Lon C. Hill Power Station
Prevention of Significant Deterioration
Air Permit Application

Submitted to
Environmental Protection Agency
Region 6
Multimedia Planning and Permitting Division

Submitted by
Lon C. Hill, LP
Houston, Texas 77002

Prepared by
CAMS eSPARC, LLC
1110 NASA Parkway, Suite 212
Houston, TX 77058

February 2014

Lon C. Hill Power Station
Prevention of Significant Deterioration
Air Permit Application

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Section 1
TCEQ General Application Forms

1.1 TCEQ Form PI-1

A copy of the TCEQ PI-1 form is provided in the following pages.

Texas Commission on Environmental Quality
Form PI-1 General Application for
Air Preconstruction Permit and Amendment

Important Note: The agency requires that a Core Data Form be submitted on all incoming applications unless a Regulated Entity and Customer Reference Number have been issued and no core data information has changed. For more information regarding the Core Data Form, call (512) 239-5175 or go to www.tceq.texas.gov/permitting/central_registry/guidance.html.

I. Applicant Information		
A. Company or Other Legal Name: Lon C. Hill, LP		
Texas Secretary of State Charter/Registration Number (if applicable):		
B. Company Official Contact Name: Mr. Gary Clark		
Title: Asset Manager		
Mailing Address: 919 Milam St., Suite 2300		
City: Houston	State: TX	ZIP Code: 77002
Telephone No.: (713) 358-9768	Fax No.: (361) 575-4978	E-mail Address:gclark@camstex.com
C. Technical Contact Name: Mr. Matthew Lindsey		
Title: Sr. EHS Specialist		
Company Name: Consolidated Asset Management Services		
Mailing Address: 919 Milam St., Suite 2300		
City: Houston	State: TX	ZIP Code: 77002
Telephone No.: (713) 358-9734	Fax No.: (713) 358-9730	E-mail Address: mlindsey@camstex.com
D. Site Name: Lon C. Hill Power Station		
E. Area Name/Type of Facility: Electric Generating Unit		☒ Permanent ☐ Portable
F. Principal Company Product or Business: Electric Services		
Principal Standard Industrial Classification Code (SIC): 4911 Electric Services		
Principal North American Industry Classification System (NAICS): 221112 Fossil Fuel Electric Power Generation		
G. Projected Start of Construction Date: May 1, 2015		
Projected Start of Operation Date: April 1, 2017		
H. Facility and Site Location Information (If no street address, provide clear driving directions to the site in writing.):		
Street Address: 3501 Callicoatte Rd		
City/Town: Corpus Christi	County: Nueces	ZIP Code: 78410
Latitude (nearest second): 27°50'47.11"N	Longitude (nearest second): 97°36'52.97"W	

Texas Commission on Environmental Quality
Form PI-1 General Application for
Air Preconstruction Permit and Amendment

I.	**Applicant Information (continued)**	
I.	Account Identification Number (leave blank if new site or facility):	
J.	Core Data Form.	
Is the Core Data Form (Form 10400) attached? If No, provide customer reference number and regulated entity number (complete K and L).		☒ YES ☐ NO
K.	Customer Reference Number (CN): CN602656688	
L.	Regulated Entity Number (RN): RN100215979	
II.	**General Information**	
A.	Is confidential information submitted with this application? If Yes, mark each confidential page confidential in large red letters at the bottom of each page.	☐ YES ☒ NO
B.	Is this application in response to an investigation, notice of violation, or enforcement action? If Yes, attach a copy of any correspondence from the agency and provide the RN in section I.L. above.	☐ YES ☒ NO
C.	Number of New Jobs: Ten (estimated)	
D.	Provide the name of the State Senator and State Representative and district numbers for this facility site:	
State Senator: Senator Glenn Hegar		District No.: Senate District 18
State Representative: Representative Geanie Morrison		District No.: House District 30
III.	**Type of Permit Action Requested**	
A.	Mark the appropriate box indicating what type of action is requested. ☒ Initial ☐ Amendment ☐ Revision (30 TAC 116.116(e) ☐ Change of Location ☐ Relocation	
B.	Permit Number (if existing):	
C.	Permit Type: Mark the appropriate box indicating what type of permit is requested. *(check all that apply, skip for change of location)* ☒ Construction ☐ Flexible ☐ Multiple Plant ☐ Nonattainment ☐ Plant-Wide Applicability Limit ☒ Prevention of Significant Deterioration ☐ Hazardous Air Pollutant Major Source ☐ Other:	
D.	Is a permit renewal application being submitted in conjunction with this amendment in accordance with 30 TAC 116.315(c).	☐ YES ☒ NO

III. Type of Permit Action Requested *(continued)*			
E. Is this application for a change of location of previously permitted facilities? If Yes, complete III.E.1 - III.E.4.0			☐ YES ☒ NO
1. Current Location of Facility (If no street address, provide clear driving directions to the site in writing.):			
Street Address:			
City:	County:	ZIP Code:	
2. Proposed Location of Facility (If no street address, provide clear driving directions to the site in writing.):			
Street Address:			
City:	County:	ZIP Code:	
3. Will the proposed facility, site, and plot plan meet all current technical requirements of the permit special conditions? If "NO", attach detailed information.			☐ YES ☐ NO
4. Is the site where the facility is moving considered a major source of criteria pollutants or HAPs?			☐ YES ☐ NO
F. Consolidation into this Permit: List any standard permits, exemptions or permits by rule to be consolidated into this permit including those for planned maintenance, startup, and shutdown.			
List: Not applicable.			
G. Are you permitting planned maintenance, startup, and shutdown emissions? If Yes, attach information on any changes to emissions under this application as specified in VII and VIII.			☒ YES ☐ NO
H. Federal Operating Permit Requirements (30 TAC Chapter 122 Applicability) Is this facility located at a site required to obtain a federal operating permit? If Yes, list all associated permit number(s), attach pages as needed).			☒ YES ☐ NO ☐ To be determined
Associated Permit No (s.): None Currently			
1. Identify the requirements of 30 TAC Chapter 122 that will be triggered if this application is approved.			
☐ FOP Significant Revision	☐ FOP Minor	☐ Application for an FOP Revision	
☐ Operational Flexibility/Off-Permit Notification		☐ Streamlined Revision for GOP	
☐ To be Determined		☐ None	

III. Type of Permit Action Requested *(continued)*		
H. Federal Operating Permit Requirements (30 TAC Chapter 122 Applicability) *(continued)*		
2. Identify the type(s) of FOP(s) issued and/or FOP application(s) submitted/pending for the site. ***(check all that apply)***		
☐ GOP Issued	☐ GOP application/revision application submitted or under APD review	
☐ SOP Issued	☒ SOP application/revision application submitted or under APD review Abbreviated application will be submitted concurrently	
IV. Public Notice Applicability		
A. Is this a new permit application or a change of location application?		☒ YES ☐ NO
B. Is this application for a concrete batch plant? If Yes, complete V.C.1 – V.C.2.		☐ YES ☒ NO
C. Is this an application for a major modification of a PSD, nonattainment, FCAA 112(g) permit, or exceedance of a PAL permit?		☐ YES ☒ NO
D. Is this application for a PSD or major modification of a PSD located within 100 kilometers or less of an affected state or Class I Area?		☐ YES ☒ NO
If Yes, list the affected state(s) and/or Class I Area(s).		
List:		
E. Is this a state permit amendment application? NO	If Yes, complete IV.E.1. – IV.E.3.	
1. Is there any change in character of emissions in this application?		☐ YES ☐ NO
2. Is there a new air contaminant in this application?		☐ YES ☐ NO
3. Do the facilities handle, load, unload, dry, manufacture, or process grain, seed, legumes, or vegetables fibers (agricultural facilities)?		☐ YES ☐ NO
F. List the total annual emission increases associated with the application ***(List all that apply and attach additional sheets as needed):***		
Volatile Organic Compounds (VOC): 144.8 tpy		
Sulfur Dioxide (SO2): 12.0 tpy		
Carbon Monoxide (CO): 852.9 tpy		
Nitrogen Oxides (NOx): 213.1 tpy		
Particulate Matter (PM): (refer to PM_{10} and $PM_{2.5}$)		
PM 10 microns or less (PM10): 112.6 tpy		
PM 2.5 microns or less (PM2.5): 110.1 tpy		
Lead (Pb): N/A		
Hazardous Air Pollutants (HAPs): Total Individual HAP: 5.2 tpy. Total Combined HAPs: 16.6 tpy		
Other speciated air contaminants not listed above: H_2SO_4: 1.8 tpy. NH_3: 199.7 tpy		

V. Public Notice Information *(complete if applicable)*		
A. Public Notice Contact Name: Mr. Matthew Lindsey		
Title: Sr. EHS Specialist		
Mailing Address: 919 Milam St., Suite 2300		
City: Houston	State: TX	ZIP Code: 77002
B. Name of the Public Place: Owen R Hawkins Public Library		
Physical Address *(No P.O. Boxes)*: 3202 McKinzie Road		
City: Corpus Christi	County: Nueces	ZIP Code: 78410
The public place has granted authorization to place the application for public viewing and copying.		☒ YES ☐ NO
The public place has internet access available for the public.		☒ YES ☐ NO
C. Concrete Batch Plants, PSD, and Nonattainment Permits		
1. County Judge Information (For Concrete Batch Plants and PSD and/or Nonattainment Permits) for this facility site.		
The Honorable: Samuel L. Neal, Jr		
Mailing Address: 901 Leopard Street, Room 303		
City: Corpus Christi	State: Texas	ZIP Code: 78401
2. Is the facility located in a municipality or an extraterritorial jurisdiction of a municipality? ***(For Concrete Batch Plants)***		☐ YES ☐ NO
Presiding Officers Name(s):		
Title:		
Mailing Address:		
City:	State:	ZIP Code:
3. Provide the name, mailing address of the chief executive and Indian Governing Body; and identify the Federal Land Manager(s) for the location where the facility is or will be located.		
Chief Executive:		
Mailing Address:		
City:	State:	ZIP Code:
Name of the Indian Governing Body:		
Mailing Address:		
City:	State:	ZIP Code:

V.	**Public Notice Information *(complete if applicable) (continued)***	
C.	Concrete Batch Plants, PSD, and Nonattainment Permits	
3.	Provide the name, mailing address of the chief executive and Indian Governing Body; and identify the Federal Land Manager(s) for the location where the facility is or will be located. *(continued)*	
Name of the Federal Land Manager(s):		
D.	Bilingual Notice	
Is a bilingual program required by the Texas Education Code in the School District?		☒ YES ☐ NO
Are the children who attend either the elementary school or the middle school closest to your facility eligible to be enrolled in a bilingual program provided by the district?		☒ YES ☐ NO
If Yes, list which languages are required by the bilingual program?	Spanish	
VI.	**Small Business Classification *(Required)***	
A.	Does this company (including parent companies and subsidiary companies) have fewer than 100 employees or less than $6 million in annual gross receipts?	☐ YES ☒ NO
B.	Is the site a major stationary source for federal air quality permitting?	☒ YES ☐ NO
C.	Are the site emissions of any regulated air pollutant greater than or equal to 50 tpy?	☒ YES ☐ NO
D.	Are the site emissions of all regulated air pollutants combined less than 75 tpy?	☐ YES ☒ NO
VII.	**Technical Information**	
A.	The following information must be submitted with your Form PI-1 ***(this is just a checklist to make sure you have included everything)***	
1.	☒ Current Area Map (refer to section 3.1)	
2.	☒ Plot Plan (refer to section 3.1)	
3.	☒ Existing Authorizations (not applicable)	
4.	☒ Process Flow Diagram (refer to section 3.1)	
5.	☒ Process Description (refer to section 3.2)	
6.	☒ Maximum Emissions Data and Calculations (refer to Attachment B)	
7.	☒ Air Permit Application Tables (refer to Section 1)	
a.	☒ Table 1(a) (Form 10153) entitled, Emission Point Summary (refer to Attachment A)	
b.	☒ Table 2 (Form 10155) entitled, Material Balance (refer to Attachment A)	
c.	☒ Other equipment, process or control device tables (refer to Attachment A)	
B.	Are any schools located within 3,000 feet of this facility?	☒ YES ☐ NO

VII.	**Technical Information**			
C.	Maximum Operating Schedule:			
Hour(s):8,760	Day(s): 365	Week(s): 52	Year(s): Continuous	
Seasonal Operation? If Yes, please describe in the space provide below.				☐ YES ☒ NO
D.	Have the planned MSS emissions been previously submitted as part of an emissions inventory? This is a new source.			☐ YES ☒ NO
Provide a list of each planned MSS facility or related activity and indicate which years the MSS activities have been included in the emissions inventories. Attach pages as needed.				
This is a preconstruction authorization application for a new source. MSS emission rates are included in this application.				
E.	Does this application involve any air contaminants for which a disaster review is required?			☐ YES ☒ NO
F.	Does this application include a pollutant of concern on the Air Pollutant Watch List (APWL)?			☐ YES ☒ NO
VIII.	**State Regulatory Requirements** **Applicants must demonstrate compliance with all applicable state regulations to obtain a permit or amendment.** *The application must contain detailed attachments addressing applicability or non applicability; identify state regulations; show how requirements are met; and include compliance demonstrations.*			
A.	Will the emissions from the proposed facility protect public health and welfare, and comply with all rules and regulations of the TCEQ?			☒ YES ☐ NO
B.	Will emissions of significant air contaminants from the facility be measured? (Continuous measurement of NOx and CO only)			☒ YES ☐ NO
C.	Is the Best Available Control Technology (BACT) demonstration attached?			☒ YES ☐ NO
D.	Will the proposed facilities achieve the performance represented in the permit application as demonstrated through recordkeeping, monitoring, stack testing, or other applicable methods?			☒ YES ☐ NO
IX.	**Federal Regulatory Requirements** **Applicants must demonstrate compliance with all applicable federal regulations to obtain a permit or amendment.** *The application must contain detailed attachments addressing applicability or non-applicability; identify federal regulation subparts; show how requirements are met; and include compliance demonstrations.*			
A.	Does Title 40 Code of Federal Regulations Part 60, (40 CFR Part 60) New Source Performance Standard (NSPS) apply to a facility in this application?			☒ YES ☐ NO
B.	Does 40 CFR Part 61, National Emissions Standard for Hazardous Air Pollutants (NESHAP) apply to a facility in this application?			☐ YES ☒ NO

IX.	**Federal Regulatory Requirements** **Applicants must demonstrate compliance with all applicable federal regulations to obtain a permit or amendment.** *The application must contain detailed attachments addressing applicability or non applicability; identify federal regulation subparts; show how requirements are met; and include compliance demonstrations.*	
C.	Does 40 CFR Part 63, Maximum Achievable Control Technology (MACT) standard apply to a facility in this application?	☒ YES ☐ NO
D.	Do nonattainment permitting requirements apply to this application?	☐ YES ☒ NO
E.	Do prevention of significant deterioration permitting requirements apply to this application?	☒ YES ☐ NO
F.	Do Hazardous Air Pollutant Major Source [FCAA 112(g)] requirements apply to this application?	☐ YES ☒ NO
G.	Is a Plant-wide Applicability Limit permit being requested?	☐ YES ☒ NO
X.	**Professional Engineer (P.E.) Seal**	
Is the estimated capital cost of the project greater than $2 million dollars?		☒ YES ☐ NO
If Yes, submit the application under the seal of a Texas licensed P.E.		
XI.	**Permit Fee Information**	
Check, Money Order, Transaction Number ,ePay Voucher Number:		Fee Amount: $75,000
Paid online?		☐ YES ☒ NO
Company name on check: Lon C. Hill, LP		
Is a copy of the check or money order attached to the original submittal of this application? (refer to Section 1.3)		☒ YES ☐ NO ☐ N/A
Is a Table 30 (Form 10196) entitled, Estimated Capital Cost and Fee Verification, attached? (refer to Section 1.3)		☒ YES ☐ NO ☐ N/A

XII. Delinquent Fees and Penalties

This form will not be processed until all delinquent fees and/or penalties owed to the TCEQ or the Office of the Attorney General on behalf of the TCEQ is paid in accordance with the Delinquent Fee and Penalty Protocol. For more information regarding Delinquent Fees and Penalties, go to the TCEQ Web site at: www.tceq.texas.gov/agency/delin/index.html.

XIII. Signature

The signature below confirms that I have knowledge of the facts included in this application and that these facts are true and correct to the best of my knowledge and belief. I further state that to the best of my knowledge and belief, the project for which application is made will not in any way violate any provision of the Texas Water Code (TWC), Chapter 7, Texas Clean Air Act (TCAA), as amended, or any of the air quality rules and regulations of the Texas Commission on Environmental Quality or any local governmental ordinance or resolution enacted pursuant to the TCAA I further state that I understand my signature indicates that this application meets all applicable nonattainment, prevention of significant deterioration, or major source of hazardous air pollutant permitting requirements. The signature further signifies awareness that intentionally or knowingly making or causing to be made false material statements or representations in the application is a criminal offense subject to criminal penalties.

Name: Gary Clark, Asset Manager

Signature:

Original Signature Required

Date: February 28, 2014

1.2 TCEQ Core Data Form

A copy off the Core Data Form is provided in the following pages.

TCEQ Core Data Form

For Detailed instructions regarding completion of this form, please read the Core Data Form Instructions or call 512-239-5175

TCEQ Use Only

SECTION I: General Information

1. Reasons for Submission (*If other is checked please describe in the space provided*)

- ☒ New permit, Registration or Authorization (Core Data Form should be submitted with the program application)
- ☐ Renewal (*Core Data Form should be submitted with the renewal form*)
- ☐ Other:

2. Attachments: ☒ Yes ☐ No

Describe Any Attachments (*ex. Title V Application, Waste Transporter Application, etc.*): PSD Air Permit Application

3. Customer Reference Number (*if issued*)	Follow this link to search for CN or RN numbers in Central Registry**	4. Regulated Entity Reference Number (*if issued*)
CN602656688		RN100215979

SECTION II: Customer Information

5. Effective Date for customer Information updates (mm/dd/yyy)	November 7, 2013

6. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check only one of the following:*

- ☐ Owner
- ☐ Operator
- ☒ Owner & Operator
- ☐ Occupational Licensee
- ☐ Responsible Party
- ☐ Voluntary Cleanup Applicant
- ☐ Other: ____________________

7. General Customer Information

- ☐ New Customer
- ☒ Update to Customer Information
- ☐ Change in Regulated Entity Ownership
- ☐ Change in legal Name (Verifiable with the Texas Secretary of State)
- ☐ No change**

*<u>**If "No change" and Section I is complete, skip to Section III – Regulated Entity Information.</u>*

8. Type of Customer:	☐ Corporation	☐ Individual	☐ Sole Proprietorship – D.B.A.
☐ City Government	☐ County Government	☐ Federal Government	☐ State Government
☐ Other Government	☐ General Partnership	☒ Limited Partnership	☐ Other: ____________

9. Customer Legal Name (*If an individual, print last name first: ex. Doe, John*)	If new Customer, enter previous Customer below	*End Date*:
Lon C. Hill, LP		

10. Mailing Address:	919 Milam Street, Suite 2300 (Attn: Environmental Manager)						
	City	Houston	State	TX	ZIP	77002	ZIP + 4

11. Country Mailing Information (*If outside USA*)	12. E-Mail Address (*If Applicable*)
	mlindsey@camstex.com

13. Telephone Number	14. Extension or Code	15. Fax Number (*If Applicable*)
(713) 358-9734		(713) 358-9730

16. Federal Tax ID (*9 digits*)	17. TX State Franchise Tax ID (*11 digits*)	18. DUNS Number (*If applicable*)	19. TX SOS Filing Number (*If applicable*)
20-1045612	12010456122	14-613-0872	0800327225

20. Number of Employees: ☒ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

21. Independently Owned and Operated? ☒ Yes ☐ No

SECTION III: Regulated Entity Information

22. General Regulated Entity Information (*If "New Regulated Entity" is selected below this form should be accompanied by a permit application*)

- ☐ New Regulated Entity
- ☐ Update to Regulated Entity Name
- ☒ Update to Regulated Entity Information
- ☐ No Change** (*see below*)

**If "NO CHANGE" is checked and Section I is complete, skip to Section IV, Preparer Information.

23. Regulated Entity Name (*name of the site where the regulated action is taking place*)

Lon C. Hill Power Station

24. Street Address of the Regulated Entity: (No. P.O. Boxes)	3501 Callicoatte Rd.						
	City	Corpus Christi	State	TX	ZIP	78410	ZIP + 4
25. Mailing Address:	919 Milam St, Suite 2300						
	City	Houston	State	TX	ZIP	77002	ZIP + 4
26. Email Address:	gclark@camstex.com						

27. Telephone Number	28. Extension or Code	29. Fax Number (*If Applicable*)
(713) 358-9768		(361) 575-4978

30. primary SIC Code (*4 digits*)	31. Secondary SIC Code (*4 digits*)	32. Primary NAICs Code (*5 or 6 digits*)	33. Secondary NAICS Code (*5 or 6 digits*)
4911		221112	

34. What is the Primary Business of this entity? (*Please do not repeat the SIC or NAICS description*)
Electric generating facility

Questions 35 – 37 address geographic location. Please refer to the instructions for applicability

35. Description to Physical Location:	South of State Highway 37 and State Highway 69 intersection.

36. Nearest City	County	State	Nearest ZIP Code
Corpus Christi	Nueces	TX	78410

37. Latitude (N) In Decimal:	27.846419°		38. Longitude (W) In Decimal:	-97.614714°	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
27°	50'	47.11"	97°	36'	52.97"

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form or the updates may not be made. If your Program is not listed, check other and write it in. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☐ Edwards Aquifer	☒ Industrial Hazardous Waste SWR # 31182	☐ Municipal Solid Waste
☒ New Source Review – Air NE0025C	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS	☐ Sludge
☐ Stormwater	☒ Title V – Air Pending	☐ Tires	☐ Used Oil	☐ Utilities
☐ Voluntary Cleanup	☒ Waste Water TX0003565 WQ0001255000	☐ Wastewater Agriculture	☐ Water Rights	☐ other:

SECTION IV: Preparer Information

40. Name:	Mona C Johnson	41. Title	Chief Executive Officer
42. Telephone Number	43. Extension or Code	44. Fax Number	45. Email Address
(281) 333-3339	x201	(281) 333-3386	mjohnson@camsesparc.com

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 9 and/or as required for the updates to the ID numbers identified in field 39.

(See the Core Data Form instructions for more information on who should sign this form.)

Company:	Consolidated Asset Management Services	Job Title:	Asset Manager
Name *(In Print)*::	Gary Clark	Phone:	(713) 358-9768
Signature:		Date:	February 28, 2014

1.3 TCEQ Table 30

The estimated capital cost of the proposed project is expected to be greater than 7.5 million US dollars. Therefore, the maximum fee of $75,000 (US dollars) for a PSD permit application is being submitted.

A cover letter addressed to the TCEQ Revenue Section along with a copy of the PI-1 Form, the Core Data Form, TCEQ Table 30 and a check for the permit fee will be submitted separately.

TCEQ Table 30 and a copy of the permit fee check are included in this section.

Texas Commission on Environmental Quality
Table 30
Estimated Capital Cost and Fee Verification

Include estimated cost of the equipment and services that would normally be capitalized according to standard and generally accepted corporate financing and accounting procedures. Tables, checklists, and guidance documents pertaining to air quality permits are available from the Texas Commission on Environmental Quality, Air Permits Division Web site at www.tceq.state.tx.us/nav/permits/air_permits.html.

I. DIRECT COSTS [30 TAC § 116.141(c)(1)]	**Estimated Capital Cost**
A. A process and control equipment not previously owned by the applicant and not currently authorized under this chapter	$
B. Auxiliary equipment, including exhaust hoods, ducting, fans, pumps, piping, conveyors, stacks, storage tanks, waste disposal facilities, and air pollution control equipment specifically needed to meet permit and regulation requirements	$
C. Freight charges	$
D. Site preparation, including demolition, construction of fences, outdoor lighting, road and parking areas	$
E. Installation, including foundations, erection of supporting structures, enclosures or weather protection, insulation and painting, utilities and connections, process integration, and process control equipment	$
F. Auxiliary buildings, including materials storage, employee facilities, and changes to existing structures	$
G. Ambient air monitoring network	$
II. INDIRECT COSTS [30 TAC § 116.141(c)(2)]	**Estimated Capital Cost**
A. Final engineering design and supervision, and administrative overhead	$
B. Construction expense, including construction liaison, securing local building permits, insurance, temporary construction facilities, and construction clean-up	$
C. Contractor's fee and overhead	$
TOTAL ESTIMATED CAPITAL COST	Greater than $7,500,000

I certify that the total estimated capital cost of the project as defined in 30 TAC § 116.141 is equal to or less than the above figure. I further state that I have read and understand Texas Water Code § 7.179, which defines CRIMINAL OFFENSES for certain violations, including intentionally or knowingly making, or causing to be made, false material statements or representations.

Company Name: Lon C. Hill, LP

Company Representative Name (please print): Gary Clark Title: Asset Manager

Company Representative Signature: [signature]

Estimated Capital Cost	**Permit Application Fee**	**PSD/Nonattainment Application Fee**
Less than $300,000	**$900 (minimum fee)**	**$3,000 (minimum fee)**
$300,000 to $25,000,000	**0.30% of capital cost**	
$300,000 to $7,500,000		**1.0% of capital cost**
Greater than $25,000,000	**$75,000 (maximum fee)**	
Greater than $7,500,000		**$75,000 (maximum fee)**

PERMIT APPLICATION FEE (from table above) = $75,000 Date: 11/07/2013

TEXA787	TEXAS COMMISSION ON		ReNu Power Holdings, LLC			10/30/2013
Ref Nbr	Invoice Nbr	Invc Date	Invoice Amount	Amount Paid	Disc Taken	Net Check Amt
004850	PERMIT	10/30/13	75,000.00	75,000.00	0.00	75,000.00

000301

THE FACE OF THIS DOCUMENT HAS A COLORED BACKGROUND ON WHITE PAPER - THE BACK CONTAINS AN ARTIFICIAL WATERMARK - HOLD AT AN ANGLE TO VIEW

Compass Bank

ReNu Power Holdings, LLC
919 Milam St., Suite 2300
Houston, TX 77002

CHECK # 000301
DATE 1 0 3 0 2 0 1 3
M M D D Y Y Y Y

$ *******75,000.00

PAY Seventy-Five Thousand and 00/100-- Dollars

TO THE ORDER OF
TEXAS COMMISSION ON
ENVIRONMENTAL QUALITY
12000 PRK 35 CIRCLE, BLD A THIRD FLO
AUSTIN, TX 78753

Authorized Signature

BORDER CONTAINS MICROPRINTING

⑈000301⑈ ⑆113010547⑆ 35260048⑈

Section 2
Project Overview

Lon C. Hill, LP (LCH) is proposing to construct, own and operate a new 2x1 combined cycle power plant west of Corpus Christi, Nueces County, TX, which will be referred to as the Lon C. Hill Power Station. The new plant nominal capacity will be of approximately 625 to 740 megawatts (MW). Construction of the new plant is proposed to begin in May 2015 with commercial operation proposed for April 2017.

The site previously hosted a four unit generation facility that ceased operations in 2002 and was subsequently demolished down to the equipment foundations. All associated air permits (New Source Review Permits and Federal Operating Permits) were voided.

The proposed new facility will consist of two natural gas-fired combustion turbines (GTs), two heat recovery steam generators (HRSGs) with natural gas-fired duct burners and one steam turbine (ST) generator (2x1 configuration). Proposed ancillary equipment may include a natural gas fuel supply system, an auxiliary natural gas-fired boiler, a diesel-fired emergency generator, a fire protection system, an water-cooled condenser with a cooling tower, an oil/water separator, two diesel storage tanks, an aqueous ammonia storage tank, and storage and dispensing of gasoline from a small gasoline storage tank. Other equipment may include an evaporative cooling system or gas turbine inlet chilling with the associated cooling tower and chilled water storage.

The combined cycle units will exclusively fire natural gas. Dry low-NOx (DLN) combustors will be used to reduce the nitrogen oxides (NOx) emissions at the turbine exhaust. The duct burners in the HRSGs will be equipped with low-NOx burners. Stack exhaust NOx emissions will be reduced to 2 parts per million volume dry basis corrected to 15 percent oxygen (ppmvdc) on a 24-hour average basis, using selective catalytic reduction (SCR) with aqueous ammonia (NH_3). NH_3 emissions will be limited to 7 ppmvdc. Stack exhaust carbon monoxide (CO) emissions will be reduced to 2 ppmvdc using CO catalyst.

The combined cycle emission rates represented on Table 1(a) are based on the expected maximum short-term and annual average emission rates. Due to the variability in potential operating conditions for the GTs (e.g., ambient temperature, load, etc.) and the unpredictable future demand for electric power, all of the potential operating cases cannot be represented in this permit application. Therefore, LCH requests that the operation of the turbines not be limited to the specific operating scenarios represented in this application, but instead, by the maximum emission rates represented in the Table 1(a).

Operation of the proposed power station will result in airborne regulated pollutant emissions. Therefore, an air permit must be issued prior to the start of construction activities [30 TAC §116.110(a)]. This submittal, including the required permit application forms and supporting technical documentation, constitutes the LCH application for authorization to commence construction in accordance with the Texas Commission on Environmental Quality (TCEQ) permitting rules contained in 30 TAC Chapter 116.

The proposed power plant will be located in Nueces County, an area that is classified by the United States Environmental Protection Agency (US EPA) as attainment with the National Ambient Air Quality Standards (NAAQS) for nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter 10 microns or less (PM_{10}), particulate matter 2.5 microns or less ($PM_{2.5}$), lead (Pb) and ozone (O_3).

Because the area is designated attainment for all regulated pollutants, Prevention of Significant Deterioration (PSD) regulations will apply to any new major stationary source. A stationary source is considered "major" if it has the potential to emit either 100 tons per year or more of a regulated pollutant, if the source is classified as one of the 28-named source categories, or 250 tons per year or more of any of the regulated pollutants for unlisted sources. This facility is one of the 28-named sources under the PSD rules (i.e., fossil fuel-fired steam electric facilities greater than 250 MMBtu); therefore, the applicable major source threshold for all regulated pollutants is 100 tpy. The Lon C. Hill Power Station will be a major stationary source due to NOx, CO, VOC and PM_{10}/$PM_{2.5}$ emissions, and a PSD permit will be required.

The proposed power station will not result in an emission rate above 10 tons per year or higher of any individual hazardous air pollutant (HAP), or 25 tons per year or more of a combination of HAPs. Therefore, under Section 112 of the Clean Air Act, the Lon C. Hill Power Station will not be a major source of HAPs.

Finally, since the proposed power station will be major for other PSD pollutants and will also result in Greenhouse Gas (GHG) emissions greater than the 75,000 short-tons per year (tpy) carbon dioxide equivalent (CO_2e), a separate permit application will be submitted to the US EPA Region 6 addressing PSD applicability for GHG emissions.

The purpose of this application is to authorize the construction of the Lon C. Hill Power Station and to demonstrate that the project will not cause or contribute to a violation of the NAAQS, or State Ambient Air Quality Standards. Furthermore, this application demonstrates that LCH has selected all the pollution control technologies in accordance with state Best Available Control Technology (BACT) requirements.

This report is organized as follows:

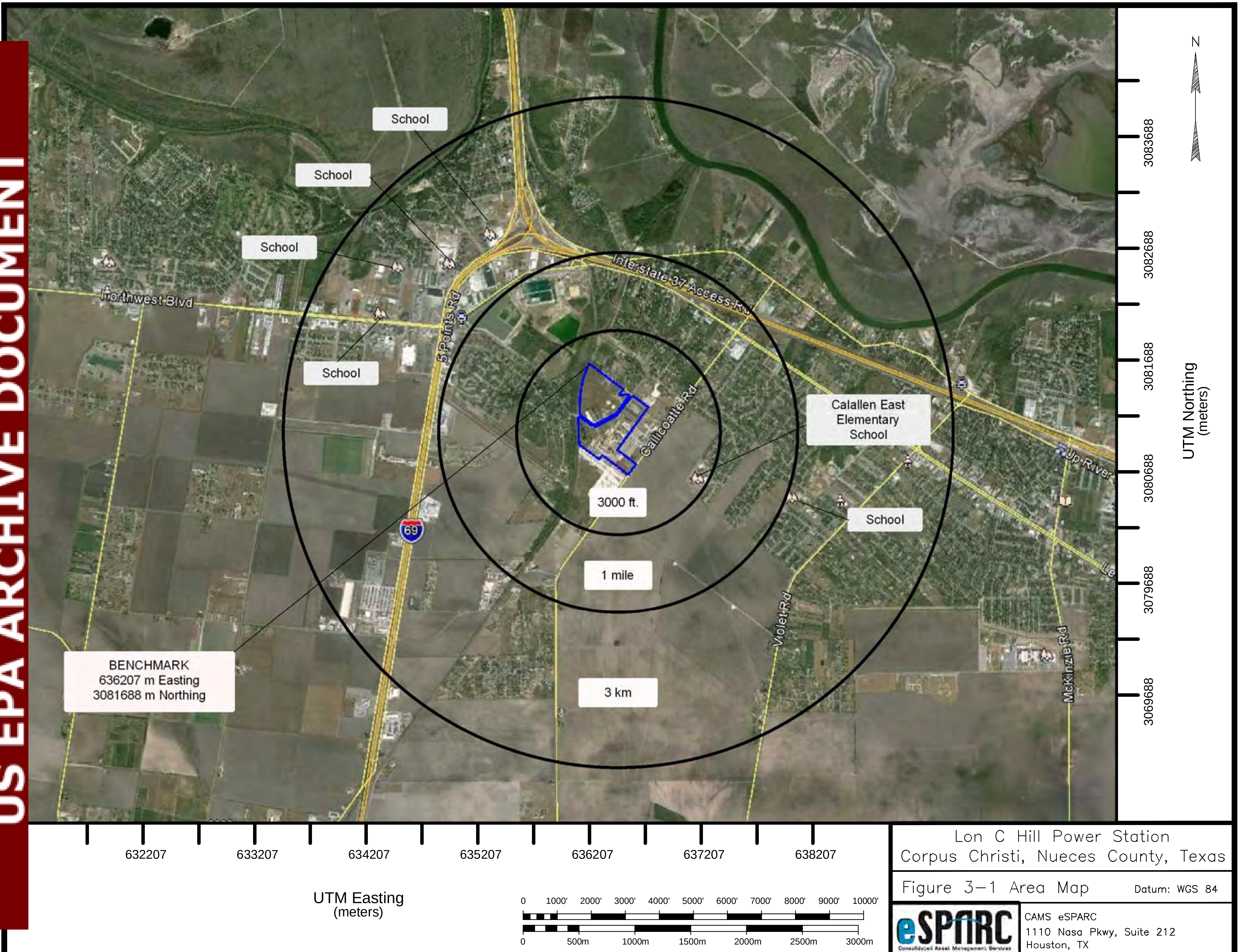
- Section 1 provides the TCEQ general application forms, Core Data Form and TCEQ permit fees summary table.
- Section 2 provides an introduction to the proposed project.
- Section 3 provides TCEQ requested technical information.
- Section 4 describes the air emission rate calculations and data.
- Section 5 provides an analysis of BACT.
- Section 6 provides an overview and summary of the applicable state and federal regulations and discusses the applicability of these regulations to the proposed project.
- Section 7 describes the NNSR and PSD requirements and discusses the applicability of these regulations to the proposed project.

Section 3
Technical Information

3.1 Area Map, Plot Plan and Process Flow Diagram

Lon C. Hill Power Station will be located within TCEQ Region 14, Corpus Christi, Texas. The land surrounding the site is mostly suburban area. Calallen East Elementary School is within 3,000 feet of the site.

A copy of the Lon C. Hill Power Station area map, a preliminary proposed plot plan, and a process flow diagram are provided on the following pages.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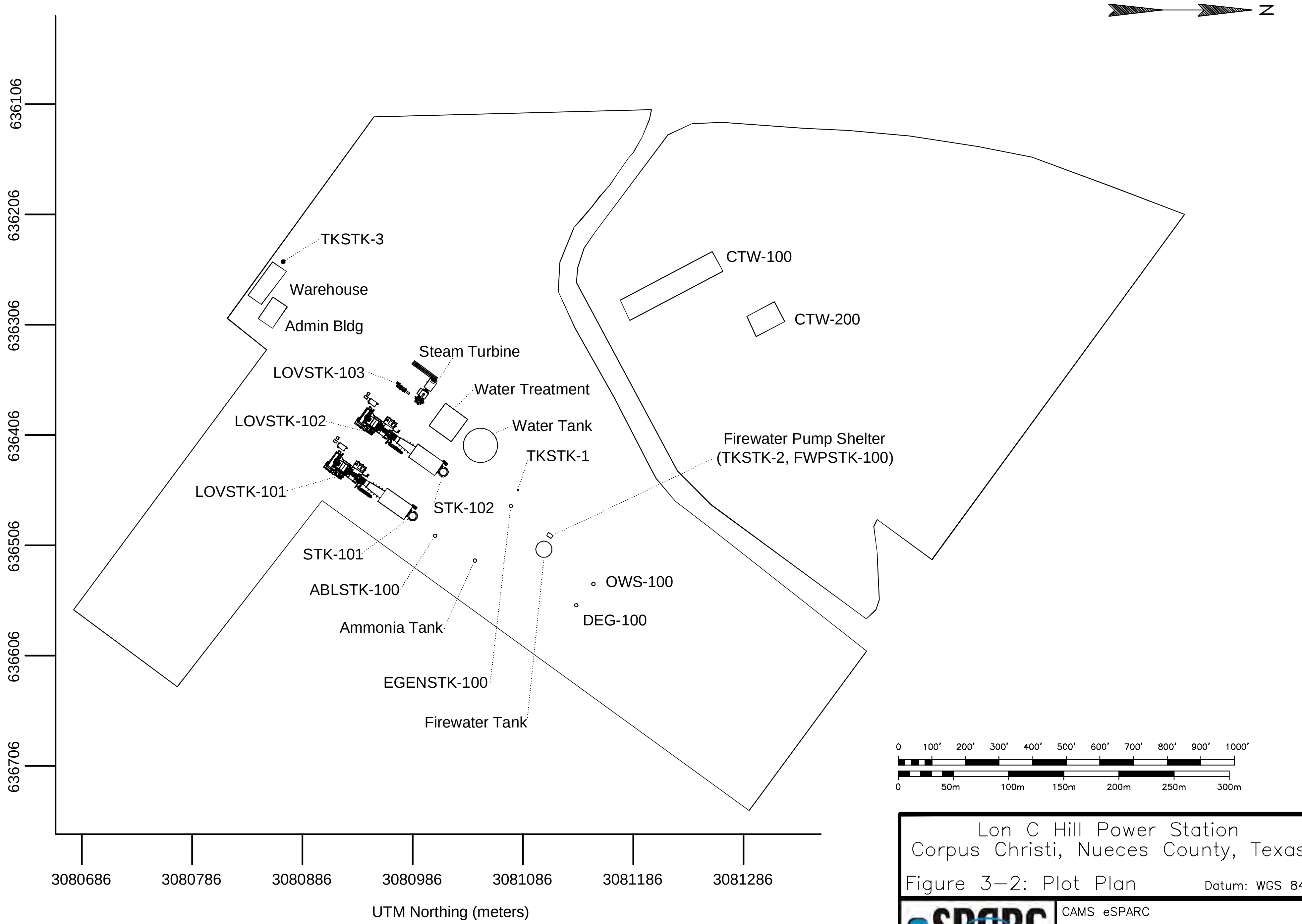
Lon C Hill Power Station
Corpus Christi, Nueces County, Texas
Figure 3-1 Area Map
Datum: WGS 84
eSPARC
CAMS eSPARC
1110 Nasa Pkwy, Suite 212
Houston, TX



Lon C Hill Power Station
Corpus Christi, Nueces County, Texas

Figure 3–2: Plot Plan

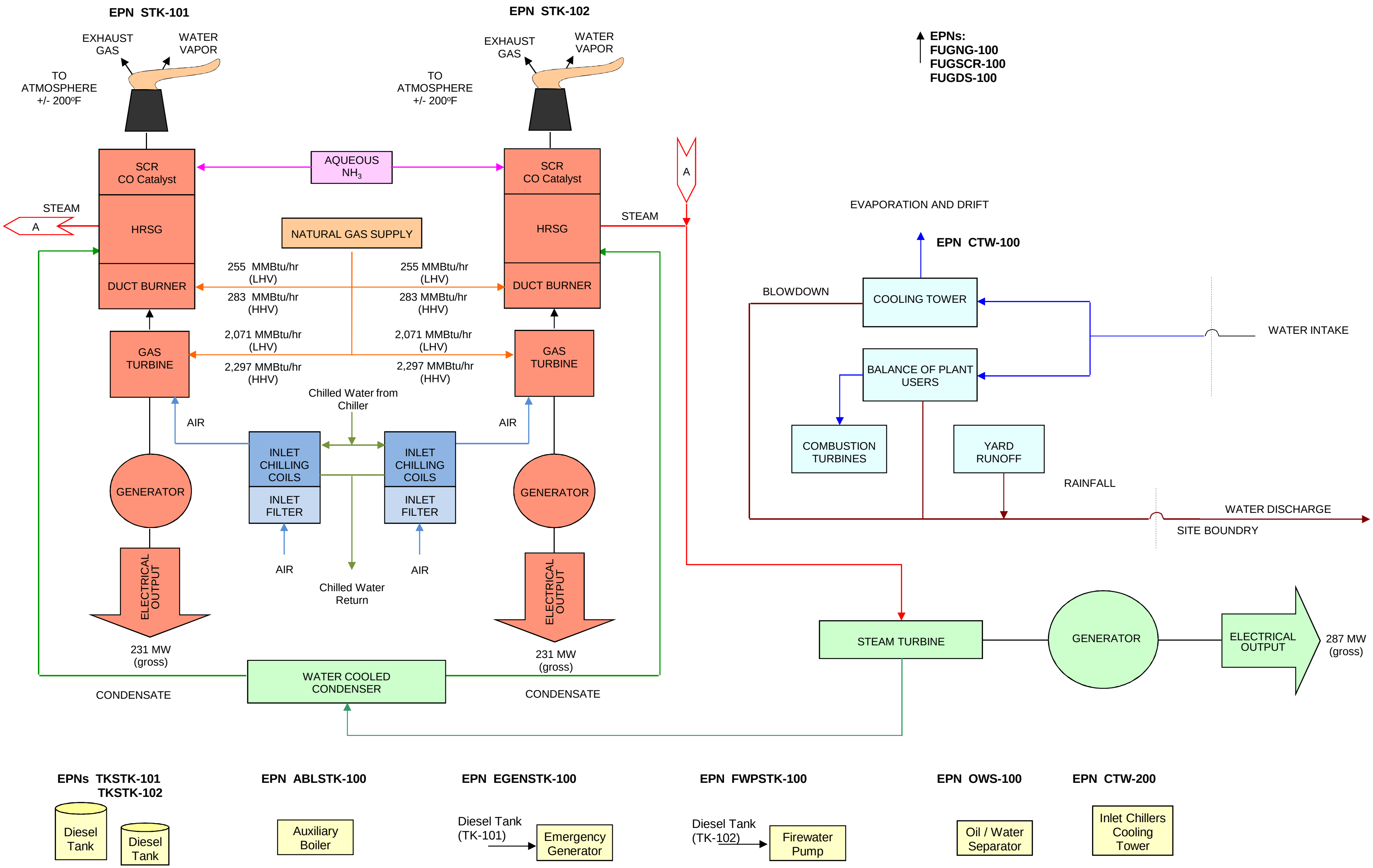
Datum: WGS 84

eSPARC
Consolidated Asset Management Services

CAMS eSPARC
1110 Nasa Pkwy, Suite 212
Houston, TX

LON C HILL REDEVELOPMENT PROJECT
LON C. HILL, LP

PROCESS FLOW DIAGRAM



3.2 Process Description

Lon C. Hill Power Station will be a 2x1 combined cycle power plant consisting of two natural gas-fired combustion turbines (GTs), two heat recovery steam generators (HRSGs) with natural gas-fired duct burners (DBs) and a steam turbine (ST) generator. The plant nominal operating capacity will be approximately 625 to 740 megawatts (MW).

A process flow diagram illustrating the general plant configuration is included in Section 3.1. The material balance is provided in TCEQ Table 2, Section 3.4.

Gas Combustion Turbines (GTs)

The main function of each GT is to produce shaft power to generate electricity. In each GT, large volumes of air are compressed to high pressures. The compressed air is subsequently injected, together with the combustion fuel, into the GT combustion chamber. The fuel for the units will be natural gas only. Hot gases from the combustion chamber turn the turbine that drives the compressor and the GT generator producing electricity, before exhausting to the HRSG for steam production. Each HRSG contains a gas-fired duct burner assembly that supplements the steam production. The steam from the two HRSGs is then passed through a single steam turbine to generate additional electricity.

Each GT will be equipped with an inlet air filtration system and either an inlet chilling system or an evaporative cooling system, to pre-treat the combustion air. The inlet air filtration system removes the bulk of the particulate matter in the inlet air. The filtration improves both long-term compressor efficiency and compressor blade life, by reducing erosion and fouling of the GTs inlet air compressors. The inlet chilling, as well as the evaporative cooling, if installed, cools the inlet air to within a few degrees of the prevailing wet bulb temperature; this increases the output of the GTs and improves efficiency. Emission estimates for scenarios with and without cooling of the inlet air are provided in this application (Attachment B).

NOx emissions from the GTs will be controlled with DLN combustors in combination with a SCR. One aqueous ammonia tank will be installed as part of the project to supply ammonia to the SCR systems for both units. CO emissions from the GTs will be controlled with CO-oxidation catalysts.

The proposed new combined cycle facility will utilize either Siemens SCC6-5000F GTs with duct-fired HRSGs and a single SST6-5000 steam turbine or General Electric 7FA.04/7FA.05 GTs with duct-fired HRSGs and a single D-11 steam turbine. Each GT will have an estimated nominal gross output of approximately 195 to 240 MW. The ST is expected to generate approximately 230 to 290 MW.

Heat Recovery Steam Generators (HRSGs)

The HRSGs use the hot combustion gases exiting the GTs to produce steam. Indirect heating of the HRSG feed water produces steam at various pressure levels. Each HRSG is supplied with supplementary firing (duct burners) to increase the steam production as required to generate more power. The HRSG duct burners will be fired with natural gas only. The maximum firing rate of each duct burner system will be approximately 250 to 670 MMBtu/hr (HHV). The CO-oxidation catalyst and the SCR technology will be installed between the tube banks within the HRSGs.

Lube Oil Vents

The combustion turbines and the steam turbine require lube oil reservoirs that can potentially emit small amounts of particulate matter through atmospheric vents. The lube oil vents will be equipped with mist eliminators with 99.9% efficiency. Consequently, associated particulate matter emissions are estimated to be below 0.1 pounds per hour (lb/hr) per vent.

Auxiliary Boiler

The design of the new facility includes a natural gas fired auxiliary boiler to provide pre-warming steam to the steam turbine generator prior to startup. Use of the auxiliary boiler will decrease the amount of time that the combustion turbines must be run at low output levels during startup, particularly during cold startups. The unit will nominally produce 31,000 pounds of steam per hour at a maximum heat input of 48.4 MMBtu/hr. The maximum annual capacity factor will be 30%.

Emergency Generator

A diesel engine driven emergency generator, rated at approximately 1,000 kW (1,340 HP) will provide power to essential ancillary equipment in the event of a loss of primary power. This engine will operate no more than 100 hours per year for maintenance and testing purposes only [40 CFR 60, Subpart IIII (§60.4211(f)(2))]. The diesel engine has not yet been procured; however LCH will ensure that the installed unit meets the emission requirements of 40 CFR 60, Subpart IIII, if applicable. CO_2e emission rates for this unit are included in the facility potential to emit. However, it is not expected that the unit will have any reporting obligations through US EPA Electronic Greenhouse Gas Reporting Tool (eGGRT), according to §98.30(b)(2).

Firewater Pump

The project will include the installation of a diesel engine driven firewater pump rated at approximately 460 kW (617 HP). This engine will operate no more than 100 hours per year for maintenance and testing purposes only [40 CFR 60, Subpart IIII (§60.4211(f)(2))]. The firewater pump has not yet been procured, however LCH will ensure that the installed unit meets the emission requirements of Table 4 of 40 CFR 60, Subpart IIII, if applicable. CO_2e emission rates for this unit are included in the facility potential to emit. However, it is not expected that the unit will have any reporting obligations through eGGRT, according to 98.30(b)(2).

Cooling Water System

LCH intends to utilize a cooling tower with a water-cooled condenser in order to minimize the station water demand. The preliminary cooling tower design considers the use of gray water from the City of Corpus Christi for cooling tower make up. Gray water may undergo filtration as needed. A portion of the cooling water circulation (blowdown) will be purged from the system to prevent concentrations of solids or other constituents in the circulating water from building up to unacceptable levels. The cooling water drift factor rate will not exceed 0.001%.

LCH is also evaluating the possibility of enhancing the performance of the combustion turbines by incorporating either evaporative coolers or inlet chillers. The Inlet chiller option will have an associated cooling tower and chilled water storage. The cooling tower drift factor rate will not exceed 0.0005%.

Oil/Water Separator

The site will be equipped with an oil/water separator to treat oil impacted water effluents. The oil/water separator could potentially emit small amounts of volatile organic compounds to the atmosphere. The preliminary design includes a 96,000 gallon per year unit.

Storage Tanks

There will be two dedicated storage tanks to supply diesel fuel to the emergency generator and the fire water pump engines. The preliminary design includes a 700 gallon tank for the emergency generator and a 300 gallon tank for the firewater pump.

In addition, there will be an aqueous ammonia storage tank for use in the SCR systems. The aqueous ammonia tank will be pressurized and therefore will have no emissions to the atmosphere. The preliminary design includes a 25,000 gallon tank to serve both combined cycle units.

The new plant may include a 250-gallon tank for gasoline storage. This fuel will be used in miscellaneous plant equipment. It is expected that no more than 250 gallons of gasoline will be used annually.

3.3 Maintenance, Startup and Shutdown

This permit application proposes to authorize planned or routine maintenance, startup and shutdown (MSS) and temporary maintenance facilities associated with the Lon C. Hill Power Station. The number and/or duration of planned MSS activities are not to be construed as binding since permit compliance will be based upon proposed emission rates as represented on Table 1(a). MSS emission rate calculations are described in Section 0. MSS proposed activities include:

- Gas turbine startup and shutdown events;
- Auxiliary boiler startup and shutdown events;
- Maintenance natural gas purging;
- Offline turbine washing;
- Soldering, brazing and welding activities; and
- Coalescer filter change out.

3.4 Table 2 Material Balance

Table 2 Material Balance for the Lon C. Hill Power Station is provided in Attachment A.

3.5 TCEQ Equipment Tables

TCEQ equipment tables are provided in Attachment A of this application, as follows:

Table 1 – TCEQ Equipment Tables

TCEQ Equipment Table	Units (FIN)
Table 31 – Combustion Turbines	Unit 1 Gas Turbines (CC-101) Unit 2 Gas Turbines. (CC-102)
Table 6 – Boilers and Heaters	Unit 1 HRSG Duct Burners (CC-101) Unit 2 HRSG Duct Burners (CC-102) Auxiliary Boiler (ABL-100)
Table 7(a) – Vertical Fixed Roof Storage Tank Summary	Diesel Tank (TK-101) Diesel Tank (TK-102)
Table 7(b) – Horizontal Fixed Roof Storage Tank Summary	Aqueous Ammonia Tank (TK-103)
Table 29 – Reciprocating Engines	Emergency Generator (EGEN-100) Firewater Pump (FWP-100)

Section 4
Emission Data and Calculations

This section describes the methods used to estimate the emission rates associated with the air permit application. The emission sources are listed in Table 2. Emission rate estimates are provided for routine and MSS operations. A complete Table 1(a) is included in Attachment A. Refer to Attachment B for detailed calculations.

4.1 EPN-FIN Cross Reference Table

Table 2 – EPN-FIN Cross Reference

EPN	FIN	Description
STK-101	CC-101	Unit 1 Combined Cycle (GT+HRSG DB)
STK-102	CC-102	Unit 2 Combined Cycle (GT+HRSG DB)
LOVSTK-101	CC-101	Unit 1 GT Lube Oil Vent
LOVSTK-102	CC-102	Unit 2 GT Lube Oil Vent
LOVSTK-103	ST-103	ST Lube Oil Vent
ABLSTK-100	ABL-100	Auxiliary Boiler
EGENSTK-100	EGEN-100	Emergency Generator
FWPSTK-100	FWP-100	Firewater Pump
CTW-100	CTW-100	Cooling Tower 1
CTW-200	CTW-200	Cooling Tower 2
OWS-100	OWS-100	Oil Water Separator
TKSTK-101	TK-101	Diesel Tank (Emergency Generator)
TKSTK-102	TK-102	Diesel Tank (Firewater Pump)
FUGNG-100	FUGNG-100	Fugitive Natural Gas Service
FUGSCR-100	FUGSCR-100	Fugitive Ammonia Service
FUGDS-100	FUGDS-100	Fugitive Diesel Service
PURG-100	PURG-100	MSS Fuel Purging Emissions
OFFWASH-100	CC-101 and CC-102	MSS Offline Turbine Washing
WELD	WELD	MSS Soldering, Welding, Brazing

4.2 Emitting Sources

Combined Cycle Units (FINs: CC-101 and CC-102; EPNs: STK-101 and STK-102)

Two combined cycle gas turbine generators nominally rated at approximately 195 to 240 MW of power (gross) and two HRSGs equipped with supplemental duct burner firing are proposed. The maximum firing rate of the HRSG duct burners is of approximately 250 to 670 MMBtu/hr (HHV) for each train. The GTs and HRSG duct burners will be fired with natural gas only.

Combustion emissions associated with the GTs and the HRSG duct burners include NOx, CO, VOC, SO_2, PM_{10}/$PM_{2.5}$, sulfuric acid (H_2SO_4), and hazardous air pollutants (HAPs). There may also be ammonia slip from the SCR systems. Emission rate estimates for the GT/HRSG train stacks are based on vendor estimated data, fuel analysis data, and regulatory requirements. The natural gas heating value was calculated based on the natural gas analysis, as provided by turbine vendor data, as 926 Btu/scf (LHV) and 1,027 Btu/scf (HHV).

Since pollutant emission rates may vary depending on ambient conditions, several operating scenarios representing a range of ambient temperatures were considered for estimating the maximum hourly emission rates. Table 3 shows the various operating scenarios considered.

Table 3 – GT/HRSG Operating Scenarios – Hourly Emission Rate Calculations

GT	Scenario	Ambient Temperature (°F)	Load %	GT Rate (MMBtu/hr, HHV) Inlet Cooling OFF	GT Rate (MMBtu/hr, HHV) Inlet Cooling ON	HRSG Duct Burner (MMBtu/hr, HHV)
Siemens SCC6-5000F	1	15	Base	2,260	--	283
	2	45	Base	2,262	--	270
	3	60	Base	2,277	--	255
	4	75	Base	2,274	2,297	233
	5	95	Ā ‰	2,124	2,217	160
GE S207FA.04	1	13	Base	1,918	--	329 (97% DB)
	2	60	Base	1,807	1,829	34 (10% DB)

Inlet Cooling maybe achieved through evaporative coolers or inlet chillers.

Detailed emission rate calculations are provided in Attachment B of this application. For each pollutant, the total emission rate out the stack considers the combined flow from the GT exhaust and the duct burner exhaust, controlled by the CO-catalyst and the SCR. The proposed hourly emission rate limit for each pollutant is based on the ambient conditions which result in the maximum hourly emission rate for the Siemens or GE evaluated equipment.

Annual emission rates were evaluated assuming continuous annual operation (8,760 hours per year per unit) as well as cases with maximum annual startups and shutdowns (8,188 hours per year of routine operation and 572 hours per year of startups and shutdowns), as shown in Table 4.

Table 4 – GT/HRSG Operating Scenarios – Annual Emission Rate Calculations

GT	Scenario	Ambient Temperature (^oF)	Inlet Cooling	Duct Firing	Routine Hours of Operation	Startup Shutdown Hours of Operation
Siemens SCC6-5000F	1	45	OFF	ON	8,760 8,188	-- 572
	2	65	OFF	ON	8,760 8,188	-- 572
	3	75	ON	ON	8,760 8,188	-- 572
	4	*	OFF	ON	8,760 8,188	-- 572
GE S207FA.04	1	13	OFF	ON	8,760 8,188	-- 572
	2	60	ON	ON	8,760 8,188	-- 572

*45 ^oF ambient temperature from April through October (to simulate inlet cooling on) and 60 ^oF from November through March.

The proposed annual emission rate limit for each pollutant is based on the maximum of these scenarios (for either Siemens or GE alternatives), which collectively allow the operational flexibility necessary for the plant to respond to market demands. NOx stack concentrations will be controlled by a SCR system and are established by the vendor to be at 2 ppmvdc on a 24-hour average basis. CO stack concentrations will be controlled by a CO-oxidation catalyst and are established by the vendor to be at 2 ppmvdc. SO_2 emission rates are based on an average annual fuel sulfur content of 0.2 grains per 100 standard cubic feet (scf). It is assumed that 10 percent of the SO_2 emissions from the turbine and the duct burners will oxidize to form SO_3. It is assumed that 100 percent of the SO_3 will form H_2SO_4. However, no reduction to the total SO_2 emission rate (hourly or annual) is accounted for, even though SO_2 oxidizes to form SO_3. The post-SCR, post-CO-oxidation catalyst maximum hourly and annual emission rates from the stack are represented in this application for each pollutant. Detailed calculations are provided in Attachment B.

GT Startup and Shutdown Events

The startup and shutdown emission rates for NOx, CO, VOC and NH_3 are based on the projected amount of time needed for MSS activities and vendor-supplied data. MSS activities associated with the turbines are expected to occur for a maximum of 572 hours per year per turbine. The duration of the startups will be minimized to the best extent possible for each unit.

A startup is initiated when the Data Acquisition and Handling System (DAHS) detects a flame signal and ends when the permissive for the emission control system are met (i.e., steady state emissions compliance is achieved). The turbines will have the following typical startups:

- Cold Startup: is a startup after an extended GT shutdown of greater than 64 hours, with the ST HP/IP metal temperatures less than 485 °F (252 °C). It is expected to have no more than 10 events per year at approximately 241 minutes per event;
- Warm Startup: is a startup after a GT shutdown of 16 to 64 hours, with the ST HP/IP metal temperatures between 485 °F (252 °C) and 685 °F (363 °C). It is expected to have no more than 50 events per year at approximately 136 minutes per event;
- Hot Startup: is a startup after a GT shutdown of less than 16 hours, with the ST HP/IP metal temperatures greater than ~ 685 °F (363 °C). It is expected to have no more than 200 events per year at approximately 93 minutes per event; and

A startup is initiated when the Data Acquisition and Handling System (DAHS) detects a flame signal (or equivalent signal) and ends when the permissives for the emission control system are met (i.e., steady state emissions compliance is achieved).

A shutdown begins when the load drops to the point at which steady state emissions compliance can no longer be assured and ends when a flame-off signal is detected.

We have represented a conservative operating scenario that combines hot, warm, and cold startups to achieve the worst case (i.e., maximum emission rate expected from the new facility). This facility will likely be a merchant facility and cannot be operationally constrained to a specific number of hot, warm, or cold startups. Therefore, LCH requests that compliance be demonstrated by maintaining short and long term emission rates below those represented in the permit application, rather than a specific number of hot, warm, and/or cold startups.

The emission rates are based on vendor data. Detailed emission rate calculations and example calculations are provided in Attachment B

Lube Oil Vents (FINs: CC-101, CC-102 and ST-103; EPNs: LOVSTK-101, LOVSTK-102 and LOVSTK-103)

Lube oil vents from the gas turbines and the steam turbine could potentially emit particulate matter. Emission rates are calculated based on the demister oil flow rate and 99.9 percent mist eliminator efficiency. Detailed emission rate calculations and example calculations are provided in Attachment B

Auxiliary Boiler (FIN: ABL-100; EPN: ABLSTK-100)

The auxiliary boiler will fire only natural gas. Combustion emissions include NOx, CO, VOC, SO_2, $PM_{10}/PM_{2.5}$ and HAPs. The boiler will be able to achieve a NOx emission rate of 0.036 lb/MMBtu and a CO emission rate of 50 ppmvd at 3 percent O_2. The auxiliary boiler will have a maximum heat input of 48.4 MMBtu/hr and the annual hours of operation will be limited to 2,628 hours (30% capacity factor). Emission rates for all other pollutants are estimated based on US EPA AP-42 Chapter 1.4 “Natural Gas Combustion”, Tables 1.4-2, 1.4-3 and 1.4-4. Detailed emission rate calculations and example calculations are provided in Attachment B

Auxiliary Boiler Startup and Shutdown Events

NOx startup emissions will be limited to 0.1 lb-NOx/MMBtu and CO startup emissions will be limited to 500 ppmvd at 3 percent O_2. SU/SD events associated with the auxiliary boiler are expected to occur for a maximum of 340 hours per year. The duration of the startups will be minimized to the best extent possible. The typical event durations will be:

- Cold Startup: 10 events per year at 8 hours per event;
- Warm Startup: 50 events per year at 4 hours per event;
- Shutdowns: 60 events per year at 1 hour per event.

Detailed emission rate calculations and example calculations are provided in Attachment B

Emergency Generator (FIN: EGEN-100; EPN: EGENSTK-100)

The emergency generator is expected to be a 1,000 kW (1,340 HP) engine. The emissions associated with the emergency generator include NOx, CO, VOC, SO_2, $PM_{10}/PM_{2.5}$ and HAPs. NSPS Subpart IIII §60.4202(a)(2), (§89.112 – Table 1) NOx, CO, VOC and $PM_{10}/PM_{2.5}$ emission rates for emergency stationary engines with a displacement less than 10 liters per cylinder for model year 2007 and earlier are proposed. This provides the worst case scenario and is used for permitting purposes only. SO_2 and HAP emission rate calculations are based on US EPA AP 42 emission factors (Chapter 3.3 "Gasoline and Diesel Industrial Engines" Tables 3.3-1 and 3.3-2). Detailed emission rate calculations and example calculations are provided in Attachment B.

Firewater Pump (FIN: FWP-100; EPN: FWPSTK-100)

The firewater pump is expected to be a 460 kW (617 HP) engine. The emissions associated with the firewater pump include NOx, CO, VOC, SO_2, $PM_{10}/PM_{2.5}$ and HAPs. §60.4205(c) (Table 4) NOx, CO VOC and $PM_{10}/PM_{2.5}$ emission rates for fire pump engines model year 2008 and earlier are proposed. This provides the worst case scenario and is used for permitting purposes only. SO_2 and HAP emission rate calculations are based on US EPA AP 42 emission factors (Chapter 3.3 "Gasoline and Diesel Industrial Engines" Tables 3.3-1 and 3.3-2). Detailed emission rate calculations and example calculations are provided in Attachment B

Cooling Towers (FINs: CTW-100 and CTW-200; EPNs: CTW-100 and CTW-200)

Wet cooling towers provide direct contact between the cooling water and the air passing through the tower. Some of the liquid water from the cooling tower may be entrained in the air stream and be carried out of the tower as "drift" droplets. Therefore, the particulate matter constituents of the drift droplets may be classified as a pollutant emission. A conservative assumption is that all of the solids in the cooling tower drift become $PM_{10}/PM_{2.5}$. According to the preliminary estimates, the CTW-100 water circulation flow rate will be 127,000 gallons per minute (gpm) and the drift rate will be 0.001%. For the CTW-200 water circulation flow rate will be 10,000 gpm and the drift rate of 0.0005%. Detailed emission rate calculations and example calculations are provided in Attachment B.

Oil Water Separator (FIN: OWS-100; EPN: OWS-100)

VOC emissions from the oil water separator are expected to be minimal due to the low vapor pressure of the products that may be introduced to the separator (turbine oil and lube oils). Emission rates have conservatively been calculated using an emission factor of 5 pounds of VOC per 1,000 gallons of oil, according to US EPA AP-42 Chapter 5.1 "Petroleum Refining". The preliminary design includes a 96,000 gallon per year unit. Detailed emission rate calculations and example calculations are provided in Attachment B.

The oil water separator will be cleaned on an interval of every five years or more. Due to the low vapor pressure of the products that may be introduced to the oil water separator and the short duration of the cleaning event, only negligible emissions are expected to occur during this infrequent, non-routine activity.

Diesel Tanks (FINs: TK-101 and TK-102; EPNs: TKSTK-101, TKSTK-102)

The plant will be equipped with two diesel tanks, a 700 gallon tank (TK-101) for the emergency generator and a 300 gallon tank (TK-102) for the firewater pump. Emission rates are calculated using US EPA TANKS 4.09D software. Short-term emission rates are calculated based on TCEQ's "Technical Guidance Package for Storage Tanks, RG-166" (Draft, February 2001). Annual emission rates are calculated based on the emergency generator and firewater pump diesel requirements and the tanks capacity. VOC is the only pollutant associated with the diesel tanks. Detailed emission rate calculations and example calculations are provided in Attachment B.

Gasoline Tank (FIN: TK-103; EPN: TKSTK-103)

The plant may be equipped with a 250 gallon gasoline storage tank. Emission rates are calculated using US EPA TANKS 4.09D software. Short-term emission rates are calculated based on TCEQ's "Technical Guidance Package for Storage Tanks, RG-166" (Draft, February 2001). Annual emission rates are calculated based on a maximum gasoline usage of 250 gallons per year. VOC is the only pollutant associated with the gasoline tank. Hazardous air pollutants, including benzene, toluene and xylenes emission rates are included in the calculations. Detailed emission rate calculations and example calculations are provided in Attachment B.

Fugitive Emissions (FINs: FUGNG-100, FUGSCR-100, FUGDS-100; EPNs: FUGNG-100, FUGSCR-100, FUGDS-100)

Fugitive releases of VOC may originate from the natural gas and diesel fuel lines, while NH_3 fugitive emissions could occur from the SCR ammonia handling system and piping, although extremely unlikely. Emission rates were estimated based in the preliminary design component counts. Emission factors used were obtained from TCEQ's "Technical Guidance for Chemical Sources – Equipment Leak Fugitives" (Draft, October 2000). No control efficiency is claimed for natural gas and diesel service components, while for ammonia service "AVO" is claimed. Audio, visual and olfactory walk-through inspections are applicable for inorganic/odorous and low vapor pressure compounds. Visual checkups will be conducted every 4 hours. Detailed emission rate calculations and example calculations are provided in Attachment B.

Maintenance Fuel Gas Purging (FIN: PURG-100; EPN: PURG-100)

During startup, shutdown or protective tripping of the facility, fuel gas line purging occurs on an automated basis in both the gas turbine and the HRSG duct burner fuel supply lines. During such events, some natural gas will be released to the atmosphere as line pressure between double-block and bleed function shutoff valves is vented. Fuel purging emissions are based on the Universal Ideal Gas Law, with the assumption that in one hour, the entire length of pipe is purged once and the purging takes place for every startup, shutdown and protective tripping of the units. Detailed emission rate calculations and example calculations are provided in Attachment B.

Maintenance Offline Washing of Turbines (FIN: CC-101 and CC-102; EPN: OFFWASH-100)

Offline water washing can potentially release small VOC vapors associated with the soap-based cleaning solution. Emission rates are calculated using a mass balance approach and are based on the chemical soap throughput and VOC content. Offline wash of the turbines is performed up to four times a year (two washes per unit per year) and lasts for approximately one hour each time. Detailed emission rate calculations and example calculations are provided in Attachment B.

Soldering, Brazing and Welding (EPN: WELD)

Temporary maintenance facilities may be used for soldering, brazing and welding. The use of lead containing rods will be prohibited at Lon C. Hill Power Station. This activity could result in the emission of particulate matter, including HAPs. Emission rates are calculated based on US EPA AP-42 Chapter 12.19 "Electric Arc Welding" emission factors. Worst case rods were considered for the selection of the most conservative emission factors. Detailed emission rate calculations and example calculations are provided in Attachment B.

Filter Change-Outs

When a coalescer filter is replaced, the filter housing is opened to the atmosphere, possibly releasing very small quantities of vapors. However, emission rate calculations are not required due to the low vapor pressure of the turbine oil associated with the coalescer. According to a TCEQ Memo dated September 19, 1996 from Victoria Hsu, emission rate calculations are not required if the vapor pressure is below 0.0002 psia at 104°F.

4.3 Non-Emitting Sources

In addition to the emission sources describe in Section 0, the Lon C. Hill Power Station will be equipped with a 2.5 million gallon water storage tank, a 1 million gallon water tank for the firewater system, a 25,000 gallon pressurized aqueous ammonia tank, and various tanks and totes containing water treatment chemicals. None of these tanks constitutes a potential emission source. However, the aqueous ammonia equipment leak fugitives are quantified separately as described in the previous section.

4.4 Table 1(a) Emission Point Summary Table

Three complete Table 1(a)s are included in Attachment A, one with the worst case maximum emissions, a second one with combined cycle units using Siemens vendor data and a third one with GE vendor data.

Section 5
BACT Analysis

This section presents the Best Available Control Technology (BACT) analysis for the proposed redevelopment of the Lon C. Hill Power Station. PSD regulations require that BACT be used to minimize the emissions of pollutants subject to PSD review from a new major source or a major modification of an existing major source. BACT is determined on a case-by-case basis taking into consideration economic, environmental, and energy impacts, and technical feasibility. BACT must be applied to each new or modified emission point of the pollutants subject to review. The pollutants subject to PSD review for the proposed project are NOx, CO, VOC and PM_{10}/$PM_{2.5}$. TCEQ Chapter §116.111 also requires that BACT be applied to minimize emissions from any new or modified sources (TCEQ's guidance document, "Evaluating Best Available Control Technology (BACT) in Air Permit Applications", draft dated April 2001).

BACT selection is based on the US EPA recommended five-step "top-down" methodology. First, all available control alternatives are identified for each new or modified source of significant pollutants. The identification of control alternatives is performed through knowledge of the applicant's particular industry and previous regulatory decisions for identical or similar sources. A detailed search of the latest RACT/BACT/LAER Clearinghouse (RBLC) database, for natural gas fired combined cycle units, was completed. Summary tables are included in Attachment C. In the second step, technically infeasible alternatives are dismissed based on either physical or chemical principles. Remaining alternatives are then rank-ordered beginning with the most stringent control and working down to form a control technology hierarchy in the third step. In the fourth step, the ranked technologies are evaluated for their energy, environmental and economic impact. If these considerations do not justify eliminating the top-ranked option, it should be selected as BACT at the fifth step. However, if the energy, environmental, or economic impacts of the top-ranked option demonstrate that this option is not achievable, then the evaluation of this option stops at Step 4 of the process and continues with an examination of the energy, environmental, and economic impacts of the second-ranked option, third-ranked option, etc. The results of the first four steps are used to select the most appropriate BACT in the fifth step. The discussion of proposed BACT for each source type is provided in the following sections.

The TCEQ also requires that BACT be addressed for MSS sources. In general, best management practices will be employed during scheduled maintenance operations. No existing controls will be bypassed. No additional controls are required for maintenance beyond current BACT guidelines.

The discussion of proposed BACT for each source type is provided in the following sections. Where appropriate, the routine operation for each source is described first, followed by the analysis for the MSS operation.

5.1 Summary of BACT

Table 5 summarizes the control technologies proposed for the Lon C. Hill Power Station to meet BACT. The remainder of this section describes the individual BACT analyses for the new sources being constructed as part of this project.

Table 5 – Summary of BACT Control Methods for Lon C. Hill Power Station

Pollutant	Proposed BACT	Proposed Concentration Limit	Averaging Period
Combined Cycle Units			
NOx	Dry low NOx burners for the GTs. Low NOx burners for the duct burners. SCR.	2 ppmvdc	24-hour average
CO	Natural gas only. Good combustion practices. Oxidation catalyst.	2 ppmvdc 2 ppmvdc	24-hour average Annual average
NH_3	Proper operation of SCR.	7 ppmvdc	Hourly average
VOC	Natural gas only. Good combustion practices.	2 ppmvdc 2 ppmvdc	24-hour average Annual average
$PM_{10}/PM_{2.5}$	Natural gas only. Good combustion practices.		
SO_2	Natural gas only. Good combustion practices.		
H_2SO_4	Natural gas only. Good combustion practices.		
MSS	Limited to the emission rate estimates described in Section 0 and summarized in Attachment A, Table 1(a).		
Lube Oil Vents			
$PM_{10}/PM_{2.5}$	Emissions not to exceed 0.1 lb/hr per lube oil vent.		
Auxiliary Boiler			
NOx	Natural gas only. Low NOx burners. Maximum capacity factor: 0.3.	0.036 lb/MMBtu	
CO	Natural gas only. Good combustion practices. Maximum capacity factor: 0.3.	50 ppmvd at 3% O_2	
VOC, SO_2, $PM_{10}/PM_{2.5}$	Natural gas only. Good combustion practices.		
MSS	Limited to the emission rate estimates described in Section 0 and summarized in Attachment A, Table 1(a).		

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Table 5– Summary of BACT Control Methods for Lon C. Hill Power Station (*continued*)

Pollutant	Proposed BACT	Proposed Concentration Limit	Averaging Period
Emergency Generator			
NOx, CO, VOC, SO_2, $PM_{10}/PM_{2.5}$	Limited use (≤100 hr/yr)		
Firewater Pump			
NOx, CO, VOC, SO_2, $PM_{10}/PM_{2.5}$	Limited use (≤100 hr/yr)		
Cooling Water Towers			
$PM_{10}/PM_{2.5}$	Use of drift eliminators	Drift Loss 0.0005% - 0.001% wt	
Oil Water Separator			
VOC	Use of low vapor pressure material.		
Storage Tanks			
VOC	Fixed roof. Submerged fill-pipes. Vapor pressure < 0.5 psia (diesel). Tank capacity < 700 gal.		
Fugitive Emissions			
VOC	Low VOC content in the natural gas piping system. Low component count in the diesel piping system.		
NH_3	Aqueous ammonia (19% NH_3 content). 97% control efficiency for Audio, Visual and Olfactory (AVO) walk-through inspections conducted every four hours.		

5.2 BACT Analysis for the Combined Cycle Units

This section addresses BACT requirements for emissions of NOx, CO, VOC, $PM_{10}/PM_{2.5}$, SO_2, H_2SO_4 and NH_3 from the GT/HRSG. Attachment C includes a summary of the latest RBLC database for natural gas fired combined cycle units.

5.2.1 NOx

NOx emissions from turbines and duct burners are the result of either the combination of elemental nitrogen and oxygen in air within the combustion device (thermal NOx), or the oxidation of the nitrogen contained in the fuel (fuel NOx). The natural gas fuel does not contain a significant amount of nitrogen; therefore, most of the NOx emissions from the turbines and the duct burners are the result of thermal NOx.

BACT Step 1 – Identify All Available Control Technologies

Table 6 summarizes, in order of increasing efficiency, the available control technologies listed for gas fired combined cycle units in the current RBLC database (refer to Attachment C).

Table 6 – Natural Gas Fired Combined Cycle NOx Control Technologies

Control Technology	Description
Good Combustion Practices	Suppression of thermal NOx formation in combustion sources is commercially demonstrated through the adjustment of the air-fuel ratio, combustion air temperature, and combustion zone cooling. Adjustments of these parameters may be accomplished through water injection or dry control technology.
Steam/Water Injection	To reduce combustion temperature, steam or water can be mixed with the air flow. This lowers combustion temperature to below 1,400°F, limiting thermal NOx generation. However, this technique has the disadvantage of potentially increasing the concentration of CO and unburned hydrocarbons emitted from the turbine.
Low NOx Burners	Low NOx burners allow for a reduced oxygen level, in comparison to ambient air (approximately 10% versus 21%), resulting in peak flame temperatures less than 3,000 degrees Fahrenheit, and therefore reduce the generation of thermal NOx.
Lean Pre-Mix, Dry Low NOx (DLN) Combustion	DLN combustors and pre-mixing fuel and air, minimize flame temperature and therefore the generation of thermal NOx.
XONON	This technology is designed to avoid the high temperatures created in conventional combustors. The XONON combustor operates below 2,700°F at full power generation, which significantly reduces NOx emissions without raising, and possibly even lowering, emissions of CO and unburned hydrocarbons. XONON uses a proprietary flameless process in which fuel and air react on the surface of a catalyst in the turbine combustor to produce energy in the form of hot gases, which drive the turbine.
EMx (SCONOx)	The EMx (SCONOx) system is based on a multi-pollutant reducing platinum catalyst bed coated with potassium carbonate. The catalyst is designed to reduce NOx, CO and VOC emissions and is situated downstream of the combustion chamber in a separate reactor vessel and operates in an ideal temperature window of 300 °F to 700 °F. The EMx system does not require a reactant. The SCONOx catalyst is very susceptible to fouling by sulfur in the flue gas. These catalysts have high frequency maintenance requirements (recoating or washing must be done every 6 months to a year depending on the gas sulfur content).

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Table 6– Natural Gas Fired Combined Cycle NOx Control Technologies (*continued*)

Control Technology	Description
Selective Catalytic Reduction (SCR)	Ammonia is injected from the SCR system into the turbine and duct burner exhaust gases upstream of a catalyst bed. On the catalyst surface, ammonia reacts with NOx to form nitrogen and water. Optimal NOx reduction occurs at catalyst bed temperatures between 575 and 750 degrees Fahrenheit for conventional (typically vanadium or titanium-based) catalyst types. The NOx removal efficiency depends on the flue gas temperature, amount of catalyst, and the NH_3 to NOx ratio in the flue gas stream. According to the RBLC database, recent permits have been issued at NOx emission rates as low as 2.0 ppmvdc, 24-hour average, using SCR technology on natural gas fired combined cycle turbines, with ammonia slip levels in the neighborhood of 7 ppmvdc.

BACT Step 2 – Eliminate Technically Infeasible Options

The only options considered to be technically infeasible are XONON and EMx (SCONOx). These technologies are promising, but have limited commercial validation. The only installations have been on smaller power generation units (<85 MW each).

The only two sites found in the RBLC data base that use these technologies were: three 56 MW units at a facility employing XONON and two 83 MW units at a site employing EMx. These units are three to four time smaller than the proposed units. Both technologies claim a NOx exhaust concentration of 2.5 ppmvdc. The scalability and reliability of these technologies remains to be proven. Therefore, due to the differences in the size and the lack of sufficient commercial applications, these options were deemed to be undemonstrated for the proposed facility and technically infeasible.

BACT Step 3 – Rank Remaining Control Technologies

Technically feasible technologies are therefore, in order of increasingly efficiency, good combustion practices, steam or water injection, low NOx burners, DLN combustors and SCR. According to the data from RBLC database, the combination of good combustion practices and DLN combustors can achieve NOx exhaust concentrations of 9 ppmvdc. The combination of low NOx burners and SCR can achieve NOx exhaust concentrations of 3.5 ppmvdc. The top level control is considered to be the combination of good combustion practices, use of pre-mix DLN combustion, use of low NOx burners and SCR, shown to achieve NOx exhaust concentrations of 2 ppmvdc.

BACT Step 4 – Evaluate Most Effective Control Technologies

The most effective control technology listed for units comparable to those at the proposed project is good combustion practices combined with the use of pre-mix DLN combustion, low NOx burners, and SCR catalyst. These technologies are commonly employed and consistently meet concentration limits in the range of 2 ppmvdc to 2.5ppmvdc. The technologies are robust and proven.

BACT Step 5 – Select the BACT

The Lon C. Hill combined cycle units will use SCR in combination with DLN combustors and low NOx burners to achieve a NOx emission rate of 2.0 ppmvdc for a 24-hour averaging period. NOx emissions will also be limited to 3.5 ppmvd @ 15% oxygen on a rolling three-hour basis. These control technologies have been commonly applied as BACT in recent permitting activities [e.g., Avenal Energy Project (CA), Colusa Generation Station (CA), King Power Station (TX) and Thomas C. Ferguson Power Station (TX)]. For units of a size similar to the proposed Lon C. Hill units, the achieved NOx concentrations range from 2 ppmvdc to 2.5ppmvdc. This is consistent with both the published Texas BACT levels and the concentrations proposed for this project of 3.5 ppmvdc maximum 3-hour rolling average and 2 ppmvdc 24-hour rolling average.

5.2.2 CO

Carbon monoxide emissions from combustion turbines and duct burners are the result of incomplete fuel combustion. Operating conditions that may enhance CO formation include low temperature, insufficient residence time, and insufficient oxygen in the combustion zone. Insufficient oxygen may be the result of either a low air-to-fuel ratio or inadequate mixing, or both.

BACT Step 1 – Identify All Available Control Technologies

Table 7 summarizes, in order of increasing efficiency, the available control technologies listed for gas fired combined cycle units in the current RBLC database (refer to Attachment C).

Table 7 – Natural Gas Fired Combined Cycle CO Control Technologies

Control Technology	Description
Good Combustion Practices	Good combustion practices refer to design and operational practices that promote the complete combustion of fuel, leading to lower CO emissions, such as (1) efficient tuning of the air-to-fuel ratio in the combustion zone to allow minimal generation of unburned carbon; (2) proper combustor design that promotes air/fuel mixing and longer combustion chamber residence times, adequate temperature and turbulence; and (3) diligent maintenance and operation according to manufacturer's specifications.
EMx (SCONOx)	The EMx (SCONOx) system is based on a multi-pollutant reducing platinum catalyst bed coated with potassium carbonate. The catalyst is designed to reduce NOx, CO and VOC emissions and is situated downstream of the combustion chamber in a separate reactor vessel and operates in an ideal temperature window of 300 °F to 700 °F. The EMx system does not require a reactant. The SCONOx catalyst is very susceptible to fouling by sulfur in the flue gas. These catalysts have high frequency maintenance requirements (recoating or washing must be done every 6 months to a year depending on the gas sulfur content).

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Table 7– Natural Gas Fired Combined Cycle CO Control Technologies (*continued*)

Control Technology	Description
Catalytic Oxidation	Catalytic oxidation is a post-combustion control technology which oxidizes CO to CO_2. Most oxidation catalysts are comprised of a honeycomb-shaped titanium substrate, and coated with noble metals (usually in the platinum group). There is a pressure drop across the catalyst of 1.0 to 1.2 inches of water column that results in a slight decrease in the maximum power output of the turbine. On GT/HRSG applications with SCR, the catalyst must be located upstream of the NH_3 injection system, to preclude oxidation formation of NO_x and H_2O. The catalyst causes the CO in the flue gas to be oxidized to CO_2 at temperatures in the 700°F to 1,000°F range. Depending on the velocity of the exhaust gas through the catalyst (space velocity), the catalyst may oxidize up to 80% of the CO and achieve exhaust CO concentrations of 2 to 4 ppmvdc. During startups and shutdowns, the flue gas temperature is often below this optimum range, and the CO reduction is diminished. The expected catalyst life is approximately 7 years. This technology has been demonstrated primarily on natural gas fired turbines in a combined cycle configuration.

BACT Step 2 – Eliminate Technically Infeasible Options

EMx (SCONOx) is considered technically infeasible. This technology has limited commercial validation. Only one site with two 83 MW units was found in the RBLC data base using this technology. These units are three times smaller than the proposed units and do not achieve the required BACT exhaust concentration of 2 to 4 ppmvdc. The SCONOX claims a CO exhaust concentration of 4 ppmvd at 15% O_2. The scalability and reliability of these technologies remains to be proven. Therefore, due to the differences in the size and the lack of sufficient commercial applications, this option was deemed to be undemonstrated for the proposed facility and technically infeasible.

BACT Step 3 – Rank Remaining Control Technologies

Good combustion practices and oxidation catalysts are, therefore, the only technically feasible technologies. According to the information available in the RBLC database, good combustion practices can achieve CO exhaust concentrations between 6 to 8 ppmvdc, while incorporating oxidation catalyst will allow achieving levels of 2 to 4 ppmvdc. Consequently, the top level control is the combination of both technologies.

BACT Step 4 – Evaluate Most Effective Control Technologies

Good combustion practices with current combustor designs can guarantee a CO emission rate as low as 6 ppmvdc. In combination with CO catalyst, the exhaust concentration may be further reduced to 1.5 ppmvdc. Despite the potentially negative effects of the oxidation catalyst (i.e., the generation of a hazardous waste (spent catalyst), an increase in CO_2 emissions by improving full combustion of CO and VOC, and the reduction in net power generation due to parasitic load), most combined cycle units will not achieve the 2 to 4 ppmvdc BACT limits without the oxidation catalyst, according to the RBLC database search results. Good combustion practices in combination with an oxidation catalyst are commonly employed and consistently meet concentration limits in the range of 1.5 ppmvdc to 6 ppmvdc. The technologies are robust and proven.

BACT Step 5 – Select the BACT

The Lon C. Hill combined cycle units will use good combustion practice and oxidation catalyst to achieve an average annual CO emission rate of 2.0 ppmvdc. CO emissions will also be limited to 2 ppmvdc on a 24-hour basis. These control technologies have been commonly applied as BACT in recent permitting activities [e.g., Avenal Energy Project (CA), Colusa Generation Station (CA), Langley Gulch Power Plant (IN), Ninemile Point Electric Generating Plant (LA), King Power Station (TX) and Thomas C. Ferguson Power Station (TX)]. For units of a size similar to the proposed Lon C. Hill units, the achieved CO concentrations range from 1.5 ppmvdc to 4 ppmvdc. This is also consistent with the published Texas BACT levels and the concentrations proposed for this project of 2 ppmvdc maximum 24-hour average and 2 ppmvdc annual average.

5.2.3 VOC

VOC emissions result from potentially unburned hydrocarbons. Due to the high combustion efficiency of the new turbines and the low non-methane content of the natural gas, these emissions are intrinsically low in gas turbines and duct burners.

BACT Step 1 – Identify All Available Control Technologies

Table 8 summarizes, in order of increasing efficiency, the available control technologies listed for gas fired combined cycle units in the current RBLC database (refer to Attachment C).

Table 8 – Natural Gas Fired Combined Cycle VOC Control Technologies

Control Technology	Description
Good Combustion Practices	Good combustion practices refer to design and operational practices that promote the complete combustion of the fuel, leading to lower VOC emissions, such as (1) efficient tuning of the air-to-fuel ratio in the combustion zone to allow minimal generation of unburned carbon; (2) proper combustor design that promotes air/fuel mixing and longer combustion chamber residence times, adequate temperature and turbulence; and (3) diligent maintenance and operation according to manufacturer's specifications.
Catalytic Oxidation	Though VOC reduction is not typically guaranteed, catalytic oxidation may promote further oxidation of unburned hydrocarbons, and hence reduce VOC emissions.

BACT Step 2 – Eliminate Technically Infeasible Options

None of the identified control technology options are technically infeasible.

BACT Step 3 – Rank Remaining Control Technologies

The top level control is considered to be the use and maintenance of good combustion practices. Examples from the RBLC show VOC exhaust levels from 5 ppmvdc [e.g., Wallula Power Plant (WA)] to 1.3 ppmvdc [e.g. Florida Power & Light Martin Plant (FL)].

BACT Step 4 – Evaluate Most Effective Control Technologies

According to current data, the most effective control technology is the use and maintenance of good combustion practices.

BACT Step 5 – Select the BACT

The Lon C. Hill combined cycle units will use and maintain good combustion practices, to achieve a VOC emission rate of 2.0 ppmvdc on an average annual basis. VOC emissions will also be limited to 2 ppmvdc on a 24-hour average basis. These control technologies have been commonly used as BACT in recent permitting activities [e.g., Channel Energy Center LLC (TX), Deer Park Energy Center (TX) and ES Joslin Power Plant (TX)]. In addition, LCH will incorporate a CO oxidation catalyst, which will help limit VOC exhaust concentrations.

5.2.4 $PM_{10}/PM_{2.5}$

Particulate emissions from the turbines and duct burners result primarily from inert solids contained in the fuel, combustion air and water (when water injection is used), and from sulfur compounds and unburned fuel hydrocarbons that agglomerate to form particles. These particles pass through the system and are emitted with the exhaust gas. All particulates emitted by the turbines and duct burners are fine particulate, and essentially all will be less than 2.5 microns in size.

Particulate emissions from gas turbines and duct burners are inherently low when using clean fuels, such as natural gas. In addition, turbines are designed and operated to combust the fuel as completely as possible in order to attain the highest possible thermal efficiency, which maintains particulates at very low levels.

BACT Step 1 – Identify All Available Control Technologies

Table 9 summarizes, in order of increasing efficiency, the available control technologies listed for gas fired combined cycle units in the current RBLC database (refer to Attachment C).

Table 9 – Natural Gas Fired Combined Cycle PM Control Technologies

Control Technology	Description
Good Combustion Practices	Good combustion practices refer to design and operational practices that promote the complete combustion of the fuel, leading to lower particulate emissions, such as (1) efficient tuning of the air-to-fuel ratio in the combustion zone to allow minimal generation of unburned carbon; (2) proper combustor design that promotes air/fuel mixing and longer combustion chamber residence times, adequate temperature and turbulence; and (3) diligent maintenance and operation according to manufacturer's specifications.
Use of Clean Fuel	Use of natural gas, pipeline quality natural gas, and California Public Utility Commission (PUC) quality natural gas(1) that contain very low amounts of particulates.

(1) PUC Quality Natural Gas: Any gaseous fuel, gas-containing fuel where the sulfur content is no more than 0.25 grain of hydrogen sulfide per 100 standard cubic feet and no more than 5 grains of total sulfur per 100 standard cubic feet. PUC quality natural gas also means high methane gas of at least 80% methane by volume

BACT Step 2 – Eliminate Technically Infeasible Options

None of the identified control technology options are technically infeasible.

BACT Step 3 – Rank Remaining Control Technologies

The top level control is considered to be the combination of good combustion practices and the use of clean fuel. Examples from the RBLC show particulate exhaust levels from 27 lb/hr [e.g., Channel Energy Center LLC (TX)] to 4 lb/hr [e.g. Cheyenne Prairie Generating Station (WY)].

BACT Step 4 – Evaluate Most Effective Control Technologies

Good combustion practices and use of clean fuels represent the only demonstrated particulate control technology for turbines and duct burners firing gaseous fuels. There is no economic penalty associated with these approaches. Good combustion practices and use of clean fuels are employed on combustion turbines throughout the US.

BACT Step 5 – Select the BACT

The Lon C. Hill combined cycle units will exclusively fire natural gas and will maintain good combustion practices. These control technologies have been commonly used as BACT in recent permitting activities [e.g., Avenal Energy Project (CA), Colusa Generating Station (CA), Channel Energy Center (TX), Deer Park Energy Center (TX), ES Joslin Power Plant (TX) and Cheyenne Prairie Generating Station (WY)], and are proven and robust technologies.

5.2.5 SO_2 and H_2SO_4

The proposed project SO_2 emissions are below the PSD major source threshold and Significance Level, therefore an EPA top-down BACT selection process is not required. The TCEQ BACT guidelines for combustion turbines do not specify BACT for SO_2 emissions.

Emissions of SO_2 from the combustion of natural gas are inherently low. The turbines and duct burners will be exclusively fired with sweet natural gas. The represented SO_2 emissions from the natural gas combustion in the turbines and duct burners are based on a fuel sulfur content of 0.2 grains/100 scf on a long-term basis and 5 grains/100scf on a short-term basis.

A small percentage (conservatively assumed to be 10%) of the SO_2 formed in the combustion process may be oxidized across the SCR and CO catalysts to form SO_3, which can react with water to form H_2SO_4 (conservatively assumed to be 100%). Since the SO_2 emissions are low due to the combustion of natural gas, the small percentage conversion produces very low H_2SO_4 emissions. Combustion of natural gas is therefore proposed as BACT for SO_2 and H_2SO_4.

5.2.6 NH_3

The Lon C. Hill ammonia slip from the SCR systems will be controlled to be 7 ppmvdc. This emission limit corresponds to proper operation of the SCR system and meets TCEQ BACT guidelines. The RBLC database search shows ammonia slip levels between 5 ppmvdc [e.g., Wallula Power Plant (WA), Sumas Energy Generation Facility (W), BP Cherry Point Cogeneration Project (WA)] and 10 ppmvdc [e.g., El Dorado Energy (NV), Ivanpah Energy Center (NV)]. A minimum level of 2 ppmvdc is claimed at Kleen Energy Systems (CT), when burning natural gas at steady state, with 5.0 ppmvd when burning natural gas in transient operations (580 MW nominal natural gas fired power plant with No. 2 oil backup).

5.2.7 BACT Analysis for GT Startup/Shutdown Emissions

Turbine startup and shutdown emission rates are quantified separately from those of routine operations, as described in Section 0. The SCR system and the CO catalyst used on the CTG/HRSG units will not initially reduce NOx and CO emissions since the systems must heat up to achieve the normal operating efficiencies. Lon C. Hill Power Station will be operated to minimize the duration of the startups to the extent possible for each turbine unit. The emissions from startups and shutdowns will be limited to the rates described in Section 0 and presented in Table 1(a) to satisfy the BACT requirements.

5.3 BACT Analysis for the Turbine Lube Oil Vents

The two gas turbines and the steam turbine will each emit small quantities of particulate matter due to the lube oil vent demisters. Due to the low $PM_{10}/PM_{2.5}$ emissions associated with the lube oil vent demisters, no further control is proposed as BACT.

5.4 BACT Analysis for the Auxiliary Boiler

The auxiliary boiler will have a maximum firing rate of 48.4 MMBtu/hr (HHV) and will be exclusively fired with natural gas. The boiler will be equipped with low NOx burners and will be limited to a maximum capacity of 30%, in order to meet NOx and CO limits of 0.036 lb/MMBtu and 50 ppmvd at 3% O_2 respectively. Because of the intermittent use of the boiler, these concentrations (which are consistent with those allowed for similar boilers authorized with the TCEQ Standard Permit for Boilers) are proposed as BACT.

RBLC database search shows good combustion practices, low NOx burners and fuel gas recirculation and clean gases (e.g., natural gas) as proposed BACT. Refer to Attachment C for further details.

Good combustion practices, firing natural gas and limiting the maximum capacity factor to 30% will be used to satisfy BACT requirements for the remaining combustion pollutants (VOC, PM_{10}/$PM_{2.5}$ and SO_2) associated with the auxiliary boiler.

5.4.1 BACT Analysis for the Auxiliary Boiler Startup/Shutdown Emissions

The auxiliary boiler startup and shutdown emissions are quantified separately from routine operation emissions as described in Section 0. Lon C. Hill Power Station will be operated to minimize the duration of the startups to the extent possible. NOx and CO startup emissions will be limited to 0.10 lb/MMBtu and 500 ppmvd at 3% O_2, respectively.

5.5 BACT Analysis for the Emergency Diesel Generator

The emergency diesel generator will be operated for no more than 100 hours per year. This limited operating time inherently limits emissions. No controls are proposed to satisfy BACT requirements.

5.6 BACT Analysis for the Firewater Pump

The diesel fired firewater pump will be operated for no more than 100 hours per year. This limited operating time inherently limits the emissions. No controls are proposed to satisfy BACT requirements.

5.7 BACT Analysis for the Cooling Towers

Particulate from cooling towers is generated by the presence of dissolved and suspended solids in the cooling tower circulation water, which is potentially lost as “drift” or moisture droplets that are suspended in the air moving out of the cooling tower. A portion of the water droplets emitted from the tower exhausts will evaporate, leaving the suspended or dissolved solids in the atmosphere.

Particulate emissions from cooling towers can be controlled by minimizing the amount of water drift that occurs and/or minimizing the amount of dissolved solids in the water. This can be accomplished by using high efficiency drift eliminators, a decreased number of cycles of circulating water concentration, or a combination of both. The number of cycles of water concentration is limited by the amount of water available for use, since lower levels of concentration require increased cooling tower blowdown and more water intake to offset the blowdown.

Drift eliminators are a technically feasible control option for particulate emissions from cooling towers. There are no significant energy, environmental, or economic impacts that would preclude the use of drift eliminators for this project. RBLC database search shows drift eliminators as the proposed BACT in the range of 0.0005% weight control up to 0.001% weight. Refer to Attachment C for further details.

LCH proposes to use drift eliminators that limit the drift loss to 0.001% weight for CTW-100, which is consistent with TCEQ BACT guidelines for cooling towers (updated August 2011) and to 0.0005% for CTW-200, per vendor data.

5.8 BACT Analysis for the Oil Water Separator

The oil water separator (OWS) will have a maximum throughput of 200 gallons per hour and 96,000 gallons per year. The oils that enter the oil water separator will be turbine oils with low vapor pressure (<0.02 psia). Due to the low vapor pressure of the product in the OWS, there will likely only be negligible VOC releases. Good operating practices, including use of low vapor pressure products is proposed as BACT for this source.

5.9 BACT Analysis for the Diesel and Gasoline Storage Tanks

The Lon C. Hill Power Station diesel storage tanks will have capacities of 700 gallons or less and the gasoline tank will have a capacity of 250 gallons or less. Diesel has a low vapor pressure (below 0.5 psia) and all three tanks have small capacities. LCH proposes to use fixed roof tanks with submerged fill-pipes to meet current TCEQ BACT requirements.

5.10 BACT Analysis for the Site Fugitive Emissions

Fugitive emissions may be generated from the natural gas delivery system, the ammonia delivery system and the diesel delivery system. These fugitive emissions were estimated using TCEQ recommended emission factors. VOC –service components will not be a significant source of VOC, due to the intrinsically low VOC content of the natural gas and the small number of components in the diesel service.

BACT for process fugitives typically consists of leak detection and repair (LDAR) program intended to minimize the amount of time a leak goes undetected, and thus reduce VOC emissions. Because the conservatively calculated fugitive VOC emissions from the proposed project will be less 1 tpy, LCH proposes that a LDAR program is not necessary to satisfy BACT requirements. However, the lines will be periodically inspected and any leaks will be repaired as necessary. The number of ammonia-service components will also be limited. Ammonia is a strong irritant, and any leaking components are easily detected by personnel through audio/visual/olfactory walk-through inspections (AVO) which are routinely conducted by shift personnel. Such leaks will be repaired when detected for worker comfort and safety purposes. As such, an AVO inspection program is proposed as BACT for ammonia-service components.

Section 6
Regulatory Applicability Analysis

6.1 State Regulations

30 TAC Chapter 101 – General Rules

The Lon C. Hill Power Station will be operated according to the General Rules relating to circumvention, nuisance, traffic hazards, notification requirements for emissions events, notification requirements for scheduled maintenance/startup/shutdowns, sampling, sampling ports, emissions inventory requirements, sampling procedures and terminology, compliance with Environmental Protection Agency Standards, the National Primary and Secondary Air Quality Standards, inspection fees, emissions fees, and all other applicable General Rules.

30 TAC Chapter 106 – Permit By Rule

Should LCH authorize any future facility by using Chapter 106 Permit by Rule (PBR), the facility will comply with all requirements as applicable.

30 TAC Chapter 111 – Control of Air Pollution from Visible Emissions and Particulate Matter

The operation of the combined cycle units (CC-101 & CC-102), auxiliary boiler (ABL-100), emergency generator (EGEN-100), firewater pump (FWP-100)and cooling tower (CTW-100) will comply with the opacity limits specified in §111.111.

The emissions of the combined cycle units (CC-101 and CC-102), lube oil vents (CC-101, CC-102 and ST-103), auxiliary boiler (ABL-100), emergency generator (EGEN-100), firewater pump (FWP-100) and cooling tower (CTW-100) will also comply with the allowable particulate matter emission rate specified in §111.151 and as summarized in Table 10 below. A sample calculation for compliance demonstration follows:

The sample calculation is shown for the Unit 101 Combined Cycle stack (EPN: STK-101):

Stack Height (h)	= 152 ft
Stack Exit Diameter (De)	= 22 ft
Stack Exit Velocity (ve)	= 44.63 ft/s
Stack Exit Temperature (Te)	= 194.95°F = 654.62°R
Stack Effluent Flow (q)	= 1,017,923 acfm
PM Estimated Maximum Emissions	= 29.70 lb/hr (proposed allowable)

The Effective Stack Height (he) is calculated as [§111.151(c)]:

he = h + 0.083 * ve * De * [1.5 + 0.82 * ((Te -550)/ Te) *De]

= 152 + 0.083 *44.63 * 22 * [1.5 + 0.82 * ((654.62 -550)/654.62) * 44.63]

= 152.0 ft + 0.083 * 44.63 ft/sec * 22.0 ft * [1.5 + 0.82 * (654.62 R - 550 R) / 654.62 R * 22.0 ft] =

= 509.21 ft

The Standard Effective Stack Height (He) is calculated as (using interpolation equation provided for Table 2 Standard Effective Stack Heights in §111.151):

He = 1.05 * q^0.35

= 1.05 * (1,017,923)^0.35 = 133.01 ft

Because the Effective Stack Height (he) is greater than the Standard Effective Stack Height (He), the PM emission rate interpolated from data in Table 1 in §111.151 does not require an adjustment.

The PM emission limit (E) is calculated per Table 1 in §111.151 as:

E = 0.048 * q^0.62

= 0.048 * (1,017,923)^0.62 = 254.70 lb/hr

Thus, the proposed allowable maximum PM emission rate of 29.70 lb/hr from the combined cycle (EPN STK-101) is less than the §111.151 allowable limit of 254.70 lb/hr.

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30 TAC §111.151 Particulate Matter Limit Verfication

EPN	FIN	Description	Stack Height, h (ft) (1)	Stack Diameter, De (ft) (1)	Stack Velocity, ve (fps) (1)	Stack Exit Temperature (ºR) (1)	Stack Flow, q (acfm) (2)	Eff. Stack Height, he (ft) (3)	Std. Eff. Stack Height, He (ft) (4)	he > He?	PM Limit, E (lb/hr) (5)	PM Emission Rate (lb/hr) (1)	Is PM Emission Rate < E (lb/hr)
STK-101	CC-101	Unit 101 Combined Cycle (GT+HRSG)	152.0	22.0	44.63	654.62	1,017,923	509.21	133.01	Yes	254.70	29.70	Yes
STK-102	CC-102	Unit 102 Combined Cycle (GT+HRSG)	152.0	22.0	44.63	654.62	1,017,923	509.21	133.01	Yes	254.70	29.70	Yes
LOVSTK-101	CC-101	Unit 101 GT Lube Oil Vent	6.8	0.5	12.70	527.67	150	7.58	6.06	Yes	1.07	0.003	Yes
LOVSTK-102	CC-102	Unit 102 GT Lube Oil Vent	6.8	0.5	12.70	527.67	150	7.58	6.06	Yes	1.07	0.003	Yes
LOVSTK-103	ST-103	ST Lube Oil Vent	6.8	0.5	12.70	527.67	150	7.58	6.06	Yes	1.07	0.01	Yes
ABLSTK-100	ABL-100	Auxiliary Boiler	14.0	2.5	78.35	859.67	23,075	50.39	35.34	Yes	24.34	0.36	Yes
EGENSTK-100	EGEN-100	Emergency Generator	10.0	0.5	60.00	659.67	707	13.90	10.43	Yes	2.80	1.19	Yes
FWPSTK-100	FWP-100	Firewater Pump	10.0	0.5	60.00	659.67	707	13.90	10.43	Yes	2.80	0.55	Yes
CTW-100	CTW-100	Cooling Tower 1	59.0	28.0	34.65	567.17	1,280,000	235.74	144.12	Yes	293.57	0.81	Yes
CTW-200	CTW-200	Cooling Tower 2	50.0	12.0	44.34	566.37	300,900	128.81	86.82	Yes	119.64	0.003	Yes

Notes

(1) As represented in Table 1(a)

(2) Pursuant §111.151, q (acfm) = pi()/4 * De^2 (ft^2) * ve (ft/sec) * 60 sec / 1 min

q_LCH1 = pi()/4 * 22.0^2 ft^2 * 44.63 ft/sec * 60 sec/ 1 min = 1,017,923 acfm

(3) Pursuant §111.151, he (ft) = h (ft) + 0.083 * ve (ft/sec) * De (ft) * [1.5 + 0.82 * (T (R) -550 (R))/ T (R) * De (ft)]

he_LCH-1 = 152.0 ft + 0.083 * 44.63 ft/sec * 22.0 ft * [1.5 + 0.82 * (654.62 R - 550 R) / 654.62 R * 22.0 ft] = 509.21 ft

(4) Pursuant §111.151, He = 1.05 * q ^ 0.35

He = 1.05 * (1,017,923)^0.35 = 133.01 ft

(5) Pursuant §111.151, E (lb/hr) = 0.048 * q ^ 0.62 if he > He or if he < He then E (lb/hr) = (he/He) ^ 2 * 0.048 * q ^ 0.62

he_LCH-1 > He_LCH-1 then E = 0.048 * (1,017,923)^0.62 = 254.70 lb/hr

30 TAC Chapter 112 – Control of Air Pollution from Sulfur Compounds

The maximum ground level SO_2 concentration due to the routine and MSS emissions from sources in this application will be below 0.4 part per million by volume (ppmv) averaged over any 30-minute period, as required by §112.3(a).

The net ground level sulfuric acid concentration due to the sources in this application (both routine and MSS) will be below the limits specified in §112.41 as follows:

- a net ground level concentration of 15 µg per cubic meter of air averaged over any 24-hour period;
- a net ground level concentration of 50 µg per cubic meter of air averaged over a one-hour period of time more than once during any consecutive 24-hour period; or
- a net ground level concentration of 100 µg per cubic meter of air maximum at any time.

Compliance with the SO_2 net ground level concentration requirement specified in §112.3 will be demonstrated through an air dispersion modeling analysis which will be submitted separately.

30 TAC Chapter 113 – Control of Air Pollution from Toxic Materials

Chapter 113 regulates the emissions of radon from phosphogypsum stacks (40 CFR 61, Subpart R), hazardous air pollutants for source categories (40 CFR 63), designated facilities (municipal solid waste landfills and hospital/medical/infectious waste incinerators), and consolidated federal air rule SOCMI sources (40 CFR 65). Chapter 113, Subchapter C incorporates the requirements of 40 CFR 63 by reference.

The Lon C. Hill Power Station will not have the potential to emit more than 25 tpy of aggregated HAPs or 10 tpy of any single HAP as summarized in Table 11.

Table 11 – Sitewide HAPs Emission Rates Summary Table

EPN	Max. Individual HAP (tpy)	Total Combined HAP (tpy)
STK-101	2.57	8,24
STK-102	2.57	8,24
ABLSTK-100	0.10	0.10
EGENSTK-100	0.001	0.003
FWPSTK-100	0.001	0.001
WELD	0.01	0.01
Total Sitewide	**5.25**	**16.61**
Is Site Major Source for HAPs?	**NO**	**NO**

Therefore, the Lon C. Hill Power Station will not be a major source of HAPs. As a minor source of HAPS, the Lon C. Hill Power Station is potentially subject to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Stationary Combustion Turbines (40 CFR, Subpart YYYY), the NESHAP for Stationary Reciprocating Internal Combustion Engines (40 CFR 63, Subpart ZZZZ), and the NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters (40 CFR 63, Subpart DDDDD). Refer to the discussion on 40 CFR 63 applicability provided later in this section.

30 TAC Chapter 114 – Control of Air Pollution from Motor Vehicles

The Lon C. Hill Power Station will comply with applicable provisions of this regulation for motor vehicles operated at the site, including maintenance and operation of air pollution control systems or devices and inspection requirements.

30 TAC Chapter 115 – Control of Air Pollution for Volatile Organic Compounds (VOC)

This regulation requires control of VOC emission sources located in specific Texas counties and nonattainment areas. These include general sources, transfer operations, petroleum refining sources, natural gas processes, petrochemical processes, solvent-using processes, miscellaneous industrial sources, consumer-related sources, and sources of highly reactive VOCs. The Lon C. Hill Power Station is located in Nueces County, a covered attainment area, which does have some potentially applicable requirements under this rule. The following is a discussion on the potentially applicable sections of Chapter 115.

Subchapter B – General Volatile Organic Compound Sources

The Lon C. Hill Power Station diesel storage tanks are potentially subject to the regulatory requirements of Chapter 115, Subpart B, Division 1 "Storage of Volatile Organic Compounds". The proposed 700 gallon tank (TK-101) and 300 gallon tank (TK-102) will store number 2 diesel fuel oil, which has a true vapor pressure less than 1.5 psia. Consequently, the proposed tanks meet the exemptions outlined in §115.111(b)(1) and (8) and are therefore exempt from the requirements of Chapter 115

The Lon C. Hill Power Station oil water separator will be subject to the regulatory requirements of Chapter 115, Subpart B, Division 3 "Water Separation". The proposed water separator will separate materials, obtained from any equipment on site. At a minimum, the material will have a true vapor pressure of VOC less than 1.5 psia (10.3 kPa), therefore, the proposed unit will meet exemption §115.137(b)(3) and is consequently exempt from§115.132(b) control requirements. Complete, up-to-date records will be maintain to demonstrate continuous compliance with the applicable exemption criteria, including, but not limited to, the names and true vapor pressures of all such materials stored, processed, or handled at the oil water separator, and any other necessary operational information [§115.136(b)(1)].

30 TAC Chapter 116 – Control of Air Pollution by Permits or New Construction or Modification

§116.111 of the Texas Administrative Code (TAC) requires applicants to submit information to demonstrate compliance with Texas Clean Air Act (TCAA) and Federal Regulations. This section provides a summary demonstration that the emission sources associated with this permit application will meet these requirements. Rule language is included in italic blue font to simplify this review.

§116.111(a)(2)(A)(i)

*Protection of Public Health and W*elfare. *The emissions from the proposed facility will comply with all rules and regulations of the commission and with the intent of the TCAA, including protection of the health and property of the public.*

As described in Section 6.1 of this application, the Lon C. Hill Power Station will comply with all air quality rules and regulations of the TCEQ and with the intent of the TCAA, including protection of the health and physical property of the public.

§116.111(a)(2)(A)(ii)

For issuance of a permit for construction or modification of any facility within 3,000 feet of an elementary, junior high/middle, or senior high school, the commission shall consider any possible adverse short-term or long-term side effects that an air contaminant or nuisance odor from the facility may have on the individuals attending the school(s).

The emissions from the Lon C. Hill Power Station will comply with the rules and regulations of the TCEQ and the intent of the TCAA. There is one school (Calallen East Elementary School) within 3,000 feet of the plant. Therefore, verification that the emissions from the facility will not result in any short-term or long-term side effects or nuisance odors upon any individual attending the school, is required [§116.111(a)(2)(A)(ii)]. An air quality analysis will be performed based on guidance from the TCEQ permit engineer during the application review. The results of this analysis will be submitted to the TCEQ under a separate cover.

116.111(a)(2)(B)

Measurement of Emissions. The proposed facility will have provisions for measuring the emission of significant air contaminants as determined by the executive director. This may include the installation of sampling ports on exhaust stacks and construction of sampling platforms in accordance with guidelines in the "Texas Natural Resource Conservation Commission (TNRCC) Sampling Procedures Manual."

The Lon C. Hill Power Station will have the provisions for measuring the emissions of significant air contaminants as determined by the TCEQ.

§116.111(a)(2)(C)

Best Available Control Technology (BACT). The proposed facility will utilize BACT, with consideration given to the technical practicability and economic reasonableness of reducing or eliminating the emissions from the facility.

The Lon C. Hill Power Station will use the BACT with consideration given to the technical practicality and economic reasonableness of reducing or eliminating emissions from the proposed sources and associated MSS activities as detailed in Section 5 of this application.

§116.111(a)(2)(D)

New Source Performance Standards (NSPS). The emissions from the proposed facility will meet the requirements of any applicable NSPS as listed under Title 40 Code of Federal Regulations (CFR) Part 60, promulgated by the EPA under FCAA, §111, as amended.

The Lon C. Hill Power Station is potentially subject to various NSPS standards under 40 CFR Part 60, as detailed in Section 6.2.1 of this application.

§116.111(a)(2)(E)

National Emission Standards for Hazardous Air Pollutants (NESHAP). The emissions from the proposed facility will meet the requirements of any applicable NESHAP, as listed under 40 CFR Part 61, promulgated by EPA under FCAA, §112, as amended.

The Lon C. Hill Power Station is potentially subject to a NESHAP standard under 40 CFR Part 61, as detailed in Section 6.2.2 of this application.

§116.111(a)(2)(F)

NESHAP for Source Categories. The emissions from the proposed facility will meet the requirements of any applicable maximum achievable control technology standard as listed under 40 CFR Part 63, promulgated by the EPA under FCAA, §112 or as listed under Chapter 113, Subchapter C of this title (relating to National Emissions Standards for Hazardous Air Pollutants for Source Categories (FCAA §112, 40 CFR 63)).

The Lon C. Hill Power Station will constitute an area source of HAP emissions, as shown in Table 11 (30 TAC Chapter 113 applicability review above). Therefore, the site is potentially subject to various NESHAP standards under 40 CFR Part 63, as detailed in Section 6.2.3 of this application.

§116.111(a)(2)(G)

Performance Demonstration. The proposed facility will achieve the performance specified in the permit application. The applicant may be required to submit additional engineering data after a permit has been issued in order to demonstrate further that the proposed facility will achieve the performance specified in the permit application. In addition, dispersion modeling, monitoring, or stack testing may be required.

The sources presented in this application will perform as represented. Source emissions will not exceed the emission rates represented in Section 4 of this application.

§116.111(a)(2)(H)

Nonattainment review. If the proposed facility is located in a nonattainment area, it shall comply with all applicable requirements in this chapter concerning nonattainment review.

The Lon C. Hill Power Station is located in Nueces County, an attainment area for all regulated pollutants; therefore, NNSR is not required.

§116.111(a)(2)(I)

Prevention of Significant Deterioration (PSD) review. If the proposed facility is located in an attainment area, it shall comply with all applicable requirements in this chapter concerning PSD review.

The Lon C. Hill Power Station will be a new major source as defined in the PSD regulations. As described in Section 7, PSD significance thresholds are exceeded for NO_2, CO, VOC and $PM_{10}/PM_{2.5}$ for both routine and MSS operations; therefore, PSD review is required for these pollutants.

§116.111(a)(2)(J)

Air dispersion modeling. Computerized air dispersion modeling may be required by the executive director to determine air quality impacts from a proposed new facility or source modification. In determining whether to issue, or in conducting a review of, a permit application for a shipbuilding or ship repair operation, the commission will not require and may not consider air dispersion modeling results predicting ambient concentrations of non-criteria air contaminants over coastal waters of the state. The commission shall determine compliance with non-criteria ambient air contaminant standards and guidelines at land-based off-property locations.

Dispersion modeling will be provided for the proposed project.

§116.111(a)(2)(K)

Hazardous Air Pollutants. Affected sources (as defined in §116.15(1) of this title (relating to Section 112(g) Definitions)) for hazardous air pollutants shall comply with all applicable requirements under Subchapter C of this chapter (relating to Hazardous Air Pollutants: Regulations Governing Constructed or Reconstructed Major Sources (FCAA, §112(g), 40 CFR Part 63)).

The Lon C. Hill Power Station will constitute an area source of HAP emissions, as shown in Table 11 (30 TAC Chapter 113 applicability review above). Therefore, the site is potentially subject to various NESHAP standards under 40 CFR Part 63, as detailed in Section 6.2.3 of this application.

§116.111(a)(2)(L)

Mass Cap and Trade Allowances. If subject to Chapter 101, Subchapter H, Division 3, of this title (relating to Mass Emissions Cap and Trade Program), the proposed facility, group of facilities or account must obtain allowances to operate.

The Lon C. Hill Power Station is not subject to the Mass Emissions Cap and Trade Program, Chapter 101, Subchapter H, Division 3 because it is not located in the Houston/Galveston/Brazoria (HGB) nonattainment area.

30 TAC Chapter 117 – Control of Air Pollution from Nitrogen Compounds

This regulation requires control of NOx for general sources including industrial, commercial and institutional sources as well as combustion engines in specific areas of Texas. The Lon C. Hill Power Station is located in an attainment county (Nueces). The following is a discussion of the potentially applicable sections of Chapter 117.

Subchapter E – Division 1 – Utility Electric Generation in East and Central Texas

The provisions of this division do not apply to the Lon C. Hill Power Station, since it is a new site and therefore, was not placed into service before December 31, 1995 [§117.3000 (a)(3)].

Subchapter E – Division 4 – East Texas Combustion

The Lon C. Hill Power Station is located in Nueces County which is not an affected county under Chapter 117, therefore, the provisions of this division do not apply [§117.3300].

30 TAC Chapter 118 – Control of Air Pollution Episodes

There are no requirements applicable to the emission units addressed in this application in Chapter 118. Should the requirements of Chapter 118 become applicable to the Lon C. Hill Power Station, the facility will comply with the requirements.

30 TAC Chapter 122 – Federal Operating Permits

LCH previously operated the Lon C. Hill Power Station, a grandfathered Electric Generating Facility, under Federal Operating Permit (FOP) No. O-41. This plant ceased operation in 2002. A Standard Permit (81494) and a Title V Permit (O-2955) were issued for a proposed combined cycle unit that was never constructed. Both permits were eventually voided and the site was fully demolished between 2008 and 2011. The currently proposed redevelopment project will be a new major source and will trigger 30 TAC 122. LCH will submit the required Title V permit application.

6.2 Federal Regulations

6.2.1 40 CFR 60 – New Source Performance Standards

Subpart Dc – Standards of Performance for Small Industrial Steam Generating Units

NSPS Subpart Dc applies to steam generating units that are constructed, modified, or reconstructed after June 9, 1989, with a heat input capacity less than 100 MMBtu/hr but greater than 10 MMBtu/hr.

The Lon C. Hill Power Station HRSGs duct burners design capacities and construction dates meet the requirements for 40 CFR 60 Subpart KKKK; therefore, these units are not subject to Subpart Dc. However, the proposed gas fired auxiliary boiler (ABL-100) meets the requirements of NSPS Dc, and will therefore comply with all applicable provisions of this subpart.

Subpart Kb – Standards of Performance for Volatile Organic Liquid Storage Vessels for which Construction, Reconstruction, or Modification Commenced after July 23, 1984

This regulation applies to volatile organic liquid storage vessels with a storage capacity greater than 75 cubic meters (19,813 gallons) and constructed, reconstructed, or modified after July 23, 1984. Lon C. Hill Power Station will not have volatile organic liquids storage vessels with a storage capacity greater than 75 cubic meters (19,813 gallons); therefore, this subpart does not apply.

Subpart GG – Standards of Performance Stationary Gas Turbines

The Lon C. Hill Power Station gas turbines design capacities and construction dates will meet the requirements for 40 CFR 60 Subpart KKKK; therefore, Subpart GG is not applicable [§60.4305(b)].

Subpart VVa – Standards of Performance for Equipment Leak of VOC in SOCMI for which Construction Commenced After November 7, 2006

The Lon C. Hill Power Station will not produce, as an intermediate or final product, any of the chemicals referenced in 40 CFR §60.489a; therefore, it is not an affected facility and is not subject to the requirements of this subpart.

Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

This subpart potentially applies to the diesel fired emergency generator (EGEN-100) and the firewater pump diesel engine (FWP-100). The standards in Subpart IIII depend on the engine model year, power rating, and cylinder displacement volume. The emergency generator and the firewater pump diesel engines are each expected to be rated at over 500 hp. Both units will comply with Subpart IIII as applicable to these engines.

Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

No stationary spark ignition internal combustion engines are proposed in the redevelopment of the Lon C. Hill Power Station. Therefore, Subpart JJJJ does not apply.

Subpart KKKK – Standards of Performance for Stationary Combustion Turbines

The Lon C. Hill Power Station proposed combustion turbines, heat recovery steam generators (HRSGs), and duct burners (CC-101 and CC-102), are subject to this subpart. As outlined in §60.4305(b) of Subpart KKKK, the stationary combustion turbines are exempt from NSPS GG (concerning stationary gas turbines) and the heat recovery steam generators and duct burners are exempt from NSPS Subpart Da, Db, and Dc (related to steam generating units) since Subpart KKKK applies to these sources instead. The combined cycle units will comply with NSPS Subpart KKKK as applicable.

6.2.2 40 CFR 61National Emission Standards for Hazardous Air Pollutants

Subpart M – National Emission Standard for Asbestos

The facility could potentially be subject to Subpart M, Standards for Demolition and Renovation [§61.145]. The facility will comply with this regulation should it become applicable.

6.2.3 40 CFR 63 National Emission Standards for Hazardous Air Pollutants for Source Categories

Subpart Q – National Emission Standards for Hazardous Air Pollutants for Industrial Process Cooling Towers

The MACT for industrial process cooling towers applies to certain cooling towers operated with chromium based water treatment chemicals. The proposed cooling towers (CTW-100 and CTW-200) will not operate with chromium based water treatment chemicals; therefore, Subpart Q does not apply.

Subpart YYYY – National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines

This subpart establishes national emission limitation and operating limitations for HAP emissions from stationary combustion turbines located at major sources of HAP emissions. Since the Lon C. Hill Power Station is an area source of HAPS, the two gas combustion turbines are not subject to the Turbine MACT.

Subpart ZZZZ – National Emission Standards for Stationary Reciprocating Internal Combustion Engines (RICE)

Subpart ZZZZ establishes national emission limitations and operating limitations for HAPs emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. The diesel fired emergency generator (EGEN-100) and fire water pump engine (FWP-1) will be new stationary RICE located at an area source of HAP emissions [§63.6590(a)(2)(iii)].

An affected source that is a new stationary RICE located at an area source of HAP emissions must meet the requirements of 40 CFR Part 63 through compliance 40 CFR Part 60, Subpart IIII (NSPS IIII) for compression ignition engines [§63.6590(c)(1)]. No further requirements apply for such engines under 40 CFR Part 63. The diesel fired emergency generator and the firewater pump are subject to and will comply with all the requirements of NSPS IIII, thereby also complying with the requirements of 40 CFR Part 63, Subpart ZZZZ.

Subpart CCCCCC – National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities

The Lon C. Hill Power Station will be an area source of HAP emissions and may include one or more 55-gallon drums containing gasoline. This fuel will be used in miscellaneous plant equipment. It is expected that no more than three 55-gallon drums of gasoline will be used annually. There will be no gasoline storage tank and no gasoline cargo tank deliveries, therefore, 40 CFR 63 Subpart CCCCCC does not apply.

Subpart JJJJJJ – National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources

The Lon C. Hill Power Station will be an area source of HAP emissions and is proposing to install a natural gas fired auxiliary boiler onsite. The proposed auxiliary boiler is exempt from the requirements of Subpart JJJJJJ, as it meets the definition of a gas-fired boiler [§63.11195(e)].

6.2.4 40 CFR Part 64 – Compliance Assurance Monitoring

The enhanced monitoring requirements adopted in 40 CFR Part 64 are referred to as Compliance Assurance Monitoring (CAM). CAM is potentially applicable to certain emission sources located at major sources that employ control devices. Applicability for CAM must be determined on a pollutant-by-pollutant basis; therefore, all of the criteria must be satisfied for a particular pollutant for each emission unit to be subject to CAM for that pollutant. CAM is required if all of the following criteria are met and there are no applicable exemptions:

- The emission unit is subject to an emission limitation or standard for an air pollutant (or surrogate thereof) in an applicable requirement;
- The emission unit uses a control device to achieve compliance with the emission limitation or standard; and
- The emission unit has the pre-control device potential to emit greater than or equal to the amount in tons per year required for a site to be classified as a major source.

The Lon C. Hill Power Station proposed combined cycle units (CC-101 and CC-102) will be equipped with DLN combustors and SCR to control NOx emissions. Since CAM requirements do not apply to emission limitations or standards proposed by the EPA after November 15, 1990 (i.e., NSPS KKKK), or emission limitations or standards under the Acid Rain Program, NOx emissions from CC-101 and CC-102 are not subject to CAM.

Units CC-101 and CC-102 will be also be equipped with a CO catalyst to control CO emissions. However, there is no specific emission limitation or standard for CO that is applicable to the combustion turbines and/or duct burners. Therefore, CO emissions from CC-101 and CC-102 are not subject to CAM.

6.2.5 40 CFR Part 68 – Chemical Accident Prevention and Risk Management Programs

The Lon C. Hill Power Station will use a nineteen percent aqueous ammonia solution. The applicability threshold quantity for ammonia is 20,000 pounds or more for concentrations 20 percent or more [§68.130]. Therefore, Lon C. Hill Power Station will not be subject to the Chemical Accident Prevention Provisions in 40 CFR Part 68.

6.2.6 40 CFR Parts 72 – 77 - Acid Rain Regulations

The Lon C. Hill Power Station will be subject to and will comply with the Federal Acid Rain regulations found at 40 CFR Parts 72 through 77. Compliance with the Acid Rain regulations will require:

- Installation of continuous emission monitoring system;
- Initial certification of the CEMS to be completed by the deadlines specified in §75.4 and prior to use in the Acid Rain Program;
- Development of a quality assurance/quality control (QA/QC) written plan for the CEMS and their components;
- Development and maintenance of a monitoring plan, containing detail information on the CEMS and excepted methodologies (e.g. Part 75 Appendix D) used to demonstrate that all unit SO_2 emissions, NOx emissions, CO_2 emissions, and opacity are monitored and reported;
- Electronic quarterly reporting according to §75.64;
- Semiannual or annual RATA reports;
- Establishment of a compliance account under the Allowance Tracking System [§73.31];
- Purchase of allowances.

6.2.7 40 CFR Part 82 – Stratospheric Ozone Protection Regulations

Subpart F, Recycling and Emissions Reductions, of 40 CFR Part 82, Protection of Stratospheric Ozone, generally requires that all repairs, service, and disposal of appliances containing Class I or Class II ozone depleting substances are conducted by properly certified persons. The Lon C. Hill Power Station will comply with this regulation should it become applicable.

6.2.8 40 CFR Parts 96 – 97 Clean Air Interstate Rule Permit Requirements

The Lon C. Hill Power Station will be subject to and will comply with the Clean Air Interstate Rule (CAIR) permit requirements. In addition, Lon C. Hill will potentially be subject to the proposed Cross-State Air Pollution Rule (CSAPR), if it is adopted, and will then comply with all requirements under the CSAPR.

6.2.9 40 CFR Part 98 – Mandatory Greenhouse Gas Reporting

The Lon C. Hill Power Station will be an electricity generating facility subject to 40 CFR 98 [§98.2(a)(1)]. As such, it will be required to meet the general requirements of Part 98 Subpart A and the specific monitoring, calculation methodologies, and recordkeeping and reporting requirements of Subparts C and D.

The Lon C. Hill Power Station affected source categories will include the two combined cycle units (CC-101 and CC-102) and the gas fired auxiliary boiler (ABL-100), as well as fugitive emissions from the natural gas service lines and the circuit breakers. The emergency generator (EGEN-100) and the firewater pump (FWP-100) will be exempt from any reporting obligations through eGGRT according to 98.30(b)(2).

6.3 Disaster Review

The TCEQ requires a disaster review for any chemicals used on-site that have a reasonable potential to cause off-property impacts that are immediately dangerous to life and health in the event of an accidental release. Lon C. Hill Power Station will not keep onsite any chemical subject to a Disaster Review, and therefore these requirements do not apply.

Section 7
NNSR and PSD Applicability Review

This section describes the Nonattainment New Source Review (NNSR) and Prevention of Significant Deterioration (PSD) applicability analyses associated with the proposed redevelopment of the Lon C. Hill Power Station.

7.1 NNSR Applicability Review

Lon C. Hill Power Station is located in Nueces County, an attainment area for all regulated pollutants. Therefore, NNSR is not required.

7.2 PSD Applicability Review

The Lon C. Hill Power Station is located west of Corpus Christi, Nueces County, in an area that is classified by the U.S. EPA as attainment with the NAAQS for all regulated pollutants. The facility is included as one of the 28-named sources under PSD rules. Therefore, the applicable major source threshold for all attainment pollutants is 100 tpy. Proposed NOx, CO, VOC and PM_{10}/$PM_{2.5}$ emission rates are in excess of 100 tpy each; therefore, the proposed power plant will be a new major source as defined by the PSD rules (40 CFR §52.21).

All of the sources included in this application are new sources; as such, the project emission rate increases for the sources are based on their proposed allowable emission rates. Table 12 presents the project emission rate increases for the proposed project and compares them to the PSD Significant Emissions Rate (SER) for each pollutant. Tables 1F, 2F and 3F are provided in Attachment D.

Table 12 – PSD Applicability Analysis

Air Pollutant	Project Emission Rate Increase (tpy)	PSD SER (tpy)	Netting Required?	Net Emission Rate Increase (tpy)	PSD Review Required?
NOx	213.1	40	N/A	213.1	Yes
CO	852.9	100	N/A	852.9	Yes
VOC	144.8	40	N/A	144.8	Yes
PM_{10}	112.6	15	N/A	112.6	Yes
$PM_{2.5}$	110.1	10	N/A	110.1	Yes
SO_2	12	40	N/A	12	No
H_2SO_4	1.8	7	N/A	1.8	No

Since no emission rate decreases occurred during the contemporaneous period, the net emission rate increases are based on the proposed project emission rate increases. The Lon C. Hill Power Station is, therefore, a new major source and PSD review is required for each regulated pollutant with significant emissions, as defined in 40 CFR 52 (§52.21(b)(23)). As shown in Table 12, the emission rate increases exceed the SER for the following pollutants: NOx, CO, VOC and $PM_{10}/PM_{2.5}$.

The project will also result in an increase in GHG emissions above the 75,000 tpy CO_2e PSD major source threshold. US EPA Region 6 currently reviews all GHG permit applications for the State of Texas; therefore, a separate PSD GHG permit application will be submitted to US EPA Region 6.

7.3 BACT/LAER Requirements

Federal BACT analysis is required for all pollutants that trigger PSD review. Section 5 of this permit application demonstrates that the proposed facilities will meet BACT requirements for all applicable emission sources. LAER does not apply to any facilities or pollutants because NNSR is not triggered for the project.

7.4 Air Quality Monitoring Requirements

PSD regulations require collection of up to one year of pre-construction ambient air quality monitoring data for each pollutant subject to PSD review unless the air quality impacts from the proposed source or modification are shown to be *de minimis.* The PSD regulations contain *de minimis* levels for each pollutant. The air quality impact analysis, which will be submitted separately from this application, is expected to demonstrate that the project is exempt from preconstruction monitoring for NO_2, CO, VOC and $PM_{10}/PM_{2.5}$. The report documenting the modeling analysis will verify this assumption. In the event that *de minimis* pre-construction monitoring levels are exceeded, representative ambient monitoring data from existing nearby monitors may be used in lieu of pre-construction monitoring.

7.5 Air Quality Analysis

An air quality modeling analysis is required to demonstrate the proposed emission rates will not cause or contribute to a violation of any NAAQS or PSD Increment for pollutants subject to PSD review (NO_2, CO, VOC and $PM_{10}/PM_{2.5}$). The TCEQ may also require a demonstration of compliance with the NAAQS and TCEQ property line standards and with Effect Screening Levels for other pollutants. Any air quality analysis will be performed based on guidance from the TCEQ permit engineer during the application review. The results of this analysis will be submitted to the TCEQ under a separate cover.

7.6 Additional Impacts Analysis

Federal PSD regulations require an analysis of the emissions impact from the proposed project on soils and vegetation, visibility, and associated growth. These requirements will be addressed as part of the air quality analysis report.

Attachment A
TCEQ Permit Tables

TCEQ Table	Units
Table 1(a)	Emission Point Summary Table
Table 2	Material Balance
Table 31 – Combustion Turbines	Unit 101 Gas Turbines (CC-101) Unit 102 Gas Turbines. (CC-102)
Table 6 – Boilers and Heaters	Unit 101 HRSG Duct Burners (CC-101) Unit 102 HRSG Duct Burners (CC-102) Auxiliary Boiler (ABL-100)
Table 7(a) – Vertical Fixed Roof Storage Tank Summary	Diesel Tank (TK-101) Diesel Tank (TK-102)
Table 7(b) – Horizontal Fixed Roof Storage Tank Summary	Aqueous Ammonia Tank (TK-103)
Table 29 – Reciprocating Engines	Emergency Generator (EGEN-100) Firewater Pump (FWP-100)

Attachment B
Emission Rate Calculations

Attachment C
RBLC Database Search

Refer to Original Application
NO CHANGES

Attachment D
PSD Applicability Review Tables

Attachment E
Tanks 4.09D Output Report

Refer to Original Application
NO CHANGES