U.S. Livestock Project Protocol
Version 4.0
ERRATA AND CLARIFICATIONS

The Climate Action Reserve (Reserve) published its U.S. Livestock Project Protocol Version 4.0 (LSPP V4.0) in January 2013. While the Reserve intends for the LSPP V4.0 to be a complete, transparent document, it recognizes that correction of errors and clarifications will be necessary as the protocol is implemented and issues are identified. This document is an official record of all errata and clarifications applicable to the LSPP V4.0.[1]

Per the Reserve's Program Manual, both errata and clarifications are considered effective on the date they are first posted on the Reserve website. The effective date of each erratum or clarification is clearly designated below. All listed and registered livestock projects must incorporate and adhere to these errata and clarifications when they undergo verification. The Reserve will incorporate both errata and clarifications into future versions of the protocol.

All project developers and verification bodies must refer to this document to ensure that the most current guidance is adhered to in project design and verification. Verification bodies shall refer to this document immediately prior to uploading any Verification Statement to assure all issues are properly addressed and incorporated into verification activities.

If you have any questions about the updates or clarifications in this document, please contact Policy at policy@climateactionreserve.org or (213) 891-1444 x3.

[1] See Section 4.3.4 of the Climate Action Reserve Program Manual for an explanation of the Reserve's policies on protocol errata and clarifications. "Errata" are issued to correct typographical errors. "Clarifications" are issued to ensure consistent interpretation and application of the protocol. For document management and program implementation purposes, both errata and clarifications are contained in this single document.

Errata and Clarifications (arranged by protocol section)

Section 3

1. Regulatory Compliance at Centralized Digesters (CLARIFICATION – July 21, 2016)

Section: 3.6 (Regulatory Compliance)

Context: This section states that, where a verifier determines that project activities have caused a material violation, no CRTs will be issued during the period(s) when the violation occurred. The guidance in this section does not specify how to address regulatory compliance for projects where manure is received from multiple farms and managed in a centralized BCS.

It is unclear whether a violation with respect to one manure source facility would jeopardize the ability of the project to receive credit from emission reductions related to manure from other source facilities. It may be possible for an offset project at a centralized digester to have CRTs issued to it for manure from compliant manure source facilities during a period of time when one or more manure source facilities are materially noncompliant with a regulation.

Clarification: The following text shall be inserted on page 7, at the end of Section 3.6:

"With respect to projects that accept and manage manure from multiple, discrete source facilities (separate from the project BCS in both physical location and management), it may be possible for a project developer to demonstrate that a regulatory violation at one source facility does not affect the eligibility of the entire project under this section. Project developers should contact the Reserve to discuss potential regulatory non-compliance issues."

Section 5

2. Accounting for Methane Emissions during Temporary Project Shutdown (CLARIFICATION – October 29, 2013)

Section: 5.3 (Calculating Project Methane Emissions)

Context: The last full paragraph on page 24 reads: "Although not common under normal digester operation, it is possible that a venting event may occur due to catastrophic failure of digester cover materials, the digester vessel, or the gas collection system. In the event that a catastrophic system failure results in the venting of biogas, the quantity of methane released to the atmosphere shall be estimated according to Equation 5.7 below."

Equation 5.7 on page 26 provides guidance for calculating the quantity of methane released during a venting event, which is added to the total Project Methane Emissions from the BCS, as calculated in Equation 5.6. Equation 5.7 accounts for two releases of biogas: the initial release of biogas being stored in the digester, and then the daily release of additional gas that is generated in the digester until the gas collection system is functional.

The intent of the current guidance is to account for situations where the project digester continues to receive and treat manure, but the gas collection system is discovered to be compromised. In situations where the project digester has been shut down for longer periods of

time, biogas is typically released from the digester and then project manure directed to an anaerobic system (e.g. either the covers are taken off the digester or manure is diverted to open lagoons) that would meet the definition in Section 3.4. During such longer shutdowns, it has not been clear whether this entire period of time should be considered a venting event and, if so, how quantification of emissions should proceed.

Clarification: The following text shall be inserted between Equation 5.7 and Equation 5.8 on page 26:

"A venting event occurs when the project digester continues to process manure, but biogas is vented directly to the atmosphere (e.g. through a rip in a lagoon cover or a broken pipe). Projects that experience a venting event shall continue to use Equation 5.7 to calculate the resulting project methane emissions.

A project shutdown occurs when the project digester is no longer functional. This occurs when the project reverts to an open, uncontrolled, anaerobic manure treatment system (e.g. the manure is redirected to open, anaerobic lagoons, or the cover is completely removed from a covered lagoon digester and no heating or mixing occurs). A project shutdown is defined as a venting event on the day of the shutdown, and then a cessation of project operations until the BCS is once again operable.

In the case where the project BCS is shut down and the manure is treated in an open, uncontrolled, anaerobic system (meeting the definition in Section 3.4), the project scenario shall be assumed to be equal to the baseline scenario. In this case the project must quantify the release of stored biogas (MS_{BCS} in Equation 5.7) at the time that the system is shut down, but not the subsequent daily release of biogas from the open lagoons. In these situations the project will cease quantification of emission reductions until the BCS is once again operational."

3. Service Providers for Site-Specific Destruction Efficiency Testing (CLARIFICATION – January 21, 2014)

Section: 5.3 (Calculating Project Methane Emissions)

Context: Footnote 19 on page 25 provides guidelines for service provider accreditation. It is not clear what specific options are available and permissible for projects located in a state or locality which does not have an accreditation program for source test service providers. Footnote 26 on page 29 and the first full paragraph on page 69 in Appendix B contain similar language.

Clarification: The intent of this requirement is to ensure that any source testing conducted for the determination of a site-specific value for methane destruction efficiency is of a quality that would be acceptable for compliance by a regulatory body. The following text shall replace the last sentence of footnote 19 on page 25, of footnote 26 on page 29, and of the first full paragraph on page 69 of Appendix B:

> "If neither the state nor locality relevant to the project site offer accreditation for source testing service providers, projects may use an accredited service provider from another U.S. state or domestic locality. Alternatively, projects may choose a non-accredited service provider, under the following conditions: 1) the service provider must provide verifiable evidence of prior testing which was accepted for compliance by a domestic regulatory agency, and 2) the prior testing procedures must be substantially similar to

the procedures used for determining methane destruction efficiency for the project destruction device(s)."

Section 6

4. Monitoring Operational Status (CLARIFICATION – October 29, 2013)

Section: 6.2 (Biogas Control System Monitoring Requirements)

Context: The first and second paragraphs of page 35 in Section 6.2 states that "[o]perational activity of the destruction devices shall be monitored and documented at least hourly to ensure actual methane destruction. … If for any reason the destruction device or the operational monitoring equipment…is inoperable, then all metered biogas going to the particular device shall be assumed to be released to atmosphere…[and] the destruction efficiency of the device must be assumed to be zero."

Certain types of destruction devices, such as internal combustion engines and most large boiler systems, are designed in such a way that gas may not flow through the device if it is not operational. It has not been clear how the requirements of Section 6.2 apply to these devices.

Clarification: The first sentence of the first paragraph on page 35 shall be read to apply to all destruction devices in use during the reporting period. The paragraph on page 34 of Section 6.2 starting, "[a] single flow meter may be used…," shall not be construed to relax the requirement for hourly operational data for all destruction devices. Rather, that paragraph is allowing a specific metering arrangement during periods when one or more devices are known to be not operating. All destruction devices must have their operational status monitored and recorded at least hourly. If these data are missing or never recorded for a particular device, that device will be assumed to be not operating and will be assigned a destruction efficiency of zero for all flow data that are assigned to that device.

5. Instrument QA/QC for a Stationary Flow Meter in Use for 60 Days or More that is Removed and Not Reinstalled During the Same Reporting Period (CLARIFICATION – July 19, 2023)

Section: 6.3 (Biogas Measurement Instrument QA/QC)

Context: Section 6.2 of the protocol states that:

"If a stationary meter that was in use for 60 days or more is removed and not reinstalled during a reporting period, that meter shall either be field-checked for calibration accuracy prior to removal or calibrated (with percent drift documented) by the manufacturer or a certified calibration service prior to quantification of emission reductions for that reporting period."

The intent of the requirement above is to ensure accurate flow meter data is being recorded and used for emission reduction calculations. However, the timeline and requirement to perform a field-check for calibration accuracy or calibration by the manufacturer is unclear.

Clarification: The following language has replaced the requirement mentioned above:

"If a stationary meter that was in use for 60 days or more is removed and not reinstalled during a reporting period, that meter shall either be:

- field-checked for calibration accuracy within 2 months of removal; or
- calibrated (with percent drift documented) by the manufacturer or a certified calibration service (with as-found results recorded) no more than 12 months prior to use of the meter to quantify emission reductions and no later than the commencement of verification activities for the relevant reporting period.

6. Meter Field Check Procedures (CLARIFICATION – October 29, 2013)

Section: 6.3 (Biogas Measurement Instrument QA/QC)

Context: The second paragraph below the first bulleted list of page 36 in Section 6.3 states that "[i]f the field check on a piece of equipment reveals accuracy outside of a +/- 5% threshold, calibration by the manufacturer or a certified service provider is required for that piece of equipment…"

Certain types of biogas flow meters and methane analyzers are susceptible to measurement drift due to buildup of moisture or contaminants on the metering sensor, even if the equipment itself is not out of calibration. If the as-found condition of the meter is outside of the accuracy threshold, but the as-left condition (after cleaning) is within the accuracy threshold, it is not clear whether a full calibration is still required for this piece of equipment. In some cases the manufacturer provides specific guidance to this effect.

Clarification: The following text shall be inserted after the second paragraph following the bulleted list on page 36:

"The as-found condition (percent drift) of a field check must always be recorded. If the meter is found to be measuring outside of the +/- 5% threshold for accuracy, the data must be adjusted for the period beginning with the last successful field check or calibration event up until the meter is confirmed to be in calibration. If, at the time of the failed field check, the meter is cleaned and checked again, with the as-left condition found to be within the accuracy threshold, a full calibration is not required for that piece of equipment. This shall be considered a failed field check, followed by a successful field check. The data adjustment shall be based on the percent drift recorded at the time of the failed field check. However, if the as-left condition remains outside of the +/- 5% accuracy threshold, calibration is required by the manufacturer or a certified service provider for that piece of equipment."

7. Methane Analyzer Factory Calibrations (CLARIFICATION – November 16, 2017)

Section: 6.3 (Biogas Measurement Instrument QA/QC)

Context: The fourth bullet in the list at the beginning of this section (page 36) states that "[all gas flow meters and continuous methane analyzers must be] calibrated by the manufacturer or a certified calibration service per manufacturer's guidance or every 5 years, whichever is more frequent."

The principle underlying this requirement is the need to ensure data integrity. More specifically, the intent of this requirement is that meters meet such requirement every time they are used to gather data that is used in project emission reduction quantification. If a meter was out of conformance with this calibration requirement during a portion of the reporting period when it is not in use, but is brought back into conformance with this requirement before again being used to gather data which is used for project emission reduction calculations, then the underlying intent of this requirement is met.

Clarification: The following text shall be inserted after the fourth bulleted point at the beginning of Section 6.3:

"Conformance with this requirement is only required during periods of time where data gathered by the meter are used for emission reduction quantification. Periods where the meter did not meet this requirement will not cause the project to fail this requirement, provided the meter was not being used for project emission reduction quantification during such periods, and provided the meter was brought back into conformance before being employed to gather data which is used for project emission reduction quantification."

Appendix D

8. Data Substitution when Operational Data are Missing (ERRATUM – October 29, 2013)

Section: Appendix D (Data Substitution)

Context: There are three parameters necessary for the quantification of biogas destruction: biogas flow volume, methane concentration, and operational status of the destruction device. Section D.1 on page 80 provides a methodology for the substitution of missing biogas flow or methane concentration data. Data on the operational status of a destruction device are not eligible for substitution. Substitution of one parameter (i.e. flow or concentration) is only allowed if both other parameters are successfully recorded during the data gap. Thus, to employ the data substitution methodology, it is required that the record of operational status be intact during the gap.

This data substitution methodology was originally developed to resolve incidents of missing methane destruction data in landfill gas projects. Under that project type, excluding the data gap entirely is equivalent to the use of a destruction efficiency (DE) value of zero, whereas the same is not true for a livestock project. In the case of the Livestock Project Protocol, there is additional guidance on page 35 of Section 6.2 that requires the use of a DE value of zero for periods where the destruction device is inoperable, or the operational data are missing. This procedure effectively provides substitution of missing operational data with the assumption that the device was inoperable during the data gap. The effect of this substitution is an increase in project emissions, resulting in a more conservative estimate of emission reductions, regardless of whether the ultimate estimate of emission reductions is based on the modeled baseline or the metered methane destruction.

Because of the nature of the quantification methodology for livestock projects, and the ways that it differs from that of landfill projects, it is appropriate and conservative to carry out flow or methane data substitution, even if the destruction device is inoperable. Under this protocol, the quantification of emission reductions will be more conservative than if the data substitution were not employed.

Correction: The guidance on page 35 of Section 6.2 shall supersede the guidance in Appendix D. The following text shall be inserted after the second paragraph of Section D.1 in Appendix D:

"If the destruction device is inoperable, or its operational data are missing, the destruction efficiency for the device shall be zero during that period of time. Data substitution may be employed for missing biogas flow or methane concentration data during periods of missing operational data, provided the dataset is able to fulfill all other requirements of this data substitution methodology. The data substitution methodology shall be employed in the manner resulting in the greatest level of conservativeness for the quantification of emission reductions."

9. Data Substitution for Continuous Methane Data (CLARIFICATION – October 29, 2013)

Section: Appendix D (Data Substitution)

Context: The data substitution methodology in Appendix D may not be used for data gaps that are greater than seven days. However, the minimum measurement frequency for methane concentration data is once per quarter (three months). For projects that measure methane concentration at a frequency that is greater than quarterly, it is not clear how methane values should be applied during gaps of more than one week but less than an entire quarter.

Clarification: As long as a livestock project has at least one methane concentration reading per quarter, the project may satisfy the monitoring requirements in Section 6.2. A livestock project may have gaps between methane concentration readings that are greater than one week without this being considered "missing data" as it is conceived in Appendix D. Thus, project developers may devise a reasonable approach by which to assign a value to periods of time between recorded methane concentration values. The verifier shall confirm that the value(s) applied by the project is reasonable and conservative. No data substitution may be applied if there are no methane concentration readings during an entire quarter.