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Elizabeth Scheehle
Chief, Oil and GHG Mitigation Branch
California Air Resources Board
1001 "I" Street
Sacramento, CA 95814

Re: Pacific Gas and Electric Company's Comments on the Proposed Regulation for Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities

Dear Ms. Scheehle,

Pacific Gas and Electric Company (PG&E) appreciates the opportunity to provide comments on the Air Resources Board's (ARB) Proposed Regulation for Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities[1] (Proposed Regulation), which was released on May 31, 2016.

I. GENERAL COMMENTS

PG&E is committed to delivering safe, reliable and affordable natural gas to our 15 million natural gas customers. Spanning 70,000 square miles, the company's system serves one in 20 Americans, provides 970 billion cubic feet per year of volume, and consists of thousands of miles of pipelines in addition to compressor stations, boosting stations, storage facilities, and other supporting infrastructure.

PG&E is also committed to helping California achieve its ambitious climate goals. Many of the improvements that PG&E has made in recent years to increase the safety and reliability of the natural gas system, including implementing one of the nation's most aggressive pipeline modernization programs and adopting the latest innovative leak-detection technologies, also serve to reduce methane emissions. Additionally, PG&E has upgraded its measurement, monitoring, and data management systems to improve the accuracy of greenhouse gas (GHG) data reported to the United States Environmental Protection Agency (EPA) and ARB in support of the Mandatory Reporting Regulation (MRR).

PG&E respectfully submits the following comments on the Proposed Regulation. An overview of PG&E's comments includes:

[1] Air Resources Board. May 2016. Proposed Regulation Order: Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities.

- More time is required for stakeholder analysis and input regarding the new storage requirements.
- Accurate leak measurement is critical to reducing emissions.
- Critical component exemptions can be appropriately considered at the facility level.
- Performance criteria limiting the number of leaks based on component population counts should be eliminated.

II. STORAGE REQUIREMENTS MERIT ADDITIONAL PUBLIC DISCUSSION

The May 31 Proposed Regulation includes substantial new provisions related to natural gas storage.[2] Unlike the other requirements, the proposed language in 17CCR§95668(h), *Well Casing Vents* and 17CCR§95668(i), *Natural Gas Underground Storage Facility Monitoring Requirements* have not been addressed in public workshops. In light of the fact that the other requirements of this regulation were developed with substantial stakeholder engagement over the course of multiple years, PG&E respectfully requests that the underground storage requirements be excluded from the regulation until more thorough stakeholder review and public discussion can be conducted. Additional public process regarding the storage requirements is also important in light of the Division of Oil, Gas and Geothermal Resources (DOGGR) discussion draft storage regulation and the associated risk for duplicative regulatory requirements.

At this time, PG&E notes that the 200 foot radius well-head monitoring requirement conflicts with the 100 foot radius well-head monitoring requirement contained in the DOGGR discussion draft. PG&E recommends this inconsistency be corrected. Additionally, a well-head radius of 200 feet would include within it components from other types of equipment at certain PG&E facilities. PG&E recommends that the radius be reduced to 100 feet to avoid inadvertently making non-storage components subject to the storage regulations.

III. ACCURATE LEAK MEASUREMENT IS CRITICAL TO REDUCING EMISSIONS

PG&E supports reduction of leak emissions but recommends that further consideration be given to the measurement basis in the Proposed Regulation's Leak Detection and Repair (LDAR) requirements. The LDAR requirements are a key emission reduction provision of the Proposed Regulation, as noted in the Staff Report: Initial Statement of Reasons.[3] Leak repair timelines are driven by measurement of leak concentration using EPA Reference Method 21 testing, with higher concentration leaks requiring speedier repair. In this way, "large" leaks would ostensibly be repaired quickly so as to limit emissions.

However, it is well understood that Method 21, as a concentration-based measurement, does not correlate well to volume-based leak rates. This can result in inaccurate characterization

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[2] Air Resources Board. May 2016. Proposed Regulation Order: Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities. 95668(i).

[3] California Air Resources Board. May 31, 2016. Staff Report: Initial Statement of Reasons. P 84.

of actual emissions from leaks. Even after strictly following Method 21 procedures, external factors like wind speed, probe orientation, and screening speed introduce measurement uncertainties that can cause any single leak rate estimate to vary by a factor of 1000. ARB's own documentation regarding Method 21 recognizes the issue: "This procedure is intended to locate and classify leaks only, and is not to be used as a direct measure of mass emission rate from individual sources." [4]The lack of correlation between concentration-based measurements and actual leak emissions can lead to the misclassification of minor leaks as severe.

Accurate leak measurement is critical for cost-effective emissions reduction. For one, understanding the true severity of leaks allows for proper repair prioritization. Additionally, making repairs on the timelines mandated by the Proposed Regulations will often require equipment blowdowns, which may result in emissions many times greater than the leak that is being repaired. Accurate leak measurement allows for informed analysis of the tradeoffs between repair and blowdown over a given timeframe.

PG&E recognizes that Method 21 offers practical advantages for local air districts that have historically used concentration-based measurement. These advantages include familiarity of use, and avoided cost of purchasing new equipment and training personnel. However, since the purpose of this regulation is to reduce methane emissions, the language should allow operators to use volume-based measurements, such as high-flow sampler devices to confirm any high concentrations measured prior to initiating leak repairs. These records would be retained and made available for inspection.

Finally, with regard to the LDAR provisions that are driven by concentration-based leak measurement, PG&E reiterates that variance provisions to repair time frames be developed to protect against increased emissions. Due to the scope of this regulation and the variety of equipment and station designs that it covers, it is impossible to give consideration to every repair scenario. This regulation may inadvertently force the repair of a leak that will create a net increase in emissions when the repair blowdown volume is considered. Variance provisions which enforce reasonable repair timelines while allowing operators to bundle repairs will help the regulation achieve its emission reduction goals.

IV. FACILITY LEVEL CRITICAL COMPONENT EXEMPTIONS

PG&E facilities subject to the Proposed Regulation play key roles in the operation of the natural gas system and the provision of safe, affordable, and reliable energy to customers. PG&E supports the critical component exemption included in the Proposed Regulation, which recognizes that LDAR requirements for certain components may need to be delayed in cases where shutting down the component would result in greater emissions, or would impact the safety or reliability of the natural gas system.[5]

PG&E recommends that the regulation specifically allow system or facility level exemptions. A single PG&E compressor may have hundreds of individual components, the

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[4] California Air Resources Board. July 1, 1999. *Method 21 Determination of Volatile Organic Compound Leaks.*
[5] Air Resources Board. May 2016. Proposed Regulation Order: Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities. 95670(b).

majority of which would require taking the compressor out of service to repair. Preparing a critical component exemption for each compressor component would be onerous and require developing a specific naming convention and catalog for each component in a way that could be understood by both the operator and regulators. Since the compressor as a whole unit is critical to safely operating the facility, a system-level exemption would be appropriate for this location.

PG&E agrees that the critical component exemption should not be used to avoid routine maintenance and standard repairs that can be conducted without taking a critical component/facility out of service. Requiring tightening, lubrication or adjustment (TLA) repairs on a timeframe consistent with the Proposed Regulation's LDAR requirements (subject to variance provisions) could be a stipulation of critical component status in facility-level cases.

V. PERFORMANCE CRITERIA LIMITING THE ALLOWABILITY OF LEAKS BASED ON COMPONENT POPULATION COUNTS SHOULD BE ELIMINATED

The Proposed Regulation includes criteria specifying the number of allowable leaks based on the number of components at a given facility.[6] PG&E's natural gas underground storage and transmission compressor facilities operate under varying pressures that can range from <1 psig to 2160 psig. While manufactured components have an estimated service life, system operations, environmental factors, and other variables make it very difficult for operators to predict when a component will fail and leak. PG&E currently implements a condition-based maintenance program to ensure the safety and reliability of equipment and components within a facility. In order to comply with the proposed regulation, PG&E will need to develop and implement a prescriptive, aggressive, and costly component replacement schedule. This would likely yield little emission reduction benefit, as a majority of the components would be replaced prior to their service life.

Additionally, this prescriptive requirement is counter to the objective of the LDAR program which is designed to detect and repair leaks on an on-going basis. Adding punitive performance criteria for the discovery of leaks detected through compliance with the LDAR program is at odds with the broader mission of leak detection, repair, and emissions avoidance.

PG&E also notes that starting in 2020, any leak detected with a concentration measurement of 50,000 ppmv or greater constitutes a violation of the regulation. PG&E interprets this requirement as intending to limit "super-emitting" leak sources; however, as noted in Section III, a high concentration measurement does not necessarily correlate to a high-emission leak. Unless volume-based measurement is instituted and agreement is reached on what constitutes a zero-allowability, super-emitting leak by volume, PG&E recommends this stipulation be removed.

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[6] *Ibid.* 95669(o)

Finally, the Proposed Regulation contains provisions which require the replacement of components which require five repair actions within a 12 month period.[7] In addition to the quarterly LDAR requirements, this stipulation provides a backstop against operators that may choose to perform minimal repairs. Given the multiple repair requirements prescribed in the Proposed Regulation, PG&E again recommends removing the leak allowability criteria.

VI. CONCLUSION

Thank you for the opportunity to submit these comments on the ARB Proposed Regulation.

Sincerely,

/s/

Nathan Bengtsson

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[7] *Ibid. 95669*(n)