Summary of Response to Reviewer Comments

Review Comment	Action / Comment
1	• Please see response to Reviewer Comment 9
2	• ***Comment accepted*** – page 3, footnote 1 corrected
3	• ***Comment accepted*** – page 4, paragraph 2 addresses comment
4	• ***Comment accepted*** – page 6, paragraph 1 & 2 addresses comment
5	• ***Comment accepted*** – page 5, paragraph 2 addresses comment
6	• ***Comment accepted*** – page 5, paragraph 3 addresses comment
7	• ***Comment accepted*** – page 15, paragraph 3 -6 and page 16, paragraph 1 addresses comment. In addition, the project proponents can offer the following explanation. • While it is true that dump valves can occasionally hang-up for a variety of reasons, retrofitting the controllers from continuous bleed to low bleed will not increase the likelihood of gas blow-by to a tank. Most dump valve hang-ups can be attributed to improper liquid set-point, incorrect instrument gas pressure, improper tuning parameters on a throttle controller, or dirty service causing the dump valve to not seat properly and leak gas by to the tank. These issues are not directly attributable to installing a low bleed pilot on a controller. In fact the installation of a low bleed pilot can reduce the likelihood of controller related upsets, as the low bleed pilot does not continuously vent gas and there is less likelihood of sweeping debris to the controller. In addition, by properly installing a low bleed pilot, the controller is essentially receiving a preventative maintenance overhaul and should now perform better than an older controller. The use of an installation QA/QC checklist will ensure that the retrofits are performed properly.
8	• ***Comment accepted*** – page 7, paragraph 6 and page 9, paragraph 5 addresses comment
9	• ***Comment accepted*** – page 7 & 8, EPA Lessons Learned from Natural Gas Star Partners report (http://www.epa.gov/gasstar/documents/ll_pneumatics.pdf) is used as a reference source for pneumatic controller population numbers • Also please see analysis following table. Population size triangulated using various source data • The EPA's 2002 survey (see Exhibit 5 in document "PD vendor info follow-up_1-27-09.pdf" which is a summary of an EPA report supplied to Verdeo) states that of the total population of pneumatic controllers, 65.9% were high-bleed controllers and 34.1% were low or no-bleed controllers (prevalent mostly in the distribution sector) • Based on data from EPA (Lessons Learned report and Gas STAR) it appears that conversion of high-bleed pneumatic controllers to low-bleed only accounts for less than 10% of the total industry population. • Therefore, despite being available for more than 15 years and despite the fact that 80% of the 1990 high bleed controllers could have been replaced with low bleed controllers, there has been limited adoption of the practice of retrofitting high bleed controllers with low or no bleed controllers
10	• ***Comment accepted*** – page 8, paragraph 6 addresses comment
11	• ***Comment accepted*** – page 9, paragraph 4 addresses comment
12	• ***Comment accepted*** – page 9, paragraph 4 addresses comment

13	• ***Comment accepted*** – page 12, paragraph 5 and page 13, paragraph 3 and Appendix C addresses comment • While higher actuation rates result in higher emissions for pilot operated controllers, the converse is true for continuous bleed controllers. Continuous bleed controllers do not bleed when actuating, therefore a higher actuation rate will mean lower overall emissions. Further, formula 3 discounts the actuation rate, therefore a project proponent that artificially inflated the actuation rate will in fact reduce the project baseline. • Additionally, attempts to manipulate the system by increasing the differential pressure are very unlikely to yield material improvements in emission reduction claims considering the work required and the risks associated with such manipulation o The methodology uses the lowest DP across the snap-acting control population to be conservative o This results in longer required actuation times and a greater baseline emissions deduction o Even if the project proponent were successful in manipulating the differential pressure, the manipulation would have to be extreme (10 times normal operating pressure) and will still only yield very small gains (~2.1%) ▪ For example, if there were two identical 2" Kimray control valves with ¼" port size, both producing 20 barrels per day: 1. DP of 200 psi = actuation rate of 3.1% 2. DP of 2000 psi = actuation rate of 1.0% ▪ Therefore the manipulation would decrease the actuation time by 2.1% (3.1%-1.0%) which will increase the actuation discount factor from 0.969 to 0.99 ▪ Therefore there is no significant advantage to artificial manipulation of differential pressure o Additionally, because the methodology uses the lowest differential pressure across the population, the project proponent would have to raise the differential pressure for every controller within the entire population of controllers. This will take significant amounts of time and effort and cost o Further, an unintended consequence of artificial backpressure is the risk of logging off a well due to fluid buildup in the well bore. Logging off a borehole, even for a short period of time will result in losses far in excess of any gains achievable through manipulations of the actuation rate
14	• The methodology is only applicable to existing <u>continuous</u> bleed pneumatic controllers. (see page 4, paragraph 3) • Pilot operated pneumatic controllers are not continuous-bleed pneumatic devices as they only vent to the atmosphere when purging the gas pressure on the diaphragm after dumping of the liquid
15	• ***Comment accepted*** – formulae changed
16	• Taking a straight percentage of the population being analyzed does not follow any know statistical guidelines. While there are no definitive rules on how to select a sample size when performing statistical analysis on a population, there is more empirical evidence to support a sample size of 30 than selecting a straight percentage of the population

	• Ideally, the project proponent would select an appropriate or acceptable Margin of Error they would want to achieve and then based on an estimate of standard deviation of the population and the confidence level calculate the needed sample size by using $\left[n = \left(\frac{1.96}{Margin\ of\ Error}\right)^2 \times \sigma^2\right]$. E.g. in the case of Appendix B for Cemco valves, should the project proponent have chosen an acceptable Margin of Error of 60 scfd, then the required sample size would have been 23-24 samples. However, this approach requires that the project proponent have some knowledge of the population's standard deviation prior to sampling. When this is not the case the project proponent is required to make assumptions and use rules of thumb around sample size. • The reason that 30 is often chosen as a sample size in various industrial applications is that there is empirical evidence to suggest that when the parent distribution is symmetrical and relatively short tailed, then the sample mean reaches approximate normality in accordance with the Central Limit Theorem which states that the mean of a sufficiently large number of sample measurements will be normally distributed even though the population from which the samples are taken may not normally distributed. Therefore beyond a certain size additional sample measurements are marginally useful in establishing the mean of the population.(http://www.statisticalengineering.com/central_limit_theorem.htm) • Additionally, a project developer may choose to sample greater than the minimum 30 prescribed samples in order to reduce the margin of error and achieve a higher baseline (see Appendix C.) Choosing a larger sample (n) will increase the degrees of freedom (n-1) of the sample and therefore reduce the *t-statistic* which will then reduce the margin of error $\left(t \times \frac{s}{\sqrt{n}}\right)$ (see Appendix B)
17	• ***Comment accepted*** –page 16, paragraph 1 addresses comment
18	***Comment accepted,*** that comment has been removed
19	• ***Comment accepted*** –page 17, table 4.0
20	• ***Comment accepted*** –page 18, paragraph 4 addresses comment
21	• See Reviewer comment 16 above
22	• ***Comment accepted*** –page 18, paragraph 6 addresses comment
23	• ***Comment accepted*** –page 18, Section 4.3.4
24	• ***Comment accepted*** – page 19, Section 4.4.1
25	• ***Comment accepted*** – page 20, Section 4.4.1
26	• ***Comment accepted*** –page 16, formula 11 & page 23 & 25 addresses comment
27	• ***Comment accepted*** –page 24, paragraph 1 addresses comment
28	• In Section 6.0, the project proponent will identify which high bleed controllers are to be retrofitted and assign each a uniquely identified number. Table 7-1 in the methodology summarizes the specific QA/QC requirements of the project proponent. The critical operating parameters for calculating emissions are described in Section 3.0 in detail. • After successfully retrofitting the controllers, the project proponent will ensure their proper operation as part of routine operations checks. Separator levels and controller functionality are monitored regularly. If a level is off setpoint, the controller pneumatic (instrument) gas pressure will be checked and adjusted if necessary and the functionality of the controller will be tested.

	• Upsets such as these largely depend on the quality of the instrument gas supply and nature of the operation and are issues independent of a controller retrofitting program. As described in Section 3.0, downtime is factored in the emissions calculations. • As described in Comment 7 above, retrofitting continuous bleed controllers with low bleed controllers can decrease the likelihood of controller related upsets.
29	• ***Comment accepted*** –page 26, paragraph 2 addresses comment
30	• ***Comment accepted*** –page 26, paragraph 4 addresses comment
31	• ***Comment accepted*** –page 27, table 7-1
32	• ***Comment accepted*** –page 32, Table A-2 & page 34 addresses comment

Reviewer Comment 9 – Supporting Documentation on Common Practice

1. **Analysis A – Total population size = 498,000**

The EPA in their report "Lessons Learned from Natural Gas STAR Partners" (http://www.epa.gov/gasstar/documents/ll_pneumatics.pdf) estimates the population of pneumatic controllers as follows:

- Production sector = 400,000 – used to control and monitor gas and liquid flows and levels in dehydrators and separators, temperature in dehydrator regenerators, and pressure in flash tanks
- Processing sector = 13,000 – used for compressor and glycol dehydration control in gas gathering/booster stations and isolation valves in processing plants
- Transmission sector= 85,000 – used to actuate isolation valves and regulate gas flow and pressure at compressor stations, pipelines, and storage facilities.
- Total population estimate = 498,000 (400,000+13,000+85,000)

2. **Analysis B – Total population size – 525,652**

Data:

Emissions from pneumatic devices = 50 Bcf/year (attached DOE article, pg 1 – Summary Box)
Emission from high bleed pneumatics = 140,000 cf/year (attached DOE article, pdf pg 1 – Summary Box)
Emission from low bleed pneumatics = 8,000 cf/year (attached DOE article, pg 1 – Summary Box)
Split between high and low bleed = 66% high bleed, 34% low bleed (see attached summary of 1992 EPA Report - PD vendor info follow-up_1-27-09.pdf)

Variables

Let the number of high bleed controllers = X
Let the number of low bleed controllers = Y

Calculations

$\frac{X}{X+Y} = 0.66$

(1)

Also

$140 \times X + 8 \times Y = 50{,}000{,}000$

(2)

Therefore from (1)

$$X = \frac{0.66}{0.34} \times Y$$

$X = 1.94 \times Y$

Substituting in (2)

$140 \times (1.94 \times Y) + 8 \times Y = 50{,}000{,}000$

Therefore solving:

$280 \times Y = 50{,}000{,}000$

$Y = 178{,}722$

And therefore:

$X = 346{,}930$

Conclusions:

There are approximately 178,722 low-bleed pneumatic devices and 346,930 high bleed pneumatic devices in the industry. This equates to a total of 525,652 pneumatic controllers (high and low bleed) through-out the industry.

3. Analysis C – Total population size – 400,311 in production sector only

Data

Number of production oil and gas wells = 774,295 (418,758+355,537) based on EIA data (http://www.eia.doe.gov/pub/oil_gas/petrosystem/us_table.html)

Activity factor for pneumatic controllers per well = 0.517 (page 5-8, page 43 of EPA Research and Development Report - Methane Emissions from the Natural Gas Industry – Volume 5)

Conclusions

Based on this data the estimated number of pneumatic controllers in the production sector was approximately 400,311 (both high bleed and low bleed)

ACR Review comments

No.	Page	Comment	Response
1	4	Under 1.2 - Applicability, suggest adding a bullet to indicate this methodology is applicable to conversions of both snap-acting and throttle type high-bleed pneumatic controllers.	• Comments accepted. Changes made – Page 4 in Section 1.2
2	4	"The project boundaries will be confined to all conversions implemented by a single project entity in a contiguous time frame." Clarify wording: it is really by a single Project Proponent, correct, and in a continuous (how defined?) time frame. Not necessarily contiguous project area, unless very broadly defined.	• Comments accepted. Changes made – Page 5 in Section 2.1 Paragraph 1
3	5	As is clear on page 5 and elsewhere in the document, this methodology really addresses estimating emissions in both the baseline (high bleed) and project (conversion to low bleed) cases. The net emission reductions will be the difference between these, statistically sampled. Why then is the document titled only "*Baseline* Monitoring Methodology"?	• Comments accepted. Methodology re-titled
4	5	Table suggests that CO2 released along with natural gas generally constitutes only about 5% (by volume? By CO2 equivalent, compared to methane? Should clarify). You do not explicitly say this is *de minimis.* Anyway perhaps better than claiming *de minimis* would be simply to say that ignoring CO2 emitted along with natural gas is conservative, since there is less natural gas and therefore less CO2 emitted in the project case than in the baseline case, but no credit is being claimed for this.	• Comments accepted. Changes made – Page 5 & 6 in Table 2.1
5	6	Can you add any detail on how it is possible to predict, without looking at each one, what proportion of controllers will have reached the end of their useful life before the end of the crediting period? And of those that are assumed to have reached the end of their useful life, are *all* conservatively assumed to be replaced by low-bleed controllers in the baseline, so no further credits?	• It is not possible to determine the end of a controller's useful life without very thorough individual examination • However, controllers tend to have very long useful lives driven by the fact that they can be easily and economically refurbished • It is common practice for operators to refurbish or overhaul controllers to restore them to their "as new" condition using cheap manufacturer supplied refurbishment kits • This practice is driven by the low cost of the refurbishment kits when compared to the high costs of replacement • This has meant that the high-bleed controllers have an inordinately long useful life as

			demonstrated by the fact that 66% of all controllers are still high bleed controllers despite low and no bleed controllers being readily available • The methodology does however make provision for the scenario where if a controller would have been replaced during the crediting period it will be excluded from the project boundary
6	6	"Project proponents utilizing this methodology should consult the latest version of the American Carbon Registry's Standard Technical Hybrid Additionality Test." Change wording to "…should consult the latest version of the American Carbon Registry's Technical Standard" (which includes the hybrid additionality test).	• Comments accepted. Changes made – Page 6 in Section 2.3
7	7	"The project proponent must demonstrate that there is no existing *or proposed* regulation…" ACR's regulatory surplus test does not include proposed regulations; a project activity need only be in excess of regulations currently in effect in order to pass this test. Of course at the time of applying to renew its crediting period, if regulations have changed, the activity may no longer be regulatory surplus and may not be eligible. But for now look only at current regulations.	• Comments accepted. Changes made – Page 7 in Section 2.3, Paragraph 3
8	7	The language addressing common practice in the industry is excellent overall. It may be useful to state up front, before getting into all the details, that: the penetration rate of replacement of high with low bleed controllers is believed to be less than 10%, based on information provided below…	• Comments accepted. Changes made – Page 7, Paragraph 7
9	8	Strongly suggest you delete the sentence "Furthermore, these operators are skeptical that they will receive credit for any voluntary emission reductions ahead of a resolution by the U.S. Congress." Part of the value of registering these reductions on ACR is that it will significantly increase the chances of early action recognition, and ACR is working hard to make that the case.	• Comments accepted. Changes made – Page 9 in Paragraph 1
10	9	For meeting the implementation barriers component of the ACR's three-prong additionality test, financial (or possibly institutional) barriers seem the most likely pick. To strengthen the demonstration of financial barriers, two suggestions: • Methodology could include a comparison of IRR of the high- to low-bleed conversion with and without carbon credit revenues. • Methodology could more explicitly address why cost savings from reducing natural gas losses are not sufficient financial incentive for operators to be making these	• Comments accepted. Changes made – Page 9, Paragraph 6

		conversions. See for example the DOE article you attached, which talks about a payback period on the order of months, I believe only from the gas savings. Are the real barriers more institutional?	
11	10	"Quantification of project emissions will require baseline emissions…" I think this is not what you mean. Rather, "Quantification of net emission reductions will be based on the difference between baseline and project emissions, both statistically sampled and estimated at the conservative end of the 95% confidence interval."	• Comments accepted. Changes made – Page 10 in Section 3.1
12	17	ACR Technical Standard states that non-forest projects will have a crediting period of 10 years or less. You are not explicit here about crediting period. You do discuss the verification interval (annual). For other project types, we are requiring that verification at least once every five years include a site visit. You could apply that here and say that once every five years, the verifier will visit sites to check performance of, and perhaps subsample, a portion of the converted controllers. Overall, I would like to see a little more clarity on exactly what the Project Proponent will measure (this is pretty clearly delineated in Appendix C) vs. what the verifier needs to measure (similar things but a subsample). Some of this may be more appropriate to your GHG Project Plan, than this methodology document.	• Comments accepted. Changes made – Page 4 in Section 1.2
13	25	I do not see why the number of pneumatic controllers replaced would be an uncertainty. Yes you may only sample a subset of those replaced, but surely you know how many were replaced.	• Comments accepted. "number of replaced controllers" removed as an uncertainty
14	26	Excellent to take the conservative approach of using the lower bound of the 95% confidence interval for baseline emissions, and the upper bound for project emissions. Both can of course be narrowed by more intensive sampling.	• Comments accepted
15	32	Here you could address more explicitly how stratification (e.g. by manufacturer and model) may be used to reduce the sample size required to achieve a targeted confidence interval.	• Comments accepted. Changes made – Page 31, Paragraph 1
16	33	In the last row of the table, where you give the upper and lower bounds of the 95% confidence interval, suggest saying "437 to 584" and "507 to 751" rather than using commas.	• Comments accepted. Changes made – Page 33 Table
17	34	The wording is slightly imprecise. More samples do not really give "a higher baseline emissions estimate and a lower project emissions estimate" as you say here. Rather, more samples mean a smaller margin of error at 95% confidence, which means a higher lower bound for the baseline emissions and a lower upper bound for the project emissions, resulting in greater net emission reductions.	• Comments accepted. Changes made – Page 34

Follow-up Peer Review Comments

Number	Comment	Responsible
1	Page 1, Section 1.1, ¶ 2: Revise second and third sentences as follows, "Before 1990, pneumatic controllers were designed with generally high bleed rates. Increasing awareness of the extent of wasted resources and potential environmental hazards resulting from higher bleed rates…" This change is proposed for accuracy, given that the original 1996 GRI Study survey in 1992 found many pneumatic devices with no bleed or bleed rates meeting the EPA coined definition of "low-bleed." The term "low bleed" was not used in any part of the 1996 GRI Study report, suggesting that it was not a term defining particular design intent.	• Comments accepted. Changes made – Page 3, Paragraph 2
2	Page 5, ¶ 1, last sentence: This sentence makes it clear, per peer review comments, that the oil and gas industry sectors intended to be covered by this methodology are production and gas transmission. However, Table 2.1, CH4 emission Description, makes reference to production facilities, but makes no mention of transmission facilities. As the vast majority of pneumatic controllers are in transmission compressor stations, it makes sense to provide a description unique to them.	• Comments accepted. Changes made – Page 5, Table 2.1
3	Page 5, ¶ 4: This paragraph slants the background toward focus ONLY on the emissions from pneumatic devices. The rebuttal to the Peer Review comments 7 and 28 suggest that "upsets" of the process are caused by factors independent of the pneumatic devises. This is a conclusion that a methodology should not assume. Rather, this document may make a point in the background that process upsets leading to emissions of GHG can be caused by many factors unrelated to pneumatic control devices, but the project data should document such upsets in the baseline and project, and draw conclusions as to the causes. This allows a verifier to ascertain with data and facts that the pneumatic devices are not the cause of upsets. There is growing data and anecdotal evidence that pneumatic device mal-functions lead to excessive emissions; however, it is unclear whether those malfunctions and emissions are caused uniquely by low bleed versus high bleed devices. The recent (2009) Texas Commission for Environmental Quality (TCEQ) study of production tank emissions and 2006 Houston Advanced Research Center (HARC) study on the same source both found about 50% of production tanks had emissions far exceeding flashing of gas from gas-oil separator conditions. While data was not gathered in either study to conclusively identify separator dump valve failure (stuck open, vortex, too low level setting) it is believed by industry experts that something like this is the cause of those excessive emissions. Natural Gas STAR transmission Partners have reported in technology transfer workshops that they found excessive condensate tank emissions caused by scrubber dump valves sticking open	• Comments accepted. Changes made – Page 15, Section 3.3

	and blowing high pressure gas through the dump valve in into the condensate tank. With this ample evidence that pneumatic control devices can be involved with excessive emissions outside the boundary of just the devices themselves, it makes sense that the document recognizes this issue and indicates how the project will establish evidence in the baseline and project that demonstrates that the choice of low bleed devices is NOT causing increased emissions.	
4	Page 12, ¶ 1: The focus on a "basin-by-basin approach" is uniquely applicable to production. As it is made clear in the background that this methodology applies to transmission as well as production, there should be either a generalization of the approach or a companion paragraph dealing specifically with transmissions, as this paragraph deals with production. Given that gas gathering/booster stations are commonly controlled with natural gas powered pneumatic controllers, and they straddle the production, processing and transmission sectors of the industry, they should be called out as well.	• Comments accepted. Changes made – Page 12, Section 3.1.1
5	Page 13, Section 3.1.1: An additional paragraph inserted at the end of this section, before Section 3.1.2, could describe differences in the above methodology as applied to gas gathering and transmission compressor stations, with particular focus on compressor scrubber dump valves.	• Comments accepted. Changes made – Page 13, Section 3.1.1
6	Page 13, Section 3.1.2, ¶ 2: This paragraph is out of place; it belongs in the background section, not the quantification methodology section, as it provides no explanation of how to quantify emissions (rather, it continues a general theme of proselytizing in favor of the low emissions technology rather than demonstrating the low emissions with baseline and project collected data and analysis).	• Comments accepted. Changes made – Paragraph deleted
7	Page 15, ¶ 1-5: A methodology should not be drawing conclusions like these, preempting a verifier from arriving at such conclusions based on data and analyses comparing the background with the project. This reads like a PDD responding to issues of leakage rather than guidance as to what issues should be addressed: e.g. provide project evidence that pneumatic gas pressure does not increase as a result of conversion to low bleed, causing increased fugitives. Leakage discussion should point out other possible avenues for increased emissions, such as system upsets, etc, and require evidence in the baseline and project that such emissions are not caused by the project.	• Comments accepted. Changes made – Page 15, Section 3.3
8	Page 16, Table 4.0: The column heading "Manufacturers Specifications" is not sufficient. This should be footnoted with specific data, such as pneumatic gas supply pressure. This same column should be reproduced in the "Retrofit info" heading, including similar footnoted manufacturer specifications. Alongside this manufacturer's recommended specification column should be actual field data on each instrument, showing actual operating data (i.e. actual supply gas pressure). This provides the verifier data on which to draw his opinion that the project is not	• Comments accepted. Changes made – Page 17, Table 4.0

	gaming the emissions with too high supply gas pressure in the baseline and too low in the project. There should be other instrument parameters useful to a verifier, such as proportional band and low liquid level settings in the baseline and project provide the verifier evidence as to whether the pneumatic controller is being activated unnecessarily frequently in the baseline, or the liquid level in a scrubbers and separators are not set so low as to cause gas blow-by and excessive emissions elsewhere in the process.	
9	Page 18, last paragraph in Procedure 3: The reference to "end-of-life" is probably not something that any operator would know. It would be better to refer to "instrument overhaul" (and define that term such that it applies to refurbishing the internal elements of the controller: o-rings, seals, needle valves, orifices, etc; the parts that deteriorate in service and need periodic replacement). This document should require field data to be collected in the baseline that shows the frequency of such major overhauls and the last overhaul of each instrument in the baseline emission factor determination. This is important in that pneumatic device emissions (bleed rates) may be highest just before an overhaul, and the cost of such an overhaul can be avoided by making replacement at that time, slanting the economics if not accounted for.	• Overhauls are conducted in reaction to failure conditions and as such it is not common practice for operators to follow a planned overhaul schedule for pneumatic controllers • If, in the rare case that, an operator does follow a planned pneumatic controller overhaul schedule, the representative sampling approach employed to determine the baseline and project emission factors will mirror the entire controller population and reflect any variability in emission rates that could be attributable to overhaul status (i.e. controllers that have just been overhauled, controllers that are about to be overhauled, controllers that have never been overhauled during the entire operation life and various stages in between) • Estimating the baseline from a sample comprising only controllers that have been overhauled will violate the validity of the statistical analysis and void the sample and an accurate representation of the population • Further, requiring that project proponents document past overhauls will severely limit the use of this methodology in light of the fact that operators do not have an overhaul schedule
10	Page 19, Section 4.3.5: There seems to be some mis-understanding of the review comments pertaining to pneumatic gas supply pressure and process pressure drop across the control valve. Supply gas pressure should be recorded and compared with manufacturer's specifications in the	• Comments accepted. Changes made – Page 19, Section 4.3.5

	baseline and project data.	
11	Page 21, top, right-hand table cell: Document may want to reference National Institute of Standards and Technology (NIST) traceable calibration gases.	• Comments accepted. Changes made – Page 23, Table 4.5
12	Page 20, Section 4.4.3: This review opinion suggests adding another section to 4.0 Data Collection and Monitoring, outlining the use of calibrated bagging. The CDM Methodology Panel recently approved adding calibrated bagging to Approved Method 23 (AM0023), which applies to fugitive and vented emissions. This is a very inexpensive method that this reviewer recommends adding to this methodology. It is not a NECESSARY addition, but potentially useful.	• Comments accepted. Changes made – Page 20, Section 4.4.3
13	Page 25, Section 6.0, ¶ 2: A methodology should indicate what data is to be collected and compared to provide evidence that something is or is not occurring. It is necessary to provide a verifier with field collected data in the baseline and project to draw his opinion.	• Comments accepted. Changes made – Page 21, Section 4.5
14	Page 25, Section 7.0, ¶ 3: Recommend editing as follows: "These potential sources of uncertainty include, but are not limited to: emissions factors … in Table 7-1. Other factors as stated above (e.g. equipment overhaul frequency, instrument settings) …" [edits shown underlined].	• Comments accepted. Changes made – Page 26, Paragraph 1
15	Page 26, ¶ 1: Edit sentence as follows: "Operating outages in the baseline and the Project will be recorded, if and when they occur through the contribution …"	• Comments accepted. Changes made – Page 25, Paragraph 5
16	Page 26, Table 7-1: This table needs to be expanded with a section on "Instrument Parameters" to supplement the "Operating Parameters" section. The first "QA/QC Procedures Risk Mitigation" paragraph under Operating Parameters should be supplemented with paragraphs discussing Overhauls, Process Upsets with Frequency and Magnitude." The second paragraph presently under Operating Parameters should be included in the new Data Parameter section on Instrument Parameters, as Actuation Rate is an instrument setting parameter. This should be supplemented with other instrument parameters such as Proportional Band and Low Liquid Level in dump valves and liquid level controllers.	• Comments accepted. Changes made – Page 27, Table 7-1