Biothermica

# COMMENTS ON THE CLIMATE ACTION RESERVE'S COAL MINE METHANE PROTOCOL (VERSION 2.0)

**BIOTHERMICA TECHNOLOGIES INC.**

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# Table of Contents

## Introduction

Biothermica Technologies Inc. ("Biothermica") would first like to thank the Climate Action Reserve (CAR) for the opportunity of providing comments on the public draft of Version 2.0 of the Coal Mine Methane Protocol (the "Protocol"). Our comments are provided from the perspective of a Ventilation Air Methane (VAM) carbon project developer and technology owner, having developed and implemented the first VAM destruction project at an active coal mine in America. This project has been fully operational since March 2009 at Walter Energy's coal mine No.4 in Brookwood, Alabama, using Biothermica's VAMOX® technology. It is registered with the CAR registry under Project No. CAR 577, using Version 1.0 of CAR's CMM protocol.

Biothermica supports CAR's efforts to enhance the environmental integrity of its Protocols in order to be the leading standard in the North American voluntary market. However, as a developer and investor in the nascent VAM market, we are concerned by the regulatory scope expansion proposed by the Protocol. We fear that this expansion will be a strong deterrent to the implementation of greenhouse gas (GHG) projects because of the great uncertainty it will place on the CRT issuance process. This scope expansion is discussed in the first section of this document.

In the subsequent sections of this document, we bring forward several recommendations with regard to the monitoring and data substitution aspects of the Protocol.

### 1. Regulatory scope expansion

**(a) Project developers will not be able to secure financing and invest in projects for which the risk of CRTs not being issued cannot be evaluated and controlled. The scope expansion will be a strong deterrent to project development.**

Project developers have control over the activities that are within the project boundaries as defined in the CMM Project Protocol, but they have no control over the activities of the mine. If it is impossible to evaluate and control the risk of CRTs not being issued, it will be very difficult to secure financing for these projects, which depend on CRT generation as their major source of revenue.

**(b) Given the significant number of regulations to which a mine is subject, it is virtually impossible for offset project developers to assess whether a mine is in compliance with all regulations**

Coal mining is one of the most extensively regulated industries in the United States. Requiring the investigation of instances of non-compliance with all regulations, outside of the project boundaries, constitutes a significant administrative burden on project developers.

**(c) If the scope expansion prevents CMM projects from going forward, the result will be contrary to CAR's mission**

CMM projects have the potential of generating annual GHG reductions of several million tons of $CO_2$ equivalent per year. If the scope expansion results in preventing CMM projects from going forward, it will be contrary to CAR's mission of "promoting the reduction of greenhouse gas emissions by pioneering credible market-based policies and solutions".

**(d) The scope expansion will not protect the reputation and integrity of the CRTs**

By expanding the regulatory scope beyond the project boundaries, CAR is ultimately also expanding the scope of its own responsibilities, oversight and accountability to the mining operations, which are outside the CRT generation process.

The reputation and integrity of the CRTs will be better protected if CAR continues to confine the project boundaries, both from an operational and regulatory standpoint, to greenhouse gas mitigation and not to the mining operations.

**(e) Should CAR desire to continue investigating the option of a regulatory scope expansion, we suggest extensive proper research to better understand all regulations applicable to coal mines, in order to provide stakeholders with a common set of data**

Considering the potential implications of such an expansion, if CAR still wishes to progress with this exercise, it is imperative that proper research be conducted on all applicable regulations, similarly to the external research conducted with regard to the data supporting CAR's work on CMM to pipeline activities. Biothermica would be happy to be provide further comments on the result of this research.

The investigation should cover in particular:

- Laws and regulations applicable to coal mines;
- State of compliance of US coal mines with applicable regulations: aggregated data.

**(f) Pursuant to comment e), CAR should also conduct proper research with regard to its other Protocols, as the regulatory expansion cannot be confined to the CMM Protocol**

The feasibility of expanding the regulatory scope in other sectors such as ODS (entire supply chain) and livestock (entire feedlot operation) should for example be assessed.

**(g) In all cases, it should not be left to the discretion of the Verifier to determine whether there was an instance of neglect or intent on the part of the mine. Project developers need clear and objective criteria to be able to secure project financing and invest in these projects**

The establishment of clear and objective criteria is an absolute pre-requisite in order for project developers to invest in these projects. Leaving the determination of negligence or intent on the part of the mine to the discretion of Verifiers creates additional uncertainty and volatility.

It is our opinion that the Verifier should not interfere with the activities already performed by regulatory or supervisory entities such as mine inspectors. Many Verifiers may be unwilling to take on a project Verification with this requirement and mines will also resist the interference of a Verifier with their compliance activities.

## 2. Project Monitoring

### 2.1 NMHC requirements

**(a) The data unit applied to the NMHC requirement should include the notion of standard conditions**

The NMHC requirement is currently expressed in $mg/m^3$ on a wet basis (p27 & 33). This requirement should refer to standard conditions and therefore be expressed in mg per standard cubic meters. Alternatively, the expression "wet basis" could be replaced by "wet volume of air in standard conditions".

**(b) The "r" coefficient represents a relative mass proportion of NMHC compared to methane**

We recommend that the following minor adjustment be applied with regard to the description of the "r" coefficient (p 27 & 34), suggested in redline as applied to the existing text:

r = Relative mass proportion of NMHC compared to methane

### 2.2 Units

**(a) Project developers should be able to measure and report temperatures, pressures and flow rates in the data units of their preference (international or imperial system)**

We note that the CAR Mexico landfill gas Protocol V 1.1 uses the international system of units instead of the U.S imperial system used by the CMM Protocol[1]. In a spirit of Protocol harmonisation and providing flexibility to the project developers, we recommend that CAR allow project developers to measure and report temperatures, pressures and flow rates in the data units of their preference, as long as the calculations are consistent with the end result being expressed in metric tons of $CO_2$ equivalent.

For example, it should be allowed to measure and report:

- Temperature in ºC, ºF, ºR, or ºK
- Pressure in atm, inches of water or Pa
- Flow rates in cfm or $m^3/h$

### 2.3 Monitoring requirements for VAM projects

**(a) The inlet flow should be mentioned as the flow entering the oxidation unit instead of the flow entering the reaction chamber.**

The reaction chamber is a component of the oxidation system, where the flow is very variable. The flow entering the reaction chamber is not the correct flow to be used to determine the mass of methane entering the oxidation unit. We therefore recommend the following wording with regard to the monitoring requirements for VAM projects, also proposing some simple harmonisations in the presentations of the requirements (p38):

"For VAM projects, monitoring requirements include:

- The total inlet flow entering the ~~reaction chamber~~oxidation unit, measured continuously and recorded every two minutes;

[1] Data table (p28) and equation used to adjust the landfill gas flow to reference conditions (p17)

- If required in order to standardize the flow rate, the t~~T~~emperature and pressure ~~of the inlet flow entering the reaction chamber~~in the vicinity of the flow meter, measured continuously and recorded at least every hour to calculate hourly pressure and temperature;
- The fraction of methane in the ventilation air entering the oxidation unit and in the exhaust gas, measured continuously and recorded every two minutes to calculate average methane concentration per hour;
- If required in order to correct the concentration readings, the temperature and pressure in the vicinity of the methane analyzers, measured continuously and recorded at least every hour to calculate hourly pressure and temperature.

### 2.4 Instrument QA/QC

**(a) Considering CAR has now determined that the ±5% accuracy requirement with regard to field checks applies to the reading, the Protocol should take into account situations where the reading is equal or close to zero**

A ±5% accuracy requirement on the reading is inapplicable when the values are equal or close to zero, such as 0°F for example. The Protocol should take these situations into account and offer a complementary accuracy requirement (example: accuracy defined as the highest figure between 5% of the reading or an absolute error).

It should also be noted that this procedure, namely providing both a percentage and an absolute value, is common practice on the part of the manufacturers with regard to the accuracy of the monitoring equipment.

**(b) We recommend harmonizing and clarifying the paragraph introducing the procedures applicable when the accuracy criteria are not met**

We propose that the second paragraph on page 41 read as follows, for clarity purposes:

"For the interval between (1) the last successful field check or calibration event and (2) any field check or calibration event confirming accuracy outside the ± 5% threshold, all data from that meter or analyzer must be scaled…"

**(c) We recommend that the adjustments, in case the accuracy requirements are not met, be related to the under or over estimation of the emission reductions instead of the measured value itself**

Under-reporting of the methane concentration at the outlet would for example lead to an overestimation of emission reductions. However, as the Protocol is currently written, no adjustment would be required. We therefore recommend the following wording for the two bullet points on page 41:

"1. For field checks or calibrations that indicate ~~under-reporting (lower flow rates, or lower methane concentration),~~ an underestimation of emission reductions, the metered values must be used without correction
2. For field checks or calibrations that indicate ~~over-reporting (higher flow rates, or higher methane concentration)~~an overestimation of emission reductions, the metered values must be adjusted based on the greatest calibration drift recorded at the time of calibration".

## 3. Data substitution guidelines

### 3.1 Temperature and Pressure

**(a) If Temperature is missing but Pressure is available, project developers should be allowed to use the real pressure values instead of being required to substitute also for pressure**

The Protocol currently requires that "the methodology be applied to both parameters simultaneously, regardless of if data is available for one or the other" (Appendix C). We do not understand the rationale for requiring projects to substitute for real data that has been actually measured.

### 3.2 Substitution methodology

**(a) The substitution methodology table should specify that the hours prior and after the outage should be hours of normal system operation for all the cases presented in the table in Appendix C**

The table in Appendix C currently specifies that the hors of normal operations should be used if the duration of the missing data is less than six hours. This should also be the case for the other durations, we proposed the following revised Table:

| Duration of missing data | Substitution methodology |
|---|---|
| Less than six hours | Use the average of normal operations immediately before and following the outage |
| Six to 24 hours | Use the 90% lower or upper confidence limit of the 24 hours of normal operations prior to and after the outage, whichever results in greater conservativeness |
| One to seven days | Use the 95% lower or upper confidence limit of the 72 hours of normal operations prior to and after the outage, whichever results in greater conservativeness |
| Greater than one week | No data may be substituted and no credits may be generated |