Golder Associates

September 24, 2010 103-89500

Robert Bull, P.E.
New Source Review Section
Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blair Stone Rd.
Tallahassee, FL 32399-2400

RE: PROJECT NO. 0950137-032-AC
REQUEST FOR ADDITIONAL INFORMATION (RAI)
STANTON ENERGY CENTER, UNITS 1 AND 2
HEAT INPUT INCREASE AND PERMIT MODIFICATIONS

Dear Mr. Bull:

On April 2, 2010, the Department received OUC's request for a heat input increase for Units 1 and 2, as well as other permit condition revisions. Initial construction was authorized under Site Certification PA81-14 and PSD-FL-084. On April 28, 2010, OUC received a request for additional information (RAI) in order to continue processing this request. On July 26, 2010 and, subsequently, on August 25, 2010, OUC requested an extension of time in which to respond to this RAI and the Department granted an extension to August 26, 2010 and to September 25, 2010, respectively. The Department's comments are addressed below in the order in which they were received. Where appropriate, any assumptions, calculations and reference materials that are used or reflected in the responses are provided.

1. The original heat input limit for Unit 1 was 4,136 mmBtu/hr as part of the original site certification under PA81-14. This limit was increased to 4,286 mmBtu/hr under PSD-FL-084 as well as the limit for Unit 2 was set at 4,286 mmBtu/hr. Both units have been operating under these conditions since 1996. Based upon hourly acid rain data (calendar years 2005-2007), both units demonstrate the ability to operate at 468 MW and within the 4,286 mmBtu/hr limit. However, this information also shows the units operating above the heat input limit and the ability of the units to operate at the higher values. Provide an explanation for the numerous heat input rate excursions when the facility has demonstrated the ability to operate at maximum generating capacity and within the permitted maximum heat input rates. Are there operational changes which could alleviate some of the issues such as coal storage or drying?*

**Calendar years 2005 through 2007 were chosen since they represented the timeframes for the highest two-year averages in Table A-6.*

Response: The Department is correct that the Acid Rain heat input data show the ability of both units to operate at greater than 450 MW and within the 4,286 mmBtu/hr heat input limit, as well as the ability to operate above the heat input limit and generate approximately the same MW output. In fact, attached are several figures that graphically depict this relationship (Figures 1 and 2, representing Units 1 and 2, respectively).

It is important to note that these units have always been capable of operating (and have consistently operated) at levels which are higher than the short-term heat input level (mmBtu/hr) which is noted in the permit, but which does not include a measurement method or averaging period. Nothing has really changed physically or operationally with either unit. Rather, the proposed correction (increase) to the heat input provision eliminates the need for the permitting note incorporated into previous permits and implements a more accurate and consistent method of heat input monitoring and reporting (i.e., it specifies the method of measurement and the averaging time). It is not a physical change or an operational change (i.e., a change in the method of operation of the facility). Actual emissions are not impacted. Accordingly, since future operation of these units will not be significantly different from historical operation as a result of this permitting action, the reported annual emissions, post-correction, will not be significantly different from historical emissions.

However, in spite of the units' recognized ability to operate at heat input levels above 4,286 mmBtu/hr, the Department's above-referenced anomaly merits explanation. Specifically, the Department points out the perceived ability of both units to operate at 468 MW and within the 4,286 mmBtu/hr heat input level, as well as the ability to operate above that level and generate approximately the same MW output. Generally, the explanation for the variation in reported heat input, for what appears to be the same MW output, can be summarized into the following categories:

- Fuel quality (e.g., Btu content, hardness, mill fineness, etc.);
- Moisture (in or on the coal, plus heat of evaporation loss);
- Boiler air (total excess air, plus dry gas loss); and
- Power plant operational procedures that dictate a required MW output, although the heat input may be variable

Consequently, there are several key variables outside of OUC's control, such as increased moisture impacts due to the weather and the granular nature of the coal retaining more moisture, which have a negative impact on boiler efficiency. The variable nature of Stanton Energy Center's delivered coal includes not just its granular nature, but the carbon content, heating value, ash, sulfur, etc. Even traditional mines have much more variability these days.

Steam sootblowing is variable and dependent on the fuel characteristics. Due to ash and moisture characteristics, there has also been a need for more frequent steam sootblowing with the current coal situation compared to the past. Sootblowing is designed to remove combustion deposits from the boiler tubes to optimize the heat transfer; however, the more frequent the sootblowing, the less steam is available to the steam cycle that is used to produce electricity. Therefore, more heat input may be required to make up the difference in the required MW output.

The moisture issue is very real and attempts were made to correlate rainfall events with heat input excursions. However, the rainfall occurrence doesn't exactly translate into timeframes when the exposed coal would be fired, so the causal link is difficult to demonstrate.

Some of the impacts are also related to typical wear and tear on equipment, which occurs between maintenance cycles. OUC takes a conservative approach to maintenance cycles (i.e., better than the industry standards) for reliability purposes. Equipment mechanically deteriorates from normal wear in various ways. Fluid wear on pump impellers and steam path wear on turbine blades are examples. This wear can be corrected by weld repairs and parts replacement. Other impacts to heat rate include wear of turbine internal seals and clearances between overhauls. Frequent maintenance occurs on coal mills to maintain proper coal fineness, along with burner and controls tuning, air preheater cleaning, and boiler chemical cleaning. Recent projects to replace Unit 1 cooling tower nozzles for restoring condenser vacuum, or the repair of HP FW heater internal plates to regain efficiency from past internal bypass flow represent less frequent system maintenance. As these components undergo normal wear and tear, the overall unit efficiency and heat rate (Btu required for each kW-hour produced) will become less than optimal until the next planned maintenance cycle. This can obviously have an effect on the observed heat input (mmBtu/hr) per MW produced and can vary cyclically over time. OUC is very proud of its maintenance program and steam unit operating performance, as depicted in the attached Figure 3– Equivalent Forced Outage Rate and Figure 4- Equivalent Availability Factor. Both of these figures demonstrate that SEC Units 1 and 2 perform significantly better than average industry benchmarks for these parameters.

2. The units have shown the ability to operate at heat input values higher than the permitted values. Please provide any modifications to each unit which may have assisted in the units to perform at the higher heat input values. Please provide representative data documenting operation at elevated heat input rates from 1996 from 2004.

Response: OUC has reviewed a listing all of the capital projects conducted for Units 1 and 2 since 1996. A summary of the major projects is provided in Tables 1 and 2 (for Units 1 and 2, respectively) of this response package. It is our opinion that none of the projects undertaken has the ability, or the intent, to increase the units' firing rate above its original design capability. In fact, as described in the previous response above, many of these activities are undertaken to improve generation reliability and to regain lost operating efficiencies as part of each unit's planned maintenance cycle.

Regarding the documentation of elevated heat input rates over time, OUC initially reviewed Acid Rain heat input data from 2004 through 2009. At the Department's request, OUC has also gone back and assessed the data from 1997 (the first year in which CEMS data were available for these units). The data plots (see Figures 5 and 6) illustrate that these units have always had the capability to operate at these higher heat input levels. It is important to note that the heat input rate provisions included in the initial permits did not specify a method for monitoring and reporting heat input. Specifically, CEMS-measured heat input was generally acknowledged to be biased high at that time and there was no averaging period specified.

3. Please calculate baseline actual emissions and projected actual emissions as defined in Rules 62-212.300(1)(e) and 62-210.370(2), F.A.C. to determine actual emissions from the project. The application calculations showed the CO emission calculations would be greater than the significant emissions rates. Please provide a BACT Analysis for CO and any other pollutants which exceed the significant emission rates. A project which triggers the significant emission rates and is subject to the PSD review requires a $7,500 check submittal along with the response to this RAI. Please provide all assumptions, calculations and reference materials that are used for these values analysis.

Response: Recent teleconferences with the Department have served to further clarify the intent and the approach to this requested permitting action. Initially, OUC's April 2, 2010 application treated this heat input correction as an implied operational change (i.e., a change in the method of heat input monitoring and reporting). Based on this approach, OUC evaluated this project as though it were a potential modification, calculating baseline actual emissions and projected actual emissions as defined in Rules 62-212.300(1)(e) and 62-210.370(2), F.A.C. to determine whether an actual emissions increase resulted from the "project".

However, the "project" for regulatory applicability purposes consists of the requested correction (increase) in the allowable heat input limit, even though no "real" actual heat input increase has occurred. In other words, these units have always been capable of operating (and have consistently operated) at the higher than allowable short-term heat input rates (mmBtu/hr) and nothing has really changed physically or operationally with either unit.

The proposed correction (increase) to the heat input provision eliminates the need for the permitting note incorporated into previous permits and implements a more accurate and consistent method of heat input monitoring and reporting. It is not a physical change or an operational change (i.e., a change in the method of operation of the facility). Actual emissions are not impacted by this proposed permitting action. Specifically, as had been discussed in the previous responses, these units have demonstrated the ability to operate at the higher requested short-term heat input rates (4,715 mmBtu/hr) since 1997 (i.e., when CEM-measured heat input was first reported). In fact, the historical heat input values have been higher than the allowable limit that was included in OUC's April 2, 2010 request to increase the heat input level. The historical data, combined with recent heat input data from 2009-2010 (based on a 4-hour average), indicate a need for an allowable limit of 4,800 mmBtu/hr. This represents a revised request from the previously requested allowable heat input level. Specifically, as depicted in Figures 7 and 8, recent unbiased heat input data for close to a 2 year period (January 2009 through September 2010), indicates the need for an allowable limit of 4,800 mmBtu/hr to avoid de-rating of the units. Therefore, OUC would like to clarify that their request for a revised heat input limit should be set at 4,800 mmBtu/hr, rather than the previously requested value of 4,715 mmBtu/hr. These higher heat input values are consistently demonstrated in past years of operation and continue to be the case with the most recent 2 year operating history.

Further, based on previous discussions regarding capital projects associated with these units as early as 1997, nothing has fundamentally changed physically or operationally with either unit. It is our opinion that none of the projects undertaken has the ability, or the intent, to increase the units' firing rate above its original design capability. In fact, as described in the previous responses above, many of these activities are undertaken to improve generation reliability and to regain lost operating efficiencies as part of each unit's planned maintenance cycle. If anything, the installation of low-NO_x burners and FGD system upgrades have actually served to reduce emissions from historic levels.

Accordingly, since future operation of these units will not be significantly different from historical operation as a result of this permitting action, the reported annual emissions, post-correction, will not be significantly different from historical emissions. These are base load units and, although capacity factors will vary slightly from year-to-year, annual operating rates are fairly consistent, as summarized below.

Unit No.	Year	Annual Heat Input (MMBtu/hr)	Annual Capacity Factor (%)*
1	2003	31,842,481	85
1	2004	28,504,372	76
1	2005	36,475,115	97
1	2006	31,233,371	83
1	2007	32,228,342	86
1	2008	30,722,077	81
1	2009	31,462,117	84

Unit No.	Year	Annual Heat Input (MMBtu/hr)	Annual Capacity Factor (%)*
2	2003	29,984,462	80
2	2004	31,073,463	83
2	2005	32,905,551	88
2	2006	34,820,403	93
2	2007	31,456,921	84
2	2008	28,895,806	74
2	2009	28,070,274	75

OUC, therefore, requests a permit correction to an allowable heat input limit of 4,800 MMBtu/hr (four-hour average) for each unit and will continue to track and report emissions annually for five years to demonstrate that the past actual operation summarized above is representative of future operation. The future operation comparisons will be made to the emission baseline established and summarized below.

Air Pollutant	Highest 2-year Average	Highest 2-year Period
CO	4,402	2005-2006
NOx	9,509	2005-2006
PM	265	2006-2007
PM_{10}	265	2006-2007
SO_2	8,482	2005-2006
VOC	34	2005-2006

The above values are documented in the attached revised Tables A-1 through A-6. The methodology of annual tracking and reporting is similar to that employed in the SEC Unit 1 burner replacement project (Permit No. 0950137-009-AC) and for the replacement of the primary superheat tube banks for Unit 2 (Permit No. 0950137-008-AC). The annual emission reports (which have accompanied the annual operating reports summarized above), have been submitted for Units 1 and 2 four times on an annual basis (of the five-year period required), that demonstrated in accordance with 40 CFR 52.21 (b)(21)(v) and (b)(33) that the previous physical changes did not result in emissions increases of these pollutants. OUC proposes to continue to submit these annual reports for a five-year period (post-correction) to demonstrate that the estimates provided in this assessment are representative of future operation.

4. The application requests that limits and testing requirements for mercury, beryllium, lead, and fluorides be removed from Unit 2. The mercury testing and emission limit will remain in the permit since this is a coal fired unit and mercury is a pollutant of concern. Beryllium is no longer a regulated PSD pollutant and the emission limits will be removed from the permit. Fluoride was not a BACT pollutant. The fluoride emission limit will be removed from the permit provided the applicant reports fluoride content as part of its routine coal analysis. Lead is a BACT pollutant and the emission limit will remain in the permit. However, based on the results of the proposed compliance testing for lead, future lead compliance testing may be based upon the special testing requirements of 62-297.310, F.A.C.

Response: OUC will agree to report fluoride content as part of its routine coal analysis in exchange for removal of the fluoride emission limit in the permit. In addition, based on the Department's comment, OUC understands that lead emission testing will only be required in the future if the Department requires reasonable assurance of compliance with the limit.

Pursuant to Rule 62-4.050(3), F.A.C, responses to Department requests for additional information of an engineering nature are to be certified by a professional engineer registered in the state of Florida, as well as a certification statement by the authorized representative or responsible official. Therefore, please find these certifications attached to this response package.

It is our understanding that the Department will resume processing of our application upon receipt of this requested information. If you should have any questions, please do not hesitate to contact me at (813) 287-1717.

Sincerely,

GOLDER ASSOCIATES INC.

Scott Osbourn, P.E.
Associate and Senior Consultant

Attachments—Figures and Tables

cc: Jeff Koerner, FDEP
Garfield Blair, OUC
David Baez, OUC
Michael Cooke, Esq.

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: **Scott H. Osbourn, Senior Consultant**
   Registration Number: **57557**

2. Professional Engineer Mailing Address...
   Organization/Firm: **Golder Associates, Inc.**
   Street Address: **5100 West Lemon Street, Suite 208**
   City: **Tampa** State: **FL** Zip Code: **33609**

3. Professional Engineer Telephone Numbers...
   Telephone: **(813) 287-1717** ext. 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 [X], 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 9/24/10

(seal)

* Attach any exception to certification statement.

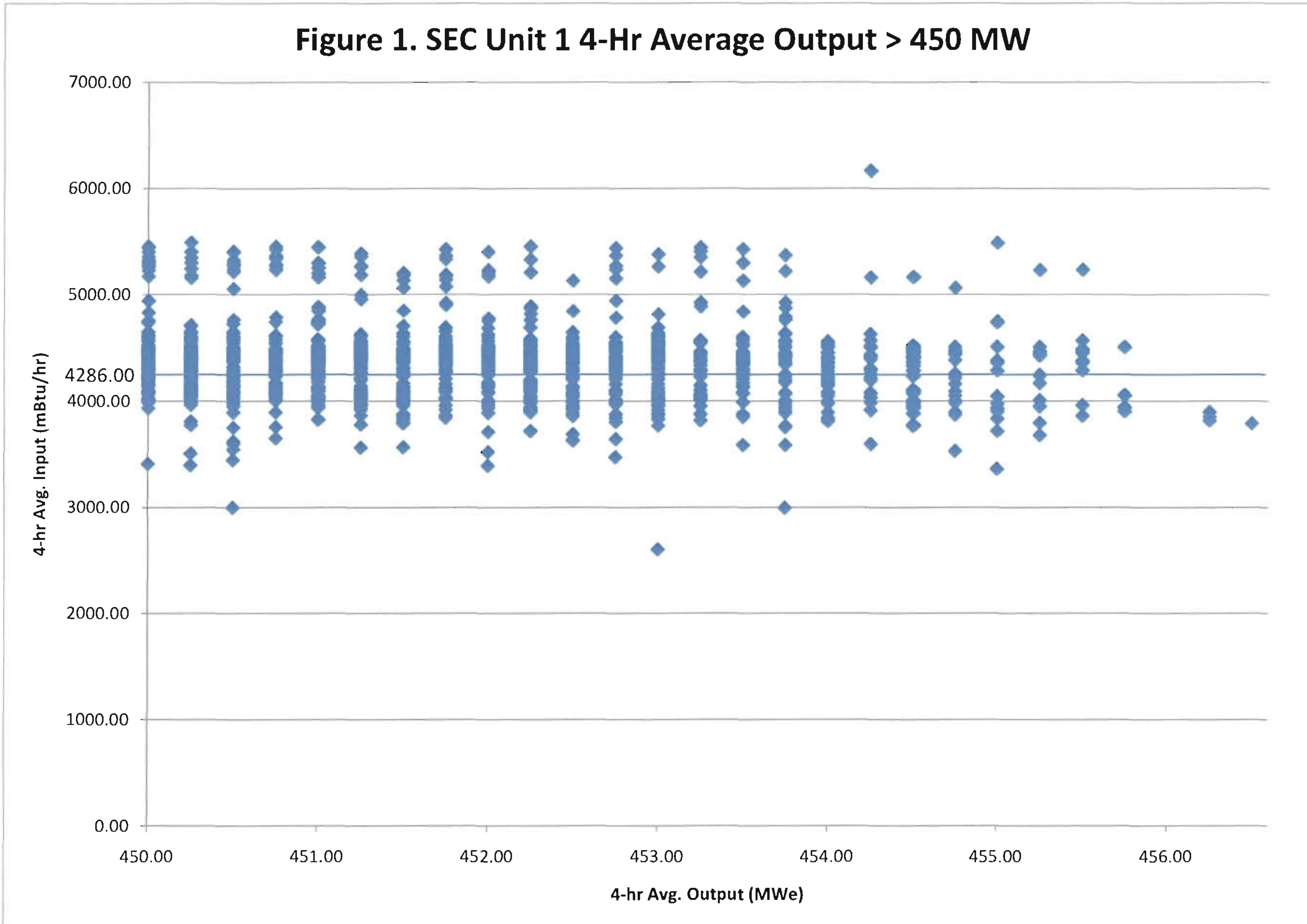
Figure 1. SEC Unit 1 4-Hr Average Output > 450 MW
7000.00
6000.00
5000.00
4286.00
4000.00
3000.00
2000.00
1000.00
0.00
4-hr Avg. Input (mBtu/hr)
450.00
451.00
452.00
453.00
454.00
455.00
456.00
4-hr Avg. Output (MWe)

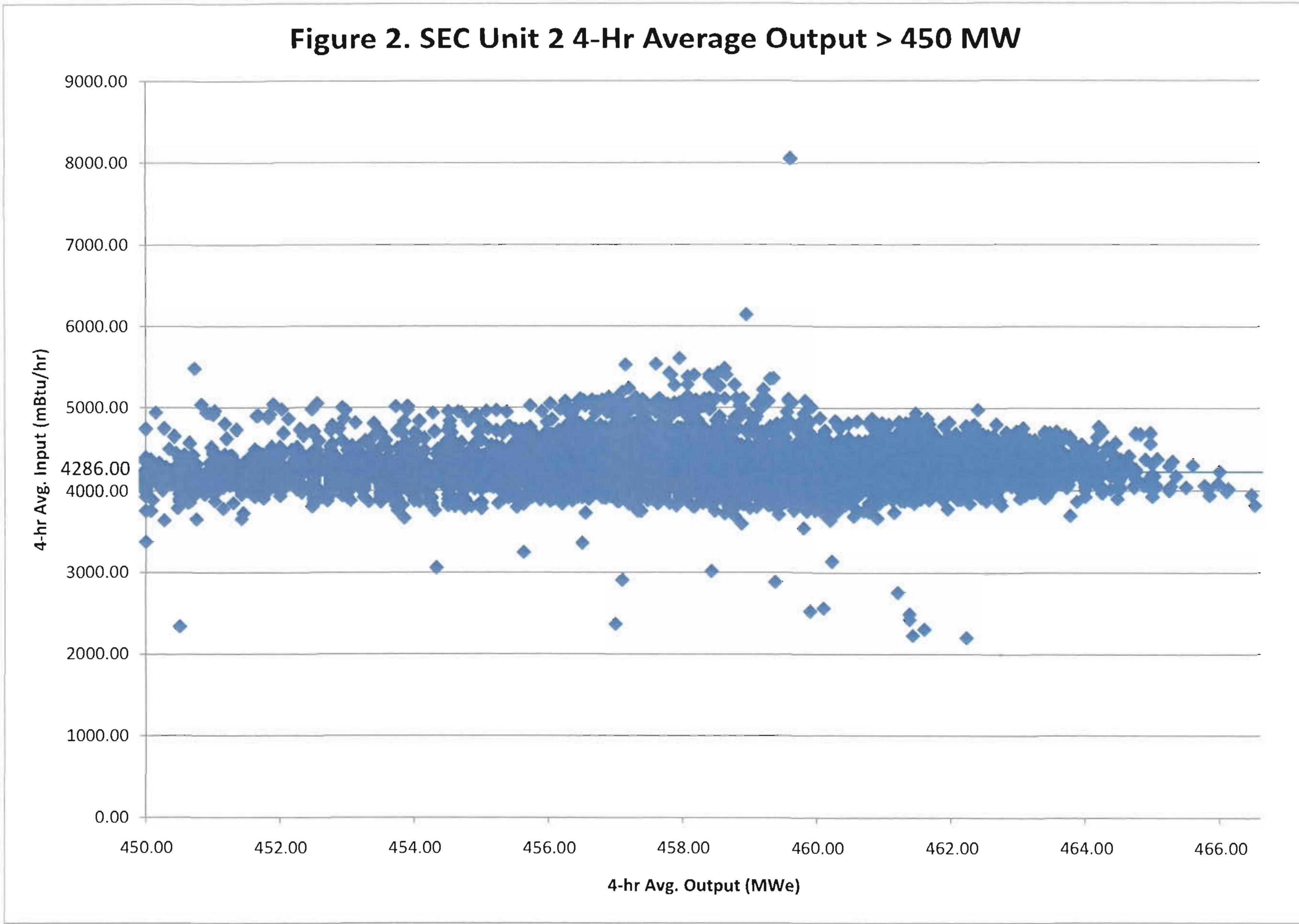
Figure 2. SEC Unit 2 4-Hr Average Output > 450 MW
9000.00
8000.00
7000.00
6000.00
5000.00
4286.00
4000.00
3000.00
2000.00
1000.00
0.00
4-hr Avg. Input (mBtu/hr)
450.00
452.00
454.00
456.00
458.00
460.00
462.00
464.00
466.00
4-hr Avg. Output (MWe)

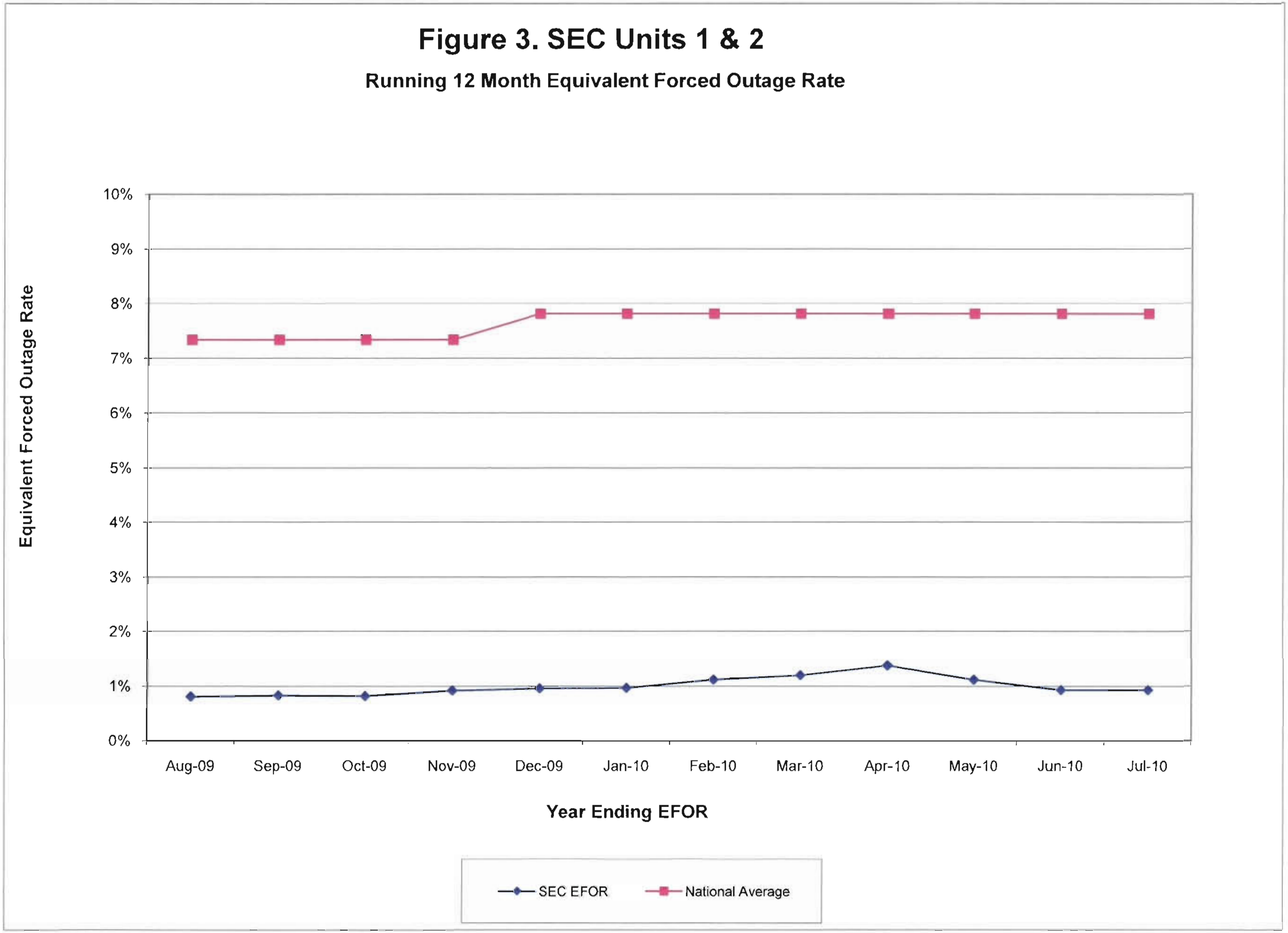
Figure 3. SEC Units 1 & 2
Running 12 Month Equivalent Forced Outage Rate
Equivalent Forced Outage Rate
10%
9%
8%
7%
6%
5%
4%
3%
2%
1%
0%
Aug-09
Sep-09
Oct-09
Nov-09
Dec-09
Jan-10
Feb-10
Mar-10
Apr-10
May-10
Jun-10
Jul-10
Year Ending EFOR
SEC EFOR
National Average

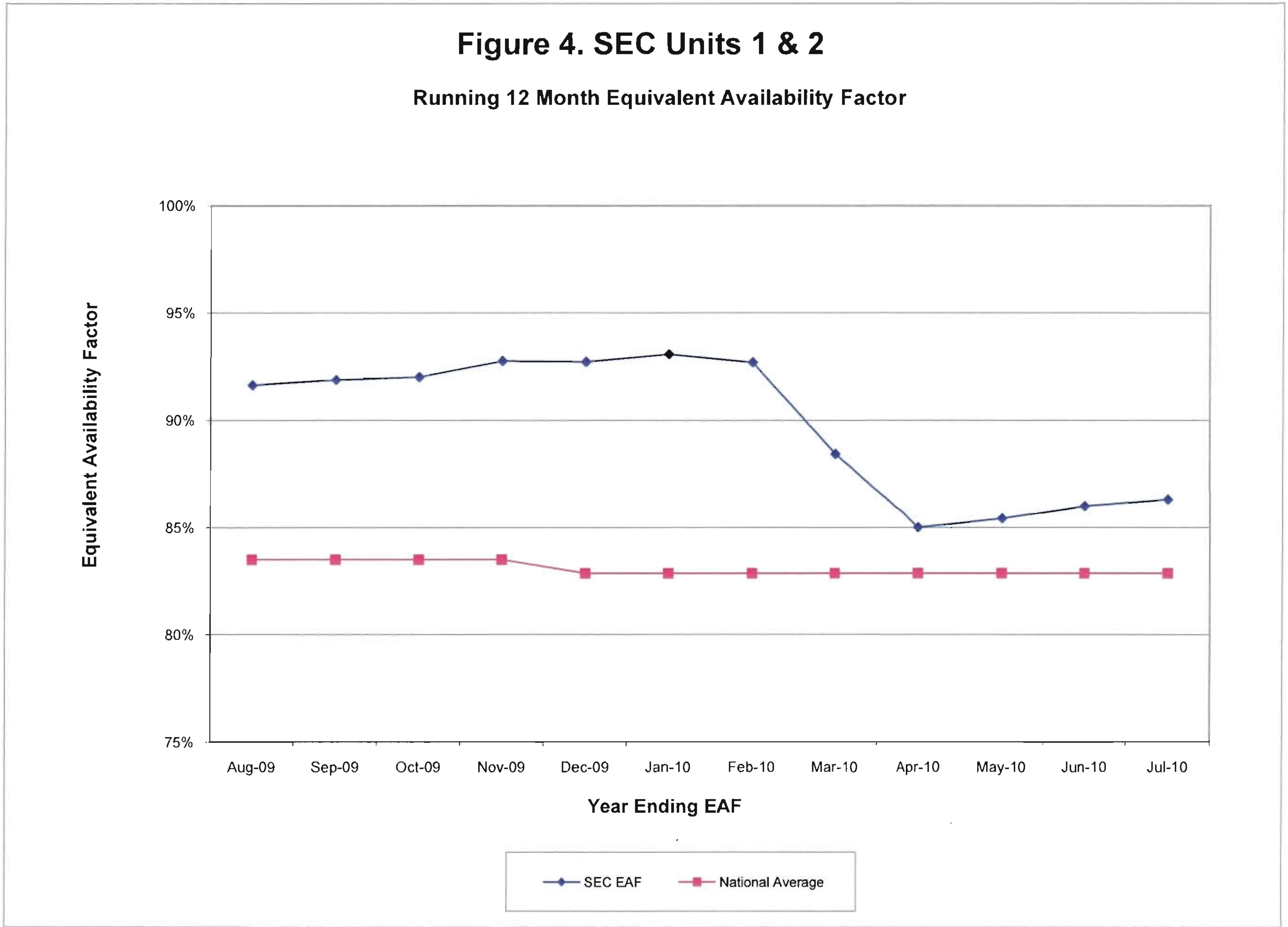
Figure 4. SEC Units 1 & 2
Running 12 Month Equivalent Availability Factor
100%
95%
90%
85%
80%
75%
Equivalent Availability Factor
Aug-09
Sep-09
Oct-09
Nov-09
Dec-09
Jan-10
Feb-10
Mar-10
Apr-10
May-10
Jun-10
Jul-10
Year Ending EAF
SEC EAF
National Average

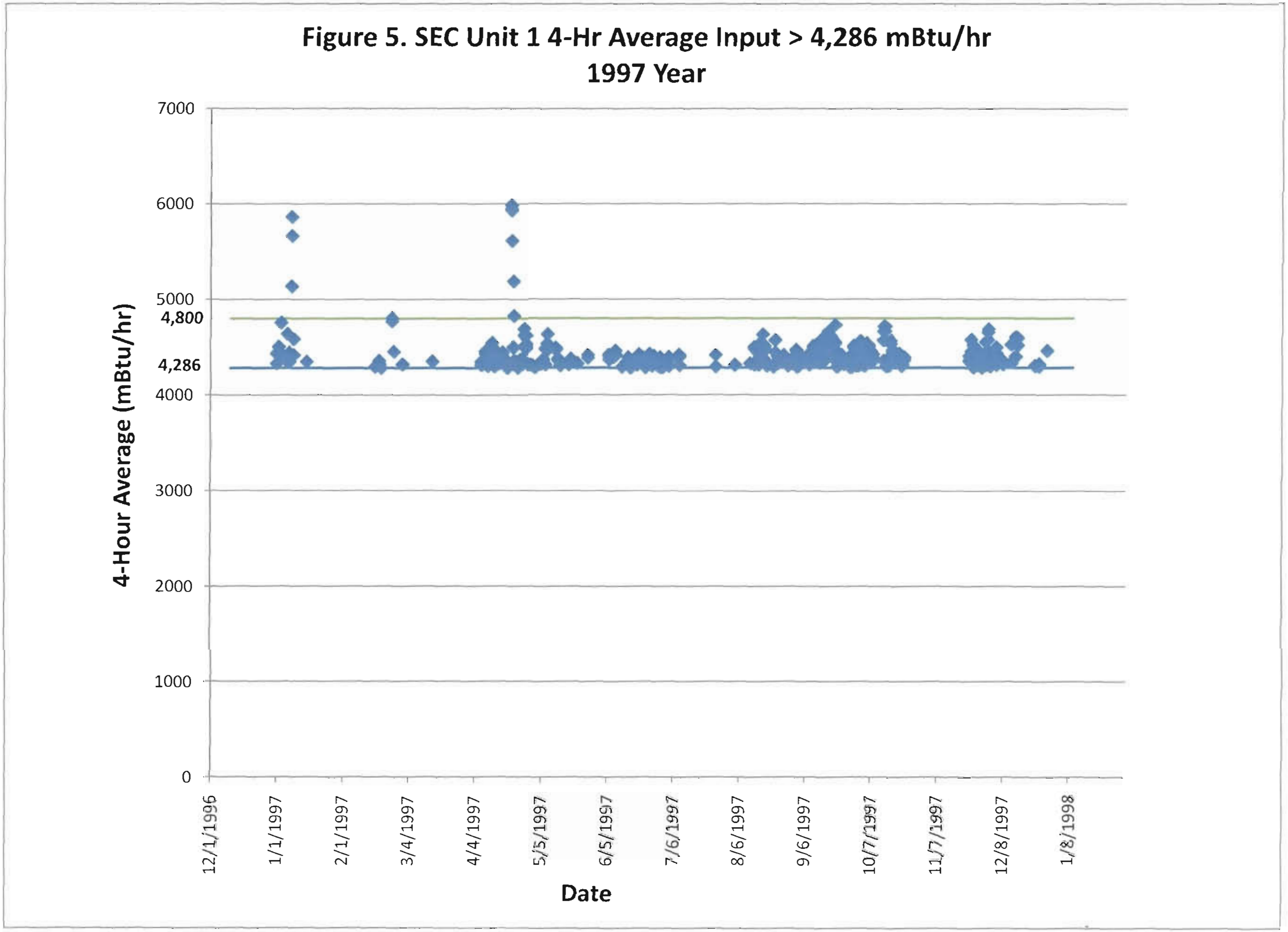
Figure 5. SEC Unit 1 4-Hr Average Input > 4,286 mBtu/hr
1997 Year
4-Hour Average (mBtu/hr)
7000
6000
5000
4,800
4,286
4000
3000
2000
1000
0
12/1/1996
1/1/1997
2/1/1997
3/4/1997
4/4/1997
5/5/1997
6/5/1997
7/6/1997
8/6/1997
9/6/1997
10/7/1997
11/7/1997
12/8/1997
1/8/1998
Date

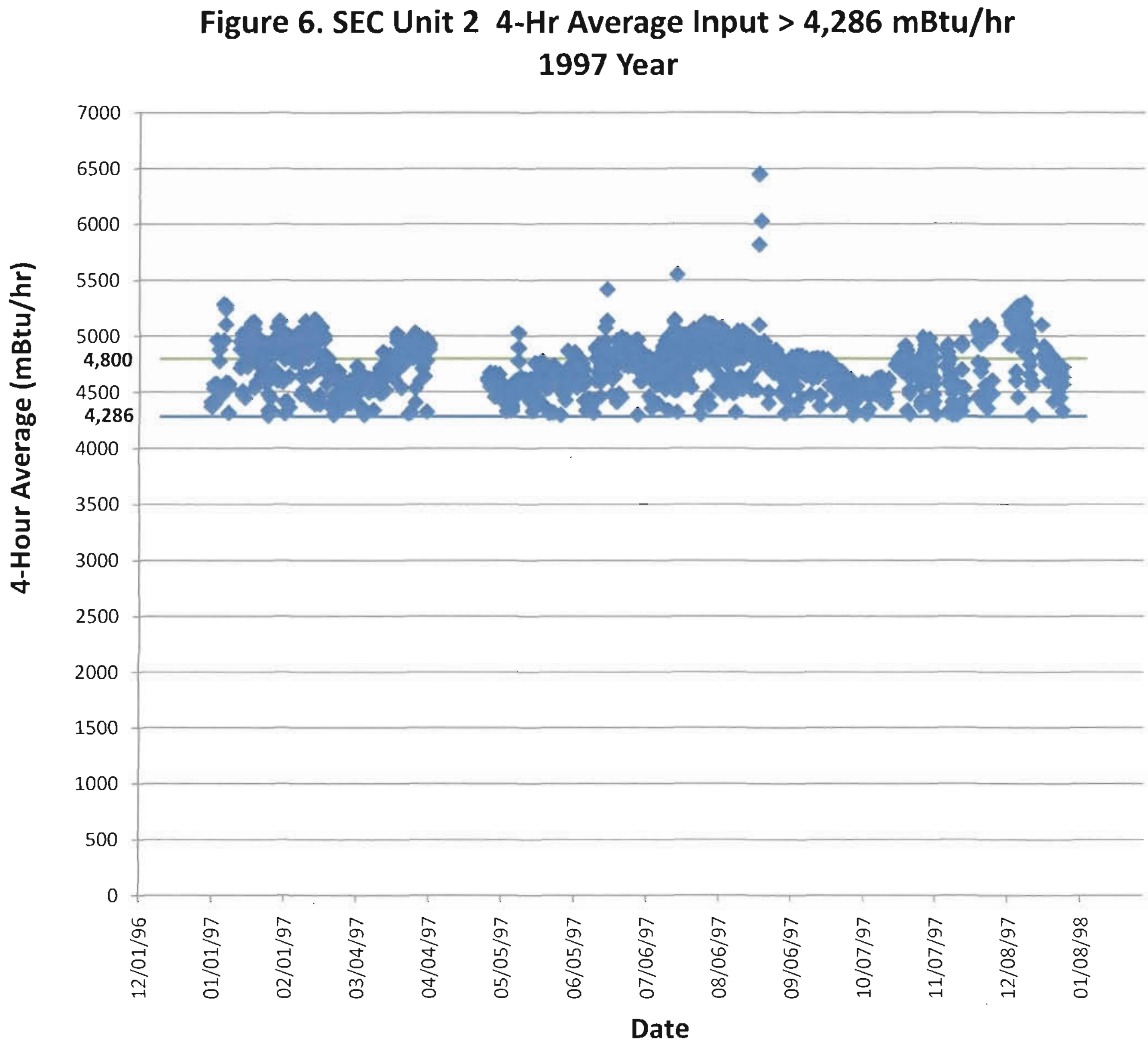
Figure 6. SEC Unit 2 4-Hr Average Input > 4,286 mBtu/hr
1997 Year
4-Hour Average (mBtu/hr)
7000
6500
6000
5500
5000
4,800
4500
4,286
4000
3500
3000
2500
2000
1500
1000
500
0
12/01/96
01/01/97
02/01/97
03/04/97
04/04/97
05/05/97
06/05/97
07/06/97
08/06/97
09/06/97
10/07/97
11/07/97
12/08/97
01/08/98
Date

Figure 7. SEC Unit 1 CEMS 4-Hr Block Input > 4,715 Mbtu/Hr
January 1, 2009 - September 21, 2010

4-Hr Time Frame	4-hr Avg. Output (MWe)	4- hr Avg. Input (Mbtu/Hr)
12/19/09 8:00 - 12/19/2009 11:00	451.00	4,731.00
12/19/09 20:00 - 12/19/2009 23:00	449.75	4,732.53
1/12/10 8:00 - 1/12/2010 11:00	434.75	4,717.03
2/21/10 0:00 - 2/21/2010 3:00	444.00	4,764.05
2/21/10 4:00 - 2/21/2010 7:00	447.50	4,750.50
2/22/10 0:00 - 2/22/2010 3:00	443.50	4,724.85
2/22/10 4:00 - 2/22/2010 7:00	447.75	4,741.90
2/22/10 12:00 - 2/22/2010 15:00	444.50	4,751.38
2/22/10 16:00 - 2/22/2010 19:00	445.25	4,749.15
2/22/10 20:00 - 2/22/2010 23:00	446.50	4,751.90
2/23/10 0:00 - 2/23/2010 3:00	445.00	4,793.63
2/23/10 4:00 - 2/23/2010 7:00	446.75	4,760.88
2/23/10 8:00 - 2/23/2010 11:00	446.75	4,764.50
2/23/10 16:00 - 2/23/2010 19:00	443.50	4,753.90
2/23/10 20:00 - 2/23/2010 23:00	446.00	4,749.75
2/24/10 0:00 - 2/24/2010 3:00	446.75	4,820.93
2/24/10 4:00 - 2/24/2010 7:00	447.25	4,756.63
2/24/10 8:00 - 2/24/2010 11:00	447.00	4,750.73
2/24/10 12:00 - 2/24/2010 15:00	444.50	4,766.00
2/24/10 16:00 - 2/24/2010 19:00	445.25	4,800.55
2/24/10 20:00 - 2/24/2010 23:00	447.00	4,756.80
2/25/10 0:00 - 2/25/2010 3:00	444.50	4,786.00
2/25/10 4:00 - 2/25/2010 7:00	446.50	4,763.80
2/25/10 8:00 - 2/25/2010 11:00	445.75	4,723.20

Notes:

1. Heat input reflects unbiased values from July 1, 2008 through May 31, 2009.

Figure 8. SEC Unit 2 CEMS 4-Hr Input > 4,715 Mbtu/Hr
January 1, 2009 - September 21, 2010

4-Hr Time Frame	4-hr Avg. Output (MWe)	4-hr Avg. Input (Mbtu/Hr)
3/10/10 8:00 - 3/10/2010 11:00	452.50	4717.05
8/21/2010 4:00 - 8/21/2010 7:00	330.25	5473.03

Notes:

1. Heat input reflects unbiased values from July 1, 2008 through May 31, 2009.

Table 1. SEC Unit 1 Capital Projects

Capital Projects	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Air Compressors Controls Replacement												√		
Auxiliary Electrical System Replacements												√	√	√
Boiler Tubes- SSH Outlet Tube Bank									√					
Bottom Ash Controls								√	√					
Bottom Ash Seal Skirt Replacement									√					
Burner Elevation Replacement	Prior to new LowNOx burners									√				
Burner Perf Plate Maintenance														√
CEMS Upgrade - Analyzers and DAS									√					
Chimney Drainage System													√	√
Chimney Interior Liner														√
Chimney Interior Liner Band Replacement										√				
Chimney Repair						√								
Coal Conveyors													√	
Coal Conveyors - Gravity Take-up Modifications												√		
Comm Sys Upgrade - Sub 17 & SEC U1									√					
Concrete Pad Under Hoppers									√					
Condensate Polisher Controls										√				
Data Acquis & Coord Cntls Sys						√								
Economizer Hopper Level Replacement										√				
Fire Protection System Replacement													√	
Fire Protection System Replacement - Turbine														√
Fly Ash Control Panel Replacement								√	√					
Hot End Sonic Horns									√					
Install PA Air Side Static Seals									√					
Low NOx Burner & OFA System CAIR												√	√	
Main Control Sys & Motor Control PLC's							√							
Mercury Monitoring System- CEMS											√	√	√	
Mist Eliminator Vanes Replacement														√
O2 Outlet Grid Expansion (8 probes)								√	√					
Ovation System Replacement - NERC Compliance														√
Ovation Turbine Controls Replacement							√	√	√					
Precip Controls Replacement									√					
Precip Hopper Level System Replacement					√									
Primary Superheat Tube Banks									√					
Pulverizer Rotating Throat Mods										√	√	√		
Reaction Tank Absorber Seals						√	√	√	√					
Re-Line Inlet Duct					√									
Replace Air Htr Hot End Baskets									√					
Replace Asbestos Arc Quenchers	√													
Replace Bushings on GSU/RATs 1 & 2		√	√											
Replace Chessel Indicators				√										
Replace Forney Operator Interface		√												
Replace Jordan Drives									√					
Replace Rubber Lining									√					
Scrubber - Forced Oxidation												√	√	
Scrubber Controls										√	√	√		
Scrubber Inlet Duct Re-Line (Mod B)											√			
Sludge Conditioning Controls										√				
Soot Blower Controls										√				
Sootblower Replacement Unit 1										√				
Spare Gearbox Input Shafts For MAG CPLGS									√					
Turbine Generator - Hydrogen Coolers														√
Turbine Lube Oil System								√						
Turbine Valves Upgrade														√
Turbine Vibration Monitoring Sys			√											
Unit 1 Interc. Valve and RHSV Modification			√											
Upgrade Additive Feed Piping								√						
Upgrade Bottom Ash Controls			√											
Upgrade CEM for Unit 1			√	√										
Replace Fly Ash Controls			√											
Replace Stock Fenders			√	√										
Replace UPS, Static Swtchs, Reliable Pwr Units										√	√			
Vitec Vibration Detection System								√						
Voltage Regulator								√						

Notes:

1. 1997-2002 capital values from excel file provided by OUC titled "CAP2002to2012Detailrev12.xls"
2. 2003 capital values from excel file provided by OUC titled "cap 10yr 2004 new and past details.xls"
3. 2004 and 2005 capital values from excel file provided by OUC titled "cap10yr2005sec.irp rev 16a.xls"
4. 2006 capital values from excel file provided by OUC titled "cap10yr2006sec.irp rev10.xls"
5. 2007 capital values from excel file provided by OUC titled "cap10yr2007sec.irp.stc.pwrmktrev6.xls
6. 2008 capital values from excel file provided by OUC titled "cap10yr2008 sec.irp.stc.pwrmkt-rev.13 final dwayne campbell.xls"
7. 2009 capital values from excel file provided by OUC titled "2009 adopt oper budg prbu cap - rev2.pdf"
8. 2010 capital values from excel file provided by OUC titled "cap10yr2010-04.24.09 from downtown.xls"

H:\PROJECTS\2010proj\10389500 OUC SEC Heat Input\Correspondence\RAI Response\[SEC Capital Proj List.xls]Unit_1

Table 2. SEC Unit 2 Capital Projects

CAPITAL PROJECTS	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Scrubber Outlet Duct Reweld				√										
Acid feed to cooling tower										√				
Air Compressors Controls Replacement												√		
Air Heater Baskets (Complete Set w/ enamel)					√	√								
Air Heater Mods- Basket removal/Circum Seal										√				
Air Htr Exp Joints											√			
Air Htr Sootblower/Platform Additions										√				
Air Preheat Coils Replacement													√	
Auxiliary Electrical System Replacements CAIR													√	√
BFPT Control System Replacement									√					
Biocide System for Cooling Tower								√						
Boiler - Waterwall Panels													√	√
Bottom Ash Seal Skirt Replacement								√						
Burner Management System Replacement									√					
Burner Perf Plate Replacement														√
CEMS Upgrade - Analyzers and DAS									√					
Door -PA Inlet Duct For Maint								√						
EPRI Ammonia Monitor				√										
FD Fan Rotor Spare						√								
Foxboro I/A Operator Work Stations									√					
Install PA Air Side Static Seals								√						
Low NOx Burners & OFA System CAIR												√		
Mercury Monitoring System- CEMS												√		
Scrubber Outlet Duct Wallpaper					√									
Mist Eliminator Replacement / M.E. Wash System				√										
Modify Electromatic Relief Valve			√											
New MBValve-5 Replacement					√									
NH3 Flow Skid											√			
O2 Outlet Grid Expansion									√					
Ovation System Replacement - NERC Compliance														√
Ovation Turbine Controls Replacement							√							
PA flow meters - venturi type										√				
Precip Controls Replacement									√					
Primary Superheat Tube Banks									√					
CO Monitors Replacement											√			
Pulverizer Rotating Throat Replacement												√		
Rubber Line Spray Headers										√	√			
SCR Catalyst			√		√	√					√			
Scrubber - Damper Seals Replacement													√	√
Scrubber - Forced Oxidation												√	√	
Scrubber Inlet Ducts Wallpaper											√			
Secondary Superheat Tubes												√		
Sootblower Controls									√					
Sootblower Replacements Unit 2										√				
Upgrade Additive Feed Piping									√					
Upgrade CEM for Units 1 & 2			√											
Replace MAG Flow Meters				√										
Visual Annunciator System Replacement									√					
Waterwall Tube Weld Overlays					√									

Notes:

1. 1997-2002 capital values from excel file provided by OUC titled "CAP2002to2012Detailrev12.xls"
2. 2003 capital values from excel file provided by OUC titled "cap 10yr 2004 new and past details.xls"
3. 2004 and 2005 capital values from excel file provided by OUC titled "cap10yr2005sec.irp rev 16a.xls"
4. 2006 capital values from excel file provided by OUC titled "cap10yr2006sec.irp rev10.xls"
5. 2007 capital values from excel file provided by OUC titled "cap10yr2007sec.irp.stc.pwrmktrev6.xls
6. 2008 capital values from excel file provided by OUC titled "cap10yr2008 sec.irp.stc.pwrmkt-rev 13 final dwayne campbell.xls"
7. 2009 capital values from excel file provided by OUC titled "2009 adopt oper budg prbu cap - rev2.pdf"
8. 2010 capital values from excel file provided by OUC titled "cap10yr2010-04.24.09 from downtown.xls"

H:\PROJECTS\2010proj\10389500 OUC SEC Heat Input\Correspondence\RAI Response\[SEC Capital Proj List.xls]Unit_2

REVISED TABLE A-1

2005 FACILITY EMISSIONS SUMMARY
Stanton Energy Center - ID No. 0950137

Air Pollutant	Emission Unit 1	Emission Unit 2	Total 2005 Emissions (TPY)
CO *	2,371	2,139	4,510
NO_x	7,343	2,690	10,033
PM	73	82	155
PM_{10}	73	82	155
SO_2	6,059	2,779	8,838
VOC	18	16	35

Heat Input (mmBtu/yr)	36,475,115	32,905,551	69,380,666
Capacity Factor (%)	97	88	93

* The CO CEMs were certified on Unit 1 on 1/21/09 and on Unit 2 on 10/21/08.
2005 estimates use the initial testing emission factor for Unit 2 (0.130 lb/mmBtu) a

Reviewed by:
Reviewed on:

REVISED TABLE A-2

2006 FACILITY EMISSIONS SUMMARY
Stanton Energy Center - ID No. 0950137

Air Pollutant	Emission Unit 1	Emission Unit 2	Total 2006 Emissions (TPY)
CO *	2,030	2,263	4,293
NO_x	6,125	2,860	8,985
PM	141	104	245
PM_{10}	141	104	245
SO_2	5,486	2,639	8,125
VOC	16	17	33

Heat Input (mmBtu/yr)	31,233,371	34,820,403	66,053,774
Capacity Factor (%)	83	93	88

* The CO CEMs were certified on Unit 1 on 1/21/09 and on Unit 2 on 10/21/08.
2006 estimates use the initial testing emission factor for Unit 2 (0.130 lb/mmBtu) ai

Reviewed by:
Reviewed on:

REVISED TABLE A-3

2007 FACILITY EMISSIONS SUMMARY
Stanton Energy Center - ID No. 0950137

Air Pollutant	Emission Unit 1	Emission Unit 2	Total 2007 Emissions (TPY)
CO *	2,095	2,045	4,140
NO_x	5,995	2,586	8,581
PM	64	220	285
PM_{10}	64	220	285
SO_2	4,611	1,857	6,468
VOC	16	16	32

Heat Input (mmBtu/yr)	32,228,342	31,456,921	63,685,263
Capacity Factor (%)	86	84	85

* The CO CEMs were certified on Unit 1 on 1/21/09 and on Unit 2 on 10/21/08.
2007 estimates use the initial testing emission factor for Unit 2 (0.130 lb/mmBtu) ai

Reviewed by:
Reviewed on:

REVISED TABLE A-4

2008 FACILITY EMISSIONS SUMMARY
Stanton Energy Center - ID No. 0950137

Air Pollutant	Emission Unit 1	Emission Unit 2	Total 2008 Emissions (TPY)
CO *	1,997	1,878	3,875
NO_x	5,866	2,271	8,137
PM	123	72	195
PM_{10}	123	72	195
SO_2	3,933	2,083	6,016
VOC	15	14	30

Heat Input ** (mmBtu/yr)	30,722,077	28,895,806	59,617,884
Capacity Factor (%)	81	74	78

* The CO CEMs were certified on Unit 1 on 1/21/09 and on Unit 2 on 10/21/08.
2008 estimates use the initial testing emission factor for Unit 2 (0.130 lb/mmBtu) ar

Reviewed by:
Reviewed on:

REVISED TABLE A-5

2009 FACILITY EMISSIONS SUMMARY
Stanton Energy Center - ID No. 0950137

Air Pollutant	Emission Unit 1	Emission Unit 2	Total 2009 Emissions (TPY)
CO*	1,125	1,004	2,128
NO_x	4,779	2,302	7,081
PM	47	70	117
PM_{10}	47	70	117
SO_2	2,415	1,951	4,366
VOC	16	14	30

Heat Input ** (mmBtu/yr)	31,462,117	28,070,274	59,532,391
Capacity Factor (%)	84	75	80

* The CO CEMs were certified on Unit 1 on 1/21/09 and on Unit 2 on 10/21/08.

Reviewed by:
Reviewed on:

REVISED TABLE A-6

EMISSION ANALYSIS
Stanton Energy Center - ID No. 0950137

Air Pollutant	Total 2005 Emissions (Tons/Year)	Total 2006 Emissions (Tons/Year)	Total 2007 Emissions (Tons/Year)	Total 2008 Emissions (Tons/Year)	Total 2009 Emissions (Tons/Year)	Highest 2-yr Average	CY
CO	4,510	4,293	4,140	3,875	2,128	4,402	2005-2006
NO_x	10,033	8,985	8,581	8,137	7,081	9,509	2005-2006
PM	155	245	285	195	117	265	2006-2007
PM_{10}	155	245	285	195	117	265	2006-2007
SO_2	8,838	8,125	6,468	6,016	4,366	8,482	2005-2006
VOC	35	33	32	30	30	34	2005-2006

Heat Input (mmBtu/yr)	69,380,666	66,053,774	63,685,263	59,617,884	59,532,391	67,717,220	2005-2006
Capacity Factor (%)	93	88	85	78	80	90	2005-2006

Reviewed by:
Reviewed on: