



# Best Practices on Oil and Gas Methane Emissions Regulations

## A FACTSHEET FOR POLICY-MAKERS

“Canada’s three major oil and gas provinces — Alberta, Saskatchewan and B.C. — have all written their own rules. The federal government must now stand its ground and ensure the provincial rules are as effective as the federal ones.”

Addressing methane is one of the most cost-effective ways to reduce greenhouse gas pollution from the oil and gas sector. The Government of Canada reaffirmed its commitment to reduce methane emissions from the oil and gas sector by 40-45% below 2012 levels by 2025 as part of the Pan-Canadian Framework. In April 2018, the Canadian federal government published robust and comprehensive regulations intended to achieve their commitment.

The provinces can introduce their own regulations if they achieve equivalent emissions reductions as the federal ones. Canada’s three major oil and gas provinces — Alberta, Saskatchewan and B.C. — have all written their own rules. The federal government must now stand its ground and ensure the provincial rules are as effective as the federal ones.

### Why Methane?

Methane is a potent greenhouse gas with more

than 80 times the climate warming impact of carbon dioxide over a 20-year timespan. Methane is responsible for approximately 25% of the warming we feel today<sup>1</sup>. These facts make near-term methane reductions a necessary element of international efforts to battle climate change.

Methane is also the primary constituent of natural gas — a valuable product. Actions that eliminate or reduce methane losses to the atmosphere therefore are highly cost-effective as fewer methane emissions translate to more product in the pipeline. The International Energy Agency says globally the oil and gas industry can cost-effectively reduce up to 75% of its methane emissions and 50% of global methane reductions can be realized at zero net cost. This level of reduction delivers the same long-term climate benefit as immediately closing all the coal plants in China<sup>2</sup>. That’s a huge win for both the climate and the economy.

Reducing methane emissions can also have significant air quality benefits. Actions that

<sup>1</sup>Data is from IPCC AR5 WGI 2013 Chapter 8 SM, Table 8.SM.6’

<sup>2</sup><https://www.iea.org/newsroom/news/2017/october/commentary-the-environmental-case-for-natural-gas.html>

release methane emissions, such as unintentional leaking and intentional venting and flaring also emit harmful air toxics and smog-forming volatile organic compounds (VOCs). Therefore, actions to reduce methane emissions also lead to improved public health protections as a co-benefit. Reduced flaring can also reduce black carbon emissions to achieve simultaneous air quality and climate mitigation objectives.

### Why Canada?

Under the Pan-Canadian Framework, Canada has implemented a plan to reduce greenhouse gas emissions in line with their Paris Agreement commitments. Part of this plan is to reduce methane emissions by 40-45%, a commitment that was made alongside the U.S. and Mexico. The federal government took a strong first step in April 2018 by finalizing regulations on methane. If implemented across Canada, these regulations can reduce greenhouse gas emissions in Canada by 15 Mt CO<sub>2</sub>e each year starting in 2023. Moreover, since methane is the major component of natural gas, abating these emissions is also key for avoiding the waste of a precious resource.

Given the significant opportunity to reduce greenhouse gases and achieve the committed 45% methane reduction, the federal government should not grant equivalence to any of the provincial methane regulations in Alberta, BC or Saskatchewan unless they achieve methane emission reductions at least equivalent to the federal regulations.

### Mapping Methane Action

National and subnational jurisdictions across the U.S. and Canada have issued regulations or committed to do so to meet oil and gas methane reduction goals, as shown in the map below.

In August 2019, the EPA introduced proposed changes to the US federal methane rules which are not yet reflected below. The proposal must undergo consultation before a final action is issued. Industry players, environmental groups and states will argue against rolling back federal methane rules, with a challenge likely in federal court. Regardless, state regulations will remain in place and active campaigns are underway in additional states so the EPA proposal does not reflect a wholesale shift away from oil and gas methane reductions in the U.S.



## How Do the Federal and Provincial Regulations Measure Up?

Increasingly, countries, provinces and states are implementing regulations to reduce methane emissions. The strength of regulations varies from one jurisdiction to the next. Some regulate methane directly, while others address VOCs, which reduces methane as a co-benefit. Key aspects that should be addressed by effective regulations include:

1. Achieving ambitious methane emission reductions across multiple segments of the oil and gas sector and from all significant emission sources, new and existing;
2. Reducing designed and intentional equipment venting from pneumatics and compressors;
3. Reducing venting and flaring from storage tanks and oil well-heads;
4. Requiring leak detection and repair (LDAR); and
5. Establishing reliable record-keeping, reporting and measurement procedures.

In these five key areas, we compare the methane regulations from the federal government and provinces of Alberta, Saskatchewan and B.C. with best practices.

## How does the Federal Regulation Measure Up?

The federal regulations include broad coverage and tackle all major sources of emissions effective across the oil and natural gas supply chain from new and existing sources. Federal regulations will result in reduced leaks and venting due to comprehensive, frequent leak inspections coupled with robust venting limits for compressors, pneumatic devices, pumps and storage tanks. Federal regulations allow operators to use emerging leak detection methods to conduct leak inspections, thereby encouraging innovation that could enhance the effectiveness and reduce the cost of inspections.

## Comparative Analysis

■ Follows best practices
 ■ Needs minor improvements
 ■ Needs major improvements

Key Aspects	Best Practices	Federal	Alberta	British Columbia	Saskatchewan
1. Achieve ambitious methane emission reductions across multiple segments of the oil and gas sector and from all significant emission sources, new and existing.	1.1 Mandatory, performance-based standards				
	1.2 Effectively targets largest emissions sources				
	1.3 Limited, and clearly circumscribed, exceptions				
2. Reduce designed and intentional equipment venting from pneumatics and compressors.	2.1 Engineer and design new pneumatic devices and pumps to be zero or near zero emitting (e.g. use electricity or instrument air in lieu of natural gas as power source)				
	2.2 Retrofit existing pneumatic devices and pumps to be zero or near zero emitting (e.g. replace high-bleed pneumatic devices with low or zero-bleeds)				
	2.3 Reduce intentional venting from compressors				
3. Reduce flaring and gas venting from storage tanks and oil well-heads.	3.1 Reduce venting of gas from tanks				
	3.2 Reduce venting of gas from oil well-heads				
	3.3. Limit flaring of gas; only allow where capture isn't feasible				
	3.4 Require use of high efficiency flares and combustors				
4. Regular leak detection and repair (LDAR).	4.1 Quarterly/triannual inspections of well sites, gas processing plants, compressor stations, tank batteries				
	4.2 Comprehensive inspections that apply to all sources with the potential to leak, unintentionally vent or abnormally operate				
	4.3 Include robust alternative compliance pathway that allows for the use of emerging technologies that are as effective in reducing emissions as allowable instruments and is subject to public input and regulatory review				
5. Record-keeping, reporting and measurement.	5.1 Include robust, detailed, site-specific record-keeping provisions, demonstrating compliance with each of the mandatory methane reduction measures				
	5.2 Require annual public reporting demonstrating compliance				
	5.3 Reliable measurement requirements				

<sup>1</sup> Includes solution and associated gas











2. Reduce designed and intentional venting from pneumatics and compressors.	2.1. Engineer and design new pneumatic devices and pumps to be zero or near zero emitting (e.g. use electricity or instrument air in lieu of natural gas as power source).	Federal regulation sets venting limits for new devices. (Section 37.1) No emissions are allowed from new pneumatic pumps (Section 39.1) with exceptions for infrequently used pumps.	Regulation doesn't set rules for new pneumatic devices or pumps.	Needs major improvement	Require new pneumatic pumps and devices to be non-emitting or controlled.
	2.2. Retrofit existing pneumatic devices and pumps to be zero or near zero emitting (e.g. replace high-bleed pneumatic devices with low or zero-bleeds).	Federal regulation sets a venting limit for existing pneumatic devices (Section 37.1) and requires no emissions from existing pneumatic pumps with exceptions for infrequently used pumps (Section 39.1).	Regulation doesn't set rules for existing pneumatic devices or pumps.	Needs major improvement	Set venting limits for existing pneumatic devices and pumps.
	2.3. Reduce intentional venting from compressors.	Federal regulation establishes a venting limit for compressors that is ambitious and aims to reduce intentional venting (Section 18 and Section 50).	Regulation doesn't set rules for venting from compressors.	Needs major improvement	Set venting limits for new and existing compressors.
3. Reduce venting and flaring from storage tanks and oil wellheads.	3.1. Reduces venting of gas from tanks.	Federal regulation establishes an annual venting limit for facility that is ambitious and aims to reduce venting of gas from major sources including tanks.	Regulation sets a limit on the percentage of vented gas that must be conserved or destroyed by region.	Needs minor improvement	A site venting limit is more efficient than a conservation requirement because it doesn't target the smallest emitters.
	3.2 Reduce venting of gas from oil wellheads <sup>1</sup> .	Federal regulation sets an annual venting limit for facility that is ambitious and aims to reduce venting of gas from major sources including solution gas venting.			
	3.3. Limit flaring of gas; only allow where capture is infeasible.	Federal regulation doesn't establish a requirement limiting flaring of gas	Regulation promotes conservation of gas and doesn't consider flaring as an acceptable alternative (Directive S-10. Section 3 and 4).	Follows best practices	
	3.4. Require use of high efficiency flares and combusters.	Federal regulation doesn't establish a requirement to use high efficiency flares but points out to follow provincial rules (Section 9) which don't require the use of high efficiency flares.	Regulation makes mandatory that all allowed flaring should be conducted with efficient flares encouraging the use of incinerators with a conversion efficiency of more than 99% (Directive S-20. Section 3.3).	Needs major improvement	Require a 98% destruction and reduction efficiency of flare and combustion.
4. Regular leak detection and repair (LDAR).	4.1. Quarterly inspections of well sites, gas processing plants, compressor stations, tank batteries.	Federal regulation requires inspections three times per year for all but single well heads (Sections 30 (3); 52).	The regulation doesn't have any leak detection and repair requirements.	Needs major improvement	Require comprehensive leak surveys at all facilities three times per year.
	4.2. Comprehensive inspections that apply to all sources with the potential to leak, unintentionally vent or abnormally operate.	Federal regulation requires LDAR inspections on all sources including thief hatches and pneumatic devices.	The regulation doesn't have any leak detection and repair requirements.	Needs major improvement	Require comprehensive inspections that apply to all sources.
	4.3. Include robust alternative compliance pathway that allows for the use of emerging technologies that are as effective in reducing emissions as allowable instruments and that is subject to public input and regulatory review.	Federal regulation establishes robust alternative compliance pathway (Sections ; 29; 35; 50).	The regulation doesn't have any leak detection and repair requirements.	Needs major improvement	Include alternate compliance pathways.
5. Record keeping, reporting and measurement	5.1 Include robust, detailed, site-specific record keeping provisions, demonstrating compliance with each of the mandatory methane reduction measures.	Federal regulation requires comprehensive site level record keeping by source type (Sections 6; 7; 10; 12; 19; 25; 27; 36; 38; 45; 48; 51; 53; 56).	Regulation does not require any record keeping on methane emissions from venting or other sources.	Needs major improvement	Require detailed record keeping for all sources of methane emissions.
	5.2. Require annual public reporting demonstrating compliance.	Federal regulation doesn't require annual public reporting demonstrating compliance.	Regulation requires no public reporting of methane emissions.	Needs major improvement	Include comprehensive reporting and a requirement to make reports public.
	5.3. Reliable measurement requirements.	Federal regulation establishes reliable measurement requirements (Section 15, 16 and 17).	Regulations set measurement requirements but have not addressed known flaws in estimation of solution gas venting.	Needs major improvement	Improve requirements for measurement of solution gas venting.