# VALIDATION OPINION FOR REVISION OF REGISTERED CPA1 (POA) MONITORING PLAN

## Cool nrg Carbon Investments Pty Ltd

## PoA- 2535'CUIDEMOS Mexico (Campana De Uso Intelegente De Energia Mexico)- Smart Use of Energy Mexico'

## CPA-2535-0001'CUIDEMOS Mexico (Campana De Uso Intelegente De Energia Mexico)- Puebla'

## UNFCCC Ref. No. 2535

**SGS Climate Change Programme**
SGS United Kingdom Ltd
SGS House
217-221 London Road
Camberley Surrey
GU15 3EY
United Kingdom

| **Date of Issue:** | **Project Number:** |
|---|---|
| 05/07/2012 | CDM.VER0993 PoA CPA-1 RMP |
| **Project Title:** | |
| PoA: CUIDEMOS Mexico (Campana De Uso Intelegente De Energia Mexico) – Smart Use of Energy Mexico<br>CPA: CUIDEMOS Mexico (Campana De Uso Intelegente De Energia Mexico) – Puebla | |
| **Organisation:** | **Client:** |
| SGS United Kingdom Limited | Cool nrg Carbon Investments Pty Ltd |
| **Subject:** | |
| Validation Opinion for Revision of Registered POA<br>Monitoring Plan: | |

| | | |
|---|---|---|
| [X] | Proposed revision includes revisions proposed by the PP/DOE | **Distribution/Document Control** |
| | Proposed revision only includes the request by the CDM EB | |
| | Proposed revision includes not only request by the CDM EB but also additional revisions proposed by the PP/DOE | |
| **Validation Team:** | | |
| Shivaji Chakraborty– Lead Assessor<br>Magdalena Cruz– Local Assessor<br>Shivaji Chakraborty – Sectoral Expert (TA 3.1) | | ☒ No Distribution (without permission from the Client or responsible organisational unit) |
| **Technical Review:** | | |
| Date: 06-07-2012<br>Name: Joe Sun | | ☐ Limited Distribution |
| **Authorised Signatory:** | | |
| Name: Siddharth Yadav<br>Date: 10-07-2012 | | ☐ Unrestricted Distribution |

| **Revision Number:** | **Date:** | **Number of Pages:** |
|---|---|---|
| 0 | 05-03-2012 | 29 |
| 1 | 14-03-2012 | 33 |
| 2 | 20-05-2012 | 35 |
| 3 | 05-07-2012 | 35 |

**Abbreviations**

| | |
|---|---|
| CAR | Corrective Action Request |
| CER | Certified Emission Reduction |
| CFL | Compact Florescent Lamp |
| CL | Clarification Request |
| CLA | Clarifications |
| CPA-DD | Component Project Activity Design Document |
| $CO_2$ | Carbon Dioxide |
| $CO_2e$ | Carbon Dioxide Equivalent |
| CoP | Conference of Parties |
| CME | Coordinating / Managing Entity |
| DMS | Data Management System |
| DOE | Designated Operational Entity |
| EB | Executive Board |
| ER | Emission Reduction |
| FAR | Forward Action Request |
| IEC | International Electro-Technical Commission |
| GHG | Green House Gas Emissions |
| GPRS | General packet radio service |
| GSM | Global System for Mobile Communications |
| ILB | Incandescent Light Bulb |
| kW | Kilo Watt |
| kWh | Kilo Watt Hours |
| LR | Lean Radar |
| CME | Component Managing Entity |
| MoP | Modalities of Parties |
| MP | Monitoring Plan |
| PoA | Programme of Activities |
| PoA-DD | Programme of Activity Design Document |
| PCCG | Project Cross-Check Sample Group |
| PSG | Programme Sample Group |
| RMP | Revision in Monitoring Plan |
| SSC | Small Scale |
| UNFCCC | United Nation Framework Convention on Climate Change |
| VVM | Validation and Verification Manual |
| W | Watt |

**Table of Content**

## 1. Validation Opinion

Paragraph 57 of the modalities and procedures for the CDM allows project participants to revise monitoring plans in order to improve accuracy and/or completeness of information, subject to the revision being validated by a Designated Operational Entity.

SGS United Kingdom Ltd has been contracted by Cool nrg Carbon Investments Pty Ltd to perform such a validation of the revision of monitoring plan according to the procedure detailed in Annex 28 to EB 49 meeting report; the registered monitoring plan is part of the PoA 'CUIDEMOS Mexico (Campana De Uso Intelegente De Energia Mexico) – Smart Use of Energy Mexico' & CPA 'CUIDEMOS Mexico (Campana De Uso Intelegente De Energia Mexico) – Puebla' UN number PoA: 2535 & CPA:2535-0001. The purpose of a validation is to have an independent third party assessment of the revision of monitoring plan. In particular, the level of accuracy and/or completeness in the proposed revision of the monitoring plan, and the conformity with approved monitoring methodology applicable to the project activity.

By applying the proposed revision of monitoring plan in the PoA CPA-1-DD by the CME as mentioned in section B.5 and B.6 the following changes are being done to the registered CPA-DD.

In the PoA-CPA1-DD the revision in monitoring plan includes the revision of section B.5 and B.6 in accordance with the revision in monitoring plan proposed to the POA-DD and Generic CPA-DD.

This revision improves the accuracy of information provided and consistency in the registered PoA-CPA1-DD and the monitoring plan. Furthermore, we confirm that:

(a) the proposed revision points have been described, and an assessment has been provided to substantiate the reasons for each of the proposed revision points of the registered monitoring plan, using objective evidence;

(b) the proposed revision of the monitoring plan ensures that the level of accuracy or completeness in the monitoring and verification process is not reduced as a result of the revisions;

(c) the proposed revision of the monitoring plan is in accordance with the approved monitoring methodology applicable to the project activity whilst ensuring the conservativeness of the emission reductions calculation.

(d) the findings of the previous verification report have been taken into account

**Signed on Behalf of the Validation Body by Authorized Signatory**

Signature: 

Name: Siddharth Yadav

Date: 10-07-2012

## 2. Introduction

### *2.1 Objective*

Paragraph 57 of the modalities and procedures for the CDM allows project participants to revise monitoring plans in order to improve accuracy and/or completeness of information, subject to the revision being validated by a Designated Operational Entity.

SGS United Kingdom Ltd has been contracted by Cool nrg Carbon Investments Pty Ltd to perform such a validation of the revision of monitoring plan according to the procedure detailed in Annex 28 to EB 49 meeting report; the registered monitoring plan is part of the POA CPA1-DD of registered PoA 'CUIDEMOS Mexico (Campana De Uso Intelegente De Energia Mexico) – Smart Use of Energy Mexico' & CPA 'CUIDEMOS Mexico (Campana De Uso Intelegente De Energia Mexico) – Puebla' UN number PoA: 2535 & CPA:2535-0001. The purpose of a validation is to have an independent third party assessment of the revision of monitoring plan. In particular, the level of accuracy or completeness in the proposed revision of the monitoring plan, and the conformity with the approved monitoring methodology applicable to the project activity.

The Validation was performed in accordance with the UNFCCC criteria for the Clean Development Mechanism (CDM) and the host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

SGS reviewed the project design documentation (revised monitoring plan), using a risk based approach and conducted follow-up interviews.

### *2.2 Scope*

The scope of the validation is defined as an independent and objective review of revision of monitoring plan. The information in these documents is reviewed against the Kyoto Protocol requirements, the UNFCCC rules and associated interpretations.

The validation is not meant to provide any consulting towards the Client/the project. However, SGS may issue requests for clarifications and/or corrective actions which may provide input for improvement of the project design.

### *2.3 GHG Project Description*

Refer to http://cdm.unfccc.int/ProgrammeOfActivities/poa_db/17BH6AJX524TYQUZF8KGCWV3OIPSE9/view /10/ , the project web page, there is no change in the POA description. The project was registered on 31st July 2009 under UNFCCC ref. no.2535.

The specific CPA-1 can be viewed at http://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/832CYTQVBJDOHR0N5UPGFKX7641ASL/view /15/
There is no change in the CPA description. The CPA was included on 31st July 2009 under UNFCCC ref. no.2535-0001

## 3. Methodology

### *3.1 Review of PoA-CPA1 DD*

The validation is performed primarily as a document review of the publicly available project documents. The assessment is performed by trained assessors using a validation protocol.

### *3.2 Use of the Validation Protocol*

The validation protocol used for the assessment is partly based on the templates of the CDM Validation and Verification Manual version 1.2 (EB55 Annex.1):

- it organises, details and clarifies the requirements the project is expected to meet; and
- it documents both how a particular requirement has been validated and the result of the validation.

The validation protocol consists of several tables. The different columns in these tables are described below.

| Checklist Question | Ref ID | Means of Verification (MoV) | Comment | Draft and/or Final Conclusion |
|---|---|---|---|---|
| The various requirements are linked to checklist questions the project should meet. | Lists any references and sources used in the validation process. Full details are provided in the table at the bottom of the checklist. | Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable. | The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached. | This is either acceptable based on evidence provided (Y/OK), or a Corrective Action Request (CAR) due to non-compliance with the checklist question (See below). A Clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met. |

The validation protocol is attached with the report as Annex 1.

### *3.3 Findings*

As an outcome of the validation process, the team can raise different types of findings

In general, where insufficient or inaccurate information is available and clarification or new information is required the Assessor shall raise a **Clarification Request (CL)** specifying what additional information is required.

Where a non-conformance arises the Assessor shall raise a **Corrective Action Request (CAR).** A CAR is issued, where:

I. Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;

II. Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;

III. Issues identified in a FAR during validation to be verified during verification have not been resolved by the project participants.

A Forward Action Request (FAR) is raised during verification for actions if the monitoring and reporting require attention and/or adjustment for the next verification period.

The validation process may be halted until this information has been made available to the assessors' satisfaction. Failure to address a CL/FAR may result in a CAR. Information or clarifications provided as a result of a CL/FAR may also lead to a CAR.

Corrective Action Requests, Clarification Requests and Forward Action Requests are raised in the draft validation protocol and detailed in a separate form (Findings Overview). In this form, the Project Developer is given the opportunity to address and "close" outstanding CARs and respond to CLs and FARs. The detailed Finding Overview is attached with this document as Annex 2.

### *3.4 Internal Quality Control*

Following the completion of the assessment process and a recommendation by the Assessment team, all documentation will be forwarded to a Technical Reviewer. The task of the Technical Reviewer is to check that all procedures have been followed and all conclusions are justified. The Technical Reviewer will either accept or reject the recommendation made by the assessment team.

## 4. Validation Findings

### *4.1 Application of Monitoring Methodology and Monitoring Plan*

***Type of Revision***

By applying the proposed revision of monitoring plan in the PoA CPA-1-DD by the CME as mentioned in section B.5 and B.6 the following changes are being made to the registered PoA-DD. In the PoA-CPA1-DD the revision in monitoring plan includes the revision of section B.5 and B.6 in accordance with the revision in monitoring plan proposed to the POA-DD and Generic CPA-DD.

**The proposed revision of the monitoring plan ensures that the level of accuracy and completeness in the monitoring and verification process is not reduced as a result of the revisions (details below).**

In accordance with the guidance and methodological choice mentioned the monitoring plan of the registered PoA CPA1 DD (version 06; dated 22/07/2009)[7] stated the monitoring of the following parameters in B.5 –

**Data and parameters that are available at validation per the revised monitoring plan in Specific CPA-DD:**

| Sr. No | Parameter | Type of Parameter | Changes as per Registered POA-CPA1-DD | Level of Accuracy and Completeness due to Revision |
|---|---|---|---|---|
| 1. | Estimated number of project activity devices to be distributed by the CPA coordinator ($L_k$) | As per implementation | No Change | This is as per the revision in the Generic CPA-DD document and hence accepted. |
| 2. | Total sample size used for monitoring utilisation hours/electricity consumption of CFLs. ($n_{PSG}$) | Determined by project participants at the PoA level as outlined in Annex 7 | Revised to be determined at the PoA level | As per requirements specified by SSC_CLA_570[12], the CME proposed to change the number of samples of CFLs for the total sample used from 240 CFLs to 880 CFLs or in other words 220 Households with 4 CFLs in each household for monitoring the hours/electricity consumptions of CFLs to ensure that the level of Confidence is 95% and precision level of 10 is maintained for the entire population of the POA. The samples would be randomly selected undertaken by applying 95/10 confidence/precision for the sample size calculation from the entire population of the CPAs under the POA as per footnote 13 of paragraph 19 of EB65 Annex 2 Thus this |

| | | | | |
|---|---|---|---|---|
| | | | | parameter change has no effect on the level of accuracy in terms of the CPA level and . This would be applicable for the entire PoA and would cover the sampling for all the CPAs involved in the PoA as per the provisions of the EB guidelines on Sampling and Survey version 01.<br><br>Also, the CME may choose to increase or decrease the sample size for subsequent monitoring periods for each CPA or each block of CPAs to meet the required confidence/precision level. This was found to be appropriate in terms of meeting the requirement of 95/10 confidence/precision level. It can be noted that with the more samples being taken there would be more accuracy in estimating the 95/10 confidence/ precision as well.<br>Also at times, the number of samples may be lowered to meet the requirement of the required confidence/precision level and considering the completeness of sample within the 880 CFLs monitoring, this was also found to be appropriate and hence accepted.<br><br>With 880 CFLs, the requirement of sampling would meet the requirements as per the General Guideline of Sampling and Survey version 01 hence accepted.<br>hence accepted.<br>Please refer justification below for the accuracy level. |
| 3. | Total sample size of CFLs used for checking to ensure ongoing operation of project devices ($n_{PCCG}$) | Determined by the project participants as per the procedure outlined in Annex 7 | At each CPA level | As per requirements specified by SSC_CLA_570[12], the CME propose to change the number of samples of CFLs for the checking to ensure ongoing operation of project devices from 240 CFLs to 388 CFLs or in other words 97 Households with 4 CFLs in sample space for the |

| | | | | |
|---|---|---|---|---|
| | | | | checking to ensure ongoing operation of project devices for each block of CPA/s.<br><br>CME proposed to apply to have a different survey using 97 households for each CPA or block of CPAs based upon a 3 month range of dates for the commencement of the CPAs.<br>Also, the CME may choose to increase or decrease the sample size for subsequent monitoring periods for each block of CPA/s to meet the required confidence/precision level. This was found to be appropriate in terms of meeting the requirement of 95/10 confidence/precision level. It can be noted that with the more samples being taken there would be more accuracy in estimating the 95/10 confidence/ precision as well.<br>Also at times, the number of samples may be lowered to meet the requirement of the required confidence/precision level and considering the completeness of sample within the 388 CFLs monitoring, this was also found to be appropriate and hence accepted.<br>Thus this parameter change will have no effect on the level of accuracy of the parameter. With the revision the requirement of sampling would meet the requirements as per the General Guideline of Sampling and Survey version 01/13/ hence accepted Please refer justification below for the accuracy level. |
| 4. | Emissions factor for electricity displaced from the grid relevant to the project boundary. (EF) | Fixed Ex Ante | No Change | Not Applicable |

According to the change above, section B.6 has been revised which has been checked and found to be consistent hence accepted.

For parameter #2, with reference to SSC_CLA_570 it was found to be justifiable in terms of the number of samples considered for monitoring the CFLs in terms of the energy savings and hours of operation and in terms of number of CFLs in operating condition. Further it has been enunciated at this revision from the CME's end based on the clarification received from the SSC WG with the SSC_CLA_570 and further with the provisions of the General Guideline of Sample and Survey version 01 that the sample size would be fixed out at the PoA level rather than at each CPA level and hence, with this revision, the sample of 220 Households will be representative of the entire population included under the PoA. These 220 households would be the total sample size used for monitoring utilization hours/electricity consumption of CFLs of the entire population of representative under the POA. This was found to be in line with the requirements of the General Guideline of Sample and Survey version 01 and hence the same was accepted as they were meeting the requirement of the 95/10 confidence/precision level.

For the parameter nPSG, the proposed sample size of 220households i.e. 880CFLs is representative of the entire population of the POA under the project boundary of Mexico. These samples would be randomly selected undertaken by applying 95/10 confidence/precision for the sample size calculation from the entire population of the CPAs together under the POA as per footnote 13 of paragraph 19 of EB65 Annex 2. The revised approach of sampling for this parameter was checked and found to be correctly calculated based on independent sample analysis by University of Melbourne Report no. 854 dated 06/03/2012 and was checked in line with the requirement of EB 65 Annex 2 para 20-26 and found to be appropriately considered. It can be deemed that the approach of sampling mechanism as in the registered monitoring plan and the revised monitoring plan are two different approach of sampling. All future CPAs will be based around similar distribution points, target the same population and will have similar usage patterns therefore there will be no requirement to do additional sampling for the future CPAs. The CME has utilized Puebla' s data to estimate the sample size which will further enhance the accuracy. Thus the revised approach of sampling was based in line with the paragraph 19 of the Standard for Sampling and Survey (EB 65 Annex 2) and a completely different approach in terms of sampling. Also this was found to be in line with the paragraph 8b of the "Best Practices Examples Focusing on Sample Size and Reliability Calculations (Version 01.0)" and thus accepted. Further, it was evaluated that what would be the effect on level of accuracy of sampling due to this proposed change. It was demonstrated by the CME that due to the lower variance over the entire population as per the University of Melbourne Report no. 854 dated 06/03/2012, the sample size chosen was representative of the larger population and since population do not have any effect on the sample size thus the sample size proposed did not have any effect on the level of accuracy of monitoring compared to the registered monitoring plan. The explanation provided by the CME was checked with the information on the University of Melbourne Report no. 854 dated 06/03/2012 and also the formulae used for estimation of the sample size and it was found to be independent of the population size. It can be noted that all the required parameters of mean, standard deviation and confidence level of 95% as per the requirement of the Standard for Sampling and Survey (EB 65 Annex 2) for small scale project was found to have been met and thus it can be concluded that due to this proposed revision in the parameter nPSG there would be no effect on the accuracy level and completeness of monitoring. Thus, the same was found to be in line with the requirement of EB 49 Annex 28 para 9(a) and VVM 1.2 para 7,8 and 217 and hence accepted.

Similarly for parameter #3, it has been enunciated at this revision from the CME's end as per requirements specified by SSC_CLA_570, the CME has increased the sample space for the checking to ensure ongoing operation of project devices from 240 CFLs to 97 Households with 4 CFLs in sample space for the checking to ensure ongoing operation of project devices. CME proposed to apply to have a different survey using 97 households for each group of CPAs based upon a 3 month range of dates for the commencement of the CPAs. This was found to be in line with the requirements of the General Guideline of Sample and Survey version 01 and hence the same was accepted as they were meeting the requirement of the 95/10 confidence/precision level.

For the parameter nPCCG, the proposed sample size of a minimum of 97households i.e. 388CFLs is representative of cross check sample for each block of CPA/s. The revised approach of sampling for this parameter was checked and found to be correctly calculated based on independent sample analysis by University of Melbourne Report no. 854 dated 06/03/2012 and was checked in line with the requirement of EB 65 Annex 2 para 20-26 and found to be appropriately considered. It can be deemed that the approach of sampling mechanism as in the registered monitoring plan and the revised monitoring plan are two different approach of sampling. Thus keeping in line with the requirement of para 9 of AMS II.C version 09, the CME

has proposed to undertake the cross check sample of 97 households for each block of CPA/s being included in the PoA. Thus the revised approach of sampling was based in line with the paragraph 19 of the Standard for Sampling and Survey (EB 65 Annex 2) and a completely different approach in terms of sampling. Also this was found to be in line with the paragraph 8b of the "Best Practices Examples Focusing on Sample Size and Reliability Calculations (Version 01.0)" and thus accepted. Further, it was evaluated that what would be the effect on level of accuracy of sampling due to this proposed change. It was demonstrated by the CME that due to the lower variance over the entire population as per the University of Melbourne Report no. 854 dated 06/03/2012, the sample size chosen was representative of the larger population and since population do not have any effect on the sample size thus the sample size proposed did not have any effect on the level of accuracy of monitoring compared to the registered monitoring plan. The explanation provided by the CME was checked with the information on the University of Melbourne Report no. 854 dated 06/03/2012 and also the formulae used for estimation of the sample size and it was found to be independent of the population size. It can be noted that all the required parameters of mean, standard deviation and confidence level of 95% as per the requirement of the Standard for Sampling and Survey (EB 65 Annex 2) for small scale project was found to have been met and thus it can be concluded that due to this proposed revision in the parameter nPCCG there would be no effect on the accuracy level and completeness of monitoring. Thus, the same was found to be in line with the requirement of EB 49 Annex 28 para 9(a) and VVM 1.2 para 7,8 and 217 and hence accepted.

The justification provided by the CME was checked with the provisions of EB during the registration of the PoA 2535 and it was found that there was no Guideline or Standard available at the time of validation of the programme of activity. Further it was checked that the CME had adopted the error margin on parameters nPSG and nPCCG as 6.5% in the initial monitoring plan as compared to the error margin on on parameters nPSG and nPCCG as 10% in the proposed revised monitoring plan. The two approaches of sampling as demonstrated in the earlier sections are different and as such the provisions by the CME to keep 10% error margin on the parameters would meet the requirements of the Standard for Sampling and Survey (EB 65 Annex 2) and also in line with the paragraph 8b of the " Best Practices Examples Focusing on Sample Size and Reliability Calculations (Version 01.0)" and thus accepted. In terms of level of accuracy, since the two approach of sampling when the registered monitoring plan is compared with the proposed revised monitoring plan, it can be deemed that there would no effect on the level of accuracy in sampling with error being 6.5% in the registered monitoring plan and error being 10% in the proposed monitoring plan. It can also be noted that due to no guideline/standard available the CME had considered a conservative 6.5% during the registration of the project and now during the revision of the monitoring plan is complying with the requirements of the Standard for Sampling and Survey (EB 65 Annex 2) and also in line with the paragraph 8b of the " Best Practices Examples Focusing on Sample Size and Reliability Calculations (Version 01.0). With the error margin of 10% in the proposed monitoring plan the CME also meets the requirement of 95% confidence level and thus it can be concluded that with the proposed change of approach in sampling for parameter nPSG and nPCCG, the change of error margin from 6.5% to 10% will not have effect on accuracy of consideration of the samples and thus in line with the requirements of EB 49 Annex 28 para 9(a) and VVM 1.2 para 7,8 and 217 and hence accepted.

The conformance check of the revised Specific CPA-DD was done with the revised PoA-DD and revised Generic CPA-DD in terms of Monitoring Aspects and were found to be in line and changed as per the detailed changes in the documents hence accepted.

There would be no change in the algorithm of calculation of emission reduction by the revision of monitoring plan.

**Changes to Annex 8 during revision of monitoring plan (Revised as Annex 7)**

The document was earlier ANNEX 8 CUIDEMOS MEXICO PoA - SAMPLE GROUP CALCULATION, SELECTION AND MAINTENANCE are now being revised as ANNEX 7 CUIDEMOS MEXICO PoA – SAMPLING PLAN mainly to bring in transparency in the approach of Sampling as per the General Guideline of Sampling and Survey version 01 and further with Standard for Sampling and Surveys for CDM Project Activities and Programme of activities (Version 02.0). This has been done based on the sample plan provided

for the project by University of Melbourne Report no. 854 dated 06/03/2012/16/. Section 3.4 of the report has been checked and found to be consistent with the requirement of UN guideline for sampling. The document clearly indicates in line with the SSC_CLA_570, the Sampling Design where the Mean value of the operating hours of CFLs for each monitoring period during the crediting period with a 95/10 Confidence /Precision and the Proportion of operating CFLs for each monitoring period during the crediting period with a 95/10 confidence / precision in compliance with " Standard for Sampling and Surveys for CDM Project Activities and Programme of activities (Version 02.0) would be considered.

In fixing the Target Population and Sampling Frame CME would chose households that can participate in the PoA within the geographic boundary of Mexico and complies with requirements of the project (e.g. exchanged up to 4 incandescent bulbs at a project distribution point). A list of households that participates in the PoA will be used as a sampling frame. Households will be used as the unit for average operating hours calculations. This would involve the averaging of CFLs within households, which ensures that each household contributes equally to the overall mean, even in cases when there are only data available from at least two CFLs for a given household. In the earlier case, for each CPA of 1 million CFLs distributed, a total sample size of 240 CFLs was to be monitored in order to be statistically representative with an error margin of +/- 6.5% at 95% confidence level as per the provisions of Annex 8 which is revised as 10% error margin at 95% confidence level as per the revised monitoring plan. The justification provided by the CME was checked with the provisions of EB during the registration of the PoA 2535 and it was found that there was no Guideline or Standard available at the time of validation of the programme of activity. Further it was checked that the CME had adopted the error margin on parameters nPSG and nPCCG as 6.5% in the initial monitoring plan as compared to the error margin on on parameters nPSG and nPCCG as 10% in the proposed revised monitoring plan. The two approaches of sampling as demonstrated in the earlier sections are different and as such the provisions by the CME to keep 10% error margin on the parameters would meet the requirements of the Standard for Sampling and Survey (EB 65 Annex 2) and also in line with the paragraph 8b of the "Best Practices Examples Focusing on Sample Size and Reliability Calculations (Version 01.0)" and thus accepted. In terms of level of accuracy, since the two approach of sampling when the registered monitoring plan is compared with the proposed revised monitoring plan, it can be deemed that the there would no effect on the level of accuracy in sampling with error being 6.5% in the registered monitoring plan and error being 10% in the proposed monitoring plan. It can also be noted that due to no guideline/standard available the CME had considered a conservative 6.5% during the registration of the project and now during the revision of the monitoring plan is complying with the requirements of the Standard for Sampling and Survey (EB 65 Annex 2) and also in line with the paragraph 8b of the "Best Practices Examples Focusing on Sample Size and Reliability Calculations (Version 01.0). With the error margin of 10% in the proposed monitoring plan the CME also meets the requirement of 95% confidence level and thus it can be concluded that with the proposed change of approach in sampling for parameter nPSG and nPCCG, the change of error margin from 6.5% to 10% will not have effect on accuracy of consideration of the samples and thus in line with the requirements of EB 49 Annex 28 para 9(a) and VVM 1.2 para 7,8 and 217 and hence accepted.

In the Sampling Method, unlike the previous document Annex 8, Project Sample Group (PSG) and Project Cross Check Sample Group (PCCG) has been considered. This has been calculated based on the requirements of the Sampling Guidelines of UN. Similarly the Project Sample Group (PSG) will be established at the PoA level. The desired precision of 10% for a 95% confidence interval is the basis for selection of the sample size for a national sample. The purpose of establishing the PSG is to monitor a representative sample of all participating households in the PoA and will be as per the requirement of the sampling guidelines hence accepted.

A further 10% oversampling has been applied to account for monitoring metering failure or losses incurred in the data collection process, resulting in a total sample size of 220 households. Based on the monitoring results, the CME may choose to increase or decrease the initial sample size to meet the required precision. This would be assessed with reference to the desired precision of 10% for a 95% confidence interval. If additional households were found to be required they would be determined using the same stratified random sample approach. This has been found to be justifiable hence accepted.

Provision during failure to achieve desired level of precision for average operating hours has been included in the revised Annex 7 document. This has been done keeping the background of the issues faced during the verification of the CPA-1 for the period of 01/12/2009 to 30/11/2010. CME has clarified that for all failure in the level of precision, additional sampling as per the guidelines of EB 50 Annex 30 would be applicable.

The CME through this revision also incorporated the effect of meter failure. During the time that the meter would not work or under repair, data will not be available. In this case, only days for in which there were meters functioning would be included in the calculation of the mean operating hours for each CFL. These will then be averaged across households to give an overall household average operating hours per CFL. However, in order to ensure all households included are statistically representative there should be a lower limit on the number of metered days acceptable for that CFL to be included.

For PCCG surveys(s), CPAs would be grouped according to distribution date. Each block of CPA/s may consist of one or more CPAs. Survey will be done for each block of CPA/s whether the block contains a single CPA or more. A separate sample will be taken for each of these blocks. Specifically, all CPAs where distribution occurred within a three-month period will be combined for the purposes of this estimation and a sample will be taken randomly from the set of all non-metered households in that block of CPA/s. If no group of CPA could be formed or a single CPA distribution occur in three months time then a separate PCCG survey will be carried out for that CPA. Sample size for the PCCG survey is calculated as per Annex 7.

The desired precision of 10% for a 95% confidence interval is the basis for selection of the sample size for PCCG group as per the requirement of SSC_CLA_570 and thus this is accepted. This has been discussed in detail above in section of parameter changes in PoA-DD

CME was requested to clarify how the request for revision in monitoring plan of the POA-DD is in line with the SSC CLA 570. Also CME was to clarify the implementation schedule for the RMP. It is unclear from what time the RMP would be implemented. CME was requested to justify the RMP as per the schedule of implementation of aspects of the revised monitoring plan. **CL #01** was raised.

In response CME clarified that SSC CLA 570 relates to the clarification for cases where the 90/10 confidence/precision is not met. The request for revision in monitoring plan in CPA1 is in line with the SSC CLA 570. The reasons are stated below:

In response to SSC CLA 570, the SSC WG had suggested to determine the sample size at the planning stage by taking a range of possibly relevant values for the standard deviation and target means, including some extra samples to ensure that the required precision is always met.

In the first monitoring period (01/12/2009 to 30/11/2010) of CPA 2525-0001 (CUIDEMOS Mexico (Campana De Uso Intelegente De Energia Mexico) – Puebla), the precision of the average operating hours of the CFLs did not meet the 90/10 confidence/precision criteria. In order to ensure that all CPAs included in the PoA meet the desired precision level in the subsequent monitoring periods, the CME opted to revise the sample size based on the actual data (such as standard deviation and mean) obtained from the first monitoring period of CPA 1. The CME has also incorporated extra samples in the final sample size to allow potential monitoring equipment failure and ensure that the required precision is met. This was checked in the RMP PoA-DD and CPA-DD and found to be consistent hence accepted. The CME had revised the number of households for the sampling as 220 as Total sample size used for monitoring utilisation hours/electricity consumption of CFLs and 97 as Total sample size used for checking to ensure ongoing operation of project devices and it would have provisions as per 95% confidence level in line with the requirement of General Guideline of Sampling and Survey version 01 and hence accepted. Also precision level of 10 is maintained as the sample size has been taken at large from the existing monitoring plan.

CME also clarified The Revised Monitoring Plan (i.e. Annex 7) will come into effect from the completion date of installation of the new monitoring equipment in the Project Sample Group (PSG) households. The date on which the new monitoring equipment would be installed in all the PSG households will be considered as the “Start date of the revised monitoring plan”. Prior to the start date of the revised monitoring plan, CPA 1 will follow the monitoring plan as outlined in ANNEX 8 CUIDEMOS MEXICO PoA – Sample group calculation, selection and maintenance'. For example, if the installation of new monitoring equipment is completed in all the PSG households on 2nd August 2012, monitoring period/s pertaining to the CPA 1 will follow the “ANNEX 8 CUIDEMOS MEXICO PoA – Sample group calculation, selection and maintenance” until 1st August 2012. From 2nd August 2012 onwards, the monitoring period/s pertaining to CPA 1 and all new CPAs will follow the revised monitoring plan (Annex 7).

The implementation schedule for the RMP is outlined below:

1. Place purchase order for new monitoring equipment
2. Receive the new monitoring equipment

3. Recruit the PSG households
4. Install and test the operation the new monitoring equipment in the PSG households
5. Completion of installation of new monitoring equipment (Start date of RMP)

The CME will record the aforementioned dates including evidence of purchase order, which will be provided to the DOE for verification. The implementation of the monitoring plan on ground was based on the approval of the monitoring plan by the EB. The completion date of installation of equipments would be the time from which the revised MP would be followed. This was found to be logical and hence accepted.

Thus **CL#01** was closed out.

**Changes in Monitoring Equipment**

The monitoring equipment will record the operating hours and/or electricity consumption of CFLs belonging to the PSG group. Monitoring equipment will be spot checked to ensure ongoing functionality and accurate calibration. If irregularities are recorded with equipment, this will be flagged immediately by the monitoring system and corrective actions will be implemented to repair or re-calibrate metering equipment. Calibration of the equipment will be conducted by the CME at least once in three years or as required.

CME was to clarify how the new monitoring equipment can be considered as more effective in terms of accuracy and completeness of data as compared to the previous device. **CL #02** was raised.

CME clarified that the new monitoring equipment provides more accurate data and allows the CME to capture a more complete set of data. The new monitoring equipment has the following advantages as compared to the Lean Radar (LR) device:

1. The LR device used home modem and internet connection for data transmission whereas the new monitoring equipment uses GPRS/GSM technology that transmits data wirelessly. As the LR equipment sends the data via the home modem and internet connection the device could go offline for various reasons (e.g. device being unplugged, faulty modem, households not paying their internet bill etc).

2. In the new monitoring equipment, each monitoring device independently transmits data whereas the LR monitoring device sends the data to a central receiver/coordinator, which then finally transmits the data. If a receiver/coordinator fails then all 4 monitoring devices will not send data.

3. When the light is shown as off for an extended period the new monitoring equipment is able to test whether that is due to the light being off or as a result of a faulty unit. This feature is not available in the LR device.

4. The new equipment measures the exact times that the light is turned on and off.

Based on the above justification provided by the CME, it was concluded that the equipment (Specifications checked as per revised monitoring plan) is based on the GPRS/GSM technology would be capable of capturing more effectively the ON/OFF of the CFLs than the Lean Radar and hence the equipment was found to be more effective in terms of accuracy and completeness of data as compared to previous device and hence accepted thus **CL #02** was closed.

**The proposed revision of the monitoring plan is in accordance with the approved monitoring methodology applicable to the project activity (details below).**

The approved methodology AMS II.C version 9 clause 7, 8 & 9 mentions

7. If the devices installed replace existing devices, the number and " power" of the replaced devices shall be recorded and monitored. (This shall be monitored while replacement is underway to avoid, e.g. that 40W lamps are recorded as 100W lamps, greatly inflating the baseline)

8. Monitoring shall consist of monitoring either the " power" and " operating hours" or the " energy use" of the devices installed using an appropriate methodology. Possible methodologies include:

(a) Recording the " power" of the device installed (e.g., lamp or refrigerator) using nameplate data or bench tests of a sample of the units installed and metering a sample of the units installed for their operating hours using run time meters.

OR

(b) Metering the " energy use" of an appropriate sample of the devices installed. For technologies that represent fixed loads while operating, such as lamps, the sample can be small while for technologies that involve variable loads, such as air conditioners, the sample may need to be relatively large.

9. In either case, monitoring shall include annual checks of a sample of non-metered systems to ensure that they are still operating (other evidence of continuing operation, such as on-going rental/lease payments could be a substitute).

The provisions of the sampling in terms of the parameter nPSG (220 households, 880CFLs for the entire POA) were clarified by the CME to be once in terms of sample identification for the entire PoA and continuous monitoring of the samples throughout the life time of the PoA for 28years within the project boundary of Mexico state only as per the provisions of the registered PoA-DD. These samples would be randomly selected undertaken by applying 95/10 confidence/precision for the sample size calculation from the entire population of the CPAs together under the POA as per footnote 13 of paragraph 19 of EB65 Annex 2 For all the samples under the parameter nPSG, in the revised monitoring plan the CME clarified that monitoring equipment shall be installed which would be monitoring the operating hours of the sample which is in line with the provisons of para 8 of the methodlogy AMS II.C version 09 and thus accepted. Further for the parameter nPCCG, which is the cross check parameter, for every inclusion of CPA or block of CPAs, the CME would undertake random sampling of minimum 97 households would be random for each year.

Further the provisions of the sampling in terms of the parameter nPCCG (97 households, 388CFLs for each block of CPA/s) samples will be selected randomly for each monitoring period. This means that PCCG samples that belongs to monitoring period 1 may be different that the PCCG samples that belongs to monitoring period 2 however will be within the project boundary of Mexico state only as per the provisions of the registered PoA-DD., The provisions in the revised monitoring plan were checked with the provisions in the registered monitoring plan in terms of the applicability of AMS II.C version 09 paragraph 8. In the registered monitoring plan as per the provisions of para 9 of AMS II.C version 09, the CME was undertaking provision of 240 cross check samples under the parameter nPCCG. This was found to be as per the requirement of AMS II.C version 09 para 9. In the proposed revised monitoring plan, the CME proposes to undertake the sampling of 97households (388CFLs for each CPA or block of CPA) under parameter nPCCG for cross checking purpose. This was also found to be in line with the requirement of AMS II.C version 09 para 9 and thus accepted.

In accordance to the above methodological requirement, the CME has revised the monitoring plan of the PoA-DD by metering the parameters which are required as per the requirements of the methodology hence accepted. No such specific parameter as per the methodology is specifically monitored in the Specific CPA and hence there are no changes proposed for the Specific CPA.

Thus it is to confirm that the all above conditions as specified by the methodology are fulfilled for this project activity. Thus the proposed revision of the monitoring plan is in accordance with the approved monitoring methodology AMS II.C version 9 applicable to the project activity.

This revision either improves or has no effect on the accuracy of information provided and consistency in registered PoA-DD and the monitoring plan. This has been validated based on requirements of EB 49 Annex 28 para 9(a) and VVM 1.2 para 7, 8 and 217 and hence accepted.

### *4.2 Findings of Previous Verification Reports*

FAR #07 was raised during the verification of CPA-1 for the period of 01/12/2009 to 30/11/2010 wherein the CME was to revise the monitoring plan so as to include the provisions/procedures to be adopted for all such

situations where the complete data for monitoring period of the sample group of 240 CFLs would not be/may not be available.

This is to confirm that the issues raised in the FAR #07 have been addressed in this revision and the revision has been in line with the requirements of SSC_CLA_570.

## 5. List of Persons Interviewed

| Date of site visit | Name | Position | Short description of subject discussed |
|---|---|---|---|
| 24/01/2011 to 27/01/2011<br><br>30/01/2012 to 05/03/2012 (via phone calls and emails –no site visit) | Chris Tierney, | General Manager Business Services, cool nrg International Pty Ltd | General Description of PoA, CPA-1, Monitoring Aspects, Sampling Plan, Monitoring Device, Procedure of Monitoring.<br><br>Revision in Monitoring Plan |
| 24/01/2011 to 27/01/2011 | Gabrielle Henry | cool nrg International Pty Ltd (Available through conference call and video chat) | General Description of PoA, CPA-1, Monitoring Aspects, Sampling Plan, Monitoring Device, Procedure of Monitoring. |
| 24/01/2011 to 27/01/2011 | Manuel Rosemberg, | Country Manager Cool nrg | On-Site evaluation of Samples. |
| 24/01/2011 to 27/01/2011 | Alan Gallart, | Logistics, Cool nrg | On-Site evaluation of Samples. |
| 30/01/2012 to 05/03/2012 (via phone calls and emails –no site visit) | Anil Bhatta | Cool nrg Pty Ltd | Revision in Monitoring Plan |

## 6. Document References

Category 1 Documents (documents provided by the Client that relate directly to the GHG components of the project, (i.e. the CDM Programme Design Document, confirmation by the host Party on contribution to sustainable development and written approval of voluntary participation from the designated national authority):

| | |
|---|---|
| /1/ | SSC_CPA_DD_CUIDEMOS Puebla_V1_140212 track |
| /1a/ | SSC_CPA_DD_CUIDEMOS Puebla_V2_200512 track |
| /1b/ | SSC_CPA_DD_CUIDEMOS Puebla_V3_050712 track |
| /2/ | SSC_CPA_DD_CUIDEMOS Puebla_V1_140212 |
| /2a/ | SSC_CPA_DD_CUIDEMOS Puebla_V2_200512 clean |
| /2b/ | SSC_CPA_DD_CUIDEMOS Puebla_V3_050712 clean |
| /3/ | Annex 7 – CUIDEMOS Mexico_Sampling Plan RMP track |
| /3a/ | Annex 7 – CUIDEMOS Mexico_Sampling Plan _RMP190512-1 track |
| /3b/ | Annex 7 – CUIDEMOS Mexico_Sampling Plan _RMP 040712-1 track |
| /4/ | Annex 7 – CUIDEMOS Mexico_Sampling Plan RMP |
| /4a/ | Annex 7 – CUIDEMOS Mexico_Sampling Plan _RMP190512-1 clean |
| /4b/ | Annex 7 – CUIDEMOS Mexico_Sampling Plan _RMP 040712-1 clean |

Category 2 Documents (background documents used to check project assumptions and confirm the validity of information given in the Category 1 documents and in validation interviews):

| | |
|---|---|
| /5/ | Registered POA-DD version 06 dated 17/02/2009 |
| /6/ | Registered Generic CPA-DD version 05 dated 22/07/2009 |
| /7/ | Specific CPA-DD version 06 dated 22/07/2009 |
| /8/ | Validation Report, dated 30/07/2009 |
| /9/ | AMS II.C version 09 |
| /10/ | http://cdm.unfccc.int/ProgrammeOfActivities/poa_db/17BH6AJX524TYQUZF8KGCWV3OIPSE9/view |
| /11/ | http://cdm.unfccc.int/ProgrammeOfActivities/FS_POA/2535/index.html |
| /12/ | http://cdm.unfccc.int/methodologies/SSCmethodologies/clarifications/79960 |
| /13/ | General Guidelines For Sampling And Surveys For Small-Scale Cdm Project Activities versión 01; EB 50 Annex 20 |
| /14/ | Standard for Sampling and Surveys for CDM Project Activities and Programme of activities (Version 02.0) |
| /15/ | http://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/832CYTQVBJDOHR0N5UPGFKX7641ASL/view |
| /16/ | University of Melbourne Report no. 854 dated 06/03/2012 |
| /17/ | Best Practices Examples Focusing on Sample Size and Reliability Calculations (Version 01.0) EB 67 Annex 6 |

**Annex 1: Validation Protocols**

| Checklist Question | Reference | MoV* | Comments | Conclusion/ CARs/CLs |
|---|---|---|---|---|

| Checklist Question | Reference | MoV* | Comments | Conclusion/ CARs/CLs |
|---|---|---|---|---|
| **A.1. General Requirements** *(Note that the sections A.1.1- A.1.4 may be completed after the other sections are completed)* | | | | |
| A.1.1. Is the revision in the monitoring plan based on a decision by the CDM EB | EB49, Annex 29 | DR | No the revision in the monitoring plan is not based on a decision by the CDM EB. However it is correlated to the clarification taken by the CME for the POA (SSC_CLA_570) | Y |
| A.1.2. Is the revision based on a decision by CDM EB but also additional revisions are proposed by the CME/DOE | EB49, Annex 29 | DR | The revision is not based on decisions by CDM EB. It is proposed by the CME/DOE. | Y |
| A.1.3. Is the need for revision in monitoring plan spotted during the first monitoring period? | EB49, Annex 29<br>Project page on UNFCCC website | DR | The requirement of revision in monitoring plan was spotted during the first monitoring period however, the request for revision of the monitoring plan has been proposed for period beyond the first monitoring period. | Y |
| A.1.4. Is the revised monitoring plan complete and does the revised monitoring plan follow the registered PoA DD template? | Registered PoA DD, CPA 1-DD | DR | The CME has correctly used the templates and used the Registered documents in reworking for the RMP. | Y |
| A.1.5. Has the revised monitoring plan submitted in track change mode for each of the revision point (issue)? | Revised monitoring plan | DR | PP has submitted a revised monitoring plan in track change mode (word file) to DOE<br><br>Track change mode and clean mode is included in the submission from PoA DD. | Y |
| A.1.6. is there an objective evidence for each of the proposed revision point (issue)? | Revised monitoring plan | DR | Yes there are objective evidences of the additional parameters provided which have been cross verified during the site visit and found consistent. | Y |
| A.1.7. Does the revised monitoring plan also include the Annex? | Registered POA DD A.4.4.2 & Annex 4 | DR | Yes the Annex 7 has been removed and Annex 8 of the PoA DD has been revised as Annex 7 which is also included and is in track change mode. | Y |

| Checklist Question | Reference | MoV* | Comments | Conclusion/ CARs/CLs |
|---|---|---|---|---|
| A.1.8. Does the revised monitoring plan lead/associate to any kind of change in the project registered design? | Registered POA DD A.4.4.2 & EB48 Annex 66-67 | DR | There is no change in the project registered design due to the change in the revised monitoring plan. Only the algorithm is revised and there is change in the monitoring equipment which is reflected in the RMP | Y |
| **A.2. Data and Parameters Monitored** | | | | |
| A.2.1. Does the revised monitoring plan in the PoA-CPA1-DD comply with the approved methodology provided for the collection and archiving of all relevant data necessary for estimation or measuring the emission reductions within the project boundary during the crediting period? | VVM Para. 91a/91d/121<br>Revised MP Section B.7<br>EB49, annex 2, para 9 | DR | Revised monitoring plan contains all necessary parameters to improve transparency in monitoring procedure and the conformity with approved monitoring methodology. It is confirmed that changes in the revised monitoring plan should have no impact on the calculation of the emissions reduction achieved by this project activity.<br>Revised MP includes the data management and quality assurance and quality control procedures to ensure the delivery of unambiguous data | Y |
| A.2.2. Are the changes in the monitoring plan inline to the applied methodology and tool? | AMS II.C version 09 | DR | Revised monitoring plan is inline with applicable methodology AMS II. C, version 09 | Y |
| A.2.3. Are the changes affecting the ER calculation (directly/indirectly)? | Revised MP | DR | The RMP would not affect the emission reduction calculation | Y |
| A.2.4. Is the information given for each monitoring variable by the presented table sufficient to ensure the verification of a proper implementation of the monitoring plan? | RMP Section E.6.3 | DR | Information's for each monitoring parameter provided in a transparent manner | Y |

| Checklist Question | Reference | MoV* | Comments | Conclusion/ CARs/CLs |
|---|---|---|---|---|
| A.2.5. Has there been an issuance with the original monitoring plan of the registered PoA-CPA1-DD in the past?<br><br>A.2.6. if so how did the identified gaps effect the ER calculations for the monitoring periods in the past? | Project page on UNFCCC website | DR | No there has been no issuance prior to this with the original monitoring plan of the registered PoA-CPA1- DD. A request for deviation is requested post rejection of the 1st monitoring period.<br><br>There has been no gaps identified that would effect the ER calculation for the monitoring periods in the past. | Y |
| A.2.7. Is the information given for each monitoring variable by the presented table sufficient to ensure the delivery of high quality data free of potential for biases or intended or unintended changes in data records? | RMP Section – B.5 | DR | Revised MP includes the data management and quality assurance and quality control procedures to ensure the delivery of unambiguous data. | Y |
| A.2.8. Is the monitoring approach in line with current good practice, i.e. will it deliver data in a reliable and reasonably acceptable accuracy? | RMP Section- B.5 | DR | Revised MP includes the data management and quality assurance and quality control procedures to ensure the delivery of unambiguous data. | Y |
| A.2.9. Are all formulae used to determine project emission clearly indicated and in compliance with the monitoring methodology. | Revised MP Section – B.5 | DR | All formulae used to determine project emission clearly indicated and in compliance with the monitoring methodology. | Y |
| **A.3. Quality Control (QC) and Quality Assurance (QA) Procedures** | | | | |
| A.3.1. Is the selection of data undergoing quality control and | VVM Para. 121 | DR | Revised MP includes the data management and quality assurance and quality control procedures to ensure the delivery of unambiguous data. It is also confirmed by means of review of the documented procedures, interviews with plant personnel and physical | Y |

| | Checklist Question | Reference | MoV* | Comments | Conclusion/ CARs/CLs |
|---|---|---|---|---|---|
| | quality assurance procedures complete? | | | inspection of the CDM project activity site that project participant has ability to implement the monitoring plan. | |
| A.3.2. | in case, a revision is proposed, the impact of the revision should be assessed and it not result in reduced level of accuracy and completeness in the monitoring and verification process | EB49, annex 2, para 9 | | Revised monitoring plan should have not result in reduced level on accuracy and completeness in the monitoring and verification process because the revision is aimed to describe the monitoring procedure in a transparent manner as per the applicable methodology<br>CME has to clarify how the new monitoring equipment can be considered as more effective in terms of accuracy and completeness of data as compared to the previous device (LEAN RADAR)<br>CME clarified that the new monitoring equipment provide more accurate data and allows the CME to capture more complete set of data. The new monitoring equipment has the following advantages as compared to the Lean Radar (LR) device:<br>1. The LR device uses home modem and internet connection for data transmission whereas the monitoring equipment uses GPRS/GSM technology that transmits data wirelessly. As the LR equipment sends the data via the home modem and internet connection the device could go offline for various reasons (e.g. device being unplugged, faulty modem, households not paying their internet bill etc).<br>2. In the new monitoring equipment, each monitoring device independently transmits data whereas the LR monitoring device sends the data to a central receiver/coordinator, which then finally transmits the data. If a receiver/coordinator fails then all 4 monitoring devices will not send data.<br>3. When the light is shown as off for an extended period the monitoring Equipment is able to test whether that is due to the light being off or as a result of a faulty unit. This feature is not available in the LR device.<br>4. The new monitoring equipment measures the exact times that the light is turned on and off.<br>Based on the above justification provided by the CME, it was concluded that the new monitoring equipment based on the GPRS/GSM technology would be capable of capturing more effectively the ON/OFF of the CFLs than the Lean Radar and hence the equipment was found to be more effective in terms of accuracy and completeness of data as compared to previous device and hence accepted. CL #02 closed. | ~~CL 02 was raised~~<br>CL 02 closed<br>Y |

| Checklist Question | Reference | MoV* | Comments | Conclusion/ CARs/CLs |
|---|---|---|---|---|
| A.3.3. Are quality control procedures and quality assurance procedures sufficiently described to ensure the delivery of high quality data? | VVM Para 121 | DR | Revised MP includes the data management and quality assurance and quality control procedures to ensure the delivery of unambiguous data. | Y |
| A.3.4. Is it ensured that data will be bound to national or internal reference standards? | VVM Para. 86d | DR | All the monitoring data are compliance with national and sectoral policies and circumstances are considered and listed in the PoA DD and also in PoA CPA1- DD. | Y |
| **A.4. Operational and Management Structure** | | | | |
| A.4.1. Is the authority and responsibility of project management clearly described? | PoA CPA1 DD | DR | Authority and responsibility of project management is described in transparent manner in Annex 4 which refers to revised Annex 7 of revised MP of PoA DD | Y |
| A.4.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described? | PoA DD Section | DR | Authority and responsibility of project management is described in transparent manner in Annex 7 of revised MP of PoA DD | Y |
| **A.5. Monitoring Plan (Annex 4)** | | | | |
| A.5.1. Does the monitoring plan completely describe all measures to be implemented for monitoring all parameter required, including measures to be implemented for ensuring data quality? | VVM Para. 122b | DR | Revised monitoring plan describe the measures to be implemented for monitoring all parameter clearly and QA/QC procedure to ensure delivery of quality data.<br><br>CME is requested to clarify how the request for revision in monitoring plan of the POA-DD is in line with the SSC CLA 570.<br>In response CME clarified that SSC CLA 570 relates to the clarification for cases where the 90/10 confidence/precision is not met. The request for revision in monitoring plan in CPA1 is in line with the SSC CLA 570. The reasons are stated below:<br>In response to SSC CLA 570, the SSC WG had suggested to determine the sample size at the planning stage by taking a range of possibly relevant values for the standard | CL#01 raised<br>CL #01 closed<br>Y |

| Checklist Question | Reference | MoV* | Comments | Conclusion/ CARs/CLs |
|---|---|---|---|---|
| | | | deviation and target means, including some extra samples to ensure that the required precision is always met.<br>In the first monitoring period (1/12/09 to 30/11/2010) of CPA 2525-0001 (CUIDEMOS Mexico (Campana De Uso Intelegente De Energia Mexico) – Puebla), the precision of the average operating hours of the CFLs did not meet the 90/10 confidence/precision criteria. In order to ensure that all CPAs included in the PoA meet the desired precision level in the subsequent monitoring periods, the CME opted to revise the sample size based on the actual data (such as standard deviation and mean) obtained from the first monitoring period of CPA 1. The CME has also incorporated extra samples in the final sample size to allow potential monitoring equipment failure and ensure that the required precision is met. This was checked in the RMP PoA CPA1-DD and found to be consistent hence accepted. The CME had revised the number of households for the sampling as 220 as Total sample size used for monitoring utilisation hours/electricity consumption of CFLs and 97 as Total sample size used for checking to ensure ongoing operation of project devices and it would have provisions as per 95% confidence level in line with the requirement of General Guideline of Sampling and Survey version 01 and hence accepted. Also precision level of 10 is maintained as the sample size has been taken at large from the existing monitoring plan.<br>Thus CL#01 was closed out. | |

| Checklist Question | Reference | MoV* | Comments | Conclusion/ CARs/CLs |
|---|---|---|---|---|
| A.5.2. Does the monitoring plan provide information on monitoring equipment and respective positioning in order to safeguard a proper installation? | VVM Para. 122b | DR | Revised monitoring plan includes all the information's about monitoring equipments involved in project activity. | Y |
| A.5.3. Is there any change proposed in the specifications of the monitoring equipment or their positioning or installation then the impact of the change due to revision should be assessed and it not result in reduced level of accuracy and completeness in the monitoring and verification process | EB49, annex 2, para 9 | DR | Refer A.5.1 | Pending closure CL#01 |
| A.5.4. Are procedures identified for calibration of monitoring equipment? | VVM Para. 122a-c | DR | Revised monitoring plan mentions the calibration procedure for monitoring equipments. | Y |
| A.5.5. Is there any change proposed in the calibration procedures, if yes then the impact of the change due to revision should not result in reduced level of accuracy and completeness in the monitoring and verification process | EB49, annex 2, para 9 | DR | There is no change proposed in the calibration procedure. | Y |
| A.5.6. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance | VVM Para. 122a-c | DR | Data handling and data recoding procedure discussed in revised monitoring plan inline with the requirements of methodology | Y |

| Checklist Question | Reference | MoV* | Comments | Conclusion/ CARs/CLs |
|---|---|---|---|---|
| documentation) | | | | |
| A.5.7. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally? | VVM Para. 122a-c | DR | Monitoring arrangements described in the revised monitoring plan are feasible within the project design | Y |

## Annex 2: Overview of Findings

### Findings Overview Summary

| | CARs | CLs | FARs |
|---|---|---|---|
| **Total Number raised** | 00 | 02 | 00 |

| Date: | 27/02/2012 | | Raised by: | Assessment Team | |
|---|---|---|---|---|---|
| Type: | CL | Number: | 01 | Reference: | RMP Document for CPA1 |

| **Lead Assessor Comment:** | **Date:** 27/02/2012 |
|---|---|
| CME is requested to clarify how the request for revision in monitoring plan in CPA1 is in line with the SSC CLA 570. | |
| **Project Participant Response:** | **Date:** 28/02/2012 |
| The SSC CLA 570 relates to the clarification for cases where the 90/10 confidence/precision is not met. The request for revision in monitoring plan in CPA1 is in line with the SSC CLA 570. The reasons are stated below:<br>In response to SSC CLA 570, the SSC WG had suggested to determine the sample size at the planning stage by taking a range of possibly relevant values for the standard deviation and target means, including some extra samples to ensure that the required precision is always met.<br><br>In the first monitoring period (1/12/09 to 30/11/2010) of CPA 2525-0001 (CUIDEMOS Mexico (Campana De Uso Intelegente De Energia Mexico) – Puebla), the precision of the average operating hours of the CFLs did not meet the 90/10 confidence/precision criteria. In order to ensure that all CPAs included in the PoA meet the desired precision level in the subsequent monitoring periods, the CME opted to revise the sample size based on the actual data (such as standard deviation and mean) obtained from the first monitoring period of CPA 1. The CME has also incorporated extra samples in the final sample size to allow potential monitoring equipment failure and ensure that the required precision is met. | |
| **Documentation Provided as Evidence by Project Participant:** | |
| *RMP document CPA-1 DD* | |
| **Information Verified by Lead Assessor:** | |
| *RMP document CPA-1 DD* | |
| **Reasoning for not Acceptance or Acceptance and Close Out:** | |
| The explanation of coherence of the RMP with the SSC CLA 570 was checked in the RMP PoA-DD and CPA-DD and found to be consistent in terms of additional sample size required. The CME had revised the number of households for the sampling as 220 as Total sample size used for monitoring utilisation hours/electricity consumption of CFLs and 97 as Total sample size used for checking to ensure ongoing operation of project devices and it would have provisions as per 95% confidence level in line with the requirement of General Guideline of Sampling and Survey version 01 and hence accepted. Also precision level of 10 is maintained as the sample size has been taken at large from the existing monitoring plan.<br>CME has to clarify the implementation schedule for the RMP. It is unclear from what time the RMP would be implemented. CME is requested to justify the RMP as per the schedule of implementation of aspects of the revised monitoring plan. | |
| **Acceptance and Close out by Lead Assessor: Open** | **Date:** 09/03/2012 |
| **Project Participant Response:** | **Date: 13/03/2012** |

The Revised Monitoring Plan (i.e. Annex 7) will come into effect from the completion date of installation of the new monitoring equipment in the Project Sample Group (PSG) households. The date on which the new monitoring equipment are installed in all the PSG households will be considered as the "Start date of the revised monitoring plan". Prior to the start date of the revised monitoring plan, CPA 1 will follow the monitoring plan as outlined in ANNEX 8 CUIDEMOS MEXICO PoA – Sample group calculation, selection and maintenance'. For example, if the installation of new monitoring equipment is completed in all the PSG households on 2nd August 2012, monitoring period/s pertaining to the CPA 1 will follow the "ANNEX 8 CUIDEMOS MEXICO PoA – Sample group calculation, selection and maintenance" until 1st August 2012. From 2nd August 2012 onwards, the monitoring period/s pertaining to CPA 1 and all new CPAs will follow the revised monitoring plan (Annex 7).

The implementation schedule for the RMP is outlined below:

1. Place purchase order for new monitoring equipment
2. Receive the new monitoring equipment
3. Recruit the PSG households
4. Install and test the operation the new monitoring equipment in the PSG households
5. Completion of installation of new monitoring equipment **(Start date of RMP)**

The CME will record the aforementioned dates including evidence of purchase order, which will be provided to the DOE for verification.

| **Documentation Provided as Evidence by Project Participant:** | |
|---|---|
| *Annex 7* CUIDEMOS MEXICO PoA – Sampling Plan | |
| **Information Verified by Lead Assessor:** | |
| *Annex 7* CUIDEMOS MEXICO PoA – Sampling Plan | |
| **Reasoning for not Acceptance or Acceptance and Close Out:** | |
| The implementation of the monitoring plan on ground was based on the approval of the monitoring plan by the EB. The completion date of installation of equipments would be the time from which the revised MP would be followed. This was found to be logical and hence accepted. | |
| **Acceptance and Close out by Lead Assessor: Closed** | **Date:** 13/03/2012 |

| Date: | 27/02/2012 | | Raised by: | Assessment Team | |
|---|---|---|---|---|---|
| Type: | CL | Number: | 02 | Reference: | RMP Document for CPA1 |
| **Lead Assessor Comment:** | | | | **Date:** 27/02/2012 | |
| CME has to clarify how the new monitoring equipment can be considered as more effective in terms of accuracy and completeness of data as compared to the previous device (LEAN RADAR) | | | | | |
| **Project Participant Response:** | | | | **Date:** 28/02/2012 | |

| |
|---|
| The New monitoring device equipment provides more accurate data and allows the CME to capture a more complete set of data. The New monitoring device equipment has the following advantages as compared to the Lean Radar (LR) device:<br>1. The LR device uses home modem and internet connection for data transmission whereas the new monitoring device equipment uses GPRS/GSM technology that transmits data wirelessly. As the LR equipment sends the data via the home modem and internet connection the device could go offline for various reasons (e.g. device being unplugged, faulty modem, households not paying their internet bill etc).<br>2. In the new monitoring device equipment, each monitoring device independently transmits data whereas the LR monitoring device sends the data to a central receiver/coordinator, which then finally transmits the data. If a receiver/coordinator fails then all 4 monitoring devices will not send data.<br>3. When the light is shown as off for an extended period the new monitoring equipment is able to test whether that is due to the light being off or as a result of a faulty unit. This feature is not available in the LR device.<br>4. The new monitoring equipment measures the exact times that the light is turned on and off. |
| **Documentation Provided as Evidence by Project Participant:** |
| *Monitoring Equipment_New monitoring device Specification*<br>*Monitoring Equipment_Lean Radar Specification* |
| **Information Verified by Lead Assessor:** |
| *Monitoring Equipment_New monitoring device Specification*<br>*Monitoring Equipment_Lean Radar Specification* |
| **Reasoning for not Acceptance or Acceptance and Close Out:** |
| Based on the above justification provided by the CME, it was concluded that the new monitoring equipment based on the GPRS/GSM technology would be capable of capturing more effectively the ON/OFF of the CFLs than the Lean Radar and hence the equipment was found to be more effective in terms of accuracy and completeness of data as compared to previous device and hence accepted. CL #02 closed. |
| **Acceptance and Close out by Lead Assessor: Closed** **Date:** 03/03/2012 |

## 7. Annex 3: Statement of Competence

# Statement of Competence

Name: Shivaji Chakraborty

**Status**

| | | | | | |
|---|---|---|---|---|---|
| - | Lead Assessor | x | - | Expert | x |
| - | Assessor | x | - | Financial Expert | |
| - | Local Assessor | India | - | Technical Reviewer | |

**Scopes of Expertise**

| | |
|---|---|
| **1. Energy Industries (renewable / non-renewable)** | **x** |
| Technical Area(s*): TA 1.2 Energy generation from renewable energy sources* | |
| **2. Energy Distribution** | **x** |
| Technical Area(s*): TA 2.1 Electricity distribution<br>TA 2.2 Heat distribution* | |
| **3. Energy Demand** | **x** |
| Technical Area(s*): TA 3.1 Energy Demand* | |
| **4. Manufacturing** | |
| Technical Area(s*):* | |
| **5. Chemical Industry** | |
| Technical Area(s*):* | |
| **6. Construction** | |
| Technical Area(s*):* | |
| **7. Transport** | |
| Technical Area(s*):* | |
| **8. Mining/Mineral Production** | |
| Technical Area(s*):* | |
| **9. Metal Production** | |
| Technical Area(s*):* | |
| **10. Fugitive Emissions from Fuels (solid, oil and gas)** | |
| Technical Area(s*):* | |
| **11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride** | |
| Technical Area(s*):* | |
| **12. Solvent Use** | |
| Technical Area(s*):* | |
| **13. Waste Handling and Disposal** | |
| Technical Area(s*):* | |
| **14. Afforestation and Reforestation** | |
| Technical Area(s*):* | |
| **15. Agriculture** | |
| Technical Area(s*):* | |

Approved Member of Staff by: Siddharth Yadav Date: 15/02/2012

# Statement of Competence

Name: Cruz, Magdalena

**Status**

| | | | | | |
|---|---|---|---|---|---|
| - | Lead Assessor | | - | Expert | |
| - | Assessor | | - | Financial Expert | |
| - | Local Assessor | Mexico | - | Technical Reviewer | |

**Scopes of Expertise**

**1. Energy Industries (renewable / non-renewable)**
Technical Area(s*):*

**2. Energy Distribution**
Technical Area(s*):*

**3. Energy Demand**
Technical Area(s*):*

**4. Manufacturing**
Technical Area(s*):*

**5. Chemical Industry**
Technical Area(s*):*

**6. Construction**
Technical Area(s*):*

**7. Transport**
Technical Area(s*):*

**8. Mining/Mineral Production**
Technical Area(s*):*

**9. Metal Production**
Technical Area(s*):*

**10. Fugitive Emissions from Fuels (solid, oil and gas)**
Technical Area(s*):*

**11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride**
Technical Area(s*):*

**12. Solvent Use**
Technical Area(s*):*

**13. Waste Handling and Disposal**
Technical Area(s*):*

**14. Afforestation and Reforestation**
Technical Area(s*):*

**15. Agriculture**
Technical Area(s*):*

Approved Member of Staff by: Siddharth Yadav Date: 05/02/2012

# Statement of Competence

Name: Joe Sun

**Status**

| | | | | | |
|---|---|---|---|---|---|
| - | Lead Assessor | | - | Expert | |
| - | Assessor | | - | Financial Expert | |
| - | Local Assessor | | - | Technical Reviewer | x |

**Scopes of Expertise**

1. **Energy Industries (renewable / non-renewable)**

Technical Area(s*):*

2. **Energy Distribution**

Technical Area(s*):*

3. **Energy Demand**

Technical Area(s*):*

4. **Manufacturing**

Technical Area(s*):*

5. **Chemical Industry**

Technical Area(s*):*

6. **Construction**

Technical Area(s*):*

7. **Transport**

Technical Area(s*):*

8. **Mining/Mineral Production**

Technical Area(s*):*

9. **Metal Production**

Technical Area(s*):*

10. **Fugitive Emissions from Fuels (solid, oil and gas)**

Technical Area(s*):*

11. **Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride**

Technical Area(s*):*

12. **Solvent Use**

Technical Area(s*):*

13. **Waste Handling and Disposal**

Technical Area(s*):*

14. **Afforestation and Reforestation**

Technical Area(s*):*

15. **Agriculture**

Technical Area(s*):*

Approved Member of Staff by: Siddharth Yadav Date: 15/02/2012

# Statement of Competence

Name: Ramkrishna Patil

**Status**

| | | | | | |
|---|---|---|---|---|---|
| - | Lead Assessor | x | - | Expert | x |
| - | Assessor | x | - | Financial Expert | |
| - | Local Assessor | India | - | Technical Reviewer | x |

**Scopes of Expertise**

| | |
|---|---|
| **1. Energy Industries (renewable / non-renewable)** | **x** |
| Technical Area(s): *TA 1.2 Energy generation from renewable energy sources* | |
| **2. Energy Distribution** | **x** |
| Technical Area(s): *TA 2.1 Electricity distribution*<br>*TA 2.2 Heat distribution* | |
| **3. Energy Demand** | **x** |
| Technical Area(s): *TA 3.1 Energy Demand* | |
| **4. Manufacturing** | |
| Technical Area(s): | |
| **5. Chemical Industry** | |
| Technical Area(s): | |
| **6. Construction** | |
| Technical Area(s): | |
| **7. Transport** | |
| Technical Area(s): | |
| **8. Mining/Mineral Production** | |
| Technical Area(s): | |
| **9. Metal Production** | |
| Technical Area(s): | |
| **10. Fugitive Emissions from Fuels (solid, oil and gas)** | |
| Technical Area(s): | |
| **11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride** | |
| Technical Area(s): | |
| **12. Solvent Use** | |
| Technical Area(s): | |
| **13. Waste Handling and Disposal** | |
| Technical Area(s): | |
| **14. Afforestation and Reforestation** | |
| Technical Area(s): | |
| **15. Agriculture** | |
| Technical Area(s): | |

Approved Member of Staff by: Siddharth Yadav Date: 22/02/2012