

LNG importer focus turns to US interchangeability rules

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As LNG becomes an increasingly global commodity and more suppliers look to import LNG to the United States, the interchangeability of revaporized LNG with the domestic natural gas stream has become an important consideration.

Nowhere is the issue more pronounced than in the Mid-Atlantic and Northeast regions of the US where the need for natural gas supply is high and the tolerance for changes to the composition of the historic gas stream is low.

Perhaps ironically, calls for more restrictive gas composition standards come from the direct beneficiaries of increased natural gas supply - power plant operators, the LNG peak-shaving facility operators and local distribution companies that serve them.

Their concerns relate to costs associated with potential retrofits to facilities to accommodate changes in the composition of the gas stream.

Proceedings

The Federal Energy Regulatory Commission (FERC) is the governmental authority charged with approving interstate natural gas pipeline tariff standards. Recently, gas pipelines in the Mid-Atlantic and the Northeast have proposed to FERC interchangeability standards designed to address the changing nature of the gas supply in the region.

Some of the proposed tariff specifications place limits on the heating value, Wobbe Index and inert gases such as nitrogen which, if approved by FERC, could prevent certain LNG cargoes from reaching these US markets.

Although recently FERC provided general guidance in its interchangeability "Policy Statement" issued in June 2006, questions about specific gas composition proposals will be answered in the individual pipeline proceedings.

LNG importers should be aware of efforts by US pipelines to implement restrictive gas composition tariff standards.

Indeed, some LNG importers are taking an active role in defending against efforts to set gas composition standards below commercially acceptable levels,

especially limitations on the level of nitrogen that can be injected into regasified LNG to meet maximum heating value requirements.

Recently, BP, StatoilHydro, Royal Dutch Shell and Hess Corp. of the US and others weighed in on the gas composition specifications proposed by Algonquin Gas Transmission, LLC (Algonquin) - an interstate pipeline that stretches from New Jersey to Massachusetts, is directly connected to the Everett LNG terminal in Boston, and will be directly connected in late 2007 to Exceleerate Energy's offshore Northeast Gateway import terminal in Boston Harbor.

These importers have expressed varying degrees of concern that Algonquin's proposed gas composition specifications could impact negatively the amount of global LNG supplies that can reach the Mid-Atlantic and Northeast markets and frustrate the seamless flow of gas into the region.

StatoilHydro, for example, provided technical data that suggests that Algonquin's proposal could reduce the availability of global LNG supplies by as much as 40 percent.

We will examine the evolving US regulatory policies and processes for addressing gas interchangeability issues, and present an LNG importer's perspective on the negative impact that restrictive gas composition standards will have on the ability of global LNG supplies to reach the Mid-Atlantic and Northeast markets.

Main concerns

As FERC evaluates and authorizes gas composition tariff specifications during the coming months and years, LNG importers will bear the burden of compliance with these new requirements.

Importers not only will have to ensure that imported LNG meets regasification terminal specifications, but also that the regasified LNG meets US pipeline specifications.

Generally speaking, regasified LNG must meet a maximum heating value of 1110 Btu/scf as required by the Natural Gas Council Plus (NGC+) Interim Guidelines. In practical terms, LNG

US LNG IMPORTS BY COUNTRY

	2001	2002	2003	2004	2005	2006
LNG TOTAL IMPORTS	238,126	228,730	506,519	652,015	631,260	583,537
ALGERIA	64,945	26,584	53,423	120,343	97,157	17,449
AUSTRALIA	2,394	0	0	14,990		
BRUNEI	0	2,401	0			
EGYPT					72,540	119,528
MALAYSIA	0	2,423	2,704	19,999	8,719	
NIGERIA	37,966	8,123	50,067	11,818	8,149	57,292
OMAN	12,055	3,013	8,632	9,412	2,464	
QATAR	22,758	35,081	13,623	11,854	2,986	
TRINIDAD	98,009	151,104	378,069	462,100	439,246	389,268

LNG imports may be affected in future by restrictive limits on nitrogen in pipeline gas in the US Mid-Atlantic and Northeast

importers will have to choose from several options:

- Import LNG from sources that already meet tariff requirements or plan to treat the LNG at the upstream liquefaction facility;
- Add stripping facilities at regasification plants to remove heavier hydrocarbons to decrease the heating value or use US terminals that already have such capabilities (e.g., terminals in the Gulf of Mexico);
- Blend LNG of varying sources and gas compositions in the tank at the terminal facility;
- Inject nitrogen or other gases into regasified LNG to reduce its heating value;
- Blend regasified LNG with domestic pipeline gas to achieve a compliant mixture.

Many importers believe that the ability efficiently and economically to manage heating values through inert injection will result in access to a greater diversity of LNG supply sources.

However, the regasified LNG must meet pipeline tariff requirements for content of inert gases - most importantly, nitrogen. Current movements to restrict nitrogen limits in pipeline gas may limit access to certain LNG sources because, after nitrogen injection, the regasified LNG will fail to meet US pipeline standards.

If pipelines in the Mid-Atlantic and Northeast are permitted to implement restrictive tariff standards, LNG importers may be forced to deliver to

markets where compliance with gas composition standards is less costly (e.g., continental Europe and Asia).

As it stands, European and Asian markets already may be drawing cargoes away from the US because of higher market prices, thereby compounding the negative effect of restrictive gas composition standards in the Mid-Atlantic and Northeast.

Natural gas with higher heating values often flows on the interstate pipelines in the Gulf of Mexico because there is more incidental blending given the presence of many interstate and intrastate pipelines and processing plants.

However, it is unrealistic to send all "hotter" cargoes to terminals in the Gulf of Mexico and expect that these volumes will satisfy the high demand for natural gas in the Mid-Atlantic and Northeast markets because there is not enough infrastructure in place to transport such quantities of LNG to those markets.

Flexibility in destination clauses allows LNG vessels to go where the landed price obtains the greatest return for the cargo owner. As such, the US must be careful not to implement restrictive natural gas standards that prohibit LNG from the world's largest importers from being delivered into the Mid-Atlantic and Northeast markets where demand is the greatest.

In addition to nitrogen, importers are also paying close attention to proposed tariff changes regarding oxygen limits. Some LNG terminals are electing to use air injection, in lieu of nitrogen, to lower

the heating value of LNG. For those facilities that use air injection, an overly restrictive oxygen standard likely will decrease the available sources of LNG that can be efficiently and economically shipped to the Mid-Atlantic and Northeast markets. However, in contrast excess amounts of oxygen present legitimate operational and safety concerns for pipelines.

Regulatory scheme

Traditionally, national or regional standards for gas quality and interchangeability have not existed in the US. In fact, up until recently, many US pipelines did not have detailed gas composition standards in place.

However, increased imports of LNG as well as natural gas from Canada and the Rocky Mountains have led to a growing number of disputes involving gas quality and interchangeability.

In response, FERC began a multi-year discussion on gas quality and interchangeability that involved studies, industry working groups and regulatory hearings. This discussion culminated in June 2006 when FERC issued its Policy Statement.

Recognizing that a one-size-fits-all approach could hinder the introduction of additional natural gas supply, FERC opted to resolve future gas quality and interchangeability disputes on a case-by-case basis using the guidelines established in the policy statement as a general framework.

FERC's framework adopts five principles that seek to facilitate the resolution of gas quality and interchangeability disputes, including a requirement that specifications are

enumerated in the pipeline tariff and that gas composition specifications ensure safety while maximizing supply.

FERC also adopted the NGC+ Interim

Guidelines as the starting point and default basis for all new and amended gas quality and interchangeability requirements. However, there is no

express requirement that pipelines file with FERC to implement the NGC+ Interim Guidelines.

The NGC+ Interim Guidelines were



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established by a broad range of natural gas industry participants, including pipelines, local distribution companies, LNG terminal operators, marketers and end users.

The Interim Guidelines will be applied to the extent that a pipeline does not already maintain acceptable gas quality and interchangeability provisions in its tariff.

Policy message

FERC's policy statement provides some good news for LNG importers. First, it sets forth a general framework for developing gas and interchangeability tariff specifications.

Second, it relies on industry input and requires decisions to be made on the basis of technical data.

Third, it does not adopt a one-size-fits-all or lowest-common-denominator approach. Finally and perhaps most importantly, it recognizes the importance of maximizing supply and balances the increasing demand for gas with safety concerns.

By clarifying federal policies and procedures, FERC's policy statement lends support to LNG infrastructure development and recognizes the vital role LNG will play in the US energy market.

Beyond providing a basic framework,

however, the policy statement leaves detailed questions unanswered. For example, it does not prescribe techniques LNG importers should use to meet tariff requirements, saying only that blending of gas in the pipeline and other methods should be "implemented on a non-discriminatory basis and in a manner that is consistent with safe and reliable operations."

Additionally, since the policy statement does not adopt a one-size-fits-all approach to setting gas composition policies and standards, pipeline-specific standards will have to be resolved using a case-by-case, tariff-by-tariff method.

Although FERC's policy statement encourages pipelines and shippers to resolve disputes through informal means such as customer meetings and settlement conferences, in reality many of the tough calls will have to be answered by FERC.

Therefore, reliance on regulatory litigation means that LNG importers need to learn FERC process, understand the potential impacts of the various gas composition proposals, and ensure they have credible experts and experienced consultants on hand.

Practical effects

Although many specific questions remain

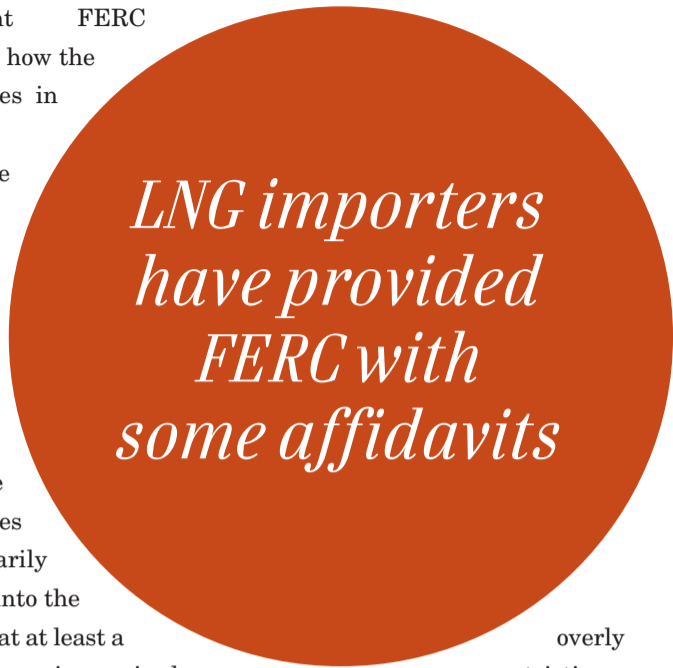
unanswered, recent FERC proceedings help clarify how the policy statement applies in practice.

One of the more contentious issues in implementation proceedings involving gas composition specifications is the proposed nitrogen level.

In order to ensure that global LNG supplies are not unnecessarily restricted from coming into the US, importers argued that at least a 4 percent limit on nitrogen is required. This standard would allow a majority of global LNG supplies to conform to the pipelines' heating value specifications as they currently are written.

Conversely, some end users expressed concerns that the nitrogen content in regasified LNG raises safety and efficiency questions for peak-shaving facilities and other end-use equipment.

These parties argued that a nitrogen limit of 2.0 percent or lower is necessary to ensure the efficient and safe operations of LNG peak-shaving facilities and should be sufficient to reduce the heating values of regasified LNG without



overly restricting global supplies into the US.

Columbia Gas Transmission

On March 16, 2007, FERC issued its order in the Columbia Gas Transmission Corp. (Columbia) gas composition proceeding accepting Columbia's proposal to include a 4 percent total inerts maximum tariff limit, with no individual specification for nitrogen. FERC concluded that Columbia's total inerts proposal was consistent with the pipeline's historical operational data and FERC's policy statement.

Responding to concerns about the impact on peak-shaving facilities, FERC held that the LDCs "provided no reason to believe that Columbia's 4.0 percent limit on total inerts, which has already been in effect ..., will cause nitrogen content of the gas KeySpan and ConEd receive at their peak shaving facilities to exceed 2.0 percent or harm their LNG peak-shaving facilities."

The Columbia order demonstrates that all gas composition proposals (or opposition to a particular pipeline proposal) must be supported with evidence, e.g., historical system or other data, and affirms that FERC will factor into its analysis any negative impact on gas supplies. In this regard, the Columbia order represents a significant victory for LNG importers.

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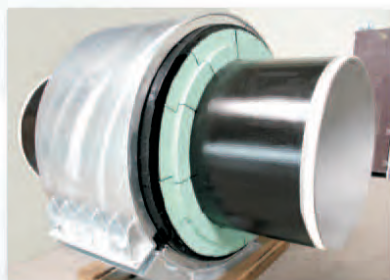
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On July 20, 2007, FERC issued an order in the Gulf South Pipeline Company, LP (Gulf South) gas composition proceeding. FERC's decision in Gulf South is notable because FERC rejected the pipeline's proposed gas composition tariff specifications as unsupported.

Significantly, FERC noted that a pipeline has the burden under section 4 of the Natural Gas Act to show that its proposed tariff changes are "just and reasonable" and that Gulf South failed to present evidence sufficient to meet its burden of proof. FERC also indicated that relying on standards or historical data applicable to downstream facilities, is not sufficient proof.

The Gulf South decision demonstrates that FERC is serious about creating gas composition standards on a case-by-case basis and will not subscribe to a least-common-denominator approach.

Gas quality and interchangeability standards that apply to downstream pipelines will not necessarily dictate the standards for those pipelines that are upstream. Instead, FERC will weigh specific factors that might merit different local standards or restrictions.

Other disputes

The majority of FERC proceedings involving interchangeability issues deal with setting pipeline tariff specifications as previously noted.

However, LNG importers also should be mindful of concerns raised by local distribution companies and utilities about alleged specific negative impacts that regasified LNG has on system equipment and the potential for regulatory or civil litigation to arise as a result.

For instance, utility Washington Gas Light Co. (WGL) alleged that the absence of pentanes plus in the regasified LNG from the Dominion

Cove Point LNG, LP (Cove Point) terminal contributed to a series of distribution-line failures in WGL's service territory in Prince George's

County, Maryland. WGL argued that Cove Point's application for expansion of its LNG terminal and pipeline system should be denied until



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FERC concluded that WGL's claims "provide no basis" to deny Cove Point's expansion application.

Cove Point proved that WGL's infrastructure would not be harmed.

Relying on the Policy Statement, and a series of inquiries and studies, FERC concluded that WGL's claims "provide no basis" to deny Cove Point's expansion application.

In WGL and other such cases, FERC has been thorough in its efforts to understand the evidence and review relevant studies, as well as conduct hearings and conferences to gather information.

In further keeping with its policy statement, FERC has continued adjudicating these issues as part of new project filings as well as tariff proceedings.

Pending issues

Anticipating increased receipts of regasified LNG into their systems, both Algonquin and Iroquois Gas Transmission, LP (Iroquois) recently proposed significant changes to their existing gas composition tariff specifications, including those addressing

heating value, Wobbe Index, and maximum nitrogen, oxygen, sulphur, hydrogen sulphide and total inert levels.

Algonquin and Iroquois have proposed restrictive maximum nitrogen limits, 2.5 percent and 2.3 percent respectively.

Currently, the pipelines' tariffs do not provide a specific limit for nitrogen, although Iroquois' tariff provides a 4 percent limitation on the combined amount of carbon dioxide and nitrogen (total inerts).

Iroquois also proposes a restrictive maximum Wobbe Index limit of 1373. Many other pipelines, including Algonquin, have proposed a maximum Wobbe Index limit of 1400. Like a restrictive nitrogen maximum limit, a restrictive Wobbe Index maximum limit can impact negatively the amount of global LNG supplies that can reach the US markets.

In the two proceedings, a significant amount of technical evidence has been submitted by many parties. On the one hand, the LNG importers have provided technical affidavits and other materials to demonstrate that a 2.5 percent maximum nitrogen limit could reduce significantly the amount of global LNG supplies that could reach the Mid-Atlantic and Northeast markets—in some cases up to 40 percent of global LNG supplies.

StatoilHydro and BP, for example, have argued that a total inerts maximum of 4 percent is more appropriate because it would allow the vast majority of global

LNG supplies to enter the Algonquin and Iroquois systems.

On the other hand, the LNG peak-shaving facilities argue that a nitrogen level in excess of 2.0 to 2.5 percent will cause operational harm to their facilities and may reduce efficiencies at the plant. Although these parties acknowledge that retrofits could alleviate the problem, facility changes could range from \$5 million to \$25 million.

FERC held technical conferences in the fall of 2007 to discuss the two pipeline proposals. Interested parties including the pipelines, LDCs, LNG peak shavers, power generators and LNG importers presented evidence either in support or in protest of the proposed changes.

Several rounds of follow-up comments were being filed by the interested parties during the fourth quarter of 2007. The earliest FERC is expected to make a decision in both the Algonquin and Iroquois proceedings is in the first quarter of 2008.

Many in the industry believe that FERC's decisions on the Algonquin and Iroquois proposals will set the tone for future pipeline-specific gas composition proceedings.

Looking ahead

Far from settling down, gas quality and interchangeability issues are only going to become more prevalent as new LNG terminals are sited in the US, new sources of natural gas are slated to meet growing demand in the Mid-Atlantic and Northeast markets, and the global LNG spot market continues to evolve and grow.

As a result, pipelines, customers and LNG importers should work, and in some cases, are working more closely together in informal settings to settle questions about gas quality and interchangeability

requirements prior to making a formal FERC filing.

For example, pipelines such as Transcontinental Gas Pipe Line Corp. (Transco), Dominion Transmission, Inc. (DTI), and Texas Eastern Transmission Corp. (TETCO) have held customer meetings to discuss potential changes to gas composition tariff specifications.

In the near future, all of these pipelines will receive increasing amounts of regasified LNG from both Gulf Coast and East Coast terminals.

Initial proposals by Transco and TETCO raise serious concerns for LNG importers. Both pipelines have discussed proposing tariff limits that cap nitrogen in the 2 to 3 percent range.

On the other hand, DTI has stated that it will not propose a change to its existing 4 percent nitrogen limit. However, it is likely that LNG peaking-shaving facilities and local distribution companies on the DTI system will object to the continuation of a 4 percent nitrogen limit.

Significant differences in nitrogen limits on interconnecting pipelines like these could frustrate the flow of gas supplies on the pipeline grid in the region.

In order to ensure global LNG supplies can reach the Mid-Atlantic and Northeast markets, it is imperative that restrictive tariff provisions are not adopted. LNG importers should continue to monitor and play an active role in gas quality and interchangeability standard-setting proceedings.

Further, LNG importers should continue to develop scientific data adequately to support arguments that restrictive limits on nitrogen and the Wobbe Index will impact negatively the amount of global LNG supplies that reach critical markets in the US. ■

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