Site safety guidance for work by contractors, suppliers &/or consultants on measurement & regulation facilities in the gas energy delivery industry

Operations Suppliers
Executive Committee

Disclaimer

Information, data, and representations contained in this guidance presentation pertaining to work to be performed on a site or the conditions at any site, including surface or subsurface conditions, are for information purposes only and are not warranted or represented in any manner to accurately show the conditions specifically at any given site of work.

It is the intent of CGA & CGA's membership to fully comply with all applicable legislation & standards even though there may not be an express written policy contained in this presentation addressing such legislation.

Should there be a discrepancy or inconsistency between the guidance material in this presentation and any applicable legislation, which results in the guidance material not being in compliance with legislation, such legislation shall prevail and CGA & its membership instruct all workers to comply with the applicable legislation/legal requirements versus what is set out in this presentation.

Gas energy* delivery in Canada

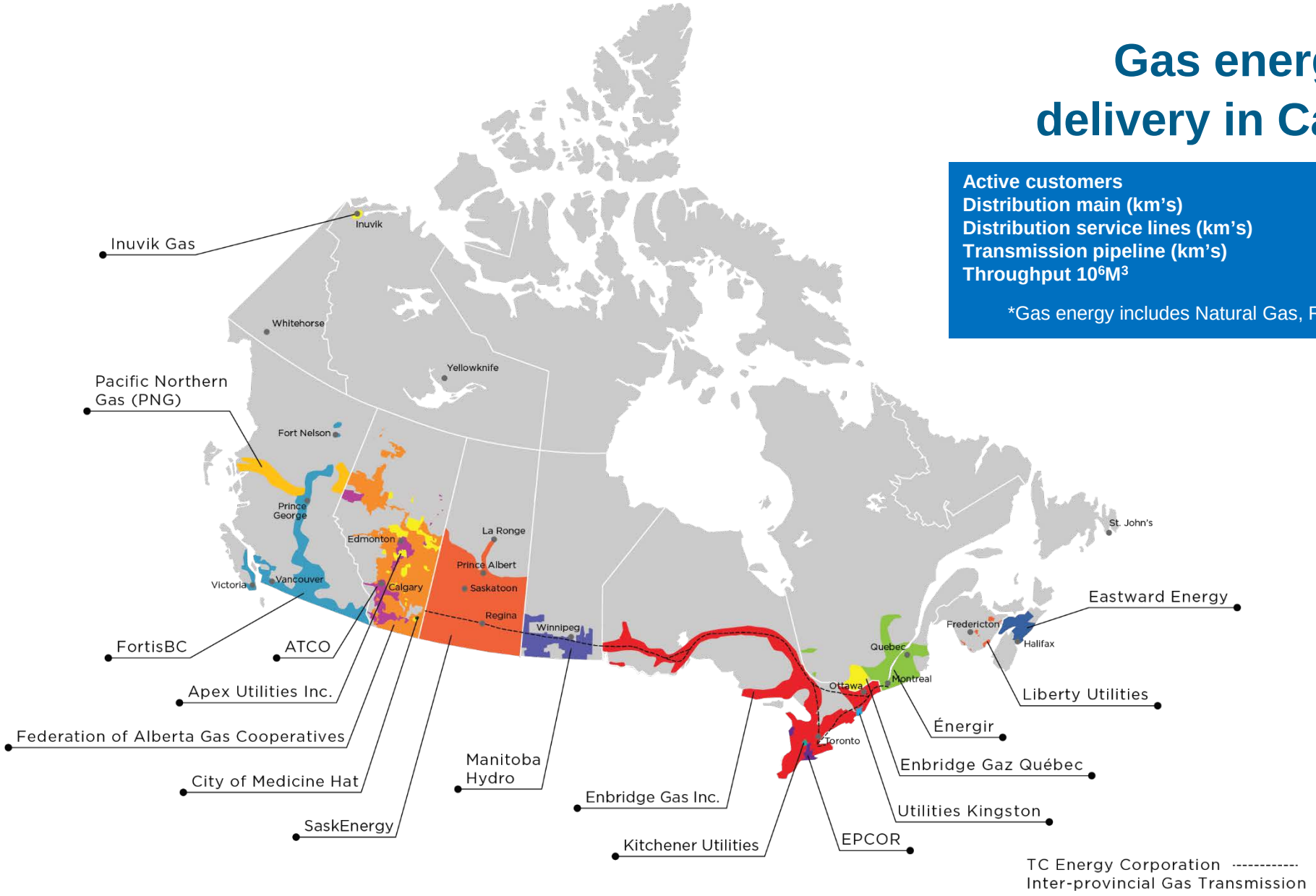
Gas energy serves more than two-thirds of Canadians

Gas energy meets nearly 40% of Canada's energy needs

The Gas energy delivery industry over 600,000 km of gas energy delivery lines

Active customers	7.75 million
Distribution main (km's)	319,704
Distribution service lines (km's)	207,724
Transmission pipeline (km's)	75,722
Throughput 10^6M^3	380,262

*Gas energy includes Natural Gas, RNG & Hydrogen



CANADIAN GAS ASSOCIATION
ASSOCIATION CANADIENNE DU GAZ

For measurement & regulation facilities sites, worker responsibilities include

- **Familiarizing yourself** with natural gas/gas energy DOs and DON'Ts
- **Understanding** natural gas/gas energy properties and behaviour
- **Wearing appropriate PPE** (personal protective equipment)
- **Identifying yourself** to the site supervisor
- **Reviewing hazards** specific to the site before beginning any work
- **Understanding** emergency procedures

Gas energy DO's & DON'Ts

DO:

- Eliminate ignition sources (e.g., turn off cell phones).
- Position vehicles upwind if possible.
- Wear all required PPE.
- Perform a site-specific hazard assessment.
- Be alert for gas energy odour &/or monitor gas energy readings in the air.
- Report significant safety related concerns.

DON'T:

- Operate electrical devices if there is any risk of a gas energy envelope (e.g., cell phone, radio).
- Enter any situation or site that has a gas content in ambient air of 50% of LEL (e.g. 2%) or more as determined through the use of an approved Combustible Gas Indicator & in accordance with the operating procedures of the site owner/operator.
- Enter a confined space (as defined by Health & Safety regulations) if possible or if entry is into a combined space required, without taking all proper, required precautions.
- Operate equipment if not authorized to do so.

Gas energy awareness

Natural gas/gas energy properties:

- Odourless in most transmission systems, odourised with mercaptan, usually at gate stations, in most distribution systems.
- Colourless.
- Lighter than air.
- Not easily ignited.
- Can produce Carbon Monoxide (CO) if incomplete combustion occurs.

Gas energy awareness

Migration:

- Escaping gas energy/natural gas rises upwards (vents to atmosphere) and is influenced by wind.
- Will follow the path of least resistance should it not able to vent to atmosphere (e.g. utility conduits, stairwells, vents, open windows).
- Can travel a considerable distance underground: spread can be influenced by surface cover (e.g. concrete, porous soils, frost).
- Can fill a building from a leak located inside or outside of the building.
- Can collect in ceiling areas, top of stairwells, top floors, attics, etc.

Suggested personal protective equipment (PPE)

- Steel-toe, safety authority (CSA) approved boots
- Hard-hat
- Safety glasses
- Full FR clothing
- Ear protection (low and high noise protection rating)
- Hand protection
- Breathing protection

Measurement & regulation facilities site

- Before entering a site, ask the transmission, local distribution company (LDC) or site owner/operator about their safety requirements and safety orientation.

- If the site or the planned work at a site does not appear to adhere to the standards required for worker employee safety, do not enter or begin work at the site.

- If the job site appears to be unsafe, contact your immediate supervisor or the site's supervisor/representative.

Before you enter a site

- Confirm with the local distribution or transmission company or the site's owner/operator, what their safety requirements & expectations are.
- Confirm the site's exit points.
- Know where the muster area is.
- What class area is it?

Explosion proof classifications

- **Class I - Locations:** Are those in which flammable gases or vapors are or may be present in the air in quantities sufficient to produce explosive or ignitable mixtures.

- **Div 1** - Locations in which hazardous concentrations in the air exist continuously, intermittently, or periodically under normal operating conditions.

- **Div 2** - Locations in which hazardous concentrations are handled, processed, or used but are normally within closed containers or closed systems from which they can escape only in case of accidental rupture or breakdown.

- **Group D** - Atmospheres containing gasoline, hexane, naptha, benzine, butane, alcohol, acetone, benzol, lacquer solvent vapors, or natural gas.

Intrinsically safe

Intrinsic Safety (IS):

A protection technique for safe operation of electrical equipment in hazardous areas by limiting the energy available for ignition.

In signal and control circuits that can operate with low currents and voltages, the intrinsic safety approach simplifies circuits and reduces installation cost over other protection methods.

Areas with dangerous concentrations of flammable gases or dust are found in applications such as petrochemical refineries and mines. As a discipline, it is an application of inherent safety in instrumentation.

High-power circuits such as electric motors or lighting cannot use intrinsic safety methods for protection.

Explosion proof classifications

Class I Div 1 and Div 2 Areas

- No cell phones, cameras, laptops, etc.
- Ask customer or site owner/operator of the site you are about to enter what is acceptable before going into that site vs. forcing them to ask you to correct/change your actions on the site after the fact.

Types of station sites

Gate station:

Usually, a custody transfer point from a transmission company to a local distribution company (LDC); a high volume and high-pressure station containing regulation, measurement, SCADA, heating & odourization facilities.

Types of station sites

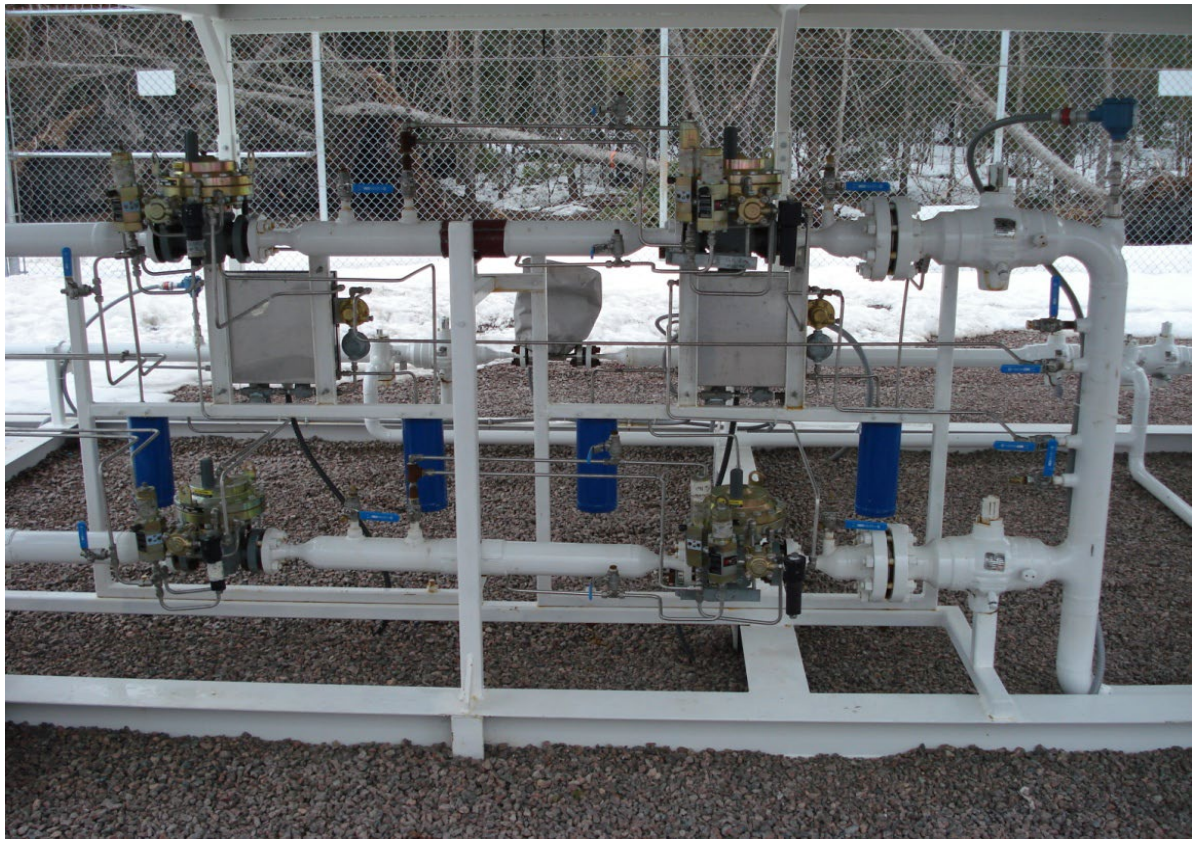
District station:

Usually, a pressure reduction station reducing higher pressures in one cut, downstream of a gate station, to distribution system pressures (≤100#) feeding an area or a grid.

Types of station sites

Town border station:

Can be a custody transfer, pressure reduction site from a transmission company to an LDC (simlar to a gate station) or a pressure reduction station from a higher-pressure distribution line. Normally a lower volume and high-pressure differential station, usually just supplying gas to a small community, taking the gas down to distribution pressures (≤100#) in one cut.



Types of station sites

Farm tap station:

Usually, a station off a high-pressure distribution line that cuts pressure to distribution pressures (≤100#) in one cut. Typically distributing gas energy to one or a few end users.

Types of LDC customer sites

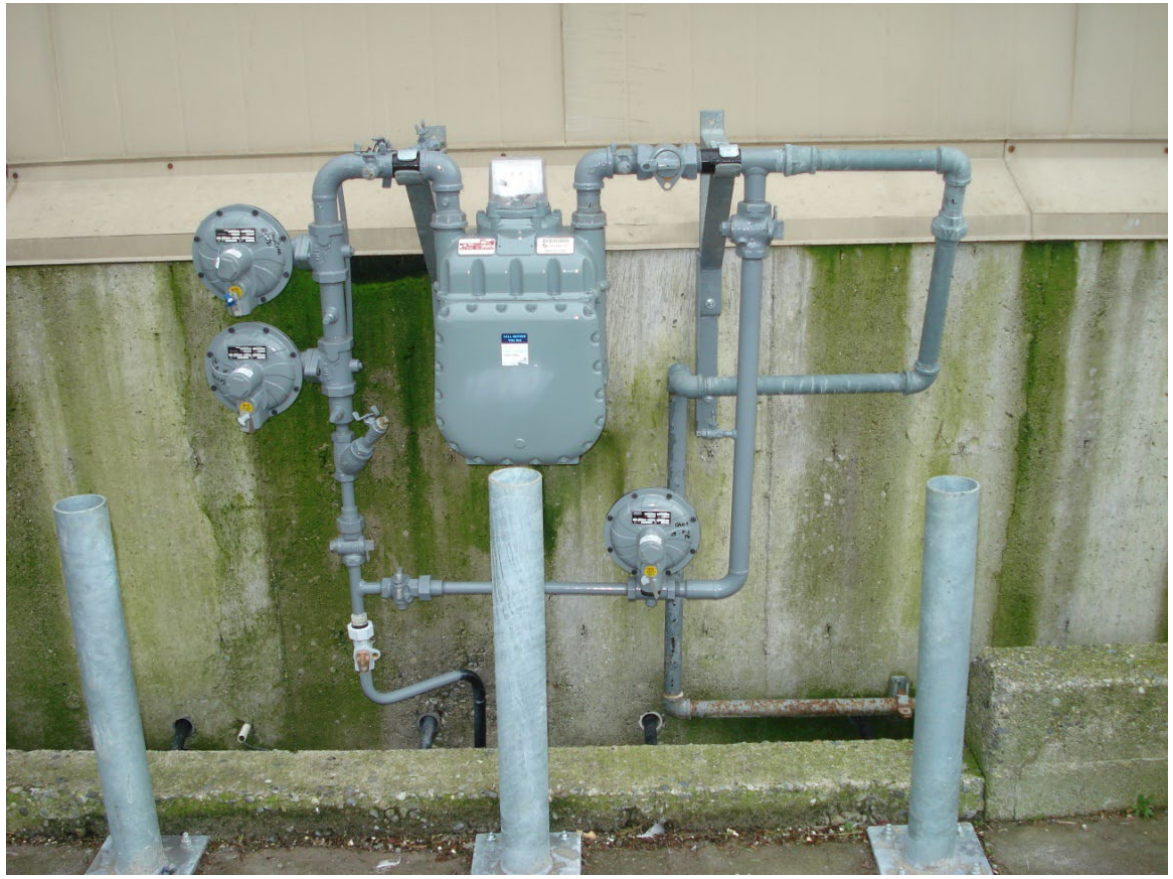
Industrial station:

A custody transfer point usually directly to a high-volume end-use customer either from a transmission or distribution system delivering low or high-pressure gas. Includes regulation & measurement facilities.

Types of LDC customer sites

Commercial station:

A custody transfer point to an end-use customer usually reducing from distribution pressures to delivery pressures typically ranging from 7” WC (1/4 psig) to 5 psig. Includes regulation & measurement facilities.



Types of station sites

Odourant station:

A point in a pipeline system, usually within a gate station, where mercaptan (odourant) is injected into the gas energy in a system to comply with DOT and CSA industry requirements for leak detection via scent or odour.

Maintenance & working at a site

- If the scope of work is on supplier equipment provided by you but you are not a subject matter expert (SME) on other equipment in the station, do not touch the other equipment and do not consult on same.

- Guesses are never good enough!

Your rights

If you are uncertain or concerned about anything:

- **Stop** and ask for clarification.
- **Ensure resolution** of your concerns before proceeding.

If your uncertainties or concerns are not addressed:

- **Do not proceed** with work.
- **Notify** your supervisor and the site owner/operator.

Canadian Gas Association

Operations Suppliers Executive Committee (OSEC)

Operations Suppliers
Executive Committee