CDM: Recommendation Form for Small Scale Methodologies (version 01)

(To be used for presenting questions/proposals/amendments to the simplified methodologies for small-scale CDM project activity categories)

Date of SSC WG meeting:	30 January−02 February 2012, SSC WG 35
Title/Subject (give a small title or specify the subject of your submission, maximum 200 characters):	Applicability of AMS-II.D. for "Integrated-Waste-Heat-Recovery-Fuel-Switch" Project
Indicative methodology to which your submission relates (refer the items of Appendix B of the Simplified Modalities and Procedures), if applicable.	AMS-II.D "Energy efficiency and fuel switching measures for industrial facilities"
Name of the authors of the query:	Thet Lin Thu Institution: Stakeholder tiddwaylll@gmail.com

Summary of the query:

Please use the space below to summarize the query related to SSC methodologies/categories SSC Modalities and Procedures provide recommendation/analysis of the SSC WG.

Original text from Stakeholder:

Brief: We are seeking clarification for a project activity which overall

1. is an energy efficiency project
2. involves replacement of baseline equipment with more energy efficient equipment
3. includes two components (waste heat recovery and fuel switch) which are integrated in a single piece of energy equipment .

We are seeking clarification number 1 if such a project could be fully applicable under a single methodology, AMS-II.D.

We are seeking clarification number 2 if we cannot use AMS-II.D. exclusively, should we use a combination of

- "AMSIID (applied fuel switch where for the project as a whole, it is not primarily fuel switch and primarily energy efficiency) with AMSIIIQ or
- AMSIIIB (applied to fuel switch for a single component within the project activity) with AMSIIIQ.

Background of Situation: The project activity replaces coal boilers with a Heat Recovery Steam Generator (HRSG) in a factory.

The baseline involves the same equipment as the existing current scenario, and includes the following:

1. Coal boilers producing steam.
2. A natural gas turbine that generates electricity which is venting waste heat to the atmosphere.

The project activity is the following:

1. To install a HRSG.

2. The machine will utilize the waste heat from the exhaust of the gas turbine.
3. The machine has an auxiliary integrated natural gas burner which will supplement the waste heat with more energy.
4. The machine will output the same quantity and quality of output steam as the baseline.
5. The machine does not use more electricity for its support systems than the boilers.
6. The baseline boilers will not be used except for back-up and emergency.
7. The new HRSG is slightly more efficient than the coal boilers based on pure ability to convert heat to produce steam BUT over 50% more efficient based on total energy required to generate the same steam output (the **unused** waste heat in the baseline accounts for about 70% of the total energy input required in machine with natural gas providing the other 30%).

In the scenario above, the emissions reductions calculations are very simple.

1. Baseline emissions are calculated based on the amount of steam generated by the HRSG in the project scenario which would thus displace steam generated by the boilers in the baseline. We need to know the amount of steam generated by the HRSG in total, the efficiency of the boilers, the NCV of coal and the EF of the coal. This is simple.
2. Project emissions are calculated based on the amount of natural gas consumed by the HRSG as supplementary energy. The HRSG has an integrated natural gas burner. Gas NCV and EF is very well known.
3. There is no leakage for the project activity as the equipment is new.

The energy efficiency is overall much higher than the baseline as in the baseline, all the waste heat is not being utilized but rather vented into the atmosphere. The energy efficiency is achieved through

1. Replacing the coal boilers with HRSG (equipment replacement)
2. Partial fuel switch by using natural gas instead of coal

Monitoring: Using AMS-II.D., we can simply monitor

1. The total steam output of the HRSG
2. The amount of natural gas consumed in the HRSG

Difficulty of Using AMS-III.Q. Waste Energy Recovery

It is understood that this project activity entails a waste heat recovery component. As such, AMS III.Q could also be applied. However, AMS III.Q is not as suitable because:

- it does not incorporate the fuel switch component of the emissions reductions (i.e. for that portion of the steam now generated with natural gas instead of coal)
- it does not incorporate the emissions reductions associated with the (small) increase in efficiency of the HRSG compared to the coal boilers
- it is overly complicated for this project. Note that the waste heat in this case is simply the exhaust from the gas turbine and thus has no NCV or combustible value but AMS-III.Q's equations require many parameters such as specific heat capacity of the waste heat and NCV.
- because the waste heat is used in combination together with supplementary natural gas to produce steam in the integrated HRSG, it is impossible to separately monitor the proportion of steam generated from the waste heat and the proportion generated from supplementary natural gas firing
- monitoring the amount and energy content of the waste heat is impossible as the exhaust vent is too large and the exhaust gas flow too turbulent to allow meaningful monitoring – this is verified by the supplier of the HRSG and the supplier of the natural gas turbine

Difficulty of Using AMS-II.H.

AMS-II.H could also be considered as applicable and suitable to the project. Although the project activity simply entails the replacement of coal boilers with an HRSG, it could also be regarded as the integration of heat and power utilities and so might also be suitable for AMS-II.H. However, AMS-II.H prescribes two baseline scenarios. The first requires the existing boilers to be operational for at least 3 years as stated in paragraph 2(d). In the project case, the baseline coal boilers were installed when the factory was built and have only been in operation for 1.5 years, not 3. The second baseline scenario is for greenfield projects which is also not consistent with the project activity in question.

Conclusion

As such, we believe that AMS II.D is more appropriate to this project activity because

1. The project activity attempts to use the currently wasted energy being generated inside the project boundary (i.e. the waste heat) by installing new equipment.
2. This new equipment is made to replace older equipment that currently uses fossil fuel energy from outside the project boundary (i.e. coal).
3. The energy efficiency claim is not just due to the utilization of waste heat which was previously unused and vented into the atmosphere. The new equipment is inherently more energy efficient than the rated efficiency of the coal boilers itself.

It is in the opinion of the PP that AMS-II.D more directly calculates and monitors emission reductions and thus reduces the scope for errors compared to the use of AMS-III.Q.

Clarification Number 1

The project activity complies with the eligibility criteria of AMS-II.D. AMS-II.D is well suited to accurately and practically calculate and monitor the total emissions reductions of the project activity. However, it is understood that a common objection to using AMS-II.D is that it is too general and can in some cases lack the required detail to adequately measure the emissions reductions of project activities. Therefore, PP's are often directed to apply other more recent and more specific Methodologies where such other more specific Methodologies are applicable. In this case, two more specific methodologies, AMS-II.H. and AMS-III.Q, have been considered but do not appear to be better suited to the project activity or to improve upon AMS-II.D. A such, we think that AMS-II.D is applicable to the project activity and the most appropriate.

Would the EB object to the application of AMS II.D in this case?

Under what conditions would the EB allow the application of AMS II.D? For example, if it can be demonstrated that the waste heat was not used in the baseline, as per the criteria of AMS III.Q or ACM0012, would AMS II.D be considered applicable in this case? Note that in this case, a DOE was commissioned to provide a pre-validation audit of the factory to verify that the waste heat was not used in the baseline (as per ACM0012).

On The Scenario that We Cannot Use AMS-II.D. Alone and Require the Use of Two Methodologies for Two Components.

However, in the event that we must indeed apply AMS III.Q to the waste heat recovery component, the project activity is then divided into two components with two different methodologies as follows:

a. AMS-IIIQ for calculation of emissions reduction for component 1.

b. AMS-IID for the remaining emissions reduction, component 2.

Discussion on the Small Scale Limits of Type II vs. Type III

Complexity arises when determining if the Type II limit is still applicable for this project activity, because if (b) is viewed as a separate distinct component, it no longer meets the “primarily energy efficiency” requirement of AMSII.D but instead might be viewed as “primarily fuel switch” and thus unintentionally fall under AMS-IIIB. In that case, both components of the project will be Type III and thus the 60 kt maximum limit would apply. Thus, with both components adding to above 60ktCO2, component 2 must

be excluded to meet the limit, and thus we would lose 30 ktCO2 of credible emission reductions. (Note that if we apply AMS II.D alone or with AMS III.Q, the project is within the small-scale limit).

Clarity on the Definition of "Primarily"

The project as a whole is clearly 'primarily energy efficiency'. The process or activity is one integrated activity utilising waste heat and supplementary gas in new more efficient heat equipment to displace old coal equipment. Thus the project as a whole, and the process/activity, is primarily energy efficiency (i.e. the two sources of ERs are from the same integrated process and initiative). Note that the project involves the installation of one single piece of equipment that integrates the use of waste heat and supplementary natural gas. As such we feel that this project is either entirely Type II or at least partly Type II. However, due to applying a specific waste heat methodology (III.Q), the project activity is divided into two components. When viewed separately from the process and the project as a whole, one of these components is classified as Type III (waste heat). The second component (coal to gas with some efficiency), when viewed separately from the project activity and the process as a whole, could also be regarded as primarily fuel switch and thus more suited to AMS III.B rather than II.D. This has implications for the small-scale limit on ERs as in this case, both components would be classified as Type III.

Clarification Number 2

The request for clarity relates to the interpretation of "primarily energy efficiency/ fuel switch" in the methodology applicability critieria. Does "primarily" refer to:

1. the project activity as a whole,
2. the process/activity as a whole,
3. each individual component of a project activity viewed separately, or
4. any of the above

Also, when assessing whether a project is primarily fuel switch or primarily energy efficiency, is this based on the amount of CERs generated by each component or some other measure?

Based on the above, we request clarity on whether we can:

1. Choose to apply AMS II.D and not AMS III.B to the second component (ER Source 2) of the project activity;
2. Continue to apply the 180GWh limit of energy saving for the whole "project activity", despite the presence of the Type III sub-components

PP sincerely thanks the SSC WG and the EB for its kind attention to this matter.

Recommendation by the SSC WG:

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

Please refer to paragraph 38 of the meeting report of the SSC WG 35 <http://cdm.unfccc.int/Panels/ssc_wg>.

Answer to authors of query by the SSC WG:

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

The small-scale working group of the CDM Executive Board would like to thank the author for the submission.

The SSC WG understood from the submission that the project activity involves an installation of HRSG to increase the efficiency of the existing gas engine by recovering the waste heat from the engine to supply process heat that otherwise would have been supplied by the existing boiler. The project activity reduces fossil fuel consumption in the existing boiler.

The SSC WG is of the opinion that the project belongs to the recovery of waste heat/gas/pressure and would be better captured under Type III such as AMS-III.Q. Specific provisions have been included in the methodology in order to attend to the special characteristics of waste heat recovery projects. One example is the procedure used to demonstrate that the waste heat/gas/pressure would have been released without recovery in the absence of the project activity. Also, if the described project activity involves supplementary firing to produce more steam in HRSG it is considered as project emissions under AMS-III.Q and fwcm is considered as 1.0 (see also the response provided to SSC_579).

AMS-II.D on the other hand includes energy efficiency measures such as efficient motors, and efficiency measures for specific industrial or mining and mineral production processes (such as steel furnaces, paper drying, tobacco curing, etc.). We believe the activity is better described under AMS-III.Q.

The SSC WG also agreed to clarify that the described project activity does not constitute two distinct components of a project activity.[1] Hence, it will not possible to combine two methodologies for this case.

The SSC WG also agreed to clarify that if the project activity aims to claim combined emission reductions from multiple activities such as i) switching fuel from coal to natural gas and ii) recovering waste heat to produce steam while doing so efficiency of the system is also improved, a new methodology would be required covering these aspects. In case one of them is predominant, the project proponent may consider to apply one methodology (e.g. AMS-III.B or AMS-III.Q) to cover only one of the aspects, and neglecting the others. Alternatively, the project proponent may consider to submit a new methodology covering all aspects for further consideration.

[1] Component of a project activity is defined by EB 28, paragraph 55(b) as "A project activity with more than one component' (e.g. methane recovery and production of electricity from the recovered methane) defined as: "a single project activity composed of two or more distinct project activities being implemented by the same project participant, each applying an approved category/methodology separate from the other. Each component of a project activity should receive or provide an input from/to other components of the project activity". It seems that the project activity is currently under validation."

Signed by the Chair, Ms. Fatou Gaye
Date: 02/02/2012

Signed by the Vice-Chair, Mr. Peer Stiansen
Date: 02/02/2012

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