Connecticut Department of

ENERGY &
ENVIRONMENTAL
PROTECTION

BUREAU OF AIR MANAGEMENT
NEW SOURCE REVIEW PERMIT
TO CONSTRUCT AND OPERATE A STATIONARY SOURCE

Issued pursuant to Title 22a of the Connecticut General Statutes (CGS) and §22a-174-3a of the Regulations of Connecticut State Agencies (RCSA).

Owner/Operator	Plainfield Renewable Energy LLC
Address	12 Mill Brook Road, Plainfield, CT 06374
Equipment Location	12 Mill Brook Road, Plainfield, CT 06374
Equipment Description	37.5 MW (net) Biomass Fluidized Bed Gasification Power Plant
Town-Permit Numbers	145-0049
Premises Number	0074
Stack Number	1
Collateral Conditions	This permit contains collateral conditions for two unpermitted emergency engines concerning hours of operation and NOx emissions reduction credits.
Prior Permit Issue Dates	December 8, 2011 (Minor Modification) December 29, 2010 (Original)
Modification Issue Date	July 13, 2017
Expiration Date	None

/s/ Anne Gobin for
Robert J. Klee
Commissioner

July 13, 2017
Date

This permit specifies necessary terms and conditions for the operation of this equipment to comply with state and federal air quality standards. The Permittee shall at all times comply with the terms and conditions stated herein.

PART I. DESIGN SPECIFICATIONS

A. General Description

Plainfield Renewable Energy LLC operates a biomass fired fluidized bed, staged gasification process with a close-coupled boiler to power a steam turbine generator. The biomass fuel comes from various sources which includes forest management residues, land clearing debris, waste wood from industries, construction and demolition (C&D) waste. The C&D waste fuel that is used in this facility is not considered a solid waste pursuant to the definition of Non-Hazardous Secondary Materials (NHSM) found in 40 CFR Part 241 Subpart B.

The primary use of bio-diesel (B100) is during startup. The startup burners are used to heat the fluidized bed up to approximately 550^0F before biomass is introduced to the gasifier. The co-firing of biomass and B100 occurs until such time that the selective non-catalytic reduction (SNCR) control device reaches operational temperature.

B. Equipment Design Specifications

1. Fuel Types:
   a. Wood Biomass
   b. Bio-Diesel (B100)

2. Maximum Fuel Consumption:
   a. Biomass: 1,357 tons/day
   b. B100: 781 gal/hr

3. Maximum Heat Input (MMBtu/hr):
   a. Biomass: 523.1 based on a HHV of 4,624 Btu/lb
   b. B100: 100, all three burners combined, based on a HHV of 128,047 Btu/gal
   c. Heat Input for biomass and B100 are considered nominal values, based on average heat content for each fuel. In practice the actual heat input will vary for each fuel depending on fuel type and/or supplier.

4. Nominal Electrical Generation (MW): 37.5 (net)

5. Maximum Steam Capacity:
   a. Feedwater Heater in service: 363,699 pph @ 955^0F and 1,550 psia
   b. Feedwater Heater out of service: 337,784 pph @ 955^0F and 1,550 psia

C. Control Equipment Design Specifications

1. Baghouse: PM/PM_{10}/$PM_{2.5}$ (filterable), SOx, HCL and metals
   a. Make and Model: Dustex – Model 6139 Pulse Jet Fabric Filter
   b. Number of compartments: 6 compartments; 270 bags/compartment
   c. Expected Control Efficiency: 99%

2. Multicyclone: PM
   a. Make and Model: Barron Fan Technology
   b. Expected Control Efficiency: 80%

3. Selective Non-Catalytic Reduction (SNCR): NOx
   a. Make and Model: Spraying Systems Technology
   b. Expected Control Efficiency: 70%

4. Spray Dryer and Bed Additive Injection: SOx, HCl and metals
   a. Make and Model: Dustex; Energy Products of Idaho
   b. Additive: Limestone
   c. Expected Control Efficiency: 90%, includes baghouse

D. Stack Parameters

1. Minimum Stack Height (ft): 155

2. Minimum Exhaust Gas Flow Rate at Maximum Rated Capacity (acfm): 206,585 (biomass); 25,992 (B100)

3. Minimum Stack Exit Temperature at Maximum Rated Capacity (°F): 225

4. Minimum Distance from Stack to Property Line (ft): 69

PART II. OPERATIONAL CONDITIONS

A. Equipment

1. Maximum Biomass Consumption over any Consecutive 12 Month Period (tons/yr): 495,305

2. Maximum Biomass Chlorine Content (% by weight, dry basis): 0.15 [State Only Requirement]

3. Allowable Biomass fuels may be utilized up to 100% of any of the following:

Biomass Wood	**Description**
Land Clearing Debris	Chipped trees, stumps, branches or brush as defined in RCSA §22a-208a-1
Recycled Wood or Clean Wood	Recycled wood or clean wood means any wood or wood fuel which is derived from such products or processes as pallets skids, spools, packaging materials, bulky wood waste or scraps from newly built wood products, provided such wood is not treated wood. [CGS §22a-209a and RCSA §22a-208a-1] ***Note: "Treated wood" means wood which contains an adhesive, paint, stain, fire retardant, pesticide or preservative [CGS §22a-209a(2)]. The use of treated wood containing pesticide or preservatives shall not be considered an allowable fuel pursuant to the definition of "regulated wood fuel" [CGS §22a-209a(4)].**

Regulated Wood Fuel Processed Construction and Demolition Wood	Regulated wood fuel means processed wood from construction and demolition activities which has been sorted to remove plastics, plaster, gypsum wallboard, asbestos, asphalt shingles and wood which contains creosote or to which pesticides have been applied or which contains substances defined as hazardous under section CGS §22a-115. [CGS §22a-209a] (State Enforceable Only) **Includes Federal definition of non-hazardous secondary materials (NHSM) found in 40 CFR Part 241 Subpart B**
Other Clean Wood	Other types if properly sized, clean, uncontaminated wood materials, such as sawdust, chips, bark, tree trimmings or other similar materials

4. Maximum B100 Fuel Consumption during Startup Operations per calendar year (gal/yr): 390,500

5. Maximum Hours of Startup Operations per calendar year shall be less than 500. All hours of refractory curing count toward the hourly annual limit for startup.

6. No Startup or Shutdown event shall exceed 14 hours in duration (unless the startup includes refractory curing).

7. Maximum B100 Fuel Sulfur Content (% by weight, dry basis):
   a. 0.05 (Through June 30, 2018)
   b. 0.0015 (July 1, 2018 and thereafter)

8. The Permittee shall not cause or allow the baghouse unit to operate at a temperature above the manufacturer's recommended design range for the bag material used.

9. The baghouse filter media shall use acid resistant coatings.

10. The Permittee shall operate the Fuel Handling particulate controls, including all aspects of truck unloading, conveying/transfer points, disc screening/wood hogging, and storage piles at all times the plant is receiving/processing biomass fuel as follows:
    a. Storage Piles
       i. Maintain wind screen on the fuel shed (fuel building) on all sides except for the equipment access openings. These openings shall be equipped with doors that will remain closed when processing fuel except for periods when physical access is required for maintenance or fuel handling.
       ii. Use Best Management Practices on the Long Term Storage Piles (all outside storage), which shall include but not be limited to the following:
           1. Biomass storage piles shall be managed on a first-in/first-out basis to minimize the accumulation of older fuel to the fullest extent practical.
           2. Mechanical moving of biomass by front end loaders or other equipment shall be minimized to the fullest extent possible when windblown dust is observed by plant personnel;
           3. Daily visual observations of the piles shall be performed to assess the potential for fugitive emissions formation. The Permittee shall be required to record observations and dust mitigation methods that are used; and
           4. The use of water sprays or other covering materials shall be used to prevent airborne particulate matter from crossing the property line regardless of the impact on fuel quality.

iii. The Generation Building Fuel Reject Chute shall be enclosed on three sides with a storage flap over the opening for equipment access.
iv. Storage piles shall not cause opacity greater than 20% during any six-minute block average.

b. Tipping Area
i. Use of dry fog suppression around all areas of the tipping pad (associated with the truck tippers) that are open to the atmosphere at all times the plant is receiving wood;
ii. Wind screen to partially enclose the area directly behind and to the sides of the receiving area so that the receiving area is below the dry fogging devices;
iii. Daily visual observations of the dry fog system shall be performed to ensure that the spray nozzles are not clogged and operating as designed;
iv. Dry fog suppression shall be used at all times that the plant is receiving/processing wood in the tipping area; and
v. Opacity shall not exceed 20% during any six-minute block average.

c. Conveyors and Transfer Points
i. All ¾ enclosed conveyors (the material conveying portion of the belt is ¾ enclosed) shall use dry fog at the transfer points;
ii. All open conveyors and transfer points will use dry fog and wind screens;
iii. All conveyors from the fuel shed to the boiler will be ¾ enclosed (the material conveying portion of the belt is ¾ enclosed);
iv. Operation of the conveyors shall immediately cease if clogging and/or spilling of the fuel material is detected, the conveyors may resume operation only after the conveyor has been adequately cleaned. All reasonable measures will be taken to prevent fugitive dust emissions during the cleaning and operation of the conveyors;
v. Dry fog suppression shall be used at all times that the plant is processing wood fuel;
vi. Use the automated telescoping chute on the outdoor storage pile to limit the fuel drop to less than three feet; and
vii. Opacity shall not exceed 20% during any six-minute block average.

d. Disc Screen and Wood Hog
i. Full enclosure surrounding the disc screen and wood hog;
ii. Dry Fog Suppression shall be used at all times the plant is processing wood fuel; and
iii. Opacity shall not exceed 20% in any six-minute block average.

e. A water vehicle and dust sweeping vehicle (or alternative and equally effective dust suppression methods) must be available on site at all times and be used as needed. If the water vehicle and dust sweeping vehicle is not available (i.e. required maintenance) the facility shall employ alternative and equally effective dust suppression methods.

f. Transporting Wood and Ash
i. Vehicles transporting wood and ash shall keep their beds covered at all times when the vehicles enter and exit the premises.
ii. Upon unloading the wood into the tippers and prior to leaving the premises, visual observations of the vehicles shall be performed to ensure that there are not any loose materials hanging on the exterior of the vehicles.

11. The Permittee shall operate the Ash Handling particulate controls, including all aspects of truck loading, conveying/transfer points at all times the plant is conveying ash to include the following:
a. Ash silos vented to the baghouse or negative pressure dry conveyance to enclosed trailers;
b. Pug Mill shall be used to add water to increase moisture content to approximately 20%. The Permittee may transfer dry ash to enclosed trailers under negative pressure; and
c. Opacity shall not exceed 20% in any six-minute block average.

12. The Permittee shall operate, the Packer Road Pump House (EU-4) and the Fire Pump (EU-5) emergency engines less than 300 hours in any calendar year, combined.

13. Bed Additive Injection shall be used to supplement spray dryer as necessary to achieve compliance with the SO_2 steady state emission limit in Part III of this permit.

B. Definitions

1. "Steady-state" operation shall be defined as operation of the fluid bed gasifier when the temperature at the SNCR reaches a minimum of 1,500°F triggering the injection of urea and compliance with the applicable steady state emissions limits. Additionally, steady-state operation shall include all modes of operation during which the fluid bed gasifier load exceeds 50% of the manufacturer's specified maximum.

2. "Malfunction" shall be defined as any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment or a process to operate in a normal or usual manner. Failures that were caused in part by poor maintenance or careless operation are not malfunctions.

3. "Startup" shall be defined as the time when bio-diesel (B100) is first fired in the unit and continues once biomass is introduced to the gasifier, until such time that the unit reaches sufficient temperature for urea injection (est. 1,500°F) and NOx analyzer response, not to exceed 14 hours (unless the startup includes refractory curing).

4. "Shutdown" shall be defined as the time when the feed of all fuel is zero and the temperature at the urea injection falls below the reaction temperature.

5. "Transient" operation shall include and describe the operation of the plant during all phases of startup, shutdown, fuel switching and equipment cleaning where the fluidized bed gasifier load is less than 50% of the manufacturer's specified maximum.

6. "Bio-diesel (B100)" shall be defined as a petroleum replacement fuel consisting of 100% virgin and/or used vegetable oils (both edible & non-edible) and/or animal fats as defined by ASTM D6751. No petroleum (distillate) fuel oil shall be blended with the B100 fuel.

7. The "Administrator" means the Administrator of the United States Environmental Protection Agency. [RCSA §22a-174-1(3)]

8. The "commissioner" means the Commissioner of the Department of Energy and Environmental Protection, or any member of the Department or any local air pollution control official or agency authorized by the commissioner, acting singly or jointly, to whom the commissioner assigns any function arising under the provisions of these regulations. [RCSA §22a-174-1(23)]

PART III. ALLOWABLE EMISSION LIMITS

The Permittee shall not cause or allow this equipment to exceed the emission limits stated herein at any time.

A. Primary Fuel: Biomass, Steady State Emissions

Pollutant	lb/MMBtu	Enforceable Limits for Pollutants Monitored by CEMS (ppmvd @ 7% O_2)	Tons/Year Includes All Modes of Operation
PM_{10} (total, includes filterable and condensable)	0.021		45.8
$PM_{2.5}$ (total, includes filterable and condensable)	0.037		84.8
SO_2	0.035	15.4	81.29
NOx	0.075	45.3	171.29
VOC	0.012		26.59
CO	0.105	103.7	239.47
Pb	1.4E-04		0.32
Ammonia		20 [State-Only Requirement]	

Note: Equivalent lb/MMBtu emission rates for SO_2, NOx and CO based on wood F-factor of 9,240 dscf/MMBtu. [40 CFR Part 60, Appendix A, Table 19-2]

B. Transient Operation, including Startup and Shutdown Emissions

Pollutant	lb/MMBtu	Duration/Event
NO_x	0.20	14 hours
VOC	0.03	14 hours
CO	1.0	14 hours

1. Emission limits for particulate matter, SO_2, and Pb shall be at steady state values.

C. Hazardous Air Pollutants

1. This equipment shall not cause an exceedance of the Maximum Allowable Stack Concentration (MASC) for any hazardous air pollutant (HAP) emitted and listed in RCSA §22a-174-29. The Permittee may be required to demonstrate compliance for any hazardous air pollutant emitted from this unit that is listed on Table 29-1, Table 29-2, or Table 29-3 of RCSA §22a-174-29. [STATE ONLY REQUIREMENT]

2. This equipment shall not exceed the following limits for any Hazardous Air Pollutant (HAP) listed in Section 112(b) of the Clean Air Act Amendments of 1990 at this premises:

Pollutant	lb/MMBtu	Actual Stack Concentration ug/m^3	Tons/Year
Section 112(b) HAP	0.00436	2,834	10

D. Opacity

Emissions from fuel combustion shall not exceed 10% opacity during any six minute block average as measured by 40 CFR Part 60, Appendix A, Reference Method 9.

E. Demonstration of compliance with the above emission limits shall be met by calculating the emission rates using emission factors from the following sources:

- CEM data for NOx, SO_2, CO, Ammonia, and Opacity
- Latest stack testing for all other pollutants

The commissioner may require other means (e.g. stack testing) to demonstrate compliance with the above emission limits, as allowed by state or federal statute, law or regulation.

PART IV. MONITORING, RECORD KEEPING AND REPORTING REQUIREMENTS

A. Monitoring

1. The Permittee shall comply with the CEM or COMS (opacity) requirements as set forth in RCSA §22a-174-4. CEM shall be required for the following pollutant parameters and enforced on the following basis:

Pollutant/Parameter	Averaging Times	Emission Limit	Units
Opacity (Boiler Exhaust Stack)	six minute block	10%	
SO_2	3 hour block	15.4	ppmvd @ 7% O_2
NOx (Steady State)	24 hour block	45.3	ppmvd @ 7% O_2
NOx (Startup & Shutdown)	24 hour block	0.20	lb/MMBtu
CO (Steady State)	8 hour block	103.7	ppmvd @ 7% O_2
CO (Startup & Shutdown)	8 hour block	1.0	lb/MMBtu
O_2	1 hour block		%
Ammonia [State-Only Requirement]	24 hour block	20	ppmvd @ 7% O_2

2. The Permittee shall continuously monitor the following operational parameters:

Operational Parameter	Averaging Times	Units
Steam Load (Capacity)	4 hour block	Steam Flow (pounds per hour)
Baghouse Inlet Temperature	1 hour block	^{0}F
Baghouse Leak Detection	1 hour average (rolling), alarm triggers when the output exceeds 50% of full range of the detector.	Pico Amps
Pressure Drop Across Baghouse	1 hour block	Inches of water
SNCR Temperature	1 hour block	^{0}F

3. Implementation of the Startup and Shutdown monitoring for NOx and CO emissions shall be completed within 60 days of the issuance of this modified permit (Application No. 201509888)

4. The Permittee shall continuously monitor wood biomass consumption.

5. The Permittee shall continuously monitor wood biomass heat input by using hourly steam production.

6. The Permittee shall continuously monitor B100 fuel consumption using a non-resettable totalizing fuel meter, and the hours of operation associated with each operating scenario (startup and shutdown conditions).

7. The Permittee shall continuously monitor all hours of operation for the startup burners.

8. The Permittee shall monitor the calendar hours of operation for the combustion units identified as EU-2, EU-4, and EU-5 in Part VII.A of this permit.

9. The Permittee shall comply with the monitoring requirements for opacity and nitrogen oxides (NOx) as required in 40 CFR §60.48b.

10. The Permittee shall operate a bag leak detection system on the baghouse at all times the gasifier is in operation. The system shall be subject to the following:
    a. The bag leak detection system must be installed and maintained in accordance with the manufacturer's recommendations. Measurement of particulate emissions from baghouse leak detection system is to provide relative values rather than actual particulate emissions.
    b. The bag leak detection system shall provide an output that will be converted to percent range of the detector.
    c. The system shall be equipped with an alarm system that will sound an audible alarm when the 60 minute average exceeds 50% of full range for the detector.

d. The system shall be installed and operated in a manner consistent with available written guidance from the U. S. Environmental Protection Agency or, in the absence of such written guidance, the manufacturer's written specifications and recommendations for installation, operation and adjustment of the system. Data availability for this system will be consistent with the data availability requirements for the Permittee's Continuous Emissions Monitoring System (CEMS) as detailed in the Permittee's CEMS QA Plan, submitted and approved in accordance with RCSA Section 22a-174-4.

11. The O&M plan required pursuant to Part VII.B of this permit must include a corrective measures plan that specifies the procedures to be followed in the case of a bag leak detection system alarm. The corrective measures plan must include, at a minimum, the procedures used to determine and record the time and cause of the alarm as well as the corrective measures taken to correct the control device malfunction or minimize emissions as specified below:
    a. the applicant must initiate the procedures used to determine the cause of the alarm within 30 minutes of the time the alarm first sounds; and
    b. must alleviate the cause of the alarm by taking the necessary corrective measure(s) which may include, but are not to be limited to inspecting the baghouse for air leaks, torn or broken filter elements, or any other malfunctions that may cause an increase in emissions; sealing off defective bags or filter media; replacing defective bags or filter media, or otherwise repairing the control device; sealing off a defective baghouse compartment; cleaning the bag leak detection probe, or otherwise repairing the bag leak detection system; or shutting down the combustor.

12. The Permittee shall monitor all biomass deliveries to the plant.

13. The Permittee shall perform inspections of the boiler control devices as recommended by the manufacturer.

14. The Permittee shall perform daily inspections/observations of the fuel handling system control devices. EPA Method 22 is sufficient for conducting visual observations.

B. Record Keeping

1. The Permittee shall keep records of monthly and consecutive 12 month fuel consumption, for each fuel. The consecutive 12 month fuel consumption shall be determined by adding (for each fuel) the current month's fuel consumption to that of the previous 11 months. The Permittee shall make these calculations within 30 days of the end of the previous month.

2. The Permittee shall keep records of the fuel certification for each delivery of bio-diesel (B100) from a bulk petroleum provider or a copy of the current contract with the fuel supplier supplying the fuel used by this equipment that includes the applicable sulfur content of the fuel as a condition of each shipment. The shipping receipt or contract shall include the date of delivery, the name of the fuel supplier, type of fuel delivered, the percentage of sulfur in such fuel, by weight, dry basis, and the method used to determine the sulfur content of such fuel.

3. The Permittee shall make and keep records of the C&D fuel deliveries from each fuel provider. The records shall be sufficient to determine the following:
    a. The shipping receipt or contract shall include the date of delivery, the name of the fuel supplier, type of fuel delivered, the percentage of chlorine in such fuel, by weight, dry basis, and the method used to determine the chlorine content of such fuel.

b. The methods used to certify that the C&D fuel meets the definition of "regulated wood fuel: as defined in CGS §22a-209a.
c. The methods used to certify that the wood fuel meets the definition of a non-hazardous secondary material that are not considered a solid waste as defined in 40 CFR Part 241 Subpart B.

4. The Permittee shall calculate and record the monthly and consecutive 12 month PM, PM_{10}, $PM_{2.5}$, SO_2, NOx, VOC, and CO emissions in units of tons. The consecutive 12 month emissions shall be determined by adding (for each pollutant) the current month's emissions to that of the previous 11 months. The Permittee shall make these calculations within 30 days of the end of the previous month. Startup, Shutdown, and Transient emissions shall be included in this calculation.

5. The Permittee shall calculate and record the monthly and consecutive 12 month NOx emissions in units of tons. The calculation shall include the emissions from this unit and the three emergency engines identified as EU-2, EU-4, and EU-5 in Part VII.A of this permit. Such records shall include a sample calculation for each pollutant. Startup, Shutdown, and Transient emissions shall be included in this calculation, where applicable.

6. The Permittee shall make and keep records of the MASC and ASC for hazardous air pollutants subject to either initial or recurring testing.

7. The Permittee shall calculate and record the monthly and consecutive 12 month hazardous air pollutant emissions in tons based on the latest stack test data. The consecutive 12 month emissions shall be determined by adding (for each pollutant) the current month's emissions to that of the previous 11 months. The Permittee shall make and keep records of all Hazardous Air Pollutant (HAP) listed in Section 112(b) of the Clean Air Act Amendments of 1990 emitted at this premises for which emission factors are available, using either AP-42 or stack emissions data.

8. The Permittee shall make and keep records of hours of operation for all startup and shutdown events, including transient events.

9. The Permittee shall make and keep records of the wood biomass heat input on an hourly block average basis using steam production. Records shall include a sample calculation converting actual steam production to heat input.

10. The Permittee shall make and keep records of the baghouse inlet temperature on an hourly block average.

11. The Permittee shall make and keep records of the pressure drop across the baghouse on an hourly block average basis.

12. The Permittee shall make and keep records of the temperature of the gasifier gas entering the urea injection phase of the NOx control system on an hourly block average basis.

13. The Permittee shall make and keep records of the hours of operation for the two unpermitted emergency engines identified as EU-4 and EU-5 in Part VII.A of this permit, combined.

14. The Permittee shall maintain records of all performance tests conducted to determine compliance with the emissions limits in Part III of this permit.
15. The Permittee shall develop pollution control inspection procedures pursuant to the manufacturer's recommendations.

16. The Permittee shall make and keep records of all inspections to pollution control devices. These records shall include the date of inspection, any findings of pollution control failures and the time period for corrective action.

17. The Permittee shall develop a written startup, shutdown and malfunction (SSM) plan.

18. The Permittee shall make and keep records for the bag leak detection system consisting of the date, time and duration of each alarm, the time corrective action was initiated and completed, a brief description of the cause of the alarm, and the corrective action taken.

19. The Permittee shall make and keep records as pursuant to RCSA §22a-174-22 and §22a-174-22e.

20. The Permittee shall comply with the reporting and recordkeeping requirements as required in 40 CFR §60.49b.

21. The Permittee shall record each and every exceedance of an emission limit or operating parameter contained in this permit. Such records shall include the date and time of the exceedance, a description of the exceedance, and the duration of the exceedance. Such report shall contain copies of the exceedance records for the month, an explanation of the likely causes of the exceedances, and an explanation of remedial actions taken to correct the exceedance.

22. The Permittee shall record daily the observations from the fuel handling equipment, which includes the tipping area, conveyors, disc screen/hog, storage piles and ash pug mill. The records shall include, but are not limited to the following:
    a. The date and time of the observation;
    b. Recording the presence of visible emissions or faulty control systems;
    c. Length of time the control system was inoperable; and
    d. Description of all corrective actions and preventative measures take.

23. The Permittee shall maintain records of stack test results.

24. The Permittee shall make and keep all records required by this permit for a period of no less than five years and shall submit such records to the commissioner upon request.

C. Reporting

1. The Permittee shall submit all required reports pursuant to RCSA §22a-174-4(d), §22a-174-22 and §22a-174-22e.

2. The Permittee shall notify the commissioner in writing each calendar quarter of any malfunction of the fluidized bed gasifier, the air pollution control equipment or the continuous monitoring system. The Permittee shall submit such notification within 30 days following the end of each calendar quarter. The notification shall include the following:
   a. Description of the malfunction, date and time, the duration and a description of the circumstances surrounding the cause or likely cause of such malfunction and;

   b. Description of all corrective actions and preventative measures taken and/or planned with respect to such malfunction.

PART V. STACK EMISSION TEST REQUIREMENTS

A. Stack emission testing shall be performed in accordance with the Emission Test Guidelines available on the DEEP website.

B. Recurrent stack testing for the following pollutants shall be conducted no sooner than 51 months but no later than 75 months from the previous stack test.

☒ PM ☒ PM_{10} ☒ $PM_{2.5}$ ☒ VOC

C. Recurrent HAP testing shall be conducted annually, but not more than 13 calendar months following the previous performance test. Compliance shall be determined by an annual performance test, either by fuel analysis and/or stack testing, if applicable.

1. ☒ HAPs: Hydrogen Chloride, Lead, Arsenic

2. Opacity testing for the fuel handling system found in Part II.A.10 of this permit.

E. Pollutants using CEM, may not be required to conduct recurring stack testing.

F. Maximum Steam capacity, as limited in Part I.B.5 of this permit, may be used to determine maximum rated capacity (MRC) during performance tests.

G. Stack test results shall be reported as follows: Criteria pollutants in units of lb/MMBtu and/or ppmvd @ 7% O_2, HAPs in units of $\mu g/m^3$.

PART VI. OPERATION AND MAINTENANCE REQUIREMENTS

A. The Permittee shall operate and maintain this equipment in accordance with the manufacturer's specifications and written recommendations.

B. The Permittee shall operate and maintain pollution control devices in accordance with the manufacturer's specifications and written recommendations at all times during normal operation. During transient operation, pollution control devices shall be operated according to the manufacturer's specifications and written recommendations. The fluidized bed gasifier can be operated without SNCR urea or ammonia injection during a startup/shutdown when the SNCR is not within the manufacturer's specified operating temperature range.

PART VII. SPECIAL REQUIREMENTS

A. The Permittee shall possess at least 210 tons of external emissions reductions to offset the 174.25 tons of allowable NO_x emissions from the following sources to comply with RCSA §22a-174-3a(l):

- EU-1: 37.5 MW Biomass Fluidized Bed Gasification Power Plant, Permit Number 145-0049
- EU-2: 500 kW Cummins DFEK ULSD fired emergency generator engine, 12 Mill Brook Road, RCSA §22a-174-3b(e)
- EU-4: 150 kW Cummins DSGAC ULSD emergency generator engine, Packer Road Pump House
- EU-5: 157 bhp Clarke/John Deere ULSD fired emergency fire pump engine, 12 Mill Brook Road

Such a quantity is sufficient to offset the emissions from the sources listed above at a ratio of 1.2 to 1 tons of reduction for every ton of NOx emissions allowed under the sources listed above. Specifically, the reductions are real, quantifiable, surplus, permanent, and enforceable as defined in RCSA §22a-174-3a(l)(5). The Permittee shall maintain sole ownership and possession of these emissions reductions for the duration of this permit and any subsequent changes to the permit.

Such offsets have been obtained from the following sources:

- Shell Energy North America - (Serial No. NYDEC-1-4720-00777-37.95)
- Shell Energy North America - (Serial No. NYDEC-1-4722-00799-56.15)
- OSRAM Sylvania - (Serial No. RI-DEM-21-07-115.9)

The offsets were approved by the Department on December 28, 2010. The Permittee shall maintain sole ownership and possession of these emissions reductions for the duration of this permit and any subsequent changes to the permit.

B. Within thirty (30) days of the issuance of this modified permit (Application No. 201509888) the Permittee shall submit a revised Compliance Plan and implementation schedule that was required pursuant to Consent Order No. 2015001DEEP, to implement the requirements found in Part II.A.10 of this permit.

C. The Permittee shall maintain an operating and maintenance plan (O&M) in accordance with the manufacturer's specifications and written recommendations. Appropriate records shall be made to verify that there is proper operation, monitoring and maintenance of all pollution control devices. The plan shall detail the procedures for operation, inspection, maintenance and corrective measures for all components of the combustor, including all associated pollution control equipment.

D. The Permittee shall comply with all applicable sections of the following New Source Performance Standards at all times.

Title 40 CFR Part 60 Subparts Db and A

Copies of the Code of Federal Regulations (CFR) are available online at the U.S. Government Printing Office website.

E. The Permittee shall comply with all applicable sections of the following National Emission Standards for Hazardous Air Pollutants at all times.

Title 40 CFR Part 63 Subparts JJJJJJ and A

Copies of the Code of Federal Regulations (CFR) are available online at the U.S. Government Printing Office website.

F. The Permittee shall not cause or permit the emission of any substance or combination of substances which creates or contributes to an odor beyond the property boundary of the premises that constitutes a nuisance as set forth in RCSA §22a-174-23. [STATE ONLY REQUIREMENT]

G. The Permittee shall operate this facility at all times in a manner so as not to violate or contribute significantly to the violation of any applicable state noise control regulations, as set forth in RCSA Sections 22a-69-1 through 22a-69-7.4. [STATE ONLY REQUIREMENT]

PART VIII. ADDITIONAL TERMS AND CONDITIONS

A. This permit does not relieve the Permittee of the responsibility to conduct, maintain and operate the regulated activity in compliance with all applicable requirements of any federal, municipal or other state agency. Nothing in this permit shall relieve the Permittee of other obligations under applicable federal, state and local law.

B. Any representative of DEEP may enter the Permittee's site in accordance with constitutional limitations at all reasonable times without prior notice, for the purposes of inspecting, monitoring and enforcing the terms and conditions of this permit and applicable state law.

C. This permit may be revoked, suspended, modified or transferred in accordance with applicable law.

D. This permit is subject to and in no way derogates from any present or future property rights or other rights or powers of the State of Connecticut and conveys no property rights in real estate or material, nor any exclusive privileges, and is further subject to any and all public and private rights and to any federal, state or local laws or regulations pertinent to the facility or regulated activity affected thereby. This permit shall neither create nor affect any rights of persons or municipalities who are not parties to this permit.

E. Any document, including any notice, which is required to be submitted to the commissioner under this permit shall be signed by a duly authorized representative of the Permittee and by the person who is responsible for actually preparing such document, each of whom shall certify in writing as follows: "I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that any false statement made in the submitted information may be punishable as a criminal offense under section 22a-175 of the Connecticut General Statutes, under section 53a-157b of the Connecticut General Statutes, and in accordance with any applicable statute."

F. Nothing in this permit shall affect the commissioner's authority to institute any proceeding or take any other action to prevent or abate violations of law, prevent or abate pollution, recover costs and natural resource damages, and to impose penalties for violations of law, including but not limited to violations of this or any other permit issued to the Permittee by the commissioner.

G. Within 15 days of the date the Permittee becomes aware of a change in any information submitted to the commissioner under this permit, or that any such information was inaccurate or misleading or that any relevant information was omitted, the Permittee shall submit the correct or omitted information to the commissioner.

H. The date of submission to the commissioner of any document required by this permit shall be the date such document is received by the commissioner. The date of any notice by the commissioner under this permit, including but not limited to notice of approval or disapproval of any document or other action, shall be the date such notice is personally delivered or the date three days after it is mailed by the commissioner, whichever is earlier. Except as otherwise specified in this permit, the word "day" means calendar day. Any document or action which is required by this permit to be submitted or performed by a date which falls on a Saturday, Sunday or legal holiday shall be submitted or performed by the next business day thereafter.

I. Any document required to be submitted to the commissioner under this permit shall, unless otherwise specified in writing by the commissioner, be directed to: Office of Director; Engineering & Enforcement Division; Bureau of Air Management; Department of Energy and Environmental Protection; 79 Elm Street, 5th Floor; Hartford, Connecticut 06106-5127.