

Air Summary

2015 - 2018



PURPOSE

This Air Summary provides information on greenhouse gases and air contaminants resulting from oil and gas activities regulated by the [BC Oil and Gas Commission](#) for the calendar years 2015 to 2018.

Building on the [2014 Air Summary](#), this update incorporates recent Commission findings and publicly available provincial and federal information, creating a more complete picture of estimated emissions from the oil and gas industry. It explains the Commission's role and initiatives for managing air contaminants and greenhouse gases in accordance with policy direction set by the Provincial Government.

Previous Air Summaries are available on the Commission's [Air Quality](#) web page, and legislation under which the Commission operates is available on the Commission's [Legislation](#) web page.

TABLE OF CONTENTS

ROLE OF THE BC OIL AND GAS COMMISSION.....	4
WHAT ARE GREENHOUSE GASES (GHGS)?	5
FIG. 1: THE GREENHOUSE GAS EFFECT.....	5
ESTIMATING AND TRACKING GHG EMISSIONS.....	6
FIG. 2: PROVINCIAL GHG EMISSIONS INVENTORY BY SECTOR	6
FIG. 3: 2017 B.C. INDUSTRY SECTOR GHGS	7
FIG. 4: 2017 UPSTREAM GHG EMISSIONS BY TYPE	7
FIG. 5: UPSTREAM METHANE EMISSIONS 2014 - 2017	8
FIG. 6: B.C. OIL AND GAS PRODUCTION 2014 - 2017	8
FIG. 7: 2017 OIL AND GAS METHANE EMISSIONS BREAKDOWN BY SOURCE ...	9
REDUCING EMISSIONS.....	10
FEDERAL ACTION	10
PROVINCIAL ACTION	10
COMMISSION ACTION.....	11
FIG. 8: DRILLING AND PRODUCTION REGULATION TIMELINE	11
AIR MONITORING	12
COMMISSION AIR MONITORING ENVIRONMENTAL LABORATORY (CAMEL)	12
DATA COLLECTION AND VALIDATION	13
NORTHEAST BRITISH COLUMBIA AIR MONITORING PROJECT	13
AIR CONTAMINANTS AND PARTICULATE MATTER	14
DATA SHARING USING THE COMMISSION AIR TOOL (CAT)	16
ROAMING AIR MONITOR (RAM)	16
FLARING.....	17
FIG. 9: B.C. FLARING VOLUMES BY SOURCE 1996 - 2018	18

BC OIL AND GAS COMMISSION

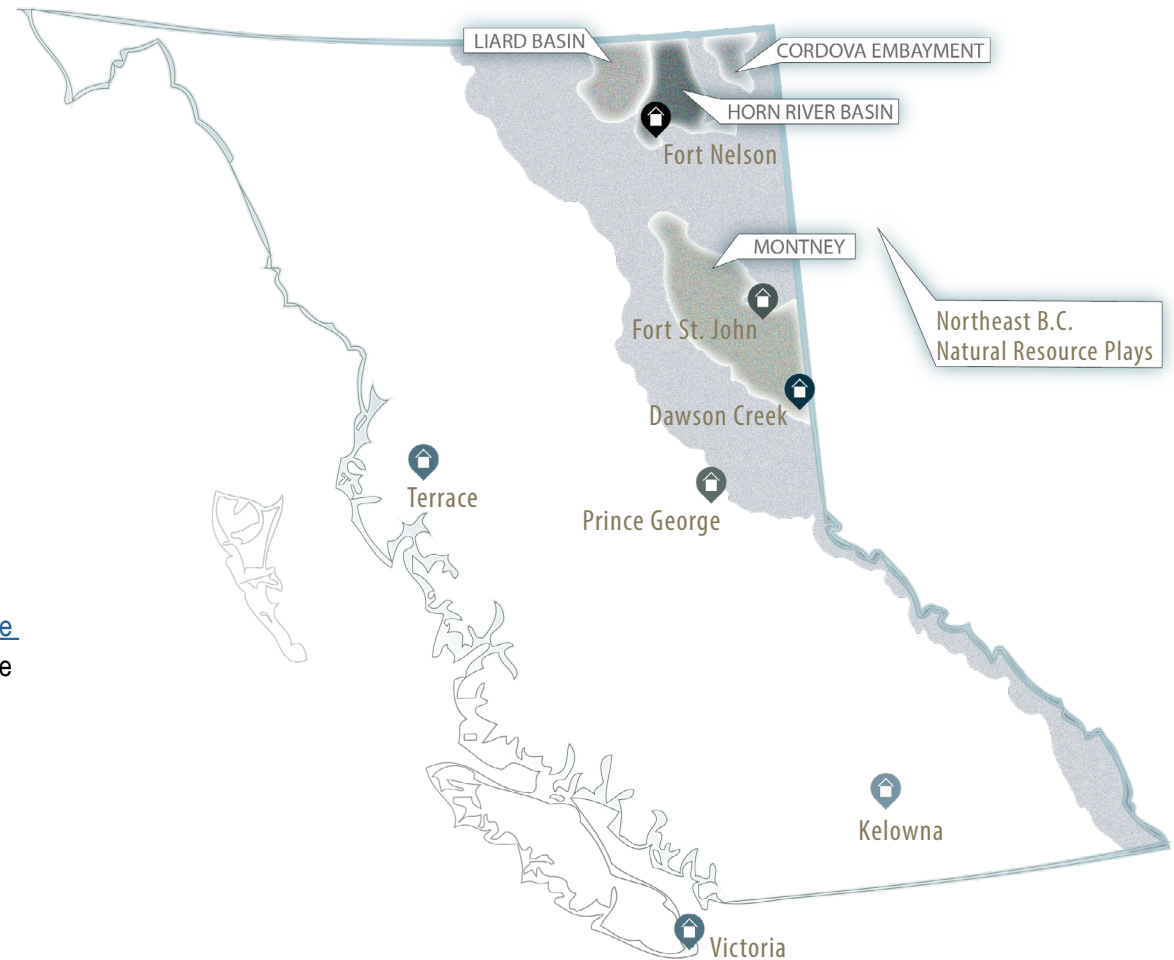
The [BC Oil and Gas Commission](#) (Commission) protects public safety and safeguards the environment through the sound regulation of oil, gas and geothermal activities in B.C.

From exploration through to final reclamation, the Commission works closely with communities and land owners, and confirms industry compliance with provincial legislation. It also ensures there are close working relationships; consults with, and considers the interests of Indigenous peoples.

The provincial government advances our energy sector by driving innovation, expanding energy-efficiency, and supporting resource conservation programs. The Commission supports these objectives operating under regulatory and policy guidance defined by the province.

The Commission extends provincial direction to industry by way of enforcing legislation that protects air quality, such as the [Oil and Gas Waste Regulation](#) and the [Environmental Management Act](#). Industry emissions are further addressed in the Commission's [Drilling and Production Regulation](#) and associated guidance, such as the [Fugitive Emissions Management Guideline](#) and [Flaring and Venting Reduction Guideline](#). As new regulatory requirements take effect, further guidance will be developed and made available. Legislation under which the Commission operates is available on the Commission [website](#).

With more than 20 years' dedicated service, the Commission is committed to safe and responsible energy resource management for British Columbia.



Commission Office Locations
Throughout B.C.

WHAT ARE GREENHOUSE GASES?

Greenhouse gases, or GHGs, are gases in the earth's atmosphere that absorb and emit energy and contribute to climate change. GHGs typically released from oil and gas operations are predominantly carbon

dioxide and methane, and to a lesser extent nitrous oxide. These gases allow rays from the sun to pass through the atmosphere where they are partially absorbed by the earth's surface (Figure 1). The earth is warmed by the

rays, with some heat bouncing back towards space. The GHGs in the atmosphere intercept and absorb some of this heat, keeping air close to the earth's surface warmer than it would be otherwise.

FIGURE 1

THE GREENHOUSE GAS EFFECT

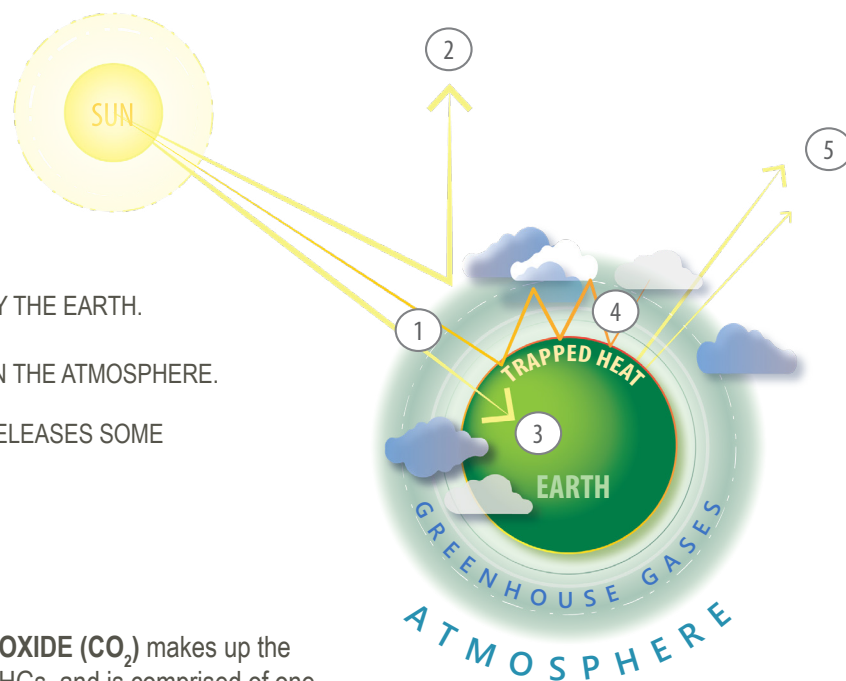
GHGs are naturally present in the atmosphere. Carbon dioxide is a common GHG that keeps the earth at a temperature that sustains life. Carbon dioxide, nitrous oxide, and methane trap energy from our sun in the atmosphere, creating what is known as the greenhouse effect. Without these gases, the earth's temperature would drop below freezing. However, as GHGs increase, the greenhouse effect increases, trapping more heat and increasing the average global temperature.

GHGs TYPICALLY RELEASED DUE TO OIL AND GAS ACTIVITY

METHANE (CH₄) is a colourless, odourless, flammable GHG and is the primary component of natural gas, having one atom of carbon and four atoms of hydrogen. Methane is a more potent GHG than CO₂. Methane is emitted during the production and transportation of natural gas and oil, and is also emitted as a result of agricultural practices and by the decay of organic waste.

CARBON DIOXIDE (CO₂) makes up the majority of GHGs, and is comprised of one carbon and two oxygen atoms. CO₂ enters the atmosphere through the burning of fossil fuels (such as natural gas and gasoline). When animals and humans breathe, they release CO₂.

- 1 RAYS FROM THE SUN PASS THROUGH THE EARTH'S ATMOSPHERE.
- 2 SOME HEAT IS REFLECTED BY THE EARTH AND THE ATMOSPHERE.
- 3 SOME RAYS ARE PARTIALLY ABSORBED BY THE EARTH.
- 4 SOME HEAT IS ABSORBED BY THE GHGs IN THE ATMOSPHERE.
- 5 THE WARMED SURFACE OF THE EARTH RELEASES SOME HEAT BACK TOWARDS SPACE.



ESTIMATING AND TRACKING GHG EMISSIONS

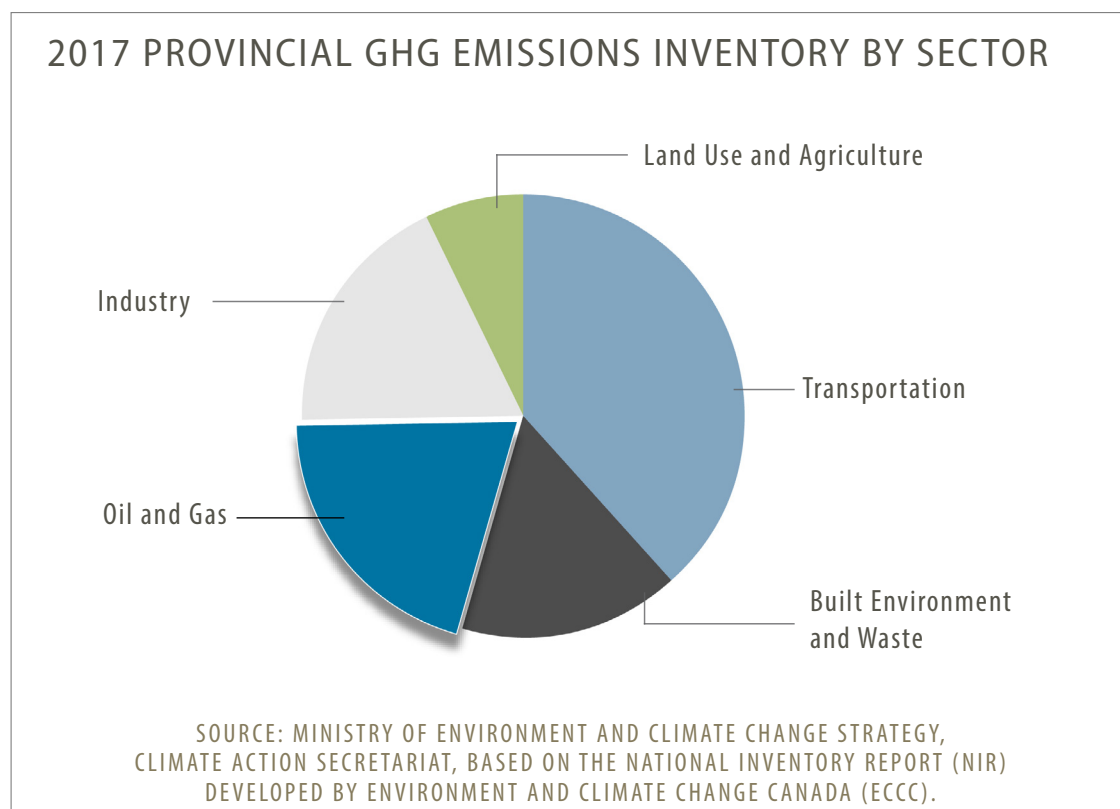
Establishing an inventory of GHGs is important for a variety of reasons. By monitoring and cataloguing emissions, GHG sources and trends are identified and tracked. The findings inform the strategies and policies developed to reduce emissions, and provide a baseline for monitoring progress towards attaining reduction targets.

British Columbia releases an annual [Provincial Greenhouse Gas Emissions Inventory](#) (Inventory), with a two-year publication delay to allow time to assemble the information. B.C.'s Inventory covers emissions included in the Province's GHG targets. Changes to data sources and methodological improvements happen over time and when

these updates occur, emissions estimates for past years are recalculated to allow for a comparison of emissions across years. The Inventory provides links to documents that describe methodologies and any changes in a given year.

The latest published Inventory for B.C. is for the 2017 calendar year with oil and gas sources accounting for 20 per cent of total provincial GHG releases (Figure 2).

FIGURE 2



WHAT IS THE SOURCE FOR GHG ESTIMATES IN THE PROVINCIAL INVENTORY?

B.C.'s methodology is described in the Provincial Inventory [Methodology Book](#).

GHG estimates for most sectors are taken from the [National Inventory Report](#).

The majority of this 20 per cent is from upstream operations with a smaller portion from downstream sources such as petroleum refining and natural gas distribution.

Each year, the Province also requires industrial operations to report GHG emissions (Figure 3) based on their quantity

of emissions, type of operations, and type of activities (e.g. gas processing, pipeline transportation). This facility-level reporting is required under the [Greenhouse Gas Emission Reporting Regulation](#) (GGERR) which outlines obligations and duties in relation to reporting requirements.

It should be noted there are subtle differences between

GHG data published by Environment and Climate Change Canada (ECCC) and the Province due to estimation methods and category definitions. The additional breakdowns provided hereafter are based on data collected by GGERR.

FIGURE 3

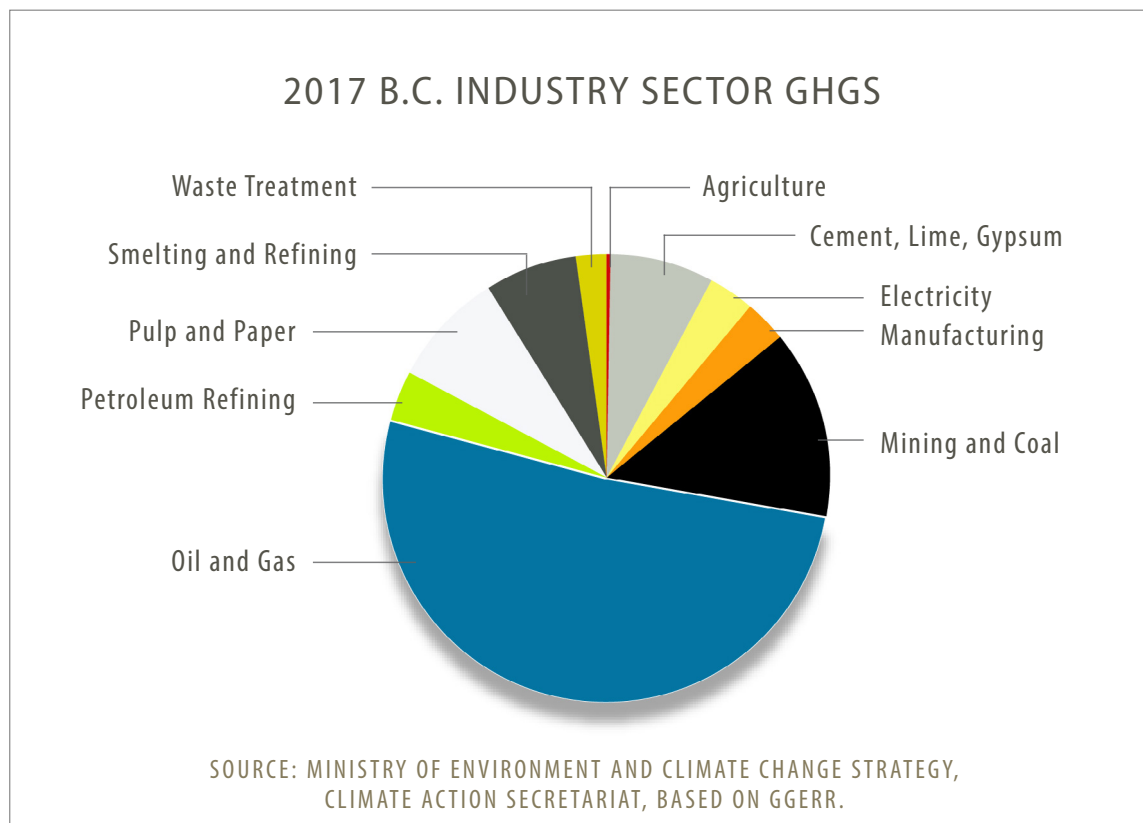


FIGURE 4

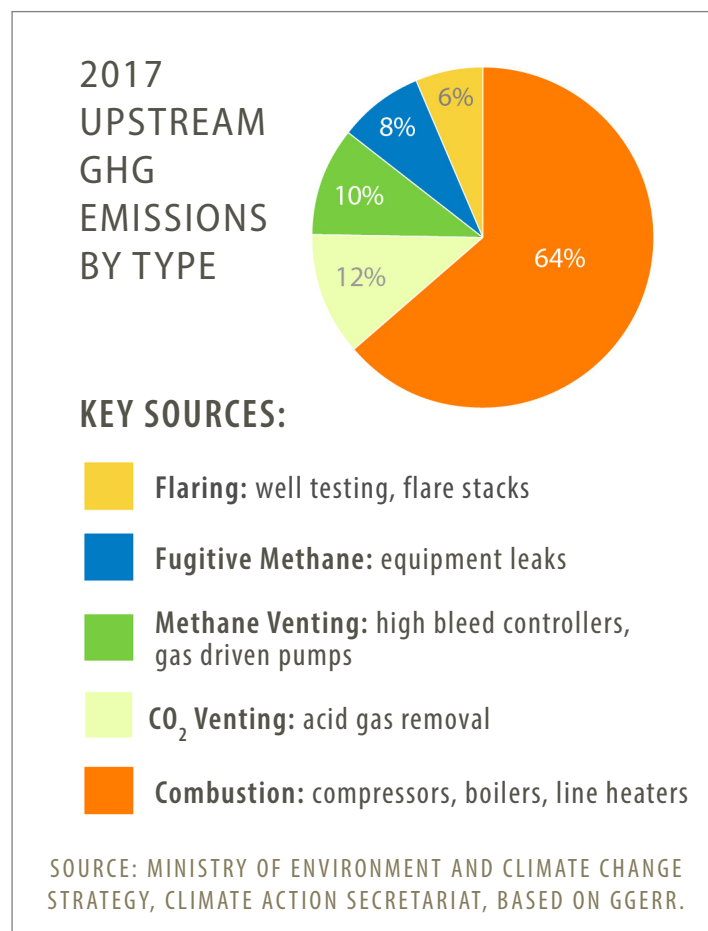


FIGURE 5
UPSTREAM
METHANE
EMISSIONS
(TONNES CO₂-E)
2014 - 2017

SOURCE:
 MINISTRY OF ENVIRONMENT AND
 CLIMATE CHANGE STRATEGY,
 CLIMATE ACTION SECRETARIAT
 BASED ON GGERR

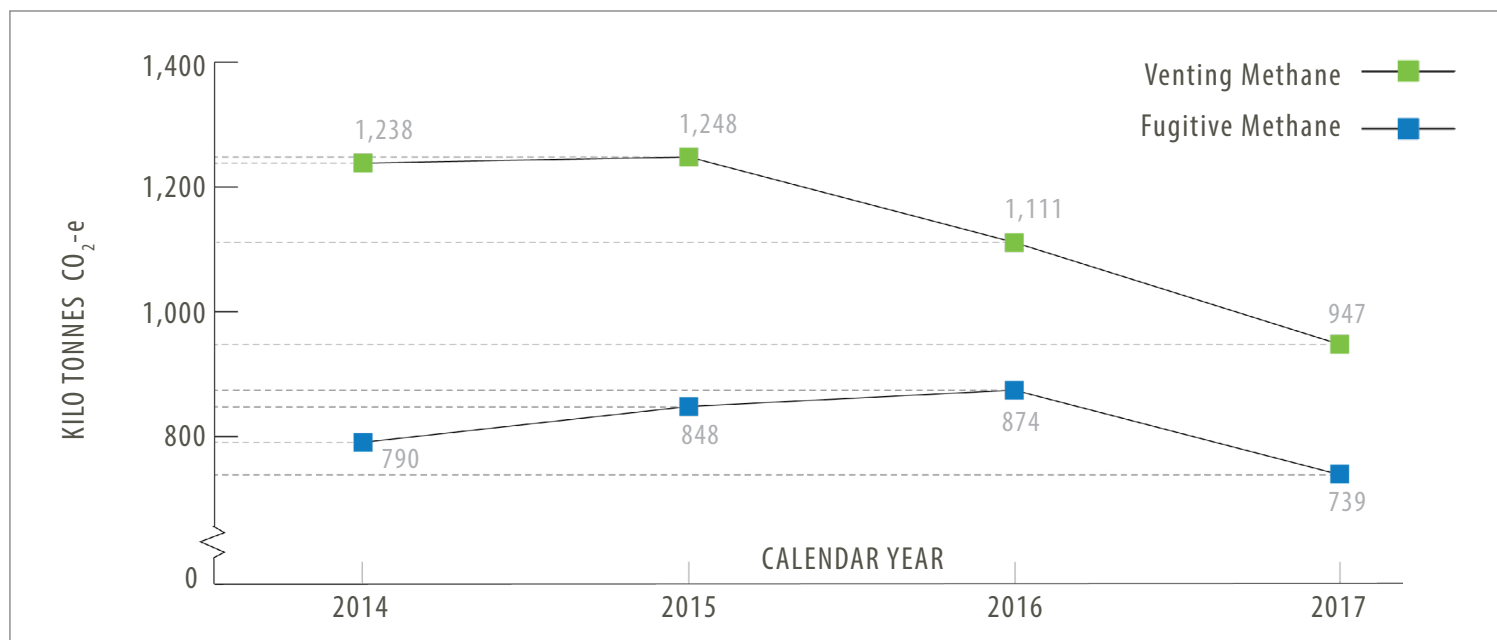
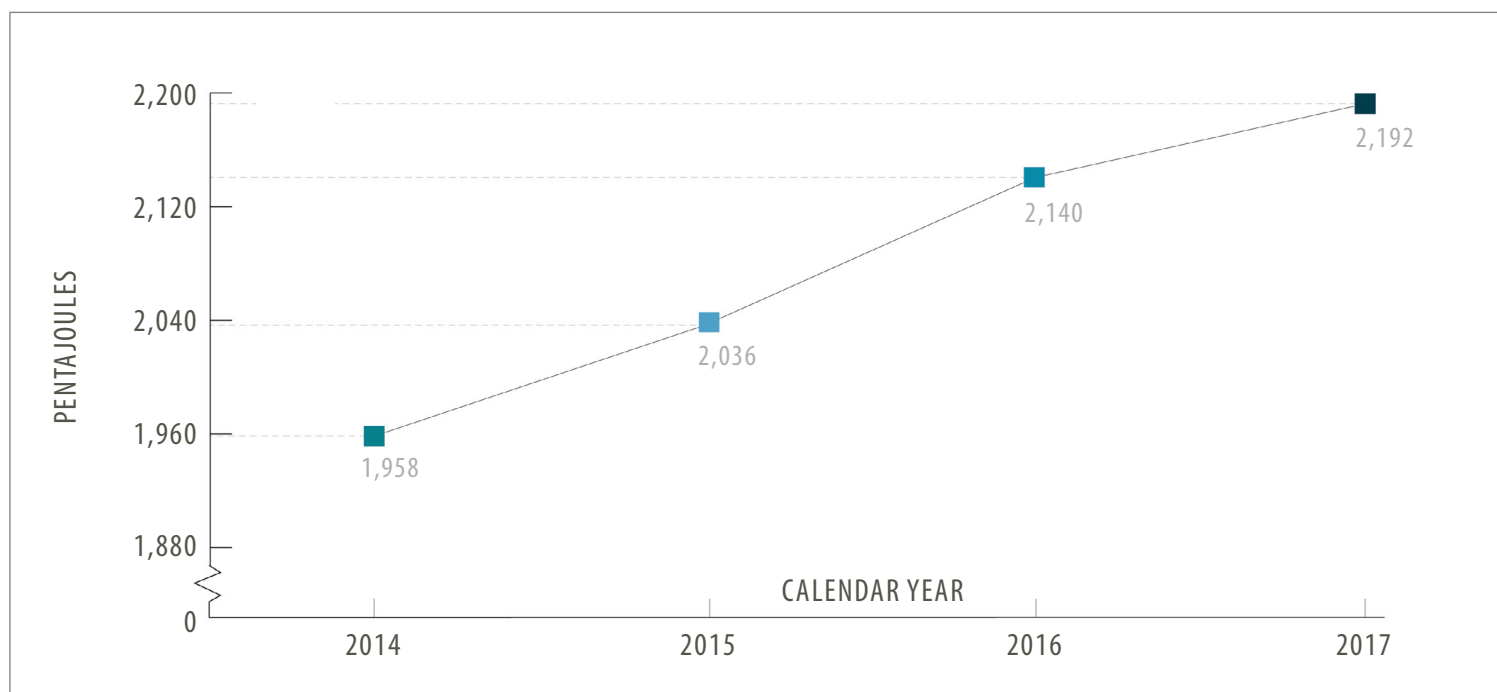


FIGURE 6
B.C. OIL AND GAS
PRODUCTION
(PENTAJOULES)
2014 - 2017

SOURCE:
 BC OIL AND
 GAS COMMISSION



Reported methane emissions from the oil and gas sector have declined slightly between 2014 and 2017 (Figure 5) while production has increased (Figure 6). These reductions can be attributed to a number of factors, including the greater use of non-emitting devices and

broader electrification of some production facilities which reduces the amount of vented methane, fugitive methane and combustion related emissions from the sector.

Increased production in the Montney region has also reduced the amount of vented carbon dioxide emissions

reported by the sector due to lower amounts of carbon dioxide in the gas extracted compared to historical sources.

Further breakdowns for the upstream oil and gas sector are illustrated in Figures 4 and 7.

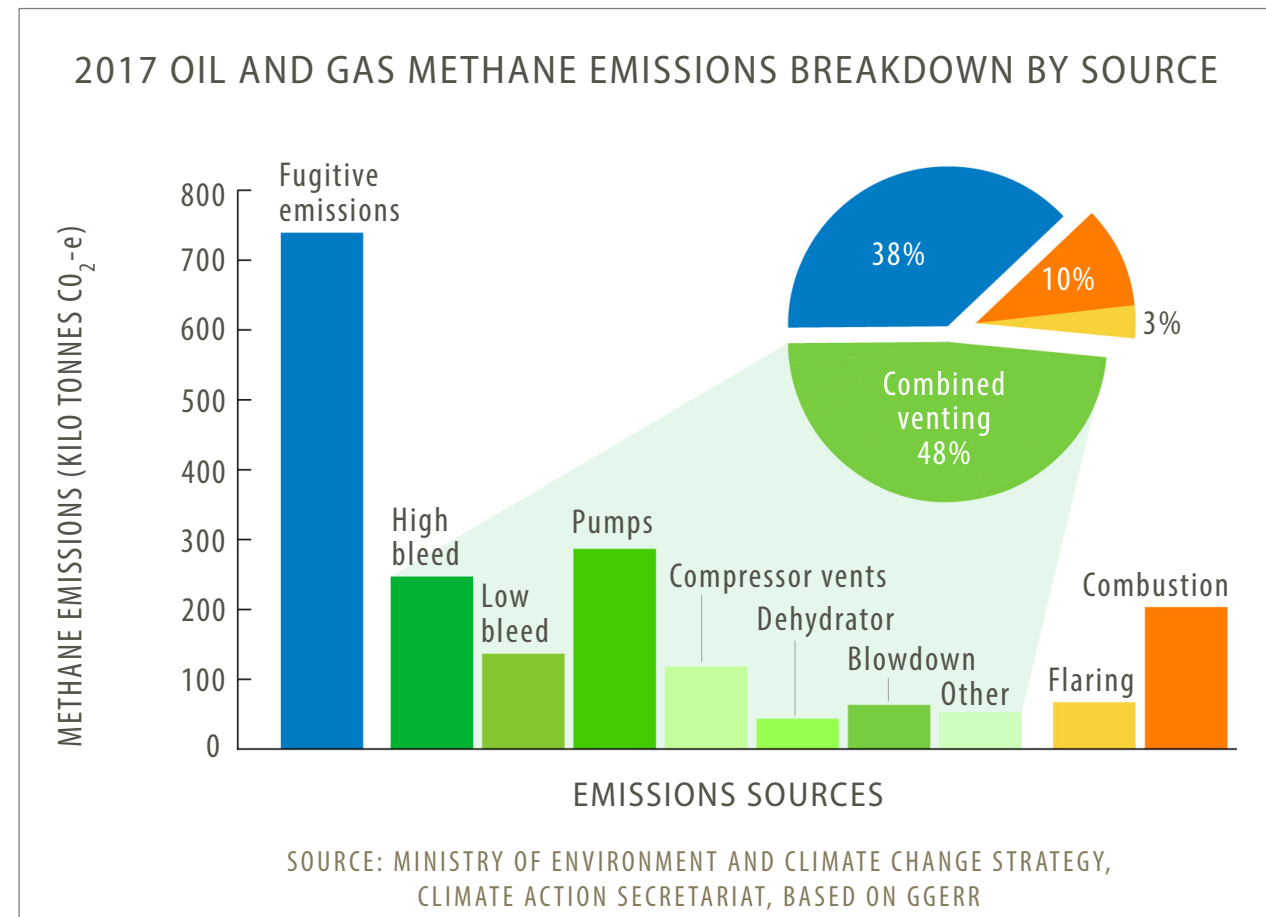
BC OIL AND GAS METHANE EMISSIONS RESEARCH COLLABORATIVE (MERC)

To support B.C.'s methane emission reduction targets, the Commission participates in MERC - a joint initiative between industry, government, and non-profits to advance research on methane emissions from oil and gas activities.

This collaborative shares funding, information and resources to improve research efficiencies and broaden scientific understanding of methane emission sources, detection and measurement methods, and emission reduction and control technologies that can be implemented by oil and gas operators.

See [page 11](#) for more about MERC.

FIGURE 7



REDUCING EMISSIONS

The Federal Government and provinces are taking action to reduce GHG releases. Material presented below is specific to the oil and gas sector.

FEDERAL ACTION

REGULATORY

The Federal Government enacted '[*Regulations Respecting Reduction in the Release of Methane and Certain Volatile Organic Compounds \(Upstream Oil and Gas Sector\)*](#)' on April 26, 2018. The objective of the regulations is to achieve an overall Canadian reduction target of 40-45 per cent by 2025 relative to 2012 levels. In the absence of provincial regulatory requirements, the federal regulations will apply to all provinces.

More information on federal initiatives, requirements and guidance as it relates to industry emissions may be found at <https://www.canada.ca/en/environment-climate-change.html>.

PROVINCIAL ACTION

CLEANBC, INDUSTRY INCENTIVES AND PROTOCOLS

The Government of British Columbia announced CleanBC on Dec. 5, 2018 with priorities focused on achieving the Province's legislated climate targets and goals. Under [CleanBC](#) there is an initiative to reduce methane emissions from upstream production of oil and natural gas by 45 per cent by 2025 relative to 2014 levels.

The Commission is working under direction provided by CleanBC to reduce GHG releases from the oil and gas industry.

Actions the Province is taking that will apply to all B.C. industries as well as oil and gas operations are:

1. CleanBC Program for Industry - as the carbon tax increases across the province to \$50/tonne by 2021, this program will provide industry with incentives for cleaner operations that release less GHGs. This program includes:
 - An Industrial Incentive program that provides incentives to industrial operations based on performance against world leading benchmarks.
 - A CleanBC Industry Fund that invests a portion of the industrial carbon tax revenue directly into emission reduction projects.

For more information on the Industrial Incentive Program and CleanBC Industry Fund, go to: <https://www2.gov.bc.ca/gov/content/environment/climate-change/industry/cleanbc-program-for-industry>.

2. The Province is delivering the [Clean Growth Infrastructure and Royalty Credit Program](#) (CGIRP) offering incentives to B.C. natural gas producers and/or pipeline companies to invest in clean

technologies that will result in reduced GHG emissions. By providing up to 50 per cent of eligible project costs in royalty deductions, the program helps achieve GHG reductions and demonstrates sustainable management for the oil and gas sector.

3. Industrial Electrification
 - Provide clean electricity to planned natural gas production in the Peace Region.
 - Increase access to clean electricity for large operations with new transmission lines and interconnectivity to existing lines.
 - The B.C. government amended the Clean Energy Act to enable BC Hydro to offer incentives to households and industry to electrify equipment, vehicles and operations. Specific incentives offered by BC Hydro are described online: <https://www.bchydro.com/powersmart.html>.
4. Alleviate air pollution in the Lower Mainland with a pilot project to test options to switch 1,700 freight trucks to cleaner or zero-emission fuel.
5. Ensure a regulatory framework for safe and effective underground CO₂ storage and direct air capture.
6. Make industrial natural gas consumption cleaner with a minimum 15 per cent to come from renewable gas.

COMMISSION ACTION

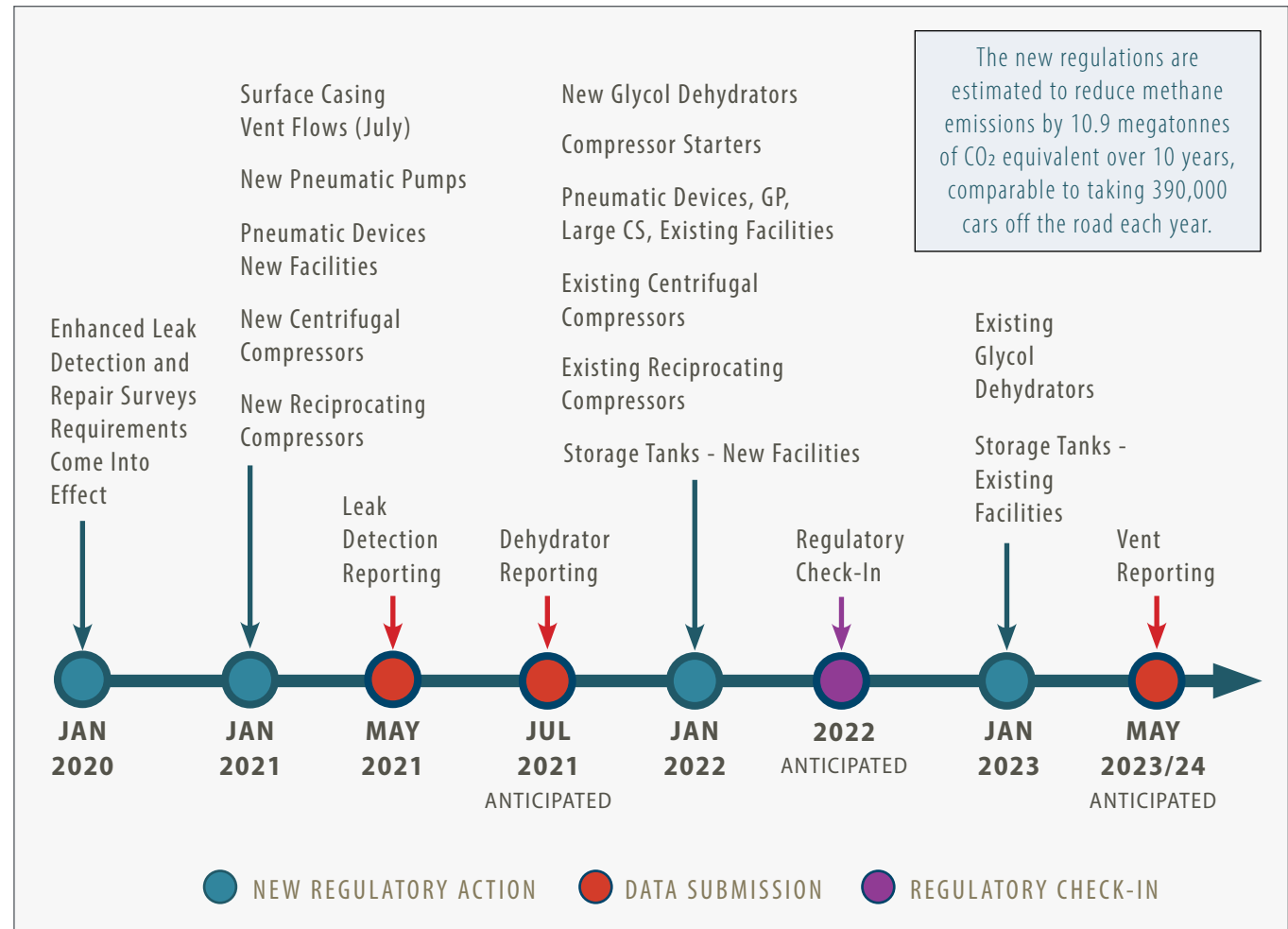
REGULATORY

On Jan. 16, 2019, the Commission [announced new regulations](#) to reduce methane emissions from upstream oil and gas operations to meet or exceed federal and provincial methane targets. The amendments under the [Drilling and Production Regulation](#) (DPR) came into effect Jan. 1, 2020 (Figure 8).

In order to have a single regulator for overseeing methane releases from the oil and gas industry, an [equivalency agreement](#) between Canada and British Columbia is being sought. With an equivalency agreement in place, the Canadian regulatory requirements will stand down (not apply) and the British Columbia requirements under the DPR would continue to apply.

To further support progress in meeting provincial and federal methane reduction targets, the Commission is involved in the [BC Oil and Gas Methane Emissions Research Collaborative](#) (MERC), created to make recommendations on the design and implementation of key research deliverables that will help identify, quantify, and control methane emissions. The Commission maintains a [web page](#) to provide the latest information on MERC and reducing methane emissions from B.C.'s upstream oil and gas facilities.

FIGURE 8 DRILLING AND PRODUCTION REGULATION TIMELINE



AIR MONITORING

The Commission monitors ambient air quality in proximity to oil and gas operations to ensure protection of public safety and conservation of the environment. Several pieces of equipment are used as described below. Deployment locations are selected based on the following considerations:

- Protection of public safety.
- Community engagement.
- Oil and gas industry focus.
- Ensuring industry compliance with permits, regulations, and [OGAA](#) conditions.
- Ensuring industry compliance with ambient air quality standards.
- Assessment of trends in relation to expanded development.
- Tracking spatial distribution of air contaminants.
- Research and increased knowledge.

COMMISSION AIR MONITORING ENVIRONMENTAL LABORATORY

The Commission Air Monitoring Environmental Laboratory (CAMEL) is a mobile trailer unit fitted with a full suite of sensory equipment designed to measure and record air contaminants - gases, liquids and suspended particulate matter with chemical properties that can impact air quality.

Meteorological and atmospheric conditions (temperature, wind speed and direction, solar radiation and rainfall) are also monitored. The findings can be valuable when determining where air contaminants originate, and provide additional context when utilized by air quality professionals for further analysis.

Being mobile and capable of continual collection and measurement of data, CAMEL can be deployed to measure air quality and potential sources of airborne contaminants in locations that do not have fixed air monitoring stations.

AMBIENT AIR MONITORING

Measurement of levels, quantities and types of contaminants in the surrounding outdoor air.

ATTAINING AIR QUALITY OBJECTIVES

Non-statutory limits used to assess air quality and guide air management decisions, including those related to environmental assessments and authorizations.

OBSERVING METEOROLOGY

A science of atmospheric processes and phenomena.

CAMEL
ASSISTS WITH:



DATA COLLECTION AND VALIDATION

Results from CAMEL are retained in both raw and validated datasets. Raw data is comprised of information as recorded in the field. There are instances where raw data can be invalid (for example, due to on-site personnel instrument servicing, or a physical problem with instrumentation leading to inaccurate measurements). Raw data is therefore validation checked by making adjustments as appropriate or by discarding data for justified reasons.

Data from CAMEL assists the Commission in determining potential sources of airborne contaminants within

communities that do not have fixed monitoring locations. The findings from CAMEL have been incorporated in studies that [monitor air quality in Northeastern B.C.](#)

Since becoming operational in November 2013, CAMEL has been deployed to several areas around northeast B.C. including Taylor, Fort St. John, Dawson Creek, Tumbler Ridge, Chetwynd, Buick Creek, Pouce Coupe, Venturian Mica and Briar Ridge. The data collected by CAMEL in several of these areas was instrumental in contributing to the Northeast British Columbia Air Monitoring Project.



HOW DOES CAMEL WORK?

CAMEL operates by drawing air samples into specialized analyzers that measure contaminants as low as parts per billion (ppb) concentrations. Its specialized instrumentation requires regular calibration checks and in-field servicing.

NORTHEAST BC AIR MONITORING PROJECT

Announced in 2012, the Northeast Air Monitoring Project was a partnership between the provincial government, the Commission, the Canadian Association of Petroleum Producers (CAPP), Spectra Energy, and communities in the Peace Region of northeast B.C. The goal was to capture air quality data to make the best-informed decisions regarding public health, pollution management and impacts to sensitive ecosystems in areas potentially impacted by oil and gas development.

The project used a science-based approach to determine locations for adding three more air quality monitoring stations to the existing network of eight stations. Air contaminants were then measured between December 2013 and June 2017.

The [final report](#) on the analysis of the measured data indicates ambient air concentrations associated with oil and gas development in northeast B.C. are generally below B.C. air quality objectives, and were unlikely to impact human health in areas away from industrial activity. The air monitoring program is now complete. As a path forward, two of the three stations added to the project have been absorbed into the BC air monitoring network. The third station is currently located in Farmington and operates with funding from the [BC Oil and Gas Research Innovation Society \(BC OGRIS\)](#) and in-kind contributions from the Commission.

AIR CONTAMINANTS

The primary air contaminants emitted by the oil and gas sector are sulphur oxides (SO_x), nitrogen oxides (NO_x), hydrocarbons, and hydrogen sulphide (H_2S). The Commission has the ability to monitor these contaminants along with ozone (O_3) and particulate matter (PM).

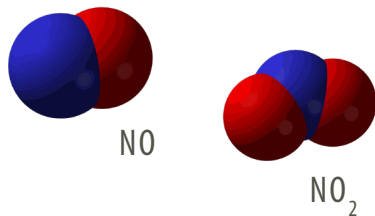
SULPHUR DIOXIDE

Sulphur dioxide (SO_2) is a toxic gas with a burnt match smell. It is released naturally by volcanic activity and is produced as a by-product of the burning of fossil fuels that contain sulphur compounds.



NITROGEN OXIDES

Nitrogen oxides are produced from the reaction among nitrogen and oxygen during combustion of fuels in air, especially at high temperatures. From an air pollution perspective, nitric oxide (NO) and nitrogen dioxide (NO_2) are most relevant. These gases contribute to the formation of smog and acid rain, and can lead to ground level ozone formation.



CARBON MONOXIDE

Carbon monoxide (CO) is a colourless gas with no odour. Consisting of one carbon atom and one oxygen atom, it is produced by burning fuels such as wood, charcoal, oil or natural gas.



HYDROCARBONS

Hydrocarbons are molecules consisting of both hydrogen and carbon. They are a primary constituent of fossil fuels such as natural gas. Methane is technically a hydrocarbon - however, it is not considered dangerous to humans by inhalation. Although non-toxic, methane is considered a 'simple asphyxiant' because it can displace oxygen required for breathing.

Volatile organic compounds (VOCs) are a group of hydrocarbons that tend to evaporate and enter the surrounding air. A group of VOCs that are hazardous and can be released from oil and gas operations is known as BTEX - an abbreviation for benzene, toluene, ethylbenzene, and xylene.

OZONE

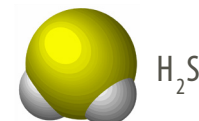
Ozone (O_3) is not emitted directly into the atmosphere, but is a secondary gas produced by a reaction between nitrogen dioxide, VOCs and sunlight. It is formed when automobiles, industry, chemical plants, and other sources emit contaminants that react chemically in the presence of sunlight.



HYDROGEN SULPHIDE

Hydrogen sulphide (H_2S) is a colourless gas with the odour of rotten eggs. It is poisonous, corrosive and flammable.

Hydrogen sulphide is often produced from the microbial breakdown of organic matter in the absence of oxygen, such as in swamps and sewers. H_2S also occurs in volcanic ashes, natural gas, and in some sources of well water.



PARTICULATE MATTER (PM)

Other emissions produced by both natural sources and industry is particulate matter (PM). Particulate matter varies in size, shape, and chemical composition, and can be comprised of different materials, such as soil,

dust and soot. Road traffic emissions are a principle source of particulate matter. PM refers to the mixture of liquid droplets and solid particles found in the air around us. Larger particles are visible to the naked eye, such as dust, dirt or smoke.

Other PM is so small it can only be seen under an electron microscope. PM is classified by size:

PM_{2.5}

Fine, inhalable particles with diameters of 2.5 micrometres and smaller. Examples include wildfires and emissions from prescribed burning, forestry operations, residential woodstoves, and diesel engine exhaust. In comparison, the average human hair has a diameter 30 times larger than the biggest fine particle.

PM₁₀

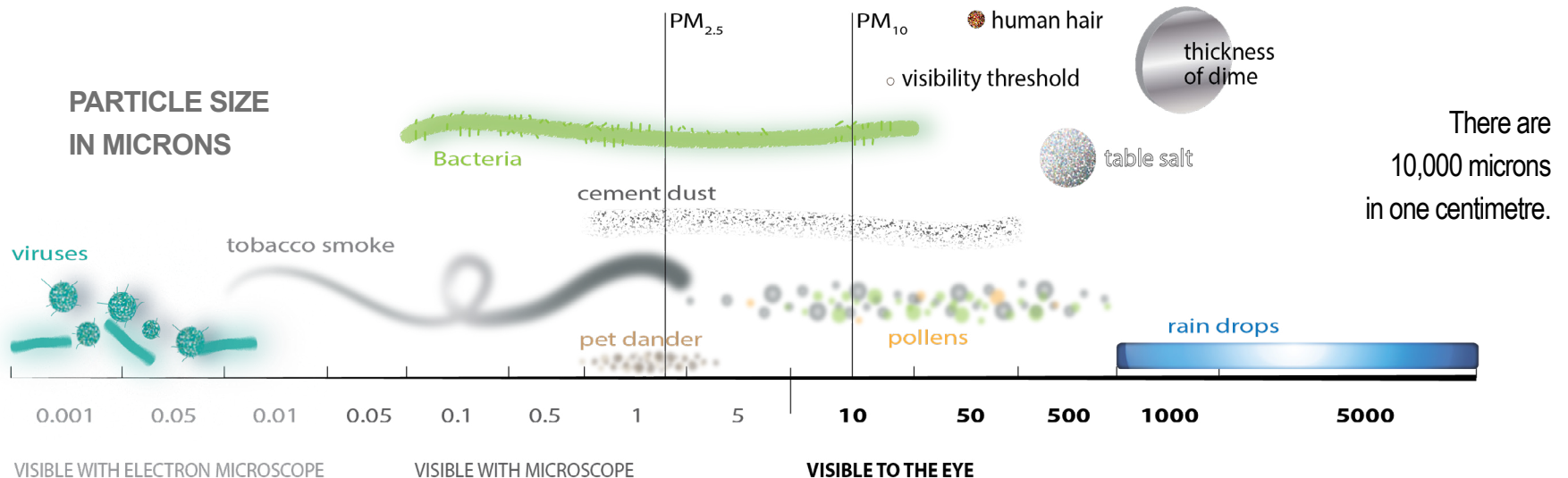
Particles are small enough to be inhalable, with diameters of 10 micrometres or less in diameter. Examples include road dust, pollen and mold.

What are the differences between GHGs and air contaminants?

The main differences are how they affect our environment and our health.

GHGs have always been in our atmosphere at levels that don't affect our health, but as more GHGs are produced, the greenhouse effect increases.

Air contaminants, such as particulate matter, affect our health when we breathe them in. These effects occur closer to the ground while GHGs affect the earth's atmosphere.



DATA SHARING USING CAT

The recently developed [Commission Air Tool](#) (CAT) is an interactive, web-based map that provides public access to information on air discharges from oil and gas operations and monitoring data collected by CAMEL.

CAT displays locations where discharges to the air have been authorized by the Commission under the Environmental Management Act (EMA), including operations registered under the Oil and Gas Waste Regulation (OGWR).

Brief reports on monitoring performed by CAMEL at specific locations can also be accessed using CAT.

As regulatory requirements and air monitoring capabilities are enhanced and allow for improved reporting, the Commission will work to broaden the scope of CAT's ability to provide public facing air monitoring information.

ROAMING AIR MONITOR

The Commission has a second mobile unit containing specialized ambient monitoring equipment. Designed as a quick response unit for addressing emergencies and urgent concerns, the Roaming Air Monitor (RAM) van became fully operational in October 2015.

As a quick response unit, RAM is usually stationed at the Commission's Fort St. John office for instantaneous deployment. When RAM is not being used for quick response, it can be utilized to conduct short-term air monitoring.

RAM is able to produce a trace of air monitoring results as it is in motion. Thus, it is able to respond to situations where there are air quality concerns and provide perspective for where air contaminants originate.

As RAM is newer than CAMEL, the Commission is working to capture, validate and share its air monitoring data with the public.

RAM monitors for:

Hydrogen sulphide
Sulphur dioxide
Total hydrocarbons
Particulates



RAM has the ability to extract samples for further detailed laboratory analysis.

PORTABLE MONITORS

Where the public has raised concerns regarding air quality resulting from oil and gas activities, the Commission can respond with AreaRAE Pro Plus transportable air monitors. These monitors are the size of a small suitcase, and can measure:

- Hydrogen sulphide (H₂S).
- Sulphur dioxide (SO₂).
- A subset of hydrocarbons known as volatile organic compounds (VOCs).
- Meteorology such as wind speed and direction and relative humidity.

AreaRAE monitors are not able to detect levels as low as CAMEL and RAM. They are, however, an effective complement to the Commission's CAMEL and RAM units.

FLARING

Air quality monitoring has been conducted in response to public concerns surrounding flaring - a procedure associated with a range of oil and gas development and operational activities (see 'Flaring Sources' on this page).

Flaring is the burning of natural gas that cannot be processed or sold. It is a necessity for certain aspects of oil and gas production, and is primarily conducted to

ensure the safe operation of facilities. All flaring in B.C. must be conducted in accordance with Commission regulations and government air quality objectives and standards.

'Flaring' refers to the combustion of gas in a flare stack or incinerator unless otherwise specified. Gas combusted in an incinerator is considered to be 'flared'.

The [Flaring and Venting Reduction Guideline](#) informs industry of best practices for flaring, incinerating and venting of natural gas at well sites, facilities and pipelines regulated under OGAA. It also provides guidance on procedural information related to flare approval requests, dispersion modelling, and the measurement and reporting of flared, incinerated and vented gas. The Commission is open to innovative ideas, solutions, practices and technologies that meet the goals set out in the guideline.

FLARING SOURCES

PRODUCTION

Underbalanced Drilling is used to drill natural gas wells wherein wellbore pressure is kept lower than fluid pressure in the formation being drilled. Underbalanced drilling is not practiced in B.C. at this time.

Well Cleanup and Testing is conducted once a well has completed drilling and prior to placing it into production. Well cleanup flaring ensures sufficient contaminants have been removed from the gas stream to allow the well to produce safely, and well testing involves flowing a well so pressure and flow data can be collected.

Solution Gas flaring occurs at oil producing wells and batteries when it is uneconomic to conserve gas. Operators are required to conserve solution gas that meets an economic threshold as defined in the Flaring Venting and Reduction Guideline.

Production Facilities gather oil and gas for pipeline transport prior to processing. Flaring occurs for safety reasons and during process upsets. The Commission works with operators on production facility designs to ensure all reasonable options are considered to reduce or eliminate flaring.

PROCESSING

Gas processing plants remove impurities from extracted gas. Flaring occurs primarily for safety reasons. Reduction efforts focus on conservation as a priority during the application review stage.

FLARING DATA

Over time flaring has generally decreased (Figure 9). In 2010, the BC Energy Plan target of eliminating all routine associated gas flaring was achieved.

Over the period of 2014 to 2018, there was some increased flaring from facilities due to increases in production. The increase in flaring for 2018 is likely due to the startup of large plants that commenced operation toward the end of 2017.

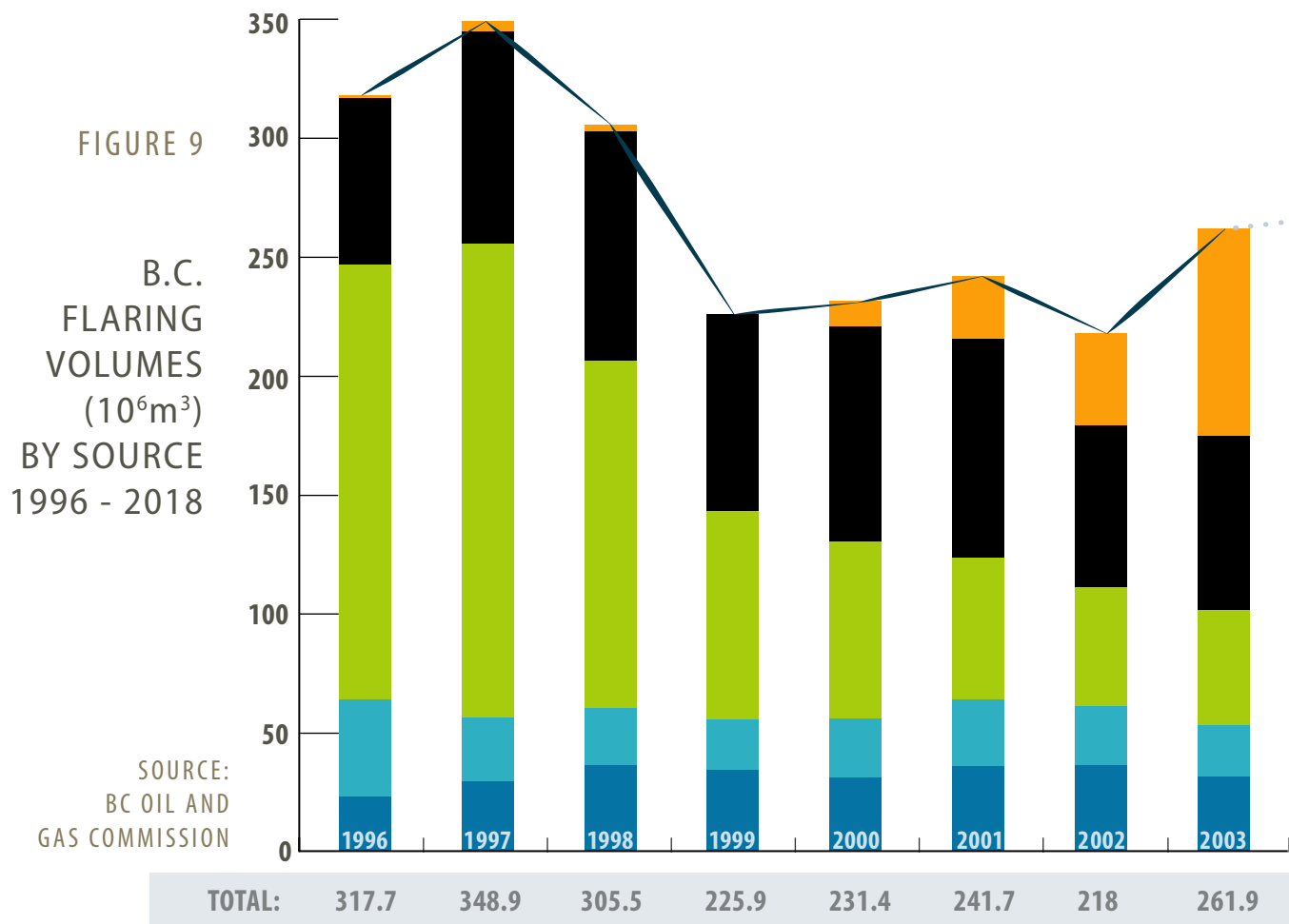
There has been continued decreases in well test flaring due to increased gas conservation and a reduction in exploratory wells. Over time, there has also been a continued downward trend in the quantity of gas flared per unit of production.

MOVING FORWARD

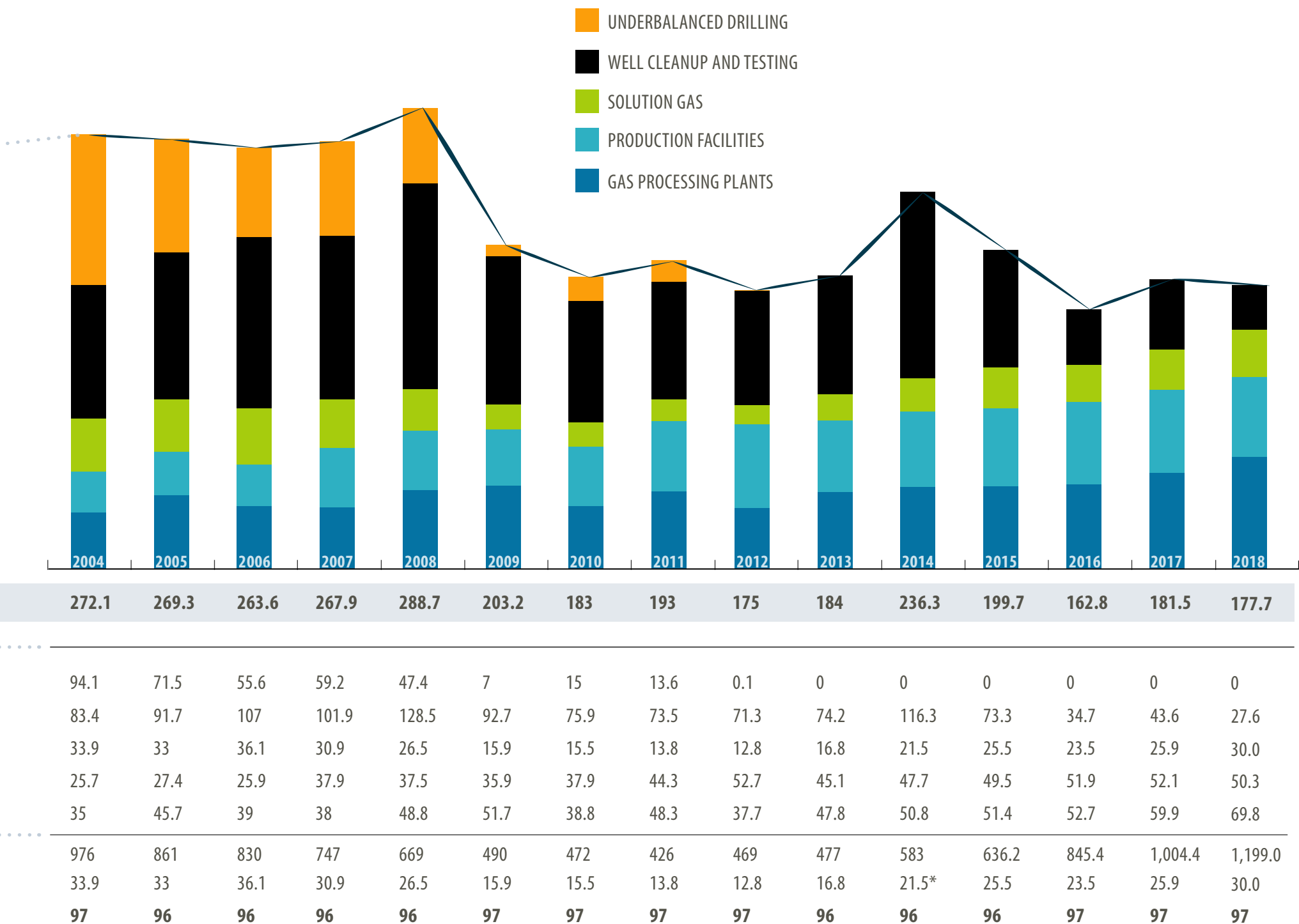
The Commission is dedicated to taking action to reduce greenhouse gas releases and to continue to manage air contaminant releases from oil and gas operations.

The Commission will also continue to administer permits and regulatory requirements for limiting the release of air contaminants.

The Commission plans to continue releasing Air Summaries as data is gathered and analyzed.



Breakdown by Source:								
UNDERBALANCED DRILLING	1.4	4.5	3.1	0.1	11	26.4	38.9	87.3
WELL CLEANUP AND TESTING	69.8	89	96	82.7	90	91.7	67.6	72.9
SOLUTION GAS	182.9	199.5	146.4	88.1	75	59.8	50.3	48.9
PRODUCTION FACILITIES	40.9	26.9	24.3	21.3	24.8	28.4	25.3	21.8
GAS PROCESSING PLANTS	22.7	29	35.7	33.7	30.6	35.4	35.7	31
SOLUTION GAS PRODUCTION	1,424	1,681	1,700	1,629	1,655	1,659	1,368	1,137
SOLUTION GAS FLARED	182.9	199.5	146.4	88.1	75	59.8	50.3	48.9
PERCENTAGE CONSERVED	87	88	91	95	95	96	96	96



*Retroactive correction



Questions regarding this Air Summary may be directed to OGC.Communications@bcogc.ca