



Monitoring report form for CDM programme of activities
(version 01.0)

Complete this form in accordance with the Attachment "Instructions for filling out the monitoring report form for CDM programme of activities" at the end of this form.

MONITORING REPORT

Title of the programme of activities (PoA)	South Africa Renewable Energy Programme (SA-REP)	
UNFCCC reference number of the PoA	7570	
Version number(s) of the PoA-DD(s) applicable to this monitoring report	07	
Coordinating/managing entity (CME)	Additional Energy Limited	
Version number of this monitoring report	02	
Completion date of this monitoring report	08/12/2015	
Monitoring period number and dates covered by this monitoring report	Monitoring Period Number : 01 Date: 05/10/ 2013 – 30/06/2015	
Monitoring report number for this monitoring period	01	
Host Party(ies)	Host Party(ies) of the PoA	Is this a host Party to a specific-case CPA covered in this monitoring report?(yes/no)
	Republic of South Africa	Yes
Sectoral scope(s)	1:Energy industries (renewable / non-renewable sources)	
Selected methodology(ies)	AMS-I.D. Grid connected renewable electricity generation (version 17)	
Selected standardized baseline(s)	ASB0001 "Standardized baseline: Grid emission factor for the Southern African power pool" (version 01.0)	
Total amount of GHG emission reductions or net GHG removals by sinks for all specific-case CPAs in the PoA covered in this monitoring report	GHG emission reductions or net GHG removals by sinks reported up to 31 December 2012	GHG emission reductions or net GHG removals by sinks reported from 1 January 2013 onwards
	N/A	91,689

PART I - Programme of activities

SECTION A. Description of PoA

A.1. Brief description of the PoA

The purpose of the South Africa Renewable Energy Programme (SA-REP) is to support the development and implementation of small-scale renewable energy projects in South Africa in order to displace grid-connected, fossil fuel based electricity generation through the promotion of grid-connected renewable energy based electricity generation, thereby reducing greenhouse gas (GHG) emissions. Renewable energy technologies implemented under the programme will include small hydro, wind, solar photovoltaic and geothermal. The project activities will consist of the installation of new power plants at sites where no renewable energy power plant was operated prior to the implementation of the CPA (greenfield plants).

Additional Energy Limited is the Coordinating/Managing Entity ("CME") of the PoA. The CME is responsible for:

- Development of the PoA Design Document (CDM-PoA-DD) and Component Project Activity (CPA) Design Documents (CDM-CPA-DD) for CPAs that are developed under the PoA;
- Obtaining a Letter of Approval for the implementation of the PoA from the host country;
- Obtaining a Letter of Authorization of the coordination of the PoA from the host country;
- Liaise with the Designated National Authority (DNA) on matters related to the implementation of the PoA and inclusion of CPAs
- Carry out a quality check on CPAs to be included in the PoA;
- Collect and compile monitoring records from all the CPA entities;
- Coordinate monitoring activities and data management during the lifetime of the PoA;
- Prepare and submit monitoring reports and facilitate the verification of the same;
- Act as the focal point with the CDM Executive Board for matters related to the PoA;
- During the lifetime of the PoA, maintenance of all monitoring reports of all CPAs in accordance with record keeping systems outlined in the CDM-PoA-DD;

Similarly, CPA entities are responsible for the implementation of individual CPAs under the PoA and:

- Operate the CPA for the duration of the project;
- Keep records of parameters as per the monitoring plan and provide hard and electronic records to the CME on a regular basis;
- Make available staff for validation and verification where applicable;

A.1.1. Generic CPA(s)

Title, identification/reference number and/or version number of the generic CPA(s) of the PoA	Sectoral scope(s)	Applied methodology(ies) or combination of methodologies and/or standardized baseline(s)
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Title, identification/reference number and/or version number of the generic CPA(s) of the PoA	Sectoral scope(s)	Applied methodology(ies) or combination of methodologies and/or standardized baseline(s)
CPA [Solar PV power plant] Version 07	1:Energy industries (renewable / non-renewable sources)	AMS-I.D. Grid connected renewable electricity generation (version 17) ASB0001 Standardized baseline: Grid emission factor for the Southern African power pool (Version 01.0) Tool to calculate the emission factor for an electricity system (version 02.2.1) Tool to calculate project or leakage CO2 emissions from fossil fuel combustion (version 02)

A.1.2. Specific-case CPA(s) covered in this monitoring report

Reference number of the specific-case CPA included in the PoA as of the end of this monitoring period	Title, identification/reference number and version number of the generic CPA to which the specific-case CPA applies	Crediting period dates of the specific-case CPA	Is this specific-case CPA covered in this monitoring report? (yes/no)
7570-0001: SA-REP – Greefspan 11.029 MW Solar PV Project	CPA [Solar PV power plant] Version 07	01/06/2014 - 31/05/2021	Yes
7570-0002: SA-REP – Aries 10 MW Solar PV Project	CPA [Solar PV power plant] Version 07	05/10/2013 - 04/10/2020	Yes
7570-0003: SA-REP – Konkoonies 10 MW Solar PV Project	CPA [Solar PV power plant] Version 07	05/10/2013 - 04/10/2020	Yes

A.2. Contact information of the coordinating/managing entity (CME) and/or responsible persons(s)/entity(ies)

Anil Bhatta
Additional Energy Limited
anil@additionalenergy.com

Additional Energy Limited is the CME of the PoA.

SECTION B. Implementation of PoA**B.1. Implementation of the management system of the PoA**

All CPAs under the PoA are developed and implemented by CPA entities. The CPA entities are responsible for the operation and maintenance of the Solar PV power plant and have entered into a power purchase agreement with ESKOM for the supply of electricity.

The CME has developed and maintained an electronic database, which contains essential data and information about each CPA, including:

- CPA name
- Name and contact details of the entity implementing the CPA
- Geographical location of the CPA (GPS coordinates)
- Technology employed by the CPA and installed capacity
- Commissioning date
- Start date of the CPA
- Crediting period
- Start and end date of crediting period
- Operational lifetime
- Verification status (number of verification and associated monitoring period)
- Emission reductions monitored and issued in each monitoring period

Operation and management of the CPAs are conducted by the respective CPA implementers. The CME has inhouse professionals with CDM experience who are managing this PoA. The professionals are responsible to review the project data, store the data in the CME data base and assist CPA implementes with any questions they have in relation to monitoring or CDM aspects of the PoA.

In line with the paragraph 19 of the CDM Project Standard (ver. 03.0, EB74, 26 Jul 2013) Additional Energy has developed a “CME Management System” that is made available to the Designated Operational Entity (DOE). The “CME management system” provides the processes and tools necessary to ensure compliance of the PoA and CPAs with the CDM Project Standard (ver. 03.0).

B.2. Implementation of single sampling plan(s)

Each CPAs are monitored individually. Therefore, sampling plan is not required for the CPAs.

SECTION C. Post-registration changes to the PoA (including the generic CPA(s))

C.1. Corrections

N/A

C.2. Inclusion of a monitoring plan to the registered PoA-DD (including its generic CPA-DD(s)), if a monitoring plan was not included at the time of registration

N/A

C.3. Permanent changes to the monitoring plan as described in the registered PoA-DD, applied methodology, or applied standardized baseline

N/A

C.4. Changes to the programme design of the registered PoA-DD (including corresponding changes to project design of the generic CPA-DD(s)) and updates to the eligibility criteria for inclusion of specific-case CPAs in the PoA

N/A

C.5. Types of changes specific to afforestation and reforestation activities

N/A

PART II - Specific-case component project activity(ies)

SECTION D. Description of specific-case CPA(s)

D.1. Brief description of implemented specific-case CPA(s)

7570-0001: SA-REP – Greefspan 11.029 MW Solar PV Project

CPA 7570-0001 comprises of 11.029 MWp solar PV plant located on the road R-357, approximately 60km Southwest from Douglas in Pixley ka Seme district municipality, Northern Cape province in South Africa. Description of technical parameters of Solar PV plant is provided in Table D.1 below.

Table D.1: Description of Technical Parameters of CPA 7570-0001 Solar PV Plant

Parameter	Value	Unit
<i>PV-module</i>		
Module manufacturer		TENESOL
Module model	-	TE220/240 60P+
Individual module power	240	Wp
Power tolerance	0 / +5	Wp
Voltage at max. power	29.55	V
Current at max. power	8.2	A
Cells size	156 x 156	mm x mm
Type	-	Polycrystalline
<i>Invert</i>		
Inverter manufacturer	-	KACO
Inverter model	-	Powador
Type of inverter	-	Powador 39.0 TL3-M-INT
Family	-	Tripower
Nominal AC power	15	kW
Maximum DC power	15.34	kWp
Nominal AC frequency	50 (-6, +5)	Hz
Total no. of installed inverters	666	-

Construction of the plant was commenced from 18/02/2013 and the plant started supplying electricity to the grid from 01/06/2014. In this monitoring period, the CPA reduced 27,711 tCO_{2-e}.

7570-0002: SA-REP – Aries 10 MW Solar PV Project

CPA 7570-0002 comprises of 10.752 MWp solar PV plant located approximately 36 km Southwest from Kenhardt, in Siyanda district municipality, Northern Cape province in South Africa. Description of technical parameters of Solar PV plant is provided in Table D.2 below.

Table D.2: Description of Technical Parameters of CPA 7570-0002 Solar PV Plant

Parameter	Value	Unit
PV-module		
Module manufacturer		BYD
Module model	-	BYD 250P6C-30
Maximum power in STC (standard test conditions)	250	Wp
Power tolerance	0 to +3	%
Voltage at max. power	30.13	V
Current at max. power	8.30	A
Cells size	156mm* 156 mm / 6 inches	Polycrystalline silicon solar cells
Type	-	Polycrystalline
Inverter		
Inverter manufacturer	-	SMA
Inverter model	-	Sunny Central 630CP XT
Nominal AC power (25°C/50°C)	700	kVA
Maximum DC power	713	kW
Rated frequency/rated grid voltage	50/315	Hz/V
Total no. of installed inverters	16	-

Construction of the plant was commenced from 05/11/2012 and the plant started supplying electricity to the grid from 01/12/2013. In this monitoring period, the CPA reduced 31,541 tCO_{2-e}.

CPA 0003 - SA-REP – Konkoonsies 10 MW Solar PV Project:

CPA 7570-0003 comprises of 10.752 MWp solar PV plant located approximately 32 km Northeast of Pofadder, in Khai ma district municipality, Northern Cape province in South Africa. Description of technical parameters of Solar PV plant is provided in Table D.3 below.

Table D.3: Description of Technical Parameters of CPA 7570-0003 Solar PV Plant

Parameter	Value	Unit
PV-module		
Module manufacturer		BYD
Module model	-	BYD 250P6C-30
Maximum power in STC (standard test conditions)	250	Wp
Power tolerance	0 to +3	%

Voltage at max. power	30.13	V
Current at max. power	8.30	A
Cells size	156mm * 156 mm / 6 inches	Polycrystalline silicon solar cells
Type	-	Polycrystalline
Inverter		
Inverter manufacturer	-	SMA
Inverter model	-	Sunny Central 630CP XT
Nominal AC power (25°C/50°C)	700/630	kVA
Maximum DC power	713	kW
Rated frequency/rated grid voltage	50/315	Hz/V
Total no. of installed inverters	16	-

Construction of the plant was commenced from 05/11/2012 and the plant started supplying electricity to the grid from 01/12/2013. In this monitoring period, the CPA reduced 32,437 tCO_{2-e}.

D.2. Geographical references or other means of identification of the location of the specific-case CPA(s)

CPA	Host Party(ies)	Location/Province	City/Town/Municipality	Geographical Location(GPS Coordinates)
CPA 7570 - 0001	Republic of South Africa	Northern cape	Siyathemba municipality, Hope town District,	North 29°23'9.24"S 23°18'53.75"E East 29°23'24.76"S 23°18'58.35"E South 29°23'42.12"S 23°18'38.41"E West 29°23'33.96"S 23°18'18.29"E
CPA 7570 - 0002	Republic of South Africa	Northern Cape	Siyanda district municipality	1. 29°29'41.26"S, 20°46'55.63"E 2. 29°29'41.29"S, 20°47'17.88"E 3. 29°29'53.22"S, 20°47'17.88"E 4. 29°29'53.14"S, 20°46'55.56"E
CPA 7570 - 0003	Republic of South Africa	Northern Cape	Khai ma district municipality	1. 28°53'13.57"S, 19°33'10.41"E 2. 28°53'15.62"S, 19°33'28.86"E 3. 28°53'20.54"S, 19°33'30.35"E 4. 28°53'27.15"S, 19°33'29.62"E 5. 28°53'26.97"S, 19°33'9.22"E 6. 28°53'15.27"S, 19°33'8.18"E

SECTION E. Post-registration changes to specific-case CPA(s)

E.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline

N/A

E.2. Corrections

7570-0002: SA-REP – Aries 10 MW Solar PV Project:

The description of PV module and inverter for CPA-0002 was found inconsistent with the actual models of PV module and inverter at the project site. This inconsistency has been corrected and reported in Section D.1 of the monitoring report. Corrected information are detailed out below:

Parameter	PV Module	Inverter
Model	BYD 250P6C-30	Sunny Central 630CP XT

7570-0003: SA-REP – Konkoonsies 10 MW Solar PV Project:

The description of PV module and inverter for CPA-0003 was found inconsistent with the actual models of PV module and inverter at the project site. This inconsistency has been corrected and reported in Section D.1 of the monitoring report. Corrected information are detailed out below:

Parameter	PV Module	Inverter
Model	BYD 250P6C-30	Sunny Central 630CP XT

E.3. Changes to the start date of the crediting period of the specific-case CPA(s)

N/A

E.4. Inclusion of a monitoring plan into the specific-case CPA(s) that was not included at registration

N/A

E.5. Permanent changes to the monitoring plan as described in the registered specific-case CPA-DD(s), applied methodology or standardized baseline

N/A

E.6. Changes to project design of the specific-case CPA(s)**7570-0001: SA-REP – Greefspan 11.029 MW Solar PV Project:**

The description of inverter manufacturer that is outlined in the registered CPA-DD-001 was found inconsistent with the actual manufacturer of inverter at the project site. As per Appendix 1, paragraph 7 of the CDM Project Standard (Version 09.0), the CME would request to allow changes in description of inverter (i.e. manufacturer, model and type) for CPA-001. Corrected inverter details that were validated during the site visit are outlined below:

Parameter	Inverter
Manufacturer	KACO
Model	Powador
Type	Powador 39.0 TL 3-M-INT

E.7. Types of changes specific to afforestation and reforestation specific-case CPA(s)

N/A

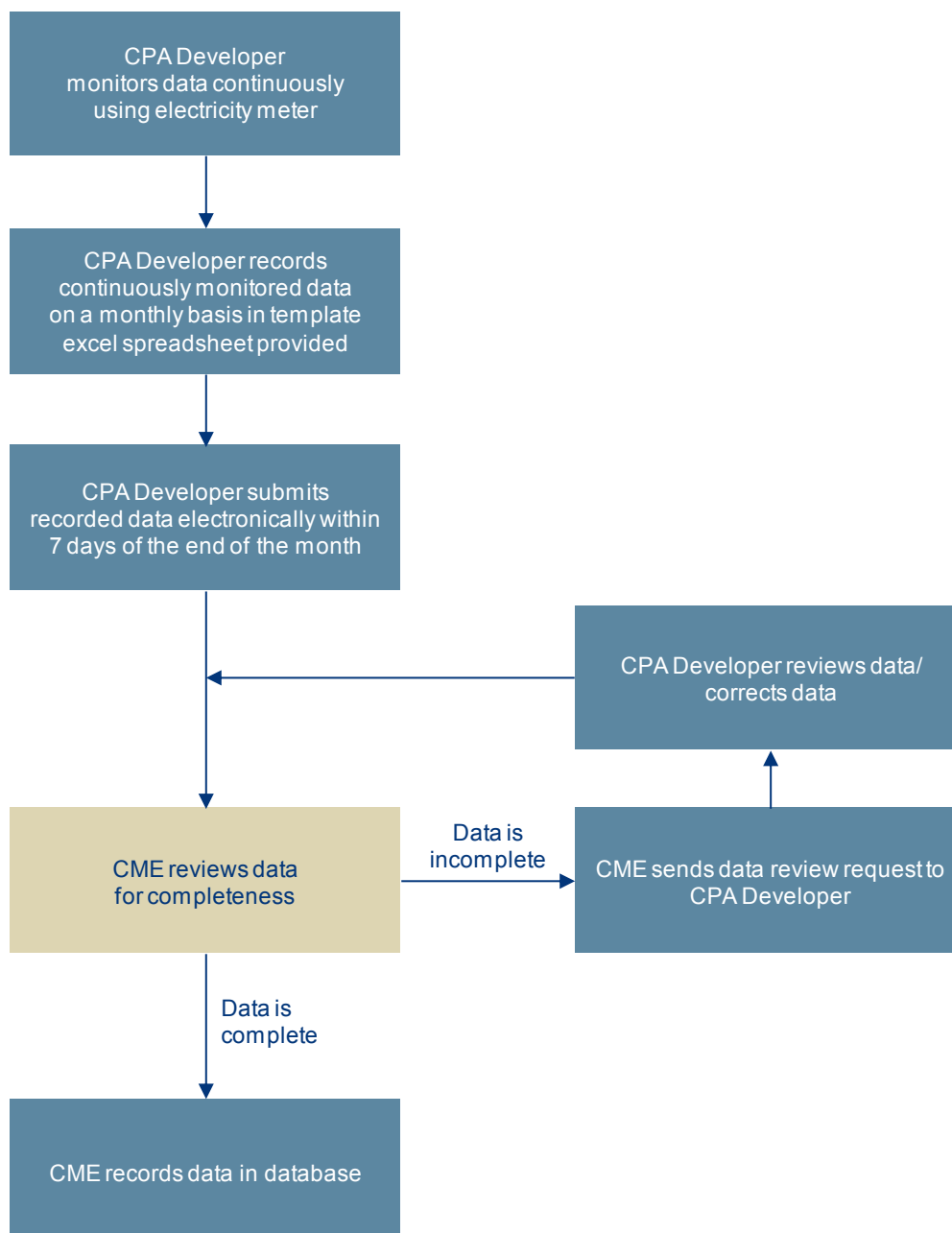
SECTION F. Description of the monitoring system of specific-case CPA(s)

Each CPAs were monitored by the respective CPA implementers. The following parameter was monitored for all CPAs included under the PoA (i.e. CPA 7570-0001, CPA 7570-0002, CPA 7570-0003).

EGBL_y Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y

The following flow chart depicts the roles and responsibility of CPA Developer and the CME in terms of data monitoring.

Figure 1: Monitoring Roles and Responsibility and Data Flow



In terms of data flow, the CPA implementer sends the project data to the CME who reviews and records the data in the CME database. If CME finds any issues or have any questions in the data, it goes back to the respective CPA implementer for clarification or correction. The CME has utilized the monitored data for calculating emissions reductions and preparing monitoring reports for the CPAs.

The CME has provided trainings to CPA implementers on data monitoring and recording methods that is in compliance with CDM requirements. The CPA implementers were trained on CDM and project monitoring requirements on the following dates:

7570-0001: Training conducted on 6 August 2014

7570-0002: Training conducted on 15 November 2013

7570-0003: Training conducted on 15 November 2013

As part of QA/QC process, the CME has developed a manual called “Monitoring Guideliness for CPA Developers” that outlines information on project data to be collected, data to be reported and managed. Furthermore, the CME has developed a data template for the CPA implementes to record and report project data to the CME. Both these two documents were provided to all CPA implementers under the PoA. The CME cross-checks project data provided by the CPA implementers. If any inconsistency in data were found, the CME would go back to the CPA implementer and ask for clarification or request for the correct data. The CME has utilised it internal QA/QC guidelines to cross-check the reported data.

Each CPAs are monitored individually. Therefore, sampling plan is not required for the CPAs

SECTION G. Data and parameters

G.1. Data and parameters fixed ex ante, at registration, inclusion or renewal of crediting period

CPA 7570-0001

Data/parameter	EF _{CO₂,grid,y}
Unit	tCO ₂ /MWh
Description	Combined margin CO2 emission factor for grid connected power generation in year
Source of data	ASB0001 Standardized Baseline: Grid Emission Factor for South African Power Pool (Version 01.0)
Value(s) applied	0.9801
Choice of data or measurement methods and procedures	Default value as provided by Standardized Baseline: Grid Emission Factor for South African Power Pool (Version 01.0)
Purpose of data	Calculation of baseline emissions
Additional comments	N/A

CPA 7570-0002

Data/parameter	EF _{CO₂,grid,y}
Unit	tCO ₂ /MWh
Description	Combined margin CO2 emission factor for grid connected power generation in year
Source of data	ASB0001 Standardized Baseline: Grid Emission Factor for South African Power Pool (Version 01.0)
Value(s) applied	0.9801
Choice of data or measurement methods and procedures	Default value as provided by Standardized Baseline: Grid Emission Factor for South African Power Pool (Version 01.0)

Purpose of data	Calculation of baseline emissions
Additional comments	N/A

CPA 7570-0003

Data/parameter	EF _{CO₂,grid,y}
Unit	tCO ₂ /MWh
Description	Combined margin CO2 emission factor for grid connected power generation in year
Source of data	ASB0001 Standardized Baseline: Grid Emission Factor for South African Power Pool (Version 01.0)
Value(s) applied	0.9801
Choice of data or measurement methods and procedures	Default value as provided by Standardized Baseline: Grid Emission Factor for South African Power Pool (Version 01.0)
Purpose of data	Calculation of baseline emissions
Additional comments	N/A

G.2. Data and parameters monitored**CPA 7570-0001**

Data/parameter	EG _{BLy}																										
Unit	MWh																										
Description	Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y																										
Measured/calculated/ default	Measured																										
Source of data	Main and check metering equipment installed at project activity site																										
Value(s) of monitored parameter	27,711																										
Monitoring equipment	<div>Electricity data are monitored by the bi-directional electricity meter. Information on electricity meter is as follows:</div> <table><tr><td>Description</td><td>Main Meter</td><td>Check Meter</td></tr><tr><td>Manufacturer</td><td>Elster</td><td>SEL</td></tr><tr><td>Type</td><td>A1700</td><td>SEL-735</td></tr><tr><td>Serial Number</td><td>351481120347</td><td>1131900531</td></tr><tr><td>Accuracy Class</td><td>0.2S</td><td>0.2S</td></tr><tr><td>Calibration Frequency</td><td>5 years</td><td>5 years</td></tr><tr><td>Date of last calibration</td><td>15/01/2014</td><td>18/07/2013</td></tr><tr><td>Validity of meters</td><td>14/01/2019</td><td>17/07/2018</td></tr></table>			Description	Main Meter	Check Meter	Manufacturer	Elster	SEL	Type	A1700	SEL-735	Serial Number	351481120347	1131900531	Accuracy Class	0.2S	0.2S	Calibration Frequency	5 years	5 years	Date of last calibration	15/01/2014	18/07/2013	Validity of meters	14/01/2019	17/07/2018
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Date of last calibration	15/01/2014	18/07/2013																									
Validity of meters	14/01/2019	17/07/2018																									
Measuring/reading/ recording frequency	The quantity of electricity supplied to the grid will be measured continuously (hourly measurement) and recorded monthly.																										
Calculation method (if applicable)	The net electricity supplied to a grid is the difference between the measured quantities of the grid electricity export and import.																										
QA/QC procedures	Monitored data is cross-checked with invoices. The electricity meter is periodically calibrated according to the national standard NRS 057: 2009.																										
Purpose of data	Calculation of baseline emissions																										

Additional comments	Electricity consumed by the office and auxiliary equipment is separately imported from the grid through the back-up line and is monitored by the electricity meter (S/N: 3011113925033). The amount of this consumption is included in the calculation of electricity import.
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CPA 7570-0002

Data/parameter	EG _{BLy}																										
Unit	MWh																										
Description	Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y																										
Measured/calculated/ default	Measured																										
Source of data	Main and check metering equipment installed at project activity site																										
Value(s) of monitored parameter	31,541																										
Monitoring equipment	<div>Electricity data are monitored by the bi-directional electricity meter. Information on electricity meter is as follows:</div> <table><tr><td>Description</td><td>Main Meter</td><td>Check Meter</td></tr><tr><td>Manufacturer</td><td>Schneider Electric</td><td>Schneider Electric</td></tr><tr><td>Type</td><td>ION7550</td><td>ION7550</td></tr><tr><td>Serial Number</td><td>PI-1307A404-03</td><td>PI-1307A406-03</td></tr><tr><td>Accuracy Class</td><td>0.2</td><td>0.2</td></tr><tr><td>Calibration Frequency</td><td>5 years</td><td>5 years</td></tr><tr><td>Date of last calibration</td><td>17/07/2013</td><td>17/07/2013</td></tr><tr><td>Validity of meters</td><td>16/07/2018</td><td>16/07/2018</td></tr></table>			Description	Main Meter	Check Meter	Manufacturer	Schneider Electric	Schneider Electric	Type	ION7550	ION7550	Serial Number	PI-1307A404-03	PI-1307A406-03	Accuracy Class	0.2	0.2	Calibration Frequency	5 years	5 years	Date of last calibration	17/07/2013	17/07/2013	Validity of meters	16/07/2018	16/07/2018
Description	Main Meter	Check Meter																									
Manufacturer	Schneider Electric	Schneider Electric																									
Type	ION7550	ION7550																									
Serial Number	PI-1307A404-03	PI-1307A406-03																									
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Calibration Frequency	5 years	5 years																									
Date of last calibration	17/07/2013	17/07/2013																									
Validity of meters	16/07/2018	16/07/2018																									
Measuring/reading/ recording frequency	The quantity of electricity supplied to the grid will be measured continuously (hourly measurement) and recorded monthly.																										
Calculation method (if applicable)	The net electricity supplied to a grid is the difference between the measured quantities of the grid electricity export and import.																										
QA/QC procedures	Monitored data is cross-checked with invoices. The electricity meter is periodically calibrated according to the national standard NRS 057: 2009.																										
Purpose of data	Calculation of baseline emissions																										
Additional comments	Electricity consumed by the office and auxiliary equipment is separately imported from the grid through the back-up line and is monitored by the electricity meter (S/N: 311472906765). The amount of this consumption is included in the calculation of electricity import.																										

CPA 7570-0003

Data/parameter	EG _{BLy}
Unit	MWh
Description	Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y
Measured/calculated/ default	Measured
Source of data	Main and backup metering equipment installed at project activity site
Value(s) of monitored parameter	32,437

Monitoring equipment	Electricity data are monitored by the bi-directional electricity meter. Information on electricity meter is as follows:		
	Description	Main Meter	Check Meter
	Manufacturer	Schneider Electric	Schneider Electric
	Type	ION7550	ION7550
	Serial Number	PI-1306A401-03	PI-1306A403-03
	Accuracy Class	0.2	0.2
	Calibration Frequency	5 years	5 years
	Date of last calibration	14/06/2013	15/06/2013
	Validity of meters	13/06/2018	14/06/2018
Measuring/reading/recording frequency	The quantity of electricity supplied to the grid will be measured continuously (hourly measurement) and recorded monthly.		
Calculation method (if applicable)	The net electricity supplied to a grid is the difference between the measured quantities of the grid electricity export and import.		
QA/QC procedures	Monitored data is cross-checked with invoices. The electricity meter is periodically calibrated according to the national standard NRS 057: 2009.		
Purpose of data	Calculation of baseline emissions		
Additional comments	Electricity consumed by the office and auxiliary equipment is separately imported from the grid through the back-up line and is monitored by the electricity meter (S/N: 310780895352). The amount of this consumption is included in the calculation of electricity import.		

G.3. Implementation of specific-case CPA level sampling plan

All CPAs are individually monitored and no sampling plan was implemented.

SECTION H. Calculation of GHG emission reductions or net GHG removals by sinks

H.1. Calculation of baseline emissions or baseline net GHG removals by sinks

CPA 7570-0001

The baseline emissions are calculated by using Equation (1) of AMS-I.D.- Grid connected renewable electricity generation (version 17) as below:

$$BE_y = EG_{BL,y} * EF_{CO_2,grid,y}$$

Where:

BE_y = Baseline Emissions in year y (tCO₂)

$EG_{BL,y}$ = Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh)

$EF_{CO_2,grid,y}$ = Emission factor of the grid in year y (tCO₂/MWh)

Therefore, the baseline emissions are:

$$\begin{aligned}
 BE_y &= EG_{BL,y} * EF_{CO2,grid,y} \\
 &= 28,274 \text{ MWh} * 0.9801 \text{ tCO}_2/\text{MWh} \\
 &= 27,711 \text{ tCO}_2
 \end{aligned}$$

Summary of Baseline Emissions:

<i>Period</i>	<i>BE_y (tCO₂)</i>
01/06/2014 to 30/06/2015	27,711

Detailed calculation has been provided to the DOE in a separate spreadsheet.

CPA 7570-0002

The baseline emissions are calculated by using Equation (1) of AMS-I.D.- Grid connected renewable electricity generation (version 17) as below:

$$BE_y = EG_{BL,y} * EF_{CO2,grid,y}$$

Where:

BE_y = Baseline Emissions in year y (tCO₂)

$EG_{BL,y}$ = Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh)

$EF_{CO2,grid,y}$ = Emission factor of the grid in year y (tCO₂/MWh)

Therefore, the baseline emissions are:

$$\begin{aligned}
 BE_y &= EG_{BL,y} * EF_{CO2,grid,y} \\
 &= 32,182 \text{ MWh} * 0.9801 \text{ tCO}_2/\text{MWh} \\
 &= 31,541 \text{ tCO}_2
 \end{aligned}$$

Summary of Baseline Emissions:

<i>Period</i>	<i>BE_y (tCO₂)</i>
01/12/2013-30/06/2015	31,541

Detailed calculation has been provided to the DOE in a separate spreadsheet.

CPA 7570-0003

The baseline emissions are calculated by using Equation (1) of AMS-I.D. - Grid connected renewable electricity generation (version 17) as below:

$$BE_y = EG_{BL,y} * EF_{CO2,grid,y}$$

Where:

BE_y = Baseline Emissions in year y (t CO₂)

$EG_{BL,y}$ = Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh)

$EF_{CO_2,grid,y}$ = Emission factor of the grid in year y (tCO₂/MWh)

Therefore, the baseline emissions are:

$$\begin{aligned} BE_y &= EG_{BL,y} * EF_{CO_2,grid,y} \\ &= 33,096 \text{ MWh} * 0.9801 \text{ tCO}_2/\text{MWh} \\ &= 32,437 \text{ tCO}_2 \end{aligned}$$

Summary of Baseline Emissions:

<i>Period</i>	<i>BE_y (tCO₂)</i>
01/12/2013-30/06/2015	32,437

Detailed calculation has been provided to the DOE in a separate spreadsheet.

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

CPA 7570-0001

CPA 7570-0001 generates electricity through Solar PV technology. For Solar PV power generation, project emissions $PE_y = 0$ as per AMS-I.D.

CPA 7570-0002

CPA 7570-0002 generates electricity through Solar PV technology. For Solar PV power generation, project emissions $PE_y = 0$ as per AMS-I.D.

CPA 7570-0003

CPA 7570-0003 generates electricity through Solar PV technology. For Solar PV power generation, project emissions $PE_y = 0$ as per AMS-I.D.

H.3. Calculation of leakage

The CPAs (CPA 7570-0001, CPA 7570-0002, CPA 7570-0003) do not use energy generating equipment that is transferred from another activity. Therefore, leakage emissions are not considered.

H.4. Summary of calculation of GHG emission reductions or net GHG removals by sinks

Specific-case CPA reference number	Baseline emissions or baseline net GHG removals by sinks (tCO ₂ e)	Project emissions or actual net GHG removals by sinks (tCO ₂ e)	Leakage (tCO ₂ e)	GHG emission reductions or net GHG removals by sinks (tCO ₂ e) achieved in the monitoring period		
				Up to 31/12/2012	From 01/01/2013	Total amount
CPA 7570-0001	27,711	0	0	0	27,711	27,711
CPA 7570-0002	31,541	0	0	0	31,541	31,541
CPA 7570-0003	32,437	0	0	0	32,437	32,437
Total	91,689	0	0	0	91,689	91,689

H.5. Comparison of GHG emission reductions or net GHG removals by sinks with estimates in the included CPA-DD(s)

Specific-case CPA reference number	Value estimated in ex ante calculation in the included CPA-DD(s)	Actual values achieved by the specific-case CPA(s) during this monitoring period
CPA 7570-0001	01/06/2014 - 30/06/2015 (395 days): 27,185	27,711
CPA 7570-0002	01/12/2013 – 30/06/2015 (577 days): 31,190	31,541
CPA 7570-0003	01/12/2013 – 30/06/2015 (577 days): 31,621	32,437
Total	89,996	91,689

Note: The values estimated in *ex ante* calculation is based on the annual GHG emission reductions for each year in the CPA-DDs during this monitoring period.

H.6. Remarks on difference from the estimated value in the included CPA-DD(s)**CPA 7570-0001**

The actual emission reductions for the 1st monitoring period is higher by 1.93 % than the estimated value in the CPA-DD. The difference is due to higher performance ratio obtained by the plant during its operation for the monitoring period. The average performance ratio of the plant for the monitoring period was forecasted to be 79.23%, however during its operation the plant obtained average performance ratio of 82.84% that ultimately contributed to higher emissions reduction than estimated value.

In addition, the application of Standardized Baseline grid emission factor of 0.9801 tCO₂/MWh for South Africa which is approximately 3.56% higher as compared to the calculated grid emission factor of 0.9464 tCO₂/MWh in the CPA-DD has further contributed to increased emission reduction.

CPA 7570-0002

The actual emission reductions for the 1st monitoring period is higher by 1.13 % than the estimated value in the CPA-DD. The difference is due to higher performance ratio obtained by the plant during its operation for the monitoring period. The average performance ratio of the plant for the monitoring period was forecasted to be 78%, however during its operation the plant obtained average performance ratio of 82% that ultimately contributed to higher emissions reduction than estimated value.

In addition, the application of Standardized Baseline grid emission factor of 0.9801 tCO₂/MWh for South Africa which is approximately 3.56% higher as compared to the calculated grid emission factor of 0.9464 tCO₂/MWh in the CPA-DD has further contributed to increased emission reduction.

CPA 7570-0003

The actual emission reductions for the 1st monitoring period is higher by 2.58% than the estimated value in the CPA-DD. The difference is due to higher performance ratio obtained by the plant during its operation for the monitoring period. The average performance ratio of the plant for the monitoring period was forecasted to be 77.8%, however during its operation the plant obtained average performance ratio of 79.8% that ultimately contributed to higher emissions reduction than estimated value.

In addition, the application of Standardized Baseline grid emission factor of 0.9801 tCO₂/MWh for South Africa which is approximately 3.56% higher as compared to the calculated grid emission factor of 0.9464 tCO₂/MWh in the CPA-DD has further contributed to increased emission reduction.

Appendix 1. Contact information of coordinating/managing entity and/or responsible persons/entities

Coordinating/managing entity and/or responsible person/entity	<input checked="" type="checkbox"/> Coordinating/managing entity <input type="checkbox"/> Person/entity responsible for completing the CDM-MR-FORM
Organization name	Additional Energy Limited
Street/P.O. Box	34B York Way
Building	
City	London
State/Region	
Postcode	N1 9AB
Country	United Kingdom of Great Britain and Northern Ireland
Telephone	
Fax	
E-mail	geoff@additionalenergy.com
Website	www.additionalenergy.com
Contact person	Geoff Sinclair
Title	
Salutation	Mr
Last name	Sinclair
Middle name	
First name	Geoff
Department	
Mobile	+44 7780 706728
Direct fax	
Direct tel.	
Personal e-mail	

Coordinating/managing entity and/or responsible person/entity	<input type="checkbox"/> Coordinating/managing entity <input checked="" type="checkbox"/> Person/entity responsible for completing the CDM-MR-FORM
Organization name	Additional Energy Limited
Street/P.O. Box	34B York Way
Building	
City	London
State/Region	
Postcode	N1 9AB
Country	United Kingdom
Telephone	+61 402643154
Fax	
E-mail	anil@additionalenergy.com
Website	www.additionalenergy.com
Contact person	Anil Bhatta
Title	Technical Director
Salutation	Mr
Last name	Bhatta
Middle name	
First name	Anil
Department	
Mobile	+61402643154
Direct fax	
Direct tel.	
Personal e-mail	anil@additionalenergy.com

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