



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Northeast Regional Office • 205B Lowell Street, Wilmington MA 01887 • 978-694-3200

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Commissioner

February 23, 2012

Mr. Rory Gaunt
Lifecycle Renewables, Inc.
27 Mugford Street
Marblehead, MA 01945

RE: *EVERETT*
Transmittal No.: X239225
Application No.: MBR-11-COM-006
Class: *NM25*
FMF No.: *528590*
**AIR QUALITY PLAN
APPROVAL**

Dear Mr. Gaunt:

The Massachusetts Department of Environmental Protection (“MassDEP”), Bureau of Waste Prevention, has reviewed your Non-major Comprehensive Plan Application (“Application”) listed above. This Application concerns the existing, unapproved construction and proposed operation of a combined heat and power (CHP) engine/generator project fueled by waste vegetable oil at the Whole Foods Market (WFM) commissary facility located at 9 Commercial Street in Everett, Massachusetts (“Facility”). MassDEP and Lifecycle Renewables, Inc. entered into an Administrative Consent Order (ACOP) (ACOP-NE-12-7001 dated February 22, 2012) resolving compliance issues concerning the commencement of installation of the engine/generator without written MassDEP approval. The Application bears the seal and signature of Mr. Paul A. Murphy, Massachusetts Registered Professional Engineer number 41840.

This Application was submitted in accordance with 310 CMR 7.02 Plan Approval and Emission Limitations as contained in 310 CMR 7.00 “Air Pollution Control,” regulations adopted by MassDEP pursuant to the authority granted by Massachusetts General Laws, Chapter 111, Section 142 A-J, Chapter 21C, Section 4 and 6, and Chapter 21E, Section 6. MassDEP’s review of your Application has been limited to air pollution control regulation compliance and does not relieve you of the obligation to comply with any other regulatory requirements.

MassDEP has determined that the Application is administratively and technically complete and that the Application is in conformance with the Air Pollution Control regulations and current air pollution control engineering practice, and hereby grants this **Plan Approval** for said Application, as submitted, subject to the conditions listed below.

Please review the entire Plan Approval, as it stipulates the conditions with which the Facility owner / operator (“Permittee”) must comply in order for the Facility to be operated in compliance with this Plan Approval.

1. DESCRIPTION OF FACILITY AND APPLICATION

Lifecycle Renewables, Inc. (“Permittee”) is proposing to own and operate a 500 kilowatt (kw) rated internal combustion engine generating system that will provide power to the WFM commissary at 9 Commercial Street in Everett, MA. Through normal cooking operations, WFM produces approximately 1,000 gallons of waste vegetable oil (WVO) per week. The Permittee collects WVO from the commissary and other WFM sites throughout New England and refines the WVO offsite into a renewable fuel called LR100. LR100 is comprised of 100 percent refined WVO.

The Massachusetts Clean Energy Center has provided financing for this project. The Permittee collects and refines LR100 fuel under a MassDEP Beneficial Use Determination, File No. X236408. The Permittee installed a Cummins Model DFEK 500 kw engine (EU1) which shall be restricted to produce no more than 250 kw of energy for the WFM commissary. The Permittee has agreed to limit the operation of EU1 to no more than five years after commencement of its operation.

EU1 shall be restricted to a maximum heat input capacity of 2,558,000 British thermal units per hour (Btu per hr). This heat input capacity is based on a higher heating value of 147, 100 million Btu per gallon of WVO. EU1 will then be capable of combusting up to 17.4 gallons per hour of WVO at 50% load.

This project is subject to New Source Performance Standards (NSPS), 40 CFR Part 60, Subpart III and the National Emission Standards for Hazardous Air Pollutants (NESHAPS) for Stationary Reciprocating Internal Combustion Engines, 40 CFR Part 63, Subpart ZZZZ. Best Available Control Technology (BACT) for EU1 is defined as the pounds per hour limits in Table 2.

2. EMISSION UNIT (EU) IDENTIFICATION

Emission Unit (EU1) identified in Table 1 is subject to and regulated by this Plan Approval:

Table 1 +			
EU#	Description	Design Capacity	Pollution Control Device (PCD)
1	Cummins Model 500DFEK engine	2.6 MMBtu/hr	None

+Table 1 Key:

EU# = Emission Unit Number

PCD = Pollution Control Device, MMBtu/hr = Million British thermal units per hour

3. APPLICABLE REQUIREMENTS

A. OPERATIONAL, PRODUCTION AND EMISSION LIMITS

The Permittee is subject to, and shall not exceed the Operational, Production, and Emission Limits as contained in Table 2, below:

Table 2+						
EU#	POLLUTANT	OPERATIONAL/ PRODUCTION LIMITS	POUNDS PER HOUR ¹	ALLOWABLE TONS PER MONTH ²	ALLOWABLE EMISSIONS TONS PER 12 MONTH ROLLING PERIOD ²	
1	NO _x	101,338 gal WVO per 12 month rolling period	2.70	1.0	7.80	
	CO		0.160	0.10	0.50	
	VOC/HAPs		0.10	0.10	0.20	
	PM/PM ₁₀ /PM _{2.5}	12,946 gal WVO/mo.	0.055	0.020	0.160	
	SO ₂		0.004	0.002	0.012	
	CO ₂	17.40 gal WVO /hr. 5,824 hours per 12 month rolling period No more than 60 consecutive months of operation after project startup	195	73	568	
	Opacity	<5%, EXCEPT 5 TO <10% FOR ≤2 MINUTES DURING ANY ONE HOUR				
	Smoke	310 CMR 7.06(1)(a)				

+Table 2 Key and Footnotes:

EU# = Emission Unit Number

WVO = waste vegetable oil

NO_x = Nitrogen Oxides

CO = Carbon Monoxide

SO₂ = Sulfur Dioxide

PM = Total Particulate Matter

PM₁₀ = Particulate Matter less than or equal to 10 microns in diameter

PM_{2.5} = Particulate Matter less than or equal to 2.5 microns in diameter

VOC = Volatile Organic Compounds

HAPs = Hazardous Air Pollutants.

CO₂ = Carbon Dioxide

< = less than

≤ = less than or equal to

% = percent

1 = Excludes Start-up and Shutdown emission rates.

2 = These emission limitations shall apply to all engine/generator loads and conditions.

B. COMPLIANCE DEMONSTRATION

The Permittee is subject to, and shall comply with, the monitoring, testing, record keeping, and reporting requirements as contained in Tables 3, 4, and 5 below:

Table 3 +	
EU#	Monitoring and Testing Requirements
1	<ol style="list-style-type: none"> 1. The Permittee shall conduct a noise survey (during daytime and nighttime operation), which is in accordance with MassDEP guidelines, to demonstrate that the noise impacts from the operation of this EU are in compliance with Regulation 310 CMR 7.10 and the Bureau of Waste Prevention’s Noise Policy No. 90-001 (copy attached). This survey shall be conducted within forty-five (45) days of the commencement of continuous operation of this EU. This noise survey, at a minimum, shall include sound level measurements at “north corner (M3)”, “northeast corner” and the “west property line” as described in Figure 3-2 (Site Plan) of the Application. 2. The Permittee shall conduct emissions compliance testing for NO_x, CO, and CO₂ on this EU within 90 days of the commencement of continuous operation of said EU. All such testing shall be conducted in accordance with the test methods and procedures set forth in 40 CFR 60, Appendix A. All emissions compliance testing shall be witnessed by MassDEP personnel at a mutually agreeable date and time. 3. For compliance testing purposes, this EU shall be constructed so as to accommodate the emissions testing requirements as stipulated in 40 CFR Part 60, Appendix A. The two (2) outlet sampling ports should be located at least two duct diameters upstream and eight duct diameters downstream of any flow disturbance. The corresponding sampling ports should be 90 degrees apart from each other. 4. The Permittee shall monitor the hourly, monthly, and twelve month rolling WVO usage for this unit using a non-resettable fuel flow monitor to document compliance with the applicable limitations contained in Table 2 above. 5. The Permittee shall monitor the weekly, monthly, and twelve month rolling hours of operation for this unit using a non-resettable hour meter to document compliance with the applicable limitations contained in Table 2 above. 6. The Permittee shall conduct additional emissions compliance testing on the subject unit within three years after the initial emissions compliance testing date in accordance with the test methods and procedures set forth in 40 CFR 60, Appendix A.

+Table 3 Key:

EU# = Emission Unit Number, CFR = Code of Federal Regulations, BWP = Bureau of Waste Prevention

Table 4 +

EU#	Record Keeping Requirements
1	<p>1. The Permittee shall maintain adequate records on-site to demonstrate compliance with all operational, production, and emission limits contained in Table 2 above. Records shall also include the actual emissions of air contaminant(s) emitted for each calendar month and for each consecutive twelve month period (current month plus prior eleven months). These records shall be compiled no later than the 15th day following each month. An electronic version of the MassDEP approved record keeping form, in Microsoft Excel format, can be downloaded at http://www.mass.gov/dep/air/approvals/aqforms.htm#report .</p>
	<p>2. The Permittee shall record the hourly, monthly, and twelve month rolling WVO usage for this EU using a non-resettable fuel flow recorder to document compliance with the applicable limitations contained in Table 2 above.</p>
	<p>3. The Permittee shall record the weekly, monthly, and twelve month rolling hours of operation for this unit using a non-resettable hour meter recorder to document compliance with the applicable limitations contained in Table 2 above.</p>
	<p>4. The Permittee shall maintain records of all monitoring and testing as required by Table 3 on site.</p>
	<p>5. The Permittee shall maintain a copy of this Plan Approval, the underlying Application and the most up-to-date SOMP for the EU approved herein on-site.</p>
	<p>6. The Permittee shall quantify all periods of excess emissions, even if attributable to an emergency/malfunction, startup/shutdown or equipment cleaning in the determination of the EU's actual emissions and compliance with the emission limits as stated in Table 2.</p>
	<p>7. The Permittee shall keep monthly records on-site of all operating and maintenance activities for the subject EU and any ancillary monitoring equipment, including the hours of operation (including start-ups and shutdowns) and monthly records of maintenance activities. The maintenance records shall include, at a minimum, the type or a description of the maintenance performed and the date and time the work was completed.</p>

Table 4 +	
EU#	Record Keeping Requirements
1	8. The Permittee shall maintain a record of all malfunctions affecting air contaminant emission rates of the approved EU and monitoring equipment. At a minimum, the records shall include: date and time the malfunction occurred; description of the malfunction; corrective actions taken; and the date and time corrective actions were initiated and completed.
	9. The Permittee shall maintain all records required by this Plan Approval on-site for a minimum of five (5) years.
	10. The Permittee shall make all records required by this Plan Approval available to MassDEP and USEPA personnel upon request.

+Table 4 Key:

- EU# = Emission Unit Number
- PCD = Pollution Control Device
- SOMP = Standard Operating and Maintenance Procedure
- USEPA = United States Environmental Protection Agency

Table 5 +	
EU#	Reporting Requirements
1	1. The Permittee shall notify MassDEP's Northeast Region Office (NERO), in writing, of commencement of operation of this EU within fourteen (14) days thereof.
	2. The Permittee shall submit to MassDEP, NERO, attention BWP Permit Chief, for approval an emissions compliance pretest protocol, at least 30 days prior to said testing, for emissions compliance testing as required in Table 3 Monitoring and Testing Requirements.
	3. The Permittee shall submit to MassDEP, NERO, attention BWP Permit Chief, a final emissions compliance test results report, within forty-five (45) days after said testing, as defined in Table 3 Monitoring and Testing Requirements.

Table 5 +	
EU#	Reporting Requirements
1	4. The Permittee shall submit the Final Standard Operating and Maintenance Procedures (SOMP) for this EU to MassDEP, NERO within sixty (60) days of completion of their required initial compliance testing. Any subsequent changes to the SOMP shall be submitted to MassDEP, NERO, within fifteen (15) days of said revision(s).
	5. The Permittee shall submit the noise survey results to MassDEP, NERO, in writing, attention BWP Permit Chief, within seventy-five (75) days of the commencement of continuous operation of this EU.
	6. The Permittee shall notify the NERO of MassDEP, BWP Compliance and Enforcement Chief by telephone at (978) 694-3277 or email, Nero.Air@MassMail.State.ma.us or fax (978) 694-3499 as soon as possible, but no later than one (1) business day after discovery of any exceedance(s) of Table 2 requirements. A written report shall be submitted to the BWP Compliance and Enforcement Chief at MassDEP, NERO within three (3) business days thereafter and shall include: identification of exceedance(s), duration of exceedance(s), reason for the exceedance(s), corrective actions taken, and action plan to prevent future exceedance(s).
	7. The Permittee shall submit to MassDEP all information required by this Plan Approval over the signature of a "Responsible Official" as defined in 310 CMR 7.00 and shall include the certification statement as provided in 310 CMR 7.01(2)(c).
	8. The Permittee shall provide a copy to MassDEP, NERO of any record required to be maintained by this Plan Approval within 30-days from MassDEP, NERO's request.

+Table 5 Key:

- EU# = Emission Unit Number
- BWP = Bureau of Waste Prevention
- CMR = Code of Massachusetts Regulation
- SOMP = Standard Operating and Maintenance Procedure
- NERO = Northeast Regional Office

11. SPECIAL TERMS AND CONDITIONS

A. The Permittee shall comply with the Special Terms and Conditions as contained in Table 6 below:

Table 6+	
EU#	Special Terms and Conditions
1	<ol style="list-style-type: none"> 1. The Permittee shall permanently disconnect EU1 at the end of its five year operational period; and shall confirm, in writing to MassDEP, NERO attention BWP Permit Chief, that this has occurred within fourteen (14) days thereof. 2. The Permittee shall be allowed to start-up EU1 with ultra low sulfur diesel fuel with a maximum sulfur of 0.0015 percent by weight. No start-up or shutdown of EU1 shall exceed 1 hour. 3. The Permittee shall operate the subject EU consistent with the Final SOMP and the conditions/parameters established during the initial compliance test. 4. The Permittee shall utilize at a minimum, a critical grade silencer prior to the exhaust stack of the subject EU. In addition, the Permittee shall install at a minimum, insulated, sound attenuating air intake louvers; an insulated, sound attenuating hood for the air discharge and sound reduction insulation for the engine/generator enclosure to minimize the potential of noise coming from EU1. 5. Any proposed increase in emissions above the limits contained in this Approval must first be approved in writing by MassDEP pursuant to Regulation 310 CMR 7.02. In addition, any increase may subject the facility to additional regulatory requirements. 6. This Facility is subject to the Federal New Source Performance Standards (NSPS) for Stationary Compression Ignition Internal Combustion Engines (40 CFR Part 60 Subpart III). This regulation includes stationary units at an area source. Since MassDEP has not accepted delegation for Subpart III for area sources, you are advised to consult with the United States Environmental Protection Agency (USEPA) for additional information. There may be additional notification, record keeping and reporting requirements. Their address is US EPA Region 1, 5 Post Office Square – Suite 100, Boston, MA 02109-3912.

Table 6+	
EU#	Special Terms and Conditions
1	7. This Facility is subject to the Federal National Emissions Standards for Hazardous Air Pollutants (NESHAPs) for Stationary Reciprocating Internal Combustion Engines (RICE) under 40 CFR Part 63 Subpart ZZZZ. This regulation includes stationary RICE units at an area source. Since MassDEP has not accepted delegation for Subpart ZZZZ for area sources, you are advised to consult with the United States Environmental Protection Agency (USEPA) for additional information. There may be additional notification, record keeping and reporting requirements. Their address is US EPA Region 1, 5 Post Office Square – Suite 100, Boston, MA 02109-3912.

+Table 7 Key:

EU# = Emission Unit Number
 CFR = Code of Federal Regulations
 CMR = Code of Massachusetts Regulation
 SOMP = Standard Operating and Maintenance Procedure
 BWP = Bureau of Waste Prevention
 NERO = Northeast Regional Office

B. The Permittee shall install and use an exhaust stack on each of the Emission Units listed in Table 7 that is consistent with good air pollution control engineering practice and that discharges so as to not cause or contribute to a condition of air pollution. Each exhaust stack shall be configured to discharge the gases vertically and shall not be equipped with any part or device that restricts the vertical exhaust flow of the emitted gases, including but not limited to rain protection devices known as “shanty caps” and “egg beaters.” The Permittee shall install and utilize an exhaust stack with the following parameters, as contained in Table 7 below, for the Emission Unit that is regulated by this Plan Approval:

Table 7 +				
EU#	Stack Height Above Ground (feet)	Stack Inside Exit Dimensions (inches)	Maximum Stack Gas Exit Velocity (feet per second)	Maximum Stack Gas Exit Temperature (°F)
1	55	9	107	900

+Table 6 Key:

EU# = Emission Unit Number
 °F = Degrees Fahrenheit

8. GENERAL CONDITIONS

The Permittee is subject to, and shall comply with, the following general conditions:

- A. Pursuant to 310 CMR 7.01, 7.02, 7.09 and 7.10, should any nuisance condition(s), including but not limited to smoke, dust, odor or noise, occur as the result of the operation of the Facility, then the Permittee shall immediately take appropriate steps including shutdown, if necessary, to abate said nuisance condition(s).
- B. If asbestos remediation/removal will occur as a result of the approved construction, reconstruction, or alteration of this Facility, the Permittee shall ensure that all removal/remediation of asbestos shall be done in accordance with 310 CMR 7.15 in its entirety and 310 CMR 4.00.
- C. If construction or demolition of an industrial, commercial or institutional building will occur as a result of the approved construction, reconstruction, or alteration of this Facility, the Permittee shall ensure that construction or demolition shall be done in accordance with 310 CMR 7.09(2) and 310 CMR 4.00.
- D. Pursuant to 310 CMR 7.01(2)(b) and 7.02(7)(b), the Permittee shall allow MassDEP and / or USEPA personnel access to the Facility, buildings, and all pertinent records for the purpose of making inspections and surveys, collecting samples, obtaining data, and reviewing records.
- E. This Plan Approval does not negate the responsibility of the Permittee to comply with any other applicable Federal, State, or local regulations now or in the future.
- F. Should there be any differences between the Application and this Plan Approval, the Plan Approval shall govern.
- G. Pursuant to 310 CMR 7.02(3)(k), MassDEP may revoke this Plan Approval if the construction work is not commenced within two years from the date of issuance of this Plan Approval, or if the construction work is suspended for one year or more.
- H. This Plan Approval may be suspended, modified, or revoked by MassDEP if MassDEP determines that any condition or part of this Plan Approval is being violated.
- I. This Plan Approval may be modified or amended when in the opinion of MassDEP such is necessary or appropriate to clarify the Plan Approval conditions or after consideration of a written request by the Permittee to amend the Plan Approval conditions.
- J. The Permittee shall conduct emission testing, if requested by MassDEP, in accordance with USEPA Reference Test Methods and regulation 310 CMR 7.13. If required, a

pretest protocol report shall be submitted to MassDEP at least 30 days prior to emission testing and the final test results report shall be submitted within 45 days after emission testing.

- K. Pursuant to 310 CMR 7.01(3) and 7.02(3)(f), the Permittee shall comply with all conditions contained in this Plan Approval. Should there be any differences between provisions contained in the General Conditions and provisions contained elsewhere in the Plan Approval, the latter shall govern.

9. MASSACHUSETTS ENVIRONMENTAL POLICY ACT

MassDEP has determined that the filing of an Environmental Notification Form (ENF) with the Secretary of Energy & Environmental Affairs, for air quality control purposes, was not required prior to this action by MassDEP. Notwithstanding this determination, the Massachusetts Environmental Policy Act (MEPA) and 301 CMR 11.00, Section 11.04, provide certain “Fail-Safe Provisions,” which allow the Secretary to require the filing of an ENF and/or an Environmental Impact Report (EIR) at a later time.

10. APPEAL PROCESS

This Plan Approval is an action of MassDEP. If you are aggrieved by this action, you may request an adjudicatory hearing. A request for a hearing must be made in writing and postmarked within twenty-one (21) days of the date of issuance of this Plan Approval.

Under 310 CMR 1.01(6)(b), the request must state clearly and concisely the facts, which are the grounds for the request, and the relief sought. Additionally, the request must state why the Plan Approval is not consistent with applicable laws and regulations.

The hearing request along with a valid check payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100.00) must be mailed to:

Commonwealth of Massachusetts
Department of Environmental Protection
P.O. Box 4062
Boston, MA 02211

This request will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver as described below. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority.

MassDEP may waive the adjudicatory hearing-filing fee for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file, together with the hearing request as provided above, an affidavit setting forth the facts believed to support the claim of undue financial hardship.

Should you have any questions concerning this Plan Approval, please contact Mr. Marc Altobelli by telephone at (978) 694-3284, or in writing at the letterhead address.

Marc Altobelli
Environmental Engineer
Bureau of Waste Prevention

James E. Belsky
Permit Chief
Bureau of Waste Prevention

cc: Board of Health, City Hall, Everett, MA 02149
Fire Headquarters, 384 Broadway, Everett, MA
MassDEP/Boston - Yi Tian (E-Copy)
CA Associates, 16 Revolutionary Road, Acton, MA 01720 ATTN: Paul Murphy