Proposed Standardized Accounting Framework for Lost and Unaccounted For Gas

# Definitions:

1. **Lost and unaccounted for gas (LAUF)** is defined as Gas Received less Gas Delivered less adjustments, and follows the formula

LAUFx = Gas Receivedx - Gas Deliveredx – Adjustmentsx,

where x is consistent across any formula as it denotes the type of system (i.e., distribution, transmission, or storage).

1. **LAUF Reporting Entity (LRE)** refers to any entity providing Natural Gas Delivery Service that is required to report LAUF, including without limitation, interstate pipelines, storage operators, intrastate pipelines, and local distribution companies (LDCs).
2. **Production Facility** **(PF)** refers to any facility which produces natural gas and its constituents from underground geologic sources. Natural gas storage facilities do not fall within the definition of Production Facility.
3. **Natural Gas Delivery Service** refers to the movement of Gas Quantities through contiguous facilities of an LRE.
4. **Gas Quantity** refers to the measured (metered) quantity of natural gas and its constituents, the measurement of which is standardized by each LRE in a manner which permits conversion to a volumetric quantity at a standard temperature and pressure (14.73 psia at 60° F, dry gas, or for gas volumes reported in cubic meters, 101.325kPa at 15° C, dry gas). The energy content of Gas Quantities should be measured and stated in dry Btus per standard cubic foot and for cubic meters in joules per standard cubic meter.

Metered Gas Quantities shall be corrected such that estimates represent equivalent volumes at standard reference conditions as defined in the most recent version of NAESB 2.3.9 Wholesale Gas Quadrant Flowing Gas Related Standards adopted by the Federal Energy Regulatory Commission (v. 2.0 as of the date of this proposed standard).

1. **Gas Received** is the Gas Quantity received by the LRE into its facilities during an Accounting Period.
2. **Gas Delivered** is the Gas Quantity delivered by the LRE out of its facilities during an Accounting Period.
3. **Adjustments**. Any difference(s) between Gas Received and Gas Delivered during an Accounting Period should be accounted for. Some LAUF Factors may be applied to the difference between Gas Received and Gas Delivered as an Adjustment.
4. **LAUF Factors** refers to the factors that contribute to any discrepancy between Gas Delivered and Gas Received. These factors are described in Appendix B.

# Requirements:

1. **Accounting Period.** LAUF should be accounted for on an annual basis from July 1 to June 30 of the following calendar year.
2. **Adjustments.** Any adjustments should be supported by metered data, engineering practices or other quantifiable results. Adjustments may be made, as appropriate, to the Gas Received or Gas Delivered categories. Examples of possible adjustments include line pack changes, meter measurement errors, and company use. **Note:** An example list of Adjustments is appended to this document (“Appendix A”) to form a basis for discussion during the standards development process. Further, Requestors suggest that a list of Adjustments appropriate to be made to the Gas Received and Gas Delivered categories should be finalized, and appended to this standard, as part of the NAESB standards development process.
3. **Consistency.** All Gas Quantities should be quantitatively accounted for. Each LRE should consistently use the same methods to quantify each LAUF Factor, whether used as an Adjustment or not, within an Accounting Period, irrespective of the LRE reporting LAUF volumes to multiple entities in a given Accounting Period. The calculation should be based on actual, measured volumes or, if such quantities are unavailable, using estimates that are clearly identified as such and have supporting justification, assumptions and calculations. Any LRE that introduces a change to its methods to quantify Gas Quantities between Accounting Periods should, as part of its LAUF reporting obligations for the Accounting Period in which it implements such change, describe the change in sufficient detail, to allow for the calculation of comparable values across Accounting Periods.
4. **System Type.** LAUF should be computed and calculated by system type (i.e. distribution, transmission, or storage) and should not be calculated across system types.

# Appendix AReporting Lost and Unaccounted For Gas: Example Table of Adjustments

In reporting LAUF, each LRE should specify the quantity units used to report Gas Quantities comprising each of the categories listed in the table below.

| **Category** | **Adjustments** |
| --- | --- |
| A. *Gas Received by LRE* |  |
| 1. | From Production Facilities  |  |
| 2. | From LRE Facilities[[1]](#footnote-1)  |  |
| 3 | From Other LRE(s) |  |
| 4. | From Other Sources (e.g., third-party propane injections, third-party gasified LNG injections, landfill gas injections, biomass injections, etc. not included in Other LRE(s) category) **Note**: Each source falling under the “other” category shall be separately identified and listed by the LRE as part of LAUF reporting obligations.  |  |
|  | **Total Gas Received by the LRE** |  |
| B. *Gas Delivered by LRE* |  |
| 1. | To End-Users (i.e., Residential, Commercial, Industrial, Processing, Electric Generation, Compression, etc.[[2]](#footnote-2))  |  |
| 2. | To Other LRE(s)  |  |
| 3. | To LRE Facilities[[3]](#footnote-3) |  |
| 4. | Other gas delivered **Note**: Each source falling under the “other” category shall be separately identified and listed by the LRE as part of LAUF reporting obligations. |  |
|  | **Total Gas Delivered by the LRE** |  |
| C.  *Adjustments*  |  |
| 1. | Line Pack Changes  | X |
| 2. | Heat Content  | X |
| 3. | Therm Billing (applies to LREs that bill by Therm) | X |
| 4. | Meter Read Cycle Adjustments (applies to LREs that bill other than by calendar month) | X |
| 5. | Meter Measurement Error | X |
| 6. | Gate Station Check Meter Adjustment | X |
| 7. | Billing Inaccuracies | X |
| 8. | Accounting Error | X |
| 9. | Company Use (not otherwise accounted for) | X |
| 10. | Dedicated Lines[[4]](#footnote-4) | X |
| 18. | Non-metered Gas  | X |
| 20. | Other (to be specified)  | X |
|  | **Total Adjustments**  | X |
| D. *LAUF Volume* |  |
|  | Total  | A-B-C |
| E. *LAUF Percentage* |  |
|  | Percentage  | (D/A)\*100% |

# Appendix B

The following table lists key LAUF Factors, i.e. factors that contribute to LAUF.

|  | LAUF Factor | Description |
| --- | --- | --- |
|  | **Line Pack Changes**  | Discrepancies due to changes in the amount of gas that is contained in LRE facilities. Changes can, for instance, arise due to differences in temperature and pressure and addition of new facilities where line fill of such new facilities is not metered.  |
|  | **Heat Content of the Gas** | Discrepancies resulting from conversion of gas volumes to heat content of gas delivered.  |
|  | **Therm Billing** | Discrepancies resulting from conversation of gas volumes (typically Ccf) to energy content (typically Therms). |
|  | **Meter Read Cycle Adjustments** | Discrepancies resulting from the fact that billing cycles do not exactly coincide with the Accounting Periods. |
|  | **Meter Measurement Error** | Discrepancies resulting from the average bias of meters in the system.  |
|  | **Gate Station Check Meters** | Discrepancies based on check meter measurements at the interconnection(s) between LREs.  |
|  | **Billing Inaccuracies** | Discrepancies due to billing inaccuracies arising from estimates of consumption between meter readings when the LRE does not have access to automated meter-reading devices. |
|  | **Accounting Error** | Discrepancies resulting from processing error when the gas accounting department incorrectly records meter readings. Such errors include inaccurate calculations, misinterpretation of meter data, and improper accounting for gas receipts and deliveries. |
|  | **Company Use** | LRE’s use of gas for its own operations such as building heat, backup power generation, and use in process equipment, such as line heaters.  |
|  | **Purging and Venting** | Gas intentionally released to the atmosphere during the Accounting Period, e.g., through a pneumatic device or during pipeline maintenance and repair.  |
|  | **Dedicated Lines** | Discrepancy between Gas Received and Gas Delivered to dedicated line customers such as electricity generation facilities. |
|  | **Soft Closes** | Discrepancies arising from gas that is used at a location, but not billed by an LRE to a customer, e.g., when the gas has not been turned off in between tenants. |
|  | **Third-Party Damage** | Gas that escaped over the Accounting Period due to third party activities, e.g., when construction crews, property owners or other persons damage LRE pipes. |
|  | **Unintentional Gas Leakage (not attributable to third-party damage)** | Unintentional leakage of gas from the LRE’s facilities over the Accounting Period for reasons other than third party damage. For instance, over time, natural deterioration of materials used in distribution systems could result in such leaks.  |
|  | **Theft** | Gas stolen from the LRE system over the Accounting Period, e.g., by illegally accessing the pipelines or otherwise bypassing a meter. |
|  | **Non-metered Gas** | Non-metered sources of gas consumption such as LRE delivered municipal gas streetlights. |

1. Includes LRE controlled Gas storage, propane storage, LNG storage, etc. and excludes Gas Received by an LRE at a gate station for delivery through Dedicated Line(s) as defined below in footnote 4. [↑](#footnote-ref-1)
2. Excludes Gas Delivered by an LRE through Dedicated Line(s) as defined below in footnote 4. [↑](#footnote-ref-2)
3. Includes LRE controlled Gas storage, LNG storage, etc. and excludes Gas Delivered by an LRE through Dedicated Line(s) as defined below in footnote 4. [↑](#footnote-ref-3)
4. A Dedicated Line is one where the LDC city gate station connects directly to a single customer. LAUF for such lines should be calculated separately. For Dedicated Lines, Gas Received, Gas Delivered and LAUF should be separately categorized by the LRE. [↑](#footnote-ref-4)