



A Sempra Energy utility®

THE SOCALGAS® GAS QUALITY STANDARDS

SoCalGas® Rule 30 describes the requirements for gas to be injected into the utility pipeline. These requirements reflect the first and foremost priority of SoCalGas to protect its customers, employees, contractors and pipeline system, as well as the public. The standards cover two major aspects: gas constituent limits (composition-based specifications) and gas interchangeability specifications (performance-based quality specifications). Gas constituent limits restrict the concentration of gas impurities to protect pipeline integrity and ensure safe and proper combustion in end-user equipment. The interchangeability specifications address end-

user combustion performance, ensuring safe and proper combustion for customers.

SoCalGas Rule 30, Section I.5. provides interconnectors with the option to request specific deviations from meeting the defined gas quality specifications in Section I.3. If SoCalGas determines such gas will not negatively impact system operations, SoCalGas is then required to file an Advice Letter for California Public Utilities Commission (CPUC) approval before the gas is permitted to flow into the utility pipeline system.

The table below shows some gas quality standards from across the United States¹. These requirements are specific to each pipeline network.

Pipeline Company	Heating Value (Btu/scf)		Water Content (Lbs/MMscf)	Various Inerts			Hydrogen Sulfide (H ₂ S) (Grain/100scf)
	Min	Max		CO ₂	O ₂	Total Inerts	
SoCalGas	990	1150	7	3%	0.20%	4%	0.25
Dominion Transmission	967	1100	7	3%	0.20%	5%	0.25
Equitrans LP	970	–	7	3%	0.20%	4%	0.3
Florida Gas Transmission Co.	1000	1110	7	1%	0.25%	3%	0.25
Colorado Intrastate Gas Co.	968	1235	7	3%	0.001%	–	0.25
Questar Pipeline Co.	950	1150	5	2%	0.10%	3%	0.25
Gas Transmission Northwest Co.	995	–	4	2%	0.40%	–	0.25

TYPICAL GAS CONSTITUENTS FOUND IN BIOGAS

In 2012, the CPUC issued a decision in the Biomethane Phase I Order Instituting Rulemaking (OIR)² in response to California Assembly Bill 1900 (AB 1900) (Gatto, 2012). In this OIR the CPUC, in collaboration with other state agencies, adopted 17 constituents of concern that can potentially be

found in biogas. The CPUC established reasonably acceptable levels of these constituents to protect human health and system integrity, and ordered them to be included in SoCalGas Rule 30 (See Section J.5). As directed by AB 1900, the protection levels for each constituent along with the monitoring, testing, reporting and recordkeeping requirements are reviewed and updated every five years, or sooner, if new information becomes available.

¹ Source: American Gas Association, Report #4A Natural Gas Contract Measurement and Quality Clauses (2009). Some standards have been updated based on publicly available information

² R.13-02-008

Siloxanes, one of the constituents of concern, can be found in a variety of consumer products. Siloxanes are typically present in biogas created at landfills and waste water treatment plants, and can sometimes be found in diverted food and green waste biogas. Siloxanes can create problems in end-user equipment because during combustion, they can coat equipment with a fine layer of silica and silicates. This is especially problematic for sensitive end-user equipment found in Southern California. For example, siloxanes can cause expensive catalysts to fail. These catalysts perform an important service reducing emissions to keep our air clean, and are found in all fuel cells, natural gas vehicles, and the majority of electric power generators. The local aerospace industry and other manufacturers have also expressed concerns with siloxanes potentially entering their sensitive facilities through the fuel supply.

CLEANING BIOGAS TO PIPELINE QUALITY STANDARDS

Several methods and technologies are available to condition and upgrade biogas into renewable natural gas (RNG) and remove constituents of concern. Technology selection can be based on many criteria, including the makeup of the biogas as well as site and operating conditions. Some examples of technologies used in biogas conditioning and upgrading are:

- High-selectivity membranes
- Pressure swing adsorption systems
- Water scrubbing systems
- Solid scavenging media
- Regenerative or non-regenerative adsorbent media
- Catalytic O₂ removal

It is common to find a combination of these technologies working together to meet a set of specifications.

GAS CONSTITUENT MONITORING AND MEASUREMENT

Gas quality is maintained by two different types of monitoring, based on the Biomethane OIR requirements. Some attributes such as carbon dioxide, total inerts, and heating value are continuously monitored at the point of utility interconnection. Other constituents, such as siloxanes, are monitored by taking quarterly or annual samples of the gas and testing it in a laboratory.

SoCalGas Rule 30 requires gas quality testing on biomethane constituents of concern be done by independent certified third-party laboratories³. The NELAC Institute (TNI) maintains a list of laboratories (<http://lams.nelac-institute.org/search>) which are able to test for constituents of concern, including the measurement of siloxanes below the defined trigger level.

FIND OUT MORE

For more information, please visit:

socalgas.com/rq

Or contact our Low Carbon Fuels Market Development Team at:

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³ SoCalGas utilizes an independent third party laboratory and may include a performance sample when measuring siloxane levels.

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