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RESERVE

**SUMMARY OF COMMENTS & RESPONSES  
DRAFT MEXICO BOILER EFFICIENCY PROJECT PROTOCOL VERSION 1.0**

Two sets of comments were received during the public comment period for the Climate Action Reserve (Reserve) draft Mexico Boiler Efficiency Project Protocol Version 1.0. Both sets of comments were submitted in Spanish and have been translated, except where otherwise noted. Staff from the Reserve provide responses to the comments in English below. Public comments for the draft protocol were received between July 5 and August 1, 2016.

The comment letters (in both Spanish and English) and the Spanish-language comment summary can be viewed on the Reserve's website at <http://www.climateactionreserve.org/how/protocols/mexico-boiler-efficiency/>.

**COMMENTS RECEIVED FROM:**

1. Petróleos Mexicanos (PEMEX)
2. Evolution Mind

## 2.2.1 Eligible Boiler Types

1. We prefer that the classification of boilers is based on tonnes of high pressure steam generation capacity. **(PEMEX)**

**RESPONSE:** The Reserve has made every effort to ensure that units in the protocol are those used in common practice. We believe it is most useful to classify boilers based on design parameters, as this provides a fixed point of comparison between all boilers. It is the Reserve's understanding that it is not typical to classify boilers based on steam generation capacity. Steam generation capacity will be boiler-specific, depending upon operational parameters (e.g., steam conditions, fuel type, efficiency, site altitude) which are likely to vary widely across projects and facilities. For example, a given boiler at Facility 1 might produce 100 tonnes of saturated steam at 8 bar (170.4°C), while a boiler at Facility 2 may produce the same amount of steam, this time at 40 bar and 450°C. The energy used to produce each tonne of steam at Facility 1 is 16.8% less than the energy needed to produce one tonne of steam at Facility 2. This is why the preferred basis for capacity rating is the energy released or absorbed. To compare between two boilers, the same basis to establish nominal capacity must be used. The Reserve, however, has included additional units throughout the protocol for a number of parameters, most notably the capacity thresholds of eligible boilers, which are now also classified by MMBtu and kcal/h.

## 2.2.2 Eligible Project Activities

2. Installation of new high efficiency boilers: Regarding the assertion that one cannot use the project to facilitate the expansion of the capacity of the project site or of the facility: many of the investments in boilers usually occur during the expansion of the capacity of the facilities as it is a period in which they can make repairs/retrofits. We propose the following:

If an improvement in efficiency of a boiler occurs during the expansion of the capacity of the facility, to consider only the installed capacity prior to the expansion. **(PEMEX)**

**RESPONSE:** In this protocol, there is a restriction with respect to capacity of new boiler projects, namely that retired boiler equipment cannot be re-used at the project site as part of a steam generation capacity expansion. If retired boilers are used to expand steam generation capacity, such projects will not be eligible under this protocol. If that "retired boiler" and its parts are not re-used onsite, a capacity expansion is allowed. This requirement helps ensure no leakage of emissions, in the sense that the new boiler is meant to replace the retired one; if inefficient equipment from the retired boiler remains in use elsewhere, it can be seen as potentially lowering the efficiency that would otherwise be achieved if capacity was increased using more efficient equipment. There is no restriction on the use of new boilers to increase capacity at project sites, nor is there any restriction on increasing capacity during a retrofit project. However, your recommendation to restrict crediting only to the installed capacity prior to the expansion is a good one. The equations in Section 5 (specifically Equations 5.4 and 5.17) have been revised to include a nominal rated boiler capacity ratio, which scales the calculations to ensure that emission reductions are only credited based on the initial installed capacity of the boiler. The equations in Section 5 are set out so that changes in capacity are not credited.

3. Comments on Fuel Switching: First, the use of natural gas is not "Business as Usual" and will not be for several years. The country has a greater demand than supply, and there are not adequate pipelines for transportation to and import from the USA. In the US, the use of natural gas is "Business as Usual," but NOT in Mexico. Accordingly, there are many facilities that would

like to use natural gas, but it is not available. If it is a fuel that is not available, it is not “Business as Usual”.

*(Note: these following comments on fuel switching were originally submitted by PEMEX in English; they have not been translated.)*

In this respect let me make some comments:

- You can decide to leave as an option to follow CDM additionality test.
- First of its kind within the type of activity or a geography area is clearly additional and should be considered in the protocol.
- It is always important to ensure regulations do not constrain the facility from using the fossil fuel with higher carbon content.
- Considering the barrier analysis: the company had to sort it out several barriers due to natural gas shortage and how the lack of infrastructure has been a fundamental barrier.
- It could be included in the protocol that if you need to construct infrastructure to bring the gas (pipeline) then the project is additional for the first two or three fuel switching events.
- Switching to natural gas is not a common practice and is not going to be a common practice for a long time. You could argue that once it becomes a common practice you will not give the incentive anymore.
- It is not clear why do you restrict the performance standard test for the same type of fuel. It is the same to add an additive to the fuel than to switch to another fuel.
- While you cannot always argue that the *carbon credit incentive* was which ensures the switching to take place you could argue that the interest in mitigation was the main drive in the decision both at the company as at the national level.
- In general projects compete for resources in the company and while a project may be economically viable when you compare its cost benefit analysis with other production projects they never receive the budget for its execution.
- Without knowing the carbon price of the credit it is difficult to argue that a carbon credit incentive will make the difference in taking an action. It is more related to the barriers you have to sort it out. **(PEMEX)**

**RESPONSE:** We have endeavored to develop a boiler efficiency protocol rather than a boiler fuel switching protocol. Shifting to natural gas does not necessarily enhance boiler efficiency, therefore, by design, any fuel switch is not a creditable activity under this protocol. It is also more common for energy efficiency and fuel switch projects to be addressed in separate methodologies, as is the case in the CDM methodologies, due to distinct quantification issues. Moreover, our analysis indicates that there is currently strong demand for natural gas in Mexico, and as the comment points out, the demand for natural gas exceeds the current supply. We agree that there are several other barriers to implementing a switch to natural gas at present, and it appears very unlikely that the inclusion of carbon revenues would remove such barriers. It is likely that any project implementing natural gas would have sought to do so in the absence of any offset project. In light of these existing drivers and barriers, a switch to natural gas appears to be at high risk of being deemed non-additional. To maintain the integrity of the protocol we choose not to include any project activities that are a high risk of being non-additional which, in this case, includes fuel switching.

### 3.3 Crediting Period

4. It appears contradictory to give more crediting years to an improved efficiency project than to a project that installs a new boiler. We recommend that the crediting periods be equal. **(PEMEX)**

**RESPONSE:** In response to comments received from the Workgroup, after the second in-person workgroup meeting in June, the Public Comment Draft of the protocol already established equal crediting periods of 10 years, non-renewable, for all project types. The final protocol that will be presented to the Board will have a single 10-year crediting period for all projects.

#### 3.4.1 Performance Standard (and other issues of Additionality)

5. The age limit of boilers that are eligible to participate in the protocol: In many cases, the age of the boiler that will be replaced is not clear. It seems to us that more important than the absolute age of the boiler, is to consider the starting date of operations as a new boiler or the starting date of operations as a boiler after it has been retrofitted to point zero. For Boiler sizing in PEMEX, it is customary that from the mechanical integrity studies, they retrofit the boilers to point zero. Another point to consider is the mechanical integrity study. There is a specific possibility of boilers operated by a project owner with more than the median age for boilers whenever a mechanical integrity study supports that the conditions are operational. **(PEMEX)**

**RESPONSE:** We believe it is reasonable and conservative to assume that the complete replacement of older boilers (specifically those older than 35) is more likely to be “business as usual” (BAU) and therefore non-additional, than other potentially eligible project types. In the absence of more comprehensive data, we believe it is most appropriate to leave this age-limit safeguard in place, without allowing for a retrofit to point zero to “reset” the boiler age to age zero in any way. Mechanical integrity studies, unfortunately, do not sufficiently meet the protocol’s data needs. Mechanical integrity studies are essentially safety tests, ensuring the mechanical integrity of a boiler is still intact and able to operate properly. These tests do not necessarily examine all components of a given boiler system that might lay within a project boundary and, to the best of our knowledge, these tests do not test for efficiency. As such, they do not seem like a good basis for establishing eligibility of older boilers.

6. In order to encourage improved efficiency of boilers and the use of the protocol, the start of the protocol could have a lower PST threshold, which over several eventually would become stricter. There is always a period of time in which the users realize the benefits of this type of protocols, which in Mexico have been used by few. **(PEMEX)**

**RESPONSE:** We believe the integrity of this protocol and offset program would be best served by ensuring we truly minimize non-additional projects from the inception of the protocol. As discussed in Appendix A of the protocol, the Reserve believes that the performance threshold established herein balances the need to be sufficiently high so as to demonstrate better than “business as usual” performance to exclude non-additional projects, without being too restrictive. The Reserve will continue to monitor common practice in Mexico moving forward, and will consider raising the performance threshold in the future, as the need arises, to ensure additionality on an ongoing basis. However, at this time, we do not believe the performance

threshold should be lowered simply to encourage more (potentially non-additional) projects at the outset.

7. Recommendation: Display a table or data-set that demonstrates or attests that the mechanism is profitable. **(Evolution Mind)**

**RESPONSE:** While the Reserve agrees with the comment that such a table or dataset would likely be helpful for a project developer, unfortunately, the inclusion of such a table or dataset in the protocol itself is outside the protocol's typical scope. The cost estimates for each technology can vary substantially due to site-specific conditions, capacity demands, and even the assumptions of those implementing such analyses. Verification costs cannot be accurately predicted, adding uncertainty to such estimates.

## 5 Quantifying GHG Emission Reductions

8. It is recommended to use the electricity emissions factor for auto-generation. **(PEMEX)**

**RESPONSE:** The Reserve believes that it is more straightforward and practical for project developers to use the grid emission factors included in the protocol and that relatively few stakeholders will have sufficient data, documentation, and desire to calculate their own self-generation electricity emission factors. That said, the Reserve also recognizes that some stakeholders will be interested in applying a project-specific emission factor, in particular when doing so will yield real, additional CRTs. As such, the Reserve has modified the protocol to include an option allowing project developers to calculate a project-specific electricity emission factor, using the most recent version of the CDM *Tool to Calculate the Emission Factor for an Electricity System* (currently version 5.0), instead of using the default emission factors, so long as all data requirements can be met. The CDM Tool is available here:  
<https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v5.0.pdf>

9. Recommendation: Validate/certify quantification programs – software – that improve the efficiency of the operation. **(Evolution Mind)**

**RESPONSE:** The Reserve has strived to develop a technology-neutral protocol, and we aim to avoid requiring any proprietary tools or technologies. As such, validating or certifying quantification programs, particularly software to improve efficiency of an entire operation, is outside the scope of this protocol. Further, depending on the mechanism by which such software improves efficiency, it is possible that emission reductions are achieved outside of the physical and GHG boundaries established in the protocol and therefore, ineligible for crediting (i.e., boiler optimization software that chooses when certain boilers should or should not run, achieves real emission reductions at the facility-level but is outside the scope of this protocol). The Reserve has included a number of methodological options and tools for calculating efficiency in the protocol and, in particular, the Reserve has worked closely with CONUEE to update and improve usability of the CONUEE Boiler Energy Efficiency Tool, which we hope will assist facility operators and project developers and possibly reduce project costs.

## 6 Monitoring Requirements

10. Calibrations should be done by internal staff in accordance to the manufacturer or a nationally/internationally recognized standardized methodology. This should be done with the

objective of not increasing costs to the project. The verifier should be the person to validate this. **(PEMEX)**

**RESPONSE:**

All of the Reserve's protocols require meters to be calibrated by the manufacturer or an independent, certified calibration service per manufacturer's guidance or every 5 years, whichever is more frequent. This imposes a minimum requirement that meters be calibrated by external, independent professionals at least once every 5 years. All other (field) calibrations, however, may be performed by suitably trained internal staff. Meter manufacturers tend to recommend less frequent and more rigorous requirements for factory calibrations, as opposed to testing of equipment in the field. We believe requiring that these minimal factory calibrations be performed by independent third parties, provides additional assurance while imposing minimal additional cost burden. Our extensive experience demonstrates that these safeguards are some of the most cost effective means for projects to reduce the risk of not receiving CRTs due to MRV failures.

## 8 Verification

11. Recommendation: Increase the period of verification to 24 months. **(Evolution Mind)**

**RESPONSE:** The Reserve agrees that managing costs is of utmost importance and has revised the protocol to allow for verification periods of either 12 or 24 months, following an initial reporting period of 12 months. Additional guidance and requirements for verification periods of 24 months are provided in Sections 7.4 and 8.6.

12. It is suggested that in cases where emissions reductions amount to less than 25,000 tonnes CO<sub>2</sub>e/year, the verification could be completed each 2 or 3 years. This is suggested given the high costs of verification. **(PEMEX).**

**RESPONSE:** As noted above, the Reserve agrees that managing costs is of utmost importance and has revised the protocol to allow for verification periods of either 12 or 24 months for all projects, not just those smaller than 25,000 tonnes CO<sub>2</sub>e/year. However, there is no precedent in the carbon markets (as far as the Reserve is aware) for verification periods of 3 years after the project's initial verification, and the Reserve has already sought to reduce project costs in a number of ways (such as multi-boiler projects and joint verification at a single project site). The Reserve does not think it is necessary at this time to also allow verification periods of 36 months (3 years).

13. It is important to expedite the process of training/certifying Mexican verifiers to reduce the cost of verification. There should be a limit to the cost of verification; for example, that the verification cost should not be more than 5-10% of the cost of credits generated. **(PEMEX)**

**RESPONSE:** Our program (like the CDM) requires independent 3<sup>rd</sup> party verifications. The pricing imposed by verification bodies is not directly controlled by the Reserve; therefore, we are unable to direct that verification costs be capped at 5-10% of CRT generation costs. However, the Reserve has made every effort to reduce project development costs in this protocol, allowing for projects with multiple boilers, joint verification at a single project site, and the option of verification periods of 24 months. The Reserve is also currently evaluating accreditation through Entidad Mexicana de Acreditación (EMA) with our Mexico Forestry pilot project, and may consider allowing for EMA accreditation for this protocol in the future.