Ag Methane Advisors

# Comments regarding June 20, 2014 discussion draft of CARB Compliance Offset Protocol Livestock Projects

Thank you to the staff of the California Air Resources Board (CARB) for undertaking an update to the Compliance Offset Protocol Livestock Projects (COP Protocol) and for the opportunity to comment on the June 20, 2014 discussion draft. The document includes Ag Methane Advisors' comments on specific aspects of the draft along with additional more general comments and suggestions about the Protocol and it's implementation. Ag Methane Advisors is an Authorized Project Designee representing more than ten livestock anaerobic digestion projects located in California and across the US that participate in CARB's Compliance Offset Program. Please direct any questions to Patrick Wood, General Manager via email at patrick@agmethaneadvisors.com.

## General Comments

It is apparent from the discussion draft that CARB has considered previous feedback and comments from many participants in the livestock anaerobic digestion carbon offset market including staff of the Climate Action Reserve, project developers, consultants and verifiers. This is very much appreciated, as collectively those market participants have extensive and valuable experience in implementing the current version of the COP Protocol as well as it's predecessors through the Reserve's protocols. Much of this experience is reflected in the Errata and Clarifications related to the protocols that the Reserve has published periodically. There are two primary benefits that these Errata and Clarifications have provided:

- First, they allow the program administrator to address unforeseen issues that arise in implementing the protocols.
- Second, they allow all participants in the market and users of the protocols to be aware of changing interpretations of the protocols in a timely and transparent manner.

Ag Methane Advisors recommends that CARB utilize their existing FAQ process on a frequent basis in order to provide these same two benefits to the Compliance Offset Program. Offset Project Operators (OPOs) work diligently to comply with the protocol, and it is challenging and frustrating to them to have interpretations change without any publication and therefore no method to be aware of the change. Numerous situations like this have arisen since the implementation of the Compliance Offset Program. This

makes participation difficult for OPOs, adversely impacting their interest in and ability to participate. In addition, it reduces the volume of offsets that can be brought to the market, including potentially offsets that could have been registered had timely and transparent information been available. Without OPOs there would not be a functional and effective Compliance Offset Program. Providing clear, timely and transparent information is crucial to the success of the program.

**Specific comments on the June 20, 2014 discussion draft**

1. Section 5.1(f) (pg. 19); Section 5.1(m) (pg. 22); Section 5.2(q) (pg. 26); Section 5.2(w) (pg. 28). Regarding the availability of site-specific data to document the fraction of volatile solids directed to each different management on a farm, in many cases operator estimates are the only way to determine a fraction. For example if a farm has 5 barns the operator may have an estimate of the number of cows in each barn on average, but the actual number changes daily. Then from each barn the majority of manure may be sent to the BCS (or lagoon in baseline), but there may be a couple loads of manure each day that are stacked. It is impossible to know exactly what proportion of manure these couple loads represent, and exactly how many cows are in each barn each day, there is simply too much variability. Measuring and verifying data for these parameters is not practical for implementation of the protocol. However, conservative estimates can be made. These are often based on operator experience and interviews. Specific mention of conservative estimates based on operator experience and interview in these sections of the protocol would be helpful to OPOs and verifiers in implementing the protocol.

2. Section 5.1(i) (pg. 20). NOAA maintains many weather stations across the country and the data is readily available. Frequently the weather stations are extremely close to the project locations (i.e. <1mile) and sometimes even on the farm's property. However, often one or two months of data may be missing from the closest NOAA weather station during a reporting period. This data is developed, maintained and provided by NOAA/NWS so is out of the control of the OPO. Therefore data from another nearby weather station needs to be substituted for the closest weather station. Allowing this substitution in the case of data that is not available from NOAA/NWS is crucial. In addition in many situations it may not be practical to know the exact elevation within 300ft of a project in order to compare that to the elevation of the weather station.

3. Section 5.1(k) (pg. 20). Further articulation of the details of drainage and cleaning would be helpful. Often farms may use lagoon liquid to irrigate fields during several months of the year, but there may only be partial removal of lagoon supernatant, and all sludge containing the volatile solids remains in the lagoon. Accurate estimation of % removal is virtually impossible, because although many farms record the volume of liquid removed from the lagoon, the volume before removal is unknown, and cannot be practically measured, nor the % of volatile solids removed easily known, without additional burdensome sampling protocols. Language describing that volatile solids should only be "zeroed out" following the months when the system was completely drained with sludge removal can effectively clarify this section.

4. Section 5.2(e) (pg. 24); Section 5.3(d) (pg. 29). Further clarification about how to obtain written permission from the Executive Officer regarding utilization of site-specific BDE would be helpful. In addition the requirement for the accuracy of the default BDEs is not clear. It seems this could mean two things; 1) that the site specific BDE must be more efficient than the default value, or 2) that the uncertainty associated with the site-specific BDE is less than the uncertainty associated with the default BDE. If the intent is #1 then is seems CARB would want site-specific values to be less conservative that the defaults rather than more conservative. If the intent is #2) then please publish the uncertainty associated with each default BDE in Appendix A.6 so there is a way to determine if a site-specific value is more accurate.

5. Section 5.2(g) (pg. 24). In the past there has been confusion and rumors among market participants about the BCE of a complete mix digester with a cover that can be removed in the event of vessel maintenance and repair. Please clarify in Table A.3 how systems like this will be considered.

6. Section 5.2(j) (pg. 25). Please clarify how digestate within the vessel should be considered when calculating maximum biogas storage volume. Should only the headspace in the digester be considered for a one time venting event?

7. Section 5.2(K) (pg. 25). Regarding venting events in many cases there is a one-time event when the digester is cleaned out and manure is bypassed directly to the lagoon until the digester can be filled again, therefore the average flow from the digester and number of days is not relevant. In other cases there may not be a complete venting of the digester, but there may be venting from one or more pipes which would have gone to a particular device. In this situation the average

flow from the digester and number of days is relevant. Equation 5.6 doesn't seem to be able to handle these situations, and seems to require accounting for project emissions that would not have happened in these common scenarios. We suggest a slight revision to the syntax of the equation to allow for these common either/or situations.

8. Section 5.2(i) (pg. 26). There is a typo with the word "emissions".

9. Section 5.2, Box for Eq. 5.7 (pg. 26); Section 5.3, Box for Eq. 5.11 (pg. 31). It appears that there may be a typo in the equation term "519.69". Since the conversion from Rankine to Fahrenheit is 469.67, it appears the term should read "519.67" given the adjustment for a standard temp of 60.0 degrees F.

10. Section 5.2(t) (pg. 27). Guidance on acceptable site-specific data for average live weight would be helpful.

11. Section 5.2, Box for Eq. 5.9 (pg. 29). It appears there is a typo for the reporting days term. It is not capitalized here, but is capitalized throughout the rest of the protocol.

12. Section 5.4(d) (pg. 31); Section 5.4(g) (pg. 32). Often purchase receipts and utility records don't distinguish between fossil fuels consumed for the project and those used elsewhere on the farm. For example there might be only one receipt for diesel purchases on the farm during a given month including all tractors and that used to heat a digester. Guidance about how to handle this situation would be helpful.

13. Section 6.1(a) (pg. 33). Often manufacturer specifications are not clear, don't specifically address issues considered in the Protocol or don't meet CARB's published/unpublished standards. Guidance about how to handle this situation would be helpful. E.g. Which takes precedent? CARB's interpretation or manufacturer specification?

14. Section 6.1(b)(2) (pg. 33). It appears that there is a typo with the word "and" hanging at the end of this section, unless there is a missing clause.

15. Section 6.1(d) (pg. 33).
    a. Further specification about the hourly operational data requirement here would be helpful, particularly for projects that have more frequent than

hourly flow data (e.g. 15 min). E.g. if there is kWh from an engine at 12:00, does this mean that flow at 11:15 is considered operational? What about flow at 12:45? What about both since they are both within 1 hour of 12:00?

b. Section 6.1(d) (pg. 33); Section 6.1(f) (pg. 34); Section 6.1(g) (pg. 34). Frequently one device may not be operational but multiple other devices are operational. The statement that, "No registry offset credits or ARB offset credits will be issued for any time period during which the destruction device is not operational" suggests that a period of zero crediting should be claimed, however it seems more appropriate to apply a zero BDE to the particular device that is not operational, so that project emissions are increased (and crediting related to that device does not happen), but so that the project as a whole and other devices with confirmed operational destruction can still be credited. Clarification of this common issue would be helpful.

c. Section 6.1(d)(1) (pg. 34). Thank you for acknowledging that many devices are equipped with valves that prevent gas from escaping when the device is not operational. Further clarification about the data that CARB would want reviewed during the verification would be helpful. The current language leaves open many questions about how to verify that a valve inside an engine is present and operational without dismantling the engine. In addition, flares often have valves and weights so that gas cannot escape until sufficient pressure has built up. But these can corrode, and confirming that they are operational would require constant inspection of a device that is 20+ feet in the air and frequently on fire, which is not practical.

16. Section 6.1(e) (pg. 34); Section 6.1(f) (pg. 34); Section 6.1(g) (pg. 34). Devices that are equipped with valves to prevent leakage should be specifically mentioned here as an exception.

17. Section 6.2(a)(3) (pg. 35). Please clarify whether the as found/as left calibration accuracy with the percent drift must be documented when a biogas flow meter is sent to a manufacturer for a full calibration other than a field check within 2 months of the end of the reporting period.

18. Section 6.2(b) (pg. 35). Assessing calibration drift after cleaning of a biogas flow meter will result in a measure of drift that is not necessarily representative of the drift recorded by the meter before the cleaning, and may result in un-

conservative crediting. Frequently, the probes on flow meters accumulate H2S build-up. This can impact the accuracy of biogas flow readings and cause under or over reporting of biogas flow. A meter with calibration accuracy tested before cleaning may be found to have >5% drift, but after cleaning it might have <5% drift. We recommend that the protocol specify assessing calibration drift before cleaning to determine an accurate assessment of the calibration accuracy, which can be applied to biogas flow data as necessary following the protocol. If a meter is found to have >5% drift it can be cleaned and then the calibration accuracy re-tested. If after cleaning it continues to have drift >5% it should be sent to the manufacturer for a full calibration, however if after cleaning it has <5% drift then it can be considered a successful field check, but the pre-cleaning drift can still be applied to biogas flow data resulting in conservative crediting.

19. Section 6.2(c) (pg. 35). Some biogas flow meter manufacturers report calibration accuracy in milliwatts, and state that 1 milliwatt equals 1% drift. However the calibration zero on a certain meter might be 121 mW or 82 mW so arithmetically 1% does not equal 1mW. However the manufacturer's manual (specification) says that 1mW=1%. Please clarify this section and address how this should be handled. It is not clear whether the arithmetic or the manufacturer's specification should take precedent here.

20. Section 6.2(c)(1) (pg. 35). Why is "independently for each meter" mentioned here? Calibration accuracy is inherently independent for each meter. In addition, total emissions reductions cannot be calculated independently for each meter as the total biogas flow from all devices (usually each with a separate meter), and the weighted BDE needs to be calculated to get total emissions reductions. Suggest removing "independently for each meter" for clarity.

21. Section 6.2(c)(1)(b) (pg. 35). Frequently, when a meter is sent to the manufacturer for a full calibration the % drift is drastically different at different levels of biogas flow. E.g. at 10 SCFM the drift may be 10% (1 SCFM), at 300 SCFM the drift may be 3% (3 SCFM) and at 1000 SCFM the drift may be 1% (10 SCFM). For an engine meter that commonly operates at > several hundred SCFM using the 10% drift (100 SCFM), which is not representative of the operations, has a substantial adverse impact. It would be helpful if this requirement were revised to reflect the drift that was representative of the flow during the period under consideration. Perhaps like for the data substitution Appendix some sort of confidence interval could be used to assess the predominant flow during the period under consideration.

22. Section 6.2(d) (pg. 35). Frequently a digester vendor or project developer will have one or more portable methane analyzer's that are used to take quarterly methane concentration samples from multiple projects. Therefore it is problematic to have the frequency of the instruments calibration tied to each projects reporting period as the projects are frequently on different schedules. Instead like in the previous version of the protocol it would be very helpful to have the frequency of calibration be related to the meter based on manufacturer specifications or annually at the longest. This is especially significant because missing one quarterly methane concentration sample has a very large impact on crediting since it impacts and entire quarter of a year. Here is an example: Project A has a reporting period from 1.1.15 to 12.31.15. Project B has a reporting period from 7.1.15 to 6.30.16. They share a portable methane analyzer that the manufacturer recommends be calibrated annually. The analyzer comes into service on 1.15.15 and is used quarterly by both projects throughout their reporting periods. The analyzer gets calibrated on 1.15.16 (one year) per manufacturer specification. However this is outside the first reporting period for Project A, which loses credits. If the calibration frequency were tied to the meter not each project, the issue is avoided.

23. Section 6.4, Table 6.1, Parameter: $MS_{,L,BCS}$ (pg. 41). Farms usually do not maintain operational records of the % of manure to different management systems, and this often is not feasible. This number is usually determined based on system designs/layout that is fixed over time until there is a major structural change. Suggest revising. Consistency with the other MS parameters in the table would be helpful.

24. Appendix A, Table A.1, A.2 and A.4.
    a. Suggest referencing the most updated version of the US EPA annual GHG inventory, so that the TAM and VS values can be updated more frequently rather than fixed by specifying values in these tables which causes them to become outdated as COP livestock protocol updates cannot happen frequently.
    b. Table A.4 utilized 2010 VS values per livestock category/state. 2011 values are available. If suggestion 24.a above is not possible, suggest at least using the most up-to-date values available at the time of the protocol update.

25. Appendix A, Table A.6. The right hand column has an asterisk, but there does not appear to be any footnote or other reference. Should the asterisk be deleted or is there a missing footnote?

26. Appendix A, Table A.10.
    a. The table suggests that a flush system is most common for an anaerobic lagoon on farms with >200 cows. However, in general, flush systems are only practical in areas that don't frequently freeze in winter. In cold climates a flush system would usually turn a dairy barn into a skating rink, so scrape systems that feed to an anaerobic lagoon are common. Suggest revising.
    b. How was the 10% solid storage value derived for the $MS_L$ parameter? Greenfield projects are often the most efficient as the design can start from scratch rather than use a layout that has evolved over years. Therefore 100% of manure is often sent to the anaerobic lagoon.
    c. For new large farms with >200 cows, the manure from the lagoon is often removed during many months of the year given nutrient management regulations, the ability for soil to absorb nutrients and the time limitations of spreading a years worth of manure in a short period of time. In addition it is very rare that a lagoon is completely emptied including removal of all sludge.

27. Appendix B:
    a. Section (a) states, "a project encounters baseline flow rate". It seems that the word "baseline" may not belong here, as there would be no biogas flow meters in the baseline scenario, and therefore no data to need substituting.
    b. Appendix B in general but Section (a)(1) in particular does not seem designed for data gaps in QUARTERLY methane concentration samples that are discrete, limited, non-chronic, and due to unforeseen circumstances. Many if not most projects take quarterly methane concentration samples rather than utilize continuous methane concentration analyzers. Appendix B seems designed for the later, and cannot apply to the former. However, despite diligent efforts by project operators, it is common for there to be one issue or another with a quarterly methane concentration samples (e.g. calibration frequency is off, sample is taken 3 days after end of the quarter, a bag sample sent in for analysis fails to be testable, etc., etc.). Under the Reserve's program this has been addressed through variances, and the most conservative

methane concentration sample from the reporting period is frequently used as a substitute. However, since there are no variances allowed in the Compliance Offset Program, many projects could have substantial issues if there was a small oversight (that may be outside their control) with a quarterly methane concentration sample. They might lose an entire quarter of crediting or more!! It would be helpful if a specific section of Appendix B were added to address data substitution for quarterly methane concentration samples.

c. Regarding Table B.1, it is common for data gaps to be near each other, and for the period before and after the gap to overlap. For example an electrical short can cause sporadic data gaps over a period of time. Assume there is a gap on June 26, 2015 from 1:00 to 13:00, then there is a period of good quality data until 16:00, but a second gap from 16:00 to 23:00. The first gap lasted 13 hours, the second gap lasted 7 hours. Both can be filled using the 90% lower or upper confidence limit of the 24 hours prior to and after the outage, except that the 24 hours periods overlap. Clarification about how to handle this common situation would be helpful. One suggestion is to consider both gaps as one gap, which is 23 hours in length.