



Flaring and Venting – Can we Harmonize Provincial Definitions?

Meeting of Canadian Flaring and Venting Regulators

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Topics to Discuss

1. Advantages of Standardization

2. Types of Facilities

3. Flaring

Definitions

Current Reporting

Proposed Definition

4. Venting

Definitions

Current Reporting

Proposed Definition

5. Path Forward

- Check with upper management – timing?
- Who needs to be consulted with and how?
- Expectations on accuracy of reporting?



1. Advantages of Standardization

• Advantages

- Opportunity to improve current reporting and align with other jurisdictions
- Consistency across provinces will help ensure industry reports correctly and isn't making errors in reporting across provinces
- If reporting is consistent and clear, companies are more likely to report
- Improved granularity, if we choose, will help improve performance and conservation (more visible)
- If GHG reporting is made consistent with our definitions then a move to reporting on smaller thresholds would be simplified
- Alignment with GHG reporting will help simplify industry reporting

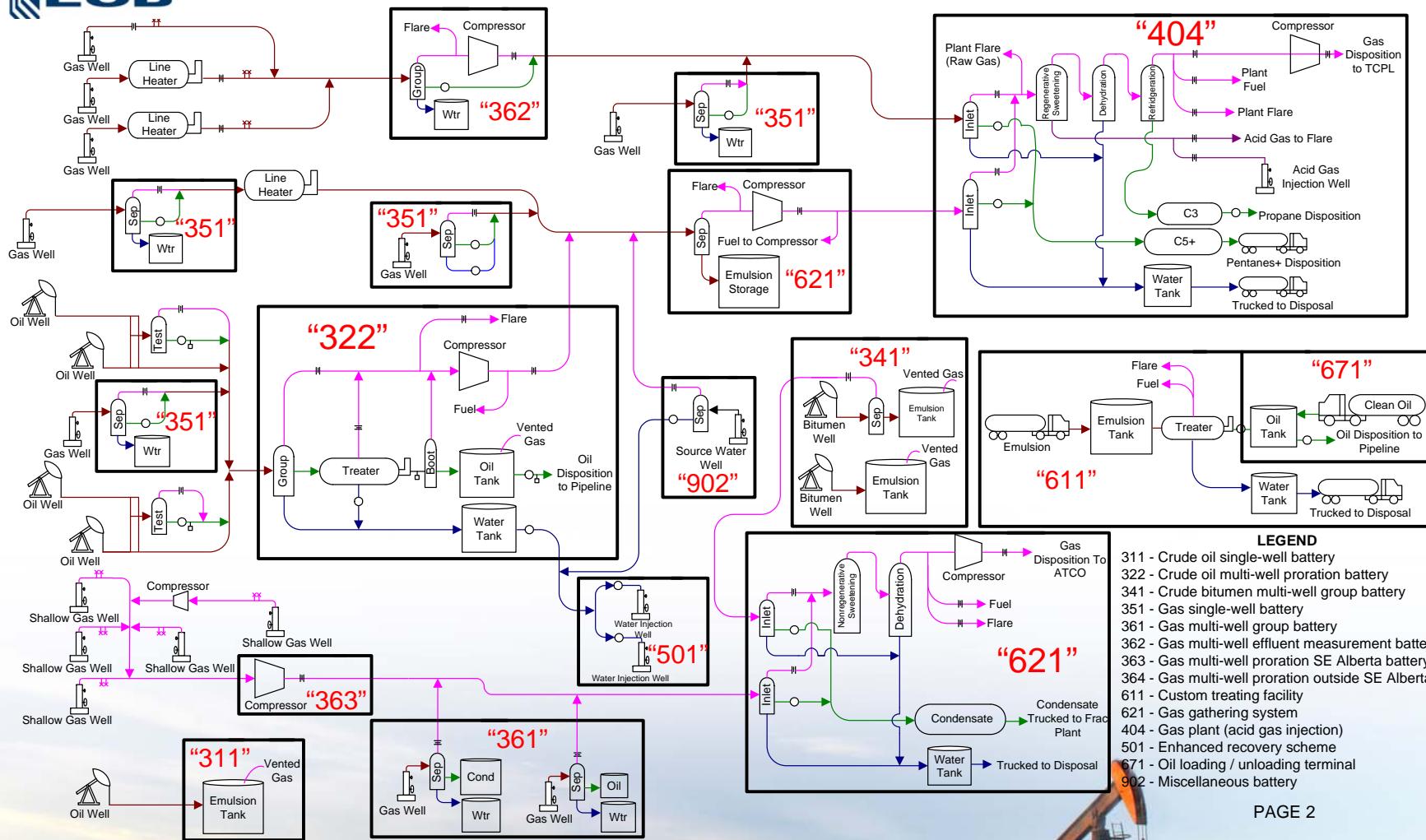
• Cons

- Cost to change production accounting systems
- Cost to change reports and computer programs that use current definitions for surveillance and public reporting
- Regulator effort to ensure that change is actually made
- Consultation effort with others prior to and after change
- Highest cost would likely be to change Alberta systems given the higher number of facilities affected unless others follow Alberta reporting



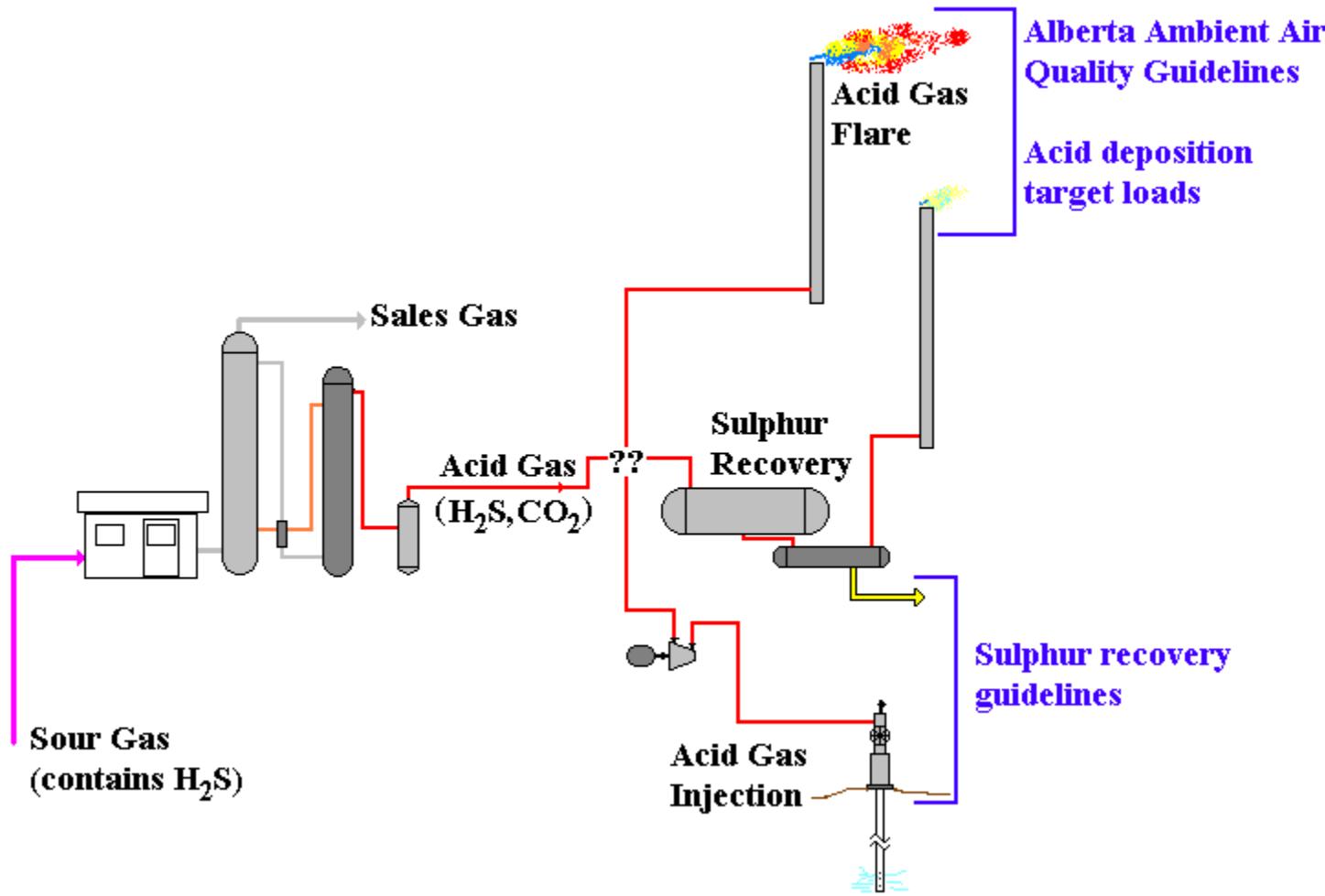
2. Types of Facilities

Facilities Delineated



PAGE 2

Sulphur Emission Management



3. Flaring

- Definitions
- Current Reporting
- Proposed Definition

Definitions of Flare – Current AB

1. Reportable flaring includes all volumes of flared gas including flash gas and/or tank vapour streams that are associated with continuous flaring/incineration during normal operations and flared volumes attributed to emergency or maintenance flaring.

Reportable flaring does not include fuel gas used for purge, flare combustion management, or pilot fuel, or acid gas volumes which are continuously flared.

Current BC

2. Reportable flaring includes all volumes of flared gas including flash gas and/or tank vapour streams that are associated with continuous flaring/incineration during normal operations and flared volumes attributed to emergency or maintenance flaring.

Reportable flaring includes fuel gas used for purge and pilot fuel gas but not acid gas volumes flared or fuel gas which is used for flare combustion management (improve dispersion and increase heating value).

Alberta Environment Specified Gas Emitters Regulation

(taken from Glossary of Technical Guidance for Completing Specified Gas Compliance Reports – V 4.0 Feb 2011)

3. Flaring emissions are direct emissions from the controlled combustion of a gas or liquid stream produced on site for purposes other than producing energy. This includes but is not limited to the incineration of waste petroleum and other hazardous materials, safety flares, and test wells.

Newfoundland Offshore

4. Reportable flaring includes all volumes of flared gas including flash gas and/or tank vapour streams that are associated with continuous flaring/incineration during normal operations and flared volumes attributed to emergency or maintenance flaring. Reportable flaring includes fuel gas used for purge, pilot fuel gas, acid gas volumes flared and fuel gas which is used for flare combustion management (improve dispersion and increase heating value).
 - The metering captures all flow to the flare tip so the reported flaring includes all of the waste streams
 - The definition of the flared gas includes:
 - pilot
 - tank vapour
 - upset /emergency blowdown
 - purge
 - acid gas
 - fuel not compressed that would be sent to reservoir
 - fuel not used as fuel /in gen sets
 - Offshore Newfoundland has not used combustion management relating to heating value and dispersion

NEB

5. Flaring There is no specific definition for flaring in the Canada Oil and Gas Operations Act (COGOA) or its Drilling and Production Regulations. However “the waste” definition under COGOA includes: **the escape or flaring of gas that could be economically recovered and processed or economically injected into an underground reservoir.**

Environment Canada/IPCC Guidelines

(Intergovernmental Panel on Climate Change)

6. Reportable flaring

- Flaring means broadly all burning of waste natural gas and hydrocarbon liquids by flares or incinerators as a disposal option rather than for the production of useful heat or energy.
- Waste gas volumes are usually vented on gas transmission systems and may be either vented or flared on gas distribution systems, depending on the circumstances and the company's policies.
- Sometimes fuel gas may be used to enrich a waste gas stream; so it will support stable combustion during flaring. Fuel gas may also be used for other purposes where it may ultimately be vented or flared, such as purge or blanket gas and supply gas for gas-operated devices (e.g., for instrument controllers). The emissions from these types of fuel uses should be reported under the appropriate venting and flaring subcategories rather than under Category 1.A (Fuel Combustion Activities).

2010 GHG Reporting Program

(under CEPA 2010 s.46 notice)

7. **“Flaring emissions”** means controlled releases of gases from industrial activities, from the combustion of a gas and/or liquid stream produced at the facility not for the purpose of producing energy, including releases from waste petroleum incineration, hazardous emission prevention systems (whether in pilot or active mode), well testing, natural gas gathering system, natural gas processing plant operations, crude oil production, pipeline operations, petroleum refining and chemical fertilizer and steel production. (*émissions de torchage*)

CARA (Clean Air Regulatory Agenda)

Section 71 for 2006 calendar year

8. “Flaring emissions” means controlled releases resulting from the combustion of a gas or liquid, the purpose for which is not producing energy.

US EPA GHG Reporting (40 CFR Part 98, Subpart W)

9. *Flare stack emissions* means CO₂ and N₂O from partial combustion of hydrocarbon gas sent to a flare plus CH₄ emissions resulting from the incomplete combustion of hydrocarbon gas in flares.

GGFR (Global Gas Flaring Reduction)

Guidelines on Flare and Vent Measurement

September 18, 2008 (taken from GGFR web site)

10. Flaring, Emergency - occasional flaring of unprocessed or semi-processed gas due to temporary process upset conditions or emergency relief events.

Flaring, Routine - flaring of regular waste gas volumes produced during normal startup, operating, shutdown and maintenance activities. This may include, but is not limited to, all continuous and intermittent waste gas volumes from process vents, and from routine depressurization and purging activities (for example, compressor start gas, treater off-gas, dehydrator off-gas, equipment blowdown, waste stock tank vapors, and waste associated gas).

Current Reporting - Spreadsheet Look

New Proposed Flaring Definition

- **Flaring**

- **Reportable flaring** includes gas streams that are directed to a flare or incinerator stack for combustion. Acid gas directed to a sulphur plant and fuel gas directed to a sulphur plant incinerator are excluded.
- Reportable flaring includes:
 - Flared fuel gas (fuel gas directed to flare to enhance dispersion and to improve combustion efficiency, purge gas, flare pilot gas),
 - Flared waste gas, and
 - Flared acid gas continuously or intermittently flared.
- Flared fuel gas, flared waste gas, and flared acid gas should be separately reported.



Why?

- More Consistent with Alberta GHG and Federal reporting (and NL Off and GNWT)
- Addresses BC's concern on
 - Public perception on visible flame
 - Focuses industry attention on reducing fuel to flare through improved pilot technology, improved purge gas control and repair of leaks into flare system
- Brings attention to anything that is directed to the flare stack
 - Brings more attention to fuel gas to flare and ensures inefficiencies are known and potential savings are realized
 - Greatly simplifies understanding of flared – if it goes to flare stack its flared
 - Easy to measure total flare gas – this number becomes reported as such and larger fuel to flare numbers aren't buried in fuel gas reported
- Matches up with the actual emission source
- Potentially better alignment with satellite observations

4. Venting

- Definitions
- Current Reporting
- Proposed Definition



Definitions of Venting - Current AB ERCB Definition (as applied today)

1. Reportable venting

is the intentional controlled release of un-combusted gas containing hydrocarbon. (It does not include fugitive emissions or vented streams that are primarily CO₂ or fuel gas.)

Current Alberta ERCB D60

(Flaring Venting and Incinerating Directive)

2. Venting is the intentional controlled release of uncombusted gas. (*It does not include fuel gas*)

Alberta Environment – Specified Gas Emitters Regulation (Applies to 33 Gas Plants)

(taken from Glossary of Technical Guidance for Completing Specified Gas Compliance Reports – V 4.0 Feb 2011)

3. Venting emissions are direct emissions from the intentional release to the atmosphere of waste gas or liquid streams.

Environment Canada/IPCC Guidelines

4. Venting comprises all engineered or intentional discharges of waste gas streams and process by-products to the atmosphere, including emergency discharges. These releases may occur on either a continuous or intermittent basis, and may include the following:

- Use of pressurized natural gas instead of compressed air as the supply medium for pneumatic devices (e.g., chemical injection pumps, starter motors on compressor engines and instrument control loops).
- Pressure relief and disposal of off-specification product during process upsets.
- Purging and blowdown events related to maintenance and tie-in activities.
- Disposal of off-gas streams from oil and gas treatment units (e.g., still-column off-gas from glycol dehydrators, emulsion treater overheads and stabilizer overheads).
- Gas releases from drilling, well-testing and pipeline pigging activities.
- Disposal of waste associated gas at oil production facilities and casing-head gas at heavy oil wells where there is no gas conservation or re-injection.
- Solution gas emissions from storage tanks, evaporation losses from process sewers, API separators, dissolved air flotation units, tailings ponds and storage tanks, and biogenic gas formation from tailings ponds.
- Discharge of CO₂ extracted from the produced natural gas or produced as a process byproduct.

Some or all of the vented gas may be captured for storage or utilization. In this instance, the inventory of vented emissions should include only the net emissions to the atmosphere.

Environment Canada/GHG Reporting

(<http://www.gazette.gc.ca/rp-pr/p1/2010/2010-08-14/html/notice-avis-eng.html>)

5. “Venting emissions” means controlled releases to the atmosphere of a waste gas, including releases of casing gas, a gas associated with a liquid (or solution gas), treater, stabilizer or dehydrator off-gas, blanket gas, and releases from pneumatic devices which use natural gas as a driver, and from compressor start-ups, pipelines and other blowdowns, and metering and regulation station control loops. (*émissions d'évacuation*)



Environment Canada/CARA regulatory development stage

6. **“Venting emissions”** means controlled releases that occur due to the design of the facility, due to procedures used in the manufacture or processing of a substance or product, or due to pressure beyond the capacity of the manufacturing or processing equipment at a facility, excluding flaring emissions, industrial process emissions, on-site mobile combustion emissions, stationary fuel combustion emissions, waste and wastewater emissions, and incineration emissions.”

US EPA's Mandatory GHG Reporting Rule of Petroleum and Natural Gas Systems (40CFR Par 98. Subpart W)

7. ***Vented emissions*** means intentional or designed releases of CH4 or CO2 containing natural gas or hydrocarbon gas (not including stationary combustion flue gas), including process designed flow to the atmosphere through seals or vent pipes, equipment blowdown for maintenance, and direct venting of gas used to power equipment (such as pneumatic devices).

Proposed New Vent Definition

- **Venting**

- Reportable venting is the direct emission from the intentional releases to the atmosphere of hydrocarbon or CO2 gas. Reportable venting includes
 - vented fuel gas
 - vented waste gas, and
 - vented CO2 where the stream is primarily CO2 which must be separately reported.

Where gas contains CO2 because of the nature of operation – such as fracing or underground combustion these vented amounts should be split between CO2 reported as CO2 and hydrocarbon reported as waste gas.



- Why?

- Consistent with Alberta and Federal GHG and BC reporting
(for the most part)
- Brings attention to anything that is vented – even fuel gas
- Gains made when moving away from hydrocarbon pneumatic devices are more visible
- Improves GHG reporting – fuel is normally assumed to be combusted, this helps ensure that the 25 x GHG potential of vent gas is properly accounted for

5. Path Forward

Advice received from CAMP/UT

- Regarding the standardization of definitions across the country for FUEL, FLARE etc., there was general agreement and understanding as to why we would want to do that, but up to each of the representative jurisdictions to take it up to their upper management to make sure there is buy-in and approval before we move ahead.

5. Path Forward (con't)

- Can we agree on definitions to consider further?
- Check with upper management – timing?
- Who needs to be consulted with externally and how?
- Expectations on accuracy of reporting?