**TABLE 1F**
**AIR QUALITY APPLICATION SUPPLEMENT**

| | | | |
|---|---|---|---|
| Permit No.: | TBD | Application Submittal Date: | July 7, 2014 |
| Company: | Lon C. Hill LP | | |
| RN: | RN100215979 | Facility Location: | 3501 Callicoatte Rd, Corpus Christi, Texas |
| City: | Corpus Christi | County: | Nueces |
| Permit Unit I.D.: | TBD | Permit Name: | Lon C Hill Power Station |
| Permit Activity: | ☒ New Source | ☐ Modification | |

| Complete for all Pollutants with a Project Emission Increase. | POLLUTANTS | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Ozone | | CO | $PM_{10}$ | $PM_{2.5}$ | $NO_X$ | $SO_2$ | Other[1] $CO_2e$ |
| | VOC | $NO_x$ | | | | | | |
| Nonattainment Potentially Applicable? | | | | | | | | No |
| PSD Potentially Applicable? | | | | | | | | Yes |
| Existing site PTE (tpy)? | | | | | | | | 0.0 |
| Proposed project emission increases (tpy from 2F[2]) | | | | | | | | 2,517,769 |
| Is the existing site a major source? | | | | | | | | No |
| If not, is the project a major source by itself? | | | | | | | | Yes |
| If site is major source, is project increase significant? | | | | | | | | Yes |
| If netting required, estimated start of construction: | | | 01-May-15 | | | | | |
| 5 years prior to start of construction contemporaneous | | | 01-May-10 | | | | | |
| Estimated start of operation period | | | 01-Apr-17 | | | | | |
| Net contemporaneous change, including proposed project, from Table 3F. (tpy) | | | | | | | | 2,517,769 |
| Major NSR Applicable? | No | No | No | No | No | No | No | Yes |

| *Signature* | *Title* | *Date* |
|---|---|---|
| | | |

[1] Other pollutants. [Pb, $H_2S$, TRS, $H_2SO_4$, Fluoride excluding HF, etc.]
[2] Sum of proposed emissions minus baseline emissions, increases only.
The representations made above and on the accompanying tables are true and correct to the best of my knowledge.

# TABLE 2F
# PROJECT EMISSION INCREASE

| Pollutant[1]: $CO_2e$ | Permit: TBD |
|---|---|
| Baseline Period: to | |

| | Affected or Modified Facilities[2] | | Permit No. | Actual Emissions[3] | A Baseline Emissions[4] | B Proposed Emissions[5] | Projected Actual Emissions | Difference (B-A)[6] | Correction[7] | Project Increase[8] |
|---|---|---|---|---|---|---|---|---|---|---|
| | FIN | EPN | | | | | | | | |
| 1 | CC-101 | STK-101 | TBD | | 0.0 | 1,256,916 | | 1,256,916 | | 1,256,916 |
| 2 | CC-102 | STK-102 | TBD | | 0.0 | 1,256,916 | | 1,256,916 | | 1,256,916 |
| 3 | ABL-100 | ABLSTK-100 | TBD | | 0.0 | 2,779 | | 2,779 | | 2,779 |
| 4 | EGEN-100 | EGENSTK-100 | TBD | | 0.0 | 77 | | 76.7 | | 76.7 |
| 5 | FWP-100 | FWPSTK-100 | TBD | | 0.0 | 35 | | 35.3 | | 35.3 |
| 6 | FUGNG-100 | FUGNG-100 | TBD | | 0.0 | 1,043 | | 1,043 | | 1,043 |
| 7 | SF6-100 | SF6-100 | TBD | | 0.0 | 4.1 | | 4.1 | | 4.1 |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| | | | | | | | | | Page Subtotal[9] | 2,517,769 |

[1] Individual Table 2F's should be used to summarize the project emission increase for each criteria pollutant
[2] Emission Point Number as designated in NSR Permit or Emissions Inventory
[3] All records and calculations for these values must be available upon request
[4] Correct actual emissions for currently applicable rule or permit requirements, and periods of non-compliance. These corrections, as well as any MSS previously demonstrated under 30 TAC 101, should be explained in the Table 2F supplement
[5] If projected actual emission is used it must be noted in the next column and the basis for the projection identified in the Table 2F supplement
[6] Proposed Emissions (column B) minus Baseline Emissions (column A)
[7] Correction made to emission increase for what portion could have been accommodated during the baseline period. The justification and basis for this estimate must be provided in the Table 2F supplement
[8] Obtained by subtracting the correction from the difference. Must be a positive number.
[9] Sum all values for this page.

## TABLE 3F
## PROJECT CONTEMPORANEOUS CHANGES[1]

| | |
|---|---|
| **Company:** | Lon C. Hill, LP |
| **Permit Application Number:** | TBD |
| **Criteria Pollutant:** | $CO2_e$ |

| Project Date[2] | | Facility at Which Emission Change Occurred[3] | | Permit No. | Project Name or Activity | Baseline Period (years) | A: Proposed Emissions (tons/year)[4] | B: Baseline Emissions (tons/year)[5] | Difference (A-B)[6] | Creditable Decrease or Increase[7] |
|---|---|---|---|---|---|---|---|---|---|---|
| | | FIN | EPN | | | | | | | |
| 1 | TBD | CC-101 | STK-101 | TBD | Unit 101 Combined Cycle (GT+HRSG) | NA | 1,256,916 | 0.0 | 1,256,916 | 1,256,916 |
| 2 | TBD | CC-102 | STK-102 | TBD | Unit 102 Combined Cycle (GT+HRSG) | NA | 1,256,916 | 0.0 | 1,256,916 | 1,256,916 |
| | TBD | ABL-100 | ABLSTK-100 | TBD | Auxiliary Boiler | NA | 2,779 | 0.0 | 2,779 | 2,779 |
| | TBD | EGEN-100 | EGENSTK-100 | TBD | Emergency Generator | NA | 76.7 | 0.0 | 76.7 | 76.7 |
| | TBD | FWP-100 | FWPSTK-100 | TBD | Firewater Pump | NA | 35.3 | 0.0 | 35.3 | 35.3 |
| 3 | TBD | FUGNG-100 | FUGNG-100 | TBD | Fugitive GHG | NA | 1,043 | 0.0 | 1,043 | 1,043 |
| 4 | TBD | SF6-100 | SF6-100 | TBD | Electrical Equipment Insulation Leaks | NA | 4.1 | 0.0 | 4.1 | 4.1 |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| | | | | | | **Page Subtotal[8]** | **2,517,769** | **0.0** | **2,517,769** | **2,517,769** |
| | | | | | | **Summary of Contemporaneous Changes Total** | **2,517,769** | **0.0** | **2,517,769** | **2,517,769** |

[1] Individual Table 3F's should be used to summarize the project emission increase and net emission increase for each criteria pollutant.

[2] The start of operation date for the modified or new facilities. Attach Table 4F for each project reduction claimed.

[3] Emission Point No. as designated in NSR Permit or Emissions Inventory.

[4] All records and calculations for these values must be available upon request.

[5] All records and calculations for these values must be available upon request.

[6] Proposed (column A) - Baseline (column B).

[7] If portion of the decrease not creditable, enter creditable amount.

[8] Sum all values for this page.

**LON C HILL REDEVELOPMENT PROJECT**
**LON C. HILL, LP**

**Summary of GHG and $CO_2$ Sitewide Emission Rates**

| EPN | FIN | Name | GHG Mass Basis | | $CO_2e$ Emission Rate (tpy) |
|---|---|---|---|---|---|
| | | | Pollutant | Emission Rate (tpy) | |
| STK-101 | CC-101 | Unit 101 Combined Cycle (GT+HRSG) | $CO_2$ | 1,255,634 | 1,256,916 |
| | | | $CH_4$ | 23.5 | |
| | | | $N_2O$ | 2.3 | |
| STK-102 | CC-102 | Unit 102 Combined Cycle (GT+HRSG) | $CO_2$ | 1,255,634 | 1,256,916 |
| | | | $CH_4$ | 23.5 | |
| | | | $N_2O$ | 2.3 | |
| ABLSTK-100 | ABL-100 | Auxiliary Boiler | $CO_2$ | 2,776 | 2,779 |
| | | | $CH_4$ | 0.05 | |
| | | | $N_2O$ | 0.01 | |
| EGENSTK-100 | EGEN-100 | Emergency Generator | $CO_2$ | 76.5 | 77 |
| | | | $CH_4$ | 0.003 | |
| | | | $N_2O$ | 0.001 | |
| FWPSTK-100 | FWP-100 | Firewater Pump | $CO_2$ | 35.2 | 35 |
| | | | $CH_4$ | 0.001 | |
| | | | $N_2O$ | 0.0003 | |
| FUGNG-100 | FUGNG-100 | Fugitive GHG | $CH_4$ | 41.7 | 1,043 |
| SF6-100 | SF6-100 | Electrical Equipment Insulation Leaks | $SF_6$ | 0.0002 | 4.15 |
| | | **Total Sitewide Emission Rates** | | **2,514,249** | **2,517,769** |

**LON C HILL REDEVELOPMENT PROJECT**
**LON C. HILL, LP**

**GHG Emission Rates per Unit Summary Table (Siemens SCC6-5000F)**

| Air Pollutant | Emission Factor (lb/MMBtu)[1, 2] | Heat Input (HHV) (MMBtu/yr)[3] | GHG Emission Rate (tpy)[4] | Global Warming Potential (100yr.)[5] | $CO_2e$ Emission Rate (tpy)[6] |
|---|---|---|---|---|---|
| $CO_2$ | 118.8 | 21,136,220 | 1,255,634 | 1 | 1,255,634 |
| $CH_4$ | 2.2E-03 | | 23.5 | 25 | 588 |
| $N_2O$ | 2.2E-04 | | 2.3 | 298 | 694 |

| | |
|---|---|
| Total GHG per Unit[7] | **1,255,660 tpy** |
| Total $CO_2e$ per Unit[8] | **1,256,916 tpy** |

**GHG Emission Rates per Unit Summary Table (GE S207FA.04)**

| Air Pollutant | Emission Factor (lb/MMBtu)[1, 2] | Heat Input (HHV) (MMBtu/yr)[3] | GHG Emission Rate (tpy)[4] | Global Warming Potential (100yr.)[5] | $CO_2e$ Emission Rate (tpy)[6] |
|---|---|---|---|---|---|
| $CO_2$ | 118.8 | 19,711,384 | 1,170,989 | 1 | 1,170,989 |
| $CH_4$ | 2.2E-03 | | 21.9 | 25 | 548 |
| $N_2O$ | 2.2E-04 | | 2.2 | 298 | 647 |

| | |
|---|---|
| Total GHG per Unit[7] | **1,171,013 tpy** |
| Total $CO_2e$ per Unit[8] | **1,172,185 tpy** |

Notes:

(1) $CO_2$ emission factor calculated per 40 CFR Part 75, Appendix G, Equation G-4, as referenced in §98.43(a), where:
CO2 Emission Factor = 1,040 scf/MMBtu / 385scf/lbmole * 44lb/lbmole = 118.8 lb/MMBtu
Carbon based F-factor, $F_C$: 1,040
Standard Molar Volume: 385
Molecular Weight $CO_2$, $MW_{CO2}$: 44

(2) $CH_4$ and $N_2O$ emission factors per 40 CFR 98, Subpart C, Table C-2 for natural gas fired units.
CH4 Emission Factor = 1.0E-03 kg/MMBtu * 1 metric ton/1,000 kg * 1.1023 short ton / metric ton * 2,000 lb/short ton = 2.2E-03 lb/MMBtu
N2O Emission Factor = 1.0E-04 kg/MMBtu * 1 metric ton/1,000 kg * 1.1023 short ton / metric ton * 2,000 lb/short ton = 2.2E-04 lb/MMBtu
Where 1.1023 short ton/metric ton per 40 CFR 98, Subpart D, §98.43(a)(1)

(3) Heat Input (HHV) maximum annual heat input for all operating scenarios evaluated for both Siemens SCC6-5000F and GE S207FA.04 including normal and MSS operation (8,760 hr/yr)

(4) Emission Rate CO2 (tpy) = Emission Factor CO2 (lb/MMBut) * Heat Input (MMBtuyr) * 1ton/2,000 lb
CO2 Emission Rate (Siemens SCC6-5000F) = 118.8 lb/MMBtu * 21,136,220 MMBtu/yr * 1ton/2,000 lb = 1,255,634 tpy
Emission Rate $CH_4$ (tpy) = Emission Factor $CH_4$ (lb/MMBut) * Heat Input (MMBtuyr) * 1ton/2,000 lb + Purging CH4 Emission Rate (tpy)
Purging $CH_4$ Emission Rate (tpy) = Gas Turbine Purging $CH_4$ (tpy) + Duct Burner Purigng $CH_4$ (tpy) + Pilot $CH_4$ (tpy)
CH4 Emission Rate (Siemens SCC6-5000F) = [2.2E-03 lb/MMBtu * 21,136,220 MMBtu/yr * 1ton/2,000 lb] + 0.20 tpy = 23.5 tpy
Purging CH4 Emission Rate = 0.16 tpy + 0.04 tpy + 0.001 tpy = 0.20 tpy
Emission Rate $N_2O$ (tpy) = Emission Factor $N_2O$ (lb/MMBut) * Heat Input (MMBtuyr) * 1ton/2,000 lb
N2O Emission Rate (Siemens SCC6-5000F) = 2.2E-04 lb/MMBtu * 21,136,220 MMBtu/yr * 1ton/2,000 lb = 2.3 tpy

(5) Global Warming potential per 40 CFR 98, Subpart A, Table A-1

(6) $CO_2e$ (tpy) = Mass Emission Rate (tpy) * Global Warming Potential
CH4 as CO2e (Siemens SCC6-5000F) = 23.5 tpy * 25 = 588 tpy

(7) Total GHG emission rate per unit = Sum of GHG mass emission rates
Total GHG (Siemens SCC6-5000F) = 1,255,634 + 23.5 + 2.3 = 1,255,660 tpy

(8) Total CO2e emission rate per unit = Sum of CO2e emission rates
Total CO2e (Siemens SCC6-5000F) = 1,255,634 + 588 + 694 = 1,256,916 tpy

**Fuel Purging**

Occasionally during startup, shutdown, or maintenance activities, natural gas is purged to the atmosphere to reduce the header pressure. 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 and shutdown of the units.

| Parameter | Units | Gas Turbine | Duct Burner | Pilot |
|---|---|---|---|---|
| Line Diameter(1) | in | 3.00 | 6.00 | 1.00 |
| Line Length(1) | ft | 10.00 | 5.00 | 5.00 |
| Line Pressure(1) | psig | 450 | 40 | 15 |
| Line Temperature(1) | ºF | 125 | 42 | 42 |
| $CH_4$ MW(2) | lb/lbmole | 16.77 | 16.77 | 16.77 |
| Line Volume(3) | cf | 0.49 | 0.98 | 0.03 |
| $CH_4$ Moles in Line (4) | lbmole | 0.04 | 0.01 | 0.0002 |
| $CH_4$ Pounds in Line(5) | lb/purge | 0.61 | 0.17 | 0.003 |
| Annual No. of Purges per Unit (6) | purges/yr | 520 | 520 | 520 |
| $CH_4$ Annual Emission Rate(7) | tpy | 0.16 | 0.04 | 0.001 |

Notes:

(1) Line characteristics per engineering knowledge.

(2) Natural gas molecular weight (MW) per Natural Gas Fuel Analisys.

(3) Line Volume = pi()/4 * D^2 * L

Gas Turbine Line Volume = pi()/4 * (3.00 inch * 1ft/12inch)^2 * 10.00 ft = 0.49 cf

(4) Universal Ideal Gas Law

Gas Turbine Moles in Line = n = P * V / (R * T) = (450 + 14.656) psia * 0.49 cf / (10.73 * (125 + 459.67) R) = 0.036 lbmole

(5) Pounds in Line (lb) = Moles in Line (lbmole) * Molecular Weight (lb/lbmole)

Gas Turbine Pounds in Line = 0.036 lbmole * 16.77 lb/lbmole = 0.61 lb

(6) Annual No. of Purges = Annual No. of Startups and Shutdowns

(7) $CH_4$ Annual Emission Rate (tpy) = $CH_4$ Pounds in Line (lb/purge) * Annual No. of Purges (purges/yr) * 1ton/2,000lb

GT CH4 Annual Emission Rate per Unit = 0.61 lb/purge * 520 purges/yr * 1ton/2,000lb = 0.16 tpy

**LON C HILL REDEVELOPMENT PROJECT**
**LON C. HILL, LP**

**Auxiliary Boiler GHG Emission Rates Summary Table**

| Air Pollutant | Emission Factor (kg/MMBtu)[1],[2] | Heat Input (HHV) (MMBtu/yr)[3] | GHG Emission Rate (tpy)[4] | Global Warming Potential (100yr.)[5] | $CO_2e$ Emission Rate (tpy)[6] |
|---|---|---|---|---|---|
| $CO_2$ | 53.02 | 47,500 | 2,776 | 1 | 2,776 |
| $CH_4$ | 1.0E-03 | | 0.05 | 25 | 1.31 |
| $N_2O$ | 1.0E-04 | | 0.01 | 298 | 1.56 |

| | |
|---|---|
| Total GHG [7] | **2,776 tpy** |
| Total $CO_2e$ [8] | **2,779 tpy** |

Notes:
(1) $CO_2$ emission factor per 40 CFR 98, Subpart C, Table C-1 for natural gas fired units.
(2) $CH_4$ and $N_2O$ emission factors per 40 CFR 98, Subpart C, Table C-2 for natural gas fired units.
(3) Heat Input (HHV) (MMBtu/yr) = Desing Heat Input (MMBtu/hr) * Annual Hours of Operation (hr/yr)
Heat Input (HHV) = 95.0 MMBtu/hr * 500 hr/yr = 47,500 MMBtu/yr
(4) Emission Rate (tpy) = Emission Factor (kg/MMBtu) * Heat Input (MMBtu/yr) * 1 metric ton/1,000kg * 1.1023 short ton/metric ton
CH4 Emission Rate = 0.001 kg/MMBtu * 47,500 MMBtu/yr * 1 metric ton/1,000kg * 1.1023 short ton/metric ton = 0.05 tpy
Where 1.1023 short ton/metric ton per 40 CFR 98, Subpart D, §98.43(a)(1)
(5) Global Warming potential per 40 CFR 98, Subpart A, Table A-1
(6) $CO_2e$ (tpy) = Emission Rate (tpy) * Global Warming Potential
CH4 as CO2e = 0.05 tpy * 25 = 1.3 tpy
(7) Total GHG emission rate = Sum of GHG emission rates
Total GHG = 2,776 + 0.05 + 0.01 = 2,776 tpy
(8) Total $CO_2e$ emission rate = Sum of CO2e emission rates
Total CO2e = 2,776 + 1.31 + 1.56 = 2,779 tpy

**LON C HILL REDEVELOPMENT PROJECT**
**LON C. HILL, LP**

**Emergency Generator GHG Emission Rates Summary Table**

| Air Pollutant | Emission Factor (kg/MMBtu)[1],[2] | Heat Input (HHV) (MMBtu/yr)[3] | GHG Emission Rate (tpy)[4] | Global Warming Potential (100yr.)[5] | $CO_2e$ Emission Rate (tpy)[6] |
|---|---|---|---|---|---|
| $CO_2$ | 73.96 | 938 | 76.47 | 1 | 76.5 |
| $CH_4$ | 3.0E-03 | | 0.003 | 25 | 0.08 |
| $N_2O$ | 6.0E-04 | | 0.001 | 298 | 0.18 |

| | |
|---|---|
| Total GHG [7] | **76 tpy** |
| Total $CO_2e$ [8] | **77 tpy** |

Notes:
(1) $CO_2$ emission factors per 40 CFR 98, Subpart C, Table C-1 for Distillate Fuel Oil No. 2
(2) $CH_4$ and $N_2O$ emission factors per 40 CFR 98, Subpart C, Table C-2 for Petroleum (all fuel types in Table C-1
(3) Heat Input based on engineering knowledge.
(4) Emission Rate (tpy) = Emission Factor (kg/MMBtu) * Heat Input (MMBtu/yr) * 1 metric ton/1,000kg * 1.1023 short ton/metric ton
CH4 Emission Rate = 0.003 kg/MMBtu * 938 MMBtu/yr * 1 metric ton/1,000kg * 1.1023 short ton/metric ton = 0.003 tpy
Where 1.1023 short ton/metric ton per 40 CFR 98, Subpart D, §98.43(a)(1)
(5) Global Warming potential per 40 CFR 98, Subpart A, Table A-1
(6) $CO_2e$ (tpy) = Emission Rate (tpy) * Global Warming Potential
CH4 as CO2e = 0.003 tpy * 25 = 0.1 tpy
(7) Total GHG emission rate = Sum of GHG emission rates
Total GHG = 76.5 + 0.003 + 0.001 = 76 tpy
(8) Total CO2e emission rate = Sum of CO2e emission rates
Total CO2e = 76.5 + 0.08 + 0.18 = 77 tpy

**LON C HILL REDEVELOPMENT PROJECT**
**LON C. HILL, LP**

**Firewater Pump GHG Emission Rates Summary Table**

| Air Pollutant | Emission Factor (kg/MMBtu)[(1),(2)] | Heat Input (HHV) (MMBtu/yr)[(3)] | GHG Emission Rate (tpy)[(4)] | Global Warming Potential (100yr.)[(5)] | $CO_2e$ Emission Rate (tpy)[(6)] |
|---|---|---|---|---|---|
| $CO_2$ | 73.96 | 431.90 | 35.21 | 1 | 35.2 |
| $CH_4$ | 3.0E-03 | | 0.001 | 25 | 0.04 |
| $N_2O$ | 6.0E-04 | | 0.0003 | 298 | 0.09 |

| | |
|---|---|
| Total GHG [(7)] | **35 tpy** |
| Total $CO_2e$ [(8)] | **35 tpy** |

Notes:
(1) $CO_2$ emission factors per 40 CFR 98, Subpart C, Table C-1 for Distillate Fuel Oil No. 2
(2) $CH_4$ and $N_2O$ emission factors per 40 CFR 98, Subpart C, Table C-2 for Petroleum (all fuel types in Table C-1
(3) Heat Input based on engineering knowledge.
(4) Emission Rate (tpy) = Emission Factor (kg/MMBtu) * Heat Input (MMBtu/yr) * 1 metric ton/1,000kg * 1.1023 short ton/metric ton
CH4 Emission Rate = 0.003 kg/MMBtu * 432 MMBtu/yr * 1 metric ton/1,000kg * 1.1023 short ton/metric ton = 0.001 tpy
Where 1.1023 short ton/metric ton per 40 CFR 98, Subpart D, §98.43(a)(1)
(5) Global Warming potential per 40 CFR 98, Subpart A, Table A-1
(6) $CO_2e$ (tpy) = Emission Rate (tpy) * Global Warming Potential
CH4 as CO2e = 0.001 tpy * 25 = 0.04 tpy
(7) Total GHG emission rate = Sum of GHG emission rates
Total GHG = 35.2 + 0.001 + 0.0003 = 35 tpy
(7) Total CO2e emission rate = Sum of CO2e emission rates
Total CO2e = 35.2 + 0.04 + 0.09 = 35 tpy

**LON C HILL REDEVELOPMENT PROJECT**
**LON C. HILL, LP**

**Fugitive GHG Emission Rates Summary Table**

| EPN | Air Pollutant | Weight %[1] | GHG Emission Rate (tpy)[4] | Global Warming Potential (100yr.)[3] | $CO_2e$ Emission Rate (tpy)[4] |
|---|---|---|---|---|---|
| FUGNG-100 | $CH_4$ | 91.84% | 41.71 | 25 | 1,043 |

Notes:
(1) Methane content (in wt%) per fuel analysis.
(2) Annual Emission Rate (tpy) = Service Total Emission Rate (tpy) * CH4 wt%
CH4 Annual Emission Rate = 45.42 tpy * 91.84% = 41.71 tpy
(3) Global Warming potential per 40 CFR 98, Subpart A, Table A-1 [78 FR 71948, Nov. 29, 2013]
(6) $CO_2e$ (tpy) = Emission Rate (tpy) * Global Warming Potential
CH4 as CO2e = 41.71 tpy * 25 = 1,043 tpy

**Natural Gas Service**

| Component Type | Component Service | Component Count (cpte)[1] | Emission Factor (lb/hr-cpte)[2] | Hours in Service (hr/yr) | Control Efficiency (%)[3] | Max. Hourly Emission Rate (lb/hr)[4] | Annual Emission Rate (tpy)[5] |
|---|---|---|---|---|---|---|---|
| Valves | Gas/Vapor | 520 | 0.0089 | 8,760 | 0.0% | 4.63 | 20.27 |
| Flanges/Connectors | Gas/Vapor | 1460 | 0.0029 | 8,760 | 0.0% | 4.23 | 18.54 |
| Compressors | Gas/Vapor | 3 | 0.5027 | 8,760 | 0.0% | 1.51 | 6.61 |
| | | | | | **Service Total** | **10.37** | **45.42** |

Notes:
(1) Component counts are based on preliminary design information and account for the 2 combined cycle units.
(2) "SOCMI without ethylene" factors.
(3) No control efficiency is claimed for natural gas service.
(3) Max. Hourly Emission Rate (lb/hr) = Component Count (cpte) * Emission Factor (lb/hr-cpte) * (1 - Control Eff%)
Max. Hourly Emission Rate Valves in NG Service = 520 cpte * 0.0089 lb/hr-cpte * (1 - 0.0%) = 4.63 lb/hr
(4) Annual Emission Rate (tpy) = Max. Hourly Emission Rate (lb/hr) * Hours in Service (hr/yr) * 1ton,2,000lb
Annual Emission Rate Valves in NG Service = 4.63 lb/hr * 8,760 hr/yr * 1ton/2,000lb = 20.27 tpy

**LON C HILL REDEVELOPMENT PROJECT**
**LON C. HILL, LP**

**Electrical Equipment Insulation $SF_6$ Leaks Emission Rates Summary Table**

| EPN | Air Pollutant | GHG Emission Rate (tpy)[4] | Global Warming Potential (100yr.)[2] | $CO_2e$ Emission Rate (tpy)[3] |
|---|---|---|---|---|
| SF6-100 | $SF_6$ | 1.82E-04 | 22,800 | 4.15 |

Notes:
(1) Annual SF6 Emission Rate (tpy) = Sum [$SF_6$ Gas Hold by CB * Annual Leak Rate (%/yr) ] * 1ton/2,000lb
Annual SF6 Emission Rate = [2GT * 24.25 lb/GT * 0.50% + 1 ST * 24.25 lb/ST * 0.50% ] * 1 ton/2,000 lb = 1.82E-04 tpy
(2) Global Warming potential per 40 CFR 98, Subpart A, Table A-1 [78 FR 71948, Nov. 29, 2013]
(3) $CO_2e$ (tpy) = Emission Rate (tpy) * Global Warming Potential
SF6 as CO2e = 18.19E-05 tpy * 22,800 = 4.15 tpy

**Electrical Equipment Characteristics**

| | GT Breakers | ST Breakers |
|---|---|---|
| No. of Breakers | 2 | 1 |
| GT Breaker Type[1] | TBD | TBD |
| GT Operating Mechanism[1] | TBD | TBD |
| $SF_6$ Gas Hold by GCB[1] | 24.25 lb | 24.25 lb |
| Annual Leak Rate[2] | 0.50% | 0.50% |

Notes:
(1) Gas insulated generator circuit breaker are part of an enclosed system. Per vendor data no $SF_6$ bleeding should occur.
Generator circuit breaker SF6 content is approximate 11 kg per breaker.
(2) IEC Standard for new equipment leakage, as published on "$SF_6$ Leak Rates from High Voltage Circuit Breakers" U.S. EPA Investigates Potential Greenhouse Gas Emission Sources" (J. Blackman, et al.)