RFQ – 100199 - APPENDIX A - TECHNICAL SPECIFICATIONS

CONTINUOUS EMISSION MONITORING SYSTEM (CEMS) CALIBRATION GASES

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1. GENERAL

JEA is soliciting bids for CEMS Calibration gases to be purchased and delivered under this specification. JEA operates three (3) steam generating utility boilers, two (2) Heat Recovery Steam Generating (HRSG) combined cycle combustion turbine units and five (5) simple cycle combustion turbines, all of which are stationary sources, at the following locations within the city limits of Jacksonville, Florida:

1.1. Northside Generating Station (N01; N02 & N03; Steam units)
4377 Heckscher Drive
Jacksonville, FL 32226
(904)-665-6702 Control Room

1.2. Kennedy Generating Station (KS CT7 & KS CT8; Simple Cycle CT's)
4215 Talleyrand Avenue
Jacksonville, FL 32206
(904)-665-4891 Control Room

1.3. Brandy Branch Generating Station (BB CT1, Simple Cycle CT; BB CT2 & BB CT3, HRSG units)
15701 West Beaver Street
Jacksonville, FL 32234
(904)-665-6602 Control Room

1.4. Greenland Energy Center (GEC 1 & GEC 2; Simple Cycle CT's)
6850 Energy Center Drive
Jacksonville, FL 32256
(904)-665 4003 Control Room

2. ABBREVIATIONS AND REFERENCES

2.1 **NIST –** National Institute of Standards and Technology.

2.2 **SRM –** Standard Reference Materials (NIST Certified).

2.3 **NTRM** – NIST Traceable Reference Materials (NIST Certified).

2.4 **GMIS** – Gas Manufacturer's Intermediate Standard (Industry Certified).

2.5 **EPA Protocol Gas Tolerance –** the tolerance for all EPA Protocol Gases specified herein shall be in accordance with EPA/600/R-12/531 and 40 CFR 60, 72 and 75.

2.6 **Responsible JEA Manager** shall be the JEA Manager, Process Controls.

2.7 **CEMS:** Continuous Emission Monitoring System.

2.8 **RESD**: Regulatory & Environmental Services Division, City of Jacksonville, FL.

2.9 **FDER/DER**: State of Florida Department of Environmental Regulation.

2.10 **US EPA/EPA**: United States Environmental Protection Agency.

2.11 **Cylinder Designations:** Aluminum cylinders which satisfy the following DOT specifications shall be delivered at a pressure of 2000 psi at seventy degrees Fahrenheit:

2.11a. **30AL -** Aluminum cylinders which satisfy DOT specification 3AL-2015 and are approximately eight inches in diameter and forty-eight inches high (excluding cylinder cap and valve). Approximate internal volume is 29.6L. Alternate designation is 150A.

2.11b. **16AL -** Aluminum cylinders which satisfy DOT specification 3AL-2216 and are approximately seven inches in diameter and thirty-three inches high (excluding cylinder cap and valve). Approximate internal volume is 15.7L. Alternate designation is 80A.

2.11c. **7AL -** Aluminum cylinders which satisfy DOT specification 3AL-2216 and are approximately seven inches in diameter and sixteen inches high (excluding cylinder cap and valve). Approximate internal volume is 6.7L. Alternate designation is 33A.

2.12 **EPA/600/R-12/531** (May 2012 or latest revision) – Final Report: EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards.

2.13 **40 CFR 60** – Title 40; Code of Federal Regulations; Part 60; Standards of Performance for New Stationary Sources.

2.14 **40 CFR 75** – Title 40; Code of Federal Regulations; Part 75; Continuous Emission Monitoring.

2.15 **40 CFR 72** – Title 40; Code of Federal Regulations; Part 72; Permits Regulation.

2.16 **Zero Air Material** – A calibration gas certified by the Vendor to be in compliance with 40 CFR 72, Subpart A, paragraph 72.2.

3. CONTRACTOR RESPONSIBILITIES

3.1 Calibration gases to be purchased and delivered under this specification shall be on an as needed basis at the discretion of the responsible JEA Manager. Contractor shall deliver the quantities ordered to the location specified within thirty days after receipt of order unless other arrangements are agreed upon. Contractor shall also supply a Certificate of Analysis conforming to EPA certification and labeling requirements as described in EPA/600/R-

97/121 (May 2012 or latest revision) and/or the parameters described in paragraph 3.1a and 3.1b, below, for all individual cylinders ordered regardless of gas specification. A duplicate original copy of each Certificate of Analysis for all gases ordered and delivered under this specification shall be mailed to the appropriate JEA Responsible Manager at the addresses cited in Paragraph 1 of this specification. Invoices for all gases delivered shall itemize each cylinder delivered and contain, at a minimum, the unique cylinder identification (serial) number and the cylinder expiration date.

3.1a Per the Institute of Clean Air Companies (ICAC), the following summarizes the minimum data and information that should be included in a certificate of analysis to ensure adherence to requirements of a protocol gas as defined by the U.S. Environmental Protection Agency (U.S. EPA). Therefore, JEA, by inclusion in this specification, requires each Certificate of Analysis to include, but not be limited to, the following information:

1. Cylinder identification number (serial number).
2. Certified concentration within three digits of the standard (ppm or % -mole basis).
3. Balance gas in the standard mixture.
4. Cylinder pressure at time of certification.
5. Assay/Certification date.
6. Certification expiration date.
7. Reference standard identification (standard type [SRM, PRM, NTRM, or GMIS], cylinder number and concentration).
8. Statement that the assay/certification conforms to EPA protocol guidelines.
9. Analytical method used.
10. Laboratory identification number (laboratory name, laboratory address).
11. Chronology of previous EPA protocol gas certification for this cylinder.
12. Analytical accuracy of the mixture.
13. Statement that certification was corrected for interference's (if applicable).
14. Ensure the concentration certified by the Vendor matches the cylinder label value.

3.1b JEA further requires the following additional information to be included with each Certificate of Analysis:

1. Gas analyzer identification including make, model, serial #, measurement principle and last multipoint calibration date.
2. Correlation coefficient that is a measure of the quality and accuracy of the calibration curve utilized in the EPA protocol gas certification.
3. Expiration dates of the reference standards.
4. Total oxides of nitrogen reported for nitric oxide protocol gases.

3.2 All JEA CEMS equipment is required for pollutant monitoring and must be maintained in accordance with 40 CFR 60 and 40 CFR 75. Therefore, the preparation of all calibration gases specified herein regardless of application shall utilize and be in compliance with EPA/600/R-12/531 (May 2012 or latest revision) and all pertinent CFR's governing the

preparation and utilization of CEMS calibration gases. JEA reserves the right to request and review all applicable Contractor calibration and traceability records regarding compliance with that EPA Protocol Standard and to make site visits to the Contractor's manufacturing facility.

3.3. On an "as requested" basis, the awarded bidder shall provide the JEA Responsible Manager or their designated representative a return shipping carrier and account number to facilitate the shipment and payment for the return of empty cylinders. As an alternative, the awarded bidder has the option of utilizing his own resources (e.g. delivery vehicle) to retrieve empty cylinders. The JEA Responsible Manager or their designated representative shall notify the awarded bidder when empty cylinders are ready for retrieval. The awarded bidder shall be given five working days to accomplish retrieval. At the conclusion of the five working day period, all daily cylinder rental charges (i.e. demurrage) for those cylinders shall cease to apply. Also, refer to Paragraph 11.1.

3.4 Certificates of analysis shall also be furnished to JEA in either of the following two ways:

1. Posted on a Contractor website accessible to JEA.
2. E-mailed to a JEA provided E-mail address in an "Adobe PDF" format.

3.5 During the time period of this specification, should the specified components of any gas described herein require modification, the awarded bidder shall comply with a written request by JEA to modify the components with an applicable price adjustment, if necessary.

3.6 During the time period of this specification, the Contractor shall maintain participation in the US EPA Protocol Gas Verification Program. The Contractor shall also be certified and/or meet any other criteria to verify compliance with US EPA guidelines, rules, regulations, etc. JEA shall have the right to require the Contractor to provide proof of such mandated requisite participation and/or certification and/or compliance to JEA prior to any purchase made under this specification.

4. CONTRACT COORDINATION

4.1 The JEA Responsible Manager or their designated representative shall be the primary contact and authorization for calibration gas cylinder purchases, deliveries, and return of empty cylinders.

4.2 For all contract matters regarding the JEA Northside Generating Station facility the JEA Responsible Manager is Donna Genslinger, Manager, Process Controls; 4377 Heckscher Drive, Jacksonville, Fl. 32226. (904–665–7845).

4.3 For all contract matters regarding the JEA Kennedy Generating Station or Greenland Energy Center facilities the JEA Responsible Manager is Roy Knight (904–665–8370) or Mike Parrish (904–665–7979).

4.5 For all contract matters regarding the JEA Brandy Branch Generating Station facilities the JEA Responsible Managers are Kristin Anderson (904–665–7841) or Mike Parrish (904–665–7979).

5. METHOD OF AWARD, PURCHASE, AND ORDERING OF GAS

5.1 It is the intent of JEA to enter into a contractual relationship with a full service supplier, therefore, **all** Bid Items must be bid upon.

5.2 The Bid Workbook, found in Appendix B, lists all of the Bid Item numbers for this solicitation. **The bid price that is inputted for each bid item listed in the Bid Workbook shall be the total "all inclusive" cost to deliver calibration gas cylinders to each plant location listed and for the return of empty cylinders to the Vendor's facility.** The Vendor shall include all shipping charges, and any other applicable charges, necessary for the delivery of calibration gases. Separate bid sections have been provided for daily rental charges (i.e. demurrage) of Vendor owned cylinders and for the re-certification of any cylinder not utilized prior to its expiration date.

5.3 The method of award shall be to the lowest responsive and responsible bidder(s) based on the "Grand Total" dollar amount on page 1 of the Bid Workbook and quality of the reference standard and purity utilized for each calibration gas to be provided for all items listed in paragraphs seven through ten, as appropriate, of these specifications. JEA reserves the right to make multiple awards.

5.4 The method of purchase and subsequent payment may, at the sole discretion of JEA, be accomplished by any financial mechanism available to JEA during the contract period of this specification: (e.g. Contract, Purchase Order, Purchasing Card, etc.)

5.5 The method of ordering shall be by JEA bid item number and specified gas component. Manufacturer's codes or other means of product identification utilized by manufacturers **will not** be considered for usage by JEA when ordering.

6. CALIBRATION GAS BID ITEMS – ALL GENERATING STATIONS – GENERAL:

6.1. For the purposes of bid evaluation it is the intent of JEA to obtain the highest quality EPA Protocol calibration gas at the most competitive price. Therefore, all EPA Protocol calibration gases to be provided in accordance with this specification shall have Reference Standards which are in accordance with all applicable NIST and EPA requirements.

6.2. He and CH_4 calibration gas shall conform to the following minimum standards:

1. He shall be 99.999% pure.
2. CH_4 shall be 99.97% pure.

6.3. "Balance N_2" calibration gas shall conform to the following minimum standards:

1. N_2 for all steam units (N01, N02 & N03) shall be 99.999% pure and contain < 1.0 ppm O_2.
2. N_2 for all combustion turbine and HRSG units (KS CT 7 & 8 and BB CT 1, 2, & 3 and GEC 1 & 2) shall be 99.9995% pure and contain < 0.5 ppm O_2.

6.4. Item numbers listed under "Calibration Gas Cylinder Bid Items" in the Bid Workbook are for the JEA units specified in paragraphs seven through ten. **The price bid for each item listed on the Bid Workbook shall be the total "all inclusive" cost to deliver full calibration gas cylinders to each location listed and for the return of empty cylinders to the Bidder's facility.** The Vendor shall include all shipping charges for delivery of calibration gas

cylinders to the JEA plant locations specified and the return of empty cylinders for each individual item bid. A separate bid section has been provided for rental charges of cylinders and for the re-certification of any cylinder not utilized prior to its expiration date.

7. CALIBRATION GAS CYLINDER BID ITEMS – NORTHSIDE GENERATING STATION - SPECIFICS

7.1 Northside Generating Station Circulating Fluidized Bed Units One and Two (N01 and N02). Unless otherwise noted, **all** CEM calibration gases bid under this section shall meet or exceed **Interference Free Multi-Component gas mixture EPA Protocol Standard** tolerances and be delivered in aluminum cylinders which satisfy DOT specification 3AL2015 (approximately eight inches in diameter and forty-eight inches high, excluding cylinder cap and valve) and at a pressure of 2000 psi at seventy degrees Fahrenheit. Cylinder designation is 30AL, unless otherwise noted. **(NOTE: "balance N_2 gas" must be < 1.0 ppm O_2.)**

7.1.1 Daily bottle #1 and CO_2 High Range Linearity Gas #3: CO_2 span calibration gas which is also utilized as a Zero Air Material gas for SO_2, NOx and CO. **MIN / MAX NOT-TO-EXCEED** Range = 17.00% – 18.00% CO_2 with the balance consisting of N_2 < 1.0 ppm O_2. This gas shall meet the standards of a Zero Air Material gas for SO_2, NOx, and CO. **Certification required**.

7.1.2 Daily bottle #2 and Low Range - High Level Linearity Gas #3 for SO_2L, NOxL and COL. Low Range - High Level span calibration gas which is also utilized as a Zero Air Material gas for CO_2. **MIN / MAX NOT-TO-EXCEED** Range = 114 – 126 ppm SO_2; 66.00 – 69.00 ppm NOx; and 162 – 166 ppm CO with the balance consisting of N_2 < 1.0 ppm O_2. This gas shall meet the standards of a Zero Air Material gas for CO_2. **Certification required**.

7.1.3 Daily bottle #3 and High Range – High Level Linearity Gas #3 for SO_2H, NOxH, and COH. **MIN / MAX NOT-TO-EXCEED** Range = 4810 – 5400 ppm SO_2; 405 – 450 ppm NOx; and 4810 – 4980 ppm CO with the balance with the balance consisting of N_2 < 1.0 ppm O_2.

7.1.4 Low Range - Low Level Linearity Gas #1 for SO_2L, NOxL, and COL. **MIN / MAX NOT-TO EXCEED** Range = 30.00 – 40.00 ppm SO_2; 18.00 – 22.00 ppm NOx; and 42.00 – 58.00 ppm CO with the balance consisting of N_2 < 1.0 ppm O_2.

7.1.5 Low Range - Mid Level Linearity Gas #2 for SO_2L, NOxL, and COL. **MIN / MAX NOT-TO EXCEED** Range = 72.00 – 82.00 ppm SO_2; 42.00 – 46.00 ppm NOx; and 105 – 115 ppm CO with the balance consisting of N_2 < 1.0 ppm O_2.

7.1.6 High Range - Low Level Linearity Gas #1 for SO_2H, NOxH, and COH. **MIN / MAX NOT-TO EXCEED** Range = 1210 – 1790 ppm SO_2; 105 – 145 ppm NOx; and 1210 – 1790 ppm CO with the balance consisting of N_2 < 1.0 ppm O_2.

7.1.7 High Range - Mid Level Linearity Gas #2 for SO_2H, NOxH, and COH. **MIN / MAX NOT-TO EXCEED** Range = 3010 – 3590 ppm SO_2; 255 – 295 ppm NOx; and 3010 – 3590 ppm CO with the balance consisting of N_2 < 1.0 ppm O_2.

7.1.8 CO_2 Linearity Low Level gas #1. **MIN / MAX NOT-TO EXCEED** Range = 4.20 – 5.80% CO_2 with the balance consisting of N_2 < 1.0 ppm O_2. This gas shall meet the standards of a Zero Air Material gas for SO_2, NOx, and CO. **Certification required**.

7.1.9 CO_2 Linearity Mid Level gas #2. **MIN / MAX NOT-TO EXCEED** Range = 10.20 – 11.80% CO_2 with the balance consisting of N_2 < 1.0 ppm O_2. This gas shall meet the standards of a Zero Air Material gas for SO_2, NOx, and CO. **Certification required**.

7.1.10 CO_2Direct Inject gas. **MIN / MAX NOT-TO EXCEED** Range = **1600-1640** ppm CO_2 with the balance consisting of N_2 < 1.0 ppm O_2. This gas shall meet the standards of a Zero Air Material gas for SO_2, NOx, and CO. **Certification required**.

7.1.11 Chlorine gas. Specified cylinder content is = 900 ppm Cl with the balance consisting of N_2 < 1.0 ppm O_2. **Certified Standard. (SPECIAL NOTE: 7AL Cylinder Size.)**

7.1.12 Zero Nitrogen CEMS calibration gas. Specified cylinder content is 100.00% N_2. This gas shall meet the standards of a CEM calibration Zero Grade Nitrogen gas. This gas shall meet the standards of a Zero Air Material gas for SO_2, NOx, CO_2 and CO. **Certification required.**

7.2 Northside Generating Station Unit Three (N03). Unless otherwise noted, **all** CEM calibration gases bid under this section shall meet or exceed **Interference Free Multi-Component gas mixture EPA Protocol Standard** tolerances and be delivered in aluminum cylinders which satisfy DOT specification 3AL2015 (approximately eight inches in diameter and forty-eight inches high, excluding cylinder cap and valve) and at a pressure of 2000 psi at seventy degrees Fahrenheit. Cylinder designation is 30AL. **(NOTE: "balance N_2 gas" must be < 1.0 ppm O_2.)**

7.2.1 Daily bottle #2 and Low Range – High Level Linearity Gas #3 for SO_2L, and NOxL. **MIN / MAX NOT-TO EXCEED** Range = 410 – 450 ppm SO_2 and 82.00 – 88.00 ppm NOx with the balance consisting of N_2 < 1.0 ppm O_2. This gas shall meet the standards of a Zero Air Material gas for CO_2. **Certification required**.

7.2.2 Daily bottle #3 and High Range – High Level Linearity Gas #3 for SO_2H, and NOxH. **MIN / MAX NOT-TO EXCEED** Range = 810 – 900 ppm SO_2 and 410 – 450 ppm NOx with the balance consisting of N_2 < 1.0 ppm O_2.

7.2.3 Low Range – Low Level Linearity Gas #1 for SO_2L, and NOxL. **MIN / MAX NOT-TO EXCEED** Range = 105 – 150 ppm SO_2 and 22.00 – 30.00 ppm NOx with the balance consisting of N_2 < 1.0 ppm O_2.

7.2.4 Low Range – Mid Level Linearity Gas #2 for SO_2L, and NOxL. **MIN / MAX NOT-TO EXCEED** Range = 255 – 300 ppm SO_2 and 52.00 – 60.00 ppm NOx with the balance consisting of N_2 < 1.0 ppm O_2N_2.

7.2.5 High Range – Low Level Linearity Gas #1 for SO_2H and NOxH. **MIN / MAX NOT-TO EXCEED** Range = 210 – 300 ppm SO_2 and 105 – 150 ppm NOx with the balance consisting of N_2 < 1.0 ppm O_2.

7.2.6 High Range – Mid Level Linearity Gas #2 for SO_2H and NOxH. **MIN / MAX NOT-TO EXCEED** Range = 510 – 600 ppm SO_2 and 260 – 300 ppm NOx with the balance consisting of N_2 < 1.0 ppm O_2.

7.3 Northside Generating Station Units One and Two (N01and N02) boiler outlet and SDA SO2 removal efficiency calibration gases.

7.3a. Northside Generating Station Units One and Two (N01and N02) boiler outlet and SDA SO2 removal efficiency calibration gases. **All** calibration gases bid under this section, regardless of application, shall meet or exceed **Interference Free Multi-Component gas mixture EPA Protocol Standard** tolerances and be delivered in aluminum cylinders which satisfy DOT specification 3AL2015 (approximately eight inches in diameter and forty-eight inches high, excluding cylinder cap and valve) and at a pressure of 2000 psi. Cylinder designation is 30AL. **(NOTE: "balance N_2 gas" must be < 1.0 ppm O_2.)**

7.3a.1. Boiler outlet O_2 calibration gas. Specified cylinder content is 0.40% O_2 with the balance consisting of N_2 < 1.0 ppm O_2.

7.3a.2. Boiler outlet O_2 calibration gas. Specified cylinder content is 1.50% O_2 with the balance consisting of N_2 < 1.0 ppm O_2.

7.3a.3. Boiler outlet O_2 calibration gas. Specified cylinder content is 8.00% O_2 with the balance consisting of N_2 < 1.0 ppm O_2.

7.3a.4. SDA SO_2 removal efficiency calibration gas. Specified cylinder content is 500 ppm SO_2 with the balance consisting of N_2 < 1.0 ppm O_2.

7.3b. Northside Generating Station Unit One and Two (N01 and N02) boiler outlet and SO2 removal efficiency calibration gases. **All** calibration gases bid under this section, regardless of application, shall meet or exceed **Interference Free Multi-Component gas mixture EPA Protocol Standard** tolerances and be delivered in aluminum cylinders which satisfy DOT specification 3AL-2216 (approximately seven inches in diameter and thirty-three inches high, excluding cylinder cap and valve) and at a pressure of 2000 psi. Cylinder designation is 16AL. **(NOTE: "balance N_2 gas" must be <1.0 ppm O_2.)**

7.3b.1. Boiler outlet O_2 calibration gas. Specified cylinder content is 0.40% O_2 with the balance consisting of N_2 < 1.0 ppm O_2.

7.3b.2. Boiler outlet O_2 calibration gas. Specified cylinder content is 1.50% O_2 with the balance consisting of N_2 < 1.0 ppm O_2.

7.3b.3. Boiler outlet O_2 calibration gas. Specified cylinder content is 8.00% O_2 with the balance consisting of N_2 < 1.0 ppm O_2.

7.3b.4. SDA SO_2 removal efficiency calibration gas. Specified cylinder content is 500 ppm SO_2 with the balance consisting of N_2 < 1.0 ppm O_2.

7.3c. Northside Generating Station Unit One and Two (N01 and N02) boiler outlet and SO2 removal efficiency calibration gases. **All** calibration gases bid under this section, regardless of application, shall meet or exceed **Interference Free Multi-Component gas mixture EPA Protocol Standard Tolerances** and be delivered in aluminum cylinders which satisfy DOT specification 3AL2015 (approximately seven inches in diameter and sixteen inches high, excluding cylinder cap and valve) and at a pressure of 2000 psi. Cylinder designation is 7AL. **(NOTE: "balance N_2 gas" must be <1.0 ppm O_2.)**

7.3c.1. Boiler outlet O_2 calibration gas. Specified cylinder content is 0.40% O_2 with the balance consisting of N_2 < 1.0 ppm O_2.

7.3c.2. Boiler outlet O_2 calibration gas. Specified cylinder content is 1.50% O_2 with the balance consisting of N_2 < 1.0 ppm O_2.

7.3c.3. Boiler outlet O_2 calibration gas. Specified cylinder content is 8.00% O_2 with the balance consisting of N_2 < 1.0 ppm O_2.

7.3c.4. SDA SO_2 removal efficiency calibration gas. Specified cylinder content is 500 ppm SO_2 with the balance consisting of N_2 < 1.0 ppm O_2.

7.4. Northside Generating Station Unit Three (N03) boiler outlet calibration gases. **All** calibration gases bid under this section, regardless of application, shall meet or exceed **Interference Free Multi-Component gas mixture Protocol Standard** tolerances and be delivered in aluminum cylinders which satisfy DOT specification 3AL2015 (approximately eight inches in diameter and forty-eight inches high, excluding cylinder cap and valve) and at a pressure of 2000 psi. Cylinder designation is 30AL. **(NOTE: "balance N_2 gas" must be <1.0 ppm O_2.)**

7.4.1. Low O_2 calibration gas. Specified cylinder content is 1.00% O_2 with the balance consisting of N_2 < 1.0 ppm O_2. Certified Standard.

7.4.2. Low CO calibration gas. Specified cylinder content is 3000 ppm CO with the balance consisting of N_2 < 1.0 ppm O_2. Certified Standard.

8. CALIBRATION GAS CYLINDER BID ITEMS – KENNEDY GENERATING STATION - SPECIFICS

8.1 Kennedy Generating Station Combustion Turbine Unit Seven and Eight (KS CT 7 & KS CT 8) CEMS calibration gases. Unless otherwise noted, **all** CEM calibration gases bid under this section shall meet or exceed **Interference Free Multi-Component gas mixture EPA Protocol Standard** tolerances and be delivered in aluminum cylinders which satisfy DOT specification 3AL2015 (approximately eight inches in diameter and forty-eight inches high, excluding cylinder cap and valve) and at a pressure of 2000 psi. Cylinder designation is 30AL. **(NOTE: "balance N_2 gas" must be < 0.5 ppm O_2.)**

8.1.1 Daily bottle #1 and High Level Linearity Gas #3 for O_2. **MIN / MAX NOT-TO EXCEED** Range = 20.20 – 22.50% O_2 with the balance consisting of N_2 < 0.5 ppm O_2. This gas shall meet the standards of a Zero Air Material gas for NOx and CO. **Certification required**.

8.1.2 Daily bottle #2 and Low Range Linearity Gas for NOx. **MIN / MAX NOT-TO EXCEED** Range = 16.20 – 18.00 ppm NOx with the balance consisting of N_2 < 0.5 ppm O_2. This gas shall meet the standards of a Zero Air Material gas for CO, Certification **required**.

8.1.3 Daily bottle #3 and High Range – High Level Linearity Gas #3 for NOx. **MIN / MAX NOT-TO EXCEED** Range = 165 – 180 ppm NOx with the balance consisting of N_2 < 0.5 ppm O_2.

8.1.4 Low Level Linearity Gas #1 for O_2. **MIN / MAX NOT-TO EXCEED** Range = 5.20% – 7.00% O_2 with the balance consisting of N_2 < 0.5 ppm O_2.

8.1.5 Mid Level Linearity Gas #2 for O_2. **MIN / MAX NOT-TO EXCEED** Range = 12.70% – 14.50% O_2 with the balance consisting of N_2 < 0.5 ppm O_2.

8.1.6 High Range – Low Level Linearity Gas #1 for NOx. **MIN / MAX NOT-TO EXCEED** Range = 42.00 – 56.00 ppm NOx with the balance consisting of N_2 < 0.5 ppm O_2.

8.1.7 High Range – Mid Level Linearity Gas #2 for NOx. **MIN / MAX NOT-TO EXCEED** Range = 102 – 116 ppm NOx with the balance consisting of N_2 < 0.5 ppm O_2.

9. CALIBRATION GAS CYLINDER BID ITEMS – BRANDY BRANCH GENERATING STATION - SPECIFICS

9.1 Brandy Branch Generating Station Combustion Turbine Unit 1 (BB CT1) CEMS calibration gases. Unless otherwise noted, **all** CEM calibration gases bid under this section shall meet or exceed **Interference Free Multi-Component gas mixture EPA Protocol Standard** tolerances and be delivered in aluminum cylinders which satisfy DOT specification 3AL2015 (approximately eight inches in diameter and forty-eight inches high, excluding cylinder cap and valve) and at a pressure of 2000 psi. Cylinder designation is 30AL. **(NOTE: "balance N_2 gas" must be < 0.5 ppm O_2.)**

9.1.1 Daily bottle #1 and High Level Linearity Gas #3 for O_2. **MIN / MAX NOT-TO EXCEED** Range = 20.20 – 22.50% O_2 with the balance consisting of N_2 < 0.5 ppm O_2. This gas shall meet the standards of a Zero Air Material gas for NOx and CO. **Certification required**.

9.1.2 Daily bottle #2 and Low Range Linearity Gas for NOx. **MIN / MAX NOT-TO EXCEED** Range = 16.20 – 18.00 ppm NOx with the balance consisting of N_2 < 0.5 ppm O_2. This gas shall meet the standards of a Zero Air Material gas for CO, Certification **required**.

9.1.3 Daily bottle #3 and High Range – High Level Linearity Gas #3 for NOx. **MIN / MAX NOT-TO EXCEED** Range = 165 – 180 ppm NOx with the balance consisting of N_2 < 0.5 ppm O_2.

9.1.4 Low Level Linearity Gas #1 for O_2. **MIN / MAX NOT-TO EXCEED** Range = 5.20% – 7.00% O_2 with the balance consisting of N_2 < 0.5 ppm O_2.

9.1.5 Mid Level Linearity Gas #2 for O_2. **MIN / MAX NOT-TO EXCEED** Range = 12.70% – 14.50% O_2 with the balance consisting of N_2 < 0.5 ppm O_2.

9.1.6 High Range – Low Level Linearity Gas #1 for NOx. **MIN / MAX NOT-TO EXCEED** Range = 42.00 – 56.00 ppm NOx with the balance consisting of N_2 < 0.5 ppm O_2.

9.1.7 High Range – Mid Level Linearity Gas #2 for NOx. **MIN / MAX NOT-TO EXCEED** Range = 102 – 116 ppm NOx with the balance consisting of N_2 < 0.5 ppm O_2.

9.2 Brandy Branch Generating Station Combustion Turbine Unit 2 and 3 (BB CT2 &BB CT3) CEMS calibration gases. Unless otherwise noted, **all** CEM calibration gases bid under this section shall meet or exceed **Interference Free Multi-Component gas mixture EPA Protocol Standard** tolerances and be delivered in aluminum cylinders which satisfy DOT specification 3AL2015 (approximately eight inches in diameter and forty-eight inches high, excluding cylinder cap and valve) and at a pressure of 2000 psi. Cylinder designation is 30AL. **(NOTE: "balance N_2 gas" must be < 0.5 ppm O_2.)**

9.2.1 Smokestack and Inlet Daily bottle #1 and Smokestack and Inlet High Level Linearity Gas #3 for O_2. **MIN / MAX NOT-TO EXCEED** Range = 20.20 – 22.50% O_2 with the balance consisting of N_2 < 0.5 ppm O_2. This gas shall meet the standards of a Zero Air Material gas for NOx and CO. **Certification required**.

9.2.2 Smokestack Daily bottle #2 and Low Range Linearity Gas #3 for CO (and Smokestack Low Level for NOx). **MIN / MAX NOT-TO EXCEED** Range = 8.20 – 9.00 ppm NOx and 16.20 – 18.00 ppm CO with the balance consisting of N_2 < 0.5 ppm O_2.

9.2.3 Smokestack Daily bottle #3 and High Range - High level Linearity Gas #3 for NOx and CO. **MIN / MAX NOT-TO EXCEED** Range = 165 – 188 ppm NOx and 970 – 1130 ppm CO with the balance consisting of N_2 < 0.5 ppm O_2.

9.2.4 Inlet Daily bottle #4 for Low Level NOx. **MIN / MAX NOT-TO EXCEED** Range = 8.20 – 9.00 ppm NOx with the balance consisting of N_2 < 0.5 ppm O_2.

9.2.5 Inlet Daily bottle #5 for High Range – High Level NOx. **MIN / MAX NOT-TO EXCEED** Range = 162 – 180 ppm NOx with the balance consisting of N_2 < 0.5 ppm O_2.

9.2.6 Smokestack Linearity bottle #1 for Low Range - Low Level CO. **MIN / MAX NOT-TO EXCEED** Range = 4.20 – 5.00 ppm CO with the balance consisting of N_2 < 0.5 ppm O_2.

9.2.7 Smokestack Linearity bottle #2 for Low Range - Mid Level CO. **MIN / MAX NOT-TO EXCEED** Range = 10.20 – 11.00 ppm CO with the balance consisting of N_2 < 0.5 ppm O_2.

9.2.8 Smokestack Linearity bottle #1 for High Range - Low Level NOx and CO **MIN / MAX NOT-TO EXCEED** Range = 42.00 – 50.00 ppm NOx and 245 – 300 ppm CO with the balance consisting of N_2 < 0.5 ppm O_2.

9.2.9 Smokestack Linearity bottle #2 for High Range - Mid Level NOx and CO. **MIN / MAX NOT-TO EXCEED** Range = 102 – 110 ppm NOx and 605 – 660 ppm CO with the balance consisting of N_2 < 0.5 ppm O_2.

9.2.10 Inlet Linearity bottle #1 for High Range – High Level NOx. **MIN / MAX NOT-TO EXCEED** Range = 42.00 – 50.00 ppm NOx with the balance consisting of N_2 < 0.5 ppm O_2.

9.2.11 Inlet Linearity bottle #2 for High Range – Mid Level NOx. **MIN / MAX NOT-TO EXCEED** Range = 102 – 110 ppm NOx with the balance consisting of N_2 < 0.5 ppm O_2.

9.2.12 Smokestack and Inlet Linearity bottle #1 for Low Level O_2. **MIN / MAX NOT-TO EXCEED** Range = 5.20 – 6.30% O2 with the balance consisting of N_2 < 0.5 ppm O_2

9.2.13 Smokestack and Inlet Linearity bottle #2 for Mid Level O_2. **MIN / MAX NOT-TO EXCEED** Range = 12.70 – 13.80% O2 with the balance consisting of N_2 < 0.5 ppm O_2.

10. CALIBRATION GAS CYLINDER BID ITEMS – GREENLAND ENERGY CENTER - SPECIFICS

10.1 Greenland Energy Center Combustion Turbine Unit One and Two (GEC 1 & GEC 2) CEMS calibration gases. Unless otherwise noted, **all** CEM calibration gases bid under this section shall meet or exceed **Interference Free Multi-Component gas mixture EPA Protocol Standard** tolerances and be delivered in aluminum cylinders which satisfy DOT specification 3AL2015 (approximately eight inches in diameter and forty-eight inches high, excluding cylinder cap and valve) and at a pressure of 2000 psi. Cylinder designation is 30AL. **(NOTE: "balance N_2 gas" must be < 0.5 ppm O_2.)**

10.1.1 Daily bottle #1 and High Level Linearity Gas #3 for O_2. **MIN / MAX NOT-TO EXCEED** Range = 20.20 – 22.50% O_2 with the balance consisting of N_2 < 0.5 ppm O_2. This gas shall meet the standards of a Zero Air Material gas for NOx and CO. **Certification required**.

10.1.2 Daily bottle #2 and Low Range Linearity Gas for NOx. **MIN / MAX NOT-TO EXCEED** Range = 16.20 – 18.00 ppm NOx with the balance consisting of N_2 <

0.5 ppm O_2. This gas shall meet the standards of a Zero Air Material gas for CO, **Certification required**.

10.1.3 Daily bottle #3 and High Range – High Level Linearity Gas #3 for NOx. **MIN / MAX NOT-TO EXCEED** Range = 165 – 180 ppm NOx with the balance consisting of N_2 < 0.5 ppm O_2.

10.1.4 Low Level Linearity Gas #1 for O_2. **MIN / MAX NOT-TO EXCEED** Range = 5.20% – 7.00% O_2 with the balance consisting of N_2 < 0.5 ppm O_2.

10.1.5 Mid Level Linearity Gas #2 for O_2. **MIN / MAX NOT-TO EXCEED** Range = 12.70% – 14.50% O_2 with the balance consisting of N_2 < 0.5 ppm O_2.

10.1.6 High Range – Low Level Linearity Gas #1 for NOx. **MIN / MAX NOT-TO EXCEED** Range = 42.00 – 56.00 ppm NOx with the balance consisting of N_2 < 0.5 ppm O_2.

10.1.7 High Range – Mid Level Linearity Gas #2 for NOx. **MIN / MAX NOT-TO EXCEED** Range = 102 – 116 ppm NOx with the balance consisting of N_2 < 0.5 ppm O_2.

11. MISCELLANEOUS BID ITEMS

11.1 CYLINDER RENTAL (DEMURRAGE)

11.1.1 Invoices for cylinder rental (demurrage) shall be submitted on a monthly basis or as mutually agreed upon by JEA and Contractor. Invoices shall contain, at a minimum, the following information:

9.1.1a. The unique cylinder identification (serial) number.

9.1.1b. The cylinder expiration date.

11.1.2 Aluminum cylinders which satisfy DOT specification 3AL-2015 and are approximately eight inches in diameter and forty-eight inches high (excluding cylinder cap and valve), aluminum cylinders which satisfy DOT specification 3AL-2216 and are approximately seven inches in diameter and thirty-three inches high (excluding cylinder cap and valve), and aluminum cylinders which satisfy DOT specification 3AL-2216 and are approximately seven inches in diameter and sixteen inches high (excluding cylinder cap and valve) shall be provided. The daily (per diem) rental charges shall be bid upon and evaluated based upon the number of days estimated (not guaranteed).

11.1.2a. Eight inches in diameter and forty-eight inches high (excluding cylinder cap and valve) aluminum cylinder daily rental charge. Type 30AL cylinder designation.

11.1.2b. Seven inches in diameter and thirty-three inches high (excluding cylinder cap and valve) aluminum cylinder daily rental charge. Type 16AL cylinder designation

11.1.2c. Seven inches in diameter and sixteen inches high (excluding cylinder cap and valve) aluminum cylinder daily rental charge. Type 7AL cylinder designation

11.2 CYLINDER RE-CERTIFICATION

Re-certification of gas cylinders shall be on an as-required basis as determined by the responsible JEA Manager. Any cylinder requiring re-certification shall be re-certified to the original cylinder specification. For bidding purposes the cylinder designation is 30AL and prices bid shall be "alI-inclusive" and include all shipping charges.

11.2.1 Recertification of any single calibration gas/balance N2 component cylinder.

11.2.2 Recertification of any two calibration gas/balance N2 component cylinder.

11.2.3 Recertification of any three calibration gas/balance N2 component cylinder.

11.2.4 Recertification of any four calibration gas/balance N2 component cylinder.

12. MISCELLANEOUS INFORMATION

12.1 The JEA holidays are as listed below. No deliveries/pick-ups will be scheduled or accepted on these days unless approved by the responsible JEA Manager.

- New Year's Day - January 1st.
- Martin Luther King Day - 3rd Monday in January
- President's Day - 3rd Monday in February
- Memorial Day - Last Monday in May
- Independence Day - July 4th
- Labor Day - 1st Monday in September
- Veteran's Day - November 11th
- Thanksgiving Day - Last Thursday in November
- Day after Thanksgiving - The Friday after Thanksgiving Day
- Christmas Eve - December 24th.
- Christmas Day - December 25th.

13. AUTHORIZATION TO PERFORM WORK

13.1 All products provided, including pick-up and delivery services, in accordance with these Technical Specifications and Contract Documents shall be authorized by the responsible JEA Manager, or his designee. Any products and/or services provided by the Contractor at the direction, direct or otherwise, of any other agency or personnel of JEA may be considered as unauthorized and the Contractor may not be entitled to compensation for products and/or services performed in that circumstance.

14. UNACCEPTABLE SERVICE

14.1 In the event that any item purchased and delivered under the terms and conditions of this specification is deemed unacceptable for good and valid cause by either JEA or any regulatory agency which JEA is subject to, for reasons which are reasonably under the control

of the Contractor, the Contractor shall re-accomplish that purchase and delivery **totally at its own expense** within a timely manner. Furthermore, the stability of all gas cylinders shall be presumed to be guaranteed for the full period allowed by EPA protocol, as applicable.