Florida Power & Light Company

Gas Quality Standardization Request to NAESB

R03035

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PART A

Establish web-based reports for tracking all physical and chemical properties of natural gas defined in pipeline tariffs, including timelines for reporting.

WHY????

- Power generators have a need to know the chemical characteristics and physical properties of all fuels being burned at their facilities...
  - for operational reasons
    - burn optimization
    - maintenance planning
    - protection of sophisticated power generation equipment
  - for collection and tracking of data for analysis or input to decisions for
    - future power plant siting projects in environmentally sensitive locations
    - expansion of existing facilities
    - selection of power generation equipment
  - for regulatory and emissions reporting purposes
    - power plant operating permit restrictions
    - emissions compliance filings (Federal, State, Local)

PART B

Develop a uniform process, including the underlying assumptions and methodologies, for determining gas quality specifications from measured data.

WHY????

- Investor owned, regulated electric utilities have “due diligence” reporting obligations requiring review, understanding, and/or verification of processes directly impacting fuel expenses.
- Well documented, widely accepted, standardized processes help to assure that “due diligence” obligations can be easily or reasonably met.
- Energy (MMBtu, Dth), received or delivered, upon which the commodity and transportation invoices are based, are calculated by pipelines from independent measurements of:
  - heating value (e.g., Btu per standard cubic feet), determined by compositional assay of a sample using any of a variety of gas chromatographs (GC)
  - volume (e.g., cubic feet), determined by any of a variety of meter types
- A sampling of gas tariffs indicate no clearly defined, universal set of quality measurement standards, assumptions, or procedures underlying the calculation of delivered energy quantities. This results in uncertainty and possibly:
  - measurement errors as gas flows in the grid from one pipeline into another or between “receipt and “delivery” on a single pipeline
  - variations in what the end user expects to see in operational benefit vs what it actually receives or pays for in fuel expenses

PART C

Examine the need to establish gas quality specification standards taking into consideration, (i) the specification needs of end users and providers of service to end users, and (ii) sources of supply (e.g., land-based, the Gulf, LNG). Draft such standards as appropriate.

WHY????

- **FUEL QUALITY VARIABILITY – can lead to mechanical failures or excess emissions necessitating reduction in power output or removal of the unit from service.**
  - Advanced, dry low NOx (DLN) combustion systems have restrictive fuel quality requirements due to the level of system control required to produce very low emissions.
  - Combustion control systems must deal with the entire unit load range, ambient temperature variation, and mechanical component wear in order to consistently meet the low emissions contained in operating permits.
  - To date turbine manufacturers have not been able to effectively deal with wide fuel quality variation without "**retuning**" the system or making physical changes to the combustion hardware to bring the unit back to full emissions compliance.
  - Heavy hydrocarbons in the gas directly impact the ability of the DLN equipped units to maintain emission compliance and operate reliably.

- **NATURAL GAS LIQUIDS (NGLs) – diminish the value of natural gas as a fuel**
  - Differences in hydrocarbon dew point can result in “drop-out” of the NGLs due to changes in pressure, temperature, obstructions, or some combination.
  - NGLs collected by a power generator are classified as "hazardous waste". Handling, transporting, and managing NGLs is an inappropriate burden on the power plant.
  - The power generator incurs costs and risks in disposing of this waste product.
  - Power plants are ill equipped to add expensive and complicated fuel gas conditioning systems to deal with excessive NGLs. Dealing with this type of waste product is not in most generators’ core competency tool box. Additional costs may be incurred to install heaters and front-end equipment in an attempt to protect generating equipment.
  - Btus purchased in the gas and transported by the pipeline (another cost) are often lost upon delivery before they can be used.
- **CONTAMINANTS – can create burdensome emissions or operational problems.**
  - Not all pipelines include the same contaminants in their tariff specs which suggest not all are tracking the same thing. Such inconsistencies present uncertainty where operational permitting, emissions reporting, maintenance needs, or safety require such information.
  - **Example: Sulfur:** Power generators have a need for accurate determination and reporting of sulfur from fuels used in power generation. Pipelines generally have a spec labeled as **total sulfur** in their tariffs…but a survey of tariffs indicate:
    - Some pipelines include mercaptan and hydrogen sulfide in calculating **total sulfur** while others do not.
    - Some pipelines list additional sulfur compounds in their tariff that other pipelines do not track or report. Example: carbonic sulfide
    - Quality specs on other reported contaminants may be needed for reasons of pipeline or consumer safety. Example: iron sulfide (“black powder” - a pyrogenic compound).

WHY NAESB?

- Gas Quality is a business process issue by virtue of its economic impact on end users.
- NAESB offers a forum where all quadrants and segments of the energy industry can come together, participate in solving business process issues, and chart the course for the future.
- NAESB has a record of producing implementable standards.
- NAESB has links to other standards-making organizations and the means to recruit technical experts from member companies and/or other standards-making organizations.
- NAESB has the ear of FERC.

WHAT IS THE PLAN?

- The industry has already examined and determined the "need" to establish gas quality specifications (PART C, first sentence), as evidenced by:
  - Presentations at the FERC Technical Conference.
  - Presentations at the recent NGC sponsored meeting.
- There is a need for an accepted, industry-wide process for resolving gas quality issues, now and for the future, that recognizes:
  - Economic impact of gas quality on all end users (retail, industrials, power generators).
  - Environmental compliance both for emissions and disposal of waste products.
  - Safety and operational integrity of TSP, LDC and power generator owned pipelines.
  - Complexity of gas quality standardization, whether by regions or across the grid.
- NAESB Board of Directors can support R03035 by:
  - Amending the 2004 annual plan to provide for a NAESB fuel quality task force (with co-chairs from each segment of the WGQ and participation from other interested quadrants) to further examine the scope and formulate a plan to address Parts A, B, and C with specific tasks as follows for 2004:
    - Part A – Research, identify, and develop formats for standardized fuel quality report alternatives against current or recently updated pipeline tariff quality specs.
    - Part B – Research, identify, and compile applicable assumptions and methods (either from examination of tariffs or review of industry standards (GPA, AGA, ASTM, etc.).
    - Part C – Provide NAESB representation at Natural Gas Council fuel quality meetings, documenting results, and providing reports on progress to NAESB membership, deferring further action until development of the NAESB 2005 annual plan.