



RESPONSE TO POINTS RAISED DURING COMPLETENESS CHECK

Subject: A completeness check completed for registration of Programme of Activities 9593 - "Demand side energy efficiency measures in building lighting systems "

Bureau Veritas Certification had performed the validation of the Programme of Activities 9593 - "Demand side energy efficiency measures in building lighting systems". Subsequently, there was a Completeness check performed by RIT during which 07 points were raised. Bureau Veritas Certification would like to provide its responses to the issues raised as given below.

1. *The PoA-DD page 4 states “the PoA aims to implement energy efficient lighting technologies such as Light Emitting Diodes (LEDs) and any other future energy efficient lighting options which are also eligible to be included under the PoA”, whereas the Eligibility Criteria 3 (page 6 and page 20 of PoA-DD) only allows the LED disseminated are high efficiency lighting with a specified electronic control gear efficiency of at least 75%”. The PP/DOE is requested to rectify the inconsistency. In doing so, the PP/DOE is requested to further provide the clear specifications of “any other future energy efficient lighting options”. In case “any other future energy efficiency lighting options” are considered as different technology/measures, a separate generic CPA-DD shall be provided for each technologies/measures. Please refer to “Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities” version 2.*

Response:

- a. The PoA-DD (in page 6 and 21) and CPA-DD (page 14) have been revised to generalize the criteria. The minimum 75% efficiency requirement is kept common irrespective of the type of technology. This means any luminaire technology which is efficient to achieve 75% or above efficiency will be qualified to include under proposed PoA.
 - b. The criteria is general as there is other luminaire technology presently available than that LED technology
 - c. Please note that the CME is not intended to use other methodology than AMS-II.C
2. *The eligibility criteria in the generic component project activity of PoA-DD (page 17) allow the future CPA to use one of the three options for baseline emissions calculation. However, the other parts of the generic CPA-DD (e.g. Section B.6.2 and Section B.7) only provide the provisions on how to apply option 1. The PP/DOE is requested to justify whether the Option 2 and 3 are applicable to the proposed PoA and substantiate how the option 2 and 3 will be applied to each CPA as per AMS.II.C version 14 (e.g. how the relevant ex ante parameters will be determined and list the relevant monitoring parameters for option 2 and 3).*

Response:

Option 2 (kWh_i) and Option 3 (EER_i & $Q_{i,y}$) are defined under section B.6.2 & B.7.1 in the PoA-DD (page 30 & 33).

3. The DOE is requested to further substantiate how the service level (e.g. rated capacity or output) of the installed, project energy-efficient equipment is between 90% and 150% of the service level of the baseline equipment, as per the paragraph 2 of the methodology. In doing so, the DOE should validate: (a) the appropriateness of using average lux of all the sampled buildings for comparison, considering there were several types of baseline luminaries with power from 17W to 43W; (b) how the sample size for lux measurement was determined; (c) how it can ensure that the samples are representative; (d) how the accuracy/reliability of the measurement is assured;

Response:

PP has carried out the Lux measurement for sampled blocks (in Baseline scenario as well as in project scenario) covering all Luminaries with power ranging from 17W – 43W and results of this measurement has been provided in an excel spreadsheet in transparent manner. To simplify PP has shown representative Average Value to prove the applicability of the methodology condition No.2; however the Excel spread sheet provides detailed measured lux values against each luminaire measured at 05 different positions in sampled buildings.

The Average value of the Baseline Lux and Project lux is calculated against each Luminaire in sampled blocks using these 5 measured values and then compared to verify that the Project Lux level is well within the prescribed range of 90% - 150%. A sample of table for lux measurement submitted by CME during Validation is provided herewith for greater clarity.

Town Council	Sampling Block Number	Date	Time	Type	Location	Centre	Front	Back	Right	Left	Avg	Date	Time	Type	Centre	Front	Back	Right	Left	Avg		
Ang Mo Kio	Block 584, Ang Mo Kio Avenue 10	03.05.12	0220	PLC	Lift Lobby	265	232	250	220	236	241	13.10.12	0130	2ft / 4ft LED	268	243	254	245	289	260	7%	107%
Ang Mo Kio	Block 584, Ang Mo Kio Avenue 10	03.05.12	0157	2ft T8	Staircase full landing level 4	100	75	58	63	88	77	13.10.12	0110	2ft / 4ft LED	121	93	81	101	90	97	21%	121%

Based on the transparent information provided by CME during validation of CPA, Validation team concludes that the measurement is done correctly, during site visit Validation team cross checked the lux level using same lux meters used by CME for Baseline and project luminaries. These lux meters are found calibrated and calibration certificates were shown by the CME.

The Sample size is calculated using same approach as defined in the POA DD and CPA DD using Para 50 “Guidelines for sampling and surveys for CDM Project activities and Programme of Activities, Version 2.0

4. The PP is requested to elaborate the conditions that avoid double counting of emission reductions as per “Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities” version 2 paragraph 16(b). Considering that the proposed PoA may not cover all the luminaries in the buildings included in its CPAs, conditions that ensure the unique identification of project luminaries (not project buildings) or that clearly distinguish the project luminaires from the other CDM project activity/non CDM projects (e.g. geographical coordinates, project logos, etc) should be set in the PoA-DD and the information of the same for the 1st CPA should be provided. The DOE is requested to validate how such conditions ensure the avoidance of double counting as per paragraph 17 and 18 of the “Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities” version 2.

Response:

The eligibility criteria of double counting of project equipments has been included in the PoA-DD (in page 6 and 20) and CPA-DD (page 14)

- a. Actual scenario – OPTILED is the manufacturer and DAVEX SINGAPORE PTE LTD is a supplier for all the LED luminaires involved in this project activity.
 - b. The project activity only covers the light installed in common areas such as staircase, void deck and corridors of the residential buildings. No household luminaires are part of this project activity.
 - c. These luminaires are connected with dedicated electricity meters which have been installed in each building to monitor the electricity consumption by the LED luminaires alone.
5. *In page 19 of the validation report to the 1st specific CPA-DD, the DOE has confirmed that the Smetered,i equals 65 and the Snon-metered is 0 because all the 1353 buildings in this CPA are metered blocks. The DOE is requested to provide the information on: (a) whether the operating hours and electricity consumptions of all the 1353 buildings will be recorded and used to calculate the emission reductions; (b) In case only the measurement result of the project sample group (PSG) will be recorded and used for emission reduction calculation, why it is appropriate to consider the buildings other than PSG as metered building thus the Snon-metered is zero. Please refer to AMS.II.C version 14 paragraphs 32.*

Response:

This is clearly explained under page 34 of revised specific CPA-DD. The explanation is based on the paragraph 31, 32 and 35 of AMS-II.C (Version 14)

6. *CPA-DD, Smetered,i is the total sample size of buildings used for monitoring operating hours and electricity consumption of project devices. It appears that the parameter of interest is the mean value (i.e, operating hour and/or electricity consumption) rather than proportion/percentage. The DOE is requested to provide the validation on the appropriateness of applying paragraph 50 of “Guidelines for Sampling and Surveys for CDM Project Activities and Programme of Activities”, version 2.0.*

Response:

CPA Validation report page 16 is clearly providing detailed validation opinion on appropriateness of simple random sampling approach, which is in accordance with Para 50 “Guidelines for sampling and surveys for CDM Project activities and Programme of Activities, Version 2.0. The Validation opinion on the appropriateness of Simple random sampling is reproduced herewith for easy reference

“The Validation team confirms that the simple random sampling is the most appropriate approach for the sampling calculation for this CPA as the population i.e. HDB Blocks involved are homogenous as well as the capacity (12 Watt) and usage hours of project luminaires installed are also found homogenous (Timers are installed to control the on and off timings of project Luminaires). The purpose of monitoring S metered and S non-metered block monitoring is to cross check the actual KWH consumption by the project luminaire during the crediting period. The data collected during such monitoring will be used to cross check the calculation of Emission reduction which is based on the capacity of luminaire and total number of luminaires installed and working hours.

Application of the simple Random sampling is found in accordance with EB Guideline EB65 Annex 2 “Standard for sampling and surveys for CDM project activities and Programme of Activities”, Version 02.0. Please refer Appendix 2 para 2,3 and 4.”

To clarify the point on proportion / percentage raised in above completeness point, validation Table in Section 3.3.3 under Project Emission is now revised with clear information on parameters used to determine the sample size. To explain further, sample size is calculated using Eq. (1) from “Guidelines for sampling and surveys for CDM Project activities and Programme of Activities, Version 2.0” and as per this equation parameters used are as given below.

n ----- Sample size
N ----- Total number of HDB Blocks in the CPA
p ----- Our expected proportion (0.50)
1.645 ----- Represents the 90% confidence required
0.1 ----- Represents the 10% relative precision

7. *The Section B.6.1 of the generic CPA-DD (also in 1st CPA-DD) indicates that the baseline emissions and project emissions will be calculated based on annual operating hours and power of the luminaires. However, in page 33 of PoA-DD (page 35 of 1st CPA-DD), the PP also proposes to calculate the monthly emission reductions by the electricity consumptions from energy meters of sampled buildings. The PP is requested to ensure the consistency.*

Response:

PoA-DD (p36) & CPA-DD (p36) are now revised to include the “yearly” instead of monthly.

We hope you will find above responses in accordance with Review comments raised.

Yours faithfully



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