

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Joseph T. Kelliher, Chairman;
Nora Mead Brownell, and Suedeen G. Kelly.

Natural Gas Interchangeability

Docket No. PL04-3-000

POLICY STATEMENT ON PROVISIONS GOVERNING NATURAL GAS QUALITY
AND INTERCHANGEABILITY IN INTERSTATE NATURAL GAS PIPELINE
COMPANY TARIFFS

(Issued June 15, 2006)

I. Introduction

1. In this proceeding, the Commission has been exploring natural gas quality and interchangeability issues and the impact of those issues on the natural gas companies subject to the Commission's jurisdiction, as well as on natural gas producers, shippers and end-users. Based upon the information developed during this proceeding, which will be discussed below, the Commission today announces its policy on natural gas quality and interchangeability issues.

2. The Commission's intention in issuing this statement of generic policy is to provide direction for addressing gas quality and interchangeability concerns, as well as to provide guidance to individual companies that have concerns about these issues. The Commission's policy embodies five principles: (1) only natural gas quality and interchangeability specifications contained in a Commission-approved gas tariff can be enforced; (2) pipeline tariff provisions on gas quality and interchangeability need to be flexible to allow pipelines to balance safety and reliability concerns with the importance of maximizing supply, as well as recognizing the evolving nature of the science underlying gas quality and interchangeability specifications; (3) pipelines and their customers should develop gas quality and interchangeability specifications based on technical requirements; (4) in negotiating technically based solutions, pipelines and their customers are strongly encouraged to use the Natural Gas Council Plus (NGC+) interim

guidelines filed with the Commission on February 28, 2005¹ (discussed below) as a common reference point for resolving gas quality and interchangeability issues; and, (5) to the extent pipelines and their customers cannot resolve disputes over gas quality and interchangeability, those disputes can be brought before the Commission to be resolved on a case-by-case basis, on a record of fact and technical review.

II. Background

3. The Commission has seen interest in natural gas quality and interchangeability issues escalate for several years, and these issues have come before the Commission in complaints, proposed tariff provisions and certificate proceedings. Historically, gas quality is one of many terms and conditions of service stated in individual pipelines' FERC-jurisdictional tariffs. The Commission has no generic policy in this area, and individual pipelines have different standards, practices, and enforcement mechanisms.

4. Principally methane, natural gas is commonly found in nature mixed with other hydrocarbons and varying amounts of contaminants.² The exact composition of natural gas is chiefly dependent upon the geological source from which it is extracted. At typical interstate pipeline operating pressures and temperatures, "pipeline quality" natural gas remains in a gaseous state and pipelines, distribution facilities, and end-user equipment are all designed to handle and burn this gas. The term "pipeline quality" natural gas is defined in each individual pipeline's tariff, and these definitions vary widely from pipeline to pipeline.

5. Depending on the relative prices of these hydrocarbon fractions, producers may have an economic incentive to process gas and deliver mostly pure methane as "pipeline quality" gas to interstate pipelines. However, when economics favor sales of natural gas

¹ *Report on Liquid Hydrocarbon Drop Out in Natural Gas Infrastructure* (HDP Report) and *Report on Natural Gas Interchangeability and Non-Combustion End Use* (Interchangeability Report).

² The hydrocarbon gases that can be found in natural gas are (and the number of carbon atoms in each): methane (C₁), ethane (C₂), propane (C₃), butanes (C₄), pentanes (C₅), hexanes (C₆), heptanes (C₇), octanes (C₈) and nonanes plus (C₉₊). Non-hydrocarbons in natural gas can include nitrogen (N₂), carbon dioxide (CO₂), helium (He), hydrogen sulfide (H₂S), water vapor (H₂O), oxygen (O₂), other sulfur compounds and trace gases.

over other hydrocarbons, producers may choose not to process.³ As it is transported and distributed, unprocessed natural gas may experience changes in temperature and pressure which cause the heavy hydrocarbons to assume a liquid form. When this happens, pipelines and other downstream equipment may experience inefficient operations and unsafe conditions. This problem is known as hydrocarbon liquid dropout, and the potential for this problem to occur can be measured in terms of cricondentherm hydrocarbon dew point (CHDP). Gas quality, as discussed in this policy statement, is concerned with the impact of non-methane hydrocarbons on the safe and efficient operation of pipelines, distribution facilities, and end-user equipment.⁴

6. Gas pipelines have taken different approaches to dealing with hydrocarbon liquid dropout, as reflected in a number of pipelines' tariffs. The HDP Report cites three examples.⁵ First, about one-third of interstate pipeline tariffs specify a maximum heating value, but this has proven to be an inadequate predictor of hydrocarbon liquid drop out.⁶ Second, some pipelines have addressed the potential for hydrocarbon liquid dropout by specifying concentration limits for heavy hydrocarbons (using C₅₊ gallons per standard

³ When delivered, natural gas is measured in terms of its thermal value, usually measured in British thermal units (Btus), and billed on that basis. When deciding whether to process natural gas, producers look to the relative thermal values of the different hydrocarbons that might be extracted in processing to determine which product will generate the most revenue.

⁴ Other materials commonly found in natural gas, include contaminants, such as water, sand, sulfur compounds, oxygen, carbon monoxide, carbon dioxide, nitrogen, helium and other materials. While this policy statement does not address these materials, the Commission understands that jurisdictional pipeline tariffs already include specifications to control these elements within acceptable limits.

⁵ HDP Report, at sections 3.1.2 – 3.1.3, at 16.

⁶ The Report notes that maximum heating value alone is not a good predictor of whether hydrocarbon liquid drop out will occur because different gases with the same gross heating value may have different propensities for hydrocarbon liquid drop out. The paper notes the examples of a gas with a relatively low heating value but a high hexane concentration that may have a high probability of hydrocarbon liquid drop out in contrast to a gas with a high heating value due to a high ethane content with a very low probability of hydrocarbon liquid drop out.

cubic feet⁷ or C₅+ GPM) to establish the concentration limits above which the heavy hydrocarbon level might be detrimental to pipeline operational integrity. This measure may in some instances indicate the potential for liquid hydrocarbon drop out, but it is not as reliable in isolation as it is in conjunction with hydrocarbon dew point. Third, a number of pipelines have elected to establish CHDP limits to control liquid dropout.

7. Natural gas interchangeability is also a significant consideration in the discussion of tariff specification of “pipeline quality” gas. As used by the gas industry historically, “interchangeability” means the extent to which a substitute gas can safely and efficiently replace gas normally used by an end-use customer in a combustion application.⁸ Much of the available science and research on interchangeability that exists today originated in the 1930s and 1940s when the interstate transportation of natural gas began to supplant manufactured gas.⁹ Technological innovation since that time has created more efficient, more environmentally benign equipment, such as gas-fired turbines. Other technological innovations, such as liquefied natural gas (LNG) storage facilities, have inherent design limitations based on the quality of natural gas available at the time the facilities were originally designed. How well they will operate if future gas supply characteristics differ from those available today is unknown.

8. Several indices have been developed over time to characterize the interchangeability of different natural gases. One widely accepted measure of interchangeability is the Wobbe Index, which is based on energy input and specific gravity. Other indices incorporate fundamental combustion phenomena in their calculations. Examples include the AGA Bulletin 36 Indices and the Weaver Indices. These indices were created using different measurable characteristics of natural gas and combustion experiments to measure and predict interchangeability. However, each index has limits to the predictive value of its application. The importance of measuring interchangeability, regardless of the index used, is that it provides a predictive correlation between the specific measurable physical characteristics of natural gas and burner tip performance.

⁷ Gallons per Million cubic feet is abbreviated GPM. *See, e.g.*, HDP Report at sections 1.2.7 and 3.1.

⁸ *See, e.g., Cove Point LNG Limited Partnership*, 97 FERC ¶ 61,043, at 61,197 (2001), *order on reh’g*, 97 FERC ¶ 61,276 (2001).

⁹ Interchangeability Report, at section 3.1.1.

9. During the 2000/01 winter heating season, rising natural gas prices led producers to stop processing natural gas. As a result, pipelines began to receive a richer quality gas containing a higher proportion of liquid and liquefiable hydrocarbons, and a higher energy density, as measured in Btus per cubic foot of natural gas. A number of pipelines reacted by invoking tariff provisions that authorize pipelines to issue operational flow orders (OFOs), which required the gas to be processed before being delivered to the pipelines. Producers objected, arguing that pipelines were attempting to impose more stringent quality standards on some producers, but not on others.

10. Interchangeability issues have also been raised in proceedings to authorize the siting and operation of LNG import terminals. In September, 2001, the Commission issued an order reauthorizing the receipt of LNG imports at Dominion's Cove Point LNG facility.¹⁰ Among the issues raised was the interchangeability of this LNG with the historic quality of gas delivered to Washington Gas Light (WGL). Ultimately, the Commission approved a settlement between Dominion, WGL and others that specified a maximum Btu heating content.¹¹

III. Procedural History

11. In September 2003, the National Petroleum Council (NPC) completed a report on the natural gas industry, which contained a number of findings and policy recommendations and highlighted the increased importance of LNG in meeting expected demand growth over the ensuing decade.¹² The Commission explored the findings and recommendations of the NPC report in an October 14, 2003 technical conference. The Summary Report recommended that the natural gas interchangeability standards be updated: "FERC and DOE should champion the new standards effort to allow a broader range of LNG imports. This should be conducted with participation from LDCs [local

¹⁰ *Cove Point LNG Limited Partnership*, *supra* n.8.

¹¹ *Cove Point LNG Limited Partnership*, 102 FERC ¶ 61,227 (2003). In the context of Dominion's proposal to expand the capacity at Cove Point, WGL now claims that the low heavy hydrocarbon content of LNG delivered by Cove Point led to drying and cracking seals in distribution facilities, which eventually led to gas leaks. *See Dominion Cove Point LNG, L.P.*, Docket No. CP05-130-000.

¹² The National Petroleum Council (NPC) is an oil and natural gas advisory committee to the Secretary of Energy.

distribution companies], LNG purchasers, process gas users, and original equipment manufacturers (OEMs).”¹³

12. By the time the NPC report was issued, the Commission already had pending before it a number of proceedings that raised natural gas quality or interchangeability issues. Since that time, other proceedings involving natural gas quality or interchangeability have been initiated. Procedurally, the gas quality and interchangeability issues have arisen in the context of complaint proceedings,¹⁴ certificate proceedings,¹⁵ and proposed tariff changes.¹⁶ Although each case involves unique circumstances, collectively, these cases reveal a growing tension between the desire of natural gas pipelines and distributors to ensure the quality of gas entering their facilities, and the desire of producers and shippers to have their product transported without onerous or unduly discriminatory processing requirements. Another recurring theme is the desire of end-use customers to receive gas that will not harm their gas-fueled equipment nor cause inefficient operations.

13. The Commission held a public conference to discuss gas quality and interchangeability issues on February 18, 2004. Many industry participants, representing industry sectors from wellhead to burner tip, provided the Commission with information on the range of complex operational concerns and issues that the market was facing.

¹³ National Petroleum Council, *Balancing Natural Gas Policy: Fueling the Demands of a Growing Economy, Volume I, Summary of Findings and Recommendations*, September 2003, at 64.

¹⁴ See, e.g., *The Toca Producers v. Southern Natural Gas Co.*, Docket No. RP03-484-001; *Amoco Production Company*, Docket No. RP01-208-000; *Southern Natural Gas Co.*, Docket No. RP04-42-000 (collectively, the Toca Proceedings); *Indicated Shippers v. Trunkline Gas Company, LLC*, Docket No. RP04-64-000; *Indicated Shippers v. ANR Pipeline Company*, Docket No. RP04-65-000; *ANR Pipeline Company*, Docket No. RP04-216-000 and RP04-435-000 (the ANR Proceedings); *Indicated Shippers v. Columbia Gulf Transmission Company*, Docket No. RP04-98-000, *Indicated Shippers v. Tennessee Gas Pipeline Company*, Docket No. RP04-99-000; and, *AES Ocean Express LLC v. Florida Gas Transmission Company*, Docket No. RP04-249-000/-001.

¹⁵ See, e.g., *Dominion Cove Point LNG, L.P.*, Docket No. CP05-130-000; *Pearl Crossing Pipeline LP*, Docket No. CP04-376-000.

¹⁶ See, e.g., *Natural Gas Pipeline Company of America*, Docket Nos. RP01-503-002, -003, 102 FERC ¶ 61,234 (2003) and 103 FERC ¶ 61,322 (2003). A December 20, 2005 Initial Decision in this proceeding is pending before the Commission.

14. Subsequent to the February 2004 technical conference the natural gas industry, under the auspices of the Natural Gas Council, initiated a collaborative effort to seek consensus on industry-wide standards for gas quality and interchangeability. This collaborative effort made tremendous progress in identifying the underlying science, identifying measurement techniques, and characterizing the different perspectives on the problems different sectors face with changing or uncertain natural gas quality and interchangeability.

15. On February 28, 2005, the Natural Gas Council filed with the Commission two technical papers entitled: *Natural Gas Interchangeability and Non-Combustion End Use* and *Liquid Hydrocarbon Drop Out in Natural Gas Infrastructure* (collectively, NGC+ Reports). These papers represent the culmination of nearly a year of work by a large group of natural gas industry stakeholders -- the NGC+ Group¹⁷ -- which worked to reach a consensus understanding of these problems and recommendations about how they might be managed. Both Reports suggest interim recommendations and urge additional research.

16. The Interchangeability Report defines interchangeability as:

The ability to substitute one gaseous fuel for another in a combustion application without materially changing operational safety, efficiency, performance or materially increasing air pollutant emissions.¹⁸

The paper goes on to provide background information on the history of the industry's experience with gas quality issues, and the changes it has experienced, and then reviews various measures that have been employed to measure interchangeability. After a review of the impacts of variable fuel quality on gas-fired appliances, the paper provides an

¹⁷ The Natural Gas Council is an organization made up of the representatives of the trade associations of the different sectors of the natural gas industry, such as the producers, pipelines, and local distribution companies. The NGC+ group included many industry volunteers from the member companies of the various trade associations as well as other industry participants interested in these issues.

¹⁸ Interchangeability Report, (February 28, 2005; refiled on March 3, 2005, and resubmitted with appendices June 30, 2005), at 2.

<http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=10644164>

overview of past industry efforts to measure, predict and monitor the interchangeability of natural gases, and examines several options for managing interchangeability.

17. Recognizing that more research is needed, the NGC+ Interchangeability Work Group makes interim recommendations, to be implemented pending further study and deliberation. These interim guidelines provide for: (1) use of the local average historical Wobbe Index average with an allowable range of variation of plus or minus four percent; (2) subject to a maximum Wobbe Index level of 1,400; (3) a maximum heating value limit of 1,110 Btu/scf; (4) a limit on butanes and heavier hydrocarbons (butanes+ or C4+) of 1.5 mole percent; and (5) an upper limit on the amount of total inert gases (principally nitrogen and carbon dioxide) of up to four mole percent. The Interchangeability Report also recommends an exception from these interim guidelines for service territories that could demonstrate experience with supplies exceeding these Wobbe Index levels, Heating Value and/or Composition Limits. Companies in these service territories could continue to use non-conforming supplies as long as use of these supplies does not unduly jeopardize the safety of or create utilization problems for end use equipment.¹⁹

18. NGC+ Group recommends that these guidelines be employed until research can be completed filling in major data gaps for modern end-use appliances and the industry forges a consensus on improved interchangeability requirements. The NGC+ Reports originally forecast that it would take 2 to 3 years to complete this additional work. The interim guidelines are for gases delivered to points in the gas transportation system most closely associated with end users: gases delivered to local distribution companies (LDCs). The guidelines do not necessarily apply directly to points upstream in the transportation system where blending, gas processing, and other factors may be utilized to allow gases outside the ranges of the guidelines to satisfy the guidelines at LDC city gates. The NGC+ Group is continuing to investigate development of guidelines for points upstream.

19. The second paper, *Liquid Hydrocarbon Drop Out in Natural Gas Infrastructure*, addresses the issue of controlling hydrocarbon drop out in natural gas pipeline and distribution facilities, and other gas industry infrastructure downstream of producing areas. The NGC+ interim recommendation on this issue is to adopt interim standards

¹⁹ Interchangeability Report at 26.

that translate historic experience into terms of CHDP or C6+ GPM methodologies,²⁰ taking best available historical data into account. The NGC+ also recommends that additional research be conducted to better understand gas composition, and to develop improved analytic equipment suitable for daily operational use.

20. In addition to Commission action on gas quality and interchangeability, The North American Energy Standards Board (NAESB) has considered requests that it adopt Business Practice Standards to address natural gas quality and interchangeability. On September 20, 2004, the Wholesale Gas Quadrant Executive Committee of NAESB adopted standards for electronic posting of certain gas quality parameters on pipeline websites. One month later, these standards were ratified by the NAESB membership. On May 9, 2005, the Commission issued an order amending its regulations governing standards for conducting business practices with interstate natural gas pipelines to incorporate by reference the NAESB standards related to gas quality, which are part of Version 1.7 of the NAESB consensus standards.²¹

21. On May 16, 2005, the Natural Gas Supply Association (NGSA) filed a petition for rulemaking seeking a Commission notice of proposed rulemaking (NOPR) to establish natural gas quality and interchangeability standards. By order issued contemporaneously with this Policy Statement in Docket No. RM06-17-000, the Commission is denying this petition. Instead of proceeding to address gas quality and interchangeability issues through a rulemaking proceeding, the Commission instead establishes herein the regulatory policy it will apply in individual proceedings before the Commission.

IV. Summary of Comments

22. The Commission solicited written comments on the NGC+ Reports and subsequently convened a technical conference on May 17, 2005 to allow for further public comment on and discussion of the issues raised by the Reports. In addition, the Commission solicited comments on the Natural Gas Supply Association's (NGSA) May 16, 2005 petition for rulemaking. Appendix A to this Policy Statement lists commenters on the Reports and comments received after the May 17 technical conference addressing issues in the Reports and the NGSA Petition.

²⁰ The phrase "C6+ GPM" stands for hexanes and heavier hydrocarbons, as measured in gallons per million cubic feet of natural gas. Measuring and controlling for the amount of these heavier hydrocarbons in the natural gas stream is an alternative to the CHDP method.

²¹ *Order No. 587-S, Standards for Business Practices of Interstate Natural Gas Pipelines*, 18 C.F.R. Part 284 (2005); FERC Statutes and Regulations ¶ 31,179.

23. Appendix B to this Policy Statement is a summary of the comments received on the NGC+ Reports and the NGSAs Petition. Briefly, commenters articulate conflicting views on whether mandatory nationwide standards are warranted, and if so, which standards should be adopted. While there is a great deal of consensus on how to articulate the problem in technical terms, opinion is divided among a number of preferred solutions. The Interstate Natural Gas Association of America (INGAA), for example, believes that there is no national problem with gas quality and interchangeability that warrants a rulemaking. While urging the Commission to address gas quality and interchangeability issues as they arise, INGAA favors a policy statement if the Commission decides to address the issues generically. There was no unanimity within the producer segment. The Independent Petroleum Association of America (IPAA) supports a rulemaking and the NGSAs proposal, while the Appalachian Producers and the Independent Petroleum Association of Mountain States oppose mandatory national standards for gas quality. The American Gas Association (AGA), the American Public Power Association of America (APGA), and a number of LDCs ask that the Commission require pipeline tariffs to contain merchantability standards. The Process Gas Consumers endorse a rulemaking and the NGSAs petition. The Edison Electric Institute and Siemens Westinghouse raise concerns about the impact of interchangeability standards on DLE turbines. Gas appliance manufacturers point out the importance of basing gas quality standards on local historical gas characteristics.

V. Discussion

A. The Problem in a Nutshell

24. Most, if not all, interstate natural gas companies have provisions in their tariffs governing gas quality. But as the NGC+ Reports note, “at no time has there ever been a common set of specifications for [hydrocarbon] components such as there has been for CO₂, H₂S, and water.”²² Each pipeline established its own terminology, standards, controls, and conditions for waiver. Until relatively recently, this approach appears to have worked reasonably well. However, gas quality and interchangeability controversies have become more frequent.²³ The Commission’s policy guidance recognizes the importance of encouraging rather than impeding the development of natural gas infrastructure and the movement of gas to the grid and to ultimate consumers. Thus, the Commission believes that the policy adopted here achieves a balanced approach by providing certainty, ensuring the safety and reliability of the nation’s gas grid, and

²² HDP Report at section 3.1.1.

²³ *Supra* note 13.

recognizing concerns about natural gas quality and interchangeability, while providing pipelines and their customers the flexibility necessary to maximize the introduction of new supply into the grid.

25. The Commission believes that there are compelling reasons to provide policy guidance on these issues. Three factors suggest that there is a need to act now. First, processing economics can create hydrocarbon dew point problems whenever the economics shift to favor decisions not to process natural gas. Second, establishing a sound policy on gas quality and interchangeability issues now would lower a potential barrier to expected increases in LNG imports.²⁴ Third, acting now will provide a firm regulatory policy basis for additional research and development on gas quality and interchangeability issues.

26. The natural gas industry, through the efforts of the NGC, has produced the NGC+ Reports that represent consensus on these topics. They offer interim approaches that can be put in place now, to the extent well-functioning gas quality and interchangeability provisions are not already in place in individual pipelines' tariffs. These interim recommendations provide a common language for discussion of these issues, and a reasonable framework to establish market-specific standards.

27. However, these same consensus Reports highlight the need for additional research and development before any more permanent consensus may be forged.²⁵ The Commission believes that a generic policy on gas quality and interchangeability would help guide the industry in the right direction. But given the areas of additional research that is required, it would be premature to take more prescriptive actions such as prescribing gas quality and interchangeability standards or prescribing specific levels of the constituent elements of, or the heating values for, the natural gas transported in pipelines.

²⁴ The Energy Information Administration projects that by the year 2030, 4.4 trillion cubic feet equivalent (Tcf) of LNG will be imported to meet approximately 27 Tcf in annual demand for natural gas--an eight-fold increase over the roughly 0.5 Tcf of LNG imported in 2003. Energy Information Administration, *Annual Energy Outlook 2006*, at 86 (February 2006). [http://www.eia.doe.gov/oiaf/aeo/pdf/0383\(2006\).pdf](http://www.eia.doe.gov/oiaf/aeo/pdf/0383(2006).pdf).

²⁵ We are encouraged by the efforts of the Department of Energy in pursuing research and development in this area. Along with the efforts of the industry, and continued voluntary collaboration, we look forward to the improvements that will become possible with a better understanding provided by these research efforts.

28. In the face of these challenges, the accomplishment of the NGC+ group in achieving consensus to submit two technical papers addressing hydrocarbon dew point and interchangeability is worthy of praise. The Commission commends those members of the natural gas industry who participated in these efforts. The Commission's policy statement is based in large part on the foundation of this group's work, and the comments filed in this generic proceeding.

B. Statement of General Policy Regarding Interstate Pipeline Tariff Provisions Governing Gas Quality and Interchangeability

29. The Commission's policy on gas quality and interchangeability embodies five principles. First, only natural gas quality and interchangeability specifications contained in a Commission-approved gas tariff can be enforced. The Commission's authority to address questions about tariff provisions on gas quality and interchangeability arises under sections 4, 5 and 7 of the NGA. By law, the Commission is responsible for ensuring that rates, charges, rules and regulations of service are just, reasonable and not unduly discriminatory or preferential, and that initial rates, terms and conditions of service are required by the public convenience and necessity.²⁶ Unless these specifications are stated in the tariff, the Commission will not be able to address gas quality and interchangeability concerns. Where gas quality and interchangeability issues are of concern to the transporting pipeline, tariff standards are essential terms and conditions of service.

30. Second, pipeline tariff provisions on gas quality and interchangeability need to be flexible. Pipelines operate in dynamic environments that frequently require quick responses to rapidly changing situations. For example, a pipeline may be asked to transport gas that does not meet a particular gas quality or interchangeability specification in the pipeline's tariff. Nevertheless, if the pipeline has the ability to transport such out-of-spec gas without jeopardizing system operations, its tariff should be flexible enough to allow it to do so. The Commission believes that flexible tariff provisions on natural gas quality and interchangeability will allow pipelines to balance safety and reliability concerns with the importance of maximizing supply, while recognizing the evolving nature of the science underlying gas quality and interchangeability specifications.

31. Third, pipelines and their customers should develop gas quality and interchangeability specifications. The Commission expects that specifications for natural gas quality and interchangeability will be based upon sound technical, engineering and scientific considerations. In addition, the Commission encourages pipelines and their

²⁶ 15 U.S.C. §§ 717c, 717d and 717f (2000).

customers to resolve gas quality and interchangeability issues on their own, either prior to or outside of formal Commission proceedings. This will facilitate mutually beneficial outcomes for all parties and should not have a detrimental impact on either current or prospective shippers.²⁷

32. Fourth, in negotiating technically based solutions, pipelines and their customers are strongly encouraged to use the NGC + interim guidelines as a common scientific reference point for resolving gas quality and interchangeability issues. The interim guidelines suggest a process for applying scientific principles to individual markets but do not address the specifics of individual pipeline circumstances or tariff provisions. Furthermore, the interim guidelines recognize that additional research and development are needed to arrive at more clearly defined limits to interchangeability specifications and to address the need for better and more timely operational information on natural gas quality and pipeline operations. The Commission's policy will keep step with improved knowledge on gas quality and interchangeability.

33. Finally, to the extent pipelines and their customers cannot resolve disputes over gas quality and interchangeability, those disputes can be brought before the Commission to be resolved on a case-by-case basis, on a record of fact and technical review. In resolving any such disputes, the Commission will give significant weight to the NGC+ interim guidelines. In addressing disputes, the Commission will develop a factual record, with sound technical underpinnings, which will provide the Commission with a good foundation for resolving disputes. The Commission recognizes that regional variation and differing local needs cannot be accommodated with an inflexible generic policy on gas quality and interchangeability. Rigid gas quality and interchangeability requirements could unnecessarily restrict the introduction of new sources of supply, which is inconsistent with the Commission's policy of encouraging new supplies and the construction of infrastructure to bring new supplies to market.²⁸ The following discussion

²⁷ In this regard, the Commission notes the "Joint Statement of the American Gas Association and the Interstate Natural Gas Association of America," filed on June 2, 2006, which outlines their agreement on developing gas quality and interchangeability specifications on a pipeline-by-pipeline basis, where needed, within the next year. On June 8, APGA filed a response to the AGA-INGAA joint statement.

²⁸ See e.g., *Northern Natural Gas Company*, 108 FERC ¶ 61,083, at P. 24 (2004) ("... the Commission must ensure that proposals that are intended to address system integrity do not unnecessarily discourage new sources of supply or impose unreasonable costs on shippers and consumers."), and *Hackberry LNG Terminal*, 101 FERC ¶ 61,294 (2002).

will elaborate on how we envision this general policy being applied in individual cases.

1. Gas Quality

34. The Reports' interim recommendations identify two valid methods that might be used to control hydrocarbon liquid dropout--the CHDP method, and the C6+ GPM method.²⁹ As a matter of policy, the Commission believes that jurisdictional tariffs should contain provisions that govern the quality of gas received for transportation when necessary to manage hydrocarbon liquid dropout within acceptable levels. Pipelines with existing tariff provisions that adequately control hydrocarbon dropout may continue to rely on their existing tariff.³⁰ Pipelines that wish to add provisions to their tariffs, or modify existing provisions, to control hydrocarbon dropout are strongly encouraged to use one of the two methods found by the NGC+ to be valid. If a pipeline wishes to propose a different method, the pipeline must provide an explanation of how the proposed method differs from the CHDP method described in the HDP Report. In addition, the pipeline will be required to include in any filing to revise its gas quality standards a comparison, in equivalent terms, of its proposed gas quality specifications and those of each interconnecting pipeline.

35. In application, either of the two methods suggested by the NGC+ task group offers a process for arriving at appropriate gas quality specifications for natural gas accepted for transportation by a pipeline. However, the specifications themselves must be derived to fit the specific circumstances of each pipeline.³¹ The appropriate gas quality specifications for different pipelines may vary depending upon a number of factors, including pipeline configuration, geographic location of the pipeline, access to and location of processing facilities, flowing gas temperatures and pressures, average ambient

²⁹ For a technical description of either of these methods, *see* HDP Report, especially sections 4 through 6.

³⁰ To the extent a complaint is filed alleging that an existing pipeline tariff is not just and reasonable, the Commission will evaluate the complaint on its specific merits.

³¹ *See* HDP Report, Appendix A *Parameters to be Considered in Establishing CHDP or C6+ GPM Based Limits*, and Appendix B *Process for Establishing a Cricondentherm Hydrocarbon Dew Point (CHDP) Limit*.

and ground temperatures and source of gas supply.³² This is a fact-intensive exercise, and is not one that lends itself to generic specifications. The Commission will examine the appropriate circumstances in each individual case. That being said, the Commission will give appropriate weight to the gas quality and interchangeability requirements of interconnecting pipelines as well as the requirements of markets directly served. The Commission wishes to ensure that natural gas wholesale trade across markets is not unduly impeded by the tariff requirements of individual pipelines. In addition, the tariff should state the natural gas quality specifications for gas that the pipeline will deliver to its customers.

2. Interchangeability

36. In its report, the NGC+ Interchangeability Work Group recommend interim guidelines based on a range of plus and minus four percent of the Wobbe number based on either local historical average gas or an established “adjustment or target” gas for the service territory at issue. This basic guideline was subject to additional parameters limiting: the maximum Wobbe number to 1,400; the maximum heating value to 1,110 Btu/scf; maximum butanes+ to 1.5 mole percent; and maximum total inert gases to four mole percent. These interim guidelines also included a specific exception for service territories with demonstrated experience with gas supplies exceeding any of the “additional parameters.”

37. The Interchangeability Report contains a methodology for arriving at an appropriate interchangeability specification, based in part on historical experience. Pipelines with existing tariff provisions which adequately characterize interchangeability limits may continue to rely on their existing tariff.³³ Pipelines that wish to add provisions to their tariffs, or modify existing provisions, to characterize interchangeability specifications are encouraged to use the interim guidelines proposed by the NGC+ Interchangeability Task Group. To the extent a pipeline wishes to propose a different method, it must explain how the proposed method differs from the interim guidelines. In addition, the pipeline will be required to include in any filing to revise its

³² See, e.g., El Paso at 6 (“A policy statement would allow the Commission to tailor its approach to reflect the complexities that each pipeline faces in addressing HDP issues, including, for example, reticulated pipeline systems that have bidirectional flows and as such may not be able to easily engage in pairing, blending, or aggregation.”), and Questar at 3-4.

³³ To the extent a complaint is filed alleging that an existing pipeline tariff is not just and reasonable, the Commission will evaluate the complaint on its specific merits.

interchangeability standards a comparison, in equivalent terms, of its proposed interchangeability specifications and those of each interconnecting pipeline.

38. As is the case with gas quality specifications, selection of interchangeability limits is a fact-based exercise. In application, either of the two methods suggested by the NGC+ task group offers a process for arriving at appropriate limits for the interchangeability characteristics of natural gas that may be accepted for transportation by a pipeline. However, the limits themselves must be derived to fit within the specific circumstances of each pipeline.³⁴ The appropriate interchangeability specifications for different pipelines may vary depending on a number of factors, including: the historic characteristics of natural gas delivered by the pipeline to the markets it serves; local market practices for the use of target or adjustment gases used to install and adjust equipment in that market; historic variability in the characteristics of gas delivered to the market; whether there are customer loads with special gas quality requirements, such as a large process gas user; the type and gas quality tolerances of the end-use equipment (including “legacy” equipment); and, the tariff requirements of downstream pipelines.³⁵ This fact-intensive exercise does not lend itself to generic specifications. The Commission will examine the appropriate circumstances in each individual case. That being said, the Commission will give appropriate weight to the gas quality and interchangeability requirements of interconnected pipelines as well as the requirements of markets directly served. The Commission wishes to ensure that natural gas wholesale trade across markets is not unduly impeded by the tariff requirements of individual pipelines. In addition, the tariff should state the natural gas quality specifications for gas that the pipeline will deliver to its customers.

3. Blending

39. Given the complexity of operating an interstate pipeline, there is substantial discretion given a pipeline to decide when and how much to allow exceptions to gas quality and interchangeability specifications to accommodate production that may not have convenient access to gas processing. In addition, some pipelines will waive gas quality limitations when operating circumstances allow, enforcing strict compliance with the tariff only when necessary. For example, a pipeline may be able to accept rich gas containing more of the heavier hydrocarbons than its tariff would otherwise permit by blending that gas with leaner gas that contains very little of the heavier hydrocarbons. However, there may be more such lean gas available for blending on some parts of the

³⁴ See Interchangeability Report at 24-26.

³⁵ See, e.g., The Florida Utilities April 1, 2005 comments.

pipeline's system than on other parts. Furthermore, a pipeline's ability to blend supplies of varying quality will depend on the supplies' proximity to market.

40. Pragmatically, this discretion allows the pipeline to maximize the gas supply available to its customers while maintaining its ability to manage gas quality and interchangeability within acceptable limits. The Commission has found in at least one case that such actions are "not necessarily undue discrimination under the NGA [Natural Gas Act]."³⁶ Operational constraints in particular parts of a pipeline's system may justify treating shippers on those parts of the system differently than shippers on other parts of the system.³⁷

41. The Commission continues to believe that it is appropriate to allow pipelines to exercise their discretion to waive strict gas quality limits when operating conditions allow, and to enforce such limits when operating conditions require stricter measures, as long as it is done in a not unduly discriminatory manner.³⁸ The Commission wishes to encourage pipelines to allow blending, pairing,³⁹ and other strategies, to the extent these can be implemented on a non-discriminatory basis and in a manner that is consistent with safe and reliable operations. This is consistent with the Commission's policy of minimizing any unnecessary restrictions on the supplies available to the national gas

³⁶ *Natural Gas Pipeline Company of America*, 102 FERC ¶ 61,234 at P. 27, and see discussion at PP. 25-33 (2003).

³⁷ *Consolidated Edison Company of New York v. FERC*, 165 F.3d 992, 1013 (D.C. Cir. 1999).

³⁸ The Commission's regulations require that pipelines strictly enforce the provisions of their tariffs if those provisions do not permit the use of discretion. In instances where the tariff provides the pipeline with discretion, it must keep a written log detailing the circumstances and manner in which it has exercised discretion under its tariff, and this information must be posted on the pipeline's website within 24 hours of when the pipeline exercised its discretion. See 18 C.F.R. §§ 385.5(c)(1) and 385.5(c)(4).

³⁹ The *HDP Report* does not use the term "pairing," but instead refers to the practice of "contractual blending." It is a paper transaction allowing a producer of gas that does not meet a pipeline's gas quality requirements to contract to blend this gas with the gas of another producer whose gas is in compliance with the pipeline's gas quality specifications. These two producers' volumes may enter the gas stream at different points and thus may not blend directly in the pipeline. Section 3.2.5 describes contractual blending. See also comments of El Paso Corporation's Pipeline Group at 2 and 10; NGSA Petition at 4 n.2; and, Selected Processors at 2.

market. Pipelines may consider “safe harbor” provisions and informational posting requirements as means of minimizing the potential for undue discrimination.⁴⁰

4. Merchantability

42. AGA urges the Commission to require pipelines to include a merchantability provision in their tariffs.⁴¹ AGA defines the term “merchantable” as gas that is:

consistently commercially free from objectionable matter including odors, bacteria, dust, gums, water, hydrocarbon liquids, other liquid or gaseous constituents that may preclude supply from being interchangeable with historically acceptable supplies delivered into a market area and will not cause injury or interference with operation of existing end use equipment, pipelines and the gas transmission and distribution infrastructure.⁴²

43. The Commission will not require such provisions. We do not believe that mandating additional merchantability requirements would provide any additional value at this time.⁴³ In addition, we are concerned that adoption of a general merchantability requirement could come into conflict with the specifications of gas quality and interchangeability that would be quantified under the interim processes recommended in the NGC+ Reports. Pipeline tariff provisions that contain detailed technical specifications for gas quality and interchangeability may be sufficient without the addition of a general merchantability provision; technical specifications and general descriptions, to the extent they are present, must work together if they are to function as intended. Neither of the NGC+ Reports included in their consensus recommendations the adoption of a merchantability clause. Some pipelines have merchantability provisions in

⁴⁰ See *National Gas Pipeline Company of America*, 102 FERC ¶ 61,234 at PP. 43, 48 (2003).

⁴¹ See, e.g., AGA comments at 25-29.

⁴² *Id.* at 27-8.

⁴³ The Commission notes that AGA also suggested an alternative approach in its comments, stating that “delivered gas will be ‘merchantable’ gas and will meet certain specifications, such as those set out for interchangeability, CHDP and other constituent limits.” AGA comments at 28. The Commission sees no value to adding the label “merchantable” to gas that otherwise meets the gas quality and interchangeability specifications set forth in the tariff.

their current tariffs and some do not. As a policy matter, the Commission will neither mandate nor prohibit such provisions.

C. Applicability to Section 311 Transporters

44. The Commission intends to apply this policy to statements of operating conditions filed by entities which provide interstate transportation services pursuant to section 311 of the Natural Gas Policy Act of 1978 (NGPA). As a general principle, the Commission expects that each section 311 transporter will include specific provisions in its statement of operating conditions governing gas quality and interchangeability.⁴⁴

D. New Companies Authorized under Section 7 of the Natural Gas Act

45. The Commission intends to apply this policy in its review of *pro forma* tariffs filed as part of section 7(c) certificate applications. Applicants should ensure that their Exhibit P *pro forma* tariff includes general terms and conditions addressing gas quality and interchangeability. Recognizing that new entrants do not have historic markets upon which to base their analysis of gas quality and interchangeability specifications, the Commission expects section 7 applicants to include relevant information about the gas quality and interchangeability specifications of interconnecting pipelines, and of the competing pipelines serving customers to be served directly by the new entrant, as well as the relevant information about the gas supplies to be received by the new entrant for transportation or storage. Applicants must show how they derived their gas quality and interchangeability specifications stated in their *pro forma* tariffs.

E. New Companies Authorized under Section 3 of the Natural Gas Act

46. The Commission intends to apply this policy in its review of proposals to construct and operate new facilities for the importation of natural gas. Applicants should include information in their application which demonstrates the compatibility of their imports with the gas quality and interchangeability requirements of all interconnecting pipelines. To the extent service is provided pursuant to Parts 157 or 284 of the Commission's regulations, the applicant should make specific reference to tariff or

⁴⁴ Section 284.224, subpart G, of the Commission's regulations authorizes LDCs and Hinshaw pipelines to perform the same types of transactions that intrastate pipelines are authorized to perform under section 311 of the NGPA and subpart C and D of Part 284 of the Commission's regulations. The Commission intends that the requirements imposed by this policy statement on section 311 intrastate pipelines would also apply to Hinshaw pipelines.

contract provisions governing gas quality and interchangeability and demonstrate their compliance with this policy statement.

47. Some commenters ask the Commission to impose specific obligations on LNG project developers regarding merchantability, identification of adverse impacts, compensation for negative impacts, and mitigation.⁴⁵ However, the Commission believes that these are issues that should be addressed, if and when problems are identified, in specific cases.

By the Commission.

(S E A L)

Magalie R. Salas,
Secretary.

⁴⁵ See, e.g., AGA, APGA, Constellation at 3, and KeySpan's April 1 comments at 10-13.

APPENDIX A

Commenters

American Gas Association (AGA)

American Public Gas Association (APGA)

Appalachian Producers:

Kentucky Oil & Gas Association, Ohio Oil and Gas Association, and the
Independent Oil & Gas Association of Pennsylvania

Aux Sable Liquid Products, L.P. (Aux Sable)

BHP Billiton LNG International (BHP Billiton)

Calpine Corporation (Calpine)

Consolidated Edison Company of New York, Inc. and Orange & Rockland Utilities, Inc.

Constellation Energy Group, Inc.

Devon Energy Corporation

Dow Chemical Company

Duke Energy Gas Transmission

Edison Electric Institute (EEI)

Electric Power Supply Association (EPSA)

El Paso Corporation's Pipeline Group

EMS Pipeline Services

Fertilizer Institute

Florida Power & Light

Florida Utilities:

Tampa Electric Company; Peoples Gas System, a Division of Tampa Electric Company; the Associated Gas Distributors of Florida (AGDF); and the Florida Municipal Natural Gas Association (FMNGA). The AGDF consists of Florida Public Utilities Company; Central Florida Gas Company; Indiantown Gas Company; Sebring Gas Systems, Inc.; St. Joe Natural Gas Company, Inc.; and Florida City Gas. The FMNGA consists of the City of Chattahoochee; City of Clearwater Gas System; Crescent City Natural Gas; City of DeFuniak Springs; Geneva County Gas District; Lake Apopka Natural Gas District; City of Leesburg; City of Live Oak; City of Madison; Okaloosa Gas District; Palatka Gas Authority; City of Perry; Southeast Alabama Gas District; and City of Sunrise.

Gas Appliance Manufacturers Association (GAMA)

Gas Processors Association

General Electric Company (GE)

Gulf South Pipeline Company, LP (Gulf South)

Independent Petroleum Association of Mountain States (IPAMS)

Interstate Natural Gas Association of America (INGAA)

Independent Petroleum Association of America (IPAA)

KeySpan Corporation
Michigan Consolidated Gas Company
National Fuel Gas Supply Corporation and National Fuel Gas Distribution Corporation
Natural Gas Supply Association (NGSA)
NiSource, Inc.
Pacific Gas and Electric Company
Process Gas Consumers Group (PGC)
Producer Coalition:

Devon Energy Corporation, Dominion Exploration & Production, Inc., Forest Oil Corporation, The Houston Exploration Company, Kerr-McGee Oil & Gas Corporation, Newfield Exploration Company, Spinnaker Exploration Company, and TOTAL E&P U.S.A., Inc.

Progress Energy
Questar Pipelines
Selected Processors:

Enterprise Products Operating L.P., Williams Midstream, Dynegy Midstream Services, Limited Partnership and Duke Energy Field Services, LLC

Sempra Global
Shell NA LNG LLC and Shell US Gas & Power, LLC
Siemens Westinghouse Power Corporation
South Carolina Electric & Gas Company, SCANA Energy Marketing, Inc. and Public Service Company of North Carolina, Inc. (SCANA)
South Carolina Pipeline Company and SCG Pipeline, Inc.
South Coast Air Quality Management District (SCAQMD)
Southeastern End Users Group:

Florida Cities – City of Tallahassee, Florida Gas Utility, Gainesville Regional Utilities, JEA, Lakeland Electric, and Orlando Utilities Commission, Florida City Gas, Florida Municipal Natural Gas Association – Cities of Chattahoochee, DeFuniak Springs, Leesburg, Madison, Perry and Sunrise, City of Clearwater Gas System, Crescent City Natural Gas, Geneva County Gas District, Lake Apopka Natural Gas District, Okaloosa Gas District, Palatka Gas Authority, Southeast Alabama Gas District, Florida Power & Light Company, Florida Public Utilities Company, Progress Energy, Peoples Gas System, a Division of Tampa Electric Company, Seminole Electric Cooperative, Inc., Southern Cities – Georgia Cities of Cartersville, Cordele, Cuthbert, Dublin, Hawkinsville, LaGrange and Tallapoosa and the Florida City of Tallahassee, Tampa Electric Company

Southern California Gas Company and San Diego Gas & Electric Company
Suez Energy North America
TransCanada Pipelines Limited
Utah Department of Public Utilities (UDPU)
Williston Basin Interstate Pipeline Company

Wisconsin Distributor Group:

Wisconsin Power & Light Company, City Gas Company, Madison Gas & Electric Company, Wisconsin Gas LLC, and Wisconsin Electric Power Company – Collectively, We Energy, and Wisconsin Public Service Corporation

APPENDIX B

Summary of Comments

A. Natural Gas Producers

1. NGSAs urge the Commission to move quickly to initiate a rulemaking to adopt its proposals. NGSAs also would establish a presumption of interchangeability (with historical gas supplies) for all gas that meets the interchangeability specifications in the NGSAs rulemaking proposal. In addition, NGSAs do not support efforts by local distribution companies (LDCs) to require pipelines to include merchantability clauses⁴⁶ in their tariffs.

2. Among independent producers, the Independent Petroleum Association of America (IPAA) supports the NGSAs proposal for a NOPR, including the CHDP safe harbor and the interchangeability levels. In addition, IPAA advocates a *de minimis* exemption for production from small wells, where such exceptions will not affect pipeline operations. Devon Energy, a small producer and processor, supports the NGSAs petition and supports the *de minimis* exemption for small volumes, so long as the quality of delivered gas remains within the tariff limits.⁴⁷

3. The Independent Petroleum Association of Mountain States (IPAMS), an association of small producers in the Rocky Mountains, opposes any rigid national standard for gas quality, citing the different needs of customers in Salt Lake City and Denver, where its members' gas is delivered. IPAMS also supports a small producer *de minimis* exemption. However, it does not address the NGSAs proposal directly. The Appalachian Producers oppose the NGSAs proposal and assert that the presumption of interchangeability, for example, "could easily be transformed into a requirement that natural gas *must* meet those standards . . . changing the *presumptive* specifications into *prescriptive* ones."⁴⁸

⁴⁶ Several LDC commenters, including the American Gas Association (AGA), urge the Commission to require pipelines to include merchantability provisions in their tariffs. The issue of merchantability is discussed in the context of LDC comments beginning at P 37.

⁴⁷ Devon at 4.

⁴⁸ Appalachian Producers comments at 2.

4. Finally, the Producer Coalition⁴⁹ supports adoption of natural gas quality and interchangeability standards through a formal rulemaking proceeding rather than through a policy statement. The Producer Coalition asserts that much of the controversy in setting gas quality standards “would be eliminated if the Commission, by rule or policy statement, would (i) establish a uniform method for determining CHDP limits for interstate pipelines; and (ii) determine who pays – producers or downstream customers – for conditioning or handling gas to accommodate the downstream temperature and pressure cuts between the interstate pipeline grid and the gas burner tip.”⁵⁰

B. LNG Operators

5. Four LNG facility operator/developer companies filed comments on the NGSA proposal. Both Shell and Sempra urge the Commission to move quickly to adopt standards in order to maintain momentum from the NGC+ efforts. Shell favors a Commission policy statement, while Sempra supports action via a NOPR, along the lines advocated by NGSA. Both support the interchangeability interim guidelines in the Report instead of the NGSA proposal, because NGSA does not adopt the $\pm 4\%$ range in the Report or the 1,110 Btu limit. In addition, Sempra opposes a mandate for pipeline blending, aggregation and other operational techniques for dealing with non-standard gas. Both favor requiring pipelines to adopt gas quality and interchangeability standards in their tariffs. Suez Energy North America (Suez) supports a rulemaking based on the proposals in the Reports, and it asserts that the Commission should “craft rules that will encourage some degree of standardization while also leaving distinct pipeline service territory issues for determination on each pipeline system.”⁵¹

6. The issue of federal – state cooperation in standard-setting is the focus of comments by BHP Billiton LNG International (BHP Billiton), an Australian energy company that plans to build a floating storage and regasification unit for LNG imports offshore California to bring gas into California. BHP Billiton opposes a proposal pending before the California Public Utilities Commission (CPUC)⁵² in the CPUC’s ongoing proceeding examining gas quality issues. In that proceeding, a California utility

⁴⁹ The Producer Coalition is an *ad hoc* group of natural gas producers consisting of Devon, Dominion E&P, Forest Oil, Houston Exploration, Kerr-McGee, Newfield Exploration, Spinnaker Exploration and TOTAL E&P.

⁵⁰ Producer Coalition at 6.

⁵¹ Suez at 5.

⁵² CPUC Docket No. 04-01-025.

has proposed that LNG suppliers be subject not only to the quality specifications in utility tariffs but also to the quality specifications of any other federal, state or local agency having “subject matter” jurisdiction over natural gas quality. BHP states that gas quality and interchangeability “should not be subject to the whim or caprice of governmental agencies that do not have direct regulatory authority over utilities.”⁵³

C. Gas Processors

7. The Selected Processors⁵⁴ support a NOPR that considers three issues: uniform CHDP standards across interconnecting pipelines; CHDP specifications in pipeline tariffs; and fair and non-discriminatory application of the CHDP standards for all gas supplies. The Selected Processors would exempt interstate pipelines that do not directly serve an end-use market from the CHDP standards. It believes that the NGSAs proposal is “vague,” and may not resolve the need for uniform CHDP standards across interconnecting pipelines, long-term certainty through clear CHDP standards in pipeline tariffs and the fair and non-discriminatory application of gas quality standards for all gas supplies.⁵⁵ The Selected Processors advocate a formal rulemaking proceeding and mandatory measures for pipeline blending or pairing of non-compliant gas. They are concerned that discretionary blending and pairing by pipelines pose the potential for discrimination.

8. Aux Sable Liquid Products (Aux Sable), which operates a gas processing plant at the terminus of the Alliance Pipeline near Chicago, Illinois, supports the adoption of gas quality and interchangeability standards through a rulemaking proceeding, but it disagrees with the detailed regulatory text contained in the NGSAs proposal. Nevertheless, Aux Sable supports the Report recommendations, including a CHDP safe harbor,⁵⁶ and the establishment of the Wobbe Index as the basic means of determining interchangeability.

⁵³ BHP Billiton at 4.

⁵⁴ The Selected Processors consist of Enterprise, Williams Midstream, Dynegy Midstream and Duke Energy Field Services.

⁵⁵ Selected Processors at 1.

⁵⁶ While Aux Sable states that it supports the “minimum safe harbor” CDHP method of controlling liquid drop out, the Report itself does not include a “safe harbor” recommendation.

9. In an October 27, 2005 letter to the Chairman, the Gas Processors Association (GPA) encourages swift resolution of the issues involved in setting gas quality specifications to ease uncertainty in the industry with respect to the outcome of these proceedings. Citing the loss of infrastructure that occurred in the Gulf following last year's hurricanes, GPA states that regulatory uncertainty adversely affects decisions on new investment to rebuild damaged infrastructure. "The gas processing industry desperately needs to know that fair, consistent application of gas quality specifications will be applied for the long-term."⁵⁷

D. Interstate Pipelines

10. The Interstate Natural Gas Association of America (INGAA) opposes NGSAs' NOPR proposal, stating that gas quality and interchangeability issues are not a nationwide problem. Rather, problems with gas quality and interchangeability can be addressed on a pipeline-specific basis as problems arise.⁵⁸ However, if the Commission is going to address these issues in a generic proceeding, INGAA believes it should do so through a policy statement. It supports a presumptive 15 degree CHDP safe harbor but wants pipelines to have the flexibility to accept gas at receipt points at different CHDP levels (higher or lower than the NGSAs proposal). INGAA would apply the CHDP standards at pipeline receipt points rather than at delivery points. The 1,400 Wobbe Index level standard proposed by NGSAs is missing critical technical parameters (heating value, use of historical average gas supply, and the plus or minus 4% Wobbe Index range). INGAA would evaluate the need for a *de minimis* exemption for small producers on a pipeline-by-pipeline basis. Finally, INGAA opposes a requirement for merchantability provisions, saying that these could be used to "trump" pipeline gas quality and interchangeability tariff provisions.

⁵⁷ Letter from Mark F. Sutton, Executive Director of GPA to Chairman Kelliher and officials at the Energy Information Administration and the Minerals Management Service, at 2 (October 27, 2005).

⁵⁸ In this regard, the Commission notes the "Joint Statement of the American Gas Association and the Interstate Natural Gas Association of America," filed on June 2, 2006, which outlines their agreement on developing gas quality and interchangeability specifications on a pipeline-by-pipeline basis, where needed, within the next year. On June 8, APGA filed a response to the AGA-INGAA joint statement. Subsequent comments on the joint statement were filed by NGSAs (on June 12) urging the Commission to establish a policy for developing natural gas quality and interchangeability standards, and by Washington Gas Light (June 13), who urged the Commission to recognize the infrastructure impacts of changes in supply compositions in addressing interchangeability issues.

11. Several pipeline companies filed individual comments on the Reports and the NGSAs proposal. Pipeline commenters oppose merchantability requirements, and, to the extent any procedural tool is favored, the pipeline commenters oppose a generic rulemaking along the lines proposed by NGSAs. Instead, most support the development of a policy statement governing gas quality and interchangeability issues. Duke Energy Gas Transmission takes another view, arguing that these issues should be handled on a complaint-driven basis and not through generic national standards. On providing an exemption for small producers advocated by some producers, ANR, Southern Natural and El Paso all assert that they have such exceptions in their gas quality tariff provisions.

12. Other pipelines point to specific constraints or supply issues on their systems that would make a generic approach particularly difficult. For example, Gulf South Pipeline states that, due to its reticulated nature, gas cannot be pathed on its system, nor can gas molecules be traced. This would make it very difficult for Gulf South to apply a single CHDP minimum standard to its entire system.⁵⁹

13. Questar and Williston Basin both cite their ability to transport high HDP gas or coal bed methane as being essential to meeting the requirements of downstream markets. In Questar's case, some of the gas it treats is delivered to its affiliated LDC. Questar has made significant investment in liquid handling facilities and processing plants in order to provide transportation service for gas coming from growing supply sources in the Green River, Uinta and Piceance basins. Although the question of who should pay for these facilities is the subject of an ongoing dispute with the Utah Division of Public Utilities, Questar asserts that its ability to transport high HDP gas on its system would be adversely affected by the CHDP safe harbor proposed in the NGSAs petition.⁶⁰ Similarly, Williston Basin states that the gas it has transported on its system historically exceeds the levels in both the Reports and the NGSAs petition. In addition, Williston Basin states that applying an inflexible gas quality standard at delivery points would impose a tremendous hardship on the pipeline, which has 53 receipt points but over 3,100 delivery points.⁶¹

E. LDCs

14. AGA and the American Public Gas Association (APGA), the major LDC trade associations, oppose the NGSAs petition. AGA's original position on the NGSAs petition supported a NOPR mandating pipeline tariff provisions on gas quality and

⁵⁹ Gulf South at 11-12.

⁶⁰ Questar at 3-4.

⁶¹ Williston Basin at 4.

interchangeability. AGA pointed to many flaws in the NGSA proposal, most of which stem from the differences between the NGSA proposal and the Reports' proposed interim guidelines. AGA believes that the Commission should allow pipelines to require gas to be processed, and it believes the CHDP should be set at the receipt points on the pipeline system instead of at delivery points as proposed by NGSA.

15. AGA proposed an alternative to the NGSA rulemaking proposal, outlining its own rulemaking procedure: pipelines would amend their tariffs to adopt a CHDP level or safe harbor CHDP developed through a pipeline-by-pipeline consensus process initiated by the Commission's NOPR and modeled on the collaborative process that led to the development of the Report. AGA would rely on the Interchangeability Report's interim guidelines implemented in a Commission-mandated consensus process in setting interchangeability standards.⁶² Since filing its comments on the NGSA petition, AGA has collaborated with INGAA to develop an agreement on how industry stakeholders could negotiate natural gas quality and interchangeability specifications on a pipeline-by-pipeline basis, where needed, within the next year. This proposal, styled as a "joint statement," was filed on June 2, 2006.⁶³

16. Both AGA and APGA support requiring pipelines to include a merchantability provision in their tariffs to protect pipeline customers from the effects of gas that is not in compliance with tariff standards gas. This will provide pipelines flexibility to accept gas that is not in compliance with the tariff but through blending or other means is "merchantable" when delivered to LDCs and other end-use customers. KeySpan also strongly endorses a requirement that pipeline tariffs include a merchantability provision.

17. A significant number of LDCs filed comments on the Reports, the May 17 technical conference and the NGSA proposal, which most LDC commenters explicitly oppose. Their comments are largely encompassed in the comments of AGA and APGA, and most LDC commenters explicitly endorsed the trade association comments. Constellation, for example, endorsed the comments of AGA and EEI. Standards based on historical gas quality and mandatory merchantability requirements in pipeline tariffs are supported by most LDCs. Most favor a rulemaking procedure, although NiSource favors a policy statement for gas quality and interchangeability standards.

⁶² AGA at 32-36.

⁶³ *Supra* at n.57. On June 8, AGPA filed a response to the AGA-INGAA joint statement essentially agreeing with the process but opining that the parties should be able to complete their negotiations within six months.

18. National Fuel Gas Distribution Corporation, which has a pipeline affiliate that receives substantial quantities of Appalachian production, expresses concern about the proposal for exempting *de minimis* production from gas quality standards. National Fuel points out that the location along the pipeline and availability of blending are also important considerations when determining whether *de minimis* production volumes should be exempt from gas quality standards. “Processing requirements should be imposed on *de minimis* producers as necessary, on a pipeline-by-pipeline, market-by-market basis to maintain the historical content of gas introduced into commerce and minimize liquid dropout.”⁶⁴

19. SCANA opposes the NGSAs petition and proposes another process for developing gas quality and interchangeability standards. Additional research would focus on developing a nationwide baseline gas quality specification, and the industry should have a 10 to 15 year transition period to accommodate a new nationwide baseline gas standard. Additional focus should also be given on providing guidance to equipment manufacturers for complying with the new nationwide baseline gas standard. SCANA asserts that pipeline tariffs should be required to contain merchantability provisions, which would supersede any CHDP level in the tariff. CHDP levels would be set on a pipeline-by-pipeline basis.

20. The Wisconsin Distributors Group⁶⁵ states that the NGSAs’s proposed 15 degree CHDP safe harbor minimum might not work in the service territories of their members. The NGSAs proposal is based on average ambient ground temperatures, and in Wisconsin, a 15 degree safe harbor might not be low enough to prevent liquid drop out. In its comments on the Reports, the Wisconsin Distributors Group points out that much of Wisconsin is served by Canadian gas, which has a CHDP of minus 30 degrees. However, recognizing the interconnectedness of the interstate pipeline grid, more gas now is coming into Wisconsin from sources other than Canada. The onus should be on each pipeline, and its tariff should prescribe the CHDP and other gas quality criteria. Each pipeline should ensure uniformity across its system, and each tariff should include a merchantability provision.

⁶⁴ National Fuel at 3.

⁶⁵ The Wisconsin Distributors Group (WDG) is an *ad hoc* group of LDCs serving natural gas customers in Wisconsin. For purposes of this proceeding, the Wisconsin Distributors Group comprises the following: Alliant Energy – Wisconsin Power & Light Company, City Gas Company, Madison Gas & Electric Company, Wisconsin Gas LLC and Wisconsin Electric Power Company (collectively doing business as We Energies) and Wisconsin Public Service Corporation.

21. The importance of interchangeability issues in the context of LNG project development was raised by several LDC commenters. AGA asserts that the Commission should require that LNG terminal developers be responsible for ensuring that their product meets standards for interchangeability and that this responsibility should be incorporated as part of the NGA section 3 or section 7 certificate processes for the review of individual applications. APGA states that the Commission should require pipelines that utilize LNG in their supply mix to develop tariff provisions for monitoring and compensating for the costs incurred by communities that are near the injection of vaporized LNG into the pipeline system. However, a couple of individual LDCs raised issues on LNG and interchangeability that were not mentioned by the trade groups. For example, Constellation states that it should not have to bear the cost of any modifications to its LNG peak shaving facility that are necessary to accommodate elevated ethane content from LNG imported into Dominion's Cove Point LNG facility.⁶⁶

22. KeySpan proposes that the Commission require a new Gas Supply Resource Report be included in each NGA section 3 and section 7 application,⁶⁷ a proposal endorsed by SCANA and SCANA's pipeline affiliates. This resource report would identify all gas composition changes associated with the introduction of new gas supplies from the proposed facilities and all adverse impacts on end-users associated with the change in gas quality. In addition, the report would consider whether specific mitigation measures would be required to address potential adverse impacts from the new gas stream on such facilities as LNG peak shaving facilities and dry-low-emissions (DLE) natural gas turbines.

F. Industrial Gas Users

23. Among industrial gas users, Process Gas Consumers (PGC), Dow Chemical and the Fertilizer Institute filed comments. PGC and Dow Chemical approached the NGSA petition from completely different perspectives. PGC endorses virtually every aspect of the proposal. It would condition its support of the 15 degree CHDP on the Commission not "grandfathering" existing pipeline CHDP standards without additional opportunity for comment, and it would subject "grandfathered" pipelines to the same complaint process NGSA proposes for all other pipeline tariff standards. It also advocates a 15 to 18 month "reopener" to evaluate how the standards have worked. PGC avers that its

⁶⁶ Constellation at 3.

⁶⁷ KeySpan April 1 comments at 10-13.

members “are prepared to shoulder the burden” of system modifications to accommodate a 1,400 Wobbe Index level “to increase gas supplies.”⁶⁸

24. By contrast, Dow Chemical urges the Commission to be cautious in moving forward on the NGSA proposal. It points to the severe economic consequences for petrochemical plants when producers bypass processing their gas in order to “preserve their entrained liquefiabiles for sale to downstream gas markets,” thereby depriving petrochemical plants of critical feedstocks, such as ethane and propane.⁶⁹ The Fertilizer Institute takes no position on the NGSA proposal but states that the determination as to where on the pipeline system gas quality standards are imposed, whether at pipeline delivery points, as advocated by NGSA or at pipeline receipt points, as advocated by INGAA, will have significant consequences for members of the Fertilizer Institute. Many members of the Fertilizer Institute are directly connected to interstate pipelines upstream of LDC city gates. If gas quality standards are imposed on gas at the LDC city gate, these customers would not be protected.

G. Electric Utilities, Generators and Power Marketers

25. The Edison Electric Institute (EEI) and the Electric Power Supply Association (EPSA) filed extensive comments in support of a NOPR process. However, both express fundamental disagreement with NGSA’s petition and proposals for CHDP and interchangeability standards. Both disagree with the 15 degree CHDP minimum and the 1,400 Wobbe Index level for reasons expressed by other commenters. EPSA observes that NGSA’s proposed complaint process is tilted against those filing complaints and states that the Commission already has in place regulations for filing complaints under section 5 of the NGA.

26. EEI supports the establishment of natural gas quality and interchangeability standards through a Commission rulemaking, but it asserts that the NGSA CHDP and Wobbe levels are “not workable.”⁷⁰ Although EEI agrees with NGSA that a NOPR is the preferable procedural framework for setting standards, it believes that natural gas composition requirements must be based on historical deliveries, and that gas composition requirements must be set regionally or on a pipeline-by-pipeline basis and not nationally, as proposed by NGSA. EEI’s comments also included a lengthy study by Combustion Science & Engineering, “Effect of Fuel Composition on Gas Turbine

⁶⁸ PGC at 7.

⁶⁹ Dow at 3.

⁷⁰ EEI at 3.

Operability and Emissions.” Among its conclusions is that turbine operators have reported numerous operational difficulties attributed to changes in gas composition. Because there is an inherent trade-off between NO_x and combustion dynamics for the latest generation of gas turbines, when changes in gas composition lead to increases in NO_x emissions, turbine operators will have to make operational changes to remain in compliance with air permits.

27. The Southeastern End Users Group, an ad hoc group of LDCs and users of gas turbines in Florida and Georgia,⁷¹ opposes the NGSAs petition and endorses AGA’s proposed process for developing gas quality and interchangeability standards. Of particular concern is the impact of gas quality and interchangeability parameters on operators of DLE natural gas turbines. The Southeastern End Users Group is concerned about whether DLEs can accept wide variations in gas quality and yet remain in compliance with emissions requirements without having to add expensive automatic tuning and heating controls. The Southeastern End Users Group also expresses concern about “legacy” gas equipment and asserts that any gas quality and interchangeability standards ultimately adopted must ensure that “legacy” equipment will not be adversely affected. They request that any generic policy adopted by the Commission not replace case-specific decisions, such as the ongoing AES proceeding (Docket No. RP04-249-000 *et al.*)⁷²

28. Calpine and Florida Power & Light oppose the NGSAs petition. Progress Energy opposes implementation of the interim guidelines in the Reports and expresses concern that the fuel constituent values in the interim guidelines on interchangeability could have an adverse effect on DLE turbines. Progress Energy also believes that EPA should be brought into the process of developing gas quality and interchangeability standards.

H. Gas Equipment Manufacturers

29. The Gas Appliance Association of America (GAMA) and Siemens Westinghouse represent consumer appliance manufacturers and turbine manufacturers, respectively. Neither supports the specific Wobbe levels advocated by NGSAs, supporting instead the interim measure recommended in the report. GAMA points out that the report cited a 1992 GRI study that showed an average Wobbe Index of 1,345, and it urges the Commission to adopt the Report’s interchangeability guidelines and its $\pm 4\%$ Wobbe Index range, instead of NGSAs’s. GAMA also points out that the lack of a heating value

⁷¹ The members of the Southeastern End Users Group are listed in Appendix A.

⁷² Southeastern End Users Group at 8.

standard in the NGSAs proposal as another critical flaw. Other than to oppose NGSAs petition, GAMA takes no position on what procedural vehicle the Commission should employ.

30. Siemens Westinghouse requests that several of the interchangeability criteria set forth in the Report interim guidelines be modified: (1) Siemens Westinghouse would set a limit of 2.5 percent for propanes and one percent for butanes+ (compared with the interim guideline of 1.5 percent for butanes+); (2) it requests that an additional limit be set on the rate of change in the Wobbe Index of gas delivered to no more than two percent per minute; (3) Siemens Westinghouse suggests that tariff provisions take into account changes in gas quality that affect air quality; and, (4) it asks the Commission to consider a mechanism to provide for cost recovery related to equipment failure caused by gas quality or interchangeability issues. Finally, Siemens Westinghouse states that the levels in NGSAs proposal may be “too narrow” for certain end users, such as fuel cell applications or natural gas vehicles.⁷³

31. GE states that the heavy-duty turbines it manufactures have a gas fuel specification that defines the allowable ranges for fuel physical properties, constituents, and contaminants, but this specification “was not written with the intent of addressing continuous fuel variability within the allowable ranges.”⁷⁴ GE states that fuel variations of more than 5 percent from the Wobbe Index level established for the particular gas turbine may result in the need to re-tune the combustion system. Because significant or frequent variability may require constant monitoring with manual intervention (*i.e.*, re-tuning), GE is working on turbine upgrade packages that allow turbines to operate with automatic combustion tuning for acoustic dynamics and emissions. This effort has been spurred in part by GE’s support for LNG and the desire to develop retro-fit equipment that will allow continuous operation by gas turbines over a range of Wobbe Index levels “consistent with GE expected ranges for [natural gas] and LNG for the North American Market.”⁷⁵

⁷³ Siemens Westinghouse at 3.

⁷⁴ GE comments (May 12, 2005) at 1.

⁷⁵ *Id.* at 2.

I. Governmental Entities

32. The Utah Department of Public Utilities (UDPU) and the South Coast Air Quality Management District (SCAQMD) filed comments on the Reports. UDPU's focus is on the quality of gas being transported by Questar Pipeline, the measures and facilities employed by Questar to render the high HDP gas suitable for downstream customers (including its affiliated LDC), and who should pay these costs. It complains that Questar's tariff requirements are set so broadly as to accommodate transporting as much gas as possible. UDPU's solution is for pipeline tariffs to specify quality standards for gas that is delivered onto the system and to require the pipeline to ensure "a constant quality" that meets the needs of the end users. UDPU would require the pipeline to control the quality of gas entering its system.

33. SCAQMD characterizes the Report on interchangeability as "a good start" to understanding the issues, and it agrees that there are significant data gaps that must be investigated. In this vein, SCAQMD recommends expedited research in these areas:

- a. Emission studies of the impacts of high Btu gas on combustion equipment, particularly larger combustion and power generation sources
- b. Effects of inert gas addition on large and small equipment
- c. Regional air quality impact analysis of LNG imports
- d. Cost analysis of different mitigation measures

SCAQMD states that the natural gas quality standards that apply in its area are inadequate. They allow a heating value of up to 1,150 Btu/scf and indirectly a Wobbe Index of approximately 1,433. In addition, SCAQMD is concerned about the air quality impacts of high Btu LNG.⁷⁶

J. Pipeline/LNG Industry Service Providers

34. EMS Pipeline Services provides a broad array of pipeline operations and maintenance services, including field measurement, pipeline integrity testing, asset management, communications, and web-based data management. EMS is the only provider of pipeline services that filed comments, which generally support the Reports' approaches on both gas quality and interchangeability. EMS asserts that the Commission should encourage the industry to develop better and more comprehensive ways of measuring gas quality and interchangeability.

⁷⁶ SCAQMD at 3-4.