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VIA EMAIL - nm.methanestrategy@state.nm.us

New Mexico Environment Department
Air Quality Bureau
ATTN: Liz Bisbey-Kuehn
525 Camino de los Marquez
Santa Fe, NM 87505

RE: GCA Comments on NMED Draft Ozone Precursor Rule

The Gas Compressor Association (GCA) is a trade organization of the natural gas industry. Several of our member companies manufacture, produce, and service natural gas compressor packages as well as related components. Many members own and operate natural gas compressor fleets which they rent or utilize to provide compression services to producers and midstream companies (collectively hereinafter, "compression services"), which will be significantly impacted by the above-mentioned draft Ozone Precursor Rule. These natural gas compressor packages and compression services help transport natural gas from the wellhead to the ultimate consumers.

According to information provided during a public meeting on August 6, 2020, the New Mexico Environment Department (NMED) has drafted the Ozone Precursor Rule in conjunction with the New Mexico Energy, Minerals and Natural Resources Department (EMNRD), Oil Conservation Division (OCD) to reduce emissions from producers and midstream operations as a part of the New Mexico Methane Strategy. Several of the included provisions directly impact compression service providers and manufacturers of related natural gas compressor package components. The potentially affected natural gas compressor package engines primarily utilize wellhead or field natural gas to operate their natural gas-driven engines, the same stream of gas those packages are employed to compress and transport. These comments are limited to the proposed rulemaking that would result in technically unachievable emission limitations, overly burdensome cost of potential retrofitting of natural gas compressor packages and related components, and nonviable maintenance practices, which in most cases is a function of the quality of the natural gas being produced in the state of New Mexico.

The GCA offers comments and makes requests with respect to the following areas of concern:

1. Request for the addition of the following federally defined terms and clarification on how these terms will affect compliance with the proposed rulemaking: Reconstruction, Certified Engines, Portable Engines, and Non-Road Engines.

2. The overly burdensome management of compliance regarding Equipment Monitoring Information and Tracking Tags (EMITT). Proposed § 20.2.50.12.A(6)(7), B(4).

3. The nonviability of certain proposed emission standards for natural gas compressor engines due to the quality of wellhead and field natural gas found in the state of New Mexico. Proposed § 20.2.50.13.B.

4. Monitoring and maintenance standards being overly inclusive and not allowing for site specific operating scenario maintenance. Proposed § 20.2.50.13.C(1).

5. Request for clarification regarding the proposed testing methodology. Proposed §20.2.50.13.C.

6. Request for reconsideration of any positive audible, visual, or odorous (AVO) leaks being tagged and reported to designee within three calendar days.

7. Request for exemption of "Certified Engines," as defined by New Source Performance Standard (NSPS) Subpart JJJJ, that comply with the required emissions factors.

8. Assign PPM values that correspond to the g/hp* limits as included in the NSPS Subpart JJJJ.

Area of Concern No. 1: Request for the addition of the following federally defined terms and clarification on how these terms will affect compliance with the proposed rulemaking: Reconstruction, Certified Engines, Non-Road Engines, and Portable Engines.

The addition of these terms to the Proposed N.M.A.C. § 20.2.50.8 and an explanation of each term's impact on compliance with the rule is requested to promote ease of permitting and compliance. Specifically, portable engines are inclusive to the broader category of Non-Road Engines regulated under the Clean Air Act. No state or any political subdivision thereof may adopt or attempt to enforce any standard relating to the control of emissions from new or non-new non-road engines. Therefore, GCA does not agree that the NMED has the authority under the Clean Air Act to issue the proposed standards for Non-Road Engines.

Area of Concern No. 2: The overly burdensome management of compliance regarding Equipment Monitoring Information and Tracking Tags (EMITT). Proposed § 20.2.50.12.A(6)(7), B(4).

A large portion of producers and midstream companies utilize compression services utilizing engine-driven natural gas compressor packages from third-party companies. GCA's member companies provide compression services via natural gas compressor packages located all over the United States and via contracts ranging anywhere from six months to multiple years depending on the producer's or midstream company's needs. At the end of a compression services contract, these natural gas compressor packages are transported to another site of in need of compression services, often resulting in them moving from state-to-state.

As such, a natural gas compressor package could be in New Mexico only for a relatively short period of time before being removed from the state entirely, and it might never return. Utilizing an EMITT for shorter compression service assignments would require technology that is redundant. The information the EMITT tracks cannot operationally change before the compression services contract term ends. As an example, a permitted natural gas compressor package under a six-month compression services contract cannot alter the unique unit identification number, UTM coordinates, type of unit, Potential to Emit (PTE), and control efficiency provided in the original permit application due to timing constraints and labor . If none of the information tracked by the EMITT can change before the natural gas compressor package leaves the state of New Mexico, maintaining an EMITT becomes overly burdensome and costly without aiding the reduction of emissions.

A natural gas compressor package consists primarily of a natural gas-driven engine, a compressor, a unit frame, and various connectors and components. Each engine and compressor carry an unalterable unique serial number generated by its manufacturer. This serial number is already utilized to provide the EPA, state agencies, producers, midstream companies, and packagers a uniform standard to identify basic information regarding the engine's or compressor's original build. While each natural gas compressor package has an engine and compressor, the package does not always keep the same engine and compressor throughout its

useful life (i.e., engine or compressor "swings"), resulting in a change of serial number for that component of that natural gas compressor package. When an engine or compressor is replaced on a natural gas compressor package's frame, the replacement does not always come from the state where the natural gas compressor package is operating. Thus, the EMITT requirement becomes ineffectual, and at a high cost in terms of time, money and effort. Each time an engine or compressor leaves the State of New Mexico the replacement would be assigned a new EMITT that would not correlate with the originally permitted natural gas compressor package unit frame regardless of software utilized.

The NMED proposes that the EMITT shall provide a state inspector with: (a) a unique unit identification number; (b) the UTM coordinates of the facility; (c) the type of unit (e.g., tank, VRU, dehydrator, pneumatic controller, etc.); (d) for the engine, the VOC (and NOx, if applicable) potential to emit in pounds per hour and tons per year; and (e) for control equipment, the controlled VOC (and NOx, if applicable) potential to emit in pounds per hour and tons per year and the design control efficiency in percent. As to each, the GCA offers the following comments:

(a) Unique Unit Identification Number – As third-party compression service providers, GCA members do not have access to the permit held by its producer or midstream company customer for such information. While GCA members' natural gas compressor packages may have unique numbers for internal fleet identification and management purposes, as previously mentioned, the engine and compressor on each package may change from time to time, so the value of this data point is questionable at best.

(b) UTM Coordinates – The GCA believes this information is not relevant to a natural gas compressor package's emissions reduction and is already provided to the state in our customers' original permit applications.

(c) Type of Unit – Providing an EMITT for each component of a natural gas compressor package does not promote the reduction of emissions. Certain components of natural gas compressor packages do not produce emissions or pose a risk of leaks and are inaccessible due to the design of the equipment.

(d) Equipment Specifications – Equipment manufacturers do not guarantee criteria pollutant potential to emit ("PTE") emission factors. Each scenario is different depending on site-specific variables such as operating conditions (e.g., elevation, temperature, etc.) and gas conditions, impacting Rated Horsepower (hp), Maximum Operating Hours, Fuel HHV (Btu/scf), Fuel Consumption (Btu/bhp-hr @ 100% load) and Maximum Heat Input (MMBtu/hr). As a result, no such guarantee is possible.

(e) Control Device Specifications – Control device manufacturers do not guarantee criteria pollutant PTE emission factors either. Rather, their guarantee provides a statement of what the control device can achieve under lab conditions, not what the control device may achieve with variable operating and gas conditions, namely fuel. Further, even if applicable to real world conditions, control device guarantees are provided in percent reduction and would need to be converted to pound per hour (lb/hr) and ton per year (TPY) measurements. Currently, there is not a standard provided federally or by a state to calculate such numbers, so each EMITT would have entirely different data. These measurements are better tracked through the existing permit application process.

The EMITT applicable to diverse, competing compression service providers' natural gas compressor package fleets cannot be linked to an EMITT Database accessible to state inspectors as that fleet data is competitively sensitive information and could arguably be considered material, non-public information by those providers and/or relevant governmental authorities.

Moreover, there is no state or federal rule specifying the use of a certain software. Each producer's and midstream company's database management system and processes is unique and may not be capable of interfacing with those of third-party companies, like those of GCA's members. As an example, there are

several different portable analyzers available on the market, each with different data input processors that result in the inability to capture all data in one place. Any regulation requiring each business to use a certain type of software or equipment would be overreaching and counterproductive to a competitive trade market. Ultimately, regulation requiring the EMITT to be linked to an unspecified database would be overly vague and technologically and competitively problematic.

Area of Concern No. 3: The nonviability of certain proposed emission standards for natural gas compressor engines due to the quality of wellhead and field natural gas found in the state of New Mexico. Proposed § 20.2.50.13.B.

The GCA requests that the state evaluate the negative effects of constituents found in the natural gas found in the affected counties. That field gas, which is used to power the subject natural gas compressor packages, is significantly different in those New Mexico counties than the Pipeline Quality Natural Gas (PQNG) that the engine and emissions equipment suppliers use to calculate performance. The typical New Mexico field gas contains lower amounts by volume of methane and higher amounts of heavier constituents such as propane, ethane, and butane, as reflected in Tables 1, below. This effect on the engine output emissions can be significant, especially with respect to VOCs, and makes compliance with the rule much more challenging and costly to attain, as reflected in Table 2, below.

The GCA recommends that a percent reduction alternative be included similar to the federal National Emission Standards for Hazardous Air Pollutants (NESHAP) limits for CO on lean burns, which allows for a 93% CO reduction option for a given target concentration. A 50% VOC reduction is a fair standard with up to 80% achievable for double the cost.

Table 1 – Example of extended fuel gas commonly found in the state of New Mexico:

Constituent	Abbrev	Mole %	Norm
Water Vapor	H2O	0.0000	0.0000
Methane	CH4	71.0141	71.0141
Ethane	C2H6	10.8672	10.8672
Propane	C3H8	6.0350	6.0350
Isobutane	iso-C4H10	0.7616	0.7616
Norbutane	nor-C4H10	1.9195	1.9195
Isopentane	iso-C5H12	0.4580	0.4580
Norpentane	nor-C5H12	0.4799	0.4799
Hexane	C6H14	0.1158	0.1158
Heptane	C7H16	0.0605	0.0605
Nitrogen	N2	2.6320	2.6320
Carbon Dioxide	CO2	5.6470	5.6470
Hydrogen Sulfide	H2S	0.0000	0.0000
Carbon Monoxide	CO	0.0000	0.0000
Hydrogen	H2	0.0000	0.0000
Oxygen	O2	0.0000	0.0000
Helium	HE	0.0000	0.0000
Neopentane	neo-C5H12	0.0000	0.0000
Octane	C8H18	0.0094	0.0094
Nonane	C9H20	0.0000	0.0000
Ethylene	C2H4	0.0000	0.0000
Propylene	C3H6	0.0000	0.0000
TOTAL (Volume %)		100.0000	100.0000

Fuel Makeup:	Gas Analysis
Unit of Measure:	English
Calculated Fuel Properties	
Caterpillar Methane Number:	53.4
Lower Heating Value (Btu/scf):	1090
Higher Heating Value (Btu/scf):	1200
WOBBE Index (Btu/scf):	1225
THC: Free Inert Ratio:	11.08
Total % Inerts (% N2, CO2, He):	8.279%
RPC (%) (To 905 Btu/scf Fuel):	100%
Compressibility Factor:	0.996
Stoich A/F Ratio (Vol/Vol):	11.29
Stoich A/F Ratio (Mass/Mass):	14.25
Specific Gravity (Relative to Air):	0.792
Fuel Specific Heat Ratio (K):	1.282

Table 2 – Resulting emission outputs utilizing fuel gas commonly found in the state of New Mexico:

Results

Description	Standard Rating	Site Rating	Units
Rated Engine Power	1380	1380	bhp
Rated Speed	1400	1400	rpm
SCAC Temp:	130	130	°F
Inlet Air Temp	77	77	°F
Altitude	500	499	ft
Fuel Methane	84.7	53.4	
Fuel Consumption	7375	7380	Btu/bhp-hr
Inlet Manifold Pressure	89.7	88.1	in Hg(abs)
Set Point Timing	30	28	°BTDC
Exhaust Temp. - Engine Outlet	836	836	°F
Exhaust Gas Flow	7958	8087	ft3/min
Exhaust Mass Gas Flow	14302	14379	lb/hr
NOx(as NO2)	0.50	0.50	g/bhp-hr
CO	2.03	2.50	g/bhp-hr
THC	4.27	3.92	g/bhp-hr
NMHC	0.64	1.74	g/bhp-hr
NMNEHC	0.43	1.07	g/bhp-hr
HCHO	0.42	0.38	g/bhp-hr
CO2	457	520	g/bhp-hr
Exhaust Oxygen	9.0	9.0	% DRY
Desired NOx - Engine Setpoint	62	61	PPM (Uncorrected)
Ht. Rejection to JW	37499	36743	Btu/min
Ht. Rejection to Atmos	5313	5313	Btu/min
Ht. Rejection to Lube Oil	4533	4442	Btu/min
Ht. Rejection to AC Stage 1	8040	7606	Btu/min
Ht. Rejection to AC Stage 2	5063	5035	Btu/min

<u>Area of Concern No. 4: Monitoring and maintenance standards being overly inclusive and not allowing for site specific operating scenario maintenance. Proposed § 20.2.50.13.C(1).</u>

The GCA urges the NMED to adopt the following language:

> "…Maintenance and repair for all spark ignition engines, compression ignition engines, and stationary combustion turbines shall meet the minimum engine or turbine manufacturer's recommended maintenance schedule or follow an owner/operator specified maintenance plan, complying with all applicable federal requirements, and following the prescribed practices of all state rules."

Manufacturer recommended maintenance is designed to encompass any operating scenario, effectively including timing constraints or exaggerated wear on a natural gas compressor engine or component that may not apply in the state of New Mexico. This can result in the excessive replacement of parts and overly burdensome routine maintenance that does not yield a decrease in emissions and, instead, simply results in the incurrence of additional costs that ultimately get passed along to the consumer of natural gas. The GCA believes the Proposed 20.2.50.13.C(1) should allow the owner and/or operator of the natural gas compressor packaged to operate and maintain that equipment, including its stationary reciprocating internal combustion engine (RICE) and after-treatment control device (if any) according to a maintenance plan that provides for

the maintenance and operation of the equipment in a manner consistent with good air pollution control practice for minimizing emissions, as provided under existing NESHAP Subpart ZZZZ.

Owners and/or operators in industrial applications typically have well-established operations and maintenance (O&M) programs, including maintenance procedures such as "condition-based" maintenance, which allow owners to make decisions based on operating or diagnostic information specific to industrial applications. Natural gas-fired RICE engines like those in GCA members natural gas compressor packages are integral to numerous energy sector industries, requiring extensively researched and developed and time-tested O&M programs with a primary goal of increasing the life expectancy of the natural gas compressor package. Robust O&M programs lead not only to a long, productive, and efficient life for our natural gas compressor packages, but equally to reduced emissions. Taking away the owners and/or operators ability to assess individual maintenance needs and only allow for inflexible maintenance could cause an increase of emissions.

The EPA has well-established and time-tested requirements for RICE and after-treatment control device maintenance. This was done after reviewing extensive comments from industry and environmental groups, as well as technical consultants. There is no need for the NMED to revisit the utilization of manufacturer recommend maintenance schedules, and doing so could result in inconsistencies that are overly difficult to track, complicated to follow and challenging to apply with respect to natural gas compressor packages that periodically move between states. Instead, the requirement in the proposed rule language should be that the federal rule(s) are followed as applicable. In this case, the recommendation is to incorporate NESHAP Subpart ZZZZ by reference.

Area of Concern No. 5: Request for clarification regarding the proposed testing methodology. Proposed § 20.2.50.13.C.

ASTM D6522 does not test for volatile organic compounds (VOCs). The test method covers the determination of nitrogen oxides (NO and NO2), carbon monoxide (CO), and oxygen (O2) concentrations in controlled and uncontrolled emissions from natural gas-fired reciprocating engines using portable analyzers with electrochemical sensors. Due to the inherent cross sensitivities of the electrochemical cells, it has been proven that the test method should not be applied to other pollutants or emission sources. GCA requests the NMED authorize CO as a surrogate measure for VOC emissions consistent with current NMED monitoring protocols included in "NEW MEXICO AIR QUALITY BUREAU, NSR & TV: IC ENGINES MONITORING PROTOCOL – PERMIT TEMPLATE LANGUAGE, Version: May 23, 2016," which reads in relevant part as follows:

> "Note 3: Periodic Emissions Testing: "Test results that demonstrate compliance with the CO emission limits shall also be considered to demonstrate compliance with the VOC emission limits." The rationale for this statement is that the portable analyzers do not speciate VOC compounds and the cost of a separate EPA method test is significant; therefore, AQB relies on CO monitoring to demonstrate compliance with VOC limits. Taking into account that the manufacturer tests the equipment and specifies the expected NOx, CO, and VOC emissions for a unit operating properly, as well as basic principles of combustion chemistry, if an engine test demonstrates that CO concentration fall within the emission limits, then VOC also falls within the emission limits, and the engine is performing as represented in the application."

Area of Concern No. 6: Request for reconsideration of any positive audible, visual, or odorous (AVO) leaks being tagged and reported to designee within three calendar days.

The GCA recommends an alternate compliance schedule of three business days. As previously expressed, many producers and midstream companies utilize the compression services of GCA members. As such, the

communication about potential leaks from those site owners and operators to we compression service providers can take time and may require multiple internal and external notifications between and within companies. These compression service providers are commonly required to perform all maintenance on the natural gas compressor packages due to safety and liability concerns and as a result of contractual obligations. These producer and midstream company sites at which the compression services are provided are often quite remote and, as such, travel is required, sometimes from an affiliate regional maintenance office that serves as a centralized hub for more than one state. Three business days allows for communication between and within companies and allows compression service providers' personnel to get to and remote location in a timely manner without higher labor costs. Similarly, this time frame was adopted in NESHAP Subpart ZZZZ for oil changes instigated by bad samples.

Area of Concern No. 7: Request for exemption of "certified engines," as defined by NSPS Subpart JJJJ, that comply with the required emissions factors.

An EPA certified engine receives a certificate of conformity demonstrating the engine complies with the emission standards and requirements of NSPS Subpart JJJJ. The intention of the proposed New Mexico Ozone Precursor Rule is to reduce emissions from producers and midstream operations as a part of the New Mexico Methane Strategy. The EPA certification process includes performance guarantee for the useful life of the engines when maintained and operated in a compliance manner waiving the requirements for performance testing similar the EPA certified NRM engines.

The GCA urges the state of New Mexico to waive performance testing for certified engines under Proposed 20.2.50.13, consistent with the NSPS Subpart JJJJ regulatory language, which follows in relevant part:

(A) For an engine greater than or equal to 100 hp and less than or equal to 500 hp, if the engine is certified by the manufacturer in accordance with 40 CFR Part 60, Subpart JJJJ and the owner or operator operates and maintains the engine in accordance with the manufacturer's instructions, the performance testing requirements are waived. 40 CFR §60.4243(a)(1), §60.4243(b)(1).

(B) For an engine greater than 500 hp, if the engine is certified by the manufacturer in accordance with 40 CFR Part 60, Subpart JJJJ and the owner or operator operates and maintains the engine in accordance with the manufacturer's instructions, the continuous compliance performance testing requirements every 8,760 hours of operation or every three years are waived. 40 CFR §60.4243(a)(2)(ii), §60.4243(b)(2)(i).

Area of Concern No. 8: Assign PPM values that correspond to the g/hp* limits, as included in 40 CFR Part 60, Subpart JJJJ

Expressing emissions limits in both g/bhp*hr and ppmvd will aid in field testing, particularly with portable analyzers, to establish compliance to limits consistent with NSPS Subpart JJJJ's Table 1, which follows:

Conclusion:

The GCA wishes to thank the NMED for the opportunity to submit the preceding comments and for its thoughtful consideration of the same. If you have any questions regarding this submittal please contact the GCA via our management company (NACM) at 972-518-0019 or via our Environmental Committee Chairperson Dalyce Watson, at 903-291-2742 or dwatson@jwenergy.com.

Sincerely,

Dalyce Watson

Environmental Committee Chairman, Gas Compressor Association