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RESERVE

SUMMARY OF COMMENTS & RESPONSES DRAFT NITRIC ACID PRODUCTION PROJECT PROTOCOL VERSION 2.0

2 sets of comments were received during the public comment period for the Climate Action Reserve (Reserve) draft Nitric Acid Production Project Protocol (NAPPP) Version 2.0. Staff from the Reserve summarize and provide responses to these comments below.

The comment letters can be viewed in their entirety on Reserve's website at <http://www.climateactionreserve.org/how/protocols/adopted/nap/nitric-acid-production-project-protocol-revision/>

COMMENTS RECEIVED BY:

1. ClimeCo (**ClimeCo**)
2. Tecnologias Ambientales Saure SA de CV (**TAS**)

General Comments

1. The term “ammonia to air ratio” as used throughout the protocol is misleading, since the formula $\text{NH}_3/(\text{NH}_3 + \text{air})$ does not actually yield the ammonia to air ratio, but the fraction of NH_3 in the inlet gas stream. **(ClimeCo)**

RESPONSE: The Reserve has elected to maintain the current usage of the term “ammonia to air ratio” within the NAPPP V2.0. Through consultation with industry stakeholders, it was determined that, although it may be a slight misnomer, this is the common usage of this term within the nitric acid industry. In addition, this usage is consistent with the terminology used by the Clean Development Mechanism (CDM).

2. ClimeCo recommends that the Reserve add a comment regarding potential regulatory requirements under the PSD Tailoring Rule. If a facility is subject to the PSD Tailoring Rule and is required to install Best Available Technology (BAT), the facility should be eligible to receive CRTs for emission reductions in excess of the PSD BAT requirement. For instance, BAT may be defined as 80% abatement. If a facility exceeds this and achieves 99% abatement, they should be eligible for the 19% they are over controlling. This is an important point for facilities installing more expensive tertiary control technologies. **(ClimeCo)**

RESPONSE: Noted. We will clarify protocol policies once EPA’s regulatory requirement has been fully defined.

2.2 Project Definition

3. ClimeCo is requesting the inclusion of a Primary Abatement definition under Section 2.2. Primary Abatement is defined in Table 2.1, but is not included under a formal definition heading in the subsequent section. Reduction of N_2O by a modification of the ammonia oxidation process and/or catalyst is a recognized form of nitrous oxide reduction. Because these modifications occur within the AOR itself, the baseline and project calculations can be transferred from the methodology as applying to secondary abatement projects. Use of the word “secondary” with regards to calculations would have to be replaced by “primary or secondary” throughout the protocol. **(ClimeCo)**

RESPONSE: The inclusion of primary abatement in the list of potential N_2O abatement measures in Table 2.1 is not meant to imply its inclusion as an eligible project type in Section 2.2 (Project Definition). Primary abatement projects could present a number of methodological challenges, in particular because the primary catalyst is changed with every new campaign and producers generally strive to optimize nitric acid production. A primary abatement project would be closely linked to the process that creates nitric acid itself and it would therefore be a challenge to establish standardized baseline estimates for N_2O production. Because of the significant methodological work that would be required we are not including this option in the protocol at this time.

4. NSCR for NO_x abatement consumes considerably more energy (fuels) compared to alternatives (both an economic and environmental disadvantage). Project developers with NSCR systems interested in reducing N_2O under the protocol may find it attractive to replace the NSCR with a combined $\text{DeNO}_x/\text{DeN}_2\text{O}$ abatement system, such as Uhdes Envinox or a combined SCR / tertiary DeN_2O (from tech providers like CRI catalysts, etc). In such cases, an N_2O removal

baseline could be established *ex-ante* (before project implementation) considering normal operating conditions for both the nitric acid plant and the NSCR unit (based on historical data). The baseline either as % removal or absolute N₂O reduction (whatever is more conservative) could be applied/included on the tertiary abatement protocol emission reduction calculations while keeping the continuous monitoring of N₂O upstream and downstream of the abatement system. **(TAS)**

RESPONSE: The scenario where a NAP with an existing NSCR unit would remove that unit and replace it with a different technology was not considered in the development of this protocol update. This scenario would raise new additionality questions, and would require further research prior to methodology development. The Reserve may consider this suggestion for a future update to the NAPPP.

5.1.1 Determination of HNO_{3,MAX} and HNO_{3,MAX,scaled}

5. ClimeCo is questioning the removal of the reference for hourly from Section 5.1.1 which allowed the ability to determine an hourly HNO_{3,MAX,scaled} in Secondary projects. Hourly was referenced in the Errata for Secondary and Tertiary projects, and is still referenced in Section 5.2.1 of V2.0 for Tertiary projects. It is the opinion of ClimeCo that the use of hourly would lead to a more accurate calculation and should be allowed for secondary projects. **(ClimeCo)**

RESPONSE: Agreed. The intention of this update was for the language in Sections 5.1.1 and 5.2.1 to be the same. The removal of this language from Section 5.1.1 was in error and it will be included in the final draft of NAPPP V2.0. The equation for HNO_{3,MAX,scaled} is structured around daily HNO₃ production based on stakeholder feedback to the effect that hourly HNO₃ production data were generally not available.

5.1.2 Allowable Operating Conditions

6. Please provide an explanation of the meaning of the phrase “value exceeded by 2.5% of the observations” as it relates to the statistical analysis of historical data for determining the AOCs. In the context of the rest of the paragraph it may not add any clarity. **(TAS)**

RESPONSE: Agreed. This phrase is meant to clarify the relationship of the new minimum and maximum temperature and pressure values to the dataset as a whole. The upper and lower 2.5% of observations are to be considered as outliers and are to be removed from the dataset, leaving new minimum and maximum values. However, the rest of the paragraph from which this phrase was taken makes this point clear enough, and the addition of this parenthetical phrase could cause confusion. It will be removed from the final draft of NAPPP V2.0.

5.1.3.1 Baseline Sampling Period

7. The guidance for the baseline sampling period instructs that data values for N₂O emissions and HNO₃ production must not be included if they are recorded after the NAP has reached its Campaign Production Volume cap (CPV_{cap}). Shouldn't the associated hours to the production that exceeds the cap also be eliminated from the EF_{BL} calculations? **(TAS)**

RESPONSE: Agreed. For baseline campaigns where the HNO₃ production exceeds

CPV_{cap}, the operating hours should not be counted beyond the hour in which CPV_{cap} was exceeded. This was the intent of this section in both V1.0 and V2.0 of the NAPPP. This section will be expanded in the final draft NAPPP V2.0 to make sure that the procedure is clear.

5.2.3 Quantifying Baseline Emissions

8. The word “immediately,” in reference to the location of the CEMS for monitoring tail-gas in tertiary projects, prevents employment of the monitoring systems in more accessible or available areas of the tail-gas line, e.g. installation on the opposite side of the tail-gas expansion turbine. As there is no threat to the creation or destruction of N₂O after the absorption tower, and tertiary systems are permitted to be employed on either side of the tail-gas expansion turbine, ClimeCo suggests that this subpart be modified to allow monitoring of baseline N₂O concentration at any point between the absorption tower and the tertiary catalyst or NSCR. **(ClimeCo)**

RESPONSE: Agreed. The insertion of the word “immediately” in this context was not intended to inhibit such flexibility as is described in the comment. Staff has determined that the inclusion of this term does not necessarily add value to the guidance, so it will be removed from the final draft of NAPPP V2.0.

6.2.1 Frequency of Testing

9. The calibration error test requirement for the analyzer and flow meter was changed from daily to quarterly.

A facility cannot make adjustments as required on a daily basis without performing error tests. These are conducted pursuant to Part 75 and should still be required on a daily basis. As CARB is currently considering adopting the Nitric Acid Production Project Protocol, it is suggested that the Reserve increase its accuracy standards to ensure that it will meet CARB/USEPA Part 75 criteria. Reducing these CEMS calibration tests can lead to false reporting and the loss of quarterly data. Strengthening this requirement would increase reporting accuracy for both the Reserve’s standards and further align itself for potential CARB inclusion. **(ClimeCo)**

RESPONSE: Calibration error testing on the flow meter (designed as a QA/QC procedure for power plants under 40 CFR Part 75) is not necessary for nitric acid plants on a daily basis, as the operating conditions at nitric acid plants are considerably more stable and the flow meter equipment recommended by manufacturers for nitric acid facilities would not necessarily have the capability to conduct daily assessments. Therefore, the Reserve has changed the required frequency to quarterly. This does not weaken the accuracy of the data to be used for quantifying emission reductions. The calibration error test for the N₂O analyzer is still required on a daily basis, which will be reflected in the final draft NAPPP V2.0.

10. The calibration error test requirement for the analyzer and flow meter was changed from daily to quarterly.

Although, as per the latest errata and clarification, the calibration error test for the flow meter has been re-scheduled from a daily to a quarterly frequency, the calibration error test for the

N₂O concentration analyzer is still required on a daily frequency (nevertheless the daily calibration test does not appear on the list of daily activities anymore). Perhaps for sake of clarity QA/QC activities shall be described separately for the flow meter and N₂O analyzer.
(TAS)

RESPONSE: Agreed. The intention of the previously-issued Errata and Clarification concerning the calibration error test was that it should apply to the flow-metering component of the CEMS only, and not to the N₂O concentration metering component. The final draft of NAPPP V2.0 will be updated to reflect that calibration error testing on the flow component of the CEMS shall be conducted on a quarterly basis, while calibration error testing on the N₂O analysis component of the CEMS shall be conducted on a daily basis.

7.4 Reporting Period and Verification Cycle

11. The draft protocol added language that “[a] reporting period must represent a full campaign...” ClimeCo requests the modification of the Protocol’s definition of a reporting period to include sub-campaign verifications. These shorter verification periods are important to both the nitric acid industry and the Reserve. Because CRTs are issued under this protocol in such large volumes, flexibility is necessary for the convenient sale of credits upon buyer demand. This becomes increasingly important as the implementation of AB32 approaches and, assuming this protocol will be accepted under AB32, the demand for nitric acid offsets by covered entities will increase. In order to provide flexibility and convenience to both the buyers and sellers of CRTs, the Reserve should allow sub-campaign verifications as it will increase the number of CRT transactions. For instance, if a verification period spans multiple calendar years, sub-campaign verification would allow a project developer to issue vintage year “x” credits during year “x”, rather than in the subsequent year. This would allow facilities with a need to meet their year “x” obligations immediately to purchase CRTs much more easily. Additionally, sub-campaign emissions reductions calculations are conservative relative to full-campaign numbers and also incur supplementary verification costs. ClimeCo has constructed and quantitatively analyzed many different operating scenarios, which prove the conservative nature of sub-campaign verifications. These were subsequently submitted to the Reserve under separate cover.
(ClimeCo)

RESPONSE: In response to this comment the Reserve has carried out its own modeling and analysis of the potential risk of over-crediting presented by sub-campaign verifications. The results of this analysis show that there is a real, albeit low, risk of overestimating the emission reductions over a full campaign if the quantification is divided into multiple reporting periods. This risk arises from the statistical operations that are performed on the data prior to quantification and the possibility that data in one time period of a campaign may be significantly different from data in another period of the same campaign.

However, it was also determined that when overestimation occurs it is unlikely to be very significant. Thus, the following procedure has been developed to allow for sub-campaign verification, while controlling for this low risk of overestimation.

If a project developer chooses to verify data for a reporting period that ends prior to the completion date of the campaign, CRTs will be issued for 95% of the total emission

reductions quantified for that reporting period. Upon completion of the full campaign, the project developer must quantify the emission reductions for the entire campaign following the guidance in the protocol. CRTs will then be issued for the total quantified emission reductions over the entire campaign, minus any CRTs issued in prior reporting periods during that campaign. In this way, the project will ultimately be issued the same quantity of CRTs whether the verification for the campaign is conducted for a single or multiple reporting periods.

This approach is conservative because if a project developer fails to complete the final verification for a campaign, the withholding of CRTs for earlier reporting periods will ensure that the project emission reductions are not overestimated.