



**STATEMENT OF BASIS**  
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BAQ Air Permitting Division

<b>Company Name:</b>	Envision AESC Florence, LLC	<b>Permit Writer:</b>	Breanna Lindler
<b>Agency Air Number:</b>	1040-0174	<b>Date:</b>	October 11, 2023
<b>Permit Number:</b>	CP-50000065 v1.0		

**DATE APPLICATION RECEIVED:** April 05, 2023  
**DATE ACCEPTED INTO EXPEDITED REVIEW:** April 14, 2023

**PROJECT DESCRIPTION**

The facility is proposing to construct two identical manufacturing processes on the Florence property; phase 1 will be completed on the west side of the property and phase 2 will be on the east side of the property. The facility will be issued a synthetic minor construction permit to establish emissions limits that will limit the facility's potential to emit to avoid being defined as a major source under the Title V permitting programs.

The pollutants that are emitted as a result of the manufacturing process are Particulate Matter (PM), Volatile Organic Compounds (VOCs), Hazardous Air Pollutants (HAPs), and Greenhouse Gases (GHG). The PM emissions from the process will be controlled by dust collectors and the VOC, HAP, and GHG emissions from the process will be controlled by activated zeolite adsorption. Additionally, there are multiple fuel burning sources and storage tanks that will emit PM, SO<sub>2</sub>, CO, NO<sub>x</sub>, VOC, HAPs, and GHG; the emissions from these sources will not be controlled.

**Post Public Notice Changes**

Capture and control efficiency testing and VOC emission source testing for the carbon adsorbers that use activated carbon as the filter media have been added. These tests were already required for the carbon adsorbers that used zeolite as the filter media. These tests will be used to demonstrate compliance with the potential emission calculations and synthetic minor limits established in this construction permit.

Monitoring was changed from adsorber use time to daily sampling for breakthrough based on removal efficiency of adsorber wheels/beds prior to a polishing wheel/bed. This sampling and analysis will provide daily records of the control efficiencies of the adsorption control devices, with this sampling the facility will track filter media replacements based on the breakthrough calculated when control efficiencies are below the values specified in the construction permit application.

All reporting frequencies have been updated to be submitted on a semiannual basis.

**FACILITY DESCRIPTION**

SIC CODE: 3691 – Storage Batteries  
NAICS CODE: 335911 – Storage Battery Manufacturing

Envision AESC Florence, LLC is a lithium-ion battery cell production facility located in Florence, South Carolina. The battery cell production process consists of three main stages: electrode manufacturing, cell assembly, and cell finishing.

**Electrode Manufacturing:**

The first process in manufacturing the lithium-ion battery cell is to prepare the electrode coatings. These coatings are a uniform slurry mixture of the electrode-coating material and conductive binder with a solvent. The cathode



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manufacturing processes uses lithium metal oxide as the cathode coating material and N-Methyl-2-pyrrolidone (NMP) as the solvent. The anode manufacturing processes uses a form of carbon as the anode coating material and water as the solvent. To avoid contamination between the active materials in the anodes and cathodes manufacturing process, the two processes will be completed in separate clean rooms. The mixed slurries are then coated directly onto the electrode material, aluminum foils for the cathode, and copper foils for the anode. Once coated the electrodes are fed directly into a drying oven to evaporate the solvent, which is collected and recovered. The coated electrodes are then prepared through a process which compresses the coated foils to adjust the physical properties of the electrodes.

**Cell Assembly:**

Following the completion of the electrode manufacturing, the battery cell begins to be assembled. This process involves forming the sub-assembly and adding electrolyte to the battery. The first step is the winding process where the internal structure is formed by adding a separator between the anode and cathode. This assembled structure is then connected to the respective terminals by a welding process. This sub-assembly is inserted into the cell housing and sealed by a welder, with enough opening to add the electrolyte. Once the battery is filled the entire battery cell is sealed and sent for finishing.

**Cell Finishing:**

The battery cell finishing process begins with the formation process, which is the first charging and discharging of the battery cell following the addition of the electrolyte. After formation is completed, the batteries enter the aging process which is where the cell characteristics and performance are monitored over a period of time. Following the completion of the aging process, the batteries are discharged to the appropriate state for shipping and packaged.

The manufacturing process for lithium-ion batteries involves the generation of regulation criteria air pollutants and hazardous air pollutants (HAPs). These emissions are generated from the manufacturing process, fuel burning, and liquid storage tanks.

**OPERATING PERMIT STATUS**

Following the issuance of this construction permit, Envision will be required to obtain a conditional major operating permit. The facility must submit a written request for a new operating permit within fifteen (15) days after the actual date of initial startup of each new source.

**EMISSIONS**

The facility operates several different control devices on the process equipment for control of PM, PM<sub>10</sub>, PM<sub>2.5</sub>, VOC, and HAP emissions. For all process units the facility utilized material balance calculations and stack test results from another facility.

Equipment ID	Equipment Description	Control Device ID	Control Device Description	Pollutants Controlled	Control Efficiency
EU1 – EU6	Electrode Manufacturing Process (Phase 1)	ECD1	Carbon Absorption/Zeolite Finishing	VOCs/HAPs	99%



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Equipment ID	Equipment Description	Control Device ID	Control Device Description	Pollutants Controlled	Control Efficiency
EU7 – EU12	Electrode Preparation (Phase 1)	ECD2	HEPA Filter	PM/PM <sub>10</sub> /PM <sub>2.5</sub> /HAPs	99.995%
EU13 – EU18	Electrode Preparation (Phase 1)	ECD3	HEPA Filter	PM/PM <sub>10</sub> /PM <sub>2.5</sub> /HAPs	99.995%
EU19 – EU36	Notching (Phase 1)	ECD4	HEPA Filter	PM/PM <sub>10</sub> /PM <sub>2.5</sub> /HAPs	99.97%
EU37 – EU54	Notching (Phase 1)	ECD5	HEPA Filter	PM/PM <sub>10</sub> /PM <sub>2.5</sub> /HAPs	99.97%
EU181 – EU207	Roll Baking (Phase 1)	ECD6	Carbon Absorption	VOCs/HAPs	90%
EU208 – EU243	Roll Baking (Phase 1)	ECD7	Carbon Absorption	VOCs/HAPs	90%
EU55 – EU81	Winding (Phase 1)	ECD8	HEPA Filter	PM/PM <sub>10</sub> /PM <sub>2.5</sub> /HAPs	99.15%
EU82 – EU84	JR Prepare Dispose	ECD9	HEPA Filter	PM/PM <sub>10</sub> /PM <sub>2.5</sub> /HAPs	99.15%
EU85 – EU90	Tab Forming (Phase 1)	ECD10	HEPA Filter	PM/PM <sub>10</sub> /PM <sub>2.5</sub> /HAPs	99.15%
EU91 – EU114	Disk Welding (Phase 1)	ECD11	HEPA Filter	PM/PM <sub>10</sub> /PM <sub>2.5</sub> /HAPs	99.15%
EU115 – EU138	Welding (Phase 1)	ECD12	HEPA Filter	PM/PM <sub>10</sub> /PM <sub>2.5</sub> /HAPs	99.15%
EU139 – EU144	Can & Disk Welding (Phase 1)	ECD13	HEPA Filter	PM/PM <sub>10</sub> /PM <sub>2.5</sub> /HAPs	99.15%
EU145 – EU150	Swage/Grooving (Phase 1)	ECD14	HEPA Filter	PM/PM <sub>10</sub> /PM <sub>2.5</sub> /HAPs	99.15%
EU151 – EU156	Formation (Phase 1)	ECD15	Carbon Absorption	VOCs/HAPs	90%
EU157 – EU174	Injection (Phase 1)	ECD16	Carbon Absorption	VOCs/HAPs	90%
EU175 – EU180	Injection (Phase 1)	ECD17	Carbon Absorption	VOCs/HAPs	90%
EU244 – EU255	Formation (Phase 1)	ECD18	Carbon Absorption	VOCs/HAPs	90%
EU470	Emergency Generator (Phase 1)	--	--	--	--
EU471	Emergency Generator (Phase 2)	--	--	--	--
EU533 – EU536	Central Utility Heaters (Phase 1)	--	--	--	--
EU537 – EU542	Central Utility Heaters (Phase 2)	--	--	--	--
EU472 – EU479	Building Air Handling and Heat (Phase 1)	--	--	--	--
EU480 -EU587	Building Air Handling and Heat (Phase 2)	--	--	--	--



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Equipment ID	Equipment Description	Control Device ID	Control Device Description	Pollutants Controlled	Control Efficiency
EU548 – EU552	Process Steam Boilers (Phase 1)	--	--	--	--
EU553 – EU557	Process Steam Boilers (Phase 2)	--	--	--	--
EU558	NMP Storage Tanks (Phase 1)	--	--	--	--
EU559	Electrolyte Storage Tanks	--	--	--	--
GU1 – GU6	Electrode Manufacturing Process (Phase 2)	GCD1	Carbon Absorption/Zeolite Finishing	VOCs/HAPs	99%
GU7 – GU12	Electrode Preparation (Phase 2)	GCD2	HEPA Filter	PM/PM <sub>10</sub> /PM <sub>2.5</sub> /HAPs	99.995%
GU13 – GU18	Electrode Preparation (Phase 2)	GCD3	HEPA Filter	PM/PM <sub>10</sub> /PM <sub>2.5</sub> /HAPs	99.995%
GU19 – GU36	Notching (Phase 2)	GCD4	HEPA Filter	PM/PM <sub>10</sub> /PM <sub>2.5</sub> /HAPs	99.97%
GU37 – GU54	Notching (Phase 2)	GCD5	HEPA Filter	PM/PM <sub>10</sub> /PM <sub>2.5</sub> /HAPs	99.97%
GU181 – GU207	Roll Baking (Phase 2)	GCD6	Carbon Absorption	VOCs/HAPs	90%
GU208 – GU243	Roll Baking (Phase 2)	GCD7	Carbon Absorption	VOCs/HAPs	90%
GU55 – GU81	Winding (Phase 2)	GCD8	HEPA Filter	PM/PM <sub>10</sub> /PM <sub>2.5</sub> /HAPs	99.15%
GU82 – GU84	JR Prepare Dispose	GCD9	HEPA Filter	PM/PM <sub>10</sub> /PM <sub>2.5</sub> /HAPs	99.15%
GU85 – GU90	Tab Forming (Phase 2)	GCD10	HEPA Filter	PM/PM <sub>10</sub> /PM <sub>2.5</sub> /HAPs	99.15%
GU91 – GU114	Disk Welding (Phase 2)	GCD11	HEPA Filter	PM/PM <sub>10</sub> /PM <sub>2.5</sub> /HAPs	99.15%
GU115 – GU138	Welding (Phase 2)	GCD12	HEPA Filter	PM/PM <sub>10</sub> /PM <sub>2.5</sub> /HAPs	99.15%
GU139 – GU144	Can & Disk Welding (Phase 2)	GCD13	HEPA Filter	PM/PM <sub>10</sub> /PM <sub>2.5</sub> /HAPs	99.15%
GU145 – GU150	Swage/Grooving (Phase 2)	GCD14	HEPA Filter	PM/PM <sub>10</sub> /PM <sub>2.5</sub> /HAPs	99.15%
GU151 – GU156	Formation (Phase 2)	GCD15	Carbon Absorption	VOCs/HAPs	90%
GU157 – GU174	Injection (Phase 2)	GCD16	Carbon Absorption	VOCs/HAPs	90%
GU175 – GU180	Injection (Phase 2)	GCD17	Carbon Absorption	VOCs/HAPs	90%
GU244 – GU255	Formation (Phase 2)	GCD18	Carbon Absorption	VOCs/HAPs	90%



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Equipment ID	Equipment Description	Control Device ID	Control Device Description	Pollutants Controlled	Control Efficiency
GU558	NMP Storage Tanks (Phase 2)	--	--	--	--

FACILITY WIDE EMISSIONS				
Pollutant		Uncontrolled	Controlled	PTE
		TPY	TPY	TPY
PM		168.13	18.90	Less than 100.0
PM <sub>10</sub>		168.13	18.90	Less than 100.0
PM <sub>2.5</sub>		168.13	18.90	Less than 100.0
SO <sub>2</sub>		2.55	2.55	Less than 100.0
NO <sub>x</sub>		22.65	22.65	Less than 100.0
CO		34.57	34.57	Less than 100.0
VOC		171.26	15.43	Less than 100.0
Total HAPs		75.98	4.92	Less than 25.0
Arsenic Compounds		4.89E-04	4.89E-04	Less than 10.0
Beryllium Compounds		2.94E-05	2.94E-05	Less than 10.0
Cadmium Compounds		2.69E-03	2.69E-03	Less than 10.0
Chromium Compounds		4.16E-01	6.93E-03	Less than 10.0
Cobalt Compounds		2.06E-04	2.06E-04	Less than 10.0
Lead Compounds		1.22E-03	1.22E-03	Less than 10.0
Manganese Compounds		5.57E+01	1.28E-02	Less than 10.0
Mercury Compounds		6.36E-04	6.36E-04	Less than 10.0
Nickel Compounds		5.14E-03	5.14E-03	Less than 10.0
Selenium Compounds		5.87E-05	5.87E-05	Less than 10.0
Acenaphthene	(CAS #: 83-32-9)	4.40E-06	4.40E-06	Less than 10.0
Acenaphthylene	(CAS #: 208-96-8)	5.36E-06	5.36E-06	Less than 10.0
Acetaldehyde	(CAS #: 75-07-0)	3.39E-06	3.39E-06	Less than 10.0
Acrolein	(CAS #: 107-02-8)	5.14E-04	5.14E-04	Less than 10.0
Anthracene	(CAS #: 120-12-7)	6.78E-05	6.78E-05	Less than 10.0
1,3-Butadiene	(CAS #: 106-99-0)	1.25E-06	1.25E-06	Less than 10.0
Benz(a)anthracene	(CAS #: 56-55-3)	3.06E-05	3.06E-05	Less than 10.0
Benzene	(CAS #: 71-43-2)	4.09E+00	7.84E-02	Less than 10.0
Benzo(a)pyrene	(CAS #: 50-32-8)	6.28E-04	6.28E-04	Less than 10.0
Benzo(b)fluoranthene	(CAS #: 205-99-2)	1.26E-07	1.26E-07	Less than 10.0
Benzo(k)flouranthene	(CAS #: 207-08-9)	4.47E-06	4.47E-06	Less than 10.0
Benzo(g,h,i)perylene	(CAS #: 191-24-2)	3.04E-06	3.04E-06	Less than 10.0
Chrysene	(CAS #: 218-01-9)	4.73E-06	4.73E-06	Less than 10.0



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FACILITY WIDE EMISSIONS				
Pollutant		Uncontrolled	Controlled	PTE
		TPY	TPY	TPY
Dibenzo(a,h)anthracene	(CAS #: 53-70-3)	3.17E-06	3.17E-06	Less than 10.0
Dichlorobenzene	(CAS #: 25321-22-6)	2.94E-03	2.94E-03	Less than 10.0
7,12-Dimethylbenz(a)anthracene	(CAS #: 57-97-6)	3.91E-05	3.91E-05	Less than 10.0
Ethylbenzene	(CAS #: 100-41-4)	5.42E+00	8.66E-02	Less than 10.0
Fluoranthene	(CAS #: 206-44-0)	7.34E-06	7.34E-06	Less than 10.0
Fluorene	(CAS #: 86-73-7)	1.19E-05	1.19E-05	Less than 10.0
Formaldehyde	(CAS #: 50-00-0)	5.44E-01	2.20E-01	Less than 10.0
Maximum HAP: Hexane,-n	(CAS #: 110-54-3)	4.41E+00	4.41E+00	Less than 10.0
Indo(1,2,3-cd) pyrene	(CAS #: 193-39-5)	4.40E-06	4.40E-06	Less than 10.0
2-Methylnaphthalene	(CAS #: 91-57-6)	5.90E-05	5.90E-05	Less than 10.0
3-Methylchloranthrene	(CAS #: 56-49-5)	4.40E-06	4.40E-06	Less than 10.0
Napthalene	(CAS #: 91-20-3)	1.49E-03	1.49E-03	Less than 10.0
Phenanthrene	(CAS #: 85-01-8)	9.84E-05	9.84E-05	Less than 10.0
Total POM		1.62E-03	1.62E-03	Less than 10.0
Propylene	(CAS #: 115-07-1)	4.89E-04	4.89E-04	Less than 10.0
Pyrene	(CAS #: 129-00-0)	1.74E-03	1.74E-03	Less than 10.0
Toluene	(CAS #: 108-88-3)	8.32E-03	8.32E-03	Less than 10.0
Xylene		5.42E+00	8.69E-02	Less than 10.0

**SOURCE TEST REQUIREMENTS**

The facility is using emission rate guarantees for CO and NO<sub>x</sub> emissions from the fuel combustion sources: Process Steam Boilers, Central Utility Heaters, Building Air Handling and Heat Boilers, and Dehumidifiers. These limited emission rates are not only required to meet regulatory requirements in S.C. Regulation 61-62.5, Standard No. 5.2 for the Process Steam Boilers, but also lowers the facility's calculated potential emissions from fuel combustion sources to below 100.0 tons per year. The facility will be required to complete an initial source test on a representative sample of each fuel combustion source type to verify the emission rates used in the construction permit application.

Sources	Pollutant	Emission Rate (ppm)	Emission Rate (lb/MMBtu)
Process Steam Boilers	CO	25.0	0.019
	NO <sub>x</sub>	9.0	0.011
Building Air Handling and Heat Boilers	CO	25.0	0.019
	NO <sub>x</sub>	9.0	0.011
Central Utility Heaters	CO	200.0	0.148
	NO <sub>x</sub>	90.0	0.11
Dehumidifiers	CO	200.0	0.148
	NO <sub>x</sub>	90.0	0.11



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The facility is using material balances and stack test information provided from another Envision facility to calculate the emissions from the process sources on site. To verify these emission estimates the facility shall be required to complete an initial source test to verify the emissions are no more than the values provided in this application and to show that the referenced material is representative of onsite operations. Std 8 de minimis thresholds and/or largest source of a pollutant, were used to determine which sources to test. The following pollutants shall be tested for and the results should be compare to the calculated emissions as shown in the following table.

Emission ID	Control Device ID	Pollutant	Emissions (as provided in the construction permit application)	
			lb/hr	TPY
EU1-EU6/GU1-GU6	ECD1/GCD1	VOC	0.17782	0.7788516
		Benzene	0.00425	0.018615
		Toluene	0.00502	0.0219876
		Ethylbenzene	0.00578	0.0253164
		Xylene	0.00578	0.0253164
EU7-EU12/GU7-GU12	ECD2/GCD2	Cobalt	0.0002	0.000876
EU19-EU36/GU19-GU36	ECD4/GCD4	PM <sub>10</sub> /PM <sub>2.5</sub>	0.00345	0.015111
		Manganese	0.00069	0.0030222
		Nickel	0.00069	0.0030222
		Cobalt	0.00069	0.0030222
EU55-EU81/GU55-GU81	ECD8/GCD8	Nickel	0.00045	0.001971
		Cobalt	0.00045	0.001971
EU91-EU114/GU91-GU114	ECD11/GCD11	Nickel	0.0004	0.001752
EU151-EU156/GU151-GU156	ECD15/GCD15	VOC	0.00003	0.000688
		Formaldehyde	0.00003	0.0001314
EU157-EU174/GU157-GU174	ECD16/GCD16	VOC	0.0149	0.0652
EU175-EU180/GU175-GU180	ECD17/GCD17	VOC	0.00298	0.0130
EU244-EU255/GU244-GU255	ECD18/GCD18	VOC	0.00251	0.011
		Formaldehyde	0.0005	0.00219

Additionally, the facility will be required to test the capture efficiency for all adsorption control systems on site, as well as the removal efficiency for VOC. This test will be used to verify that the capture efficiency is 100% and removal efficiency is equal to or greater than 99% for the Zeolite Adsorbers and 90% for the Activated Carbon Adsorbers.

Source	Parameter	Factor/Limit
Areas controlled by adsorption control devices	Capture Efficiency	100%
Zeolite Adsorbers	Removal efficiency from inlet to first zeolite wheel to inlet for final polishing wheel	99%
Activated Carbon Adsorbers	Removal efficiency from inlet to first activated carbon bed to inlet for the final polishing bed	90%



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**REGULATIONS**

**Applicable - Section II(E) (Synthetic Minor)**

With the issuance of this construction permit, the facility will be establishing emission limits to avoid being classified as a major source for Title V permitting. The respective limits and explanations are detailed in the following Synthetic Minor Limits table.

Synthetic Minor Limits					
Permit ID	Equipment ID	Permit Issue Date	Pollutant	Emission Limit (TPY)	Explanation
CP-50000065 v1.0	Facility Wide	Current Construction Permit	PM <sub>10</sub>	<100.0	The facility is potentially a Title V major source, these emission limits were requested to avoid this classification. These synthetic minor emission limits are being established with this construction permit to require the facility to remain below the major source thresholds determined in the Title V regulations.
			PM <sub>2.5</sub>	<100.0	
			SO <sub>2</sub>	<100.0	
			NO <sub>x</sub>	<100.0	
			CO	<100.0	
			VOC	<100.0	
			Total HAPs	<25.0	
			Single HAPs	<10.0	

**Applicable - Standard No. 1 (Emissions from Fuel Burning Operations)**

ID	PM Allowable (lb/hr)	SO <sub>2</sub> Allowable (lb/hr)	Uncontrolled Emissions		Controlled Emissions	
			PM (lb/hr)	SO <sub>2</sub> (lb/hr)	PM (lb/hr)	SO <sub>2</sub> (lb/hr)
EU548 – EU557 Process Boiler	23.82 (per boiler)	91.31 (per boiler)	0.30	0.02	0.30	0.02
EU533 – EU542 Central Utility Heaters	0.36 (per boiler)	1.38 (per boiler)	0.004	0.0004	0.004	0.0004
EU472 – EU487 Building Air Handling	3.6 (per boiler)	13.8 (per boiler)	0.04	0.004	0.04	0.004
Dehumidifiers	0.48 (per boiler)	1.84 (per boiler)	0.006	0.0005	0.006	0.0005

**Not Applicable - Standard No. 3 (state only) (Waste Combustion and Reduction)**

This facility does not operate any waste combustion sources.





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**Applicable - Standard No. 4** (*Emissions from Process Industries*)

The facility's process weight rate is based on the maximum amount of battery cells that will be manufactured in an hour, 36,000 cells per hour. Each cell weighs approximately 0.653 kg resulting in a process weight rate of around 26 tons/hour.

Process	Max Process Weight Rate (tons/hr)	PM Allowable at Max (lb/hr)	Uncontrolled Emissions PM (lb/hr)	Controlled Emissions PM (lb/hr)	Monitoring
Facility Wide (except Fuel Combustion Sources)	26	36.3	168.13	18.90	The facility will operate all HEPA filters on their applicable emission sources. For the sources where there are no control devices, the facility will complete visual inspections on a weekly basis to ensure the source is operating in the appropriate manner.

**Not Applicable - Standard No. 5** (*Volatile Organic Compounds*)

This facility is not an existing process, as defined in S.C. Regulation 61-62.5, Standard No. 5, Section (I)(A)(18).

**Applicable - Standard No. 5.2** (*Control of Oxides of Nitrogen (NOx)*)

The facility has proposed installation of ten (10) natural gas fired boilers that are subject to this regulation. These boilers will be required to utilize low-NO<sub>x</sub> burners or equivalent technology that can achieve the NO<sub>x</sub> emission limit of 0.036 lb/MMBtu. The facility has a manufacturer's guarantee for these boilers of 0.011 lb/MMBtu.

The facility operates additional NO<sub>x</sub> emitting source on site; the sixteen (16) Condensing Boilers, eight (8) Unit Heaters and two (2) emergency generators. These sources are not subject to this regulation because either the boiler's heat capacities are below the applicability threshold, 10 MMBtu/hr, or the emergency generators qualify as exempt under S.C. Regulation 61-62.1, Section II(B)(2).

**Not Applicable - Standard No. 7** (*Prevention of Significant Deterioration*)

This facility is not classified as a major source under S.C. Regulation 61-62.5, Standard No. 7.

The facility intends to install fossil fuel fired boilers and the total heat input for all the proposed boilers will be 569.8 MMBtu/hr. Fossil fuel fired boilers with a total heat input of greater than 250 MMBtu/hr is one of the listed source categories in this regulation which is subject to the 100.0 TPY applicability threshold. The



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potential emissions from the proposed fossil fuel fired sources are all below this threshold, the facility has not requested to establish any limitations on emissions for the boilers on site. If the facility ever increases the emissions from these sources, or any of these calculations are found to be in error PSD applicability will need to be addressed at that time.

Source	Pollutant	Emission Factor	Units	Potential Emissions	
				lb/hr	TPY
Process Boilers: EU548 - EU552, GU553 - GU557	PM	7.6	lb/mmcf	2.96	12.956
	PM <sub>10</sub>	7.6	lb/mmcf	2.96	12.956
	PM <sub>2.5</sub>	7.6	lb/mmcf	2.96	12.956
	SO <sub>2</sub>	0.6	lb/mmcf	0.23	1.023
	NO <sub>x</sub>	0.011	lb/mmbtu	4.37	19.127
	CO	0.019	lb/mmbtu	7.54	33.038
	VOC	5.5	lb/mmcf	2.14	9.376
	Lead	5.0E-04	lb/mmscf	1.95E-04	8.52E-04
Building Air Handling and Heat Boilers: EU472 - EU479, GU480 - GU587	PM	7.6	lb/mmcf	0.72	3.133
	PM <sub>10</sub>	7.6	lb/mmcf	0.72	3.133
	PM <sub>2.5</sub>	7.6	lb/mmcf	0.72	3.133
	SO <sub>2</sub>	0.6	lb/mmcf	0.06	0.247
	NO <sub>x</sub>	0.011	lb/mmbtu	1.06	4.625
	CO	0.019	lb/mmbtu	1.82	7.989
	VOC	5.5	lb/mmcf	0.52	2.267
	Lead	5.0E-04	lb/mmscf	4.71E-05	2.06E-04
Central Utility Heaters: EU533 - EU536, GU537 - GU542	PM	7.6	lb/mmcf	0.04	0.157
	PM <sub>10</sub>	7.6	lb/mmcf	0.04	0.157
	PM <sub>2.5</sub>	7.6	lb/mmcf	0.04	0.157
	SO <sub>2</sub>	0.6	lb/mmcf	0.00	0.012
	NO <sub>x</sub>	0.11	lb/mmbtu	0.53	2.313
	CO	0.148	lb/mmbtu	0.71	3.112
	VOC	5.5	lb/mmcf	0.03	0.113
	Lead	5.0E-04	lb/mmscf	2.35E-06	1.03E-05
Dehumidifier Heaters: EU560	PM	7.6	lb/mmcf	0.54	2.350
	PM <sub>10</sub>	7.6	lb/mmcf	0.54	2.350
	PM <sub>2.5</sub>	7.6	lb/mmcf	0.54	2.350
	SO <sub>2</sub>	0.6	lb/mmcf	0.04	0.186
	NO <sub>x</sub>	0.11	lb/mmbtu	7.92	34.690
	CO	0.148	lb/mmbtu	10.66	46.673
	VOC	5.5	lb/mmcf	0.39	1.700
	Lead	5.0E-04	lb/mmscf	3.53E-05	1.55E-04



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<b>FOSSIL FUEL FIRED BOILER EMISSIONS</b>			
<b>Pollutant</b>	<b>Uncontrolled</b>	<b>Controlled</b>	<b>PTE</b>
	<b>TPY</b>	<b>TPY</b>	<b>TPY</b>
PM	18.60	18.60	18.60
PM <sub>10</sub>	18.60	18.60	18.60
PM <sub>2.5</sub>	18.60	18.60	18.60
SO <sub>2</sub>	1.47	1.47	1.47
NO <sub>x</sub>	60.75	60.75	60.75
CO	90.81	90.81	90.81
VOC	13.46	13.46	13.46
Lead	1.22E-03	1.22E-03	1.22E-03

The facility's primary manufacturing, lithium-ion battery manufacturing, is not one of the listed categories subject to the lower emission threshold as such the entire facility would be subject to.

**Applicable - 61-62.6** (*Control of Fugitive Particulate Matter*)

This regulation has sections that apply to all operations within the state of South Carolina. The facility will operate all processes within an enclosed building and will utilize measures in the building to control any fugitive PM emissions.

**40 CFR 60 and 61-62.60** (*New Source Performance Standards (NSPS)*)

**Applicable - Subpart Dc** *Small Industrial Steam Generating Unit*

This subpart applies to the Process Boilers as the maximum heat input for these sources is 39.7 MMBtu/hr, each, which is greater than the heat input applicability threshold for this Subpart of 10 MMBtu/hr. The other boilers on site are not subject to this subpart as the Dehumidification heaters max heat input is 0.8 MMBtu/hr, the Central Utility Heaters max heat input is 0.6 MMBtu/hr, and the Building Air Handling and Heat Boilers max heat input is 6.0 MMBtu/hr, all of which are below the heat input applicability threshold of 10 MMBtu/hr.

**Applicable - Subpart IIII** *Stationary Compression Ignition Internal Combustion Engines (Diesel)*

The facility will operate two (2) 2,000 kW diesel fueled emergency generators that are subject to requirements under this subpart. These generators will operate a maximum of 100.0 hours a year for non-emergency and testing/maintenance purposes.

**Not Applicable - Subpart JJJJ** *Stationary Spark Ignition Internal Combustion Engines (Natural Gas)*

The facility operates two (2) diesel fueled emergency generators, as such these two generators are not subject to this subpart. The facility has no affected sources subject to any requirements in this regulation.



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**Not Applicable - Subpart Kb** *Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984*

This subpart does not apply to the NMP and electrolyte storage tanks since the maximum storage capacity is less than 75 cubic meters.

**40 CFR 61 and 61-62.61** *(National Emission Standards for Hazardous Air Pollutants (NESHAP))*

There are no subparts under this section that apply to any portions of this facility.

**40 CFR 63 and 61-62.63** *(National Emission Standards for Hazardous Air Pollutants (NESHAP) for Source Categories)*

**Applicable - Subpart ZZZZ** *Reciprocating Internal Combustion Engines (RICE)*

The facility will operate two emergency generators that are subject to this Subpart. Compliance for these new emergency stationary engines must meet the requirements established in 40 CFR 60 Subpart IIII, there are no further requirements established in this subpart.

**Applicable - Subpart CCCCCC (7C)** *(National Emission Standard for Hazardous Air Pollutants for Area Sources: Paints and Allied Products Manufacturing)*

The facility's electrode manufacturing process meets the definition of paints and allied product, as defined in §63.11607, as the product consists of a solvent and other additives that are intended to be applied to a substrate. The slurry mixture is produced by a physical means, such as blending or mixing, and is intended to leave a dried film on the solid substrate it is applied to. The facility is an area source, as it has established synthetic minor limits to remain below the major source thresholds.

**Not Applicable - Subpart MMMM** *Surface Coating of Miscellaneous Metal Parts and Products*

This subpart applies to major sources of HAP emissions, this facility is taking synthetic minor limits to avoid being classified as a major source of HAP emissions. Additionally, this facility will not manufacture or apply spray coatings to miscellaneous metal parts as defined in 40 CFR 63.3881(a).

**Not Applicable - Subpart PPPP** *Surface Coating of Plastic Parts and Products*

This subpart applies to major sources of HAP emissions, this facility is taking synthetic minor limits to avoid being classified as a major source of HAP emissions. Additionally, this facility will not be coating plastic parts as defined in 40 CFR 63.4481(a).

**Not Applicable - Subpart HHHHHH (6H)** *Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources*

This facility will not perform paint stripping or spray applications utilizing the target compounds. This subpart will not apply to this facility.



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**Not Applicable - Subpart PPPPPP (6P) Secondary Nonferrous Metals Processing Area Sources**

This facility is not a secondary nonferrous metals processing facility as defined in 40 CFR 63.11462. This subpart does not apply to this facility.

**Not Applicable - Subpart WWWWWW (6W) National Emission Standards for Hazardous Air Pollutants: Area Source Standards for Plating and Polishing Operations**

This subpart applies to facilities that perform electroplating, thermospraying, or polishing activities, that are defined in section 63.11511 of this subpart. This facility will receive materials that are pre-plated and will be coated on site with electrode slurry using a slit extrusion process. The facility will also not perform any polishing activities on site. Therefore, this subpart does not apply to this facility.

**Not Applicable - 61-62.68 (Chemical Accident Prevention Provisions)**

The facility does not use or store any regulated substances at or above the thresholds determined in this regulation.

**Not Applicable - 40 CFR 64 (Compliance Assurance Monitoring)**

The facility is establishing limits to avoid being a major source as defined in S.C. Regulation 61-62.70. Title V permitting requirements will not apply to this facility. This regulation does not apply to minor sources, as such this regulation does not apply to this facility.

**AMBIENT AIR STANDARDS REVIEW**

**Applicable - Standard No. 2 (Ambient Air Quality Standards)**

PM<sub>10</sub>, PM<sub>2.5</sub>, and NO<sub>2</sub> emissions from the boilers were modeled. The facility used the M (merged stack) parameter calculation to determine representative stacks for the groups of Phase 1 and Phase 2 boilers.

**Applicable - Standard No. 8 (State only) (Toxic Air Pollutants)**

Three pollutants were modeled: Cobalt Compounds, Formaldehyde, and Nickel. Four were de minimis; Benzene, Ethyl Benzene, Toluene, Xylene (mixed isomers).

**PERIODIC MONITORING**

ID	Pollutant/ Parameter	Limit	Required Monitoring Frequency	Reporting Frequency	Monitoring Basis/ Justification
EU548 – EU552, GU553 – GU557	PM	0.6 lb/MMBtu	--	--	Facility must only burn Natural Gas as a fuel for



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ID	Pollutant/ Parameter	Limit	Required Monitoring Frequency	Reporting Frequency	Monitoring Basis/ Justification
EU533 – EU542, GU537 – GU542	PM	0.6 lb/MMBtu	--	--	this source. Any other fuels are prohibited.
EU472 – EU487, GU480 – GU587	PM	0.6 lb/MMBtu	--	--	
EU560	PM	0.6 lb/MMBtu	--	--	
EU1 – EU6/ ECD1	PM	168.13 lb/hr	Daily	Semiannual	Carbon Absorption Devices shall be in place whenever the associated process is in operation. The used carbon bed media will be disposed of offsite.
EU7 – EU12/ ECD2			Daily	Semiannual	HEPA Filter pressure drop will be recorded daily. Exceedances of operational ranges, which shall be established within 180 days after startup, shall be submitted in an annual report.
EU13 – EU18/ ECD3			Daily	Semiannual	
EU19 – EU36/ ECD4			Daily	Semiannual	
EU37 – EU54/ ECD5			Daily	Semiannual	
EU181 – EU207/ ECD6			Daily	Semiannual	Carbon Absorption Devices shall be in place whenever the associated process is in operation. The used carbon bed media will be disposed of offsite.
EU208 – EU243/ ECD7			Daily	Semiannual	HEPA Filter pressure drop will be recorded daily. Exceedances of operational ranges, which shall be established within 180 days after startup, shall be submitted in an annual report.
EU55 – EU81/ ECD8			Daily	Semiannual	
EU82 – EU84/ ECD9			Daily	Semiannual	
EU85 -EU90/ ECD10			Daily	Semiannual	
EU91 – EU114/ ECD11			Daily	Semiannual	
EU115 – EU138/ ECD12			Daily	Semiannual	
EU139 – EU144/ ECD13			Daily	Semiannual	
EU145 – EU150/ ECD14			Daily	Semiannual	



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ID	Pollutant/ Parameter	Limit	Required Monitoring Frequency	Reporting Frequency	Monitoring Basis/ Justification
EU151 – EU156/ ECD15			Daily	Semiannual	Carbon Absorption Devices shall be in place whenever the associated process is in operation. The used carbon bed media will be disposed of offsite.
EU157 – EU174/ ECD16			Daily	Semiannual	
EU175 – EU180/ ECD17			Daily	Semiannual	
EU244 – EU255/ ECD18			Daily	Semiannual	
GU1 – GU6/ GCD1			Daily	Semiannual	
GU7 – GU12/ GCD2			Daily	Semiannual	HEPA Filter pressure drop will be recorded daily. Exceedances of operational ranges, which shall be established within 180 days after startup, shall be submitted in an annual report.
GU13 – GU18/ GCD3			Daily	Semiannual	
GU19 – GU36/ GCD4			Daily	Semiannual	
GU37 – GU54/ GCD5			Daily	Semiannual	
GU181 – GU207/ GCD6			Daily	Semiannual	
GU208 – GU243/ GCD7			Daily	Semiannual	Carbon Absorption Devices shall be in place whenever the associated process is in operation. The used carbon bed media will be disposed of offsite.
GU55 – GU81/ GCD8			Daily	Semiannual	
GU82 – GU84/ GCD9			Daily	Semiannual	
GU85 -GU90/ GCD10			Daily	Semiannual	
GU91 – GU114/ GCD11			Daily	Semiannual	
GU115 – GU138/ GCD12			Daily	Semiannual	
GU139 – GU144/ GCD13			Daily	Semiannual	
GU145 – GU150/ GCD14			Daily	Semiannual	



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ID	Pollutant/ Parameter	Limit	Required Monitoring Frequency	Reporting Frequency	Monitoring Basis/ Justification
GU151 – GU156/ GCD15			Daily	Semiannual	Carbon Absorption Devices shall be in place whenever the associated process is in operation. The used carbon bed media will be disposed of offsite.
GU157 – GU174/ GCD16			Daily	Semiannual	
GU175 – GU180/ GCD17			Daily	Semiannual	
GU244 – GU255/ GCD18			Daily	Semiannual	
EU1 – EU6/ECD1	VOC	99% control (each)	Daily	Semiannual	VOC sampling will be performed using an instrument equipped with a flame ionization detector on all Carbon Adsorption control systems on site. The facility shall calculate the control efficiency based on the percent reduction from the highest 1-minute average from the upstream and downstream sampling ports. The highest daily 1-minute averages and the calculated control efficiency shall be reported semiannually.
GU1 – GU6/ GCD1			Daily	Semiannual	
EU181 – EU207/ ECD6	VOC	90% control (each)	Daily	Semiannual	
EU208 – EU243/ ECD7			Daily	Semiannual	
EU151 – EU156/ ECD15			Daily	Semiannual	
EU157 – EU174/ ECD16			Daily	Semiannual	
EU175 – EU180/ ECD17			Daily	Semiannual	
EU244 – EU255/ ECD18			Daily	Semiannual	
GU181 – GU207/ GCD6			Daily	Semiannual	
GU208 – GU243/ GCD7			Daily	Semiannual	
GU151 – GU156/ GCD15			Daily	Semiannual	
GU157 – GU174/ GCD16			Daily	Semiannual	
GU175 – GU180/ GCD17			Daily	Semiannual	
GU244 – GU255/ GCD18			Daily	Semiannual	





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**PUBLIC NOTICE**

This construction permit(s) will undergo a 30-day public notice period, in accordance with SC Regulation 61-62.1, Section II(N) and to establish: SC Regulation 61-62.1, Section II(E) emission limits of 100.0 tons per year for PM, PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub>, CO, and VOC emission; 25.0 tons per year for total HAP emissions; and 10.0 tons per year for singular HAP emissions to avoid Title V permitting requirements. The comment period was open from August 21, 2023 to September 25, 2023 and was placed on the BAQ website during that time period. No comments were received during the comment period.

**Additional Public Participation**

A public meeting and public hearing were held on September 21, 2023, at the Florence County Complex, at 180 N. Irby St., Florence. The public meeting was held at 6pm and the public hearing at 7pm.

**Post Public Notice Changes**

See Post Public Notice Changes in PROJECT DESCRIPTION

**SUMMARY AND CONCLUSIONS**

It has been determined that this source, if operated in accordance with the submitted application, will meet all applicable requirements and emission standards.