

**NGC+ Gas Interchangeability Task Group
White Paper on Gas Interchangeability**

Outline

1. Introduction
 - a. Summary of the issue
 - b. Background
2. Interchangeability Parameters
 - a. History within US
 - b. International experience
 - c. Wobbe (most prevalent)
 - d. AGA
 - e. Weaver
 - f. Single parameters
3. Overview of Gas Supply
 - a. Historical Levels
 - i. HHV, Wobbe
 - ii. Examples
 1. Contrast Trunkline pre-2002 with current
 2. Contrast Distrigas pre-2000 with current
 3. Consider maps to depict selected receipts and market area deliveries
 - b. Impact of Introduction of LNG
 - i. LNG Sources
 1. Current
 2. Future
4. Application of Interchangeability Parameters
 - a. Range – Wobbe
 - b. Wobbe, Incomplete combustion (or CO/CO₂)
 - c. Weaver (recognize Cove Point)
 - d. Interchangeability envelope
5. Implications to the Current Infrastructure
6. Overview of End Use
 - a. Appliances
 - i. Furnaces/boilers
 - ii. White goods

1. As found
 2. New
- b. Industrial Manufacturing
 - i. Fuel
 1. Furnaces
 2. Boilers
 3. Heaters
 - ii. Feedstock/raw material
 - c. Consumer Product Manufacturing
 - d. Peak Shaving Facilities
 - e. Power generation
 - i. Turbines
 - ii. Boilers
 - f. Reciprocating Engines
 - i. Pipeline compression
 - ii. Stationary power generation
 - iii. NGVs

Within each end use section

Problems with

Reliability (e.g. - instability)

Integrity (e.g. - blade damage)

Safety (e.g. -harm to employees, homeowners)

Environmental (e.g. - non-compliant NOx emissions)

Gas quality rate of change

Costs

7. Role of BTU Stabilization Technology
 - a. Blending
 - b. Ballasting
 - c. Measurement
 - d. Stripping/fractionation
8. Recommendations
9. Appendices
 - a. Sample calculations