Climate Change Capital Response to request for public comment on the proposed revisions to AM0023 v3.0

At EB60, the Methodology Panel was invited to make recommendations for Assessment of methodologies and tools for potential improvement, following the priorities as identified by the Board: ***simplification, strengthen the assurance of environmental integrity, and the enhancement of objectivity, usability, applicability and consistency, using, where possible, new and innovative approaches.*** One methodology included for review was AM0023, the methodology for "*Leak reduction from natural gas pipeline compressor or gate stations, Version 03*". This methodology was marked as a "Priority" review.

Climate Change Capital (CCC) is providing a response to the proposed revisions to the methodology recently published. These methodology revisions will impact on projects not yet submitted for registration. To date CCC has developed and financed 3 registered CDM projects using the AM0023 methodology, has an additional project requesting registration as well as further projects in the pipeline. CCC has been developing projects using this methodology since 2006 and has cumulative experience of taking projects through validation, financing of the leak repairs, monitoring of those leaks and subsequent verification of the monitored leaks. In addition, CCC staff member Kevin James was the original co-author of the methodology and is in charge of implementing all of CCC's AM0023 activities.

Content of this Paper

This paper seeks to address four major impacts perceived by the introduction of the revisions to this methodology:

1. The procedural aspects of the introduction of the New Methodology.
2. The nature and usability of the New Methodology.
3. The perceived shortcomings of specific elements of the New Methodology.
4. The perceived potential impact of the new Methodology on future projects and Project Participants.

We have organized the comments in two sections- the first 'General Issues' section is focused on some overarching questions concerning the nature of the revisions and the process. The second 'Specific Changes' section goes through the revised methodology point by point and notes areas of concern. In each area we provide specific recommendations on how to improve the draft.

Summary of Key Recommendations

1. **As this 'revision' of AM0023 is a substantial departure from AM0023 v3.0, this submission should either be treated as an entirely new meth or the review and drafting process should be strengthened in a manner commensurate with the impact of the changes.**
2. **At times the revision's attempt to clarify has the opposite effect. The revisions should be revisited from a practioner's perspective to ensure the implementation instructions are clear, feasible, and straightforward.**

3. **Certain key assumptions have been changed from the previous AM0023 versions in ways that seriously impact the application of the methodology. These new assumptions should be documented with citations, shown to be more appropriate than the existing assumption, and clarified in terms of their practical feasibility. Otherwise, they should be eliminated.**
4. **We believe several provisions included in the revisions make the revised draft methodology unusable. These key areas should be reviewed and revised.**

General Issues

Is this a new meth rather than a revision?

Key points to emphasise:

1. The Revision is seeking to accommodate an expansion of the methodology scope to include upstream facilities. We submit that such upstream facilities differ significantly from the facilities envisaged by the existing methodology, given its focus on transmission and distribution systems. As such, the expansion of the current AM0023 to accommodate such upstream facilities is a significant cause of the Revision becoming unworkable. Therefore we recommend that the upstream facilities should be accommodated in a separate, new methodology. We observe that the Revision requires a change to more than 50% of the existing AM0023. As such, EB guidance suggests that a new methodology, not a revision, would be appropriate to include the upstream facilities in a CDM methodology.
2. As is further discussed below, we submit that (i) the impact of the expansion of the methodology to encompass upstream facilities; and (ii) the extent of the changes made in the Revision cause the Revision to fail to meet the EB objectives of ***simplification, usability*** and ***consistency.***

While this draft methodology is in part based on the approach outlined in AM0023 v3.0, it seems to be trying to expand the reach and significantly alter the assumptions and the approach currently used to determine emission reductions.

The original methodology was designed specifically for reducing leaks in above ground gas transmission and distribution system components. The revision proposes to include refineries, gas storage facilities and other gas processing facilities. While this is a laudable goal, in fact many of the key assumptions that have been employed in AM0023 projects to date are not necessarily compatible with refineries, storage facilities, etc. For example, the frequency and efficacy of maintenance, the planned replacement budget, and the extent of potential leaky components among other things may all be very different between a refinery and a distribution system. The differences between these various up-stream and down-stream parts of gas infrastructure given their different sizes, functions, safety concerns, regulations, standard practices, etc. are significant. These differences make it difficult to achieve in one combined methodology the EB's stated goal of improving the usability and consistency of AM0023. Revisions made to AM0023 in part to include additional types of facilities, we believe, have made it unusable to the current application.

Furthermore, considerably more than 50% of the methodology procedures have been changed which according to EB rules should require the creation of a new, completely separate methodology rather than a revision of an existing Approved Methodology. As the EB has determined:

*In this regard, if the request for revision to an approved methodology is likely to result in the addition of new procedures or scenarios to more than half of the sections of an approved methodology, it is advisable that project participants propose a new methodology as per procedures for submission and consideration of proposed new methodology in accordance with the latest version of the procedures. (*EB 31 Annex 12 Paragraph 9).

> ♦ We would suggest the Meth Panel and EB consider adopting minor revisions to AM0023 v3.0 in keeping with its current scope and propose a new methodology to accommodate the upstream facilities.

Do the changes exceed the Meth Panel's own stated goals for this effort?

The Meth Panel in its 48th meeting minutes stated that it agreed to review AM0023 *'with the view to improve the clarity of the language, to assess the internal consistency of the methodology, to consider the use of default values, and to improve the monitoring section.'*

This revision has exceeded this self-stated mandate by actually changing some of the key assumptions that defined AM0023 in all its previous versions and adding new processes to alter the way the methodology can be implemented. We would also note that some of the assumptions made in this revised version are not clearly substantiated to explain why the original version was altered or why these new assumptions are more appropriate.

> ♦ We would suggest that in fact there are ways to meet the Meth Panel's stated goals without completely altering the methodology and including provisions that may make the Meth unusable. Some of these suggestions are outlined below in direct response to certain provisions included in the revision to AM0023. Given that there are improvements that can be made to AM0023 v3.0, we also support and are willing to participate in a more consultative and transparent process to enhance AM0023 as per the goals stated at EB60.

Is the level of public comment, stakeholder consultation and external consultation appropriate to the size and scope of the change?

This methodology has a six year history and had three revisions successfully presented to the Meth Panel and EB. The meth process involved numerous rounds of edits, external expert's consultation, and peer exchange. The meth is also being employed in various ways across the world with a number of different project developers with numerous lessons learned on how improvements could be made.

Unless we misunderstand the current process, there seems to have only been internal Meth Panel and Secretariat input into this revision. DOEs and project developers were not invited to make suggestions in its drafting. In fact these stakeholders who have the most expertise on the positives and negatives of the existing version have only one chance to make comments on an already developed revision that changes key assumptions without documentation or full explanation.

> ♦ We would argue the process has not been nearly transparent and thorough enough given the magnitude of the impacts on project developers currently in the midst of planning and investing in new AM0023 projects. We suggest a more collaborative process with numerous opportunities for input and revisions.

Specific Changes Suggested

Definitions.

1. *Conventional versus Advanced LDAR* – These definitions need to be more clearly articulated in a way that would allow a project developer and DOE to determine what activities are conventional and what are advanced. Per this current revision, it is unclear from these definitions which specific activities might be attributed to a conventional versus advanced LDAR.

In our opinion, any such definition should be much less prescriptive as to which specific methods of identifying leaks fall into a Conventional LDAR. Instead they should give direction to the project participant and DOE to determine what distinguishes business as usual leak repairs from an advanced program given the company's historical practices. Such differences might entail the inclusion of advanced leak detection and measurement equipment, the creation of a more organized and meticulous monitoring regime, and the deployment of advanced repair materials.

In fact, there are many factors that should be assessed to determine if finding and repairing a leak would fall under a so called Conventional or Advanced LDAR program. In practice some leaks can be detected by simple methods outlined in the definition. However without measurement equipment to detect the exact location and the size of the leak, it will not be appropriately prioritized or properly identified to the repair personnel. In addition, if the required repair materials are not available, it will likely mean the leak will remain unrepaired or the repairs made will not seal the leak. Similarly, in some cases regulations may exist to require every leak is found and repaired which in practice may not be possible given the existing level of equipment, training, or repair materials. Regulations must not only exist but also be enforced to be part of the baseline case.

Finally, what for one project implementer may be extremely advanced technology might be part of the Conventional case for another company. One size does not fit all based on our experience even within distribution companies and especially not between a distribution company and a refinery. The methodology should not be limited to only those companies lacking any semblance of an Advanced LDAR for 3 years, but rather it should be open to any company that can distinguish a clear difference between leaks identified before and after the implementation of the CDM project. The definitions must account for these cases otherwise few if any projects would meet the applicability criteria. In addition, there clearly must not be a perverse incentive for regulations to be relaxed just to make sure a project can qualify for CDM.

♦ We would suggest simply eliminating these definitions altogether since they are not particularly helpful in discerning the difference between a conventional system (which should be defined as business as usual) and an advanced system (which should be an additional intervention). This would also entail the alteration of the related first applicability criteria and other sections as well other sections that utilize these definitions.

2. *Manufacturer's tolerances*- It is not clear to us why the concept of 'normal manufacturer's tolerances' in the definition of Repair of Physical Leaks has been introduced. Does this mean that reemerged leaks are ok as long as they are within the manufacture's tolerance? It is unclear how this should be applied in the Methodology.

♦ Further explanation of what the intent of manufacturer's tolerance should be given or this should be removed.

Applicability Criteria

1. The first applicability criterion is vague. What would constitute an Advanced LDAR program? How could someone demonstrate that there was no such program in place for three years? What is a program versus an isolated activity? Would a conventional LDAR look exactly the same in every country? Would a country that has a more advanced system be prohibited from doing a project even if there are discernable material improvements that could be made to advance the current practices?

♦ We suggest making this applicability criterion simply a stipulation that a project must demonstrate advancement in one or more of the following differences versus the practices found prior to implementation

a. the leak detection/measurement equipment,
b. detection/repair process, and

c. utilization of advanced repair materials

The bulk of this discussion should be dealt with through documenting the additionality of the project.

Project Boundary

This revision appears to require an exhaustive listing of all components that could possibly leak, including a detailed description of each component and its location within the project boundary. It should be noted that in even small distribution systems there are tens if not hundreds of thousands of individual components that could be included in the project. In a refinery this number may be smaller and more closely managed. However, even in the most advanced distribution systems in the world, a detailed list of all components of a system that could possibly leak would be hard to generate.

In CDM countries this information would not typically exist and it would be an effectively impossible task to organize. In order to prepare this list a project developer would have to undertake a huge logistical effort that could take months at enormous cost. All this work would have to be done before PDD development could begin if this provision is included. In practice investors and system owners would be unlikely to take the risk of undertaking such projects. A comprehensive list of each individual possible leaky component is not practical and would likely render the methodology useless.

This meth revision also seems unnecessary as the project boundaries can be clearly documented by simply describing the existing limits of the systems and including all the various types of leaky components on that finite system in the project boundary. It is very obvious which components existed prior to the project and if they are in fact part of the gas system covered in the project (it is all connected).

♦ The project boundary definition as written should be removed and should be defined instead by the following three criteria which would further enhance the objectivity and usability of the current version AM0023 v3.0 :

1) the types of potential leaky components that are found within the system,

2) the special boundary of the existing system in which they are contained, and

3) only components that existed at start of the crediting period.

Baseline Emissions

Step 1

The Conventional LDAR concept should be replaced by a concept of documenting whether the leaks would have been found and repaired under previously used detection and repair technology and techniques. The decision tree is helpful but should be reworked to focus on clarifying if the leak would have been found and repaired using previous techniques and technology. The first branch of the tree seems not to be a question but instead the purpose of the whole decision tree.

♦ We suggest the following would improve usability objectivity and applicability while maintaining environmental integrity.

a. Branch One- Could the leak have been found and isolated using pre-project leak detection equipment and practices and could the leak have been repaired with existing equipment and materials (using low cost methods such as tightening a fitting.)?
b. Branch Two-Is the leak repair required and enforced by current regulation? (For example does the leak pose an emergency health/safety risk that would require its immediate repair)?
c. Branch 3- Would the leak have been repaired anyway (scheduled for replacement) If so when?

Step 2

Point 1 should read 'Data to clearly identify the component: **such as** ID…' and the same edit should be made to point 2. The same edit concerning the Conventional LDAR as mentioned several times earlier should be made to point 5.

♦ We suggest adopting these edits to improve usability.

Step 3
Maintenance -The author makes the statement 'In the absence of an advanced LDAR, the physical leak would often cease to leak when the equipment would undergo maintenance.'

First, maintenance must be defined as it is unclear what this means and there is a large variation in what maintenance could mean in different projects.

Second, in practice we have found this statement not to be true. It would be useful for the author to provide a source or citation pertinent to CDM countries for this significant change in assumption from the previous AM0023 versions. In fact we have found many maintenance events are a simple basic inspection to make sure that no leaks that are a health & safety hazard have emerged and maybe tighten some fittings. These inspections might occur as frequently as every month or every quarter, but still huge numbers of leaks persist year after year as the tools, training, measuring technology and repair material do not exist in the company currently to fix them. If these same people lacked the equipment, training and repair materials in the first place, it is almost certain that the leak will still exist after a maintenance event as well. The revised meth seems to concede this point in the decision tree which includes the leak in the baseline even if maintenance has occurred if the leak cannot be repaired by 'low cost repair', but appears more strict in other places.

Furthermore, if the leak could be found and fixed by the existing methods, then it would almost certainly not be included in the project as per criteria 1. How does the simple fact the equipment undergoes a maintenance event change this reality?

Additionally, documenting when each of potentially hundreds of thousands of components will be maintained with any accuracy even for just the following year prior to validation is completely unrealistic. In our experience this data just does not exist. Is it also expected that this would need to be provided pre-validation for the entire project period for each component? All facets of this criterion are likely to render this methodology unusable.

♦ We suggest this criterion is removed as it impedes usability of the meth.

5 year maximum repair life- The revised meth also arbitrarily assigns each repair a 5 year maximum life. Again, it is unclear the source for this limit. Please provide the reasoning and citations as this assumption conflicts with our experience on the ground as repairs when properly done last much longer and would not have been repaired in absence of project.

We maintain a different view. Repairs made properly should last for 10 years or more. If done properly, the longevity of these repairs in all cases can be documented through monitoring.

Furthermore, we believe the inclusion of this provision will have a significant negative impact on how a project using this methodology would be implemented. There is a wide variance on the quality of repair materials that can be purchased. Cheaper materials that only need to last five years will become the norm for these projects with leaks reoccurring more quickly after the five years is over. In some cases these materials may only be marginally better than the current materials used in the base case. Currently the most advanced materials last for at least 10 years and often considerably longer. This change will also encourage project developers to simply pick only the cheapest repairs and largest leaks. Many repairs will cease to be economical. The transformative effect for the host company of implementing a comprehensive maintenance and repair program will be reduced or lost.

♦ *This criterion should be removed as it creates perverse incentives that can damage the environmental integrity of projects.*

Replacement Schedules- The third criterion by itself is manageable and could easily be tracked during the project. However the requirement to document the planned replacement schedules prior to the project is also likely to render the methodology unusable as this data does not typically exist. In many CDM countries, budgets for replacements are not in existence or are not itemized within the budget and, where they do exist, are subject to significant volatility year-to year and even are cancelled at short notice. The replacement schedule may be blank as no budget is allocated for above ground repairs. Replacements are typically only certain on leaks that pose immediate heath/safety hazard and limited budgets are reserved for these components or underground replacements.

♦ We recommend that the requirement to validate these schedules should either be removed or it should be made clear if no such data exists that this requirement is waived in light of the impact on the usability and applicability of the meth to potential projects.

Baseline Emissions
Option 1

We will not offer further comments on option 1 as it does not appear to meet the *usability* criteria for above ground distribution networks. In our practitioner's opinion the results do not meet the stated criteria of the Executive Board having plugged in the API defaults on actual project results but others may find it more appropriate for other types of projects.

♦ We would note however that SI Units should be consistently used in the default tables (psi).

Option 2
Uncertainty Calculation - In our reading, the language surrounding the Calculation of Uncertainty would prohibit the use of the most appropriate IPCC approved method for calculating the combined uncertainty of a large number of individual measurements taken with an instrument with a set margin of error. It should be made clear in the Meth language that the Uncertainty Calculation can be taken for the combined uncertainty of all the measurements together and does not have to apply separately to each measurement. This approach is based on IPCC Good Practice Guidance and basic statistics. It ensures that the EB dictated requirement of 95% level of confidence in the conservativeness of the results is met. Taking 10% off each measurement when you are taking hundreds if not thousands of measurements is nothing more than dictating an approximately 10% reduction in credits without cause and is not the recommended IPCC practice for these types of calculations.

♦ We recommend that rather than dictating the method of calculation of uncertainty, the meth should simply state the combined uncertainty of all the measurements must be conservative to a 95% level of confidence. The uncertainty factor will reflect any adjustment required to meet this threshold and be in compliance with any pertinent IPCC guidelines. This is in line directly with EB requirements and maintains full environmental integrity.

♦ As discussed above assumptions b) and d) should be removed from the Baseline Emissions section.

Project Emissions
'If a new physical leak is detected in a component included in the project boundary, as long as that physical leak is not repaired.'

It is unclear to us why this is included as a project emission. A project emission by definition is the emissions that remain from the baseline after the implementation of the project. If a leak in a component that is not included in the baseline occurs, this is not by definition a project emission as the component was not included in the baseline. A reoccurred leak in the repaired leak that is included in the baseline is a project emission.

♦ We recommend that this reference should be removed as it is counter to the intent of the methodology to continue to identify and repair new leaks rather than discourage an ongoing leak detection and repair program. If finding a new leak in a component that was not previously included in the database counts as a project emission, project developers will simply not look for additional leaks throughout the project.

In addition the following two assumptions should be amended as described or removed:

Assumption *The following assumptions should be made in the calculation of project emissions:*

• If a repair of a physical leak ceases to function, it is conservatively assumed that the leak resumed at the same flow rate that was measured prior to its repair (in case of option 2) or at the flow rate specified by the API Compendium (in case of option 1). It is further assumed that leak resumed since the day the leak was last checked and confirmed not to leak and that it continued to leak for the entire time since that date. Thus, leaks where the repair failed should be included in the project emissions;

As in option 2 the initial measurement of leak rates is required as part of the baseline, the monitoring of reoccurred leaks should also clearly be part of the monitoring process. To be clear it is also without a doubt conservative to assume that if a repair fails, it has been leaking at the same rate measured during the monitoring event since it was last measured. For example, it would make no sense for a leak that originally was measured at 100 liter per minute and is re-measured 1 year later with a 0.5 liter per minute leak to be assumed to have been leaking at 100 liters per minute the entire year. Leaks get bigger not smaller as per the fundamental assumption of AM0023 which is based on full and complete monitoring. It can be assumed with at least 95% level of confidence that a 0.5 liter per minute leak which reappears after the 1st measurement of a repaired leak, leaked at a lower rate than 0.5 liters per minute, during most of the period. Therefore, the conservative and appropriate action would be to assume the leak that emerged after the repair, was leaking the entire period since it was last monitored at the rate measured during monitoring. In the example given above the 100 liter per minute would count as baseline and the 0.5 liter per minute would be included as project emissions. The net result would be conservative and appropriate.

♦ This assumption should be amended in option 2 to allow the measured leak rate of a returned leak in a previous repair be counted towards project emissions from the point of last measurement until the more recent measurement and subsequent re-repair.

Assumption *It is possible that a new physical leak appears in a component in which there was no leak the last time the component was checked. In this case the most conservative assumption should be considered, that is, assuming that the physical leak occurred from the last time the component was checked for leakage.*

♦ This assumption again should be eliminated from the methodology as the component was not included in the baseline and therefore no project emissions should be applied.

Monitoring Requirements

♦ The monitoring requirements should include the measured leak rate for any reemerged leaks in option 2.