

**RULE 433 NATURAL GAS QUALITY**

(a) Purpose

The purposes of this rule are to monitor changes, if any, to the quality of natural gas being supplied to end users located within the South Coast Air Quality Management District (District), and determine air pollutant emission changes.

(b) Applicability

Except as noted in subdivision (h), all natural gas distribution system operators (hereinafter called operator) that convey natural gas to end users located within the District are subject to this rule.

(c) Definitions

For the purpose of this rule, the following definitions shall apply:

- (1) A BTU DISTRICT is a geographic area defined by the operator of a natural gas distribution system for the purpose of determining the heating value of natural gas and natural gas bills for natural gas customers within that area.
- (2) HIGH-PRESSURE TRANSMISSION PIPELINE means the main pipelines that transmit natural gas from suppliers outside the District to the lower-pressure distribution system that delivers natural gas to users within the District.
- (3) LIQUEFIED NATURAL GAS (LNG) is natural gas that has been converted to a liquid state.
- (4) NATURAL GAS DISTRIBUTION SYSTEM means a natural gas pipeline system which has an operating pressure above 40 psig and which is used by either an investor-owned or a municipality-owned gas utility to receive natural gas supplies and redeliver such gas supplies to industrial, commercial or residential customers within the District. This does not include any oil refinery that uses, or delivers to a customer, a fuel gas generated by the refinery.
- (5) A STANDARD CUBIC FOOT is one cubic foot of gas at a standard temperature of 60° Fahrenheit and a standard pressure of 14.73 pounds per square inch absolute.

- (6) The WOBBE INDEX (WI) of natural gas is the higher heating value (HHV) of the natural gas, expressed as Btu per standard cubic foot, divided by the square root of the gas' real relative density ( $RD_{\text{real}}$ ), i.e.,

$$WI = HHV / RD_{\text{real}}^{1/2}$$

Where,  $RD_{\text{real}} = \frac{\text{density of gas in pounds per standard cubic foot}}{\text{density of air in pounds per standard cubic foot (.07650 lb/ft}^3\text{)}}$

and HHV, also known as gross heating value, is the amount of heat released by the complete combustion of a fuel with air, with the temperature of the gas, air and products of combustion being 60°F and all of the water formed by the combustion reaction being condensed to the liquid state.

Calculation methods utilized shall be in accordance with the provisions of subdivision (g).

(d) Requirements

(1) Gas Quality Monitoring Plan

All operators shall submit to the Executive Officer for written approval and shall implement a Gas Quality Monitoring (GQM) Plan. The objectives of the GQM Plan are to monitor: 1) the quantity and WI of natural gas in high-pressure transmission pipelines entering the District; and 2) the WI of natural gas in each Btu District. The GQM Plan shall specify the following:

- A) Locations in the operator's distribution system at which the WI will be monitored;
- B) Sampling and analytical methods and calculations to be used in determining the WI of natural gas in the distribution system;
- C) Frequency of the WI determination at each location;
- D) The location of all high-pressure transmission pipelines that deliver natural gas to end users within the District;
- E) Locations (not to exceed eleven in total for any single operator) and frequency at which the quantities of natural gas delivered by high-pressure transmission pipelines to end users within the District will be compiled and recorded;
- F) Method, frequency and format of reporting the WI and quantity of natural gas to the District;
- G) Missing data procedures;

- H) A map of Btu Districts existing as of December 1, 2009; and
- I) A map of any planned changes, if known, to Btu Districts.

(2) GQM Plan Amendments

Whenever there is a change to the GQM plan, as described in paragraph (d)(1), a GQM plan amendment shall be submitted to the Executive Officer for written approval no later than 60 days after the change has taken effect.

(3) Historical Data

All operators shall submit to the District a summary of the daily average HHV,  $RD_{real}$  and WI at each Btu District within the District for the three year period from January 1, 2006 until December 31, 2008. If daily data are not available, the operator shall submit the data that are available.

(4) LNG Rollout Plan

All operators shall submit to the Executive Officer for written approval and shall implement a LNG Rollout Plan, which shall include the following:

- (A) Past actions and future planned actions to educate natural gas end-users within the District about gas quality changes and recommend revisions to selected end-user equipment maintenance or tuning practices;
- (B) Past actions and future planned actions to determine the effects of gas quality changes from LNG-derived natural gas on emissions from selected end-user combustion equipment within the District;
- (C) Unless already posted on a publicly available website identified in the LNG Rollout Plan, or unless prohibited from disclosure by a confidentiality or non-disclosure agreement, the results, if any, of emission testing conducted prior to plan submittal by the operator or a contractor for the operator at an end-user, or at a test facility, for the purpose of determining effects of changes to gas quality from LNG-derived natural gas, including the equipment description (type of equipment, make, model, rated thermal input), the date of the test, sampling and measurement methods, the natural gas WI, and the test conditions and emission results. The operator shall indicate whether the test was conducted to determine baseline emissions prior to changes in WI, if any, from a delivery of LNG-derived natural gas into the operator's distribution system, or after

changes in WI due to a delivery of LNG-derived natural gas into the operator's distribution system, or neither. If the operator had conducted emission tests before and after any repairs, adjustments or tuning of the equipment, the operator shall report all emission tests and what repairs, adjustments or tuning was conducted, if possible;

- (D) Results of equipment testing and monitoring from other studies to be used in developing a list of discrete equipment to be tested and evaluated so as not to duplicate earlier work.

If some parts of the plan will not be known or well developed until additional information becomes available in the future, the initial plan can identify those areas and defer completion of those parts of the plan until a later date.

(5) LNG Rollout Plan Amendment

If the operator determines that a change to the LNG Rollout Plan is needed, an amended LNG Rollout Plan must be submitted to the Executive Officer for written approval within 60 days of the change. Changes that require plan amendments include changes to future planned equipment testing, or customer education within the District.

(6) District-Wide Estimation of Emission Effects

All operators shall prepare an annual estimate of emission changes within the District as a result of changes in natural gas quality due to LNG-derived natural gas or other new supplies of natural gas. The estimate shall be based on and include:

- (A) Historical data from paragraph (d)(3) as a baseline;
- (B) Monitored changes of natural gas quality in each Btu District;
- (C) Fuel usage in each Btu District;
- (D) Population data of end-user equipment;
- (E) Available information on the effects of natural gas quality on emissions from various end-user equipment types;
- (F) Data and methodology of the estimates; and
- (G) Results in tons per day of NO<sub>x</sub>, CO and VOC.

(e) Compliance

- (1) All operators subject to the requirements of section (d) shall:

- (A) By September 1, 2009, submit to the Executive Officer historical data required by paragraph (d)(3);
  - (B) By December 1, 2009, submit an initial GQM Plan to the Executive Officer for review and approval;
  - (C) By December 1, 2009, submit an initial LNG Rollout Plan to the Executive Officer for review and approval;
  - (D) Within thirty (30) days after Executive Officer approval, implement the approved GQM Plan and LNG Rollout Plan; and
  - (E) By September 1 of 2010, and each year thereafter, submit the annual estimate of the effects on emissions, as described in paragraph (d)(6), for the previous 12 months ending June 30. For the first report, the time period shall be from the start of implementation of the GQM Plan until June 30, 2010.
- (2) The Executive Officer shall approve any plan or plan amendment that substantially meets all of the requirements of this rule and shall not unreasonably withhold approval of any plan or plan amendment required by this rule.

(f) **Monitoring, Recordkeeping and Reporting**

Except as approved in writing by the Executive Officer, or as set forth in the GQM Plan and LNG Rollout Plan, the operator shall comply with the following minimum monitoring, recordkeeping and reporting requirements.

- (1) At each high-pressure transmission pipeline entering the District, or a location representative of that pipeline, to the extent available:
  - (A) Determine the WI,  $RD_{real}$  and HHV of the natural gas received at least once every hour and keep records of this information; and
  - (B) Record the quantity of natural gas received each hour, in decatherms.

Any single operator shall not be required to monitor gas quality or quantity at more than eleven locations.

- (2) At each Btu District within the District, monitor and record the monthly average natural gas WI,  $RD_{real}$  and HHV, or the averages over a period consistent with California Public Utilities Commission (CPUC)-approved billing practices.
- (3) Report the recorded data described in (f)(1) and (f)(2) for each month to the District no later than 60 days after the final date of recording for a

- monthly period. The data shall be transmitted to the District by email as a Microsoft Access™ or Excel™ file in a format approved by the District.
- (4) In the event that an operator's gas quality monitoring or communication equipment fails or experiences calibration drift, or if force majeure, operational emergencies, CPUC orders or decisions, or other conditions beyond the operator's reasonable control limit the operator's ability to record, collect and report information pursuant to the GQM plan or the requirements of this rule, then the operator shall identify and explain the reasons for any missing data. In such an event, the operator shall be deemed to be in full compliance with the provisions of this Rule and exempt from other District missing data protocols and procedures, and related fines, where such may be otherwise prescribed.
  - (5) Report all actions required by and information resulting from the LNG Rollout Plan described in paragraph (d)(4) for each calendar quarter to the District by the last day of the following month. The first report shall include all actions taken since those reported in the LNG Rollout Plan application. Each report shall include the following.
    - (A) Results of all emission tests on end-user equipment, including the equipment description (type of equipment, make, model, rated thermal input), the date of the test, sampling and measurement methods, the natural gas WI, and test conditions. The operator shall identify whether a test was conducted to determine baseline emissions prior to changes in WI, if any, from a delivery of LNG-derived natural gas into the operator's distribution system, or after changes in WI, if any, due to a delivery of LNG-derived natural gas into the operator's distribution system. If the operator conducts emission tests before and after any repairs, adjustments or tuning of the equipment, the operator shall report all emission tests and what repairs, adjustments or tuning was conducted; and
    - (B) Guidance, services or technologies offered to end-users to reduce or eliminate emission increases caused by LNG-derived natural gas.
  - (6) Submit to the District the annual report described in paragraph (d)(6) on the District-wide estimation of effects on emissions from changes in natural gas quality, by September 1 of each year.

(g) Methods

- (1) The operator shall utilize the following Gas Processors Association (GPA) methods to determine the WI, HHV and  $RD_{real}$  of natural gas:

GPA Method 2166, Obtaining Natural Gas Samples for Analysis by Gas Chromatograph,

GPA Method 2261, Analysis of Natural Gas and Similar Gaseous Mixtures by Gas Chromatography, and

GPA Method 2172, Calculation of Gross Heating Value, Relative Density and Compressibility Factor for Natural Gas Mixtures from Compositional Analysis.

The operator may employ other nationally recognized test methods, or other methods accepted by the CPUC for billing or gas quality monitoring purposes in place of these test methods.

- (2) A calibrated gas chromatography system that complies with CPUC General Order 58-B, items 4 and 8, shall be used for final determination of gas quality.

(h) Exemptions

- (1) Any operator whose only sources of natural gas are through receipt of natural gas monitored by another operator or operators pursuant to this rule is exempt from this rule.

- (2) Any operator that does not receive LNG-derived natural gas directly from an LNG-derived natural gas supplier is exempt from the requirements in paragraphs (d)(4), (d)(5), and (d)(6) of this rule.