



August 6, 2013

Mr. James Belsky, Permit Chief  
MassDEP Northeast Region  
205B Lowell Street  
Wilmington, MA 01887

**Re: Major Comprehensive Plan Application  
Salem Harbor Redevelopment (SHR) Project (Transmittal Number X254064)  
Additional Information**

Dear Mr. Belsky:

This additional information is being submitted to respond to questions raised by Mr. Cosmo Buttaro with respect to the Major Comprehensive Plan Application (MCPA) submitted on December 21, 2012, and the First and Second Supplements submitted in April and June, 2013. This information is being submitted on behalf of Footprint Power Salem Harbor Development LP ("Footprint"). This additional information includes: (1) GE startup emission comparisons, (2) GE vs. Siemens startup emission data, (3) GE model designations, (4) summary of project benefits vs. environmental and social costs, (5) additional details on emissions and proposed fuel consumption limits, and (6) further information on the use and function of the auxiliary boiler auxiliary cooling tower and evaporative coolers.

### **(1) GE Startup Emissions Comparisons**

The startup/shutdown emission estimates for the GE turbine were originally provided in the December 21, 2012 MCPA, and were subsequently updated in the Second Supplement dated June 10, 2013. Attachment 1 provides this data for reference. These values were all provided directly by GE. It is important to recognize that these are indeed *estimated* emissions, since actual startup/shutdown emission for a given project may be subject to site specific variation.

Mr. Buttaro requested an explanation for the changes in this data. GE has provided an explanation for these changes, indicating that the 2012 values were extracted from a standard GE startup and shutdown document based on the best 7FA.05 data available at that time. The 2013 data in fact reflects more up to date information for the new design "quick start" turbines, incorporating the latest test stand data and project-specific design for the Footprint project.

However, since various site-specific factors for the system as installed can influence the actual startup/shutdown emissions, Footprint has requested (in the First Supplement, April 12, 2013) that the startup/shutdown values be considered as "provisional" limits for the first year of commercial operation. Then, after review of the stack tests data and CEMS data for the first year of operation, final startup/shutdown limits will be established. The Pioneer Valley Energy Center Plan Approval contains a provision to this effect (page 35 of 54, Table 11, footnote 3).

## **(2) GE vs. Siemens NO<sub>x</sub> Startup Data**

Mr. Buttaro indicated that the Plan Approval for Brockton Power for a Siemens 5000F “quick start” machine (4B08015, July 20, 2011) was approved for a NO<sub>x</sub> startup limit of 31.6 lb/hr, which is lower than the 89 lbs over 45 minutes reflected in the updated GE data.

Startup/shutdown estimates for both GE and Siemens were provided in the December 21, 2012 MCPA. As noted above, the GE values were subsequently updated in the Second Supplement dated June 10, 2013.

The more recent data for the same basic “quick start” Siemens machine (5000F) now has 83 lbs NO<sub>x</sub> over 45 minutes. Attachment 2 provides a comparison of this GE and Siemens NO<sub>x</sub> startup/shutdown data. For a combined cold start and shutdown, GE now has (89 + 10 = 99) lbs NO<sub>x</sub> while Siemens has (83 + 20 = 103) lbs NO<sub>x</sub>. GE has lower NO<sub>x</sub> emissions for both the warm and hot start. So, based on the latest information, there is no advantage to selecting Siemens over GE for NO<sub>x</sub> startup/shutdown emissions.

## **(3) GE Model Designations**

Mr. Buttaro asked how the GE FlexEfficiency60 model designations “7F Series 5 or Series 7” compared to the “107FA.05” designation as referenced in our Second Supplement.

GE has informed us they are changing over from the “7FA.05” designation to the “7F Series” designation, which in our case is 7F Series 5. The “10” prefix is a combined cycle designation, with “10” corresponding to a “one-on-one” GT/ST configuration. Accordingly, our new model designation is now 107F Series 5.

## **(4) Project Benefits vs. Environmental and Social Costs**

A summary of Attachment 3 of the First Supplement (April 12, 2013) is provided here also as Attachment 3. In addition, the significant benefits achieved by the Project are described in detail in Footprint’s Chapter 91 Application material. A disk containing electronic versions of these materials is included in the submittal and incorporated herein by reference. The Secretary of EEA has also issued a Public Benefits Determination (PBD) finding that the Project serves a public purpose and a Certificate on the Final Environmental Impact Report (FEIR Certificate), finding, inter alia, that Project alternatives have been adequately analyzed. The PBD and the FEIR Certificate are available on the EEA web site and are incorporated herein by reference.

### **(5) Additional Details on Emissions and Proposed Fuel Consumption Limits**

Additional emissions data (lb/MMBtu and lb/hr) for the 25 GE emission cases provided in Attachment 3-1 (Sheets 1 and 2) of the Second Supplement (June 10, 2013) are provided here as Attachment 4.

With respect to the firing limits per gas turbine, the maximum allowable hourly firing rate will be 2449 MMBtu/hr, based on GE Case 12, June 10 Supplement, Attachment 3. This is based on 2082 MMBtu/hr per turbine and 367 MMBtu/hr per duct burner (all HHV). The duct burner may be used for up to 720 hours per year, and can include temperatures less than or greater than 90 deg F, but in such cases the total hourly firing rate will still be limited to no more than 2449 MMBtu/hr.

The annual gas firing rate per turbine/duct burner combination will also be restricted to match our potential-to-emit calculations. This limit will be 18,888,480 MMBtu/rolling 12 months per turbine/duct burner combination. This is based on 8040 hours at the 100% load 50 deg F firing rate (2130 MMBtu/hr) and 720 hours at 2449 MMBtu/hr. 1000 Btu/scf of gas can be used to express the firing limits on a natural gas volume basis.

### **(6) Auxiliary Boiler and Auxiliary Cooling Tower**

The primary function of the auxiliary boiler is to provide steam needed for plant startup. If the turbines are off line, the auxiliary boiler may also be used to provide process steam for various plant equipment. It is not planned to use the auxiliary boiler for space heating.

For certain pollutants (e.g., NO<sub>x</sub> and CO), the auxiliary boiler will likely have higher lb/MMBtu emissions during startup compared to normal operation, and lb/hr emissions during startup may be higher than the maximum allowable full load values as well. However, the annual potential emissions for the auxiliary boiler are still adequately represented by assuming the unit operates for 6500 hours per year at full load, since actual operation of this unit is expected to be significantly less than 6500 hours per year.

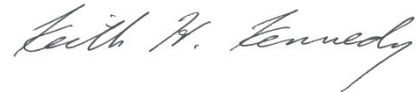
The primary function for the auxiliary cooling tower is to provide necessary equipment cooling for the gas turbine itself, which is not possible to provide using the Air Cooled Condenser (ACC) used to condense steam discharged from steam turbines.

While the auxiliary cooling tower does accomplish cooling circulating water by evaporative heat transfer, the "evaporative coolers" referred to in conjunction with the combustion turbines and duct firing are a totally different system. These evaporative coolers are part of the turbine air inlet assembly, and are designed to evaporate a water mist into the turbine inlet air which then cools the inlet air when this water mist evaporates. Cooler inlet air is denser, and with higher mass flow of inlet air the turbine can fire more fuel and produce more MW than it otherwise

could if the evaporative coolers are not in operation. Please note it is not our intent to limit the annual operating hours for the evaporative coolers as we are proposing for the duct burners. Essentially, the evaporative coolers reproduce operating conditions for somewhat cooler weather than otherwise exists. The maximum annual quantity of fuel to be consumed will remain limits to 18,888,480 MMBtu/rolling 12 months per turbine.

If you have additional questions, please contact either me at (617) 803-7809 or George Lipka at (617) 443-7545.

Sincerely,

A handwritten signature in cursive script that reads "Keith H. Kennedy".

Keith H. Kennedy  
Senior Consultant – Energy Programs

Attachments

**Attachment 1**  
**Comparison of GE Startup/Shutdown Emission Data**

<b>NO<sub>x</sub> (pounds per event)</b>	<b>GE Values in MCPA (December 21, 2012)</b>	<b>GE Updated Values in MCPA Second Supplement (June 10, 2013)</b>	<b>Delta from Original</b>
Cold Start	88	89	1
Warm Start	45	54	9
Hot Start	26	28	2
Shutdown	60	10	-50

<b>CO (pounds per event)</b>	<b>GE Values in MCPA (December 21, 2012)</b>	<b>GE Updated Values in MCPA Second Supplement (June 10, 2013)</b>	<b>Delta from Original</b>
Cold Start	491	285	-206
Warm Start	260	129	-131
Hot Start	250	121	-129
Shutdown	530	151	-379

<b>VOC (pounds per event)</b>	<b>GE Values in MCPA (December 21, 2012)</b>	<b>GE Updated Values in MCPA Second Supplement (June 10, 2013)</b>	<b>Delta from Original</b>
Cold Start	35	23	-12
Warm Start	20	13	-7
Hot Start	19	12	-7
Shutdown	46	29	-17

<b>PM/PM<sub>10</sub>/PM<sub>2.5</sub> (pounds per event)</b>	<b>GE Values in MCPA (December 21, 2012)</b>	<b>GE Updated Values in MCPA Second Supplement (June 10, 2013)</b>	<b>Delta from Original</b>
Cold Start	7.3	7.3	0
Warm Start	5	5	0
Hot Start	2.6	2.6	0
Shutdown	5.8	5.8	0

<b>Startup/Shutdown Times (minutes)</b>	<b>GE Values in MCPA (December 21, 2012)</b>	<b>GE Updated Values in MCPA Second Supplement (June 10, 2013)</b>	<b>Delta from Original</b>
Cold Start	45	45	0
Warm Start	30	32	2
Hot Start	15	18	3
Shutdown	30	27	-3

Note: Startup values are from GT fire to emissions compliance  
 Shutdown values are from emissions compliance to flame off

**Attachment 2**  
**Comparison of GE and Siemens NO<sub>x</sub> Startup/Shutdown Emission Data**

<b>NO<sub>x</sub> (pounds per event)</b>	<b>GE Updated Values in MCPA Second Supplement (June 10, 2013)</b>	<b>Siemens Values in MCPA (December 21, 2012)</b>	<b>Difference (GE minus Siemens)</b>
<b>Cold Start</b>	89	83	6
<b>Warm Start</b>	54	79	-25
<b>Hot Start</b>	28	58	-30
<b>Shutdown</b>	10	20	-10

Note: Startup values are from GT fire to emissions compliance  
 Shutdown values are from emissions compliance to flame off

## ATTACHMENT 3

### 310 CMR 7.00: APPENDIX A

#### SUMMARY OF BENEFITS VS ENVIRONMENTAL AND SOCIAL COSTS

310 CMR 7.00: Appendix A (8) (b) requires the applicant to demonstrate that the benefits of the proposed project significantly outweigh the environmental and social costs imposed as a result of the project's location, construction or modification. The demonstration requires an analysis of alternative sites, sizes, production processes, and environmental control techniques.

The required demonstration for the SHR Project is contained in this attachment.

#### Alternative Site Evaluation

Footprint's site selection process focused on sites with shuttered or challenged coal- and/or oil-fired generating facilities. The sites where these smaller, older oil and coal generating facilities presently operate also typically offer ready access to transmission, available water supply, and proximity to electric load. Developing a gas-fired facility at these challenged sites offers numerous and substantial benefits to the State and local community. In addition to retention of jobs and tax revenues, when an older fossil-fuel plant is replaced by a state-of-the-art natural gas facility with sophisticated emissions controls, significant decreases in SO<sub>2</sub>, CO<sub>2</sub>, NO<sub>x</sub>, particulates, and other pollutants are realized. Moreover, while site contamination associated with an older coal- or oil-fired facility can go unaddressed (or, at least, may not get addressed in a timely manner) when a facility is simply shut down, the proposed project will address contamination and other environmental liability issues as an integral part of the plans to construct and operate the new SHR Facility.

The Salem site presents a significant number of attributes that satisfy Footprint's locational, environmental and community criteria set forth, above. For example:

- The Salem Harbor Station facility was considered to be one of the "Filthy Five" electric generation plants in Massachusetts, with a long history of environmental challenges. Indeed, construction of the SHR Facility on the landward portion of the site will afford Footprint the opportunity to clean up the portion of the site currently occupied by the soon-to-be shuttered Salem Harbor Station, and return that valuable waterfront land to productive use, consistent with State law. Having entered commercial operation as a generating facility in 1951, the Salem Harbor Site has a long history as a site for electricity generation.
- The Salem Harbor Station has been required by ISO-NE to operate for reliability purposes through May 2014, offering Footprint the unique opportunity to minimize any gaps in electricity generation beyond that date through the development and permitting of the new state-of-the-art SHR Facility.

- The site is close (less than two miles) to natural gas pipeline facilities, namely the Maritime and Northeast pipeline.
- There is strong local support for the continuation of electricity generation on the site as a means of maximizing tax revenues and local employment. The Mayor, other city officials, and state senators and representatives, have been vocal supporters of some kind of continued presence of electricity generation at the Site generally and of this Project in particular.
- There is State support for potential reuse of the Site as demonstrated by (1) the 2011 decision to use RGGI funds to supplement the City of Salem's tax revenues for an eight-year period, (2) funding of the Salem Site Reuse Study by the Massachusetts Clean Energy Center, and (3) the enactment of Chapter 209 of the Acts of 2012 and establishment of the Salem Harbor Power Station Plan Revitalization Task Force.
- Permitting of the Project is expected given city and state support of the power generation/site reuse concept, as well as compatibility of the Project with local zoning requirements.
- The site is located in close proximity to the electric grid (National Grid system) and water supply.
- The 65-acre Site is sufficiently large to accommodate the SHR Facility and enable further redevelopment opportunities.
- The site offers Footprint the opportunity to significantly reduce air, water supply, wastewater, noise, visual, and other impacts relative to the current Salem Harbor Facility.
- The absence of new generation in Northeastern Massachusetts - Boston (NEMA/Boston) load zone. Indeed, it has been nearly a decade since any significant new generation, Mystic 8 and 9, has been added in NEMA. Over the course of these last ten years, there have been several unit retirements and still more retirements are anticipated, all while load in the NEMA/Boston area is not expected to decrease.
- The construction of a new power plant, along with demolition of the existing facility and attendant remediation of the site, will bring a significant number of jobs over the course of the next several years. Footprint expects that approximately 30-40 permanent employees will be needed to operate the SHR Facility, assuring that operations-related employment at the Salem Harbor site will continue beyond the June 1, 2014 retirement date of the existing facility.
- The demolition of the existing facility and remediation of the site will enable future use of the remainder of the Site for a variety of marine industrial purposes, thereby providing opportunities to revitalize this valuable waterfront area.

In sum, the site satisfied Footprint's overall site selection objectives, as well as most, if not all, of its locational, environmental and community criteria. Accordingly, the site was deemed to be superior to the alternative sites analyzed by Footprint.

### **Alternative Project Sizes, Production Processes, and Environmental Control Techniques Evaluation**

Footprint considered positioning the SHR Facility on the portion of the site located outside of Chapter 91 jurisdiction. The approximately 14.5-acre, irregularly shaped, non-Chapter 91



portion of the site is not large enough to accommodate the proposed SHR Facility. Footprint has concluded that it is not feasible to locate the SHR Facility in the non-Chapter 91 part of the Site.

Footprint also considered a wet-cooling system as a design alternative for the proposed SHR Facility. However, wet cooling was not considered to be a reasonable option because it would result in greater impacts to the Harbor from withdrawal/discharge in terms of water quality and impingement/entrainment.

Footprint also considered a “dual fuel” alternative in which the proposed SHR Facility could run on either gas or diesel fuel. This alternative was considered not to be a reasonable alternative due to intense local opposition to diesel fuel at the site and the potential increased environmental risks (both to the Harbor and on site) associated with fuel delivery to and use on the site.

### **State and Regional Project Benefits**

Electric generation that will be provided by the proposed Project is essential to ensure reliability in the NEMA/Boston load zone. The need for reliability of the electric power grid clearly constitutes an overriding public benefit.

In addition, the public benefit served by the redevelopment of the Site represented by the proposed Project has been expressly identified in recently enacted special legislation. Section 42 of Chapter 209 of the Acts of 2012 expressly provides:

There shall be a plant revitalization task force established to implement a plan, adopt rules and regulation and recommend necessary legislative action to ensure the full deconstruction, remediation and redevelopment or repowering of the Salem Harbor Station by December 31, 2016.

The proposed Project achieves all of the legislative goals of full demolition, remediation and redevelopment of the Site within the legislatively prescribed deadline of December 31, 2016. Indeed, unless the Commonwealth were to take the Site by eminent domain and pursue a redevelopment project on its own, it is difficult if not impossible to conceive of a project that could implement a plan for redevelopment of the Site by December 31, 2016.

The proposed Project also serves the Commonwealth’s interest in developing renewable energy sources. That is, the quick-start technology included in the SHR Facility facilitates and supports the development of wind generation. Because wind power is an intermittent resource, it is especially important for the region to be able to rely on clean and cost-effective quick-start generation during those periods when wind output is not available. While a number of quick-start “peaker” facilities have recently been sited in New England, the proposed state-of-the-art quick-start technology at the proposed Project will be more efficient and will have fewer emissions than the peaker units which presently fill the gap when wind is unavailable.

While the proposed Project clearly fulfills the need for electricity reliability, the state-of-the-art natural gas-fired facility also offers significant air quality benefits. An analysis prepared for Footprint by Charles River Associates concludes that because the proposed SHR Facility “displaces other, less efficient generation on the New England Grid, operation of [the Facility]

reduces annual regional air emissions by approximately 450,000 tons (1.3%) of CO<sub>2</sub>, 984 tons (10%) of NO<sub>x</sub> and 888 tons (8%) of SO<sub>2</sub>.<sup>1</sup>

The important air quality improvements resulting from the proposed Project are also recognized in the Massachusetts Clean Energy and Climate Action Plan for 2020, which estimates that the displacement of the former Salem Harbor Station and Somerset Station by natural gas-fired power plants would result in a net 1.2 metric ton reduction in CO<sub>2</sub>e in 2020.<sup>2</sup>

### **Local Project Benefits**

Without the proposed Project, the upcoming retirement of the Salem Harbor Station would result in a significant loss of tax revenues for the City. In fiscal year 2010, Dominion paid \$4.75 million in taxes, making the Station the largest contributor of tax revenue in the City of Salem. The \$4.75 million included a negotiated usage fee of \$1.75 million, and property taxes of \$3 million, which included \$800,000 attributable to the land. The proposed Project will help ensure that tax revenues associated with the Site are maintained, thus not adversely affecting the City's budget and it will permit dollars from the RGGI Trust Account to be redirected away from Salem and to other environmentally beneficial uses.

In addition, the Project will result in opportunities for public enjoyment of the waterfront, consistent with the Site's location in a DPA. Currently, there is no public access to the waterfront Site. In contrast, as a result of the Project, the public will have the opportunity to access paths on the Derby Street (residential) side of the Site, as well as linear access to view the Harbor. In addition, the demolition and remediation efforts to be undertaken by the Proponent will enable future development options for the rest of the Site that could even further enhance public access to and enjoyment of the waterfront.

### **Minimization of Environmental and Social Costs**

Footprint Power Salem Harbor Development LP has committed to reduce and/or mitigate any environmental and social impacts as detailed below.

The SHR Facility will minimize emissions and will not cause or contribute to violation of any applicable air quality standard, through use of only clean-burning natural gas as fuel, advanced pollution control equipment and highly efficient combustion turbines. As a result, emissions from the proposed SHR Facility will be among the lowest of any fossil fuel-fired power plant in the United States.

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<sup>1</sup> "Analysis of the Impact of Salem Harbor Repowering on New England Air Emissions," dated November 21, 2012, p. 1, included in Appendix C to the DEIR; updated values per June 10, 2013 letter to MassDEP, Attachment 4.

<sup>2</sup> "Massachusetts Clean Energy and Climate Plan for 2020, A report to the Great and General Court pursuant to the Global Warming Solutions Act (Chapter 298 of the Acts of 2008, and as codified at M.G.L. c. 21N)" dated December 29, 2010, submitted by Secretary of Energy and Environmental Affairs Ian A. Bowles, p. 44.

**Attachment 4 (Sheet 1 of 2)**

**GE Energy 107F Series 5 Rapid Response Combined Cycle Plant - Emissions Data - Natural Gas**

**GE Energy Performance Data - Site Conditions**

Operating Point		1	2	3	4	5	6	7	8	9	10	11	12	13
Case Description		Unfired	Unfired	Unfired	Unfired	Unfired	Unfired	Unfired	Unfired	Unfired	Unfired	50% DB firing	100% DB firing	Unfired
Ambient Temperature	°F	0	0	0	20	20	20	50	50	50	90	90	90	90
Ambient Pressure	psia	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
Ambient Relative Humidity	%	60	60	60	60	60	60	60	60	60	60	60	60	60

**GE Energy Performance Data - Plant Status**

HRSRG Duct Burner (On/Off)		Unfired	Unfired	Unfired	Unfired	Unfired	Unfired	Unfired	Unfired	Unfired	Unfired	Fired	Fired	Unfired
Evaporative Cooler state (On/Off)		Off	Off	Off	Off	Off	Off	Off	Off	Off	On	On	On	Off
Gas Turbine Load	%	BASE	75%	50%	BASE	75%	46%	BASE	75%	46%	BASE	PEAK	PEAK	BASE
Gas Turbines Operating		1	1	1	1	1	1	1	1	1	1	1	1	1

**GE Energy Performance Data - Fuel Data**

GT Heat Consumption	MMBtu/hr, HHV	2300	1850	1460	2250	1790	1360	2130	1700	1310	2040	2082	2082	1980
Duct Burner Heat Consumption	MMBtu/hr, HHV	0	0	0	0	0	0	0	0	0	0	183	367	0
Total Heat Consumption (GT + DB)	MMBtu/hr, HHV	2300	1850	1460	2250	1790	1360	2130	1700	1310	2040	2265	2449	1980

**GE Energy Performance Data - HRSRG Exit Exhaust Gas Emissions**

NOx	ppmvd @ 15% O2	2	2	2	2	2	2	2	2	2	2	2	2	2
CO	ppmvd @ 15% O2	2	2	2	2	2	2	2	2	2	2	2	2	2
VOC	ppmvd @ 15% O2	1	1	1	1	1	1	1	1	1	1	2	2	1
NH3	ppmvd @ 15% O2	2	2	2	2	2	2	2	2	2	2	2	2	2

NOx	lb/MMBtu	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074
CO	lb/MMBtu	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045
VOC	lb/MMBtu	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0022	0.0022	0.0013
NH3	lb/MMBtu	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027
Particulates - Filterable + Condensable, Including Sulfates	lb/MMBtu	0.0053	0.0063	0.0077	0.0054	0.0065	0.0082	0.0056	0.0067	0.0084	0.0058	0.0061	0.0063	0.0060

NOx	lb/hr	17.0	13.7	10.8	16.7	13.2	10.1	15.8	12.6	9.7	15.1	16.8	18.1	14.7
CO	lb/hr	10.4	8.3	6.6	10.1	8.1	6.1	9.6	7.7	5.9	9.2	10.2	11.0	8.9
VOC	lb/hr	3.0	2.4	1.9	2.9	2.3	1.8	2.8	2.2	1.7	2.7	5.0	5.4	2.6
NH3	lb/hr	6.2	5.0	3.9	6.1	4.8	3.7	5.8	4.6	3.5	5.5	6.1	6.6	5.3
Particulates - Filterable + Condensable, Including Sulfates	lb/hr	12.2	11.7	11.2	12.1	11.6	11.1	12.0	11.4	11.0	11.9	13.8	15.5	11.8

**Attachment 4 (Sheet 2 of 2)**

**GE Energy 107F Series 5 Rapid Response Combined Cycle Plant - Emission Data - Natural Gas**

**GE Energy Performance Data - Site Conditions**

Operating Point		14	15	16	17	18	19	20	21	22	23	24	25
Case Description		50% DB firing	100% DB firing	Unfired	Unfired	Unfired	50% DB firing	100% DB firing	Unfired	50% DB firing	100% DB firing	Unfired	Unfired
Ambient Temperature	°F	90	90	90	90	105	105	105	105	105	105	105	105
Ambient Pressure	psia	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
Ambient Relative Humidity	%	60	60	60	60	50	50	50	50	50	50	50	50

**GE Energy Performance Data - Plant Status**

HRSO Duct Burner (On/Off)		Fired	Fired	Unfired	Unfired	Unfired	Fired	Fired	Unfired	Fired	Fired	Unfired	Unfired
Evaporative Cooler state (On/Off)		Off	Off	Off	Off	On	On	On	Off	Off	Off	Off	Off
Gas Turbine Load	%	PEAK	PEAK	75%	47%	BASE	PEAK	PEAK	BASE	PEAK	PEAK	75%	49%
Gas Turbines Operating		1	1	1	1	1	1	1	1	1	1	1	1

**GE Energy Performance Data - Fuel Data**

GT Heat Consumption	MMBtu/hr, HHV	2017	2017	1590	1260	1990	2005	2005	1880	1928	1928	1520	1240
Duct Burner Heat Consumption	MMBtu/hr, HHV	183	377	0	0	0	183	377	0	183	377	0	0
Total Heat Consumption (GT + DB)	MMBtu/hr, HHV	2201	2394	1590	1260	1990	2188	2382	1880	2112	2305	1520	1240

**GE Energy Performance Data - HRSO Exit Exhaust Gas Emissions**

NOx	ppmvd @ 15% O2	2	2	2	2	2	2	2	2	2	2	2	2
CO	ppmvd @ 15% O2	2	2	2	2	2	2	2	2	2	2	2	2
VOC	ppmvd @ 15% O2	1.7	1.7	1	1	1	1.7	1.7	1	1.7	1.7	1	1
NH3	ppmvd @ 15% O2	2	2	2	2	2	2	2	2	2	2	2	2

NOx	lb/MMBtu	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074
CO	lb/MMBtu	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045
VOC	lb/MMBtu	0.0022	0.0022	0.0013	0.0013	0.0013	0.0022	0.0022	0.0013	0.0022	0.0022	0.0013	0.0013
NH3	lb/MMBtu	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027
Particulates - Filterable + Condensable, Including Sulfates	lb/MMBtu	0.0060	0.0058	0.0070	0.0096	0.0058	0.0055	0.0060	0.0061	0.0057	0.0062	0.0091	0.0125

NOx	lb/hr	14.9	14.9	11.8	9.3	14.7	14.8	14.8	13.9	14.3	14.3	11.2	9.2
CO	lb/hr	9.1	9.1	7.2	5.7	9.0	9.0	9.0	8.5	8.7	8.7	6.8	5.6
VOC	lb/hr	4.4	4.4	2.1	1.6	2.6	4.4	4.4	2.4	4.2	4.2	2.0	1.6
NH3	lb/hr	5.4	5.4	4.3	3.4	5.4	5.4	5.4	5.1	5.2	5.2	4.1	3.3
Particulates - Filterable + Condensable, Including Sulfates	lb/hr	12.2	11.7	11.2	12.1	11.6	11.1	12.0	11.4	11.0	11.9	13.8	15.5