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Engineering And Software For The Natural Gas Industry

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Natural Gas Reporting Requirements

Wrapping up our series on natural gas volume calculations, this month's newsletter will address [atmospheric pressure](#), and how to properly calculate the values for your required [annual reports](#).

Atmospheric Pressure

When we refer to pressure, we need to realize that there are several different values of pressure. *Gauge pressure* is the value commonly referred to when discussing operating pressure. It is the value measured by a pressure gauge or recorder, and is most often presented with units that end with a "g", such as Psig. *Atmospheric pressure* refers to the hydrostatic pressure of a column of air above the measurement point. *Absolute pressure* is the sum of the gauge and atmospheric pressures. Absolute pressure units often end with an "a", for example Psia. To calculate a gas volume, all three pressure values must be known or calculated.

In the natural gas industry, it is common practice to calculate an average atmospheric pressure for a service area or a large meter location using a formula based on geographic elevation. As elevation increases, the amount of air above a given point decreases, so the atmospheric pressure decreases. As used in most gas volume calculations, atmospheric pressure represents a theoretic barometric pressure at a specific location. It differs from actual barometric pressure, which is affected by many other factors including temperature and humidity.

There is no industry standard for calculating atmospheric pressure. GASCalc™ supports several methods for calculating atmospheric pressure based on elevation. The full description of the supported methods can be found in the Help Guide for the *Atmospheric Pressure* calculation.

Annual Reporting

As previously discussed, the quantity of natural gas contained in the space of a cubic foot varies with pressure and temperature. Government agencies in the United States require volumes to be reported at a specific base pressure and temperature.

The US Energy Information Administration (EIA) requires interstate and intrastate pipeline companies, distribution companies, and other types of natural gas system

operators to report (Form EIA-176) the volume of gas produced, stored, or received in Mcf (thousands of standard cubic feet) at standard base conditions of 14.73 Psia and 60 degrees Fahrenheit.

Part 191 of the US Code of Federal Regulations specifies annual reporting requirements for natural gas gathering, transmission, and distribution companies. Transmission companies (PHMSA Form 7100.2-1) are required to report their total volume of gas transported each year in MMcf (millions of standard cubic feet), also at standard base conditions of 14.73 Psia and 60 degrees Fahrenheit.

Distribution companies (PHMSA Form 7100.1-1) are required to calculate their "lost and unaccounted for gas" as a percent of total consumption. That is the amount of gas into the system minus the amount of gas out of the system, divided by the amount of gas out of the system.

(Note -The denominator value was changed from *gas in* to *gas out* in 2018).

Traditionally, the local base pressure was determined by adding the meter gauge pressure to the atmospheric pressure. For example, with a meter pressure of 0.25 Psig and an average local atmospheric pressure of 11.51 Psia, the base pressure would be 11.76 Psia. The base conditions in the tariff that governs the custody transfer at the city gate station may not necessarily match the base conditions used at the customer meter locations. These values need to be adjusted to a common set of conditions for the unaccounted for gas calculation, and to the required standard base conditions when reporting volumes.

GASCalc offers a *Base Conditions Conversion* calculation that can be used to convert a volume of gas at one set of base conditions to an equivalent volume at another set of base conditions. For example, if your customer meters record volumes using a base pressure of 11.76 Psia, this calculation can determine the equivalent volume at the required reporting value of 14.73 Psia.

In addition to the converted volume, the *Volume Comparison* calculation in GASCalc can compute the percent difference between two volumes of gas with two different sets of base conditions. If your base pressure for gas delivery is 11.76 Psia, and you are being supplied gas on a basis of 14.65 Psia, this calculation can convert your "sold" volume to the equivalent volume at the supply conditions. The percent difference between your "purchased" volume and the equivalent sold volume is your percent of unaccounted for gas.

The EIA requires reporting of gas lost due to damage, or usage in operations such as blowdown, purging, and clearing. GASCalc provides a variety of tools for estimating these values. GASPurge™ offers an even more sophisticated calculation for purging and clearing operations.

These reports are due annually each March. [Contact](#) us if you would like to learn more about using our tools to help fulfill your annual reporting obligations.

B3PE Conference Update

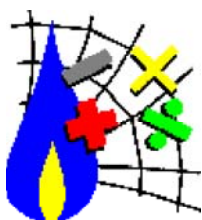
We will be appearing at the following conference in the next month:

- [CGA Operations, Engineering, Integrity, and Construction Conference](#),
February 24 to 27, Calgary, Alberta, Canada

If you are attending, we invite you to visit our booth to learn more about our innovative design and analytic solutions, and see demos of GASWorkS™, GASCalc, and GASPurge.

Stay tuned to the newsletter for future announcements of events where B3PE will be exhibiting.

GASCalc Web App Gets A New Look



Have you checked out the GASCalc Web App?

The Web App offers a limited number of calculations from the full suite of tools included in GASCalc. The Web App is designed to work on any web-enabled device, and is compatible with modern browsers.

We just completed an update to improve the look, feel, and User experience of the Web App. Visit www.gascalcapp.com to register for access, and try it out for yourself.

GASWorkS 10 - Updates



It has been more than two years since the release of GASWorkS 10.0. In that time, we have highlighted many of the great [features](#) of the software.

Our work did not stop on Release Day. Make sure your software is up-to-date by visiting our [Updates](#) page to download the latest revision, posted on **December 12**.

If you have not already tried GASWorkS 10, click [here](#) to request a 30-day evaluation copy. To upgrade today, fill out an [order form](#) and return it to sales@b3pe.com.

Our Products

[GASWorkS™](#) - Affordable and robust network modeling.

[GASCalc™](#) - Suite of gas system design and analytical tools.

[GASPurge™](#) - Natural gas pipeline purging calculator.

[StationManager™](#) - Regulator and relief valve station management solution.

[WaterCalc™](#) - Suite of water system design and analytical tools.

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