Indicative simplified baseline and monitoring methodologies
for selected small-scale CDM project activity categories

## TYPE II - ENERGY EFFICIENCY IMPROVEMENT PROJECTS

Project participants shall take into account the general guidance to the methodologies, information on additionality, abbreviations and general guidance on leakage provided at http://cdm.unfccc.int/methodologies/SSCmethodologies/approved.html.

## *II.C. Demand-side energy efficiency activities for ~~specific~~ electric powered technologies*

### Technology/measure and scope

1. This methodology comprises activities that encourage the adoption of energy-efficient equipment~~/appliance~~ (e.g. lamps, ballasts, refrigerators, motors, fans, air conditioners, pumping systems, chillers and air conditioners) at one or more ~~many~~ sites. These technologies may replace existing equipment or be installed at new sites. In the case of new facilities, the determination of baseline scenario shall be as per the procedures described in the general guidance to SSC methodologies under the section 'Type II and III Greenfield projects (new facilities)'. The aggregate energy savings by a single project may not exceed the equivalent of 60 GWh per year for electrical end use energy efficiency technologies. For fossil fuel end use energy efficient technologies, the limit is 180 GWh thermal per year in fuel input.

2. The aggregate rated capacity or output or level of service of the energy efficient equipment (~~For each replaced appliance/equipment/system the rated capacity or output or level of service~~ e.g. light output, water output, room temperature and comfort, the rated output capacity of air-conditioners or chillers, etc.) is not significantly smaller (maximum - 10%) than the aggregate baseline or significantly larger (maximum + 50%)[1] than the aggregate baseline. The relationship of the rated capacity of the energy efficient equipment to the baseline can be many-to-many (e.g. a lighting retrofit where quantities of lamp/ballast combinations are replaced one-for-one) or many-to-one (e.g. a cooling equipment retrofit where distributed cooling units are replaced by a central chiller plant.)

3. If the energy efficient equipment contains refrigerants, then the refrigerant used in the project case shall be CFC free. ~~Project e~~Emissions from the baseline refrigerants and~~/or~~ project refrigerants shall be considered in accordance with the guidance of the Board (EB 34, paragraph 17), that is if the project activity leads to any incremental emissions associated with refrigerants used, it shall be discounted from emissions reduction calculation. This methodology credits emission reductions only due to the reduction in electricity consumption from use of more efficient equipment/appliances.

[1] Project activities involving increase in output level compared to the baseline scenario are only eligible if they comply with the related and relevant guidance in the General Guidance for SSC methodologies which require a demonstration that the baseline scenario for the increased amount of output is the same as the baseline scenario defined by this methodology. Otherwise, in the event project output in year y is greater than the average historical output (average of three most recent years +/-10%) before the implementation of the project activity, the value of the output in year y is capped at the value of the historical average output level.

**Boundary**

4. The project boundary is the physical, geographical location of the aggregate of all ~~each~~ measures ~~(each piece of~~ and ~~equipment)~~ equipment, both installed and replaced[2].

**Baseline**

5. If the energy displaced is fossil fuel based, the energy baseline is the existing level of fuel consumption or the amount of fuel that would be used by the technology that would have been implemented otherwise. The emissions baseline is the energy baseline multiplied by an emission factor for the fossil fuel displaced. Reliable local or national data for the emission factor shall be used; IPCC default values should be used only when country or project specific data are not available or difficult to obtain.

6. If the energy displaced is electricity, the emission baseline is determined using one of the two following options:

- Option 1 – Constant Load[3] Device(s): The product of the baseline energy consumption of equipment/~~appliances~~ that delivers the same output each time it is energized and the emission factor for the electricity displaced:

$$BE_y = E_{BL,y} \times EF_{CO2,ELEC,y} + Q_{ref,BL} \times GWP_{ref,BL} \quad \textbf{(1)}$$

$$E_{BL,y} = \sum_i (n_i \times \rho_i \times o_i / (1 - l_y)) \quad \textbf{(2)}$$

Where:

| | |
|---|---|
| $BE_y$ | Baseline emissions in year $y$ ($tCO_2e$) |
| $E_{BL,y}$ | Energy consumption in the baseline in year $y$ (kWh) |
| $EF_{CO2,ELEC,y}$ | Emission factor in year $y$ calculated in accordance with the provisions in AMS-I.D ($tCO_2/MWh$) |

2 The boundary can also be defined to encompass the entire system for example if two or more pumps are configured to operate in parallel at a pumping station and the project activity is retrofitting only one of the pumps the boundary can include entire pumping station to enable appropriate metering and monitoring.

3 The constant load condition must be verified. Lighting or electric heating equipment controlled by an on/off switch is assumed to be constant load. For equipment that is potentially variably loaded, including all motors, the constant load condition must be demonstrated by monitored electricity and/or historical records data for a 1 year period prior to project construction. The data recording interval is monthly or less, i.e. a minimum of 12 data points. Data demonstrate a constant condition if 90% of the use records are ± 10% of the annual mean. Data can be monitored electricity use, including utility data, or historical records such as pumping volume and head for an irrigation system.

| | |
|---|---|
| $\sum_i$ | Sum over the group of *"i"* replaced devices (e.g. 40W incandescent bulb, constant load 5hp motor) ~~replaced~~, for which the project energy efficient equipment is operating during the year, implemented as part of the project activity. The devices in group "i" must be closely related by type (e.g. motor), size (e.g. 15 HP) and service (e.g. conveyor belt, office building chilled water pump cooling.) |
| $n_i$ | Number of devices of the group of *"i"* devices (e.g. 40W incandescent bulb, 5hp motor) to be replaced in the project, and for which the project energy efficient equipment is operating during the year |
| $\rho_i$ | Power of the ~~devices of the~~ group of *"i"* baseline devices (e.g. 40W incandescent bulb, 5hp motor). In the case of a retrofit activity, "power" is the weighted average of the group *i* devices replaced. For motors, the power value is based on spot-measurement and/or short-term monitoring[4] data; nameplate data are not sufficient due to the potential for partial loading. For large populations of motors, the spot-measurement and/or short-term monitoring data can be taken on a representative sample of motors. In the case of new installations, "power" is the weighted average of the group *i* devices available on the market and most commonly installed as standard practice. Standard practice may also be defined by governing codes and standards. |
| $o_i$ | Average annual operating hours of the devices of the group of *"i"* baseline devices |
| $l_y$ | Average annual technical grid losses (transmission and distribution) during year *y* for the grid serving the locations where the devices are installed, expressed as a fraction. This value shall not include non-technical losses such as commercial losses (e.g. theft/pilferage). The average annual technical grid losses shall be determined using recent, accurate and reliable data available for the host country. This value can be determined from recent data published either by a national utility or an official governmental body. Reliability of the data used (e.g. appropriateness, accuracy/uncertainty, especially exclusion of non technical grid losses) shall be established and documented by the project participant. A default value of 0.1 shall be used for average annual technical grid losses, if no recent data are available or the data cannot be regarded accurate and reliable. |
| $Q_{ref,BL}$ | Average annual quantity of refrigerant used in the baseline to replace the refrigerant that has leaked (tonnes/year). Applies to projects with replacement of equipment containing refrigerants. Values from Chapter 7: Emissions of fluorinated substitutes for Ozone depleting substances, Volume 3, Industrial Processes and Product Use, 2006 IPCC Guidelines for National Greenhouse Gas Inventories may be used |
| $GWP_{ref,BL}$ | Global Warming Potential of the baseline refrigerant (t $CO_2$e/t refrigerant) |

[4] Short-term monitoring compensates for small, short-term rapid fluctuations in power in an otherwise constant process. Short-term monitoring should be conducted for a period of 1 – 6 hours.

As an example for Option 1, consider a project for a pipeline transporting crude oil from an oil field to a trans-shipment station. The measure is to replace existing pump motors with premium efficiency units. Based on hourly production records from the past 3 years bbl/day throughput has been constant (90% of records are ± 10% of their mean) when the pipeline has been operational. Based on hourly production records for the same period the pipeline operates 8,400 hours per year. There are 20 pump motors ranging between 250 to 500 HP; kW is determined by spot measurements for each motor. Grid losses are based on a recent government study. There are no refrigerants involved.

- Option 2(a) – Variable Load Device(s), Equivalent Full Load Hour Approach: (Requires at least one continuous year of energy use data for the device(s)):

$$BE_y = E_{BL,y} \times EF_{CO2,ELEC,y} + Q_{ref,BL} \times GWP_{ref,BL} \tag{3}$$

$$E_{BL,y} = \sum_i (n_i \times \rho_i \times EFLH_i)/(1-l_y) \tag{4}$$

Where:

| | |
|---|---|
| $BE_y$ | Baseline emissions in year $y$ (tCO2e) |
| $E_{BL,y}$ | Energy consumption in the baseline in year $y$ (kWh) |
| $EF_{CO2,ELEC,y}$ | Emission factor in year $y$ calculated in accordance with the provisions in AMS-I.D (tCO2/MWh) |
| $\sum_i$ | Sum over the group of *"i"* devices (e.g. variable load 5hp motor, 5 ton air-cooled direct expansion~~DX~~ unit) that are replaced as part of the project activity, and for which the project energy efficient equipment is operating during the year. The devices in group "i" must be closely related by type (e.g. motor, room air-conditioner) size (e.g. 15 HP, <65,000 Btu/h) and service (e.g. variable flow pump motor, office building air handler fan motor.) |
| $n_i$ | Number of devices of the group of *"i"* devices (5hp motor, 4 ton roof top unit) replaced, for which the project energy efficient equipment is operating during the year |
| $\rho_i$ | Full load power of the devices of group *"i"* baseline devices (e.g. 5hp motor). Full load power is determined when the device is operating at 100% load by spot measurements or short-term monitoring of up to 1 hour. Name plate data cannot be used as the basis for full load power. In the case of a retrofit activity, "power" is the weighted average of the devices replaced. In the case of new installations, "power" is the weighted average of group *i* devices available on the market and most commonly installed as standard practice. Standard practice may also be defined by governing codes and standards. |

| | |
|---|---|
| $EFLH_i$ | Equivalent full load annual operating hours (EFLH) of the devices of the group *"i"* baseline devices. EFLH is defined as the sum of the annual kWh[5] consumption of the group "*i*" baseline devices divided by the sum of the group "*i*" baseline devices full load kW[6]. Used when kWh data have been collected for all or a representative sample of devices for a period of 1 to 3 years. |
| $l_y$ | Average annual technical grid losses (transmission and distribution) during year *y* for the grid serving the locations where the devices are installed, expressed as a fraction. This value shall not include non-technical losses such as commercial losses (e.g. theft/pilferage). The average annual technical grid losses shall be determined using recent, accurate and reliable data available for the host country. This value can be determined from recent data published either by a national utility or an official governmental body. Reliability of the data used (e.g. appropriateness, accuracy/uncertainty, especially exclusion of non technical grid losses) shall be established and documented by the project participant. A default value of 0.1 shall be used for average annual technical grid losses, if no recent data are available or the data cannot be regarded accurate and reliable. |
| $Q_{ref,BL}$ | Average annual quantity of refrigerant used in the baseline to replace the refrigerant that has leaked (tonnes/year). Values from Chapter 7: Emissions of fluorinated substitutes for Ozone depleting substances, Volume 3, Industrial Processes and Product Use, 2006 IPCC Guidelines for National Greenhouse Gas Inventories may be used |
| $GWP_{ref,BL}$ | Global Warming Potential of the baseline refrigerant (t $CO_2$e/t refrigerant) |

- Option 2(b) – Variable Load Device(s), Regression Approach:
  (Requires a minimum of 3 months worth of data for energy use and independent variables the device(s)):

$$E_{BL,y} = \sum_i (n_i \times kWh_i)/(1-l_y) \qquad \textbf{(5)}$$

[5] Use 1 year of historic, monitored data (less if using regression analysis) if available for loads with constant (+- 10%) annual service requirements (e.g. square meters of cooled space with same set-points and schedules.) Where annual service requirements are not constant, up to 3 years of historic, monitored data may be required. In either case annual kWh may be measured for the 1-3 year period, or based on regression analysis of monitored data (key independent variables) for a period not less than 3 months that represents the full range of operating conditions expected for the devices. For large populations of devices, data from a representative sample may be used to determine the annual kWh of the population.

[6] Based on measurements of true RMS kW taken under in-situ full load conditions. Full load kW cannot be based on name-plate data. For large populations of devices, data from a representative sample may be used to determine the full load kW of the population.

Where:

| | |
|---|---|
| $kWh_i$ | Annual average electric energy use for the devices in group "*i*". Based on regression analysis of key independent variables that have physical influence on energy use, e.g. outside air dry bulb temperature for space cooling applications. Takes the form of:<br><br>*kWh=f(x)* where *x* is the independent variable(s) causing the device(s) to use energy.<br><br>The data for the analysis must cover a period of at least 3 continuous months, more if needed to capture the full range of expected conditions of the independent variable(s). The data measurement interval will depend on the application but is typically 0.25 to 1.0 hour in length. Applications with high frequency variations, e.g. air compressors, may require intervals as short as a few seconds.<br><br>The regression analysis shall meet the specifications of and be calibrated per the requirements of ASHRAE[7] Guideline 14-2002, Measurement of Energy and Demand Savings, Whole Building Calibrated Simulation Performance Path[8]. |

As an example for Option 2, consider a project at a facility (e.g. at a school or residential apartment) where space cooling in the baseline case is provided by a distributed population of packaged rooftop units. The project will replace the rooftop units with chilled water supplied from a central chiller plant, and air handler units. No measured hours of use or kWh/year/unit data are available for the rooftop units. The project developer has selected Option 2(b) and will build a baseline model using regression analysis to predict annual kWh use and EFLH. For this simple example all the rooftop units are the same size, make and model, and EER, and a single regression model can represent all units. The independent variables driving kWh use are outside air dry bulb temperatures and building occupancy. The general form of the regression equation for each unit is:

$$E_{BL,y} = \sum_k (b + x_1 \times (OAT - T_{cp})_+ \times occ + x_2 \times (OAT - T_{cp})_+ \times unocc)_k \quad \textbf{(6)}$$

Where:

| | |
|---|---|
| $k$ | The $k^{th}$ hour of the cooling season |
| $b$ | Regression coefficient |
| $x_1$ | Regression coefficient when school in session |
| $OAT$ | Average daily outside air dry bulb temperature |
| $T_{cp}$ | Change point temperature, the outside dry bulb temperature at which cooling is no longer required |
| $x_2$ | Regression coefficient when school not in session |
| $occ$ | Occupancy value; 1 = school in session, 0 = school not in session |

7 American Society of Heating, Ventilating, and Air Conditioning Engineers, Atlanta, Georgia, USA.
8 Or current version or equivalent guideline.

*unocc* Unoccupied value; 1 = school not in session, 0 = school in session

Hourly data of OAT and energy (kWh) use for a sample of rooftop units were collected for 3 months. The collection period captured temperatures under peak design conditions and the lower end of the expected cooling range. The collection period also covered a week when school was on holiday. Daily average kWh use per rooftop unit was regressed against daily average OAT using a change-point regression analysis routine. Daily averages were used instead of hourly values because the resulting model gave a better fit to the data. Average daily temperatures were developed for all days for the cooling season where the school was located. Using the coefficients and change point temperature developed by the regression analysis, kWh use was predicted for the year for a single rooftop unit using equation 6. $E_{BL,y}$ was calculated using equation 5.

- Option ~~2~~3 – Production Efficiency: The specific energy consumption per unit of output ~~the system~~ in the baseline times the output in project year y times the emission factor for the electricity displaced. This option can only be used where comparable conditions for ~~the output~~ demand in the baseline and project can be established. Following are examples of comparable conditions:

(a) ~~For example in the specific case of~~ For a water pumping system comparable conditions can be established by one of the options below:

(i) Show that average baseline water flow rate (discharge) is within ± 10% of the flow rate during the project[9]; or

(ii) ~~Choose the nameplate~~ Measure[10] the average head and discharge ~~specifications~~ of the baseline pump and corresponding power/energy consumption ( weighted average values can be used when pumps are operated in parallel) ~~for a conservative estimate of EER~~

(b) For a chilled water system used for space cooling, comparable conditions can be established by:

(i) Showing that the weather-normalized per unit baseline cooling demand (e.g. ton-hours per year) served by the equipment is ± 10% of the per unit cooling load that will be served during the project, and

(ii) Normalizing the baseline and project cooling energy for average environmental cooling loads, e.g. typical meteorological cooling degree days or average daily outside air dry bulb temperature.

(c) For a chilled water system used for process cooling comparable conditions can be established by:

[9] Use 3 years historic data. For recent facilities (<3 years) a minimum of one year data would be required.

[10] For large populations of groups of devices, measurements of a sample of devices can be used to develop load or service factors to calibrate nameplate data to installed operating conditions.

(i) Showing that the per unit production cooling demand in the baseline period (e.g. kilogram of extruded plastic) is ± 10% of the project per unit process cooling load. Production rates may vary under this option.

$$BE_y = E_{BL,y} \times EF_{CO2,ELEC,y} + Q_{ref,BL} \times GWP_{ref,BL} \quad (7)$$

$$E_{BL,y} = \sum_i \left[ EER_i \times Q_{i,y} / (1 - l_y) \right] \quad (8)$$

Where:

$EER_i$ Specific Energy consumption in the baseline (MWh/unit/year) for group of devices, *i*. *EER* is calculated as total annual electricity consumed in the baseline divided by total quantity of annual output in the baseline. A group is a collection of devices sharing similar sizes, functions, schedules, outputs or loads; and for which the average *EER* can be calculated with a precision ± 20% or less.

EER may be based on regression analysis. The analysis should follow the guidelines given under Option 2 (b).

For each group of devices, *i*, ~~D~~output data from at least 3 years prior to project implementation shall be used in the calculations, e.g. water supply from a pumping station, ton-hours of cooling (records of output can be used in lieu of actually monitored baseline data). For facilities that are less than 3 years old, all historical data (consumption and output) shall be available (a minimum of one year data would be required)

$Q_{\cancel{y}i,y}$ Total quantity of ~~supply~~ output in project year ‘y’ for group of devices, *i*. ~~(unit)~~

$l_y$ Average annual technical grid losses (transmission and distribution) during year *y* for the grid serving the locations where the devices are installed, expressed as a fraction. This value shall not include non-technical losses such as commercial losses (e.g. theft/pilferage). The average annual technical grid losses shall be determined using recent, accurate and reliable data available for the host country. This value can be determined from recent data published either by a national utility or an official governmental body. Reliability of the data used (e.g. appropriateness, accuracy/uncertainty, especially exclusion of non technical grid losses) shall be established and documented by the project participant. A default value of 0.1 shall be used for average annual technical grid losses, if no recent data are available or the data cannot be regarded accurate and reliable

As an example for Option 3, consider a project at a plastics extrusion plant where chilled water is used to cool the extrusions. The plant maintains accurate production records including kilograms of pellets used per day, but does not monitor chiller energy or power use. The approach is 1) to build a model for the chiller plant daily kWh consumption using regression analysis, 2) run the model using 3 years of pellet throughput per day data, and 3) divide the results by the total number of kilograms of pellets used over the 3 year model period. The result is the EER for the process, which is used to predict $E_{BL,y}$. The regression is of the following general form:

$$kWh_{chillerplant,y} = b + x \times kg_{pellet} \quad \textbf{(9)}$$

Where:

| | |
|---|---|
| $b,x$ | Regression coefficients |
| $kWh_{chiller\ plant,\ y}$ | kWh of the chiller plant for year $y$, including chill and condenser chill water pump motors and cooling tower fan motors |
| $OAT$ | Average daily outside air dry bulb temperature |
| $T_{cp}$ | Change point temperature, the outside dry bulb temperature at which cooling is no longer required |

The regression analysis was run using equation 9 and an EER was developed for the process. The $E_{bl,y}$ was determined for the baseline year using equation 8.

7. For project activities that seek to retrofit or modify an existing unit or equipment resulting in an increase in capacity, the determination of the baseline scenario for the incremental capacity shall be based on the procedures described in the general guidance to SSC methodologies under the sections ‘retrofit’ and ‘capacity increase’.

**Project Activity Emissions**

8. Project emissions consist of electricity and/or fossil fuel used in the project equipment, determined as follows.

$$PE_y = EP_{PJ,y} \times EF_{CO2,y} + PE_{ref,y} \quad \textbf{(10)}$$

Where:

| | |
|---|---|
| $PE_y$ | Project emissions in year $y$ (tCO2e) |
| $EP_{PJ,y}$ | Energy consumption in project activity in year $y$. This shall be determined *ex post* based on monitored values |
| $EF_{CO2,y}$ | Emission factor for electricity or thermal baseline energy. The emissions associated with grid electricity consumption should be calculated in accordance with the procedures of AMS-I.D. For fossil fuel displaced reliable local or national data for the emission factor shall be used; IPCC default values should be used only when country or project specific data are not available or difficult to obtain |

Project energy consumption in case of project activities that displace grid electricity is determined as follows using the data of the project equipment or system:

$$E_{PJ,y} = \sum_i (n_i * \rho_i * o_i)/(1 - l_y)$$

9. Project emissions from physical leakage of refrigerants are accounted for. All GHGs as defined per Article 1, paragraph 5 of the Convention shall be considered as per the guidance by the Board.[11] $PE_{ref,y}$ is calculated as follows:

$$PE_{ref,y} = (Q_{ref,PJ,y}) \times GWP_{ref,PJ} \quad \textbf{(11)}$$

Where:

| | |
|---|---|
| $PE_{ref,y}$ | Project emissions from physical leakage of refrigerant from the project equipment in year $y$ (t CO2e/y) |
| $Q_{ref,PJ,y}$ | Average annual quantity of refrigerant used in year $y$ to replace refrigerant that has leaked in year $y$ (tonnes/year). Values from Chapter 7: Emissions of fluorinated substitutes for Ozone depleting substances, Volume 3, Industrial Processes and Product Use, 2006 IPCC Guidelines for National Greenhouse Gas Inventories may be used |
| $GWP_{ref,PJ}$ | Global Warming Potential of the refrigerant that is used in the project equipment (t $CO_2$e/t refrigerant) |

**Leakage**

10. If the energy efficiency technology is equipment transferred from another activity, leakage is to be considered.

**Monitoring**

11. The emission reduction achieved by the project activity shall be determined as the difference between the baseline emissions and the project emissions and leakage.

$$ER_y = (BE_y - PE_y) - LE_y \quad \textbf{(12)}$$ [12]

Where:

| | |
|---|---|
| $ER_y$ | Emission reductions in year $y$ (tCO2e) |
| $LE_y$ | Leakage emissions in year $y$ (tCO2e) |

[11] Paragraph 17 of report of EB 34.

[12] For weather dependent projects, notably chillers and other cooling equipment, the baseline model should be run using project year "y" weather data. This normalizes the "$BE_y$" term to the same conditions as the performance year. For baseline models created under Option 2(a) using EFLH where there is no model but the weather dependent condition applies, the normalization factor is the ratio of project weather to baseline weather, e.g. $CDD_{project}/CDD_{baseline}$ in the case of a cooling measure. Normalization will be required for other variable load devices where the independent variable is not weather but may be occupancy or flow rate.

12. If the devices installed replace existing devices, the number and "power" of a representative sample of the replaced devices shall be recorded in a way to allow for a physical verification by DOE.[13]

13. If the devices installed have a constant current (ampere) characteristics, monitoring shall consist of monitoring either the "power" and "operating hours" or the "energy use" of the devices installed using an appropriate method. Appropriate methods 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.

14. In either case, monitoring shall include annual checks of a sample of non-metered systems to ensure that they are still operating.

15. If the devices have variable current (ampere) characteristics, monitoring shall consist of metering the "energy use" of an appropriate sample of the devices installed. Monitoring shall also include annual checks of a sample of non-metered systems to ensure that they are still operating.

16. For pumping systems monitoring of project activity shall consist of metering the pumping energy use, hourly or daily discharge ($m^3$ per day or hour) and the total delivery head (m).

**Project activity under a programme of activities**

The following conditions apply for use of this methodology in a project activity under a programme of activities:

17. In case the project activity involves the replacement of equipment, and the leakage effect of the use of the replaced equipment in another activity is neglected, because the replaced equipment is scrapped, an independent monitoring of scrapping of replaced equipment needs to be implemented. The monitoring should include a check if the number of project activity equipment distributed by the project and the number of scrapped equipment correspond with each other. For this purpose scrapped equipment should be stored until such correspondence has been checked. The scrapping of replaced equipment should be documented and independently verified.

- - - - -

[13] This shall be monitored while replacement is underway to avoid, e.g. that 40W lamps are recorded as 100W lamps, greatly inflating the baseline.

Indicative simplified baseline and monitoring methodologies
for selected small-scale CDM project activity categories

*II.C. Demand-side energy efficiency activities for specific technologies (cont)*

**History of the document ***

| Version | Date | Nature of revision |
|---|---|---|
| 14 | EB 66, Annex #<br>02 March 2012 | Revision to expand the methodology to cover the replacement of multiple chillers and elaborate a procedure to calculate energy savings for equipment having constant and variable loads. |
| 13 | EB 48, Annex 16<br>17 July 2009 | To clarify the consideration of increased output over the historic average and boundary definition, and to add an option to use specific energy consumption for the baseline emission calculations. |
| 12 | EB 47, Annex 22<br>28 May 2009 | Elimination of baseline penetration calculations and cross effect calculations. |
| 11 | EB 44, Annex 20<br>28 November 2008 | The revisions clarify the consideration of capacity increase of the project equipment, electricity transmission and distribution (T&D) losses in the baseline and cross effects of lighting and heating. With regard to equipment containing refrigerants, the revisions clarify the calculations of direct emissions from refrigerants. |
| 10 | EB 41, Annex 17<br>02 August 2008 | Additional guidance on baseline selection for new facilities and for capacity increase due to retrofit; consideration of electricity transmission and distribution losses; guidance on treatment of direct emissions from refrigerants where relevant. |
| 09 | EB 33, Annex 26<br>27 July 2007 | Revision of the approved small-scale methodology AMS-II.C to allow for its application under a programme of activities (PoA) |
| 08 | EB 28, Annex 29<br>15 December 2006 | The threshold of small-scale Type II methodologies was increased from 15 GWh to 60 GWh. The consideration of transmission and distribution losses in the baseline estimation was removed. |
| **Decision Class**: Regulatory<br>**Document Type**: Standard<br>**Business Function**: Methodology | | |

* This document, together with the 'General Guidance' and all other approved SSC methodologies, was part of a single document entitled: Appendix B of the Simplified Modalities and Procedures for Small-Scale CDM project activities until version 07.

**History of the document: Appendix B of the Simplified Modalities and Procedures for Small-Scale CDM project activities**

| Appendix B of the Simplified Modalities and Procedures for Small-Scale CDM project activities contained both the General Guidance and Approved Methodologies until version 07. After version 07 the document was divided into separate documents: 'General Guidance' and separate approved small-scale methodologies (AMS). | | |
|---|---|---|
| **Version** | **Date** | **Nature of revision** |
| 07 | EB 22, Para. 59<br>25 November 2005 | References to "non-renewable biomass" in Appendix B deleted. |
| 06 | EB 21, Annex 22<br>20 September 2005 | Guidance on consideration of non-renewable biomass in Type I methodologies, thermal equivalence of Type II GWhe limits included. |
| 05 | EB 18, Annex 6<br>25 February 2005 | Guidance on 'capacity addition' and 'cofiring' in Type I methodologies and monitoring of methane in AMS-III.D included. |
| 04 | EB 16, Annex 2<br>22 October 2004 | AMS-II.F was adopted; leakage due to equipment transfer was included in all Type I and Type II methodologies. |
| 03 | EB 14, Annex 2<br>30 June 2004 | New methodology AMS-III.E was adopted. |
| 02 | EB 12, Annex 2<br>28 November 2003 | Definition of build margin included in AMS-I.D, minor revisions to AMS-I.A, AMS-III.D, AMS-II.E. |

| | | |
|---|---|---|
| 01 | EB 7, Annex 6<br>21 January 2003 | Initial adoption. The Board at its seventh meeting noted the adoption by the Conference of the Parties (COP), by its decision 21/CP.8, of simplified modalities and procedures for small-scale CDM project activities (SSC M&P). |
| **Decision Class**: Regulatory<br>**Document Type**: Standard<br>**Business Function**: Methodology | | |