



Global Exchanges and Markets Committee

Energy Units of Measure

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Document History

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1 Introduction

FIX uses the concept of UnitOfMeasure(996) to indicate the underlying quantity of a commodity on which a derivatives contract is based. The field UnitOfMeasure-(996) is used to indicate this within the Instrument component, and UnitOfMeasureQty-(1147) indicates the quantity being referenced.

This gap analysis proposes adding new unit of measure enumerations to support trading using metric volume measurements, which are useful for energy trading. Additionally, it proposes adding enumerations to support trading natural gas in therms and gigajoules.

2 Business Workflow

2.1 Metric Volume

Currently, the only defined liquid units of measure available in FIX are barrels and gallons. Neither of these are metric (SI) units. While many of the energy markets worldwide use barrels and/or gallons for contract definition, some markets use metric units. As such, this gap analysis proposes adding units of measure for liters and kiloliters (1000 liters).

This addition is needed for trading energy products, including gasoline, kerosene, gasoil, and fuel oil in markets that use liters or kiloliters to define and price contracts. However, usage is not limited to energy; any product that trades in units of liquid volume could conceivably trade in units of liters or kiloliters.

The 16th Conférence Générale des Poids et Mesures (CGPM) (1979) adopted both capital L and lowercase l as symbols for the liter, noting the adoption of L by several countries due to the confusion of lowercase l with the number 1. The US National Institute of Standards and Technology (NIST) recommends use of capital L. This gap analysis proposes enumerations of L and kL for liter and kiloliter, respectively.

2.2 Heat Energy

Currently, the only unit of measure supported in FIX for representing heat energy directly is MMBtu, or one million Btu. Natural gas currently trades using this unit. Natural gas can also trade in two additional units:

- therms – defined as 100,000 Btu. Its common abbreviation or symbol is thm.
- gigajoules – defined as 10^9 or 1,000,000,000 joules. The SI symbol for the gigajoule is GJ.

3 Issues and Discussion Points

4 Proposed Message Flow

This Gap Analysis contains no changes to existing FIX message flows.

Appendix A - Data Dictionary

| Tag | FieldName | Action | Datatype | Description | FIXML Abbreviation | Add to / Deprecate from Message type or Component block |
|-----|---------------|--------|----------|---|--------------------|---|
| 996 | UnitOfMeasure | Update | String | <p>The unit of measure of the underlying commodity upon which the contract is based. Two groups of units of measure enumerations are supported.</p> <p>Fixed Magnitude UOMs are primarily used in energy derivatives and specify a magnitude (such as, MM, Kilo, M, etc.) and the dimension (such as, watt hours, BTU's) to produce standard fixed measures (such as MWh - Megawatt-hours, MMBtu - One million BTUs).</p> <p>The second group, Variable Quantity UOMs, specifies the dimension as a single unit without a magnitude (or more accurately a magnitude of one) and uses the UnitOfMeasureQty(1147) field to define the quantity of units per contract. Variable Quantity UOMs are used for both commodities (such as lbs of lean cattle, bushels of corn, ounces of gold) and financial futures.</p> <p>Examples: For lean cattle futures contracts, a UnitOfMeasure of 'lbs' with a UnitOfMeasureQty(1147) of 40,000, means each lean cattle futures contract represents 40,000 lbs of lean cattle.</p> <p>For Eurodollars futures contracts, a UnitOfMeasure of Ccy with a UnitOfMeasureCurrency of USD and a</p> | UOM | |

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| | | | | <p>UnitOfMeasureQty(1147) of 1,000,000, means a Eurodollar futures contract represents 1,000,000 USD.</p> <p>For gold futures contracts, a UnitOfMeasure is oz_tr (Troy ounce) with a UnitOfMeasureQty(1147) of 1,000, means each gold futures contract represents 1,000 troy ounces of gold.</p> <p>Valid Values:</p> <p>Fixed Magnitude UOM Bcf - Billion cubic feet MMbbl - Million Barrels(deprecated in FIX.5.0SP1) MMBtu - One Million BTU thm – therms GJ – gigajoules kWh – Kilowatt hours MWh - Megawatt hours CBM - Cubic Meters</p> <p>Variable Quantity UOM Bbl - Barrels Bu - Bushels lbs - pounds Gal - Gallons L - liters kL - kiloliters oz_tr - Troy Ounces t - Metric Tons (aka Tonne) tn - Tons (US) USD - US Dollars [DEPRECATE] Alw - Allowances CER - Certified Emissions Reduction PRINC - Principal with relation to debt instrument CRT - Climate Reserve Tonnes</p> | | |
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|--|--|--|--|---|--|--|
| | | | | Ccy – Amount of currency BDFT – Board feet IPNT – Index point day – Days cwt – Hundredweight (US) g – Grams dt – Dry metric tons EnvOfst – Environmental Offset EnvCrd – Environmental Credit kW-min – Kilowatt-Minute (electrical capacity) MW-min – Megawatt-Minute (electrical capacity) kW-h – Kilowatt-Hour (electrical capacity) MW-h – Megawatt-Hour (electrical capacity) kW-d – Kilowatt-Day (electrical capacity) MW-d – Megawatt-Day (electrical capacity) kW-M – Kilowatt-Month (electrical capacity) MW-M – Megawatt-Month (electrical capacity) kW-a – Kilowatt-Year (electrical capacity) MW-a – Megawatt-Year (electrical capacity) | | |
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Appendix B - Glossary Entries

| Term | Definition | Field where used |
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Appendix C - Abbreviations

| Term | Proposed Abbreviation | Proposed Messages, Components, Fields where used |
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Appendix D - Usage Examples