

Comisión Reguladora de Energía – Ethane Issues

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Gas Specifications – Ethane Limits



- Florida Gas Pipeline is the only interstate pipeline in the United States with a limit for ethane content
 - No other interstate pipeline has included an ethane limit in recent proposed revisions to their gas specifications
- The gas interchangeability guidelines developed by the Natural Gas Council (NGC+) did not include ethane limit
 - Group of stakeholders representing all segments of the natural gas industry in the US
- California is the only state in the US with limits on ethane content
 - Limited to vehicle fuel (CARB)
 - Gas specifications for California utilities (SoCal Gas, SDG&E and PG&E) do not include an ethane limit
- EASEE Common Business Practice does not include any limit on ethane content
 - Addresses gas specifications for cross border transportation or gas entry in Europe
- Only two countries have ethane limits in gas specifications
 - Brazil: 10 – 12 mol% maximum ethane
 - Iran: 12 mol% maximum ethane

California Air Resource Board (CARB)



- Maximum 6 mol% ethane
- Applies only to compressed natural gas provided as fuel to Natural Gas Vehicles (NGV's)
- Specification established in 1993 before most NGV's were built and fuel needs were fully understood
- Significant portion of southern California gas production does not comply with CARB specification requiring long term exemptions to avoid shutting in gas production
- CARB recognizes problem with hydrocarbon compositional limits (including ethane) and is proposing to replace with a Methane Number performance parameter (similar to Octane Number)

Florida Gas Transmission (FGT)



- FERC recently approved a 10 mol% ethane limit as part of FGT tariff revision
- Applies only to gas delivered directly to FGT market area (state of Florida)
- No ethane limit for gas received in FGT's supply region
- FGT did not provide any technical or commercial justification for including the ethane limit
- FGT originally filed a 15 mol% ethane limit based on gas turbine specifications, did not provide any reason for reducing the limit

Gas Specifications – Gas Turbines



- Only two gas turbine manufacturers have fuel specifications that include a limitation on ethane content
 - GE's fuel specification includes a maximum ethane limit of 15 mol%
 - Siemens Westinghouse's fuel specification includes a maximum ethane limit of 16 mol%
- Four gas turbine manufacturers do not have any limit for ethane content in their fuel specifications
- Gas turbines utilize a version of Wobbe Index as the primary fuel specification
 - Addresses both operability and emissions issues

Ethane Limit – Concerns



- Significant portion of Pemex pipeline gas has high ethane level (near 10%)
- Several potential sources of LNG supply to Mexico have a high ethane content
 - Peru: 10.6% ethane
 - Australia: 7.1 – 10.3% ethane
 - Oman: 7.0 % ethane
 - Qatar: 6.2 – 6.7% ethane
 - Algeria: 6.7 – 8.8% ethane
 - Abu Dhabi: 13.4% ethane
- Implementation of an ethane limit is not an effective method for limiting Wobbe Index or addressing combustion issues
 - Gas with 6% ethane can have a Wobbe Index from 46.3 to 49.4 MJ/m³ or a variation of almost 7%
 - Gas with a 10% ethane content can vary in Wobbe Index from 47.0 to 50.0 MJ/m³
- Wobbe Index and gross heating value limits included in the current NOM are adequate to address gas interchangeability concerns
- Ethane recovery is only viable when infrastructure and markets are available
 - Not an option on the United States West Coast or Baja Mexico