Progress Energy

ORIGINAL

July 26, 2012

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DIVISION OF AIR
RESOURCE MANAGEMENT

A.A. Linero, P.E.
Office of Permitting and Compliance
Division of Air Resource Management
Florida Department of Environmental Protection
Division of Air Resource Management
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Response to Request for Additional Information (RAI)
File No. 1010017-013-AC (PSD-FL-419)
Anclote Power Generating Facility – Natural Gas Conversion
Florida Power Corporation d/b/a Progress Energy Florida, Inc.
Pasco County

Dear Mr. Linero:

On July 3, 2012, Florida Power Corporation d/b/a Progress Energy Florida, Inc. (PEF) received a Request for Additional Information (RAI) from the Division of Air Resource Management (DARM). This RAI was in response to an application for an Air Construction (AC) /Prevention of Significant Deterioration (PSD) permit for the Anclote Power Plant requesting the conversion of the two (2) utility boilers to combust 100% natural gas. The Department indicated that additional information was required in order to continue processing the application request. This information has been provided in the accompanying correspondence from Mr. Scott Osbourn, P.E. of Golder Associates, Inc. The information contained in this correspondence is also of an engineering nature; therefore, the Professional Engineer Certification page from DEP Form No. 62- DEP Form No. 62-210.900(1) has also been included as well.

If you need additional information, please contact Chris Bradley at (727) 820-5962.

Sincerely,

William Luke
Plant Manager, Anclote Power Plant

Enclosures

cc: Robert Wong, Administrator, FDEP SWD: robert.wong@dep.state.fl.us
Scott Osbourn, P.E., Golder Associates: sosbourn@golder.com

Golder Associates

July 27, 2012 113-89602

Mr. Al Linero, PE
Office of Permitting and Compliance
Florida Department of Environmental Protection
Division of Air Resource Management
2600 Blair Stone Road
Tallahassee, FL 32399-2400

RE: REQUEST FOR ADDITIONAL INFORMATION
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1. **Comment 1 --** Please resubmit Table 1 in accordance with the definitions and procedures for "Baseline Actual Emissions" and "Projected Actual Emissions" contained in Rule 62-210.200 (Definitions). The definitions are attached for your convenience. Some of the factors used in determining baseline and projected actual emissions would not be important for the project. However an estimate of expected future operation (even if unchanged from recent operation) would be very helpful.

   Response:

   The definitions provided by the Department, from Rule 62-210.200 (Definitions), refer to the definitions for Baseline Actual Emissions: Rule 62-210.200(36) and Projected Actual Emissions: Rule 62-210.200(252).

   With respect to "Baseline Actual Emissions," PEF's air application had provided a summary for the most recent period of representative operation, determined to be calendar years 2006 through 2010. A comparison of calendar year 2011 to the representative five year period (i.e., 2006 through 2010) had indicated a significant difference in fuel mix and was, therefore deemed to not be representative of recent normal operation. Specifically, as noted in the application, the firing of No.6 fuel oil decreased significantly in 2011 when compared to the previous 5-year period. PEF and Golder have subsequently had additional discussions with the DEP about the baseline analysis and understand that the DEP is in agreement with this approach.

   With respect to "Projected Actual Emissions", PEF has conducted future operating projections for the Anclote Plant, both with and without the natural gas conversion, and

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the projections do not reflect any significant differences as a result of the conversion of these units to natural gas. The historical capacity factors (i.e., based on annual MW-hrs) for both units has ranged from approximately 24 percent to 47 percent during the previous 5-year operating period. For purposes of the fuel conversion project, PEF does not anticipate that future actual operation would be significantly different, ranging from capacity factor estimates of approximately 23 percent to 39 percent.

Using projected capacity factors and heat rates for Units 1 and 2, which were submitted to the Florida Public Service Commission (FPSC) on June 4, 2012 (Docket No. 120103-E1), the highest projected combined capacity factors occur in 2014 with 29.7 percent and 39.1 percent for Units 1 and 2, respectively. Using a rated MW output for the units of 510 MW and applicable heat rates, the total heat input for each of the units can be determined.

That is, heat input estimated for 2014 is as follows:

[(0.297) (11,196 Btu/kW-hr) + (0.391) (10,735 Btu/kW-hr)] [(510 MW) (8,760 hr/yr) (1,000 kW-hr/MW-hr) (MMBtu/1,000,000 Btu)] = 33,607,954 MMBtu/yr

Applying this estimated future heat input to the proposed emission factors for future operation (i.e., NOx: 0.30 lb/MMBtu and CO: 0.15 lb/MMBtu), results in the estimates noted in the revised Table 1 below.

Pollutant	24-Month Baseline Period Selected (Years)	Applicant Baseline Actual Emissions (tons/year)	Revised Applicant Projected Actual Emissions (tons/year)	Projected Increase (tons/year)	PSD SER (tons/year)	Exceeds PSD SER? (Yes/No)
CO	2006 – 2007	506	2,521	+2,015	100	**Yes**
VOC	2006 – 2007	78	84	+6	40	No
NOX	2006 – 2007	6,540	5,041[1]	-1,499	40	No
SO2	2006 – 2007	25,273	60	-25,213	40	No
PM	2006 – 2007	805	548	-257	25	No
PM10	2006 – 2007	572	411	-161	15	No
PM2.5	2006 – 2007	193	137	-56	10	No
Lead	2009 – 2010	0.72	0.01	-0.71	0.60	No
GHG (CO2e)	2006 – 2007	2,517,405	1,955,983	-541,422	75,000	No

[1] Based on a conservative emission rate of 0.3 lb/MMBtu across the load range; however, it is anticipated that the emission rate will vary with load as is illustrated in attached Figures 1 and 2.

It is PEF's position is that there is not a causal relationship between the Project and future actual utilization. The project is being driven by PEF's compliance obligations under EPA's Mercury and Air Toxics Standards (i.e., the MATS Rule) and requirements. Hourly emission rates (lb/hr) for all pollutants, except CO and VOCs, will decrease as a result of the fuel conversion project; therefore, the only way that future actual annual emissions of these pollutants could be greater would be due to a system wide demand increase. Given the possible shutdown of other generating units within PEF's fleet, it is understood that

meeting existing demand with fewer units is considered system wide demand growth for the remaining units. In addition, overall system wide demand is also projected to increase regardless of the number of generating units. Such an increase in emissions due to a demand increase unrelated to the Project would be excluded from the determination of regulatory applicability. Specifically, in calculating any increase in emissions that result from the change in the method of operation at an electric utility steam generating unit, that portion of the unit's emissions following the change that could have been accommodated during the representative baseline period may be excluded.

2. **Comment 2 --** Please submit, if available, curves showing the relationship between NO_x mass (lb/hour) and concentration (lb/MMBtu) emissions with respect to unit load. The data should be readily available because it is submitted to EPA on a quarterly basis for purpose of compliance with Clean Air Act Title IV requirements.

   Response:

   As presented in the attachment to this response package, Figures 1 and 2 show (for calendar years 2010 and 2011) NOx concentrations with respect to heat input across the entire unit operating load for Units 1 and 2, respectively. Figures 3 and 4 show NOx mass emissions with respect to heat input for each unit, for the same timeframe. The operations included firing of both natural gas and heavy fuel oil.

   With regard to post-project operations, Alstom conducted a study in March 2012 to generate predictive NOx emissions data (lb/hour and lb/MMBtu) as a function of unit load based on the exclusive firing of natural gas subsequent to fuel conversion of the two units. A summary of the results of the study is presented in Figure 5, which illustrates the relationship between NOx emissions (lb/MMBtu) and unit load, given in terms of percent load.

3. **Comment 3 --** The proposed NO_x guarantee is 0.3 lb/MMBtu. Please advise whether this factor applies throughout the entire range of operation or just at high load. It is possible that the curve for the new gas burners may show superior NO_x emissions throughout the entire range of operation, in which case it may not be necessary to specify maximum hours of operation (as appears to be suggested by the application).

   Response:

   The maximum NOx value (0.3 lb/MMBtu) at full load was used to represent the maximum impact for air quality modeling and applicability assessments. Since this emission value is less than the highest historical NOx emission rate (i.e., as high as 0.33 to 0.34 lb/MMBtu for both units during the 2006- 2007 baseline period), PEF believes that it is not necessary to specify a maximum number of operating hours for future (post-modification) operation. Specifically, if the post-modification rate is lower than the highest baseline rate, then emissions cannot be higher in the future, independent of any increase in the number of future operating hours.

   Finally, based on additional discussions with the Department on July 24, 2012, PEF confirmed that the Anclote fuel conversion project will be using CCOFA and not SOFA for NOx control. PEF understands that this design will also help to minimize CO emissions from the proposed project. In addition, the Department had also inquired about the proposed increase in the heat input to the units as a result of the fuel conversion, from

5,000 MMBtu/hr to 5,500 MMBtu/hr (i.e., an approximate 10 percent increase). Engineering studies have indicated that gas-fired boilers are typically about 4 to 5 percent less efficient than oil-fired boilers, which would account for part of the increase. The remaining 5 to 6 percent heat input increase is for capacity margin (i.e., up to 5 percent steam over pressure in the boiler for recovery of additional MW output, more in line with the rated capacity of the steam generator).

Since this RAI response includes additional information of an engineering nature, a PE certification page and a responsible official certification page, are also included. If you should have any questions concerning this submittal package, please contact either me at (813) 287-717 or Chris Bradley at (727) 820-5962.

Sincerely,

GOLDER ASSOCIATES INC.

Scott Osbourn, PE
Tampa Operations Manager and Associate

cc: Robert Wong, DEP SWD
Chris Bradley, PEF
William Luke, PEF

Attachment— NOx Emission Curves

SO/GH/ev

Golder Associates

APPLICATION INFORMATION

Owner/Authorized Representative Statement

Complete if applying for an air construction permit or an initial FESOP.

1. Owner/Authorized Representative Name : **William Luke, Plant Manager**

2. Owner/Authorized Representative Mailing Address...
   Organization/Firm: **Florida Power Corporation dba Progress Energy Florida, Inc.**
   Street Address: **1729 Baillies Bluff Road**
   City: **Holiday** State: **Florida** Zip Code: **34691-9753**

3. Owner/Authorized Representative Telephone Numbers...
   Telephone: **(727) 943 - 3006** Fax: **(727) 943 - 3050**

4. Owner/Authorized Representative E-mail Address: **William.Luke@pgnmail.com**

5. Owner/Authorized Representative Statement:

   I, the undersigned, am the owner or authorized representative of the corporation, partnership, or other legal entity submitting this air permit application. To the best of my knowledge, the statements made in this application are true, accurate and complete, and any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department.

   William C Luke Jr
   Signature

   7/25/12
   Date

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: **Scott Osbourn**
   Registration Number: **57557**
2. Professional Engineer Mailing Address...
   Organization/Firm: **Golder Associates, Inc.***
   Street Address: **5100 Lemon Street, Suite 208**
   City: **Tampa** State: **FL** Zip Code: **33609**
3. Professional Engineer Telephone Numbers...
   Telephone: **(813) 287 - 1717** ext. **53304** Fax: **(813) 287 – 1716**
4. Professional Engineer E-mail Address: **sosbourn@golder.com**
5. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

(3) If the purpose of this application is to obtain a Title V air operation permit (check here ☐, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.

(4) If the purpose of this application is to obtain an air construction permit (check here ☒, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here ☐, if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here , if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Signature

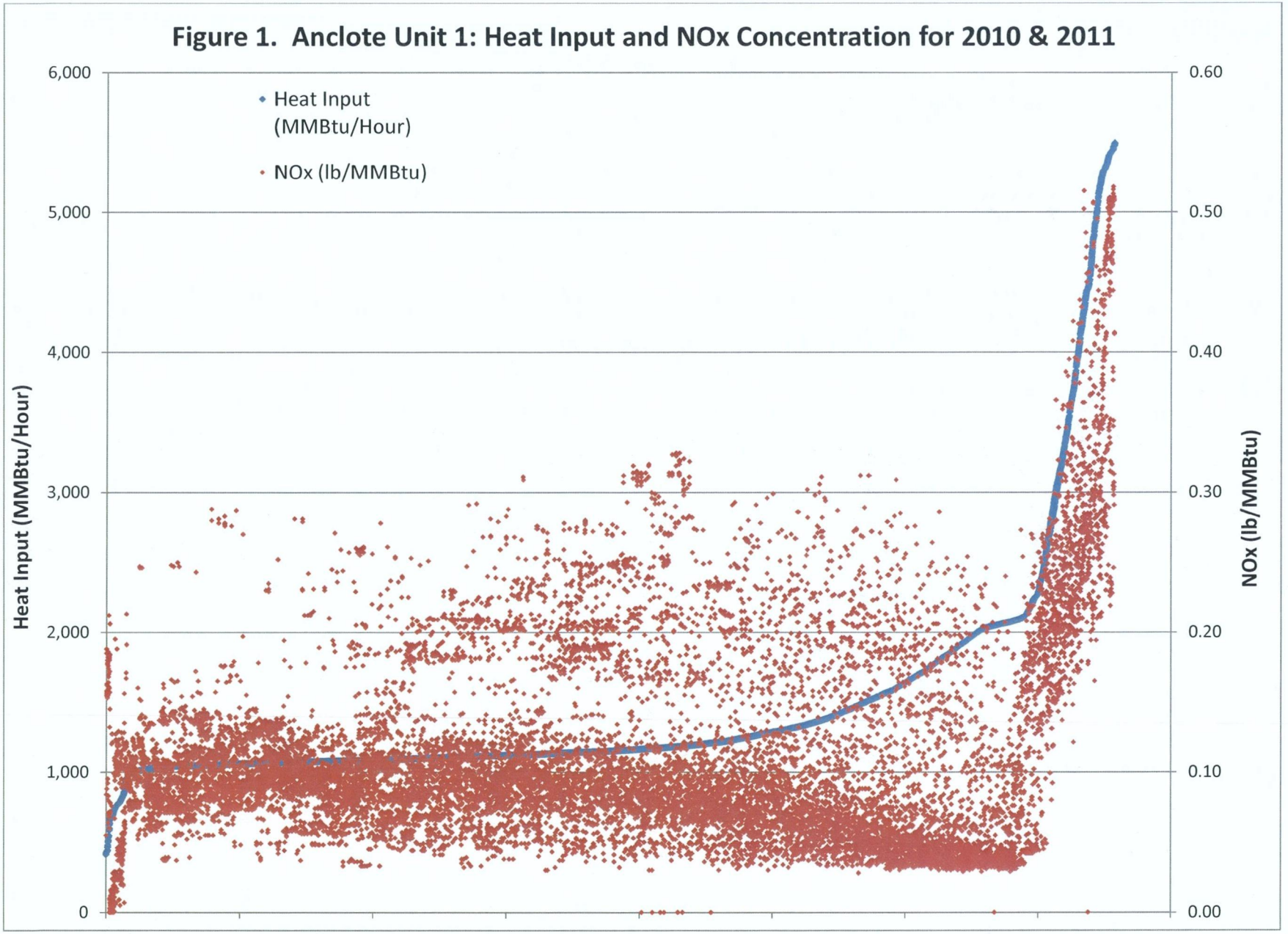
7/27/12
Date

(seal)

* Attach any exception to certification statement.

ATTACHMENT

Figure 1. Anclote Unit 1: Heat Input and NOx Concentration for 2010 & 2011



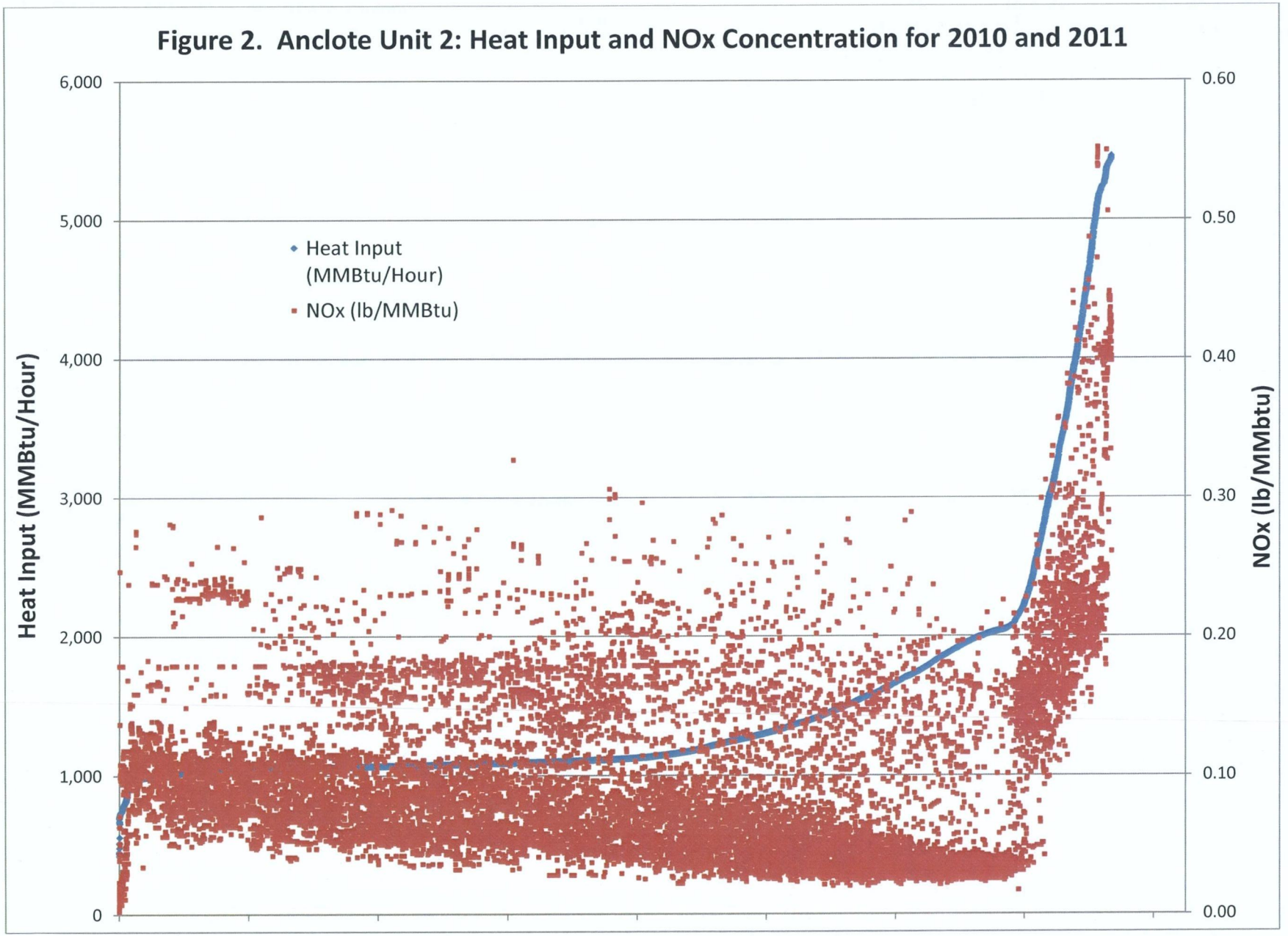
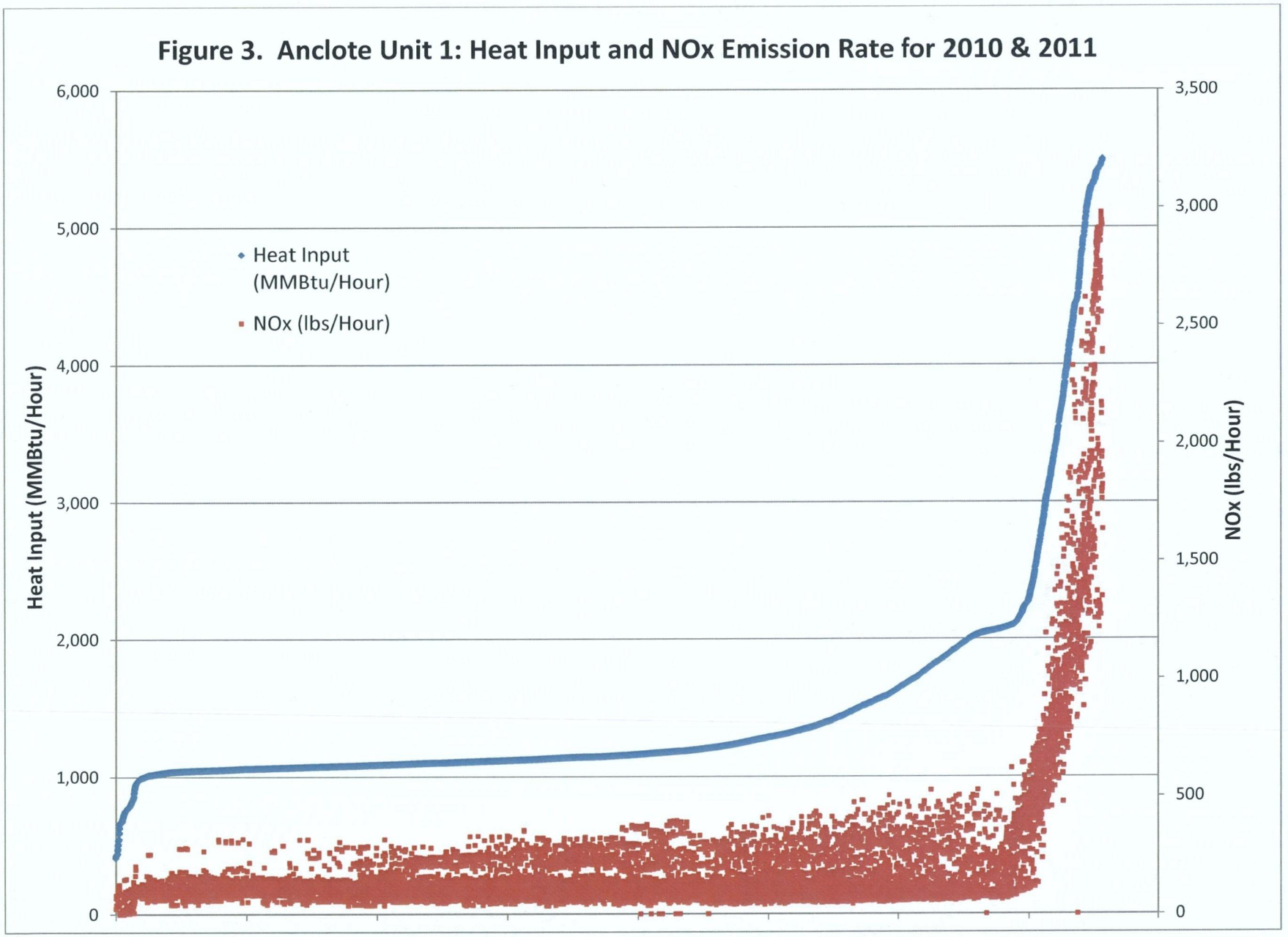
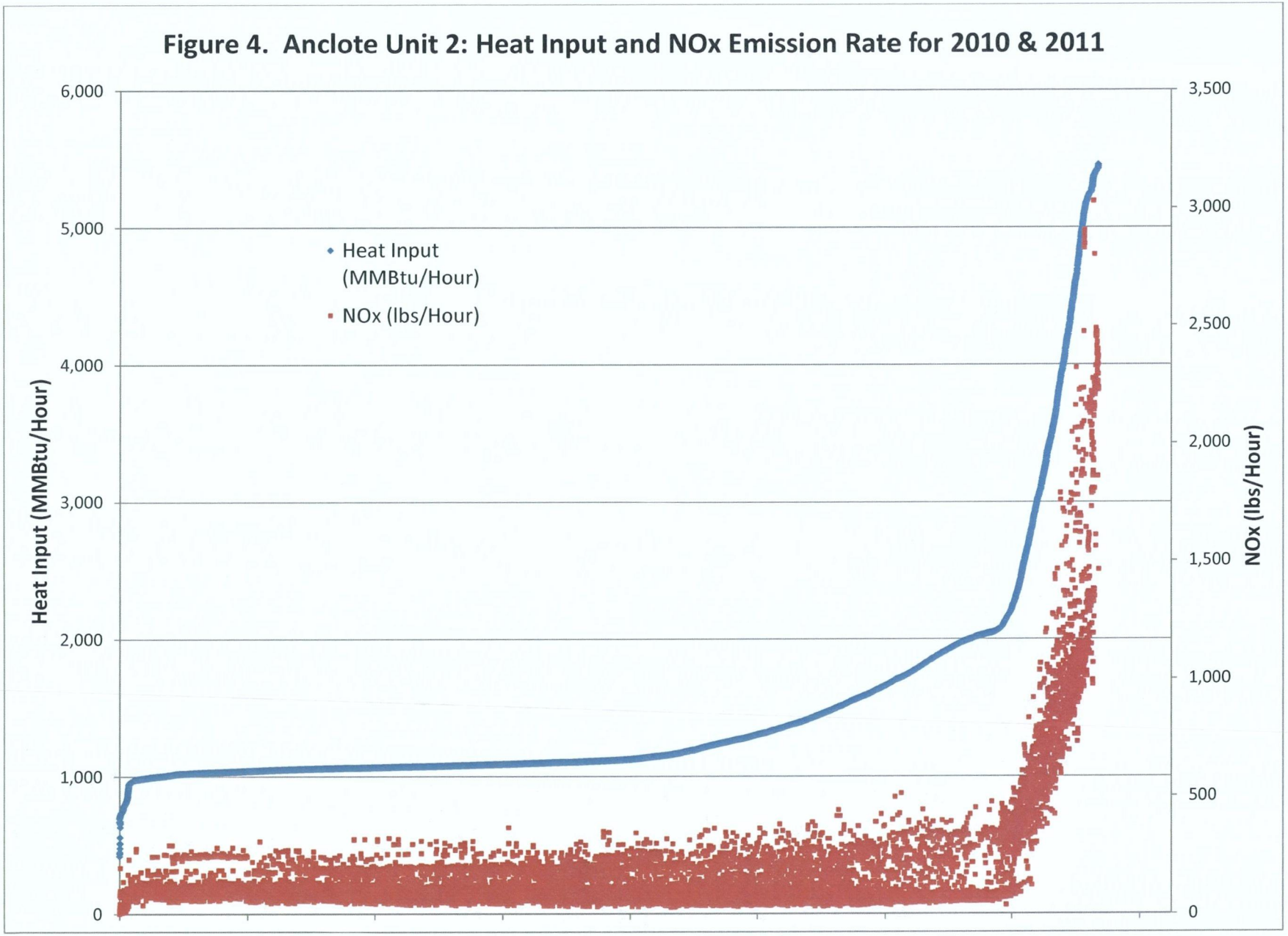


Figure 2. Anclote Unit 2: Heat Input and NOx Concentration for 2010 and 2011
Heat Input (MMBtu/Hour)
NOx (lb/MMBtu)
Heat Input (MMBtu/Hour)
NOx (lb/MMbtu)
6,000
5,000
4,000
3,000
2,000
1,000
0
0.60
0.50
0.40
0.30
0.20
0.10
0.00

Figure 3. Anclote Unit 1: Heat Input and NOx Emission Rate for 2010 & 2011

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Heat Input (MMBtu/Hour)
NOx (lbs/Hour)
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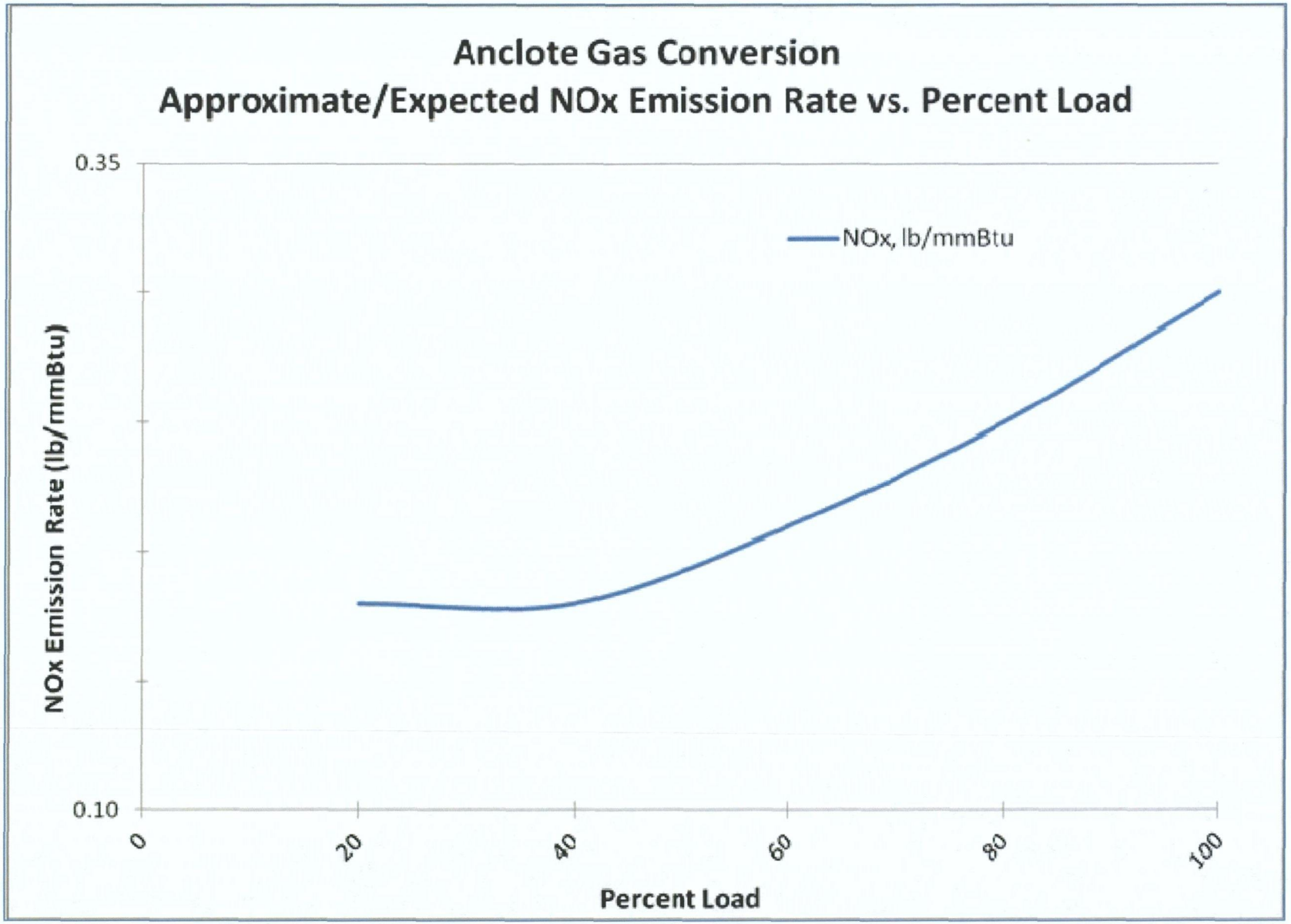
NOx (lbs/Hour)
6,000
5,000
4,000
3,000
2,000
1,000
0
3,500
3,000
2,500
2,000
1,500
1,000
500
0

FIGURE 5.


Anclote Gas Conversion
Approximate/Expected NOx Emission Rate vs. Percent Load
NOx, lb/mmBtu
NOx Emission Rate (lb/mmBtu)
0.35
0.10
0
20
40
60
80
100
Percent Load

Progress Energy

July 26, 2012

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Sincerely,

GOLDER ASSOCIATES INC.

Scott Osbourn, PE
Tampa Operations Manager and Associate

cc: Robert Wong, DEP SWD
Chris Bradley, PEF
William Luke, PEF

Attachment— NOx Emission Curves

SO/GH/ev

APPLICATION INFORMATION

Owner/Authorized Representative Statement

Complete if applying for an air construction permit or an initial FESOP.

1. Owner/Authorized Representative Name : **William Luke, Plant Manager**

2. Owner/Authorized Representative Mailing Address...
   Organization/Firm: **Florida Power Corporation dba Progress Energy Florida, Inc.**
   Street Address: **1729 Baillies Bluff Road**
   City: **Holiday** State: **Florida** Zip Code: **34691-9753**

3. Owner/Authorized Representative Telephone Numbers...
   Telephone: **(727) 943 - 3006** Fax: **(727) 943 - 3050**

4. Owner/Authorized Representative E-mail Address: **William.Luke@pgnmail.com**

5. Owner/Authorized Representative Statement:

   I, the undersigned, am the owner or authorized representative of the corporation, partnership, or other legal entity submitting this air permit application. To the best of my knowledge, the statements made in this application are true, accurate and complete, and any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department.

   Signature

   7/25/12
   Date

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: **Scott Osbourn**
   Registration Number: **57557**
2. Professional Engineer Mailing Address...
   Organization/Firm: **Golder Associates, Inc.***
   Street Address: **5100 Lemon Street, Suite 208**
   City: **Tampa** State: **FL** Zip Code: **33609**
3. Professional Engineer Telephone Numbers...
   Telephone: **(813) 287 - 1717** ext. **53304** Fax: **(813) 287 – 1716**
4. Professional Engineer E-mail Address: **sosbourn@golder.com**
5. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

(3) If the purpose of this application is to obtain a Title V air operation permit (check here ☐, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.

(4) If the purpose of this application is to obtain an air construction permit (check here ☒, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here ☐, if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here , if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Signature 7/27/12 Date

(seal)

* Attach any exception to certification statement.

ATTACHMENT

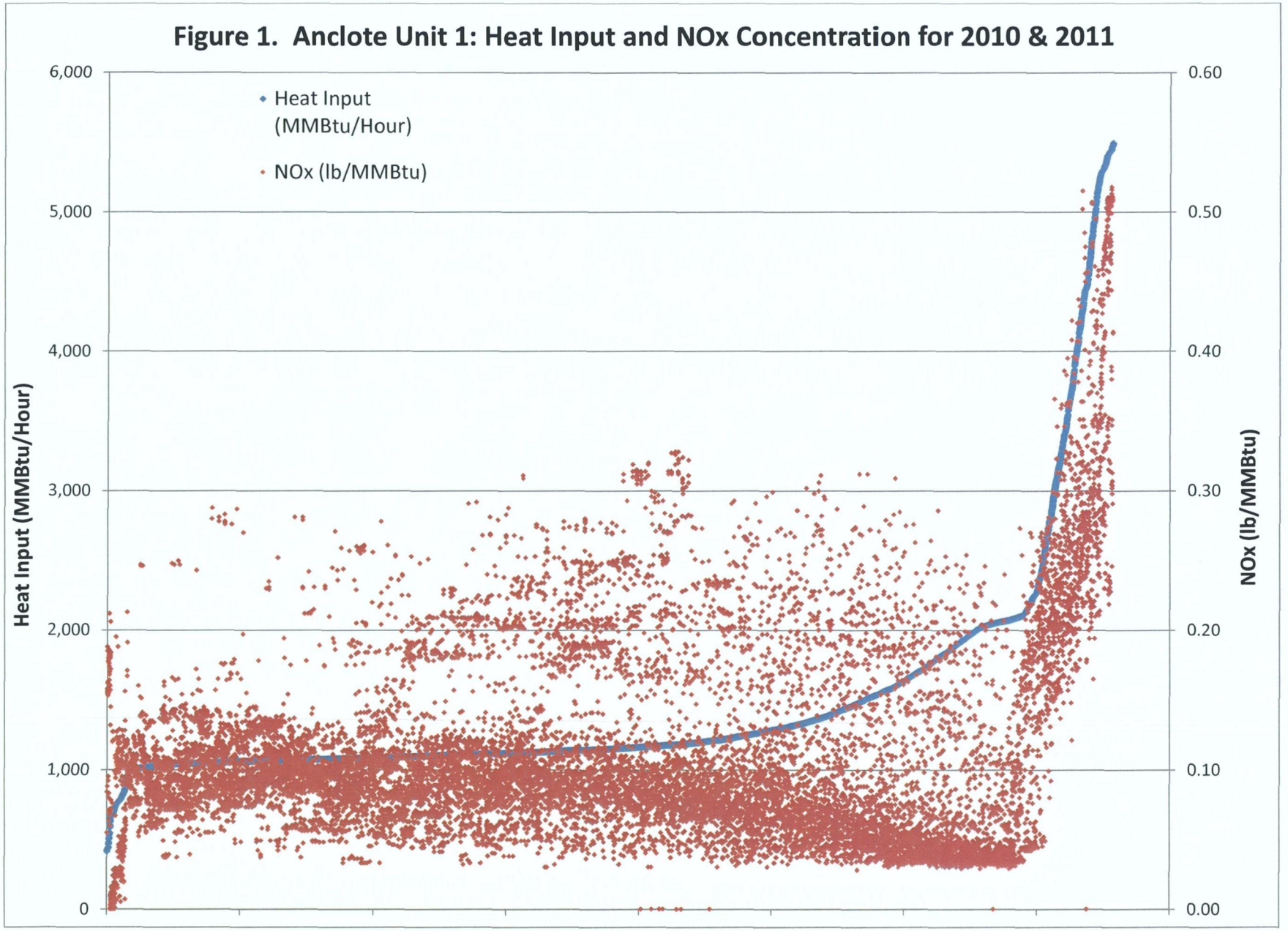


Figure 1. Anclote Unit 1: Heat Input and NOx Concentration for 2010 & 2011
Heat Input (MMBtu/Hour)
NOx (lb/MMBtu)
Heat Input (MMBtu/Hour)
NOx (lb/MMBtu)
6,000
5,000
4,000
3,000
2,000
1,000
0
0.60
0.50
0.40
0.30
0.20
0.10
0.00

Figure 2. Anclote Unit 2: Heat Input and NOx Concentration for 2010 and 2011

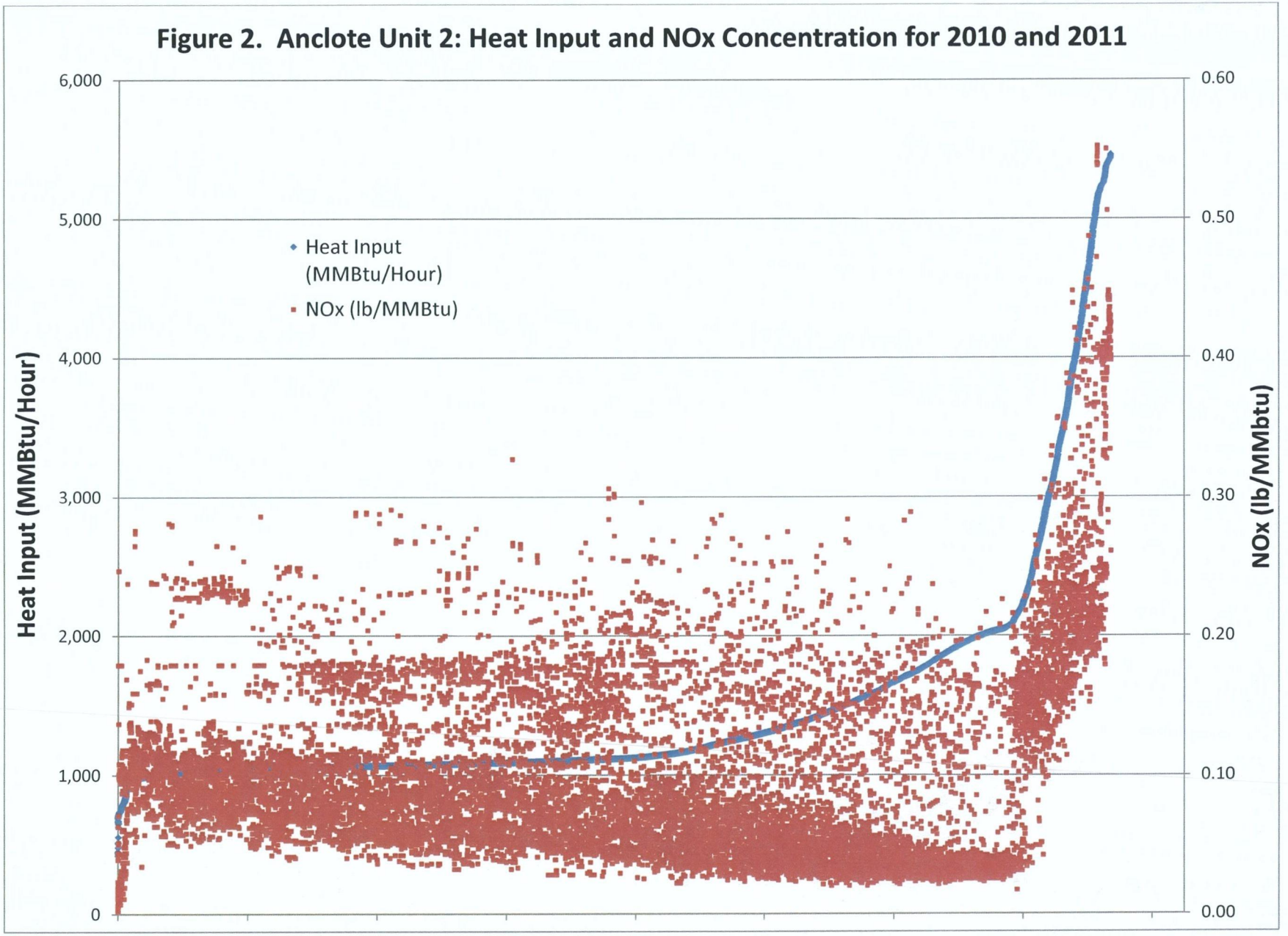


Figure 3. Anclote Unit 1: Heat Input and NOx Emission Rate for 2010 & 2011

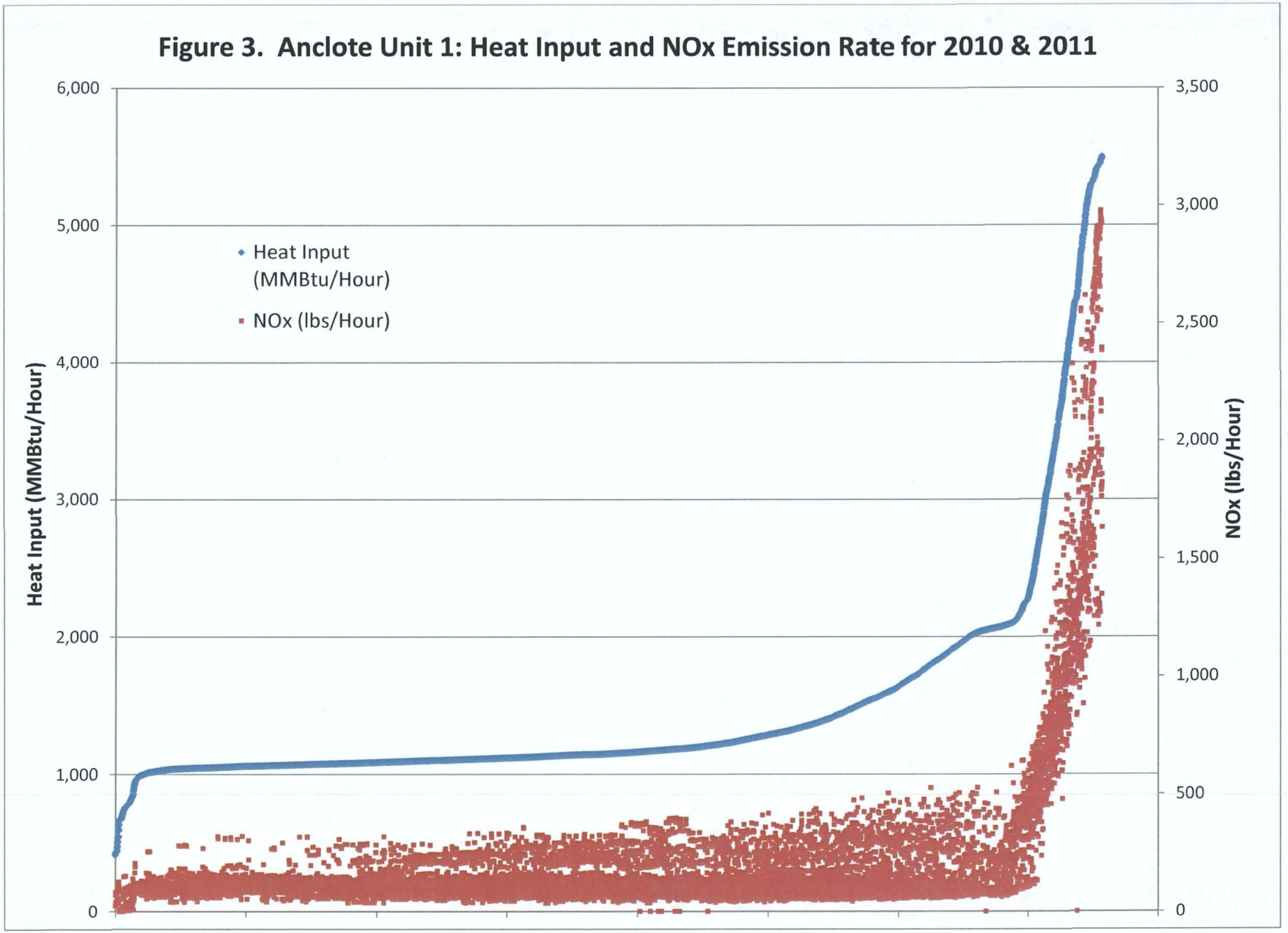


Figure 4. Anclote Unit 2: Heat Input and NOx Emission Rate for 2010 & 2011

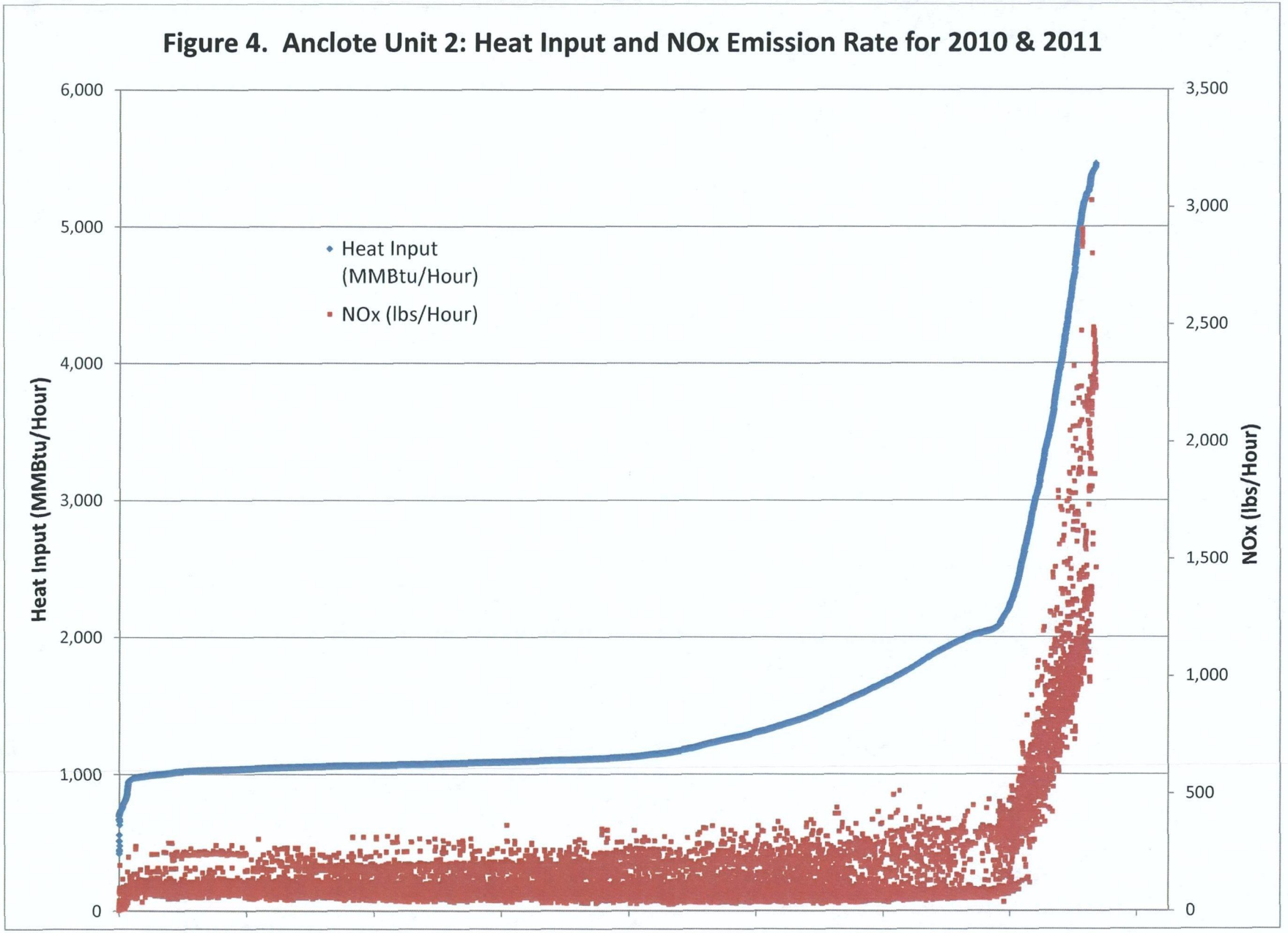
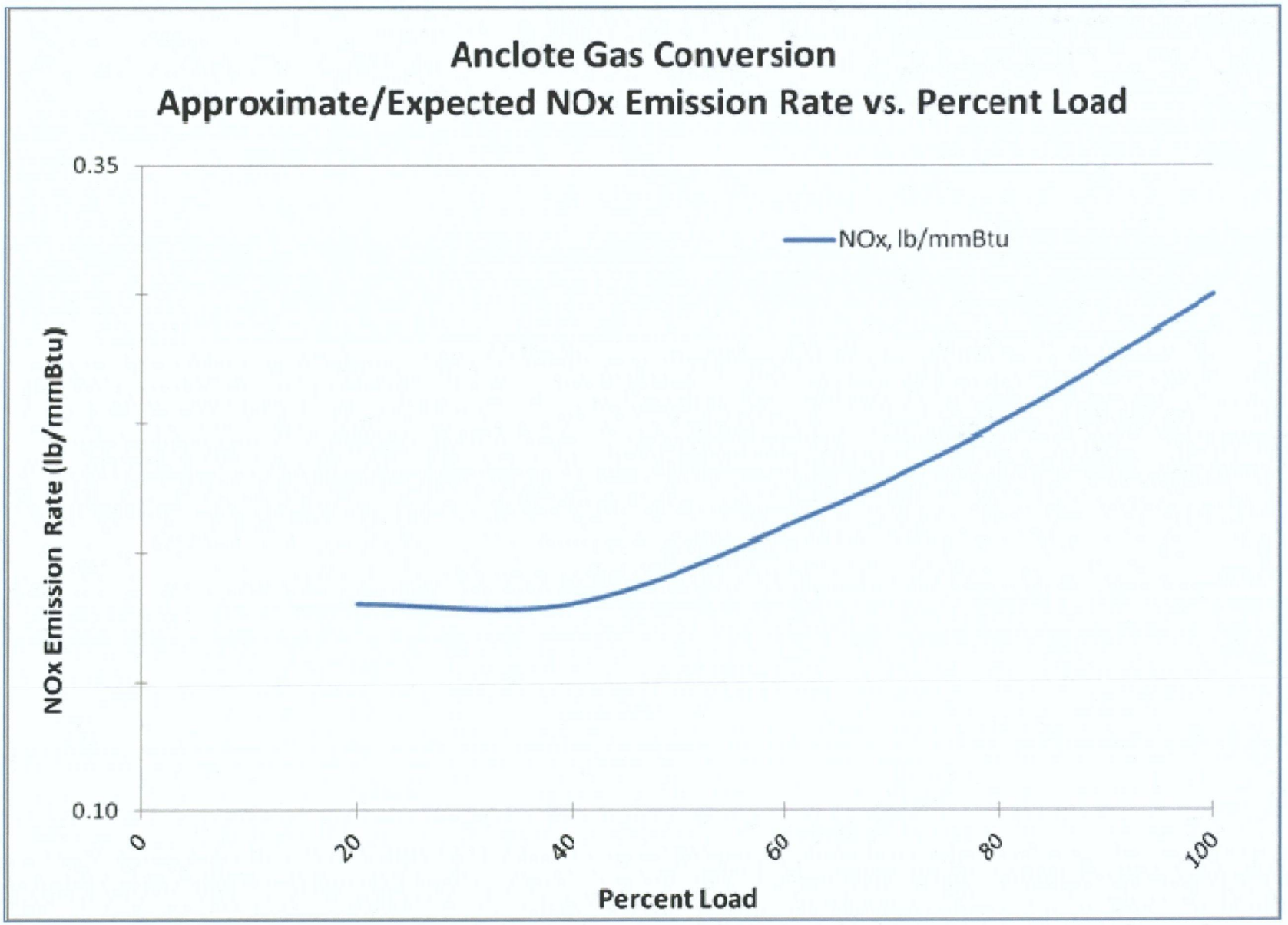


FIGURE 5.


Anclote Gas Conversion
Approximate/Expected NOx Emission Rate vs. Percent Load
NOx, lb/mmBtu
NOx Emission Rate (lb/mmBtu)
0.35
0.10
0
20
40
60
80
100
Percent Load

Progress Energy

July 26, 2012

A.A. Linero, P.E.
Office of Permitting and Compliance
Division of Air Resource Management
Florida Department of Environmental Protection
Division of Air Resource Management
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Response to Request for Additional Information (RAI)
File No. 1010017-013-AC (PSD-FL-419)
Anclote Power Generating Facility – Natural Gas Conversion
Florida Power Corporation d/b/a Progress Energy Florida, Inc.
Pasco County

Dear Mr. Linero:

On July 3, 2012, Florida Power Corporation d/b/a Progress Energy Florida, Inc. (PEF) received a Request for Additional Information (RAI) from the Division of Air Resource Management (DARM). This RAI was in response to an application for an Air Construction (AC) /Prevention of Significant Deterioration (PSD) permit for the Anclote Power Plant requesting the conversion of the two (2) utility boilers to combust 100% natural gas. The Department indicated that additional information was required in order to continue processing the application request. This information has been provided in the accompanying correspondence from Mr. Scott Osbourn, P.E. of Golder Associates, Inc. The information contained in this correspondence is also of an engineering nature; therefore, the Professional Engineer Certification page from DEP Form No. 62- DEP Form No. 62-210.900(1) has also been included as well.

If you need additional information, please contact Chris Bradley at (727) 820-5962.

Sincerely,

William Luke
Plant Manager, Anclote Power Plant

Enclosures

cc: Robert Wong, Administrator, FDEP SWD: robert.wong@dep.state.fl.us
Scott Osbourn, P.E., Golder Associates: sosbourn@golder.com

Golder Associates

July 27, 2012 113-89602

Mr. Al Linero, PE
Office of Permitting and Compliance
Florida Department of Environmental Protection
Division of Air Resource Management
2600 Blair Stone Road
Tallahassee, FL 32399-2400

RE: REQUEST FOR ADDITIONAL INFORMATION
FDEP FILE NO. 1010017-013-AC (PSD-FL-419)
ANCLOTE POWER GENERATING FACILITY – NATURAL GAS CONVERSION

Dear Mr. Linero:

This correspondence provides the clarification and additional information requested by the Florida Department of Environmental Protection (FDEP) concerning the above-referenced project. Golder Associates Inc. received the request for additional information via email on July 3, 2012. Golder is submitting this information on behalf of the applicant, Progress Energy Florida. The additional information is presented in the same sequence as in the FDEP's letter, with a restatement of each comment followed by the response in boldface italics.

1. **Comment 1** -- Please resubmit Table 1 in accordance with the definitions and procedures for "Baseline Actual Emissions" and "Projected Actual Emissions" contained in Rule 62-210.200 (Definitions). The definitions are attached for your convenience. Some of the factors used in determining baseline and projected actual emissions would not be important for the project. However an estimate of expected future operation (even if unchanged from recent operation) would be very helpful.

   Response:

   The definitions provided by the Department, from Rule 62-210.200 (Definitions), refer to the definitions for Baseline Actual Emissions: Rule 62-210.200(36) and Projected Actual Emissions: Rule 62-210.200(252).

   With respect to "Baseline Actual Emissions," PEF's air application had provided a summary for the most recent period of representative operation, determined to be calendar years 2006 through 2010. A comparison of calendar year 2011 to the representative five year period (i.e., 2006 through 2010) had indicated a significant difference in fuel mix and was, therefore deemed to not be representative of recent normal operation. Specifically, as noted in the application, the firing of No.6 fuel oil decreased significantly in 2011 when compared to the previous 5-year period. PEF and Golder have subsequently had additional discussions with the DEP about the baseline analysis and understand that the DEP is in agreement with this approach.

   With respect to "Projected Actual Emissions", PEF has conducted future operating projections for the Anclote Plant, both with and without the natural gas conversion, and

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the projections do not reflect any significant differences as a result of the conversion of these units to natural gas. The historical capacity factors (i.e., based on annual MW-hrs) for both units has ranged from approximately 24 percent to 47 percent during the previous 5-year operating period. For purposes of the fuel conversion project, PEF does not anticipate that future actual operation would be significantly different, ranging from capacity factor estimates of approximately 23 percent to 39 percent.

Using projected capacity factors and heat rates for Units 1 and 2, which were submitted to the Florida Public Service Commission (FPSC) on June 4, 2012 (Docket No. 120103-E1), the highest projected combined capacity factors occur in 2014 with 29.7 percent and 39.1 percent for Units 1 and 2, respectively. Using a rated MW output for the units of 510 MW and applicable heat rates, the total heat input for each of the units can be determined.

That is, heat input estimated for 2014 is as follows:

[(0.297) (11,196 Btu/kW-hr) + (0.391) (10,735 Btu/kW-hr)] [(510 MW) (8,760 hr/yr) (1,000 kW-hr/MW-hr) (MMBtu/1,000,000 Btu)] = 33,607,954 MMBtu/yr

Applying this estimated future heat input to the proposed emission factors for future operation (i.e., NOx: 0.30 lb/MMBtu and CO: 0.15 lb/MMBtu), results in the estimates noted in the revised Table 1 below.

Pollutant	24-Month Baseline Period Selected (Years)	Applicant Baseline Actual Emissions (tons/year)	Revised Applicant Projected Actual Emissions (tons/year)	Projected Increase (tons/year)	PSD SER (tons/year)	Exceeds PSD SER? (Yes/No)
CO	2006 – 2007	506	2,521	+2,015	100	**Yes**
VOC	2006 – 2007	78	84	+6	40	No
NOX	2006 – 2007	6,540	5,041[1]	-1,499	40	No
SO2	2006 – 2007	25,273	60	-25,213	40	No
PM	2006 – 2007	805	548	-257	25	No
PM10	2006 – 2007	572	411	-161	15	No
PM2.5	2006 – 2007	193	137	-56	10	No
Lead	2009 – 2010	0.72	0.01	-0.71	0.60	No
GHG (CO2e)	2006 – 2007	2,517,405	1,955,983	-541,422	75,000	No

[1] Based on a conservative emission rate of 0.3 lb/MMBtu across the load range; however, it is anticipated that the emission rate will vary with load as is illustrated in attached Figures 1 and 2.

It is PEF's position is that there is not a causal relationship between the Project and future actual utilization. The project is being driven by PEF's compliance obligations under EPA's Mercury and Air Toxics Standards (i.e., the MATS Rule) and requirements. Hourly emission rates (lb/hr) for all pollutants, except CO and VOCs, will decrease as a result of the fuel conversion project; therefore, the only way that future actual annual emissions of these pollutants could be greater would be due to a system wide demand increase. Given the possible shutdown of other generating units within PEF's fleet, it is understood that

meeting existing demand with fewer units is considered system wide demand growth for the remaining units. In addition, overall system wide demand is also projected to increase regardless of the number of generating units. Such an increase in emissions due to a demand increase unrelated to the Project would be excluded from the determination of regulatory applicability. Specifically, in calculating any increase in emissions that result from the change in the method of operation at an electric utility steam generating unit, that portion of the unit's emissions following the change that could have been accommodated during the representative baseline period may be excluded.

2. **Comment 2** -- Please submit, if available, curves showing the relationship between NO_x mass (lb/hour) and concentration (lb/MMBtu) emissions with respect to unit load. The data should be readily available because it is submitted to EPA on a quarterly basis for purpose of compliance with Clean Air Act Title IV requirements.

   Response:

   As presented in the attachment to this response package, Figures 1 and 2 show (for calendar years 2010 and 2011) NOx concentrations with respect to heat input across the entire unit operating load for Units 1 and 2, respectively. Figures 3 and 4 show NOx mass emissions with respect to heat input for each unit, for the same timeframe. The operations included firing of both natural gas and heavy fuel oil.

   With regard to post-project operations, Alstom conducted a study in March 2012 to generate predictive NOx emissions data (lb/hour and lb/MMBtu) as a function of unit load based on the exclusive firing of natural gas subsequent to fuel conversion of the two units. A summary of the results of the study is presented in Figure 5, which illustrates the relationship between NOx emissions (lb/MMBtu) and unit load, given in terms of percent load.

3. **Comment 3** -- The proposed NO_x guarantee is 0.3 lb/MMBtu. Please advise whether this factor applies throughout the entire range of operation or just at high load. It is possible that the curve for the new gas burners may show superior NO_x emissions throughout the entire range of operation, in which case it may not be necessary to specify maximum hours of operation (as appears to be suggested by the application).

   Response:

   The maximum NOx value (0.3 lb/MMBtu) at full load was used to represent the maximum impact for air quality modeling and applicability assessments. Since this emission value is less than the highest historical NOx emission rate (i.e., as high as 0.33 to 0.34 lb/MMBtu for both units during the 2006- 2007 baseline period), PEF believes that it is not necessary to specify a maximum number of operating hours for future (post-modification) operation. Specifically, if the post-modification rate is lower than the highest baseline rate, then emissions cannot be higher in the future, independent of any increase in the number of future operating hours.

   Finally, based on additional discussions with the Department on July 24, 2012, PEF confirmed that the Anclote fuel conversion project will be using CCOFA and not SOFA for NOx control. PEF understands that this design will also help to minimize CO emissions from the proposed project. In addition, the Department had also inquired about the proposed increase in the heat input to the units as a result of the fuel conversion, from

5,000 MMBtu/hr to 5,500 MMBtu/hr (i.e., an approximate 10 percent increase). Engineering studies have indicated that gas-fired boilers are typically about 4 to 5 percent less efficient than oil-fired boilers, which would account for part of the increase. The remaining 5 to 6 percent heat input increase is for capacity margin (i.e., up to 5 percent steam over pressure in the boiler for recovery of additional MW output, more in line with the rated capacity of the steam generator).

Since this RAI response includes additional information of an engineering nature, a PE certification page and a responsible official certification page, are also included. If you should have any questions concerning this submittal package, please contact either me at (813) 287-717 or Chris Bradley at (727) 820-5962.

Sincerely,

GOLDER ASSOCIATES INC.

Scott Osbourn, PE
Tampa Operations Manager and Associate

cc: Robert Wong, DEP SWD
Chris Bradley, PEF
William Luke, PEF

Attachment— NOx Emission Curves

SO/GH/ev

APPLICATION INFORMATION

Owner/Authorized Representative Statement

Complete if applying for an air construction permit or an initial FESOP.

1. Owner/Authorized Representative Name : **William Luke, Plant Manager**

2. Owner/Authorized Representative Mailing Address...
   Organization/Firm: **Florida Power Corporation dba Progress Energy Florida, Inc.**
   Street Address: **1729 Baillies Bluff Road**
   City: **Holiday** State: **Florida** Zip Code: **34691-9753**

3. Owner/Authorized Representative Telephone Numbers...
   Telephone: **(727) 943 - 3006** Fax: **(727) 943 - 3050**

4. Owner/Authorized Representative E-mail Address: **William.Luke@pgnmail.com**

5. Owner/Authorized Representative Statement:

   I, the undersigned, am the owner or authorized representative of the corporation, partnership, or other legal entity submitting this air permit application. To the best of my knowledge, the statements made in this application are true, accurate and complete, and any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department.

   Signature

   7/25/12
   Date

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: **Scott Osbourn**
   Registration Number: **57557**
2. Professional Engineer Mailing Address...
   Organization/Firm: **Golder Associates, Inc.***
   Street Address: **5100 Lemon Street, Suite 208**
   City: **Tampa** State: **FL** Zip Code: **33609**
3. Professional Engineer Telephone Numbers...
   Telephone: **(813) 287 - 1717** ext. **53304** Fax: **(813) 287 – 1716**
4. Professional Engineer E-mail Address: **sosbourn@golder.com**
5. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

(3) If the purpose of this application is to obtain a Title V air operation permit (check here ☐, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.

(4) If the purpose of this application is to obtain an air construction permit (check here ☒, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here ☐, if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here , if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Signature Date 7/27/12

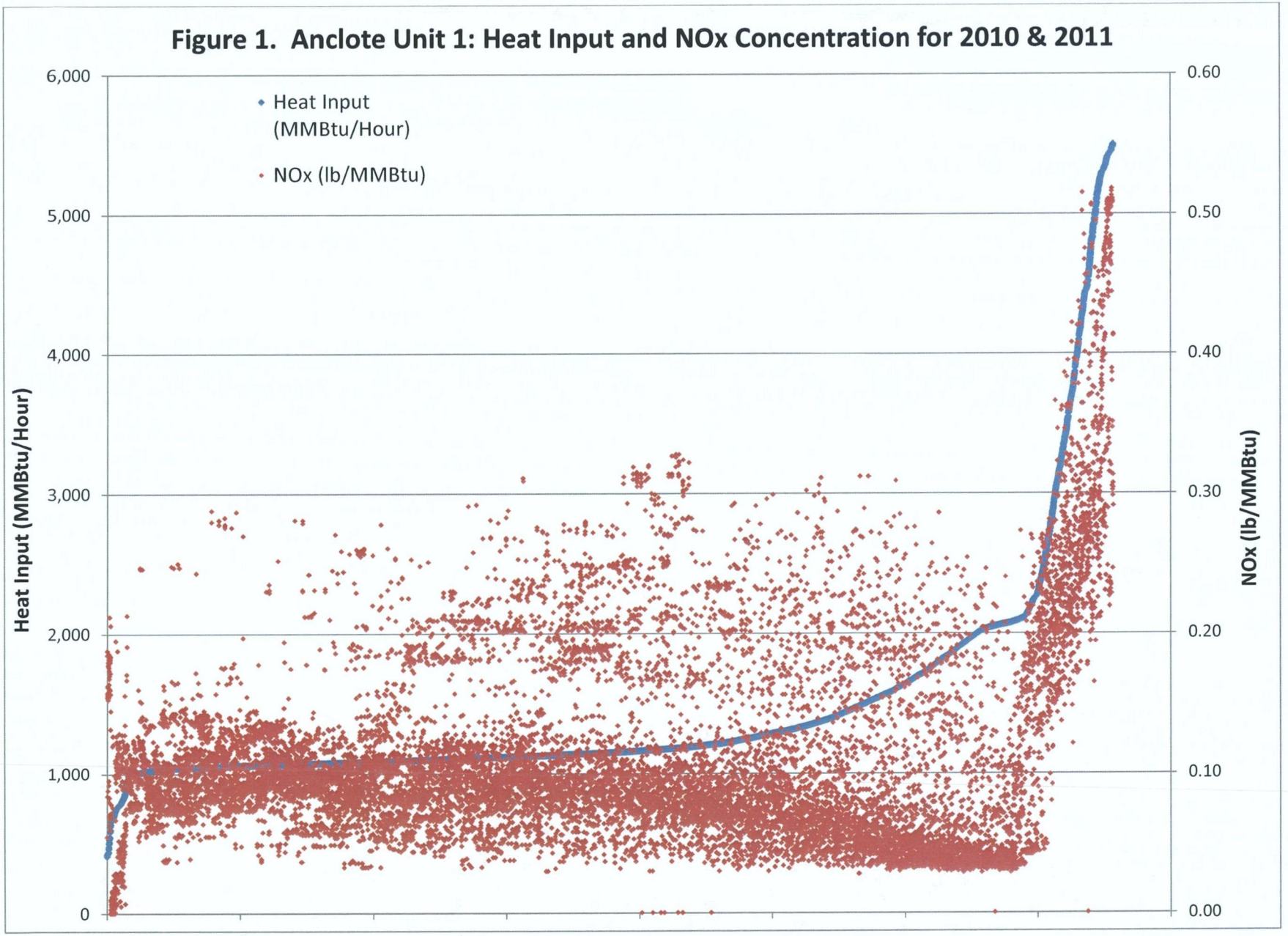
(seal)

SCOTT OSBOURN LICENSE NO. 57557 STATE OF FLORIDA PROFESSIONAL ENGINEER

* Attach any exception to certification statement.

ATTACHMENT

Figure 1. Anclote Unit 1: Heat Input and NOx Concentration for 2010 & 2011



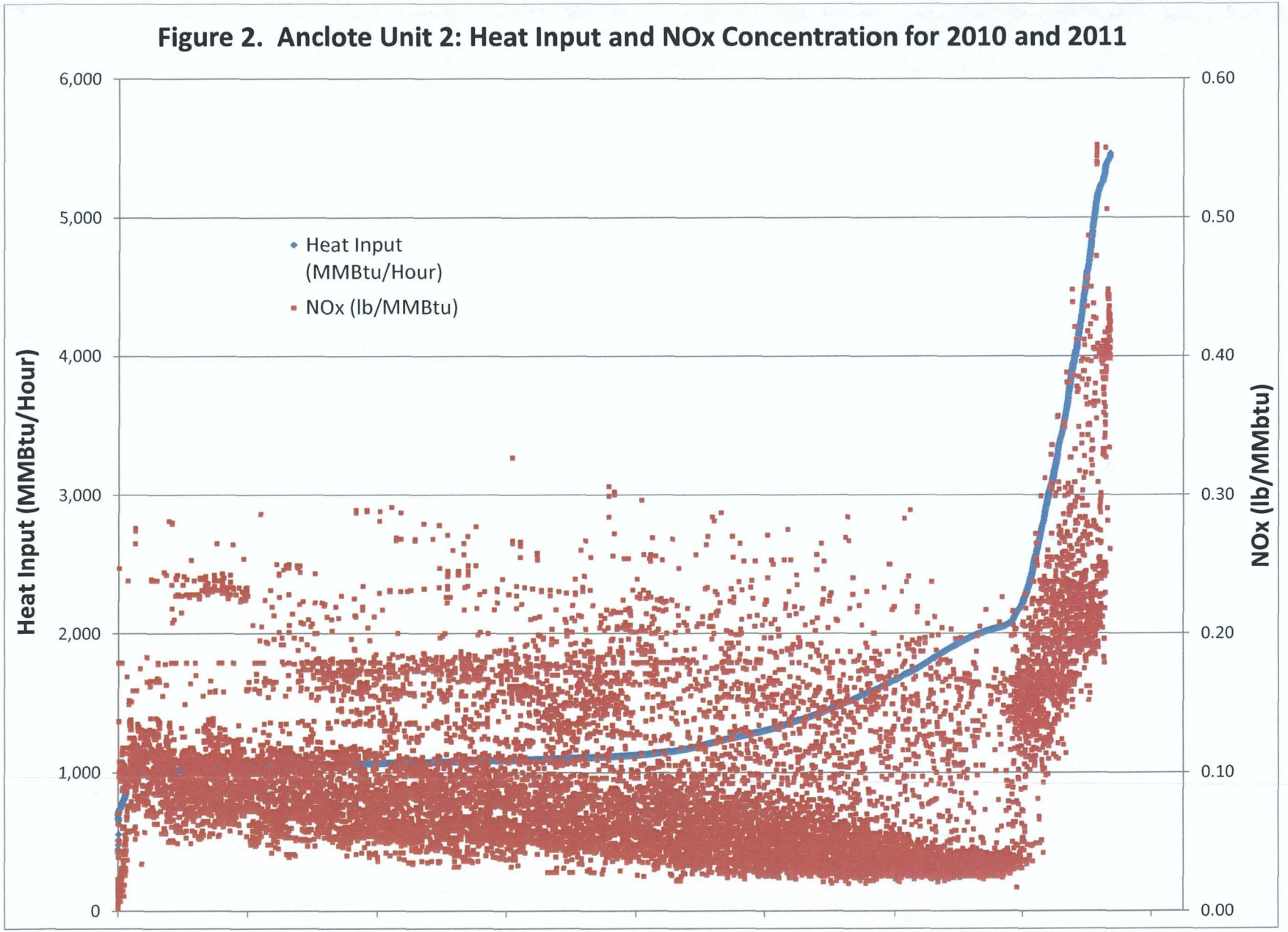


Figure 2. Anclote Unit 2: Heat Input and NOx Concentration for 2010 and 2011
Heat Input (MMBtu/Hour)
NOx (lb/MMBtu)
Heat Input (MMBtu/Hour)
NOx (lb/MMbtu)
6,000
5,000
4,000
3,000
2,000
1,000
0
0.60
0.50
0.40
0.30
0.20
0.10
0.00

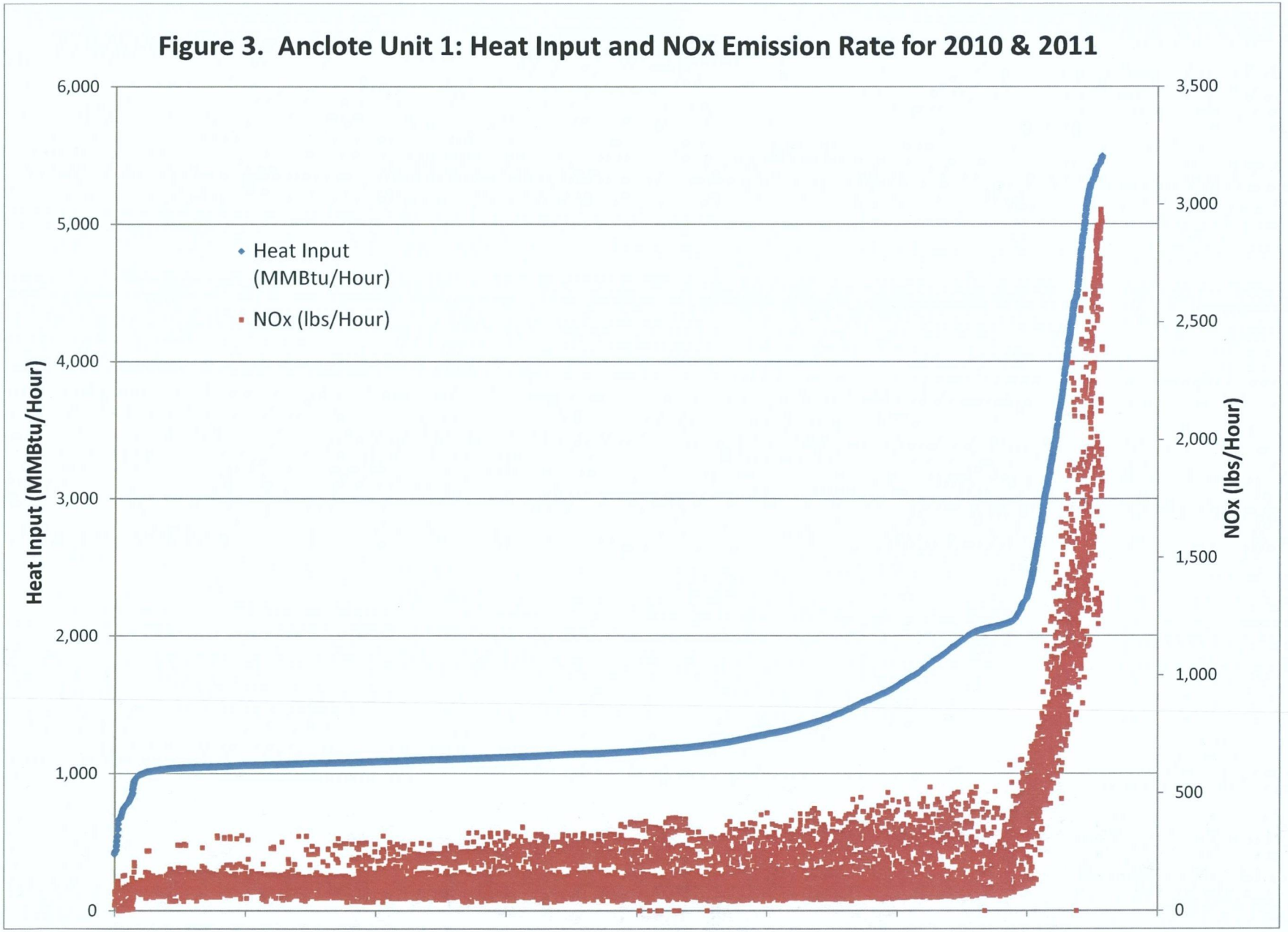


Figure 3. Anclote Unit 1: Heat Input and NOx Emission Rate for 2010 & 2011
6,000
5,000
4,000
3,000
2,000
1,000
0
Heat Input (MMBtu/Hour)
Heat Input (MMBtu/Hour)
NOx (lbs/Hour)
3,500
3,000
2,500
2,000
1,500
1,000
500
0
NOx (lbs/Hour)

Figure 4. Anclote Unit 2: Heat Input and NOx Emission Rate for 2010 & 2011

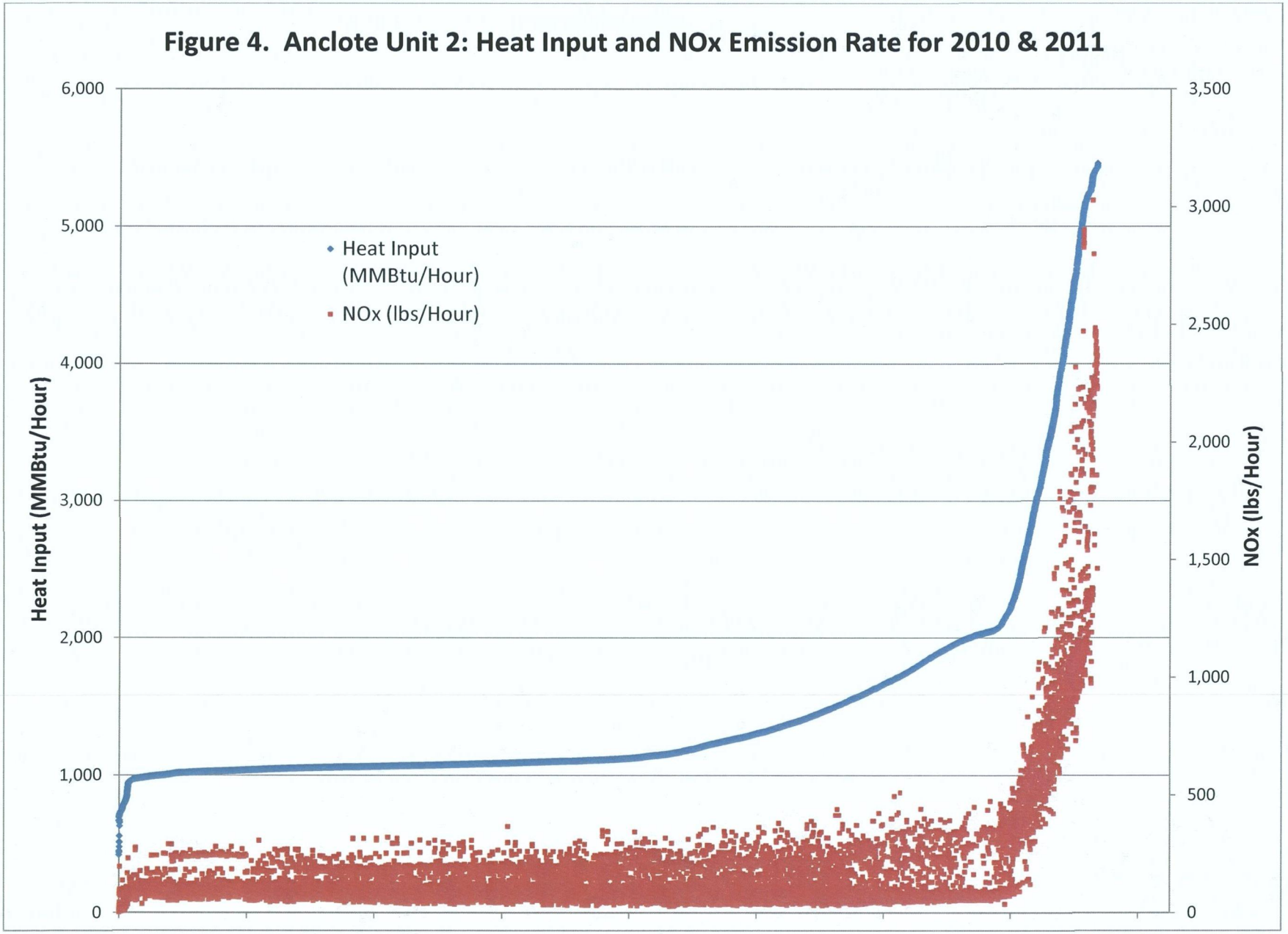
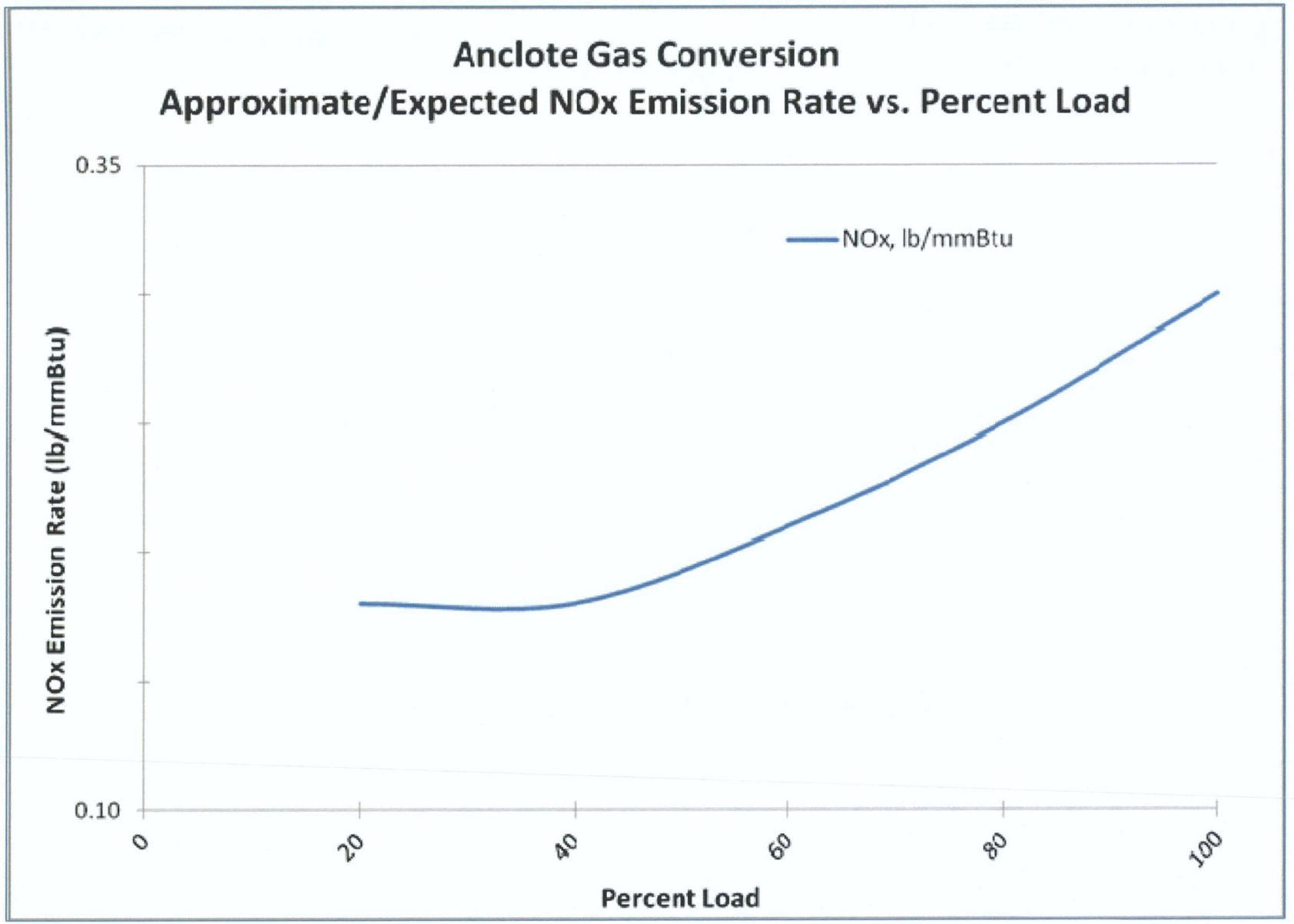


FIGURE 5.


Anclote Gas Conversion
Approximate/Expected NOx Emission Rate vs. Percent Load
0.35
0.10
NOx, lb/mmBtu
NOx Emission Rate (lb/mmBtu)
0
20
40
60
80
100
Percent Load