

**NORTH CAROLINA DIVISION OF  
AIR QUALITY**

**Application Review**

**Issue Date:**

**Region:** Mooresville Regional Office  
**County:** Iredell  
**NC Facility ID:** 4900262  
**Inspector's Name:** Melinda Wolanin  
**Date of Last Inspection:** 03/23/2017  
**Compliance Code:** 3 / Compliance - inspection

<p style="text-align: center;"><b>Facility Data</b></p> <p><b>Applicant (Facility's Name):</b> Iredell Transmission, LLC</p> <p><b>Facility Address:</b>          Iredell Transmission, LLC          365 Twin Oaks Road          Statesville, NC 28625</p> <p><b>SIC:</b> 4931 / Elec &amp; Other Services Combined  <b>NAICS:</b> 22121 / Natural Gas Distribution</p> <p><b>Facility Classification: Before:</b> Title V <b>After:</b> Title V  <b>Fee Classification: Before:</b> Title V <b>After:</b> Title V</p>	<p style="text-align: center;"><b>Permit Applicability (this application only)</b></p> <p><b>SIP:</b> 15A NCAC 02Q .0516, 15A NCAC 02Q .0507(c), 15A NCAC 02D .016, 15A NCAC 02D .0521, 15A NCAC 02D .1806  <b>NSPS:</b> Subpart JJJJ  <b>NESHAP:</b> MACT Subpart ZZZZ  <b>PSD:</b> N/A  <b>PSD Avoidance:</b> 15A NCAC 02Q .0317  <b>NC Toxics:</b> 15A NCAC 02D .1100  <b>112(r):</b> N/A  <b>Other:</b> SB-3</p>
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<b>Contact Data</b>	<b>Application Data</b>			
<table border="1" style="width: 100%;"> <tr> <td style="width: 33%; vertical-align: top;"> <p><b>Facility Contact</b>            Willard Handy            Facility Technician            (704) 873-9161            356 Twin Oaks Road            Statesville, NC 28625</p> </td> <td style="width: 33%; vertical-align: top;"> <p><b>Authorized Contact</b>            Mark Hill, Jr.            Vice President -            Operations            (734) 302-5359            425 South Main Street,            Suite 201            Ann Arbor, MI 48104</p> </td> <td style="width: 33%; vertical-align: top;"> <p><b>Technical Contact</b>            Maureen Bennett            Environmental Engineer            (734) 913-5976            414 South Main Street,            Suite 600            Ann Arbor, MI 48104</p> </td> </tr> </table>	<p><b>Facility Contact</b>            Willard Handy            Facility Technician            (704) 873-9161            356 Twin Oaks Road            Statesville, NC 28625</p>	<p><b>Authorized Contact</b>            Mark Hill, Jr.            Vice President -            Operations            (734) 302-5359            425 South Main Street,            Suite 201            Ann Arbor, MI 48104</p>	<p><b>Technical Contact</b>            Maureen Bennett            Environmental Engineer            (734) 913-5976            414 South Main Street,            Suite 600            Ann Arbor, MI 48104</p>	<p><b>Application Number:</b> 4900262.17A  <b>Date Received:</b> 03/17/2017  <b>Application Type:</b> Renewal/Modification  <b>Application Schedule:</b> TV-Renewal</p> <p style="text-align: center;"><b>Existing Permit Data</b></p> <p><b>Existing Permit Number:</b> 08634/T07  <b>Existing Permit Issue Date:</b> 02/03/2016  <b>Existing Permit Expiration Date:</b> 03/31/2018</p>
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**Total Actual emissions in TONS/YEAR:**

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2015	1.60	22.40	20.77	132.30	7.10	22.54	17.67 [Formaldehyde]
2014	1.30	20.90	2.90	124.00	6.90	4.50	3.76 [Hydrogen chloride (hydrochlori)]
2013	1.30	21.70	2.90	128.70	6.20	4.29	3.61 [Hydrogen chloride (hydrochlori)]
2012	1.70	42.40	16.10	167.20	7.30	5.09	4.38 [Hydrogen chloride (hydrochlori)]
2011	1.40	44.70	32.30	160.10	6.90	4.65	3.99 [Hydrogen chloride (hydrochlori)]

<p><b>Review Engineer:</b> Yukiko (Yuki) Puram</p> <p><b>Review Engineer's Signature:</b> _____ <b>Date:</b> _____</p>	<p style="text-align: center;"><b>Comments / Recommendations:</b></p> <p><b>Issue:</b> 08634/T08  <b>Permit Issue Date:</b> _____  <b>Permit Expiration Date:</b> _____</p>
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## **I. Purpose of Application:**

Iredell Transmission, LLC (Iredell) submitted an application for permit renewal with modification which was considered complete on March 22, 2017. Recently, the DAQ changed the SB3 emission limits for landfill-gas-fired engines to match the NSPS Subpart JJJJ limits. Iredell submitted the application to modify the limits due to this policy change. The facility tried to change the limits through an administrative amendment, but the DAQ determined that the change must be made through a significant modification. Because the SB3 limit was used to calculate the potential emissions for the PSD avoidance conditions, the parameter used for the PSD calculation would also have to be modified. Therefore, the application shall be processed as a significant modification under 15A NCAC 02Q .0516. Since the current permit (T07) is expiring on March 31, 2018, the Permittee requested to process a renewal simultaneously with the significant modification. The renewal will be processed in accordance with 15A NCAC 02Q .0501(c).

## **II. Facility Description:**

Iredell Transmission, LLC is owned and operated by DTE Biomass Energy (DTE). The facility utilizes landfill gas that is generated by the Iredell County Landfill and creates electrical energy that is supplied to the local utility power grid. Normal operation for this facility is to burn the landfill gas in the two engine/generator units. A candle stick flare (1,714 cfm) is used as a backup system to combust the landfill gas that is not burned by the engine/generator units or when the engine/generator units are not operating. Iredell County Landfill is permitted under a separate permit, 09959T02. The landfill owns and operates the landfill gas collection and control system, but the treatment system and the flare are owned by Iredell Transmission, LLC.

## **III. Application Chronology:**

September 26, 2016	Received an application for administrative amendment to change the SB3 limits at Mooresville Regional Office.
February 13, 2017	Ms. Maureen Bennett from DTE sent a request to rescind the application for the administrative amendment. The application was closed in the IBEAM.
March 22, 2017	Received an application for a renewal with a significant modification.
March 24, 2017	Acknowledgement letter was sent to the facility.
March 27, 2017	Received P&O review from the MRO.
April 24, 2017	Spoke to Ms. Bennett to confirm that the landfill owns and operates the gas collection and control system (GCCS), but DTE owns the flare and the gas treatment system.
June 16, 2017	Sent an email to Ms. Bennett confirming manufacturing dates of ES-02 and ES-03.
June 26, 2017	Ms. Bennett confirmed that manufacturing dates of ES-02 and ES-03 are September 10, 2007 and October 29, 2007, respectively

June 27, 2017

Draft permit and permit renewal sent to Ms. Maureen Bennett and Mr. Mark Hill of DTE Energy, Mr. Booker Pullen of RCO and Ms. Denise Hayes of MRO for review.

**IV. Changes to Permit/Title V Equipment Editor (TVEE)**

Existing Page(s)	New Page(s)	Section	Description of Changes
Cover and throughout	Cover and throughout	-	<ul style="list-style-type: none"> <li>Updated all dates and permit revision numbers.</li> <li>Changed the names of the governor, the secretary and the director.</li> <li>Changed the name of the facility’s responsible official.</li> <li>Added a PSD increment for NOx.</li> </ul>
3	N/A	2.1.A Emission Source Table	Deleted the odorous emissions since it was repetitive of Section 2.2.
3	3	1	<ul style="list-style-type: none"> <li>Updated all page numbers in the Emission Source and Control Device Table in Section 1.</li> </ul>
4	4	2.1.B Emission Source Table	<ul style="list-style-type: none"> <li>Added limits of each pollutant per the NSPS Subpart JJJJ standards.</li> <li>Deleted formaldehyde since the engines/generator units are exempt from the toxic emission conditions per §143-215.107 and 15A NCAC 02Q .0702(a)(27)(B).</li> <li>Deleted odorous emissions and carbon monoxide since they were repetitive of Section 2.2.</li> </ul>
5-6	7	2.1.B.3.c	Deleted the testing conditions and referred to General Condition JJ.
6	5-7	2.1.B.3.d	Deleted the initial performance test requirement, and moved the section to 2.1.B.3.c.
8	N/A	2.1.B.4	Deleted 15A NCAC 02D .1100, Toxic Air Emission Limitation and Reporting Requirement.
8	7	2.1.B.5.a	Changed the wording for the applicability section.
8	7	2.1.B.5.c	Deleted the initial notification requirements.
8	7	2.1.B.5.d	Added non-compliance language.
8	7	2.1.B.6.A	Changed the CO and NOx emission limits to 5.0 g/hp-hr and 3.0 g/hp-hr, respectively.
10	8	2.2.B.2	Changed the CO emission factor to 5.0 g/hp-hr
11-20	9-18	3	Updated the general conditions to version 5.0.

TVEE was update to reflect the most recent equipment listed on this permit.

**V. Regulatory Review**

**2.1 Emission Source(s) and Control Device(s) Specific Limitations and Conditions**

- A. Municipal Solid Waste landfill with associated landfill gas collection and control system (ID No. CD-GCCS1) including one candlestick flare (1714 cfm, 36 million Btu per hour nominal heat**

**input based on LHV of landfill gas @350 Btu/ft3) (ID No. CD-1) and one landfill gas treatment system (ID No. CD-Treatment)**

Even though the landfill and the GCCS are permitted under a separate permit, the treatment system and the flare are owned by Iredell Transmission. They are subject to the following requirements:

1. 15A NCAC 02D .0516: SULFUR DIOXIDE EMISSIONS FROM COMBUSTION SOURCES  
Emissions of sulfur dioxide from the flare shall not exceed 2.3 pounds per million Btu heat input. Similar to natural gas, sulfur dioxide emissions from burning landfill gas is minimal. Using sulfur dioxide emissions factor from burning natural gas from AP-42, the emissions from the flare is expected as follows:

$$\frac{0.6 \text{ lb}}{10^6 \text{ cf}} \times \frac{1714 \text{ cf}}{\text{min}} \times \frac{60 \text{ min}}{\text{hr}} \times \frac{\text{hr}}{36 \text{ mmBtu}} = 0.0017 \text{ lb/mmBtu}$$

Therefore, compliance is expected.

2. 15A NCAC 02D .0521: CONTROL OF VISIBLE EMISSIONS  
Visible emissions from the flare (ID No. ES-01) shall not be more than 20 percent opacity each when averaged over a six-minute period.  
No deviation from this requirement was recorded. Compliance is expected.

**B. Two landfill gas-fired lean burn internal combustion engine (2233 bhp each)/electricity generator (1600 kW each) units, ID Nos. ES-02 and ES-03.**

1. 15A NCAC 02D .0516: SULFUR DIOXIDE EMISSIONS FROM COMBUSTION SOURCES  
Emissions of sulfur dioxide from engine/generator units (ES-02 and ES-03) shall not exceed 2.3 pounds per million Btu heat input.

As indicated in A.1, sulfur dioxide emissions from the engines are expected to be similar to the emissions from natural gas combustion. Therefore, compliance is expected.

2. 15A NCAC 02D .0521: CONTROL OF VISIBLE EMISSIONS  
Visible emissions from engine/generator units (ES-02 and ES-03) shall not be more than 20 percent opacity each when averaged over a six-minute period.

According to the last inspection report, compliance was indicated.

3. 15A NCAC 02D .0524: NEW SOURCE PERFORMANCE STANDARDS FOR STATINARY NON-EMERGENCY SPARK IGNITION ENGINES [40 CFR PART 60, SUBPART JJJJ], "NO<sub>x</sub>, CO and VOCs"  
The engines (ES-02 and ES-03) are subject to NSPS Subpart JJJJ as non-certified, non-emergency stationary SI internal combustion engines greater than 500 HP. According to Ms. Bennett, manufacturing dates of ES-02 and ES-3 are September 10, 2007 and October 29, 2007, respectively. As required, the facility conducts source testing annually. Last performance test was conducted on November 28, 2016. Although the testing is currently under review, the test report indicated compliance with NSPS Subpart JJJJ. Compliance is expected.
4. 15A NCAC 02D .1100: TOXIC AIR POLLUTANT EMISSIONS LIMITATIONS AND REPORTING REQUIREMENT  
The potential formaldehyde emissions were modeled based on the manufacturer's emission rate at the last permit modification (T07). The modeling analysis demonstrated compliance with AAL. Since the sources are subject to MACT Subpart ZZZZ, this toxic emission requirement will be removed from the permit per NCGS § 143-215.107 and 15A NCAC 02Q .0702(a)(27)(B).

5. 15A NCAC 02D .1111: MAXIMUM ACHIEVABLE CONTROL TECHNOLOGY

The facility is a major source of HAP due to the formaldehyde emissions from the engines. The initial reporting requirement was removed since the requirement has already met. The engines are exempt from the emission and operation limitations of MACT Subpart ZZZZ since they are new engines with a site rating of more than 500 brake HP located at a major source of HAP emissions which combusts landfill or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis.

6. BEST AVAILABLE CONTROL TECHNOLOGY

General Assembly of North Carolina, Session Law 2007-397, Senate Bill 3 (SB3)

Due to DAQ's change in the SB3 policy and due to the applicant's request, the CO and NOx emission limits were increased to 5.0 g/hp-hr and 3.0 g/hp-hr, respectively. Even though the facility requested to change the NOx emission limit to 2.0 g/hp-hr on their permit application, the limit for the engines that are manufactured prior to July 1, 2010 is 3.0 g/hp-hr. Therefore, the NOx emission limit will be changed to 3.0g/hp-hr in accordance to NSPS Subpart JJJJ, Table 1.

**2.2 Multiple Emission Source(s) Specific Limitations and Conditions**

**A. STATE-ONLY REQUIREMENT: ODOR REQUIREMENTS**

**15A NCAC 02D .1806 "Control and Prohibition of Odorous Emissions" (State-enforceable only)**

No change was made with this requirement.

**B. 15A NCAC 02Q. 0317: AVOIDANCE CONDITIONS**

**15A NCAC 02D. 0530: PREVENTION OF SIGNIFICANT DETERIORATION – Carbon Monoxide**

In the previous permits, the Permittee used the SB3 limits to calculate the potential emissions to avoid the PSD applicability. Since the Permittee requested to increase the SB3 limits to match the NSPS standards, the PSD calculation equation on the permit needs to be updated to reflect the changes.

Therefore, the emission factor for CO in the equation was increased to 5.0 g/bhp-hr from 3.3 g/bhp-hr. See calculations in Section VIII below.

**VI. NSPS, NESHAPS/MACT, NSR/PSD, 112(r), RACT, CAM**

Iredell Transmission, LLC is subject to NSPS Subpart JJJJ and MACT Subpart ZZZZ. See Section V above for the applicable requirements. This facility is a major source of HAPs. The landfill (ES-01), the gas collection and control system (CD-GCCS1), the flare (CD-1) and the treatment system (CD-Treatment) are subject to NSPS Subpart WWW. However, the requirements associated with Subpart WWW are on Iredell County landfill's permit since they own and operate the emission source (ES-01).

**VII. Facility Wide Air Toxics**

Iredell conducted a dispersion modeling analysis to demonstrate a compliance with Acceptable Ambient Limit (AAL) for formaldehyde. According to the review dated December 9, 2015, the maximum impacts of formaldehyde emissions was 19% of AAL, which demonstrated that there was no unacceptable human health risk. Per NCGS§ 143-215.107 and 15A NCAC 02Q .0702(a)(27)(B), the sources (ID Nos. ES-02 and ES-03) are exempt from the air toxic pollutant regulations.

**VIII. Facility Emissions Review**

- Potential emissions from the flare (CD-1):

$$CO^*: \frac{0.37 \text{ lbs}}{10^6 \text{ Btu}} \times \frac{500 \text{ Btu}}{\text{ft}^3 \text{ LFG}} \times \frac{1714 \text{ cf}}{\text{min}} \times \frac{60 \times 8760 \text{ min}}{\text{yr}} \times \frac{\text{ton}}{2000 \text{ lb}} = 83 \text{ tpy}$$

$$NOx^{**}: \frac{40 \text{ lb}}{10^6 \text{ cf}} \times \frac{1714 \text{ cf}}{\text{min}} \times 50\% CH_4 \times \frac{60 \times 8760 \text{ min}}{\text{yr}} \times \frac{\text{ton}}{2000 \text{ lb}} = 9.0 \text{ tpy}$$

$$PM^{**}: \frac{17 \text{ lb}}{10^6 \text{ cf}} \times \frac{1714 \text{ cf}}{\text{min}} \times 50\% CH_4 \times \frac{60 \times 8760 \text{ min}}{\text{yr}} \times \frac{\text{ton}}{2000 \text{ lb}} = 7.6 \text{ tpy}$$

\* Emission factor based on the vender record

\*\*Emission factors based on the EPA's AP42

- Potential emissions from the engine/generator units (ES-02 and ES-03):

$$\text{CO}^*: \frac{5.0 \text{ grams}}{\text{bhp-hr}} \times \frac{0.0022 \text{ lbs}}{\text{gram}} \times 2233 \text{ bhp} \times \frac{8760 \text{ hrs}}{\text{yr}} \times \frac{\text{ton}}{2000\text{lb}} \times 2 \text{ engines} = 215 \text{ tpy}$$

$$\text{NOx}^*: \frac{3.0 \text{ grams}}{\text{bhp-hr}} \times \frac{0.0022 \text{ lbs}}{\text{gram}} \times 2233 \text{ bhp} \times \frac{8760 \text{ hrs}}{\text{yr}} \times \frac{\text{ton}}{2000\text{lb}} \times 2 \text{ engines} = 129 \text{ tpy}$$

$$\text{VOCs}^*: \frac{1.0 \text{ grams}}{\text{bhp-hr}} \times \frac{0.0022 \text{ lbs}}{\text{gram}} \times 2233 \text{ bhp} \times \frac{8760 \text{ hrs}}{\text{yr}} \times \frac{\text{ton}}{2000\text{lb}} \times 2 \text{ engines} = 43 \text{ tpy}$$

SO<sub>2</sub>\*\* : 9.9 tpy  
 PM<sub>10</sub>\*\* : 10 tpy  
 Formaldehyde\*\*\* : 18.1 tpy

\* Emission factors based on the NSPS Subpart JJJJ limits

\*\* Emission rates based on the application for T04

\*\*\* Emission rate based on the application for T07

- Facility-wide potential emissions:

Pollutant	CO	NOx	PM10	SO2	VOCs	Formaldehyde
Emission Rate (tpy)	298	138	18	9.9	43	18.1

## IX. Compliance Status

Iredell has three violations in the past five years per the DAQ's database.

- An NOV/NRE was issued March 7, 2012 for a late ACC report.
- An NOV/NRE was issued May 12, 2014 for a failed stack test.
- An NOV/NRE was issued August 13, 2014 for a late semiannual report.

During the most recent inspection, conducted on March 23, 2017 by Ms. Melinda Wolanin of MRO, the facility appeared to be in compliance with all applicable requirements.

## X. Public Notice/EPA and Affected State(s) Review

A notice of the DRAFT Title V Permit shall be made pursuant to 15A NCAC 2Q .0521. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. The US EPA will also be given a 45-day review period. Copies of the public notice shall be sent to persons on the Title V mailing list and the EPA. Pursuant to 15A NCAC 2Q .0522, a copy of each permit application, each proposed permit and each final permit pursuant shall be provided to EPA.

## XI. Other Regulatory Considerations

- A P.E. seal is NOT required for this application.
- A zoning consistency determination is NOT required for this application.
- Due to the SB-3 limits increase, potential emissions for CO and NOx were increased as follows:
  - CO: 215.7 tpy – 194.06 tpy = 21.06 tpy = 4.94 lb/hr
  - NOx: 86.3 tpy – 76.33 tpy = 9.97 tpy = 2.28 lb/hr

Since Iredell County has triggered PSD increment tracking for PM<sub>10</sub>, SO<sub>2</sub> and NO<sub>x</sub>, only the NO<sub>x</sub> emission increased will be noted on the cover letter.

## XII. Recommendations

The renewal application with associated modification for Iredell Transmission, LLC located in Statesville, Iredell County, NC has been reviewed by DAQ to determine compliance with all procedures and requirements. DAQ has determined that this facility is complying or will achieve compliance, as specified in the permit, with all requirements that are applicable to the affected sources. The DAQ recommends the issuance of Air Permit No. 10226T03.