE	9 January'14
BASELINE METHODOLOGY	ACM0002 / Ver 14.0 and "Tool to Calculate the Emission Factor for an Electricity System", Version 4.0

<b>Net Generation in Operating Margin (GWH) (incl. Imports)</b>			
	2010-11	2011-12	2012-13
NEWNE	476,986	502,300	539,385
Southern	145,076	157,536	162,905

<b>Simple Operating Margin (tCO<sub>2</sub>/MWh) (incl. Imports) (1) (2)</b>			
	2010-11	2011-12	2012-13
NEWNE	0.9710	0.9691	0.9914
Southern	0.9421	0.9602	0.9972

<b>Weighted Generation Operating Margin</b>	
NEWNE	<b>0.9776</b>
Southern	<b>0.9675</b>

<b>Build Margin (tCO<sub>2</sub>/MWh) (not adjusted for imports)</b>			
	2010-11	2011-12	2012-13
NEWNE	0.8713	0.9345	<b>0.9673</b>
Southern	0.7828	0.8544	<b>0.9509</b>

<b>Combined Margin Emission Factor</b>	
NEWNE	<b>0.9750</b>
Southern	<b>0.9633</b>

## Appendix 5. Further background information on monitoring plan

Please refer section B.7.1 and B.7.2 for information on monitoring.

## Appendix 6. Summary of post registration changes

Not Applicable.

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### Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
08.0	22 July 2016	EB 90, Annex 2 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	Revisions to: <ul style="list-style-type: none"> <li>• Include provisions related to statement on erroneous inclusion of a CPA;</li> <li>• Include provisions related to delayed submission of a monitoring plan;</li> <li>• Provisions related to local stakeholder consultation;</li> <li>• Provisions related to the Host Party;</li> <li>• Editorial improvement.</li> </ul>
05.0	25 June 2014	Revisions to: <ul style="list-style-type: none"> <li>• Include the Attachment: Instructions for filling out the project design document form for small-scale CDM project activities (these instructions supersede the "Guidelines for completing the project design document form for small-scale CDM project activities" (Version 01.1));</li> <li>• Include provisions related to standardized baselines;</li> <li>• 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</li> <li>• Change the reference number from <i>F-CDM-SSC-PDD</i> to <i>CDM-SSC-PDD-FORM</i>;</li> <li>• Editorial improvement.</li> </ul>
04.1	11 April 2012	Editorial revision to change history box by adding EB meeting and annex numbers in the Date column.
04.0	13 March 2012	EB 66, Annex 9 Revision required to ensure consistency with the "Guidelines for completing the project design document form for small-scale CDM project activities"

<i>Version</i>	<i>Date</i>	<i>Description</i>
03.0	15 December 2006	EB 28, Annex 34 <ul style="list-style-type: none"> <li>The Board agreed to revise the CDM project design document for small-scale activities (CDM-SSC-PDD), taking into account CDM-PDD and CDM-NM.</li> </ul>
02.0	08 July 2005	EB 20, Annex 14 <ul style="list-style-type: none"> <li>The Board agreed to revise the CDM SSC PDD to reflect guidance and clarifications provided by the Board since version 01 of this document.</li> <li>As a consequence, the guidelines for completing CDM SSC PDD have been revised accordingly to version 2. The latest version can be found at <a href="http://cdm.unfccc.int/Reference/Documents">http://cdm.unfccc.int/Reference/Documents</a>.</li> </ul>
01.0	21 January 2003	EB 07, Annex 05 Initial adoption.
Decision Class: Regulatory Document Type: Form Business Function: Registration Keywords: project design document, SSC project activities		