



**CDM: Response form for request for clarification on
Approved Methodologies
(version 01.1)**

<i>Date of Meth Panel meeting:</i>	21 - 25 June 2010
<i>Title and number of request for clarification</i>	Inquiries regarding the correct application of AM0058 with respect to baseline identification and determination of additionality AM_CLA_0182

Summary of the query:

Please use the space below to summarize the request for clarification on the related approved methodologies.

AM0058 "Introduction of a new primary district heating system" is applicable to project activities that introduce a new primary district heating system to supply heat to residential and commercial consumers, where the heat comes: (i) Predominantly from an existing grid connected power plant with no heat extraction, other than the required for the operation of the power plant auxiliary systems, prior to the project activity. The project may also involve introduction of new modern heat only boilers to supplement heat from the existing power plant; or(ii) From heat only boiler(s), in which case the project boundary includes only existing buildings.

The request seeks following clarifications regarding the application of the approved methodology:

1. Definition of "levelised cost of provided heat"

The project proponents (PPs) request clarification/confirmation regarding the definition and calculation of the "levelised cost of provided heat" mentioned in Step 3 of the procedure for the identification of the baseline scenario and demonstration of additionality.

The PPs seeks clarification whether the definition of "levelised electricity generation cost" in a document (Projected Costs of Generating Electricity", 2005 Update, Page 174, International Energy Agency, 2005) can be used and can be calculated as below:

$$EGC = \Sigma [(I_t + M_t + F_t) (1+r)^{-t}] / \Sigma [E_t (1+r)^{-t}]$$

EGC = Average lifetime levelised electricity generation cost

I_t = Investment expenditures in the year t

M_t = Operations and maintenance expenditures in the year t

F_t = Fuel expenditures in the year t

E_t = Electricity generation in the year t

r = Discount rate

Furthermore, the PPs mention that the U.S. Energy Information Administration (EIA) defines the 'Levelised (Energy) Cost' <http://www.eia.doe.gov/glossary/glossary_1.htm> as "The present value of the total cost of building and operating a generating plant over its economic life, converted to equal annual payments. Costs are levelised in real dollars (i.e., adjusted to remove the impact of inflation)."

The above formula represents that definition, if the summation is performed over the economic (technical) lifetime of the technology under consideration.

The PPs seek clarification whether the above formula for “levelised energy cost” is equally applicable to the “levelised cost of provided heat” mentioned in AM0058. The PPs request to provide a suitable definition and calculation procedure for the “levelised cost of provided heat” if the above definition and procedure is not appropriate.

2. Lifetime used in the calculation of levelised energy cost

As per above definition, the “levelised energy cost” is the specific cost of generating energy for a particular energy-generating system over its lifetime. Different technologies may have different lifetimes, which should be reflected in the calculation of the levelised costs of energy for each alternative available after the Step 2 of AM0058.

However, the following paragraphs of AM0058 raise questions on how to correctly calculate the levelised cost of (heat) generation in order to determine the baseline scenario and additionality in Step 3:

Page 7-8: “The economic investment analysis shall be based on levelised cost of provided heat (USD/GJ), and explicitly state the following parameters;

...
Lifetime of the project, equal to the remaining lifetime of the existing facility,”

Page 13: Provisions regarding the average remaining lifetime of existing heat-only boilers in the baseline scenario (“Step 3: Lifetime of existing heat only boiler(s)”).

Page 8: The calculation should be done taking into account the residual value of the new equipment at the end of the lifetime of the project activity.

The PPs seek clarification (original text in *italics*) on how to correctly determine and select the lifetime for the purpose of investment comparison, in specific:

2.1 Identification of the lifetime in project activity

As described on Page 8 of the methodology AM0058 (version 03):

"Lifetime of the project, equal to the remaining lifetime of the existing facility".

The PPs seeks clarification:

- (a) Whether the term ‘existing facility’ refers to:
 - (i) The existing power plant supplying heat in the project scenario (this could be reasonable since limited availability of the heat source would also limit the useful life of the project); or
 - (ii) Existing boilers in the pre-project scenario.
- (b) Should the remaining lifetime of the existing facility be used in the “levelised cost of provided heat” of project activity?

It should be noted that the economical lifetime of the project scenario is not affected by the average remaining lifetime of existing boilers. Applying that same average remaining lifetime in the calculation of the project’s levelised cost of generation would result in a higher value as compared to the result obtained when the actual economical/technical lifetime is applied as per above definition; this would not be conservative.

2.2 Identification of the lifetime in baseline scenario

As described on Page 13 of the methodology AM0058 (version 03): “the length of the crediting period of the project activity may not exceed the calculated average remaining lifetime of boilers in the category j with the shortest average remaining lifetime of boilers”.

The PPs request clarification: If the crediting period is limited to the calculated average remaining lifetime of boilers, should this remaining lifetime of boilers be used in the “levelised cost of provided heat” of baseline scenario?

Clarification is sought because from the quoted passage it is not quite clear whether it is intended:

- (a) To adjust and limit the lifetime applied in the actual calculation of levelised cost for **all** alternative scenarios (incl. the project) to the remaining average lifetime of existing boilers, or
- (b) To ensure that the use of existing boilers would remain a valid baseline scenario throughout the crediting period (as otherwise the methodology would have to provide for means to consider a modified baseline during the crediting period; see EB22, Annex 2, Section C).

Furthermore, should case (a) apply, clarification is requested how the investments costs for the baseline technology should be considered in the calculation of levelised cost of provided heat, in particular how the investment costs having been spent in the past for the existing technology/facilities should be considered (i.e., whether such limitation of the lifetime would justify omission of investment expenditures in the calculation of levelised costs).

2.3 Application of the lifetime in baseline scenario and the project activity

As defined on Page 4 of the “*Combined tool to identify the baseline scenario and demonstrate additionality*” (version 2.2): “Identify all alternative scenarios that are available to the project participants and that provide outputs or services with comparable quality, properties and application areas as the proposed CDM project activity”. Moreover, footnote 2 on Page 4 states: “In the case of a project improving the energy efficiency of motors in a facility, the service provided is mechanical energy. Different scenarios to produce the **same quantity** of mechanical energy should be considered”.

Clarification is sought on whether the requirement for comparable outputs or services should, in the context of calculating the levelised cost of generation, refer to:

- (a) The same installed capacity; or
- (b) The same installed capacity and the same technology lifetime to be applied in the calculation of “levelised cost of provided heat” for baseline scenario and the project activity?

(Note however that the actual lifetime of baseline and project technologies may differ from each other significantly, thus distorting the levelised costs as compared to the definition given above.)

Recommendation by the Meth Panel:

Please use the space below to provide amendments /changes (in your expert view, if necessary).

Please refer to the next section.

Answer to authors of the request for clarification by the Meth Panel :

Please use the space below to provide an answer to the authors of the above query

The Meth Panel clarifies each of the queries as follows:

1. Definition of “levelised cost of provided heat”

The Meth Panel clarifies that the project proponents (PPs) can use similar approaches to calculate the “levelised cost of provided heat” as provided above in the request. However, the PPs should revise the equation providing an index variable, i with lower bound of summation as 1 and the upper bound of summation as n , where n represents the lifetime of the system (i.e. boilers) in years. Furthermore, the Meth Panel clarifies that this is not the only way to calculate the ‘levelised cost’. The PPs can use other approaches that are commonly used to describe and calculate levelised cost (e.g. using the concept of annuity), if clearly described in the CDM-PDD.

2. Lifetime used in the calculation of levelised energy cost

2.1 Identification of the lifetime in project activity

The Meth Panel clarifies that as described on page 8 of the methodology AM0058 (version 03), in the sentence: *"Lifetime of the project, equal to the remaining lifetime of the existing facility"*, the term ‘existing facility’ refers to the existing boilers in the pre-project scenario. Furthermore, the remaining lifetime of the existing facility should be used in the calculation of the levelised cost of provided heat. The Meth Panel recommends to editorially revise the above sentence to make the message clearer.

The methodology provides guidance in the next paragraph that the residual value of the new facility should be taken into account while calculating the levelised cost of provided heat. For example, if the existing facilities (boilers) have a remaining lifetime of 8 years and the project facility has a total lifetime of 30 years, 8 years should be used as the time period when calculating the levelised cost of provided heat for both these alternatives. In that case, the residual value of the project facility should be calculated at the 8th year and be used in the calculation of the NPV and levelised cost.

2.2 Identification of the lifetime in baseline scenario

The Meth Panel clarifies that remaining lifetime of boilers should be used in the calculation of “levelised cost of provided heat” for all scenarios, including the baseline scenario.

The Meth Panel further clarifies that from the quoted passage (“the length of the crediting period of the project activity may not exceed the calculated average remaining lifetime of boilers in the category j with the shortest average remaining lifetime of boilers”) it is intended to limit the lifetime applied in the calculation of levelised cost for all alternative scenarios (including the project) to the remaining average lifetime of existing boilers. In such a case, while calculating the levelised cost of provided heat from the existing facilities, the investment made in the past shall be omitted.

2.3 Application of the lifetime in baseline scenario and the project activity

In the specific context of this methodology, the requirement of ‘comparable outputs or services’ refers to the same installed capacity. In this particular case, it is assumed that the same installed capacity, would provide similar output (e.g. the heat). If the remaining lifetime of the existing equipment is lower than the project equipment, the residual value of project equipment is taken into account at the end of the lifetime of the existing equipment in the calculation of levelised cost.

Signed by the Chair, Mr. Lex de Jonge

Date: 25/06/2010

Signed by the Vice-Chair, Mr. Philip Gwage

Date: 25/06/2010

Information to be completed by the secretariat

F-CDM-AM	AM_CLA_0182
Name of the authors of the query:	TUEV RHEINLAND
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