



# Validation Report

for the Post Registration Changes of the CDM Project  
Activity

Changes to Project Design of a  
Registered Project Activity and Changes  
to the Registered Monitoring Plan

Solar Farm at Nakhonsawan,  
Thailand

In  
Thailand

Report No. 01 997 9105076935  
Version 03, 2014-03-31

Designated Operational Entity (DOE)

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**I. Project data:**

<b>Project title:</b>	Solar Farm at Nakhonsawan, Thailand	<b>Report No.: 01 997 9105076935</b>
<b>Registration No. / Date:</b>	Registration No.8446/ Date: 11/12/2012	<b>Current revision No.: 03</b>
<b>Monitoring period:</b>	N/A	<b>Date of current revision: 2014-03-31</b>
<b>Methodology:</b>	ACM0002, version 12.3.0	<b>Date of first issue: 2013-10-14</b>
<b>Publication of MR:</b>	N/A	
<b>Average emission reductions:</b>	Estimated: 82,955 tCO <sub>2</sub> e/yr in the revised PDD, version06	Verified: N/A
<b>GHG reducing measure/technology:</b>	Photovoltaic solar power plant project to generate electricity and supplied to Thai national grid, mainly uses fossil fuel for electricity generation.	

Party	Project participants	Party considered a project participant	Contract party
Thailand (Host)	EA Solar Nakornsawan Co., Ltd.	No	<input checked="" type="checkbox"/>

**II. Validation Team:**

Validation Team			Role									
Full name	Affiliation TÜV Rheinland	Appointed for Sectoral Scopes (Technical Areas)	Team leader	Acting Team Leader	Local Expert	Team Member (Auditor)	Technical Expert	Acting Tech. Expert	Trainee Auditor	Technical Reviewer	Expert to TR	Trainee TR
Dr.Piyaporn Songprasert	Thailand	1.2, 13.1	<b>X</b>		<b>X</b>		<b>X</b>					
Ms.Deng Cuiping	China	1.2, 5.1, 11.1, 12.1								<b>X</b>		

Validation Phases	Validation Status
<input checked="" type="checkbox"/> Desk Review <input checked="" type="checkbox"/> Follow up interviews <input checked="" type="checkbox"/> Resolution of outstanding issues	<input type="checkbox"/> Corrective Actions / Clarifications Requested <input checked="" type="checkbox"/> Full Approval and Submission for Approval <input type="checkbox"/> Rejected

**III. Validation Report:**

Final approval	Released	Distribution
<input checked="" type="checkbox"/>	<b>By: Mr. Henri Phan</b>	<input type="checkbox"/> No distribution without permission from the Client or responsible organizational unit <input checked="" type="checkbox"/> Unrestricted distribution
Date: 2014-04-04		

**Abbreviations**

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM EB	CDM Executive Board
CDM PCP	Clean Development Mechanism Project Cycle Procedure
CDM PS	Clean Development Mechanism Project Standard
CDM VVS	CDM Validation and Verification Standard
CEF	Carbon Emission Factor
CER	Certified Emission Reduction(s)
CH <sub>4</sub>	Methane
CL	Clarification request
CO <sub>2</sub>	Carbon dioxide
CO <sub>2e</sub>	Carbon dioxide equivalent
DD	Design Document
DNA	Designated National Authority
DOE	Designated Operational Entity
EA	Energy Absolute Public Co., Ltd.
EA NKS	EA Solar Nakornsawan Co.,Ltd.
EPC	Engineering Procurement and Construction
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
LDC	Least Developed Country
MoC	Modalities of Communication
MP	Monitoring Plan
MR	Monitoring Report
N <sub>2</sub> O	Nitrous oxide
OSV	On-site Visit
PDD	Project Design Document
PP	Project Participant
PRC	Post Registration Change
TUV R	TUV Rheinland (China) Ltd
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation And Verification Manual
VVS	Validation And Verification Standard

## Validation opinion — summary

The validation team of the DOE (TÜV Rheinland (China) Ltd., TÜV R) is assigned by “EA Solar Nakornsawan Co., Ltd.” to perform the validation of post registration changes of the CDM Project Activity “Solar Farm at Nakhonsawan, Thailand” in Thailand, as described in the registered PDD, version 05, date 02/11/2012, meets all relevant requirements of the UNFCCC for CDM project activities including CDM VVS. The request is to perform the independent and objective validation on PDD for Changes to the Project Design of the Registered Project Activity and Changes to the Registered Monitoring Plan..

### Validation methodology and process

The validation has been performed as described in the VVS, version 05.0, and constitutes the following steps:

- Review of the Registered PDD, version 05, date 02 /11/2012
- Desk review of the revised PDD and the relevant documents
- On-site assessment on date 21/10/2013
- Preparation of the Validation Report, version 03, date 31/03/2014

The validation team confirms that the revised PDD submitted in the new format has been verified and is materially the same as the information in the registered PDD.

It is DOE’s opinion that the revised documentation submitted are conforming to the requirements for Post Registration Changes as stipulated in the Clean Development Mechanism Validation and Verification Standard and thus DOE is recommending the approval of the post registration changes.

2014-04-04  
Date



Mr. Henri Phan  
DOE Manager  
TÜV Rheinland (China) Ltd.

2014-03-31  
Date



Ms.Deng Cuiping  
Technical Reviewer  
TÜV Rheinland (China) Ltd.

2014-03-28  
Date



Dr.Piyaporn Songprasert  
Team Leader  
TÜV Rheinland Thailand Ltd.

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Appendix A: Certificates of Competence

## 1. Introduction

EA Solar Nakornsawan Co., Ltd. has commissioned the DOE TÜV Rheinland (China) Ltd. to perform a validation of the Post Registration Changes “Changes to the Project Design of the Registered Project Activity and Changes to the Registered Monitoring Plan” to the CDM Project Activity “Solar Farm at Nakhonsawan, Thailand” in Thailand (hereafter “project activity”). The term “UNFCCC criteria” refers to Article 12 of the Kyoto Protocol, the CDM modalities and procedures and the subsequent decisions by the CDM Executive Board. The independent validation by the DOE is required on the Registered PDD to confirm the post registration changes with respect to actual implementation and operation carried out by the project activity. This report summarises the post registration changes of the project with respect to the Clean Development Mechanism Validation and Verification Standard (VVS) requirements.

### 1.1 Objective

Validation is the independent review and *ex ante* determination of both quantitative and qualitative information of the actual implementation and operation of the project activity by a Designated Operational Entity (DOE) towards the registered PDD.

The purpose of validation is to have independent third party assessment to determine whether there are proposed or actual changes to the project from the registered PDD and conclude the respective post registration changes in transparent manner as per VVS and CDM project cycle procedure.

The validation was requested since the Post Registration Change (PRC) requires prior approval by the Board in accordance with paragraph 134(b) of the Clean Development Mechanism Project Cycle Procedure (PCP), version 05.0, and paragraph 250 of the Clean Development Mechanism Validation and Verification Standard (VVS), version 05.0.

### 1.2 Scope

The validation scope is defined as the PRCs to this project, which includes changes to the project design of a registered project activity and changes to the registered monitoring plan, and influences on the applicability to the CDM Project Standard (CDM PS) and relevant criteria that may occur due to these changes.

The validation is an independent and objective review of the registered project design document (PDD), the project’s baseline study and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. TUV R has, based on the requirements in the Validation and Verification Standard, version 05.0, employed a rules-based approach, focusing on the requirements of the EB’s VVS for project implementation and the generation of CERs.

The validation is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

While carrying out the validation, TUV R determines if the project activity complies with the requirements of Para 37 of the CDM M&P and also assess the claims and assumptions made in the PDD without limitation on the information provided by the project participants.

The scope of the validation is:

- To apply TUV R’s own quality management system integrated with the VVS standard along with the recent decisions and guidance provided by the UNFCCC board to determine if the project activity meets all applicable CDM requirements, including those specified in the relevant methodologies, tools and guidelines;
- Asses the accuracy, conservativeness, relevance, completeness, consistency and transparency of the information provided by the project participants;
- Determine whether information provided by the project participants are reliable and credible;

- Present information in the form of validation report in a factual, neutral, coherent manner and document all assumptions, provide references to the background material and identify changes made to the documentation;
- Base the findings and conclusions on objective evidence and conduct all validation in accordance with CDM rules and procedures;
- Apply consistent validation criteria in providing expert judgments to the requirements of applicable approved methodologies, tools and also cross check the same with projects of similar characteristics, technology, time period and region; and
- Safeguard the confidentiality of all information's obtained or created during validation.
- Where sampling is involved, the standard for sampling and surveys are applied.

## 2. Methodology

The validation consists of the following four phases:

### I A desk review of the project design documents

- A review of data and information;
- Cross checking between information provided in registered PDD and revised PDD with all necessary means without limitations to the information provided by the project proponent;

### II On-site visit

- Interviews with relevant stakeholders in host country with personnel's having knowledge with the project development via telephone, email or direct on-site visits;
- Cross checking between information provided by interviewed personnel with all necessary means without limitations to the information provided by the project proponent;

III Reference to available information's relating to projects or technologies similar projects under validation and review based on the approved methodology being applied of the appropriateness of formulae and accuracy of calculations.

IV The resolution of outstanding issues and the issuance of the final assessment report and opinion. The following sections outline each step in more detail.

### 2.1 Desk review

The following table outlines the documentation reviewed during the verification:

Ref no.	Reference Document
/1/	Registered PDD, version05, 02/11/2012, and registration no. 8446 (VVM track)
/2/	Registered PDD, version05, 02/11/2012, (VVS track)
/3/	Revised PDD, version06, 28/03/2014, (VVS track)
/4/	Registered Validation Report, version 04, 08/11/2012
/5/	UNFCCC, Clean Development Mechanism Validation and Verification Standard (VVS), version 05.0
/6/	UNFCCC, Clean Development Mechanism Project Cycle Procedure, version 05.0
/7/	UNFCCC, Clean Development Mechanism Project Standard, version 05.0
/8/	UNFCCC, Approved consolidated baseline and monitoring methodology ACM0002, Consolidated baseline methodology for grid-connected electricity generation from renewable sources, version 12.3.0
/9/	UNFCCC, Tool for the demonstration and assessment of additionality, version07.0.0
/10/	UNFCCC, Guidelines on the assessment of investment analysis, version 05.0
/11/	ER Calculation_Solar Farm Nakhonsawan as per the registered PDD, ER spreadsheet
/12/	Revised ER Calculation_Solar Farm Nakhonsawan, ER spreadsheet

Ref no.	Reference Document
/13/	Investment Analysis_Solar Farm Nakhonsawan as per the registered PDD, IRR spreadsheet
/14/	Revised Investment Analysis_Solar Farm Nakhonsawan, IRR spreadsheet
/15/	Signed power purchase agreement novation from Energy Absolute Public Co., Ltd. to EA Solar Nakornsawan Co., Ltd. (with Electricity Generating Authority of Thailand (EGAT)), issued on 23/01/2013
/16/	Signed substation construction agreement novation from Energy Absolute Public Co., Ltd. to EA Solar Nakornsawan Co., Ltd. (with SIEMENS LIMITED), issued on 13/06/2013
/17/	Signed Engineering Procurement and Construction (EPC) contract between EA Solar Nakornsawan Co., Ltd. and the consortium of HYDROCHINA ZHONGNAN ENGINEERING CORPORATION and DEMCO PUBLIC COMPANY LIMITED, issued on 30/04/2013
/18/	Shareholder list of EA Solar Nakornsawan Co.,Ltd. (EA NKS) issued on 29/04/2013
/19/	Land purchase agreement between Energy Absolute Public Co., Ltd. to EA Solar Nakornsawan Co., Ltd. signed on 03/07/2013
/20/	F-CDM-MOC, issued on 22/01/2014
/21/	Letter of approval that includes reference to both the old and the new name/legal status of the project participant from the DNA of Thailand, issued on 25/03/2014
/22/	Report on installed project activity to the Board of Investment of Thailand, issued on 05/11/2013
/23/	Confirmation letter of number and specification of PV Module, Inverter and Transformer of project activity by DEMCO PUBLIC COMPANY LIMITED, issued on 25/12/2013
/24/	PV module specifications of project activity: LDK & Renesolar
/25/	Inverter specification of project activity: Santerno
/26/	Transformer specifications of project activity: Tusco Trafo
/27/	Published paper; A Strategic research agenda for photovoltaic solar energy technology, prepared by Working Group 3, Science, Technology and Applications, of the EU PV Technology Platform, 06/2007
/28/	Publication paper: Proposal of Construction of MW Solar Farm, presented by Thai Solar Future Co., Ltd. on 09/2010, published by Energy for Environment Foundation, Thailand
/29/	Publication paper: The market for PV solar energy in Thailand by Asian Development Institute for Community Economy and Technology on 22-23/03/2010
/30/	Signed substation construction agreement between Energy Absolute Public Co., Ltd. and SIEMENS., Ltd, issued on 19/09/2012
/31/	Signed agreements for technical advisors i.e. substation advisor, lawyers, issued on 28/02/2013, 28/03/2013
/32/	Publication paper: Typical investment cost of power plant in Thailand published by EGAT at Posttoday on 18/07/2011
/33/	Publication paper: Study on PV Solar project in Thailand by Mott Macdonald Thailand Co., Ltd., 08/2011
/34/	Single line diagram of project monitoring meters
/35/	Copy of communication email on Change of entity legal name from Energy Absolute Public Co., Ltd. to EA Solar Nakornsawan Co., Ltd. Contact details for the authorized representative Mr Somphote Ahunai remain unchanged with UNFCCC's representative on 30/01/2014

## 2.2 On-site visit

The validation team has conducted onsite inspection in order to re-validate the project. The validation team confirms that all physical features of the project activity proposed in the revised PDD are in place and that the project participant has operated and correctly monitored all parameters of the proposed CDM project activity as per the revised PDD /3/ before the verification. The validation team had visited the project site on 21/10/2013.



The action items covered during the site visit include, but are not limited to:

- The on-site assessment included an investigation of whether all relevant equipment's are installed and works as anticipated in the revised PDD /3/.
- Assessment of permanent changes in the project activity in comparison with the registered PDD /2/.
- The operating staff was interviewed and observed in order to check the risks of inappropriate operation and data collection procedures.
- Calculations and assumptions made in determining the GHG data and emission reductions were reviewed.
- An 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.

During the on-site visit, a number of persons were interviewed. Date of interview, interviewee and points discussed are given in the following table.

	Date	Name	Organization	Topic
/i/	21/10/2013	Mr.Chanyut Chayawattana Mr.Chalermkiat Pimsorn	EA Solar Nakornsawan Co., Ltd. (PP's representative)	1. Project Background 2. Project status 3. Environmental impact assessment
/ii/	21/10/2013	Mr.Jetsada Falert Mr.Chayaphol Aroontherawong	Advance Energy Plus Co., Ltd. (Consultant)	4. Design & approvals of Project activity 5. Technical issue of Project activity 6. Monitoring plan and procedures 7. Project facilities and equipment check 8. Project design and technology used

## 2.3 Internal quality control

The final validation report underwent a technical review by a qualified independent reviewer before requesting approval of the project activity. The technical review was performed by a technical reviewer qualified in accordance with TÜV Rheinland's qualification scheme for CDM validation and verification that meets the criteria of EB guidelines for qualification.

## 2.4 Validation Team

Before the assessment begins, members of the validation team are ensured to cover the technical area(s), sectoral scope(s) and relevant host country experience including local language ability for evaluating the CDM verification activity. The qualification of the team is as per the criterias defined by the EB guidelines for qualification.

Validation Team			Type of Involvement						
Full name	Affiliation TÜV Rheinland	Appointed for Sectoral Scopes (Technical Areas)	Supervising the work	Desk review	Site Visit + Interview	Report Writing	Technical Expert Input	Reporting Support	Technical Reviewer
Dr.Piyaporn Songprasert	Thailand	1.2, 13.1		X	X	X	X		
Ms.Deng Cuiping	China	1.2, 5.1, 11.1, 12.1							X

### 3. DESCRIPTION OF POST REGISTRATION CHANGES

#### 3.1 Changes to the Project Design of a Registered Project Activity

The registered project number 8446 “Solar Farm at Nakhonsawan, Thailand” is a solar photovoltaic power plant at Takhli district, Nakhonsawan province in northern Thailand. The total installed capacity of the solar PV power plant is about 101.25 MWp. The PV power plant is expected to generate an average of 135,165 MWh per annum throughout its lifetime of 25 years.

The PDD /1/ was registered in VVM track. The validation team confirms that the material included in the new form of PDD (VVS track) /2/ is materially the same as the information in the registered PDD (VVM track) /1/ as confirmed by document review.

As per the revised PDD /3/, Project Participant (PP) was changed from Energy Absolute Public Co., Ltd. (EA) to EA Solar Nakornsawan Co., Ltd. (EA NKS) but contact details for the authorized representative Mr Somphote Ahunai remain unchanged. The F-CDM-MOC /20/, Letter of approval that includes reference to both the old and the new name/legal status of the project participant from the DNA of Thailand /21/, communication email with UNFCCC’s representative on 30/01/2014 /35/ are verified. In addition, the validation team accessed UNFCCC’s website<sup>1</sup> and confirms that EA Solar Nakornsawan Co., Ltd. is authorized Project Participant. Therefore, the validation team confirms that it is in line with requirements in paragraph 175 of Clean Development Mechanism Project Cycle Procedure, version 05.0 /6/.

In addition, in the revised PDD /3/, the total installed capacity of the solar PV power plant was changed from 101.25 MWp to 126.126 MWp and the PV power plant is expected to generate an average of 139,446 MWh per annum. Changes to project design affected from the registered PDD /2/ are summarised as:

Affected Changes	DOE Analysis																												
Changes in effective output capacity due to increased installed capacity	Yes. The project activity changes in effective output due to increased installed capacity from 101.25 MWp to 126.126 MWp. The revised project activity is as follows:																												
	The technical specification of the solar module to be used in the project activity is given in the following table:																												
	<table><tr><th>Manufacturer</th><th>Model</th><th>Quantity</th><th>Nominal Peak Power (Wp)</th><th>Cell type</th></tr><tr><td rowspan="2">LDK</td><td>LDK-245P-20</td><td>157,300</td><td>245</td><td>Multicrystalline silicon</td></tr><tr><td>LDK-250P-20</td><td>98,098</td><td>250</td><td>Multicrystalline silicon</td></tr><tr><td rowspan="2">Renesolar</td><td>JC245M-24/Bb</td><td>57,200</td><td>245</td><td>Polycrystalline</td></tr><tr><td>JC250M-24/Bb</td><td>196,196</td><td>250</td><td>Polycrystalline</td></tr><tr><td>Total</td><td></td><td>508,794</td><td></td><td></td></tr></table>	Manufacturer	Model	Quantity	Nominal Peak Power (Wp)	Cell type	LDK	LDK-245P-20	157,300	245	Multicrystalline silicon	LDK-250P-20	98,098	250	Multicrystalline silicon	Renesolar	JC245M-24/Bb	57,200	245	Polycrystalline	JC250M-24/Bb	196,196	250	Polycrystalline	Total		508,794		
	Manufacturer	Model	Quantity	Nominal Peak Power (Wp)	Cell type																								
	LDK	LDK-245P-20	157,300	245	Multicrystalline silicon																								
LDK-250P-20		98,098	250	Multicrystalline silicon																									
Renesolar	JC245M-24/Bb	57,200	245	Polycrystalline																									
	JC250M-24/Bb	196,196	250	Polycrystalline																									
Total		508,794																											
	Technical specifications of the inverter to be used in the project activity are given below:																												

<sup>1</sup> <http://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1354173065.29/view>

Affected Changes	DOE Analysis																	
	<table><tr><th>Manufacturer</th><th>Model</th><th>Quantity</th><th>AC nominal output (kW)</th><th>Maximum / EU / CEC efficiency (%)</th></tr><tr><td>Santerno</td><td>TG610 1000V TE-400 OD</td><td>180</td><td>500</td><td>98.5 / 98.3 / 98.0</td></tr></table>	Manufacturer	Model	Quantity	AC nominal output (kW)	Maximum / EU / CEC efficiency (%)	Santerno	TG610 1000V TE-400 OD	180	500	98.5 / 98.3 / 98.0							
	Manufacturer	Model	Quantity	AC nominal output (kW)	Maximum / EU / CEC efficiency (%)													
	Santerno	TG610 1000V TE-400 OD	180	500	98.5 / 98.3 / 98.0													
	Technical specifications of the transformer to be used in the project activity are given below:																	
<table><tr><th>Manufacturer</th><th>Capacity</th><th>Quantity</th></tr><tr><td>Tusco Trafo</td><td>1250 kVA</td><td>90</td></tr><tr><td>Tusco Trafo</td><td>50 kVA</td><td>3</td></tr><tr><td>Tusco Trafo</td><td>100 kVA</td><td>6</td></tr><tr><td>Tusco Trafo</td><td>160 kVA</td><td>1</td></tr><tr><td>Tusco Trafo</td><td>250 kVA</td><td>1</td></tr></table>	Manufacturer	Capacity	Quantity	Tusco Trafo	1250 kVA	90	Tusco Trafo	50 kVA	3	Tusco Trafo	100 kVA	6	Tusco Trafo	160 kVA	1	Tusco Trafo	250 kVA	1
Manufacturer	Capacity	Quantity																
Tusco Trafo	1250 kVA	90																
Tusco Trafo	50 kVA	3																
Tusco Trafo	100 kVA	6																
Tusco Trafo	160 kVA	1																
Tusco Trafo	250 kVA	1																
	The changes are verified against Signed Engineering Procurement and Construction (EPC) contract /17/, Report on installed project activity to the Board of Investment of Thailand /22/, Confirmation letter of number and specification of PV Module, Inverter and Transformer of project activity /23/, PV module & inverter & transformers specifications /24/, /25/, /26/ and inspection during on-site visit (OSV).																	
	Therefore, the validation team confirms that the corrected information in the revised PDD /3/ is an accurate reflection of actual project information and verifiable.																	
Changes in effective output capacity due to increased number of units / installation of units with lower capacity / installed units with less advanced technology than that described in the PDD	No. The project activity does not changes in effective output capacity due to increased number of units / installation of units with lower capacity / installed units with less advanced technology than that described in the PDD as verified against Signed Engineering Procurement and Construction (EPC) contract /17/, Report on installed project activity to the Board of Investment of Thailand /22/, Confirmation letter of number and specification of PV Module, Inverter and Transformer of project activity by DEMCO PUBLIC COMPANY LIMITED /23/, PV module & inverter & transformers specifications /24/, /25/, /26/ and inspection during OSV.																	
Addition of components or extension of technology	Yes. The project activity changes in effective output due to increased installed capacity from 101.25 MWp to 126.126 MWp by changing PV module, inverter and transformer specifications and numbers.  The changes are verified against Signed Engineering Procurement and Construction (EPC) contract /17/, Report on installed project																	

Affected Changes	DOE Analysis
	<p>activity to the Board of Investment of Thailand /22/, Confirmation letter of number and specification of PV Module, Inverter and Transformer of project activity by DEMCO PUBLIC COMPANY LIMITED /23/, PV module &amp; inverter &amp; transformers specifications /24/, /25/, /26/ and inspection during OSV.</p> <p>Therefore, the validation team confirms that the corrected information in the revised PDD /3/ is an accurate reflection of actual project information and verifiable.</p>
<b>Removal or addition of site / increase in the project boundary</b>	<p>No. There is no removal or addition of site and the project boundary remains same with the registered PDD as “the project boundary includes the solar PV power plant and the Thai National grid to which the power plant is connected”.</p> <p>This is confirmed through the physical site visit conducted by the validation team and verifying against Signed Engineering Procurement and Construction (EPC) contract /17/, Report on installed project activity to the Board of Investment of Thailand /22/, Confirmation letter of number and specification of PV Module, Inverter and Transformer of project activity by DEMCO PUBLIC COMPANY LIMITED /23/, and PV module &amp; inverter &amp; transformers specifications /24/, /25/, /26/. There is no change in the project boundary.</p>
<b>Actual operational parameters which are within the control of the project participants differing from the expected parameters</b>	<p>There is no expected parameter which differs from the actual operational parameters which are within the control of the project participant due to project activity changes as confirmed by document review /2/, /3/, /34/.</p>
<b>Any consequential changes to the baseline methodology – including changing or adding another baseline methodology or</b>	<p>No. There is no any consequential change to the baseline methodology – including changing or adding another baseline methodology from the registered PDD /2/ as confirmed by document review /2/, /3/ and the physical inspection during OSV.</p>
<b>Any consequential changes by applying a baseline scenario that is more appropriate as a result of the proposed or actual modification to the project activity.</b>	<p>As mentioned above, there is no change by applying a baseline scenario that is more appropriate as a result of the proposed or actual modification to the project activity. The project activity generates electricity from based on solar energy and delivers Thai national grid, same as the registered PDD /2/.</p>

Herewith, the validation team summarizes the post registration changes between registered PDD /2/ and actual project activity in the revised PDD /3/:

<b>Post registration change in the project implementation</b> <b>Description of the proposed or actual changes as compared to the description in the registered PDD /2/</b>	
Description in Registered PDD /2/	Correction to the registered PDD /3/ based on the actual project activity with DOE assessment and reason of acceptance
<b>Section A.1.</b> “Solar Farm at Nakhonsawan, Thailand (hereafter called the “project activity”) is developed by Energy Absolute Public Co., Ltd. It is proposed to construct a solar photovoltaic power plant at Takhli district, Nakhonsawan province in northern Thailand. The	<b>Section A.1.</b> “Solar Farm at Nakhonsawan, Thailand (hereafter called the “project activity”) is developed by Energy Absolute Public Co., Ltd. <sup>2</sup> It is proposed to construct a solar photovoltaic power plant at Takhli district, Nakhonsawan province in northern Thailand. The

<sup>2</sup> Project Participant has been changed from “Energy Absolute Public Co., Ltd.” to “EA Solar Nakornsawan Co., Ltd.”

Post registration change in the project implementation																																																				
Description of the proposed or actual changes as compared to the description in the registered PDD /2/																																																				
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<p><b>Section A.3.</b> The proposed 101.25 MWp solar photovoltaic power plant project tentatively will comprise of the following units:</p> <p>1,012,500 units of photovoltaic modules 360 units of inverters 360 units of transformer</p> <p>The technical specification of the solar module to be used in the project activity is given in the following table:</p> <table border="1"> <thead> <tr> <th>Manufac turer</th><th>Model</th><th>Quantit y</th><th>Nominal Peak Power (Wp)</th><th>Silicon cell type</th></tr> </thead> <tbody> <tr> <td>Sunwell</td><td>WD-A-CC087A</td><td>1,012,500</td><td>100</td><td>Amorphous Silicon</td></tr> </tbody> </table> <p>Technical specifications of the inverter to be used in the project activity are given below:</p> <table border="1"> <thead> <tr> <th>Manufac turer</th><th>Model</th><th>Qu ant ity</th><th>AC nominal output (kW)</th><th>Max. efficienc y / Euro efficienc y (%)</th></tr> </thead> <tbody> <tr> <td>Power One</td><td>PVI-250-TL-CN</td><td>360</td><td>250</td><td>98.5 / 98.2</td></tr> </tbody> </table>		Manufac turer	Model	Quantit y	Nominal Peak Power (Wp)	Silicon cell type	Sunwell	WD-A-CC087A	1,012,500	100	Amorphous Silicon	Manufac turer	Model	Qu ant ity	AC nominal output (kW)	Max. efficienc y / Euro efficienc y (%)	Power One	PVI-250-TL-CN	360	250	98.5 / 98.2	<p><b>Section A.3.</b> The proposed <b>126.126 MWp</b> solar photovoltaic power plant project tentatively will comprise of the following units:</p> <p><b>508,794</b> units of photovoltaic modules <b>180</b> units of inverters <b>101</b> units of transformer</p> <p>The technical specification of the solar module to be used in the project activity is given in the following table:</p> <table border="1"> <thead> <tr> <th>Manufa cturer</th><th>Model</th><th>Quantity</th><th>Nominal Peak Power (Wp)</th><th>Cell type</th></tr> </thead> <tbody> <tr> <td rowspan="2"><b>LDK</b></td><td><b>LDK-245P-20</b></td><td><b>157,300</b></td><td><b>245</b></td><td><b>Multicrystalline silicon</b></td></tr> <tr> <td><b>LDK-250P-20</b></td><td><b>98,098</b></td><td><b>250</b></td><td><b>Multicrystalline silicon</b></td></tr> <tr> <td rowspan="2"><b>Renesolar</b></td><td><b>JC245M-24/Bb</b></td><td><b>57,200</b></td><td><b>245</b></td><td><b>Polycrystalline</b></td></tr> <tr> <td><b>JC250M-24/Bb</b></td><td><b>196,196</b></td><td><b>250</b></td><td><b>Polycrystalline</b></td></tr> <tr> <td><b>Total</b></td><td></td><td><b>508,794</b></td><td></td><td></td></tr> </tbody> </table> <p>Technical specifications of the inverter to be used in the project activity are given below:</p>			Manufa cturer	Model	Quantity	Nominal Peak Power (Wp)	Cell type	<b>LDK</b>	<b>LDK-245P-20</b>	<b>157,300</b>	<b>245</b>	<b>Multicrystalline silicon</b>	<b>LDK-250P-20</b>	<b>98,098</b>	<b>250</b>	<b>Multicrystalline silicon</b>	<b>Renesolar</b>	<b>JC245M-24/Bb</b>	<b>57,200</b>	<b>245</b>	<b>Polycrystalline</b>	<b>JC250M-24/Bb</b>	<b>196,196</b>	<b>250</b>	<b>Polycrystalline</b>	<b>Total</b>		<b>508,794</b>		
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<sup>3</sup>NASA Surface meteorology and Solar Energy data. <http://eosweb.larc.nasa.gov/sse/RETScreen/>

Post registration change in the project implementation																										
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Party involved (host) indicates a host Party	Private and/or public entity(ies) project participants (as applicable)	Indicate if the Party involved wishes to be considered as project participant (Yes/No)		Party involved (host) indicates a host Party	Private and/or public entity(ies) project participants (as applicable)	Indicate if the Party involved wishes to be considered as project participant (Yes/No)																				
*Thailand (host)	*Energy Absolute Public Co., Ltd. (Public entity)	No		*Thailand (host)	*EA Solar Nakornsawan Co., Ltd.	No																				
				The revised PDD /3/ is verified and confirmed by document review /20/, /21/, /35/, and accessed UNFCCC’s website <sup>4</sup> .																						
Section B.6.3.				Section B.6.3.																						
Therefore, EG <sub>facility,y</sub> in ex ante for the first crediting period are summarised in the following table. The guaranteed electricity figures for entire project lifetime are given in Appendix 4:				Therefore, EG <sub>facility,y</sub> in ex ante for the first crediting period are summarised in the following table. The guaranteed electricity figures for entire project lifetime are given in Appendix 4:																						
Year		Energy output warranty (MWh)		Year		Energy output warranty (MWh)																				
1		152,682		1		152,666																				
2		148,893		2		151,564																				
3		146,051		3		150,463																				
4		144,157		4		149,361																				

<sup>4</sup> <https://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1354173065.29/view>



Post registration change in the project implementation					Description of the proposed or actual changes as compared to the description in the registered PDD /2/				
Description in Registered PDD /2/					Correction to the registered PDD /3/ based on the actual project activity with DOE assessment and reason of acceptance				
5	142,578				5	148,259			
6	141,315				6	147,158			
7	140,052				7	146,056			
					<p>The revised <math>EG_{\text{facility},y}</math> is guaranteed and proposed by EPC subcontractor /17/. The revised plant load factor is 17.69%<sup>5</sup>. The validation team crosschecked the plausibility of PLF with other published papers by the 3<sup>rd</sup> Party in Thailand /27/, /28/, /29/ and other CDM registered projects in Thailand under Solar PV type (ref. No. 5221, 5739, 6129, 6615, 7079, 7112, 7176, 7238, 82078299, 8449, 8487, 8625, 8679<sup>6</sup>) and found that their PLFs are in a range of 13-20%. Therefore, the validation team is of opinion that the revised value of <math>EG_{\text{facility},y}</math> is reasonable.</p>				
Section B.6.4.					Section B.6.4.				
Year	Baseline emissions (t CO <sub>2</sub> e)	Project emissions (t CO <sub>2</sub> e)	Leakage (t CO <sub>2</sub> e)	Emission reductions (t CO <sub>2</sub> e)	Year	Baseline emissions (t CO <sub>2</sub> e)	Project emissions (t CO <sub>2</sub> e)	Leakage (t CO <sub>2</sub> e)	Emission reductions (t CO <sub>2</sub> e)
01/12/2013 – 30/11/2014	84,799	0	0	84,799	01/12/2013 – 30/11/2014	84,791	0	0	84,791
01/12/2014 – 30/11/2015	82,695	0	0	82,695	01/12/2014 – 30/11/2015	84,179	0	0	84,179
01/12/2015 – 30/11/2016	81,117	0	0	81,117	01/12/2015 – 30/11/2016	83,567	0	0	83,567
01/12/2016 – 30/11/2017	80,065	0	0	80,065	01/12/2016 – 30/11/2017	82,955	0	0	82,955
01/12/2017 – 30/11/2018	79,188	0	0	79,188	01/12/2017 – 30/11/2018	82,343	0	0	82,343
01/12/2018 – 30/11/2019	78,486	0	0	78,486	01/12/2018 – 30/11/2019	81,731	0	0	81,731
01/12/2019 – 30/11/2020	77,785	0	0	77,785	01/12/2019 – 30/11/2020	81,119	0	0	81,119
<b>Total</b>	<b>564,136</b>	<b>0</b>	<b>0</b>	<b>564,136</b>	<b>Total</b>	<b>580,686</b>	<b>0</b>	<b>0</b>	<b>580,686</b>
<b>Total number of crediting years</b>	7				<b>Total number of crediting years</b>	7			
<b>Annual average over the crediting period</b>	<b>80,591</b>	<b>0</b>	<b>0</b>	<b>80,591</b>					

<sup>5</sup> PLF =  $139,446 \text{ MWh} / (90 \text{ MW}_{\text{AC}} * (24 * 365) \text{ h/years}) * 100 = 17.69\%$

<sup>6</sup> Other CDM registered projects in Thailand under Solar PV type which are not indicated are different technology with project activity (i.e. tracker technology) and there is no average annual electricity generation data through project lifetime.

Post registration change in the project implementation																		
Description of the proposed or actual changes as compared to the description in the registered PDD /2/																		
Description in Registered PDD /2/		Correction to the registered PDD /3/ based on the actual project activity with DOE assessment and reason of acceptance																
		Annual average over the crediting period	82,955	0	0	82,955												
		Due to the increase in installed capacity, the estimated emission reductions are increased without any change in the emission factor which remains fixed throughout the first crediting period from the registered PDD /2/. Therefore, the estimated emission reductions as indicated in the revised PDD /3/ are conservative and reasonable.																
When was the changes occurred (after registration /prior to registration)		By document review /15/, /17/, /UNFCCC website <sup>7</sup> /, the project activity changes occurred after registration and more details are as follows:																
		<table><tr><th>Event</th><th>Project activity</th><th>Evidence</th></tr><tr><td>Project register with CDM EB</td><td>11/12/2012</td><td>UNFCCC's website<sup>8</sup></td></tr><tr><td>Power Purchase Agreement (PPA) novation from Energy Absolute Public Co., Ltd. to EA Solar Nakornsawan Co., Ltd. with PEA</td><td>23/01/2013</td><td>Signed PPA novation /15/</td></tr><tr><td>Signed Engineering Procurement and Construction (EPC) Contract</td><td>30/04/2013</td><td>Signed EPC contract /17/</td></tr></table>					Event	Project activity	Evidence	Project register with CDM EB	11/12/2012	UNFCCC's website <sup>8</sup>	Power Purchase Agreement (PPA) novation from Energy Absolute Public Co., Ltd. to EA Solar Nakornsawan Co., Ltd. with PEA	23/01/2013	Signed PPA novation /15/	Signed Engineering Procurement and Construction (EPC) Contract	30/04/2013	Signed EPC contract /17/
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Signed Engineering Procurement and Construction (EPC) Contract	30/04/2013	Signed EPC contract /17/																
Reason for these changes taking place		The proposed specification of the project activity as indicated in the registered PDD /2/ is not available therefore the project's EPC has proposed the new model which has higher performance as confirmed by PP's representative during on-site assessment.																
How does the changes impact on the overall operation/ability of the project activity to deliver emission reduction as stated in the registered PDD		Due to the increase in capacity, the estimated emission reductions are increased without any change in the emission factor which remains fixed throughout the first crediting period from the registered PDD /2/. Therefore, the estimated emission reductions as indicated in the revised PDD																

<sup>7</sup> <http://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1354173065.29/view>

<sup>8</sup> <http://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1354173065.29/view>



Post registration change in the project implementation	
Description of the proposed or actual changes as compared to the description in the registered PDD /2/	
Description in Registered PDD /2/	Correction to the registered PDD /3/ based on the actual project activity with DOE assessment and reason of acceptance
	/3/ are conservative.

### 3.1.1 Impact on Additionality of the project activity

As per the revised PDD /3/, since installed capacity and technology specification are changed, electricity generation and total investment cost are change and resulting in project IRR & sensitivity analysis changes as well.

The validation of electricity generation and total investment cost bases on the supporting documents and the local and sectoral expertises of the validation team. The justification is tabulated as follows:

Parameter:	Electricity generation		
Value applied for the IRR calculation:	139,446 MWh/y <sup>9</sup>		
Source of the value:	Parameters	Applied value	Sources
	1. Installation capacity	126.126 MW <sub>p</sub>	Signed Engineering Procurement and Construction (EPC) contract, issued on 30/04/2013 /17/
	2. % Degrade	0.7% of average value through 25 years of project lifetime and 3% in the first year	PV module specifications of project activity: LDK & Renesolar /24/ attached with Signed Engineering Procurement and Construction (EPC) contract, issued on 30/04/2013 /17/
	3. Solar irradiation	5.18 kWh/m <sup>2</sup> -d or 5.18 h/day	Signed Engineering Procurement and Construction (EPC) contract, issued on 30/04/2013 /17/
	4. % Guarantee Performance Ratio	66%	Signed Engineering Procurement and Construction (EPC) contract, issued on 30/04/2013 /17/
Consistency of the value:	Yes		
Justification by the validation team according to §113 of VVM: ( cross checking and comparison as applicable)	Parameters	Applied value	Validation team's justification
	1. Installation capacity	126.126 MW <sub>p</sub>	The accuracy of the applied value is confirmed by document review /17/, /22/, /23/, /24/, /25/, /26/.
	2. % Degrade	0.7% of average value through 25 years of project lifetime and 3% in the first year	Comparing to other CDM registered projects in Thailand under Solar PV type and clearly published this

<sup>9</sup> average annual electricity generation data through project lifetime (25 years)

			<p>figure and other publications by the third Party /28/, /29/ (1% was as average value through 25 years of project lifetime), the applied value is slightly lower resulting to higher electricity generation estimation, conservative for Investment analysis point of view.</p> <p>Therefore, it is opinion of validation team that the applied value is conservative and suitable.</p>
	3. Solar irradiation	5.18 kWh/m <sup>2</sup> -d or 5.18 h/day	<p>The applied value is crosschecked via website of National Aeronautical and Space Administration U.S.A which are average value of 22 years historical data (<a href="http://eosweb.larc.nasa.gov/se/RETScreen/">http://eosweb.larc.nasa.gov/se/RETScreen/</a>) and found that the average daily solar radiation is in range of 4.59-6.22 kWh/m<sup>2</sup>-d or 4.59-6.22 h/day (1 kWh/m<sup>2</sup>-d is equal to 1 h/day as checked via <a href="http://en.wikipedia.org/wiki/Insolation">http://en.wikipedia.org/wiki/Insolation</a>) and the applied value is mostly average data.</p> <p>Therefore, the validation team is of opinion that the applied value is valid and applicable.</p>
	4. % Guarantee Performance Ratio	66%	<p>The applied value is the guarantee conditions taken from signed EPC contract /17/.</p> <p>Therefore, the validation team is of the opinion that the applied value is valid and applicable.</p>
	<p>The revised plant load factor of the project activity is 17.69%<sup>10</sup>. The validation team crosschecked the plausibility of PLF with other published papers by the 3<sup>rd</sup> Party in Thailand /27/, /28/, /29/ and other CDM registered projects in Thailand under Solar PV type (ref. No. 5221, 5739, 6129, 6615, 7079, 7112, 7176, 7238, 82078299, 8449, 8487, 8625, 8679<sup>11</sup>) and found that their PLFs are in a range of 13-20%. Therefore, the validation team is of opinion that the applied value is appropriate and valid.</p>		

<sup>10</sup>  $PLF = 139,446 \text{ MWh} / (90 \text{ MW}_{AC} * (24*365) \text{ h/years}) * 100 = 17.69\%$

<sup>11</sup> Other CDM registered projects in Thailand under Solar PV type which are not indicated are different technology with project activity (i.e. tracker technology) and there is no average annual electricity generation data through project lifetime.

Parameter:	Total investment cost		
Value applied for the IRR calculation:	9,491 million THB		
Source of the value:	Items	Actual cost in the revised PDD /3/(millionTHB)	Sources
	Land & Land preparation	725.00	Land purchase agreement, signed on 03/07/2013 /19/
	Substation	303.00	Signed substation construction agreement between Energy Absolute Public Co., Ltd. and SIEMENS., Ltd, issued on 19/09/2012 /30/
	EPC contract	8,443.00	Signed Engineering Procurement and Construction (EPC) contract, issued on 30/04/2013 /17/, Exchange rate on 30/04/2013 published by Bank of Thailand <sup>12</sup>
	Arranger Fee / Others	20.00	Signed agreements for technical advisors i.e. substation advisor, lawyers, issued on 28/02/2013, 28/03/2013 /31/
	Total Investment Cost	9,491.00	
Consistency of the value:	Yes		
Justification by the validation team according to §113 of VVM: ( cross checking and comparison as applicable)	<p>The plausibility of applied value is crosschecked via publications of the 3<sup>rd</sup> Party /28/, /29/, /32/, /33/, and further crosschecked with other CDM registered project in Thailand under Solar PV type (ref. No. 5221, 6615, 6617, 8449, 8487<sup>13</sup>). The result shows that the investment cost of PV power plant projects in Thailand (exclusively land&amp;land preparation cost, substation cost), is about 80.0-120.0 millionTHB/MW<sub>AC</sub> and the applied value for project is within the range (93.8 millionTHB/MW<sub>AC</sub> = 8,443million THB/90MW<sub>AC</sub>).</p> <p>Therefore, it is opinion of validation team that the applied value of total investment cost is appropriate and valid.</p>		

### Financial calculation and conclusion

The revised IRR spreadsheet /14/ was received, verified and found to be correct by the validation team. The assumptions used in the financial calculations are correct, valid and consistent. The financial analysis is in accordance with the Guidelines on the assessment of investment analysis, version 05. All revised input parameters used in the IRR calculation were valid. The validation team confirms that the revised project IRR-

<sup>12</sup> [http://www.bot.or.th/Thai/Statistics/FinancialMarkets/ExchangeRate/\\_layouts/Application/ExchangeRate/ExchangeRate.aspx](http://www.bot.or.th/Thai/Statistics/FinancialMarkets/ExchangeRate/_layouts/Application/ExchangeRate/ExchangeRate.aspx)

<sup>13</sup> Other CDM registered project in Thailand under Solar PV type did not declare the project additionality by using investment analysis

pretax without any CDM revenue works out to be 10.26% which is below benchmark (WACC-pretax) of 12.77%. It is clearly demonstrated that the proposed project activity without CER revenues is financially unattractive. The validation took cognizance of paragraph 104, 118-120 of VVS, version 05.0 /5/.

### Sensitivity analysis

The validation took cognizance of paragraph 120 (e) of VVS, version 05.0 /5/. The table below summaries the situation where the IRR would reach the benchmark:

Input value	Variation	Validation team's opinion
(i) Investment cost	If the investment cost decreases by 12.3%, the IRR reaches the benchmark.	Since the applied figure for Investment cost in the revised PDD is an actual cost calculated from the project receipts /17/, /19/, /30/, /31/, the validation team agrees that decreasing of investment cost by 12.3% is unrealistic.
(ii) Electricity price	If the electricity price increases by 29.0%, the IRR reaches the benchmark.	<p>Although there is no change on electricity price due to project activity change, sensitivity analysis result on Electricity price was updated in the revised PDD /3/.</p> <p>The applied electricity price is derived from the sum of 1) base tariff rate (3.1768 THB/kWh) and 2) adder (6.5 THB/kWh). Since the adder is fixed, the electricity price variation depends on base tariff rate.</p> <p>Comparing to historical data of base tariff rate during January 2009 – June 2011 obtained from EGAT website<sup>14</sup>, there is no change of the averaged wholesale tariff rate (2.3121 THB/kWh). Only Ft has monthly changed and it varies in range of 0.8668 - 0.9490 THB/kWh. Even the highest Ft at 0.9490 THB/kWh is applied in the investment analysis, the project IRR slightly increases to 10.46% and its sensitivity analysis (+10%) slightly increases to 11.54% which are still lower than the benchmark.</p> <p>It would require an increase of 29% in base tariff rate for the project to reach the benchmark. Based on the review of the historical data of base tariff during January 2009 – June 2011, the maximum base tariff rate was 3.2611 THB/kWh. Therefore, the validation team concludes that the increase of the base tariff rate to 4.1108 THB/kWh would not be realistic.</p>
(iii) Electricity generation	If Electricity generation increases by 11.5%, the IRR crosses the benchmark.	<p>The applied PLF in the revised PDD (17.69%) is estimated by Technology's supplier who has various experiences for PV power plant. The validation team crosschecked the plausibility of PLF with other published papers by the 3<sup>rd</sup> Party in Thailand /27/, /28/, /29/ and other CDM registered projects in Thailand under Solar PV type (ref. No. 5221, 5739, 6129, 6615, 7079, 7112, 7176, 7238, 82078299, 8449, 8487, 8625, 8679<sup>15</sup>) and found that their PLFs are in a range of 13-20%. Although, 20% of PLF is applied, the project IRR slightly increases to 12.73%, not overcome the benchmark (12.77%).</p> <p>Therefore, the validation team agrees that a variation in Electricity generation that to by 11.5% is not realistic.</p>

<sup>14</sup> <http://www.ppa.egat.co.th/Sppx/Index.html>, only data from January 2009 onwards was published

<sup>15</sup> Other CDM registered projects in Thailand under Solar PV type which are not indicated are different technology with project activity (i.e. tracker technology) and there is no average annual electricity generation data through project lifetime.

The validation team thus confirms that the sensitivity analysis is in accordance with Guidelines on the assessment of investment analysis, version 05.0 /10/.

In addition, the validation team confirms that project participants have only modified the key parameters in the original spreadsheet calculations affected by actual changes to the project activity, in line with requirements in paragraph 274 of VVS, version 05.0 /5/.

### Barrier analysis

As per Tool for the demonstration and assessment of additionality, version 07.0.0, the barrier analysis is not necessarily required because investment analysis is selected to demonstrate the project additionality.

### Common Practice analysis

Although the installation capacity of PV module is changed to 126.126 MWp, the installation capacity of inverter is same with registered PDD /2/, i.e. 90 MW<sub>AC</sub>. Therefore, there is no impact to common practice analysis.

In summary, the validation team still confirms that there are essential distinctions between the project activity and other similar PV power plant projects in Thailand and the project activity is not common practice and is hence additional.

### 3.1.2 Impact on the scale and boundary of the project activity

As per the revised PDD /3/, the installation capacity is changed to 126.126 MWp which is still under large scale CDM project, same as the registered PDD /2/.

### 3.1.3 Impact on the applicability and application of approved baseline methodology under which the project activity has been registered

The validation team determined the applicability of methodology ACM0002, version 12.3.0 as follows:

Applicability criteria according to ACM0002, version 12.3.0	Jusification as indicated in the registered PDD /2/	Jusification as indicated in the revised PDD	Determination by the validation team
This methodology is applicable to grid-connected renewable power generation project activities that (a) install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant); (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s).	Applicable. The project activity involves the installation of new grid connected solar PV power plant.	Applicable. The project activity involves the installation of new grid connected solar PV power plant.	By document review /15/, /16/, /17/, /18/, /22/, /23/, /24/, /25/, /26/ and physical inspection during on-site assessment, the validation team confirms that the project is under option (a) of a new grid-connected solar PV power plant installation at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant).  Therefore, this requirement is applicable for the project.
The methodology is applicable under the following conditions:			
• The project activity is the installation, capacity	Applicable. Project activity involves	Applicable. Project activity involves	By document review /17/, /22/, /23/, /24/, /25/, /26/.

Applicability criteria according to ACM0002, version 12.3.0	Jusification as indicated in the registered PDD /2/	Jusification as indicated in the revised PDD	Determination by the validation team
addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit.	installation of a new 101.25 MWp solar PV power plant.	installation of a new 126.126 MWp solar PV power plant.	the validation team confirms that the project activity involves installation of a new 126.126 MWp solar PV power plant.  Therefore, this requirement is applicable for the project.
<ul style="list-style-type: none"> <li>• In the case of capacity additions, retrofits or replacements (except for capacity addition projects for which the electricity generation of the existing power plant(s) or unit(s) is not affected): the existing plant started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity addition or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.</li> </ul>	<p>Not applicable.</p> <p>The project activity is a greenfield power plant. It does not involve any retrofit or replacement activities. Hence this criterion is not applicable.</p>	<p>Not applicable.</p> <p>The project activity is a greenfield power plant. It does not involve any retrofit or replacement activities. Hence this criterion is not applicable.</p>	<p>By document review /15/, /16/, /17/, /22/, /23/, /24/, /25/, /26/ and physical inspection during on-site assessment, the validation team confirms that the project is not capacity additions, not retrofits or not replacements.</p> <p>Therefore, this requirement is not applicable for the project.</p>
<p>In case of hydro power plants: at least one of the following conditions must apply:</p> <ul style="list-style-type: none"> <li>• The project activity is implemented in an existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or</li> <li>• The project activity is implemented in an</li> </ul>	<p>Not applicable.</p> <p>The project activity does not involve hydro power plant and hence this criterion is not applicable.</p>	<p>Not applicable.</p> <p>The project activity does not involve hydro power plant and hence this criterion is not applicable.</p>	<p>This requirement is not applicable for the project because the project activity involves the installation of a solar PV power plant, not hydro power plant as confirmed by document review /15/, /16/, /17/, /22/, /23/, /24/, /25/, /26/ and physical inspection during on-site assessment.</p>

Applicability criteria according to ACM0002, version 12.3.0	Jusification as indicated in the registered PDD /2/	Jusification as indicated in the revised PDD	Determination by the validation team
<p>existing single or multiple reservoirs, where the volume of any of reservoirs is increased and the power density of each reservoir, as per the definitions given in the Project Emissions section, is greater than 4 W/m<sup>2</sup> after the implementation of the project activity; or</p> <ul style="list-style-type: none"> <li>• The project activity results in new single or multiple reservoirs and the power density of each reservoir, as per the definitions given in the Project Emissions section, is greater than 4 W/m<sup>2</sup> after the implementation of the project activity.</li> </ul>			
<p>In case of hydro power plants using multiple reservoirs where the power density of any of the reservoirs is lower than 4 W/m<sup>2</sup> after the implementation of the project activity all of the following conditions must apply:</p> <ul style="list-style-type: none"> <li>• The power density calculated for the entire project activity using equation 5 is greater than 4 W/m<sup>2</sup>;</li> <li>• All reservoirs and hydro power plants are located at the same river and were designed together to function as an integrated project<sup>1</sup> that collectively constitutes the generation capacity of the combined power plant;</li> <li>• The water flow between the multiple reservoirs is not used</li> </ul>	<p>Not applicable.</p> <p>The project activity does not involve hydro power plant and hence this criterion is not applicable.</p>	<p>Not applicable.</p> <p>The project activity does not involve hydro power plant and hence this criterion is not applicable.</p>	<p>Idem.</p>



Applicability criteria according to ACM0002, version 12.3.0	Jusification as indicated in the registered PDD /2/	Jusification as indicated in the revised PDD	Determination by the validation team
<p>by any other hydropower unit which is not a part of the project activity;</p> <ul style="list-style-type: none"> <li>• The total installed capacity of the power units, which are driven using water from the reservoirs with a power density lower than 4 W/m<sup>2</sup>, is lower than 15 MW;</li> <li>• The total installed capacity of the power units, which are driven using water from reservoirs with a power density lower than 4 W/m<sup>2</sup>, is less than 10% of the total installed capacity of the project activity from multiple reservoirs.</li> </ul>			
<p>The methodology is not applicable to the following:</p> <ul style="list-style-type: none"> <li>• Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site;</li> <li>• Biomass fired power plants;</li> <li>• A hydro power plant that results in the creation of a new single reservoir or in the increase in an existing single reservoir where the power density of the reservoir is less than 4 W/m<sup>2</sup>.</li> </ul>	<p>Not applicable.</p> <p>The project activity does not involve any fuel switching from fossil fuel to renewable energy. Also it does not involve biomass fired power plant and hydro power plant. Hence this criterion is not applicable.</p>	<p>Not applicable.</p> <p>The project activity does not involve any fuel switching from fossil fuel to renewable energy. Also it does not involve biomass fired power plant and hydro power plant. Hence this criterion is not applicable.</p>	<p>By document review /15/, /16/, /17/, /22/, /23/, /24/, /25/, /26/ and physical inspection during on-site assessment, the validation team confirms that the project is not switching from fossil fuels to renewable energy sources, not biomass fired power plants and not hydro power plant.</p> <p>Therefore, this requirement is not applicable for the project.</p>

Therefore, the validation team confirms that the changes comply with application of applied methodology, ACM0002, version 12.3.0, and due to this methodology, the conservativeness of the monitoring and verification process and the related emission reduction calculation do not get affected.



### 3.1.4 Impact on the compliance of the monitoring plan with the applied monitoring methodology

By document review /3/, /17/, /22/, /23/, /24/, /25/, /26/ and on-site physical inspection, changes in effective output due to increased installed capacity from 101.25 MWp to 126.126 MWp have no impact on the compliance of the monitoring plan with the applied monitoring methodology.

However, there are the changes of the registered monitoring plan by (1) installing 3 imported meters (changes from 1 meter to 3 meters) for monitoring the electricity consumption by control room and offices and (2) there is no back-up meter for imported electricity monitoring. By document review /3/, /8/, /34/ and on-site physical inspection, the validation team confirms that the changes still comply with application of applied methodology, ACM0002, version 12.3.0 and justification details will be shown in section 3.2 on this report.

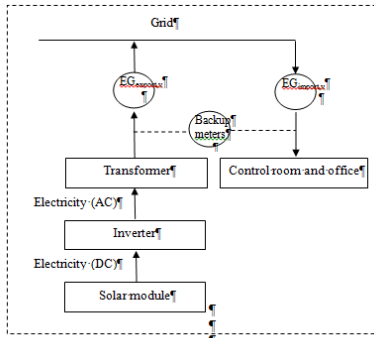
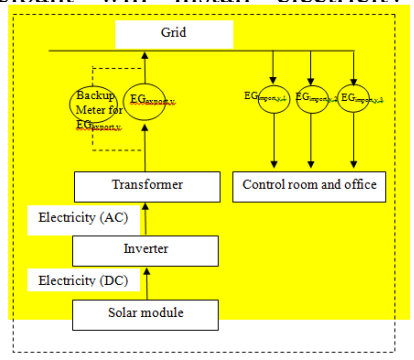
### 3.1.5 Impact on the level of accuracy and completeness of the monitoring plan

The detailed justification of impact on the level of accuracy and completeness of the monitoring plan can be shown in the section 3.2.

## 3.2 Changes to the Registered Monitoring Plan

Herewith, the validation team summarizes the post registration changes between registered PDD /2/ and actual project activity in the revised PDD /3/:

Post registration change in the monitoring plan																																					
Description of the proposed or actual changes as compared to the description in the registered monitoring plan																																					
Description in monitoring plan of the registered PDD /2/	Correction to the monitoring plan of the registered PDD based on the actual monitoring in the project activity with DOE assessment and reason of acceptance /3/																																				
<b>Section B.7.1</b> <table border="1"> <tr> <td>Data / Parameter</td><td>EG<sub>import,y</sub></td></tr> <tr> <td>Unit</td><td>MWh</td></tr> <tr> <td>Description</td><td>Quantity of import electricity by the project activity from the grid in year y</td></tr> <tr> <td>Source of data</td><td>Data measured and recorded from the electricity meters installed at the power Station</td></tr> <tr> <td>Value(s) applied</td><td>0 (ex-ante)</td></tr> <tr> <td>Measurement methods and procedures</td><td>Continuously measured by installed on-site electricity meter(s) with at least 2% accuracy and will be recorded daily. The recorded data will be reported on a monthly basis.</td></tr> <tr> <td>Monitoring frequency</td><td></td></tr> <tr> <td>QA/QC procedures</td><td>The meter will be installed at the power plant substation to monitor the electricity imported from the grid. The meter will be properly calibrated according to the national standard but at least once in a year. Back up meter of same accuracy class will be installed. It will be used in case of any malfunctioning of the main electricity meter. The measurement results will be cross checked with the electricity sales receipts from the national grid.</td></tr> <tr> <td>Purpose of data</td><td></td></tr> </table>	Data / Parameter	EG <sub>import,y</sub>	Unit	MWh	Description	Quantity of import electricity by the project activity from the grid in year y	Source of data	Data measured and recorded from the electricity meters installed at the power Station	Value(s) applied	0 (ex-ante)	Measurement methods and procedures	Continuously measured by installed on-site electricity meter(s) with at least 2% accuracy and will be recorded daily. The recorded data will be reported on a monthly basis.	Monitoring frequency		QA/QC procedures	The meter will be installed at the power plant substation to monitor the electricity imported from the grid. The meter will be properly calibrated according to the national standard but at least once in a year. Back up meter of same accuracy class will be installed. It will be used in case of any malfunctioning of the main electricity meter. The measurement results will be cross checked with the electricity sales receipts from the national grid.	Purpose of data		<b>Section B.7.1</b> <table border="1"> <tr> <td>Data / Parameter</td><td>EG<sub>import,y</sub></td></tr> <tr> <td>Unit</td><td>MWh</td></tr> <tr> <td>Description</td><td>Quantity of import electricity by the project activity from the grid in year y</td></tr> <tr> <td>Source of data</td><td>Data measured and recorded from the electricity meters installed at the power station</td></tr> <tr> <td>Value(s) applied</td><td>0 (ex-ante)</td></tr> <tr> <td>Measurement methods and procedures</td><td>Continuously measured by 3 installed on-site electricity meters with at least 2% accuracy and will be recorded daily. The recorded data will be reported on a monthly basis.  EG<sub>import,y</sub> = EG<sub>import,y,1</sub> + EG<sub>import,y,2</sub> + EG<sub>import,y,3</sub></td></tr> <tr> <td>Monitoring frequency</td><td></td></tr> <tr> <td>QA/QC procedures</td><td>The meters will be installed at the power plant substation to monitor the electricity imported from the grid. The meters will be properly calibrated according to the national standard but at least once in a year. The measurement results will be cross checked with the electricity sales receipts from the national grid.</td></tr> <tr> <td>Purpose of data</td><td></td></tr> </table>	Data / Parameter	EG <sub>import,y</sub>	Unit	MWh	Description	Quantity of import electricity by the project activity from the grid in year y	Source of data	Data measured and recorded from the electricity meters installed at the power station	Value(s) applied	0 (ex-ante)	Measurement methods and procedures	Continuously measured by 3 installed on-site electricity meters with at least 2% accuracy and will be recorded daily. The recorded data will be reported on a monthly basis.  EG <sub>import,y</sub> = EG <sub>import,y,1</sub> + EG <sub>import,y,2</sub> + EG <sub>import,y,3</sub>	Monitoring frequency		QA/QC procedures	The meters will be installed at the power plant substation to monitor the electricity imported from the grid. The meters will be properly calibrated according to the national standard but at least once in a year. The measurement results will be cross checked with the electricity sales receipts from the national grid.	Purpose of data	
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Purpose of data																																					

<b>Post registration change in the monitoring plan</b> <b>Description of the proposed or actual changes as compared to the description in the registered monitoring plan</b>			
Description in monitoring plan of the registered PDD /2/		Correction to the monitoring plan of the registered PDD based on the actual monitoring in the project activity with DOE assessment and reason of acceptance /3/	
<b>Additional comment</b>	All data will be stored electronically for the duration of the project activity plus two additional years.	<b>Additional comment</b>	All data will be stored electronically for the duration of the project activity plus two additional years.
		<p>By document review /3/, /34/, and on-site physical inspection, the validation team confirms that there are permanent changes from the registered PDD /2/ as per requirements in paragraph 262 – 266 of VVS, version 05.0. and comply with requirements in applied methodology, ACM0002, version 12.3.0.</p>	
<b>Section B.7.3</b> The project participant will install electricity meter(s) as follows:  <p>Figure 6: Monitoring Meter Flow Diagram</p>		<b>Section B.7.3</b> The project participant will install electricity meter(s) as follows:  <p>Figure 6: Monitoring Meter Flow Diagram</p>	
		<p>By document review /3/, /34/, and on-site physical inspection, the validation team confirms that there are permanent changes from the registered PDD /2/ as per requirements in paragraph 262 – 266 of VVS, version 05.0. and comply with requirements in applied methodology, ACM0002, version 12.3.0.</p>	

### 3.2.1 Impact on the level of accuracy of the monitoring plan

By document review /2/, /3/, /8/, /34/ and on-site physical inspection, the changes of monitoring plan are to (1) install 3 imported meters (changes from 1 meter to 3 meters) for monitoring the electricity consumption by control room and offices and (2) there is no back-up meter for imported electricity monitoring. However, the electricity meter accuracy for all 3 imported meter has no change (i.e. at least 2% accuracy) from the registered PDD /2/. Therefore, the validation team confirms that the changes on monitoring plan have no impact on the level of accuracy of the monitoring plan and do not reduce the level of accuracy of the monitoring compared with the requirements contained in the registered monitoring plan, in line with requirements in the paragraph 263 of VVS, version 05.0 /5/.

### 3.2.2 Monitoring plan in accordance with monitoring methodology

Since the monitoring parameters in the revised PDD /3/ have no change from the registered PDD /2/, although there are the changes of monitoring plan by (1) installing 3 imported meters (changes from 1 meter to 3 meters) for monitoring the electricity consumption by control room and offices and (2) there is no back-up meter for

imported electricity monitoring, the validation team confirms that the monitoring plan in the revised PDD /3/ is complete and in compliance with the applied methodology, ACM0002, version 12.3.0. Therefore, the validation team confirms that the monitoring plan as indicated in the revised PDD /3/ in accordance with monitoring methodology as confirmed by document review /2/, /3/, /8/, /34/. In addition, the validation team confirms that the permanent changes will not lead to a reduction in the accuracy of the calculation of emission reductions, in line with requirements in the paragraph 266 of VVS, version 05.0 /5/.

#### **4. FINDINGS FROM THE PREVIOUS VERIFICATION REPORTS**

Not applicable because it is validation on post registration change, not verification stage.

#### **5. CONCLUSION OF THE VALIDATION TEAM**

The validation team concludes that the validation of post registration changes is assessed as per paragraphs 263-268 and 270 – 276 of VVS, version 05.0. The actual changes that have occurred after the registration of the project activity but prior to the commencement of the verification are (1) an increase in installed capacity from 101.25 MWp to 126.126 MWp and (2) changes of monitoring plan by installing 3 imported meters (changes from 1 meter to 3 meters) for monitoring the electricity consumption by control room and offices and there is no back-up meters for imported electricity monitoring.

The validation team based on the documentary evidence, onsite assessment and interview with the project proponent and consultant concludes that there is no change in the baseline and monitoring methodology, scale of the project, additionality and monitoring plan of the project activity. The emission reductions are conservatively estimated. All the revised documents including revised emission reduction spreadsheet, revised PDD in track change and clean mode, supporting documents to justify the additionality are verified and found to be valid.

The validation team confirms that the changes of project design have no impact on the additionality, scale and the applicability of the baseline / monitoring methodology, ACM0002, version 12.3.0 and as per the requirements established in the Project Standard, version 05.0 and as per the requirements in paragraph 270 – 282 of VVS, version 05.0. In addition, the validation team confirms that the permanent changes of monitoring plan reflect the application of the approved methodology, ACM0002, version 12.3.0, guidance from the Board, in line with the requirements in paragraph 263 – 268 of VVS, version 05.0.

Therefore, the validation team confirms the changes and request for the approval of “Changes to the Project Design of the Registered Project Activity” and “Changes to the Registered Monitoring Plan”.

**List of Requests for Corrective Action (CAR) and Clarification (CL)**

Validation / Verification Manual

(35) The DOE shall raise a corrective action request (CAR) if one of the following occurs:

- (a) The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
- (b) The CDM requirements have not been met;
- (c) There is a risk that emission reductions cannot be monitored or calculated.

(36) The DOE shall raise a clarification request (CL) if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

The wording of CAR/CL shall clearly address nonconformity or seek clarification, and avoid instructive / consultative language in order to prevent actual or perceived consultancy.

No.	CAR/CL	Observation (CAR/CL)	Summary of project owner response	Validation team conclusion																			
1	x	CAR1 Installation capacity and specification of PV module and inverter is not same with the revised PDD.	<p>The proposed 126.126 MWp solar photovoltaic power plant project tentatively will comprise of the following units:</p> <ul style="list-style-type: none"> <li>• 508,794 units of photovoltaic modules</li> <li>• 180 units of inverters</li> <li>• 101 units of transformer</li> </ul> <p>The technical specification of the solar module to be used in the project activity is given in the following table:</p> <table border="1"> <thead> <tr> <th>Manufacturer</th><th>Model</th><th>Quantity</th><th>Nominal Peak Power (Wp)</th><th>Cell type</th></tr> </thead> <tbody> <tr> <td rowspan="2">LDK</td><td>LDK-245P-20</td><td>157,300</td><td>245</td><td>Multicrystalline silicon</td></tr> <tr> <td>LDK-250P-20</td><td>98,098</td><td>250</td><td>Multicrystalline silicon</td></tr> <tr> <td>Renesolar</td><td>JC245M-24/Bb</td><td>57,200</td><td>245</td><td>Polycrystalline</td></tr> </tbody> </table>	Manufacturer	Model	Quantity	Nominal Peak Power (Wp)	Cell type	LDK	LDK-245P-20	157,300	245	Multicrystalline silicon	LDK-250P-20	98,098	250	Multicrystalline silicon	Renesolar	JC245M-24/Bb	57,200	245	Polycrystalline	<p>The revised PDD /3/, Signed Engineering Procurement and Construction (EPC) contract, issued on /17/, Report on installed project activity to the Board of Investment of Thailand /22/, Confirmation letter of number and specification of PV Module, Inverter and Transformer of project activity /23/, PV module &amp; inverter &amp; transformers specifications /24/, /25/, /26/ are verified. <b>CAR1</b> is closed.</p>
Manufacturer	Model	Quantity	Nominal Peak Power (Wp)	Cell type																			
LDK	LDK-245P-20	157,300	245	Multicrystalline silicon																			
	LDK-250P-20	98,098	250	Multicrystalline silicon																			
Renesolar	JC245M-24/Bb	57,200	245	Polycrystalline																			

	JC250M-24/Bb	196,196	250	Polycrystalline
Total		508,794		

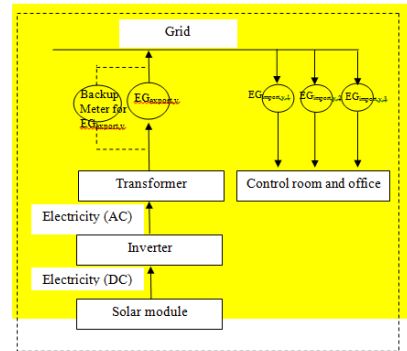
Technical specifications of the inverter to be used in the project activity are given below:

Manufacturer	Model	Quantity	AC nominal output (kW)	Maximum / EU / CEC efficiency (%)
Santerno	TG610 1000V TE-400 OD	180	500	98.5 / 98.3 / 98.0

Technical specifications of the transformer to be used in the project activity are given below:

Manufacturer	Capacity	Quantity
Tusco Trafo	1250 kVA	90
Tusco Trafo	50 kVA	3
Tusco Trafo	100 kVA	6
Tusco Trafo	160 kVA	1
Tusco Trafo	250 kVA	1

Signed Engineering Procurement and Construction (EPC)

				contract, issued on /17/, Report on installed project activity to the Board of Investment of Thailand /22/, Confirmation letter of number and specification of PV Module, Inverter and Transformer of project activity /23/, PV module & inverter & transformers specifications /24/, /25/, /26/ are submitted.							
2	x		<p>CAR2</p> <p>The imported electricity meters and back up meters as indicated in monitoring diagram in the revised PDD are different from the actual installation.</p>	<p>In the revised PDD, there are 3 of import electricity meters and 1 back-up meter for an exported electricity meter consistent with the actual installation.</p> <p>Therefore,</p> $EG_{import,y} = EG_{import,y,1} + EG_{import,y,2} + EG_{import,y,3}$  <p>Figure 6: Monitoring Meter Flow Diagram</p>	<p>The revised PDD /3/ and the single line diagram of monitoring meter /34/ are verified.</p> <p><b>CAR2</b> is closed</p>						
3		x	<p>CL1</p> <p>Please clarify and substantiate relationship between Energy Absolute Public Co., Ltd. to EA Solar Nakornsawan Co., Ltd.</p>	<p>EA Solar Nakornsawan Co.,Ltd. (ESN) is the subsidiary of Energy Absolute Public Co., Ltd (EA Plc). As EA Plc holds 99.997% of EA’s share. The list of ESN’s shareholder is shown in file ”List of ESN shareholders”.</p>	<p>Document on shareholder list of EA Solar Nakornsawan Co.,Ltd. issued on 29/04/2013 /18/ is verified and confirmed.</p> <p><b>CL1</b> is closed.</p>						
4		x	<p>CL2</p> <p>Supporting document on Electricity generation is requested for validation.</p>	<p>The electricity generation is calculated base on:</p> <table><thead><tr><th>Parameters</th><th>Applied value</th><th>Sources</th></tr></thead><tbody><tr><td>1. Installation capacity</td><td>126.126 MW<sub>p</sub></td><td>Signed Engineering Procurement and Construction (EPC) contract, issued on</td></tr></tbody></table>	Parameters	Applied value	Sources	1. Installation capacity	126.126 MW <sub>p</sub>	Signed Engineering Procurement and Construction (EPC) contract, issued on	<p>The supporting documents i.e. Signed Engineering Procurement and Construction (EPC) contract, issued on 30/04/2013 /17/ PV module specifications of project activity: LDK &amp; Renesolar /24/ are verified.</p> <p><b>CL2</b> is closed.</p>
Parameters	Applied value	Sources									
1. Installation capacity	126.126 MW <sub>p</sub>	Signed Engineering Procurement and Construction (EPC) contract, issued on									

				<table><tr><td>2. % Degrade</td><td>0.7% of average value through 25 years of project lifetime and 3% in the first year</td><td>30/04/2013 PV module specifications of project activity: LDK &amp; Renesolar attached with Signed Engineering Procurement and Construction (EPC) contract, issued on 30/04/2013</td></tr><tr><td>3. Solar irradiation</td><td>5.18 kWh/m<sup>2</sup>-d or 5.18 h/day</td><td>Signed Engineering Procurement and Construction (EPC) contract, issued on 30/04/2013</td></tr><tr><td>4. % Guarantee Performance Ratio</td><td>66%</td><td>Signed Engineering Procurement and Construction (EPC) contract, issued on 30/04/2013</td></tr></table>	2. % Degrade	0.7% of average value through 25 years of project lifetime and 3% in the first year	30/04/2013 PV module specifications of project activity: LDK & Renesolar attached with Signed Engineering Procurement and Construction (EPC) contract, issued on 30/04/2013	3. Solar irradiation	5.18 kWh/m <sup>2</sup> -d or 5.18 h/day	Signed Engineering Procurement and Construction (EPC) contract, issued on 30/04/2013	4. % Guarantee Performance Ratio	66%	Signed Engineering Procurement and Construction (EPC) contract, issued on 30/04/2013	
2. % Degrade	0.7% of average value through 25 years of project lifetime and 3% in the first year	30/04/2013 PV module specifications of project activity: LDK & Renesolar attached with Signed Engineering Procurement and Construction (EPC) contract, issued on 30/04/2013												
3. Solar irradiation	5.18 kWh/m <sup>2</sup> -d or 5.18 h/day	Signed Engineering Procurement and Construction (EPC) contract, issued on 30/04/2013												
4. % Guarantee Performance Ratio	66%	Signed Engineering Procurement and Construction (EPC) contract, issued on 30/04/2013												
			All supporting document is submitted for validation.											
5		x	CL3 Supporting document on total investment cost is requested for validation.	<p>The support documents for investment cost are as follows:</p> <table><tr><th>Items</th><th>Actual cost (millionTHB)</th><th>Sources</th></tr><tr><td>Land &amp; Land preparation</td><td>725.00</td><td>Land purchase agreement, signed on 03/07/2013</td></tr><tr><td>Substation</td><td>303.00</td><td>Signed substation construction agreement between Energy Absolute Public Co., Ltd.</td></tr></table>	Items	Actual cost (millionTHB)	Sources	Land & Land preparation	725.00	Land purchase agreement, signed on 03/07/2013	Substation	303.00	Signed substation construction agreement between Energy Absolute Public Co., Ltd.	<p>The supporting documents i.e. Land purchase agreement, signed on 03/07/2013 /19/, Signed substation construction agreement between Energy Absolute Public Co., Ltd. and SIEMENS., Ltd, issued on 19/09/2012 /30/, Signed Engineering Procurement and Construction (EPC) contract, issued on 30/04/2013 /17/, Exchange rate on 30/04/2013 published by Bank of Thailand<sup>16</sup>, Signed agreements for technical advisors i.e. substation advisor, lawyers, issued on 28/02/2013, 28/03/2013 /31/ are verified.</p> <p><b>CL3 is closed.</b></p>
Items	Actual cost (millionTHB)	Sources												
Land & Land preparation	725.00	Land purchase agreement, signed on 03/07/2013												
Substation	303.00	Signed substation construction agreement between Energy Absolute Public Co., Ltd.												

<sup>16</sup> [http://www.bot.or.th/Thai/Statistics/FinancialMarkets/ExchangeRate/\\_layouts/Application/ExchangeRate/ExchangeRate.aspx](http://www.bot.or.th/Thai/Statistics/FinancialMarkets/ExchangeRate/_layouts/Application/ExchangeRate/ExchangeRate.aspx)

				<table><tr><td></td><td></td><td>and SIEMENS., Ltd, issued on 19/09/2012</td></tr><tr><td>EPC contract</td><td>8,443.00</td><td>Signed Engineering Procurement and Construction (EPC) contract, issued on 30/04/2013, Exchange rate on 30/04/2013 published by Bank of Thailand</td></tr><tr><td>Arranger Fee / Others</td><td>20.00</td><td>Signed agreements for technical advisors i.e. substation advisor, lawyers, issued on 28/02/2013, 28/03/2013</td></tr><tr><td>Total Investment Cost</td><td>9,491.00</td><td></td></tr></table>			and SIEMENS., Ltd, issued on 19/09/2012	EPC contract	8,443.00	Signed Engineering Procurement and Construction (EPC) contract, issued on 30/04/2013, Exchange rate on 30/04/2013 published by Bank of Thailand	Arranger Fee / Others	20.00	Signed agreements for technical advisors i.e. substation advisor, lawyers, issued on 28/02/2013, 28/03/2013	Total Investment Cost	9,491.00		
		and SIEMENS., Ltd, issued on 19/09/2012															
EPC contract	8,443.00	Signed Engineering Procurement and Construction (EPC) contract, issued on 30/04/2013, Exchange rate on 30/04/2013 published by Bank of Thailand															
Arranger Fee / Others	20.00	Signed agreements for technical advisors i.e. substation advisor, lawyers, issued on 28/02/2013, 28/03/2013															
Total Investment Cost	9,491.00																
6		x	CL4 Evidence on communication with UNFCCC's representatives on change of PP is requested for validation.	The F-CDM-MOC /20/, Letter of approval that includes reference to both the old and the new name/legal status of the project participant from the DNA of Thailand /21/, communication email with UNFCCC's representative on 30/1/2014 /35/ are submitted.	The supporting evidences /20/, /21/, /35/ are verified. In addition, the validation team accessed UNFCCC's website <sup>17</sup> and confirms that EA Solar Nakornsawan Co., Ltd. is authorized Project Participant. <b>CL4</b> is closed.												

<sup>17</sup> <http://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1354173065.29/view>



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## **Appendix A**

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### **CERTIFICATES OF COMPETENCE**

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## Qualification

Songprasert, Piyaporn /

## Emission Trading

### United Nations Framework Convention on Climate Change

Auditor No.:

(AuditorenRegNr)

Appointed:  
(Zugelassen)

☒ ja

Qualification Level:  
(Qualifikationsstufe)

Lead Auditor

External:  
(Externer)

☐ ja

Add. reviewer:  
(Zusätzlicher Prüfer)

☐ yes

EAC Scopes:  
(EAC Branchen)

CDM 01 - Energy industries (renewable - / non-renewable sources)  
CDM 13 - Waste handling and disposal  
CDM 02 - Energy distribution

Add. qualification:  
(zus. Qualifikation)

First Appointment:  
(Erstberufung)

03/14/2012

Valid to:  
(Gültig bis)

03/15/2015

Remarks:

TA 13.1 , TA 1.2

Languages:

Thai  
English

## Experience Exchange

Date

Location

Remarks

Accreditation(s)

## Monitoring

Latest Monitoring:  
(letzte Beurteilung)

Next Monitoring:  
(nächste Beurteilung)

Remarks:

[View / Edit Monitoring](#)

## History of scope allocation

Date:

2012-12-19

Change:

EAC CDM added

By:

Praveen Urs

Reason:

Date: 2012-03-29  
Change: EAC CDM, CDM added  
By: Praveen Urs  
Reason:

## History

Created:	02/02/2011 10:20:42 AM	Chaipot Maksuk/Tha/TUV
Modified:	10/01/2013 03:30:47 PM	Piyaporn Songprasert/Tha/TUV
	07/04/2013 10:01:06 AM	Piyaporn Songprasert/Tha/TUV
	12/19/2012 07:41:51 PM ZE8	Piyaporn Songprasert/Tha/TUV
	11/09/2012 10:03:31 PM	
	11/06/2012 08:09:47 PM	
	03/29/2012 08:12:24 PM ZE8	
	02/02/2011 10:21:00 AM	

## Export to ICMS

Last Export:

## Qualification

Deng, Cuiping /

## Emission Trading

### United Nations Framework Convention on Climate Change

Auditor No.:

(AuditorenRegNr)

Appointed:  
(Zugelassen)

☒ ja

Qualification Level:  
(Qualifikationsstufe)

Lead Auditor

External:  
(Externer)

☐ ja

Add. reviewer:  
(Zusätzlicher Prüfer)

☒ yes

EAC Scopes:  
(EAC Branchen)

CDM 01 - Energy industries (renewable - / non-renewable sources)  
CDM 05 - Chemical industry  
CDM 11 - Fugitive emissions from production and consumption of  
halocarbons and sulphur hexafluoride  
CDM 12 - Solvents use  
CDM 04 - Manufacturing industries  
CDM 08 - Mining/Mineral production  
CDM 10 - Fugitive emissions from fuels (solid; oil and gas)

Add. qualification:  
(zus. Qualifikation)

First Appointment:  
(Erstberufung)

09/09/2013

Valid to:  
(Gültig bis)

08/07/2016

Remarks:

Appointed as Technical Reviewer for TA 1.2 TA 5.1, 11.1, 12.1  
and TA 4.1, 4.5, 8.2, 10.2 based on transitional measures of  
Accreditation Standard

Languages:

## Experience Exchange

Date

Location

Remarks

Accreditation(s)

2010-12-21 Beijing

United Nations Framework Convention on Climate Change

GC CDM Auditor Experience Exchange, Beijing, 2010-12-21to23

## Monitoring

Latest Monitoring:  
(letzte Beurteilung)

Next Monitoring:  
(nächste Beurteilung)

Remarks:

## History of scope allocation

Date:	2012-07-06
Change:	EAC CDM, CDM, CDM added
By:	Praveen Urs
Reason:	
Date:	
Change:	
By:	
Reason:	
Date:	
Change:	
By:	
Reason:	
Date:	2010-11-11
Change:	EAC CDM, CDM, CDM, CDM added
By:	Manfred Brinkmann
Reason:	Appointed as Technical Reviewer for

## History

Created:	08/13/2010 11:19:43 AM ZE8	Cuiping Deng/Bj/Chn/TUV
Modified:	10/30/2013 05:20:21 PM ZE8	Henri Phan/Chn/TUV
	10/30/2013 05:19:33 PM ZE8	Henri Phan/Chn/TUV
	08/10/2012 03:03:17 PM ZE8	Nelly Yong/MY/TUV
	07/06/2012 04:46:22 PM ZE8	
	07/06/2012 04:46:10 PM ZE8	
	07/02/2012 03:09:41 PM ZE8	
	07/02/2012 03:09:40 PM ZE8	
	02/12/2012 05:35:34 PM ZE8	
	02/12/2012 05:35:21 PM ZE8	
	11/11/2010 12:00:44 PM ZE9	
	11/11/2010 11:59:20 AM ZE9	
	11/11/2010 11:58:18 AM ZE9	
	08/13/2010 11:21:37 AM ZE8	

## Export to ICMS

Last Export: