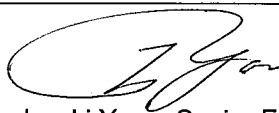




**Verification and certification report form for CDM programme of activities**  
(version 01.0)

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

**VERIFICATION AND CERTIFICATION REPORT**

<b>Title of the programme of activities (PoA)</b>	Green Power for South Africa	
<b>UNFCCC reference number of the PoA</b>	7167	
<b>Version number(s) of the PoA-DD(s) applicable to this report</b>	Version 10	
<b>Version number of the verification and certification report</b>	02	
<b>Completion date of the verification and certification report</b>	06/07/2016	
<b>Monitoring period number</b>	1	
<b>Duration of this monitoring period</b>	01/06/2013 – 30/06/2015	
<b>Number and version number of the monitoring report to which this report applies</b>	Monitoring report number: 02 Monitoring report version number: 03	
<b>Coordinating/managing entity (CME)</b>	Additional Energy Limited	
<b>Host Party(ies)</b>	Host Party(ies) of the PoA	Is this a host Party to a CPA covered in this report? (yes/no)
	Republic of South Africa	Yes
<b>Sectoral scope(s)</b>	1. Energy industries (renewable / non-renewable sources)	
<b>Selected methodology(ies)</b>	ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (ver. 12.3.0)	
<b>Selected standardized baseline(s)</b>	N/A	
<b>Total estimated GHG emission reductions or net GHG removals for this monitoring period in the included CPA(s) covered in this report</b>	239,797 tCO <sub>2</sub> e	
<b>Total certified GHG emission reductions or net GHG removals for this monitoring period for the included CPA(s) covered in this report</b>	257,077 tCO <sub>2</sub> e	
<b>Name of DOE</b>	Japan Quality Assurance Organization	
<b>Name, position and signature of the approver of the verification and certification report</b>	 Tadayuki Yano, Senior Executive	

## SECTION A. Executive summary

### **Brief Summary**

Japan Quality Assurance Organization (JQA) has performed the 1<sup>st</sup> periodic verification of the emission reductions achieved by the large-scale registered CDM PoA "Green Power for South Africa (Ref. 7167, registered on 14/12/2012)" under the contract with Additional Energy Limited. The verification covers the monitoring period from 01/06/2013 to 30/06/2015. CPA 7167-0002 under the registered PoA was implemented during the 1<sup>st</sup> monitoring period and the emission reductions achieved by the implementation of CPA 7167-0002 were claimed for this monitoring period.

The objective of the registered PoA is to generate electricity using solar or wind energy and to contribute to the reduction of GHG emissions from grid electricity which is mainly supplied by coal-fired power stations.

Through the verification of CPA 7167-0002, JQA raised four CARs and six CLs. As a result of the resolution of these CARs/CLs, JQA confirms that CPA 7167-0002 and its monitoring activities are implemented and operated in accordance with the registered PoA-DD, the registered monitoring plan and the applied methodology/ tools.

The GHG emission reductions are transparently and correctly calculated in accordance with the methodology ACM0002 (ver.12.3.0) and the CPA-DD under the registered PoA-DD. JQA determines that the claimed emission reductions of 257,077 tCO<sub>2</sub>e in the 1<sup>st</sup> monitoring period achieved by CPA 7167-0002 are free from material errors, omissions or misstatements with a reasonable level of assurance.

### **Scope of verification**

The Monitoring Report (ver. 01 and ver. 03) and the ER Calculation Spreadsheet (ver. 1.0 and ver. 03) were reviewed against:

- Decisions by UNFCCC
- Kyoto Protocol
- Decision 3 / CMP.1
- Relevant decisions of COP/MOP and CDM-EB
- Monitoring report form for CDM programme of activities (ver. 01.0) including Attachment: Instructions for filling out the monitoring report form for CDM programme of activities
- CDM Validation and Verification Standard (VVS) (ver. 09.0)
- CDM Project Standard (PS) (ver. 09.0)

The MR and the ER calculation spreadsheet were also assessed to confirm their conformities with the following documents:

- Registered PoA-DD
- Registered CPA-DD of CPA 7167-0002 under the registered PoA
- Validation Reports of the registered PoA-DD and each CPA-DD
- ACM0002- Consolidated baseline methodology for grid-connected electricity generation from renewable sources (ver. 12.3.0)
- Tool to calculate the emission factor for an electricity system (ver. 02.2.1)
- Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion (ver. 02)
- Combined tool to identify the baseline scenario and demonstrate additionality (ver. 04.0.0)
- Tool for the demonstration and assessment of additionality (ver. 06.1.0)
- All supporting documents relevant to the MR and the ER calculation

### **Verification process**

The verification process of JQA consists of the following steps:

- 1) Desk review of relevant documents including MR provided from the CME and each CPA developer;
- 2) Materiality assessment and preparation of verification and sampling plan
- 3) On-site assessment including site-tour, interview with the relevant personnel, cross-check of the data and the calculation for GHG emission reductions, and identification of the PPs' quality control and the quality assurance procedures;
- 4) Resolution of corrective action requests (CARs) and clarification requests (CLs); In case that forward action requests (FARs) are raised, the CME and CPA implementer are expected to address the issues for the next verification period;
- 5) Preparation of the draft Verification and Certification Report; and
- 6) Internal quality control (Technical Review) and final decision on the issuance of Verification and Certification Report

In order to ensure transparency, CDM Verification Checklist is customized for the project according to VVS and decisions/rulings issued by the CDM-EB. Issues identified in the verification process are indicated under the titles "CAR", "CL" and "FAR" in the checklist and are listed in Appendix 4 of this report. The verification process does not provide the project participants with any consulting service. However, appropriate actions to CARs, CLs and FARs could contribute to improve monitoring documentations and monitoring activities.

The criteria for CAR, CL and FAR according to VVS are as follows:

#### CAR (Corrective Action Request)

- a) Non-compliance with the monitoring plan or methodology are found in monitoring and reporting and has not been sufficiently documented by the project participants, or if the evidence provided to prove conformity is insufficient
- b) Modifications to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the project participants;
- c) Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impact the quantity of emission reductions;
- d) Issues identified in a FAR during validation to be verified during verification or previous verification(s) have not been resolved by the project participants.

#### CL (Clarification Request)

- a) Information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

#### FAR (Forward Action Request)

- a) Monitoring and reporting require attention and/or adjustment for the next verification period.

JQA lists all issues and findings in Appendix 4 of this report.

### **Verification conclusion**

Based on the 1<sup>st</sup> periodic verification of the registered PoA "Green Power for South Africa" and CPA 7167-0002 for the monitoring period between 01/06/2013 and 30/06/2015, JQA confirms that the registered PoA and CPA 7167-0002 and its monitoring activities are implemented and operated in accordance with the registered PoA-DD and CPA-DD, the registered monitoring plan and the monitoring methodology/ tools.

The GHG emission reductions are transparently and correctly calculated based on the methodology ACM0002 (ver. 12.3.0). JQA determines that the claimed emission reductions of 257,077 tCO<sub>2</sub>e in the 1<sup>st</sup> monitoring period are free from material errors, omissions or misstatements with a reasonable level of assurance.

**SECTION B. Verification team, technical reviewer and approver****B.1. Verification team members**

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interview(s)	Verification findings
1.	Team Leader	EI	Yoshida	Tadashi	N/A	x	x	x	x
2.	Verifier	IR	Motokawa	Hiroshi	Tokyo central office	x	x	x	x

**B.2. Technical reviewer and approver of the verification and certification report**

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	IR	Hashizume	Sachiko	Tokyo central office
2.	Approver	IR	Yano	Tadayuki	Tokyo central office

**SECTION C. Means of verification****C.1. Desk review**

The desk review involves;

- A review of the data and information presented to verify their completeness;
- A review of the monitoring plan, monitoring methodology including applicable tool(s) and, where applicable, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures;
- A review of calculation and assumptions made in determining the GHG data and emission reductions;
- An evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.

Documents reviewed or referenced during the verification are listed in Appendix 3 of this report.

**C.2. On-site inspection**

Duration of on-site inspection: 30/09/2015				
No.	Activity performed on-site	Site location	Date	Team member
1.	Assessment of implementation and operation of the project activity based on the registered monitoring plan and physical features of the project activity as per PoA-DD and CPA-DD	Northern Cape Province, South Africa	30/09/2015	Tadashi Yoshida Hiroshi Motokawa
2.	Review of information flows for generating, aggregating and reporting the monitoring parameters	Northern Cape Province, South Africa	30/09/2015	Tadashi Yoshida Hiroshi Motokawa
3.	Interview with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the monitoring plan in the CPA-DD	Northern Cape Province, South Africa	30/09/2015	Tadashi Yoshida Hiroshi Motokawa
4.	Check of the monitoring equipment including calibration performance against the requirements of the CPA-DD, the applied methodology and national standards, where applicable	Northern Cape Province, South Africa	30/09/2015	Tadashi Yoshida Hiroshi Motokawa
5.	Cross-check between information provided in the monitoring report and data from other sources such as plant logbook, sales/purchase invoices or	Northern Cape Province, South Africa	30/09/2015	Tadashi Yoshida Hiroshi Motokawa
6.	Review of calculation and assumption made in determining the GHG data and emission reductions	Northern Cape Province, South Africa	30/09/2015	Tadashi Yoshida Hiroshi Motokawa
7.	Identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters	Northern Cape Province, South Africa	30/09/2015	Tadashi Yoshida Hiroshi Motokawa

**C.3. Interviews**

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Sinclair	Geoff	Additional Energy Limited	30/09/2015	CME Activities and management system	Tadashi Yoshida / Hiroshi Motokawa
2.	Bhata	Anil	Additional Energy Limited	30/09/2015	CME Activities and management system	Tadashi Yoshida / Hiroshi Motokawa
3	Krapohl	Charl	Scatec Solar Kalkbult, Assistant Supervisor	30/09/2015	CPA Implementation and management system	Tadashi Yoshida / Hiroshi Motokawa

**C.4. Sampling approach**

As the verification team verified all electricity data through cross-checking with the Check meter's data, SCADA daily data and invoices, a sampling approach was not employed. The following monitoring parameters measured by the main meter were cross-checked:

- $EG_{\text{facility},y}$  : Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh/y)

- $EG_{imported,y}$ : Quantity of electricity imported into the power plant/ used by the power plant and supplied by the grid in year y (MWh/y)

As a result of cross-checking the monthly data in the MR and ER calculation spreadsheet with their SCADA daily data, some errors were identified as mentioned in Appendix 4 of this report. These data were appropriately corrected by the PPs.

#### C.4. Clarification requests, corrective action requests and forward action requests raised

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
<b>General</b>			
Compliance of the monitoring report with the monitoring report form	-	-	-
Remaining forward action requests from validation and/or previous verification	-	-	-
Specific-case CPA(s) considered for verification and covered in this report	-	-	-
<b>Programme of activities</b>			
Compliance of the programme implementation with the registered PoA-DD	1	-	-
Implementation and operation of the management system	1	-	-
Post-registration changes			
<ul style="list-style-type: none"> <li>Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline</li> </ul>	-	-	-
<ul style="list-style-type: none"> <li>Corrections</li> </ul>	-	-	-
<ul style="list-style-type: none"> <li>Inclusion of a monitoring plan in a registered PoA-DD (including its generic CPA-DD(s))</li> </ul>	-	-	-
<ul style="list-style-type: none"> <li>Permanent changes to the monitoring plan as described in the registered PoA-DD, applied methodology, or applied standardized baseline</li> </ul>	-	-	-
<ul style="list-style-type: none"> <li>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</li> </ul>	-	-	-
<ul style="list-style-type: none"> <li>Types of changes specific to afforestation and reforestation activities</li> </ul>	-	-	-
<b>Component project activity(ies)</b>			
Compliance of the CPA implementation with the included CPA design document	1	-	-
Post-registration changes			
<ul style="list-style-type: none"> <li>Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline</li> </ul>	-	-	-
<ul style="list-style-type: none"> <li>Corrections</li> </ul>	-	-	-
<ul style="list-style-type: none"> <li>Changes to the start date of the crediting period</li> </ul>	-	-	-
<ul style="list-style-type: none"> <li>Inclusion of a monitoring plan to an included CPA-DD</li> </ul>	-	-	-
<ul style="list-style-type: none"> <li>Permanent changes to the monitoring plan as described in the included CPA-DD, applied methodology, or applied standardized baseline</li> </ul>	-	-	-
<ul style="list-style-type: none"> <li>Changes to the programme design of the included CPA-DD</li> </ul>	-	-	-
<ul style="list-style-type: none"> <li>Types of changes specific to afforestation and reforestation component project activities</li> </ul>	-	-	-
Compliance of the monitoring plan with the monitoring	-	-	-

methodology including applicable tool and standardized baseline			
Compliance of monitoring activities with the registered monitoring plan			
• Data and parameters fixed ex ante or at renewal of crediting period	1	-	-
• Data and parameters monitored	1	2	-
• Implementation of sampling plan	-	-	-
Compliance with the calibration frequency requirements for measuring instruments	-	-	-
Assessment of data and calculation of emission reductions or net removals			
• Calculation of baseline GHG emissions or baseline net GHG removals by sinks	-	1	-
• Calculation of project GHG emissions or actual net GHG removals by sinks	-	-	-
• Calculation of leakage GHG emissions	-	-	-
• Summary of calculation of GHG emission reductions or net GHG removals by sinks	-	-	-
• Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included specific-case CPA	-	1	-
• Remarks on difference from estimated value in registered PDD	1	-	-
Others (please specify)	-	-	-
<b>Total</b>	<b>6</b>	<b>4</b>	<b>0</b>

#### SECTION D. Internal quality control

The following are implemented in line with the procedure for internal quality control prescribed by JQA CDM Quality Manual and relevant procedures.

First, the verification team establishes the draft verification report including draft conclusion and submits the draft verification report and other documents needed for the review to the technical reviewer. The reviewer verifies appropriateness of the draft conclusion on the verification of the project activity and its procedures. Then the reviewer reports the review results to the verification team. The verification team responds to the reviewer's comments and revises the documents, if necessary. The team leader of the verification team reports the review result to the Senior Executive of JQA. Finally, the Senior Executive approves the emission reductions achieved by the CDM Project and issues the Verification and Certification Report.

#### SECTION E. Verification opinion

JQA has performed the 1<sup>st</sup> periodic verification of emission reductions achieved by the registered CDM PoA project "Green Power for South Africa" (Ref. 7167; registered on 14/12/2012) for the period of 01/06/2013 - 30/06/2015, under the contract with Additional Energy Limited which is the CME for the PoA, as reported in the Monitoring Report (ver. 03) dated 22/06/2016. The CME is responsible for the collection of data in accordance with the monitoring plan and for the reporting of GHG emission reductions from the implementation of the registered PoA.

The following 11 CPAs are included under the registered CDM PoA:

- 7167-0001 Scatec Solar Linde CPA-001 (SSL CPA-001),
- 7167-0002 Scatec Solar Kalkbult CPA-002 (SSK CPA-002),
- 7167-0003 AE-AMD Herbert CPA-003 (AEH CPA-003),

- 7167-0004 Erika Energy Soutpan CPA-004 (EES CPA-004),
- 7167-0005 Core Energy Witkop CPA-005 (CEW CPA-005),
- 7167-0006 Solar Capital De Aar 1 CPA-006 (SCDA1 CPA-006),
- 7167-0007 Solar Capital De Aar 3 CPA-007 (SCDA3 CPA-007),
- 7167-0008 Lesedi 74.96 MW Solar PV Project CPA-008,
- 7167-0009 Letsatsi 74.96 MW Solar PV Project CPA-009,
- 7167-0010 Scatec Solar Dreunberg CPA-010,
- 7167-0011 Boshof Solar Park CPA-011

One of them listed above, *i.e.*, CPA 7167-0002, was implemented during the 1<sup>st</sup> monitoring period and the emission reductions achieved by the implementation of the CPA were claimed for this monitoring period. The implementation period of the CPA 7167-0002 is 01/09/2013 – 30/06/2015.

JQA has performed the verification of CPA 7167-0002 under the registered PoA as per VVS to check whether the CDM Project is implemented and operated in accordance with the registered PDD, its monitoring plan, the applied monitoring methodologies/ tools and decisions/ rulings by Kyoto Protocol, UNFCCC, CMP and CDM-EB. The verification process includes the desk review of the relevant documents, on-site assessment including data cross-check and site inspection, resolution of CARs and CLs, preparation of Draft Verification Report, internal quality control and the final approval of Verification and Certification Report.

JQA confirms that the monitoring report is completed using the latest version 01.0 of monitoring report form which is valid at the time of making publicly available on the UNFCCC website, and the evidence and information provided by the CME are sufficient and reliable.

During the course of verification and on-site visit, the electricity data in the MR and ER calculation spreadsheet were cross-checked with the SCADA daily data and invoices. The procedures for data monitoring, recording, aggregation and calculation were also verified.

Through the resolution of four CARs and six CLs raised in this verification, JQA confirms that CPA 7167-0002 under the registered PoA was correctly implemented and operated in accordance with the applied methodology, monitoring plan and the registered / included CPA-DDs.

In conclusion, JQA has confirmed that CPA 7167-0002 under the registered PoA result in the emission reductions of 257,077 tCO<sub>2</sub>e during the 1<sup>st</sup> monitoring period from 01/06/2013 to 30/06/2015.

## **SECTION F. Certification statement**

JQA has performed the 1<sup>st</sup> periodic verification of the registered PoA “Green Power for South Africa” (Ref. 7167). The PoA involves electricity generation by the utilization of wind and solar energy to displace grid electricity which is mainly supplied by centralised coal-fired power stations.

The verification was performed for CPA 7167-0002 under the registered PoA to identify the compliance of the component projects with implementation and monitoring requirements. The verification was based on the registered PoA-DD, CPA-DD and the monitoring report for this project which are provided by the CME, Additional Energy Limited, and conducted through the desk review of relevant documents, on-site inspection and interview with the CME and CPA developers to check whether the provisions of the monitoring methodology and the monitoring plan were consistently and appropriately applied and the evidences supporting the reported data were appropriately collected.

JQA has confirmed that CPA 7167-0002 under the registered PoA is appropriately implemented and operated in accordance with the monitoring methodology ACM0002 (ver. 12.3.0) and the monitoring plan of the CPA-DD under the registered PoA. JQA hereby certifies that the emission



reductions achieved in the 1<sup>st</sup> monitoring period from 01/06/2013 to 30/06/2015 by the registered CDM PoA “Green Power for South Africa” are 257,077 tCO<sub>2</sub>e and are free from material errors, omissions or misstatements with a reasonable level of assurance. The GHG emission reductions stated in the revised MR (ver. 03) and the revised ER calculation spreadsheet (ver. 03) are transparently and correctly calculated throughout the 1<sup>st</sup> monitoring period by applying the methodology/ tools.

The amounts of emission reductions achieved by each CPA for this monitoring period are as follows;

CPAs (included in this request)	Emission reductions in this monitoring period	
	Up to 31/12/2012	01/01/2013 onwards
CPA 7167 – 0002	--	257,077
<b>Total</b>	--	<b>257,077</b>

## SECTION G. Verification findings - General

### G.1. Compliance of the monitoring report with the monitoring report form

<b>Means of verification</b>	It is confirmed through the review of relevant documents that the monitoring report is completed using the valid version (ver. 01.0) of the CDM-PoA-MR-FORM at the time of making publicly available on the UNFCCC website, and in accordance with the instructions for filling out the monitoring report form.
<b>Findings</b>	N/A
<b>Conclusion</b>	JQA concludes that the MR is completed using the valid version of monitoring report form. Therefore, this section is closed.

### G.2. Remaining forward action requests from validation and/or previous verification

This is the 1<sup>st</sup> periodic verification of the project. Through the review of the validation reports of the registered PoA-DD and CPA-DD of CPA 7167-0002, it is confirmed that there are no remaining FARs from their validations.

### G.3. Specific-case CPA(s) considered for verification and covered in this report

Reference number of the specific-case CPA included in the PoA as of the end of this monitoring period	Is the specific-case CPA considered for this verification? (yes/no)	Version number of the registered PoA-DD to which the specific-case CPA complies with	Confirmation that a request for issuance including the specific-case CPA has been published for the previous monitoring period (Y/N)
7167-0001	No	Version 10	No
7167-0002	Yes	Version 10	No
7167-0003	No	Version 10	No
7167-0004	No	Version 10	No
7167-0005	No	Version 10	No
7167-0006	No	Version 10	No
7167-0007	No	Version 10	No
7167-0008	No	Version 10	No
7167-0009	No	Version 10	No
7167-0010	No	Version 10	No

7167-0011	No	Version 10	No
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## SECTION H. Verification findings – Programme of activities

### H.1. Compliance of the programme implementation with the registered programme design document

<b>Means of verification</b>	<p>The purpose of the registered PoA is to generate electricity through the utilization of wind or solar energy and to reduce the GHG emission reductions by displacing the electricity from the grid which is mainly supplied by the operation of coal-fired power stations.</p> <p>The boundary of the PoA is defined as the geographical area where large-scale CPAs included in the PoA are implemented, <i>i.e.</i>, the Republic of South Africa. Each CPA is identified uniquely with the address and GPS coordinates, which prevents incidences of double counting. The Western Cape Province has the best potential for wind energy and the Northern Cape Province has the best solar resource in the country.</p> <p>All power generated by the projects under the registered PoA is fed into the national grid and hence displaces the electricity generated from centralized coal-fired power stations. All CPAs consist of a wind or solar PV powered facilities with various capacities from small (&lt;5 MW) to large (&gt;100 MW) renewable energy.</p> <p>It is confirmed through the review of the relevant documents, on-site inspection and the interview with the CPA developer that CPA 7167-0002 implemented under the registered PoA is assigned into large-scale power generation project using solar energy which are located in the Northern Cape Province of South Africa, and its capacity is 75 MW. These findings are in accordance with the description in the registered PoA.</p> <p>Through the review of technical specification of facilities (such as PV module, inverter and electricity meter) provided by the CME/CPA developers and the physical on-site inspection on 30/09/2015, it was confirmed that all physical features (technology, project equipment, and monitoring and metering equipment) of the CPA under the registered PoA were in place and that the CME/CPA developer had operated and implemented as planned in the registered PoA. As per the eligibility criteria (No.4) for the inclusion of a CPA in the Green Power for South Africa PoA, the starting date of the CPA shall be after 18/11/2011, which is the start date of the PoA when the PoA-DD was first published for the global stakeholder consultation process. It is confirmed through the review of the relevant documents and the interview with the CPA developer that the start date of CPA 7167-0002 (<i>i.e.</i>, 14/12/2011) implemented under the registered PoA is after 18/11/2011.</p> <p>The verification covers the 1<sup>st</sup> monitoring period of 01/06/2013 - 30/06/2015. Through the 1<sup>st</sup> verification of the project activity, it is confirmed that any deviations or actual changes are not identified in the implementation or operation of the registered PoA-DD.</p> <p>Through the review of the electricity data and the interview with the CME/CPA developer, it is confirmed that CPA 7167-0002 and its monitoring activity are implemented and operated in accordance with the registered PoA, the registered monitoring plan and the monitoring methodology/ tools. Namely, the quantity of electricity exported/ imported by the project activity is continuously measured with main and check electricity meters and daily recorded by SCADA system. The monthly electricity data measured is cross-checked with invoices issued by the grid company.</p> <p>The value of <math>EF_{grid,CM,y}</math> (0.9721 tCO<sub>2</sub>/MWh) is provided in the PoA-DD and CPA-DD in which this parameter was determined <i>ex-ante</i> using "Tool to calculate the</p>
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	<p>emission factor for an electricity system".</p> <p>The GHG emission reductions are transparently and correctly calculated based on the methodology ACM0002 (ver. 12.3.0) and the registered PoA. JQA determines that the claimed emission reductions of 257,077 tCO<sub>2</sub>e in the 1<sup>st</sup> monitoring period are free from material errors, omissions or misstatements with a reasonable level of assurance.</p>
<b>Findings</b>	N/A
<b>Conclusion</b>	JQA concludes that CPA 7167-0002 under the registered PoA has been operated and implemented in accordance with the description contained in the registered PoA. Thus, this section is closed.

## H.2. Implementation and operation of the management system

<b>Means of verification</b>	<p>Additional Energy Limited is the Coordinating/Managing Entity (CME) of Green Power for South Africa Programme of Activities (PoA). Previously, Standard Bank Plc was the CME of the PoA. Additional Energy Limited was approved as the CME by the UNFCCC on 27/11/2015 and is responsible for overseeing the overall implementation of the PoA. As a CME, Additional Energy Limited has the following responsibilities:</p> <ul style="list-style-type: none"> <li>- Coordination of the monitoring activities of CPAs included under the PoA,</li> <li>- Maintenance of all monitoring reports of all CPAs in accordance with record keeping systems outlined in the CDM PoA-DD,</li> <li>- Provision of all monitoring reports to the DOE, and</li> <li>- Submission of requests for issuance as agreed with project participants.</li> </ul> <p>In accordance with the CPA Participation Agreement between CME and CPA developer, CPA developer is initially required to provide basic information on the location of the CPA, installed capacity of the power plant, technical specification of PV module and inverter, details of main and check electricity meters. It is confirmed through the review of relevant documents and the interview with the CME/CPA developer that these information are compiled in "CME Database Sheet".</p> <p>CPA developer is further requested to monitor electricity data such as <math>EG_{facility,y}</math> and <math>EG_{imported,y}</math> and to send them electronically to the CME on a monthly basis. The data is recorded in an Excel spreadsheet entitled "CPA specific data recording sheet" which is provided by the CME to CPA developer. The QA/QC of monitored data is performed by CPA developer according to "Procedure for PoA Data Quality Check" which is provided by the CME.</p> <p>It is confirmed through the review of relevant documents and the interview with the CME/CPA developer that the role and responsibilities of the CME/ CPA developer and data information flow are stipulated in "Monitoring Guidelines for CPA Developers" for the registered PoA, which is prepared by the CME on 19/11/2013, and that CPA 7167-0002 is appropriately monitored and managed in accordance with the "Monitoring Guideline" and "Procedure for PoA Data Quality Check".</p>
<b>Findings</b>	- Regarding the implementation of management system in Section B.1, CL 02 was raised and resolved as described in Table 2 of Appendix 4.
<b>Conclusion</b>	JQA concludes that CPA 7167-0002 under the registered PoA has been appropriately monitored and managed in accordance with the "Monitoring Guideline" and "Procedure for PoA Data Quality Check" which are provided by the CME. Thus, this section is closed.

**H.3. Post-registration changes****H.3.1. Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline**

Not applicable

**H.3.2. Corrections**

Not applicable

**H.3.3. Inclusion of a monitoring plan in a registered PoA-DD (including its generic CPA-DD(s))**

Not applicable

**H.3.4. Permanent changes to the monitoring plan as described in the registered PoA-DD, applied methodology, or applied standardized baseline**

Not applicable

**H.3.5. 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**

Not applicable.

**H.3.6. Types of changes specific to afforestation and reforestation activities**

Not applicable

**SECTION I. Verification findings – Component project activity(ies)****I.1. Compliance of the CPA implementation with the included CPA design document**

<b>Means of verification</b>	There are eleven specific CPAs (from 7167-0001 to 7167-0011) included in the registered PoA, which are all grouped into the large-scale photovoltaic (PV) projects using solar energy, at the end of the current monitoring period. One of them ( <i>i.e.</i> , 7167-0002) is implemented and operated in the 1 <sup>st</sup> monitoring period as follows:	
	CME	Additional Energy Limited
	Title of the PoA	Green Power for South Africa
	UNFCCC registration No.	7167
	Applied methodology	ACM0002 (ver. 12.3.0)
	Start date of the PoA	18/11/2011
	Title of the CPA	Scatec Solar Kalkbult CPA-002 (SSK CPA-002)
	CPA reference No.	7167-0002
	Installed capacity	75 MWp
	Date of inclusion	28/02/2013
	CPA start date	14/12/2011

	Start date of operation	01/09/2013
	CPA developer	Scatec Solar South Africa (Pty) Ltd.
	Project scale	Large-scale
	Location of the CPA	Northern Cape province, South Africa
	GPS coordinates	S30°09'34" E24°07'50"
	CPA crediting period	01/06/2013 – 31/05/2023 (Fixed)
	Implementation period of CPA	01/09/2013 – 30/06/2015
<p>CPA 7167-0002 projects implemented under the registered PoA is located in the Northern Cape province of South Africa and its installed capacity is 75 MWp. The PV generation system comprises of solar PV module, DC/AC inverter, 22kV/132kV transformer, electricity meters, SCADA and Communications system and grid substation. The back-up battery system for emergency use is installed on-site to supply electricity to the measuring system. All electricity generated by the projects is exported to the national grid of South Africa - Eskom. Exported/imported electricity are continuously measured by the main/check electricity meters and continuously recorded through the SCADA system in an Excel spreadsheet entitled "CPA specific data recording sheet" provided by the CME. The electricity data aggregated on a monthly basis is reported to the CME. CPA 7167-0002 project consists of only one site and is not with phased implementation.</p> <p>Through the review of technical specification of facilities provided by the CME/CPA developer and the physical on-site inspection on 30/09/2015, it is confirmed that all physical features (technology, project equipment, and monitoring and metering equipment) of CPA 7167-0002 under the registered PoA were in place and that the PPs had operated and implemented as planned in the registered CPA-DD. The start date of the CPA was after 18/11/2011 which is the start date of the PoA, being first published for the global stakeholder consultation process.</p> <p>The verification covers the 1<sup>st</sup> monitoring period between 01/06/2013 and 30/06/2015, which is within the 10-years fixed crediting period. Through the 1<sup>st</sup> verification of the project activity, it is confirmed that no post-registration changes to the CPA-DD are identified in the implementation and operation of the registered CPA 7167-0002.</p> <p>It is confirmed that the project activities and its monitoring activities are implemented and operated in accordance with the CPA-DD, the registered monitoring plan and the monitoring methodology/ tools.</p>		
<b>Findings</b>	<ul style="list-style-type: none"> <li>- Regarding the brief description of the registered PoA in Section A.1, CL 01 was raised and resolved as described in Table 2 of Appendix 4.</li> <li>- Regarding the relevant dates of the CPA in Section D.1, CL 03 was raised and resolved as described in Table 2 of Appendix 4.</li> </ul>	
<b>Conclusion</b>	JQA concludes that CPA 7167-0002 under the registered PoA has been implemented and operated in accordance with the description contained in the registered CPA-DD. Thus, this section is closed.	

## I.2. Post-registration changes

### I.2.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline

Not applicable

**I.2.2. Corrections**

Not applicable

**I.2.3. Changes to the start date of the crediting period**

Not applicable

**I.2.4. Inclusion of a monitoring plan to an included CPA-DD**

Not applicable

**I.2.5. Permanent changes to the monitoring plan as described in the included CPA-DD, applied methodology, or applied standardized baseline**

Not applicable

**I.2.6. Changes to the programme design of the included CPA-DD**

Not applicable

**I.2.7. Types of changes specific to afforestation and reforestation component project activities**

Not applicable

**I.3. Compliance of monitoring plan with the monitoring methodology including applicable tool and standardized baseline**

<b>Means of verification</b>	It is confirmed through the desk review of relevant documents that the monitoring plan in the registered CPA-DD contains all monitoring parameters required by ACM0002 (ver. 12.3.0), <i>i.e.</i> , $EG_{\text{facility},y}$ and $EG_{\text{imported},y}$ , which are used to determine emission reductions. The monitoring frequency and recording of electricity data are also specified by ACM0002, <i>i.e.</i> , Continuous measurement and at least monthly recording.
<b>Findings</b>	N/A
<b>Conclusion</b>	JQA concludes that the monitoring plan of the registered CPA-DD fully complies with ACM0002 (ver. 12.3.0) and tools applied to the CDM Project. Thus, this section is closed.

**I.4. Compliance of monitoring activities with the registered monitoring plan****I.4.1. Data and parameters fixed ex ante or at renewal of crediting period**

<b>Means of verification</b>	<p>It is confirmed through the review of the relevant documents that the following data and parameters fixed <i>ex-ante</i> are listed in Section G.1 of the MR, and that it is consistent with the registered CPA-DD as follows:</p> <ul style="list-style-type: none"> <li>- <math>EF_{\text{grid,CM},y}</math> : Combined margin CO<sub>2</sub> emission factor for the project electricity system applicable to the wind and solar power generation in year y (0.9721 tCO<sub>2</sub>/MWh)</li> </ul> <p>The parameter of <math>EF_{\text{grid,CM},y}</math> (0.9721 tCO<sub>2</sub>/MWh) is provided in the CPA-DD in which</p>
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	this parameter was determined <i>ex-ante</i> using "Tool to calculate the emission factor for an electricity system" at the time of validation.
<b>Findings</b>	- Regarding the combined margin CO <sub>2</sub> emission factor of the grid in Section G.1, CL 05 was raised and resolved as described in Table 2 of Appendix 4.
<b>Conclusion</b>	JQA concludes that the default value (0.9801 tCO <sub>2</sub> /MWh) of EF <sub>grid,CM,y</sub> derived from Standardized baseline ASB0001 is not applicable to the calculation of baseline emissions as per para. 142(a) of VVS (ver. 09) and the value (0.9721 tCO <sub>2</sub> /MWh) fixed <i>ex-ante</i> in the registered PoA shall be applied throughout the crediting period. The MR (ver. 03) is revised by using the correct value of EF <sub>grid,CM,y</sub> fixed <i>ex-ante</i> in the registered PoA. Therefore, this section is closed.

#### 1.4.2. Data and parameters monitored

<b>Means of verification</b>	<p>It is confirmed through the review of the relevant documents, on-site inspection and the interview with the CME/CPA developers that the following data and parameters monitored are listed in Section G.2 of the MR, and that they are consistent with the monitoring plan in the registered CPA-DD as follows:</p> <p>(a) The monitoring plan including the measurement of electricity generated and consumed is properly implemented by the CPA developer,</p> <p>(b) All parameters have been monitored as follows:</p> <p>(i) Project emission parameters; No parameters are included as fossil fuels are not used on-site.</p> <p>(ii) Baseline emission parameters;</p> <p>- EG<sub>facility,y</sub> : Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh)</p> <p>- EG<sub>imported,y</sub> : Quantity of electricity imported into the power plant/used by the power plant and supplied by the grid in year y (MWh)</p> <p>(iii) Leakage parameters: No leakage emissions are considered as per ACM0002 (ver. 12.3.0).</p> <p>(iv) Management and operational system:</p> <p>The roles and responsibilities of the CME and CPA developers, monitoring parameters and data flow are clearly described in Section F of the MR, which is fully consistent with the monitoring plan in the registered CPA-DD. The electricity data aggregated on a monthly basis is reported to the CME who reviews and records the data in the CME database. Then, the CME calculates emission reductions and prepares Monitoring Report. The CME provides "Monitoring Guideline for CPA Developers" and "Procedure for PoA Data Quality Check" to the CPA developer on how the monitoring should be conducted and data to be collected for the calculation of emission reductions.</p> <p>Furthermore, the training of the CDM staffs for the operation/ maintenance of the plant and data monitoring was conducted on 06/08/2014 during the 1<sup>st</sup> monitoring period. It is confirmed through the review of the relevant documents and the interview with the CME/CPA developer that the management and operational system are well organized to implement the monitoring activity.</p> <p>(c) The measuring equipment (main/check electricity meters) used for monitoring is installed/ controlled/ calibrated in accordance with the monitoring plan and national standards (NRS 057: 2009). It is confirmed through the on-site inspection that the manufacturer, type, serial number, accuracy class of these meters are fully consistent with those in the MR. The main and check meters are bidirectional type which can measure both export and import electricity. CPA 7167-0002 installs back-up battery system for emergency use instead of grid electricity import.</p> <p>(d) Electricity data are continuously measured by the main and check meters installed at the grid transformer substation, and daily recorded and then monthly aggregated, in accordance with the monitoring plan in the registered CPA-DD. The records of monitored data are cross-checked with the invoices issued by the grid</p>
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	company Eskom.  (e) The calibration of electricity meters is conducted by the CPA developer every five years according to the national standard (NRS 057: 2009).
<b>Findings</b>	<ul style="list-style-type: none"> <li>- Regarding the purpose of data for <math>EG_{imported,y}</math> in Section G.2, CAR 01 was raised and resolved as described in Table 3 of Appendix 4.</li> <li>- Regarding the lack of information on electricity meter in Section G.2, CAR 02 was raised and resolved as described in Table 3 of Appendix 4.</li> <li>- Regarding the staff training and cross-checking of the monitored data in Section F, CL 06 was raised and resolved as described in Table 2 of Appendix 4.</li> </ul>
<b>Conclusion</b>	JQA concludes that the monitoring activities including QA/QC procedures have been appropriately carried out in accordance with the registered monitoring plan and the methodology/ tools applied. Therefore, this section is closed.

### I.4.3. Implementation of sampling plan

<b>Means of verification</b>	CPA 7167-0002 monitors electricity data individually. Therefore, the sampling plan is not required for the CPA. Thus this item is not applicable.
<b>Findings</b>	N/A
<b>Conclusion</b>	N/A

### I.5. Compliance with the calibration frequency requirements for measuring instruments

<b>Means of verification</b>	<p>The applied methodology ACM0002 (ver. 12.3.0) does not specify any requirements for the calibration frequency of measuring equipment, but “Monitoring Guideline for CPA Developers” prepared by the CME states that CPA developer is responsible for calibration of the monitoring equipment, <i>i.e.</i>, electricity meters, according to National standard NRS 057: 2009 or as per the meter manufacturer’s guidelines. According to NRS 057: 2009, the calibration frequency of electricity meter with a load level of 10 MVA to &lt;100 MVA is five years.</p> <p>The calibration certificates of electricity meters and the certificate of calibration entity are provided by the CME/CPA developer. It is confirmed that the electricity meters are calibrated by the authorized entity (Power Meter Technics (Pty) Ltd., Accreditation No. 143, valid from 31/08/2010 to 31/08/2015 and Elster Solutions (Pty) Ltd., Accreditation No. 172, valid from 31/01/2014 to 10/12/2017) which is accredited by South African National Accreditation System (SANAS).</p> <p>It is confirmed through the review of the calibration certificates that the calibration of electricity meters is to be performed every five years according to National standard NRS 057: 2009.</p>
<b>Findings</b>	N/A
<b>Conclusion</b>	JQA concludes that the calibration procedure and management of electricity meter is established by the CME/CPA developer according to National standard NRS 057: 2009. Therefore, this section is closed.

### I.6. Assessment of data and calculation of emission reductions or net removals

#### I.6.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

<b>Means of verification</b>	<p>Trough the review of the electricity data and relevant documents, JQA has assessed the data and calculation of GHG emission reductions achieved by CPA 7167-0002 under the registered PoA.</p> <p>A complete set of electricity data for the 1<sup>st</sup> monitoring period was provided by the</p>
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	<p>CME/CPA developer. The monthly electricity data in the MR and the ER calculation spreadsheet, which are measured with the main meter, are cross-checked with the following data sources:</p> <ul style="list-style-type: none"><li>- SCADA daily data of electricity measured by the main meter</li><li>- SCADA daily data of electricity measured by the check meter</li><li>- Invoices issued by the grid company Eskom</li></ul> <p>The quantity of net electricity supplied to the grid by the solar PV plant is calculated by the following equation:</p> $EG_{\text{facility},y} = \text{Total electricity exported to the grid } (EG_{\text{export},y}) - EG_{\text{imported},y}$ <p>If the value of <math>EG_{\text{export},y}</math> is different among main meter, check meter and invoice, the smallest one of the three values is employed for conservativeness as the net electricity supplied to the grid.</p> <p>As per the Equations (6) and (7) of ACM0002 (ver. 12.3.0) and the registered CPA-DD, the baseline emissions from electricity generation in fossil fuel fired power plant are calculated as follows:</p> $BE_y = EG_{PJ,y} \times EF_{\text{grid,CM},y} \quad \text{----- (6)}$ <p>If the project activity is the installation of a new grid-connected renewable power plant/unit at a site where no renewable plant was operated prior to the implementation of the project activity, then:</p> $EG_{PJ,y} = EG_{\text{facility},y} \quad \text{----- (7)}$ <p>where:</p> <ul style="list-style-type: none"><li>- <math>BE_y</math> : Baseline emissions in year y (<math>\text{tCO}_2/\text{y}</math>)</li><li>- <math>EG_{PJ,y}</math> : Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh)</li><li>- <math>EF_{\text{grid,CM},y}</math> : Combined margin <math>\text{CO}_2</math> emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system” (<math>\text{tCO}_2/\text{MWh}</math>).</li><li>- <math>EG_{\text{facility},y}</math> : Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh)</li></ul> <p>The result of baseline emissions of CPA 7167-0002 is summarized as follows:</p> <table><tr><th>CPAs</th><th><math>EG_{\text{facility},y}</math> (MWh)</th><th><math>EF_{\text{grid,CM},y}</math> (<math>\text{tCO}_2/\text{MWh}</math>)</th><th><math>BE_y</math> (<math>\text{tCO}_2\text{e}</math>)</th></tr><tr><td>CPA 7167-0002</td><td>264,456</td><td>0.9721</td><td>257,077</td></tr><tr><td><b>Total</b></td><td><b>264,456</b></td><td></td><td><b>257,077</b></td></tr></table> <p>Thus, the baseline emissions for the 1<sup>st</sup> monitoring period are correctly calculated based on electricity data measured, in accordance with the formulae and methods described in the methodology ACM0002 (ver.12.3.0) and the registered CPA-DD. The baseline GHG emissions are determined to be 257,077 <math>\text{tCO}_2\text{e}</math> for the 1<sup>st</sup> monitoring period.</p>	CPAs	$EG_{\text{facility},y}$ (MWh)	$EF_{\text{grid,CM},y}$ ( $\text{tCO}_2/\text{MWh}$ )	$BE_y$ ( $\text{tCO}_2\text{e}$ )	CPA 7167-0002	264,456	0.9721	257,077	<b>Total</b>	<b>264,456</b>		<b>257,077</b>
CPAs	$EG_{\text{facility},y}$ (MWh)	$EF_{\text{grid,CM},y}$ ( $\text{tCO}_2/\text{MWh}$ )	$BE_y$ ( $\text{tCO}_2\text{e}$ )										
CPA 7167-0002	264,456	0.9721	257,077										
<b>Total</b>	<b>264,456</b>		<b>257,077</b>										
Findings	<ul style="list-style-type: none"><li>- Regarding the formula and the methodology in Section H.1, CAR 06 was raised and resolved as described in Table 3 of Appendix 4.</li></ul>												
Conclusion	<p>JQA concludes that the baseline GHG emissions, which are defined by ACM0002 (ver. 12.3.0) and the registered CPA-DD, are correctly calculated for the 1<sup>st</sup> monitoring period. Therefore, this section is closed.</p>												

### 1.6.2. Calculation of project GHG emissions or actual net GHG removals by sinks

<b>Means of verification</b>	According to the methodology ACM0002 (ver. 12.3.0), the project emissions are zero for most renewable power generation project activities except geothermal/
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	hydro power plants. In case where fossil fuels are used for electricity generation in the project activity, project emissions from the combustion of fossil fuels shall be accounted for. However, for the proposed CPA 7167-0002 under the registered PoA, back-up battery system is used as emergency power and hence any fossil fuels are not used on-site. As a result, the project emissions are regarded as zero.
<b>Findings</b>	N/A
<b>Conclusion</b>	JQA concludes that the project GHG emissions are determined as zero ( $PE_y=0$ ) for the 1 <sup>st</sup> monitoring period, in accordance with ACM0002 (ver. 12.3.0). Therefore, this section is closed.

### I.6.3. Calculation of leakage GHG emissions

<b>Means of verification</b>	As per the methodology ACM0002 (ver. 12.3.0), no leakage emissions are considered.
<b>Findings</b>	N/A
<b>Conclusion</b>	JQA concludes that the leakage emissions are not considered as per ACM0002. Therefore, this section is closed.

### I.6.4. Summary of calculation of GHG emission reductions or net GHG removals by sinks

<b>Means of verification</b>	<p>According to Equation (11) of ACM0002 (ver. 12.3.0), the GHG emission reductions are calculated by the following equation:</p> $ER_y = BE_y - PE_y$ $= 257,077 - 0$ $= 257,077 \text{ tCO}_2\text{e}$ <p>Where:</p> <ul style="list-style-type: none"> <li>- <math>ER_y</math> : Emission reductions in year y (<math>\text{tCO}_2\text{e}</math>)</li> <li>- <math>BE_y</math> : Baseline emissions in year y (<math>\text{tCO}_2\text{e}</math>)</li> <li>- <math>PE_y</math> : Project emissions in year y (<math>\text{tCO}_2\text{e}</math>)</li> </ul> <p>Thus, the GHG emission reductions achieved by the project activity during the 1<sup>st</sup> monitoring period are determined as 257,077 <math>\text{tCO}_2\text{e}</math>.</p>
<b>Findings</b>	N/A
<b>Conclusion</b>	JQA concludes that the GHG emissions reductions, which are defined by ACM0002 (ver. 12.3.0) and the registered CPA-DD, are correctly calculated for the 1 <sup>st</sup> monitoring period. Therefore, this section is closed.

Specific-case CPA reference number	Baseline emissions or baseline net GHG removals by sinks ( $\text{tCO}_2\text{e}$ )	Project emissions or actual net GHG removals by sinks ( $\text{tCO}_2\text{e}$ )	Leakage ( $\text{tCO}_2\text{e}$ )	GHG emission reductions or net GHG removals by sinks ( $\text{tCO}_2\text{e}$ )		
				Results achieved in the period up to 31 December 2012	Results achieved in the period from 1 January 2013 onwards	Results achieved in the entire monitoring period
CPA 7167-0002	257,077	0	0	0	257,077	257,077
<b>Total</b>	<b>257,077</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>257,077</b>	<b>257,077</b>

### I.6.5. Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included specific-case CPA

<b>Means of verification</b>	<p>The <i>ex-ante</i> estimates calculated for the 1<sup>st</sup> monitoring period, based on the registered CPA 7167-0002, is 239,797 tCO<sub>2</sub>.</p> <p>The actual GHG emission reductions achieved in the 1<sup>st</sup> monitoring period between 01/06/2013 and 30/06/2015 are 257,077 tCO<sub>2</sub>.</p> <p>As a result, the value of actual emission reductions is 107.2 % (= 257,077 tCO<sub>2</sub> / 239,797 tCO<sub>2</sub> x 100%) of the estimates in the registered CPA-DD.</p>
<b>Findings</b>	N/A
<b>Conclusion</b>	JQA has confirmed that the value of actual emission reductions achieved in the 1 <sup>st</sup> monitoring period is higher by 7.2% than the estimates in the registered CPA-DD. Therefore, this section is closed.

Specific-case CPA reference number	Value estimated in ex ante calculation in the included specific-case CPA-DD(s)	Actual values achieved by the specific-case CPA(s) during this monitoring period
CPA 7167-0002	239,797	257,077
<b>Total</b>	<b>239,797</b>	<b>257,077</b>

### I.6.6. Remarks on difference from estimated value in registered PDD

Means of verification	As described in Section I.6.5, the actual emission reductions of CPA 7167-0002 is larger by 7.2% than the estimate in the CPA-DD.				
	The cause of the increase in CPA 7167-0002 is likely attributed to the weather variation (solar irradiation) during this monitoring period. The emission reductions estimated <i>ex-ante</i> were determined using Meteonorm 6.1 which is a software based on a database of ground measurements during the period of 1981-2000 at meteo stations. Therefore, the quality of the solar irradiation data depends on the available meteo stations close to the project site and some discrepancy between the estimates and the actual value would be happened.				
	In addition to the solar irradiation, the quantity of electricity generated by the solar PV plant is also affected by the following factors:				
	<ul style="list-style-type: none"><li>- Plant performance ratio (Ratio of actual generation performance to the theoretical value for overall PV solar generation system)</li><li>- Plant availability (Ratio of operating time of the plant to the full time in a certain period)</li><li>- Grid availability (availability of grid to feed electricity from a solar plant)</li></ul>				
	To sum up the effect of these factors on the actual ER, the following result is obtained.				
		Plant performance ratio (%)	Plant availability (%)	Grid availability (%)	Increase ratio in ER (%)
	Estimated	81.70	98.50	95.00	8.3
	Actual	83.73	98.89	99.99	
	It is noted that the estimated values of these factors were conservatively calculated in the registered CPA-DD. The result of 8.3% increase calculated above is very close to the actual increase of 7.2% in the ER during the 1 <sup>st</sup> monitoring period. Therefore, the increase of 7.2% in the actual ER, compared to the estimates in the CPA-DD, is plausible and reasonable.				
Findings	- Regarding the increase in the actual emission reductions of CPA 7167-0002, CL 04 was raised and resolved as described in Table 2 of Appendix 4.				
Conclusion	JQA concludes that the increase in the actual ER of CPA 7167-0002 is likely due				

	to the integrated effects of more solar irradiation, higher plant performance, plant availability and grid availability in the actual operation. Therefore, it seems that the increase of 7.2% is within the reasonable range of fluctuation.
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## Appendix 1. Abbreviations

Abbreviations	Full texts
AC/DC	Alternative current/Direct current
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM PS	CDM Project Standard
CDM VVS	CDM Validation and Verification Standard
CER	Certified Emission Reduction
CL	Clarification Request
CME	Coordinating/ Managing Entity
COP/MOP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
CPA	Component Project Activity
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	CDM Executive Board
EI	External Individuals
ER	Emission Reductions
FAR	Forward Action Request
GHG	Greenhouse Gas
GPS	Global Positioning System
GSP	Global Stakeholder Process
IPCC	Intergovernmental Panel on Climate Change
IR	Internal Resource
JQA	Japan Quality Assurance Organization
KP	Kyoto Protocol
MR	Monitoring Report
MP	Monitoring Plan
OA	On-site Assessment
PDD	Project Design Document
PoA	Programme of Activities
PPs	Project Participants
PRC	Post registration changes
PV	Photovoltaic
QA/QC	Quality Assurance / Quality Control
SCADA	Supervisory Control And Data Acquisition
SV	Site visit
TR	Technical Review
UNFCCC	United Nations Framework Convention on Climate Change

## Appendix 2. Competence of team members and technical reviewers

### Statement of competence



Name: Dr. Tadashi Yoshida

Qualified and authorized by Japan Quality Assurance Organization.

Function	
	Date of qualification
Validator	2014/12/22
Verifier	2014/12/22
Team leader	2014/12/22

### Technical area within sectoral scopes

	Date of qualification
TA 1.1. Thermal energy generation	2014/12/22
TA 1.2. Renewables	2014/12/22
TA 3.1. Energy demand	2014/12/22
TA 4.1. Cement and lime production	2015/11/12
TA 4.6. Other manufacturing industries	2014/12/22
TA 5.1. Chemical industry	2014/12/22
TA 10.1. Fugitive emissions from oil and gas	2014/12/22
TA 13.1. Solid waste and wastewater	2014/12/22

E-01-30

### Statement of competence



Name: Mr. Hiroshi Molokawa

Qualified and authorized by Japan Quality Assurance Organization.

Function	
	Date of qualification
Validator	2014/12/22
Verifier	2014/12/22
Team leader	2014/12/22

### Technical area within sectoral scopes

	Date of qualification
TA 1.1. Thermal energy generation	2014/12/22
TA 1.2. Renewables	2014/12/22
TA 3.1. Energy demand	2014/12/22
TA 4.1. Cement and lime production	2014/12/22
TA 4.6. Other manufacturing industries	2014/12/22
TA 13.1. Solid waste and wastewater	2014/12/22

E-01-30

### Statement of competence



Name: Ms. Sachiko Hashizume

Qualified and authorized by Japan Quality Assurance Organization.

Function	
	Date of qualification
Validator	2015/11/20
Verifier	2015/11/20
Team leader	-

### Technical area within sectoral scopes

	Date of qualification
TA 1.1. Thermal energy generation	2015/11/20
TA 1.2. Renewables	2015/11/20
TA 3.1. Energy demand	2015/11/20
TA 13.1. Solid waste and wastewater	2015/11/20

E-01-30

### Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	Additional Energy Limited	Monitoring Report, ver. 01 and 03	28/08/2015 22/06/2016	CME
2	Additional Energy Limited	ER calculation spreadsheet, ver. 01 and 03	28/08/2015 22/06/2016	CME
3	Standard Bank Plc.	Registered PoA-DD, ver. 10	05/12/2012	Others
4	Japan Consulting Institute (JCI)	Validation Report, Report No. JCI-CDM-VAL-11/086, Rev. No. 01	11/12/2012	Others
5	Standard Bank Plc.	CPA-DD of CPA 7167-0002, ver. 4	21/01/2013	Others
6	Japan Consulting Institute (JCI)	Validation Report of CPA-002, Report No. JCI-CDM VAL 502-2, Rev. No. 00	09/01/2013	Others
7	UNFCCC	Monitoring report form for CDM programme of activities (ver. 01.0) including "Attachment. Instructions for filling out the monitoring report form for CDM programme of activities"	01/04/2015	Others
8	UNFCCC	ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", ver. 12.3.0	02/03/2012	Others
9	UNFCCC	Tool to calculate the emission factor for an electricity system (ver. 02.2.1)	29/09/2011	Others
10	UNFCCC	Tool to calculate project or leakage CO2 emissions from fossil fuel combustion (ver. 02)	02/08/2008	Others
11	UNFCCC	Combined tool to identify the baseline scenario and demonstrate additionality (ver. 04.0.0)	02/03/2012	Others
12	UNFCCC	Tool for the demonstration and assessment of additionality (ver. 06.1.0)	13/09/2012	Others
13	UNFCCC	CDM project standard (ver. 09.0)	20/02/2015	Others
14	UNFCCC	CDM validation and verification standard (ver. 09.0)	20/02/2015	Others
15	National Energy Regulator of South Africa (NERSA)	Business licenses of CPA 7167-0002	26/04/2012	CME
16	Scatec Solar SA 163(Pty) Ltd.	Layout of solar farm for CPA 7167-0002	--	CME
17	Scatec Solar SA 163 (Pty) Ltd	Taking-Over Certificate (CPA7167-0002) including construction start date information	25/06/2014	CME
18	BYD	Manufacturer's specification of PV module for CPA 7167-0002	--	CME
19	SMA	Manufacturer's specification of inverter for CPA 7167-0002	--	CME
20	CPA developer	Photos of nameplates of the PV module for CPA 7167-0002	30/09/2015	CME
21	Eskom Holdings Soc Limited	Power purchase Agreement (PPA) of PV projects between CPA implementer and grid company Eskom for CPA 7167-0002	05 Nov 2012	CME

22	Standard Bank	Monitoring Guidelines for CPA Developers	19 Nov 2013	CME
23	Standard Bank	Procedure for PoA Data Quality Check (Internal use only)	--	CME
24	CPA developer	CME Database Sheet for CPA 7167-0002	--	CME
25	CME	Record and text of CDM staff training for CPA 7167-0002	06 Aug 2014	CME
26	CPA developer	Electricity line diagram for CPA 7167-0002	--	CME
27	Elster Landis+Gyr	Specification of electricity meter used for CPA 7167-0002	--	CME
28	SABS Standards Division	NRS 057:2009- South African National Standard – Code of practice for electricity metering, including calibration frequency, accuracy class and testing of metering equipment	2009	CME
29	Power Meter Technics (Pty) Ltd./ Elster Solutions (Pty) Ltd.	Calibration certificates of electricity meters used for CPA 7167-0002	15/01/2014	CME
30	South African Accreditation System (SANAS)	Certificate of accreditation (143) for Power Meter Technics (Pty) Ltd.	31/08/2012	CME
31	South African Accreditation System (SANAS)	Certificate of accreditation (172) for Elster Solutions (Pty) Ltd.	31/08/2014	CME
32	CPA developer	SCADA daily data for CPA 7167-0002	On-site	CME
33	CPA developer	Invoices of electricity export for CPA 7167-0002	1 <sup>st</sup> monitoring period	CME
34	CPA developer	Data of solar irradiation, plant performance ratio, plant operation availability and grid availability	1 <sup>st</sup> monitoring period	CME
35	Additional Energy Limited	CME Management System issued by Additional Energy Limited	Nov 2015	CME



## Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 1. Remaining FAR from validation and/or previous verification

<b>FAR ID</b>	--	<b>Section no.</b>	N/A	<b>Date:</b> DD/MM/YYYY
<b>Description of FAR</b>				
N/A				
<b>CME response</b>				<b>Date:</b> DD/MM/YYYY
N/A				
<b>Documentation provided by the CME</b>				
N/A				
<b>DOE assessment</b>				<b>Date:</b> DD/MM/YYYY
N/A				

Table 2. CL from this verification

<b>CL ID</b>	01	<b>Section no.</b>	A.1	<b>Date:</b> 30/09/2015
<b>Description of CL</b>				
The information on the framework for the implementation of the PoA in Section A.1 is not included.				
<b>CME response</b>				<b>Date:</b> 26/02/2016
The framework for the implementation of the PoA and the role/responsibility of Additional Energy Limited as CME are appropriately added in the revised MR (ver. 03).				
<b>Documentation provided by the CME</b>				
<ul style="list-style-type: none"> <li>- CME Management System, dated November 2015</li> <li>- Monitoring Guideline for CPA Developers, dated 19/11/2013.</li> </ul>				
<b>DOE assessment</b>				<b>Date:</b> 05/03/2016
It is confirmed through the review of relevant documents and the interview with the CME/CPA developer that the framework for the implementation of the PoA and the role/responsibility of Additional Energy Limited as a CME are appropriately added in Section A.1 of the revised MR (ver. 03). Thus, CL 01 is closed.				

<b>CL ID</b>	02	<b>Section no.</b>	B.1	<b>Date:</b> 30/09/2015
<b>Description of CL</b>				
The information on the applicable provisions on the implementation of the management system of the PoA in Section B.1 is not sufficient.				
<b>CME response</b>				<b>Date:</b> 26/02/2016
The record keeping system for the CPA and systems/procedures to avoid double counting are appropriately added in the revised MR (ver. 03). In line with the CDM Project Standard (ver. 03.0), the description on CME Management System developed by Additional Energy Limited as a CME is also added.				
<b>Documentation provided by the CME</b>				
<ul style="list-style-type: none"> <li>- CME Database Sheet for CPAs, issued by CME</li> <li>- Procedures for PoA Data Quality Check, issued by CME</li> <li>- CME Management System, developed by Additional Energy Limited, November 2015</li> </ul>				
<b>DOE assessment</b>				<b>Date:</b> 05/03/2016

It is confirmed through the review of relevant documents and the interview with the CME/CPA developer that the record keeping system for the CPA and systems/procedures to avoid double counting, including the development of CME Management System, are appropriately added in Section B.1 of the revised MR (ver. 03). Thus, CL 02 is closed.

<b>CL ID</b>	03	<b>Section no.</b>	D.1	<b>Date:</b> 30/09/2015
<b>Description of CL</b>				
Although the starting date of feeding electricity into the grid is included, the relevant dates for the CPA (e.g., construction, commissioning, continued operation periods, etc.) in Section D.1 are not clearly described.				
<b>CME response</b>				<b>Date:</b> 26/02/2016
The construction start date of each CPA is properly added in the revised MR (ver.03).				
<b>Documentation provided by the CME</b>				
- Taking-Over Certificate for CPA 7167-0002				
<b>DOE assessment</b>				<b>Date:</b> 05/03/2016
It is confirmed through the review of relevant documents and the interview with the CPA developer that the construction start date of CPA 7167-0002 is added in Section D.1 of the revised MR (ver. 03). Thus, CL 03 is closed.				

CL ID	04	Section no.	H.6	Date: 30/09/2015
Description of CL				
The CPA implementer is requested to explain the increase in the actual ER of CPA 7167-0002 in Section H.6, compared to the estimate in the CPA-DD.				
CME response				Date: 22/06/2016
The cause of the increase in the actual ER of CPA 7167-0002 is likely attributed to the weather variation (solar irradiation) during this monitoring period. The emission reductions estimated <i>ex-ante</i> were determined using Meteonorm 6.1 which is a software based on a database of ground measurements during the period of 1981-2000 at meteo stations. Therefore, the quality of the solar irradiation data depends on the available meteo stations close to the project site and some discrepancy between the estimates and the actual value would be happened.				
In addition to the solar irradiation, the quantity of electricity generated by the solar PV plant is also affected by the following factors:				
<ul style="list-style-type: none"><li>- Plant performance ratio (Ratio of actual generation performance to the theoretical value for overall PV solar generation system)</li><li>- Plant availability (Ratio of operating time of the plant to the full time in a certain period)</li><li>- Grid availability (availability of grid to feed electricity from a solar plant)</li></ul>				
To sum up the effect of these factors on the actual ER, the following result is obtained.				
	Plant performance ratio (%)	Plant availability (%)	Grid availability (%)	Increase ratio in ER (%)
Estimated	81.70	98.50	95.00	8.3
Actual	83.73	98.89	99.99	
It is noted that the estimated values of these factors were conservatively calculated in the registered CPA-DD. The result of 8.3% increase calculated above is very close to the actual increase of 7.2% in the ER during the 1 <sup>st</sup> monitoring period. Therefore, the increase of 7.2% in the actual ER, compared to the estimates in the CPA-DD, is plausible and reasonable.				
Documentation provided by the CME				
<ul style="list-style-type: none"><li>- Data of solar irradiation, plant performance ratio, plant availability and grid availability for CPA 7167-0002</li></ul>				
DOE assessment				Date: 23/06/2016

It is confirmed through the review of relevant documents and the interview with the CPA developer that the increase in the actual emission reductions of CPA 7167-0002 is likely due to the integrated effects of more solar irradiation, higher plant performance, plant availability and grid availability in the actual operation. Therefore, it seems that the increase of 7.2% is within the reasonable range of fluctuation. Thus, CL 04 is closed.

<b>CL ID</b>	05	<b>Section no.</b>	G.1	<b>Date:</b> 30/09/2015
<b>Description of CL</b>				
CME is requested to justify that Standardized baseline ASB0001 can be applicable to the CPAs under the proposed PoA in relation to the paragraph 12 of ASB0001.				
<b>CME response</b>				<b>Date:</b> 22/06/2016
According to VVS (ver. 09) para. 142(a), data and parameters fixed <i>ex-ante</i> in the registered PoA shall remain fixed throughout the crediting period and hence the grid emission factors provided as a default value from Standardized baseline ASB0001 are not applicable to the calculation of baseline emissions during this monitoring period. The CME has recalculated the baseline emissions using the correct grid emission factor (0.9721 tCO <sub>2</sub> /MWh) determined <i>ex-ante</i> in the registered PoA.				
<b>Documentation provided by the CME</b>				
- Revised MR (ver. 03) and ER calculation spreadsheet (ver. 03)				
<b>DOE assessment</b>				<b>Date:</b> 23/06/2016
It is confirmed through the review of the revised MR (ver. 03) and ER calculation spreadsheet (ver. 03) that the baseline emissions of CPA 7671-0002 are appropriately recalculated using the correct grid emission factor (0.9721 tCO <sub>2</sub> /MWh) determined <i>ex-ante</i> in the registered PoA. . Thus, CL 05 is closed.				

<b>CL ID</b>	06	<b>Section no.</b>	F	<b>Date:</b> 30/09/2015
<b>Description of CL</b>				
The CME is requested to include the following information in Section F of the MR: 1) how the CDM staffs for CPA 7167-0002 was trained, 2) how the monitored data was cross-checked.				
<b>CME response</b>				<b>Date:</b> 26/02/2016
Information on the CDM staff training conducted on 06/08/2014 and the cross-checking procedures of project data as part of QA/QC procedures are provided in Section F of the revised MR (ver. 03).				
<b>Documentation provided by the CME</b>				
<ul style="list-style-type: none"> <li>- Record and text of CDM staff training for CPA 7167-0002, conducted on 06/08/2014</li> <li>- Monitoring Guideline for CPA Developers, developed by the CME, dated 19/11/2013</li> <li>- CME Database Sheet for CPAs, developed by the CME</li> </ul>				
<b>DOE assessment</b>				<b>Date:</b> 05/03/2016
It is confirmed through the review of relevant documents, on-site inspection and the interview with the CME/CPA developer that the CDM staff training was appropriately conducted on 06/08/2014 for the CPA developer and the cross-checking of project data as part of QA/QC procedures are developed and managed by the CME. The information is added in Section F of the revised MR (ver. 03). Thus, CL 06 is closed.				

Table 3. CAR from this verification

<b>CAR ID</b>	01	<b>Section no.</b>	G.2	<b>Date:</b> 30/09/2015
<b>Description of CAR</b>				

The description of "Purpose of data" for $EG_{imported,y}$ in Section G.2 is not consistent with the equation given in "Calculation method" for $EF_{facility,y}$ .	
<b>CME response</b>	<b>Date:</b> 26/02/2016
The description "Calculation of project emissions" is properly corrected to "Calculation of baseline emissions" for the parameter $EG_{imported,y}$ in Section G.2 of the revised MR (ver. 03), in accordance with the monitoring plan in the registered PoA.	
<b>Documentation provided by the CME</b>	
N/A	
<b>DOE assessment</b>	<b>Date:</b> 05/03/2016
It is confirmed through the review of the monitoring plan in the registered PoA/CPA and the applied methodology ACM0002 (ver. 12.3.0) that the description of "Purpose of data" for the parameter $EG_{imported,y}$ is properly corrected in Section G.2 of the revised MR (ver.03). Thus, CAR 01 is closed.	

<b>CAR ID</b>	02	<b>Section no.</b>	G.2	<b>Date:</b> 30/09/2015
<b>Description of CAR</b>				
The information on type, accuracy class, serial number, calibration frequency, date of last calibration and validity of monitoring equipment in Section G.2 is not included.				
<b>CME response</b>				<b>Date:</b> 26/02/2016
The information on type, accuracy class, serial number, calibration frequency, date of last calibration and validity of electricity meter used in the monitoring activity is added in Section G.2 of the revised MR (ver. 03).				
<b>Documentation provided by the CME</b>				
<ul style="list-style-type: none"> <li>- Manufacturer's specification of electricity meter</li> <li>- Calibration certificate of electricity meters used for CPA 7167-0002</li> <li>- Certificates of accreditation for Power Meter Technics (Pty) Ltd and Elster Solutions (Pty) Ltd.</li> <li>- NRS 057:2009 – South African National Standard- Code of practice for electricity metering, including calibration frequency, accuracy class and testing of metering equipment.</li> </ul>				
<b>DOE assessment</b>				<b>Date:</b> 05/03/2016
It is confirmed through the review of the relevant documents, on-site inspection and the interview with the CME/CPA developer that the information on the electricity meter used for monitoring is appropriately added in Section G.2 of the revised MR (ver. 03). Thus, CAR 02 is closed.				

<b>CAR ID</b>	03	<b>Section no.</b>	H.5	<b>Date:</b> 30/09/2015
<b>Description of CAR</b>				
The annual GHG emission reductions estimated for each year covering this monitoring period are provided for "Value estimated in <i>ex-ante</i> calculation in the included CPA-DDs" in Section H.5. However, the total amount of the estimates for this monitoring period should be calculated in order to compare it with the actual value achieved by CPA 7167-0002.				
<b>CME response</b>				<b>Date:</b> 26/02/2016
The PP has provided the total amount of the emission reductions for the 1 <sup>st</sup> monitoring period of CPA 7167-0002 in Section H.5 of the revised MR (ver. 02), which is calculated from the annual estimates of each year in the CPA-DD.				
<b>Documentation provided by the CME</b>				
N/A				
<b>DOE assessment</b>				<b>Date:</b> 05/03/2016

It is confirmed through the review of the CPA-DD that the total estimates of the emission reductions for the 1<sup>st</sup> monitoring period are correctly calculated in Section H.5 of the revised MR (ver. 03). Thus, CAR 03 is closed.

<b>CAR ID</b>	04	<b>Section no.</b>	H.1	<b>Date:</b> 30/09/2015
<b>Description of CAR</b>				
The formula and the methodology used to calculate the baseline emissions in Section H.1 are not consistent with those in Section D.6.3 of the CPA-DD.				
<b>CME response</b>				<b>Date:</b> 26/02/2016
The formula and the methodology used to calculate the baseline emissions are corrected to $BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$ and ACM0002 (ver. 12.3.0), respectively, in Section H.1 of the revised MR (ver. 03).				
<b>Documentation provided by the CME</b>				
- Monitoring methodology ACM0002 (ver. 12.3.0)				
<b>DOE assessment</b>				<b>Date:</b> 05/03/2016
It is confirmed through the review of the applied methodology ACM0002 (ver. 12.3.0) and the registered CPA-DD that the formula and the methodology used to calculate the baseline emissions are properly corrected in Section H.1 of the revised MR (ver. 03). Thus, CAR 04 is closed.				

**Table 4. FAR from this verification**

<b>FAR ID</b>	--	<b>Section No.</b>	N/A	<b>Date:</b> DD/MM/YYYY
<b>Description of FAR</b>				
N/A				
<b>CME response</b>				<b>Date:</b> DD/MM/YYYY
N/A				
<b>Documentation provided by the CME</b>				
N/A				
<b>DOE assessment</b>				<b>Date:</b> DD/MM/YYYY
N/A				

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