



MAKING SENSE OF

METHANE



NATURAL GAS WORLD



Overview of Methane Regulation: Federally and in Alberta

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OSLER

Overview

- Methane has a global warming potential roughly 25 times greater than carbon dioxide (CO₂)
- In November 2015, the Alberta government announced its Climate Leadership Plan, including a plan to reduce methane emissions from oil and gas operations by 45% from 2014 levels by 2025
- In March 2016, the Federal government and US government jointly committed to reduce methane emissions from the oil and gas sector by 40 to 45% from 2012 levels by 2025
- Federal government open to equivalency agreements with provinces

Status of Federal Regulations

- *Regulations Respecting Reduction in the Release of Methane and Certain Volatile Organic Compounds (Upstream Oil and Gas Sector)* under the *Canadian Environmental Protection Act* were made law on April 26, 2018
 - The regulations are not yet in force
 - The majority will come into force on January 1, 2020, with select provisions coming into force on January 1, 2023
- *Regulations Respecting Reduction in the Release of Volatile Organic Compounds (Petroleum Sector)* still in draft form

Key Targets of Federal Regulations

All upstream oil and gas facilities

- Compressors
 - Must measure flow rate of methane from vents starting on January 1, 2020
 - Must be within maximum flow rate (depending on compressor type and age) starting January 1, 2023
- Well Completions Involving Hydraulic Fracturing
 - Cannot vent any hydrocarbon gas during flowback
 - Does not apply in Alberta or BC due to provincial measures

Key Targets of Federal Regulations

Large emitting facilities (>60,000 m³/year of gas)

- Fugitive Equipment Leaks
 - Must implement leak detection and repair program (LDAR) as of January 1, 2020 , with provision for “alternative” LDAR
 - Requires at least 3 inspections per year
- Venting Limits
 - Must limit vented volumes of methane to 15,000 standard m³ per year as of January 1, 2023 (not including blowdowns, start-ups, and other activities, as well as certain types of facilities)
- Pneumatic Controllers and Pumps
 - Limits on using pneumatic controllers and pumps using hydrocarbon gas (other than propane) as of January 1, 2023

Compliance and Enforcement

- *Environmental Enforcement Act* sets out compliance and enforcement requirements
- Broad powers for enforcement officers to issue warnings, directions, environmental protection compliance orders, injunctions and prosecutions
- Fines of up to \$6 million per offence for large companies

Status of Alberta Regulations

- Implementation of the new oil and gas methane standards will be led by the Alberta Energy Regulator
- *Directive 060: Upstream Petroleum Industry Flaring, Incinerating, and Venting* and *Directive 017: Measurement Requirements for Oil and Gas Operations* are being revised to meet provincial targets
 - Draft forms of these documents were released in April 2018
- Not clear whether these requirements will meet the “equivalency” standard

Highlights

- Directive 060:
 - Overall vented gas limit for routine and non-routine venting ($15 \times 10^3 \text{ m}^3/\text{month}$)
 - Becomes effective when the directive is finalized, but with exemptions for pneumatic devices, compressor seals and glycol dehydrators until 2023
 - Equipment-specific limits for vented gas for pneumatic devices, compressor seals and glycol dehydrators, depending on whether existing or new (after January 1, 2022)
 - Every operator must prepare Methane Reduction Retrofit Compliance Plan (effective June 1, 2019)
 - Annual methane reporting required once directive is finalized

Highlights

- Directive 060 (cont'd):
 - Every operator must prepare Fugitive Emissions Management Program, effective January 1, 2020
 - Every operator must conduct annual fugitive emissions surveys or screenings (depending on type of facility), effective January 1, 2020
- Directive 017:
 - Sets out when continuous metering or periodic testing is required, along with acceptable methodologies
 - The approach to estimating methane emissions is to be set out in a forthcoming AER manual

Thank You



Natural Gas World

Gerald Palanca, Manager, Climate Policy Assurance

Oct 10, 2018

Government
of Alberta's
Commitment

- November 2015: Premier Notley announced the Alberta Climate Leadership Plan
- The plan included a commitment to reduce methane emissions from oil and gas operations by 45% by 2025 from 2014 levels



- AER responsibility:
 - Design and implement requirements to achieve the policy objective
- Climate Policy Assurance Team was formed in 2015
 - Design and implement measurement and reporting regulations
 - Methane: quantification and performance reporting
 - Enable carbon levy

AER's Focus Areas
for Methane
Reduction

- Regulations for new and existing facilities
 - Fugitive Emissions
 - Venting
 - Pneumatics
 - Compressors
 - Dehydrators
- Regulations for measurement, monitoring, and reporting
 - Draft Directive 060 (moderate)
 - Draft Directive 017 (minor)
 - MMR Manual
 - Fugitive Emissions Manual
- Methane emission reporting system

Methane
Measurement
and Reporting
Requirements

- Annual calendar year reporting by operator by Petrinex facility ID
- Reporting emission mass and volume by source type
- Additional reporting of
 - Pneumatic counts
 - Inventories for compressors and dehydrators
 - Fugitive emissions survey and screening dates and leak counts
- Record keeping for four years

Example
Measurement
and Reporting
Regulatory Design

- Requirements standardize **direct measurement and estimation** applications.
- Requirements for **record keeping** provide for audit activities to support compliance assurance oversight.
- Requirements for **annual reporting by facility to source-level granularity** align with emission reduction requirements by source and provide public transparency of achievement of emissions reductions under policy.
- Requirements for **equipment-level inventory reporting** improve understanding of population of emitting devices.

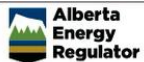
Integrated
Decision
Approach

» Changing the way we make decisions

- Transparency and information sharing
- Integrated application
- Risk-informed approach across the lifecycle
- Efficiency

» Built on the concept of:

One application,
One review,
One decision



Reporting Facility: ABBT0067097

Emissions Reporting

Methane Emissions

> Dehydrators

Tanks

Routine Venting

Compressors

Fugitives

Validations/Rules

Overview

Emissions Reporting - Dehydrators

Validate

Dehydrators

Mass (Tonnes of Methane) 13

Volume (1000 Cubic Meters - Whole Gas) 125

Add Row

Remove Selected

Individual Dehy Mass

☐	Dehy No.	Mass of Methane (Tonnes)	Operating Hours	Installation Date	Primary Control
☐	DH1	2.000	4,567	9/6/2017	Flare
☐	DH2	12.000	1,291	9/5/2017	Incinerator

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Calculate

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Save

Next >

Reporting Facility Search

Facility ID

Facility Name

Authorization ID

Authorization Type

--- Select ---

UWI

LLD

Search

Reset

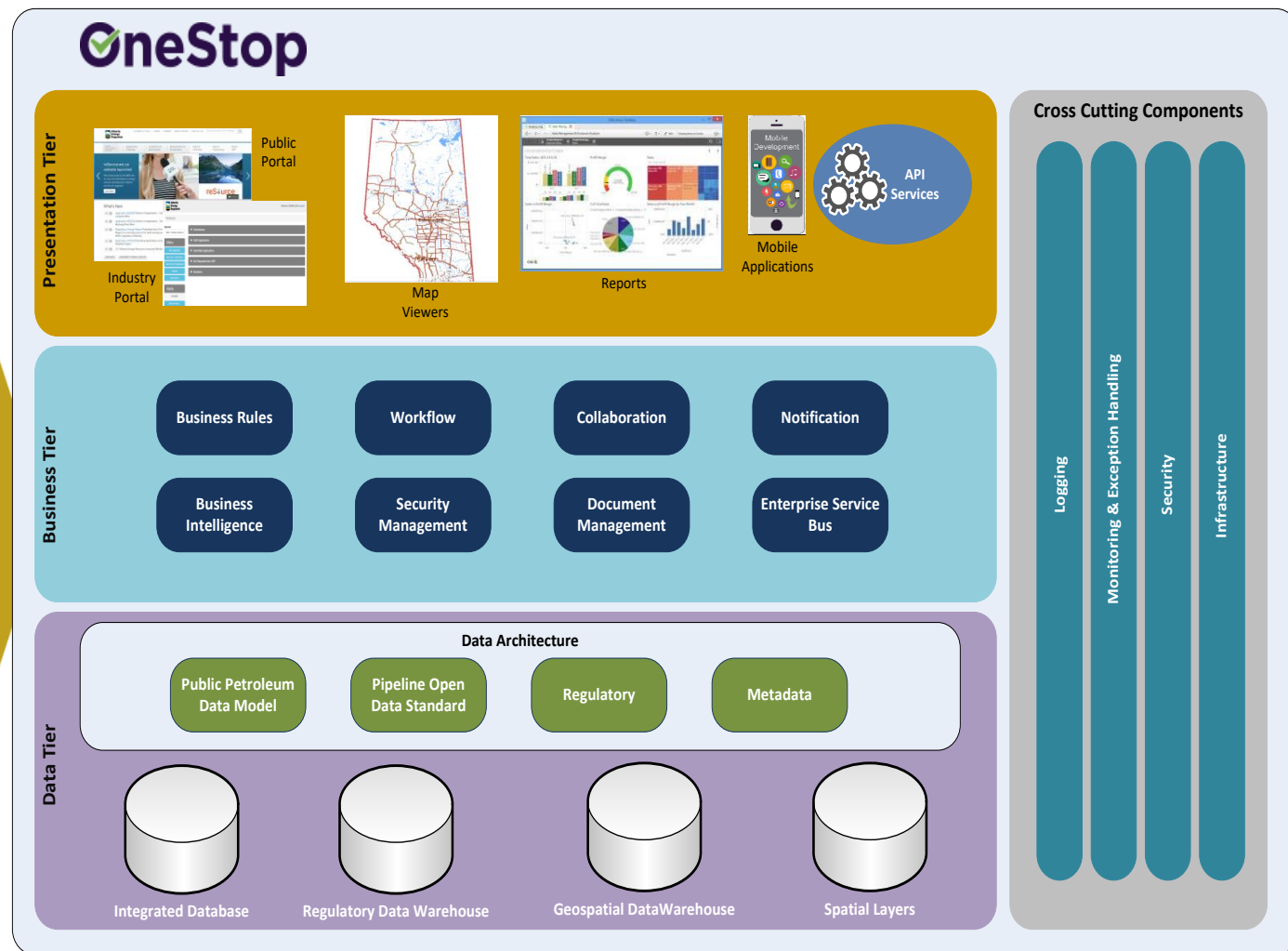
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☐	ABBT0092926	WWEC 1-33-54-27W4	BT	Gas Single
☐	ABBT0093407	12-3/02 Single Well Gas Battery	BT	Gas Single
☐	ABBT0095863	NEXEN DORIS 16-13-63-6W5 PAD	BT	Gas Group
☐	ABBT0096181	16-4-55-27W4 Sweet Oil Battery	BT	Crude Oil Single

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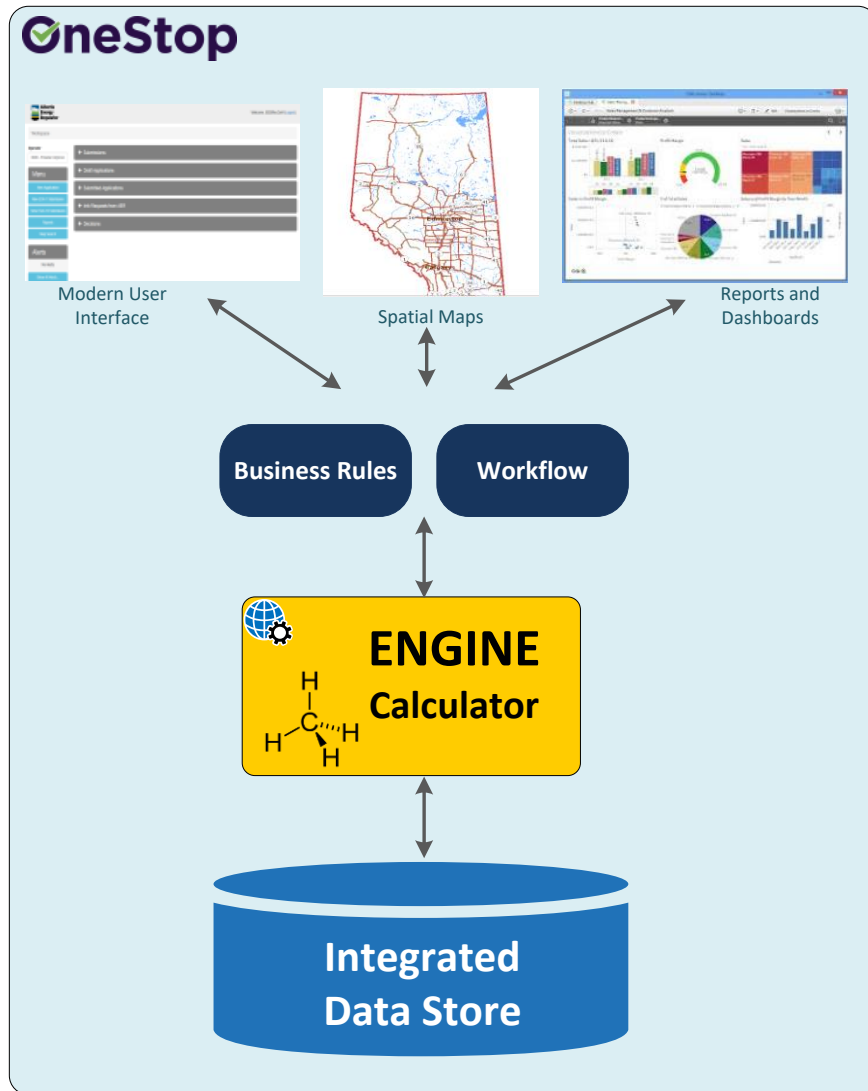
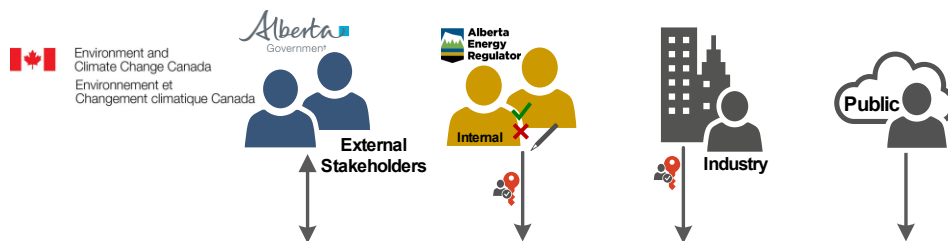
Select Reporting Facility

AER OneStop Technology Platform



AER

Methane Emissions Reporting Tool



Digital Data Submission (DDS) System
Corporate Data

Volumetric Data



Next Steps

- » Final Directive 060, 017 release
- » OneStop Go Live
 - D084: late September
 - D060 and D039: winter 2018
- » Training: 2019



Thank you





Methane Regulations: B.C. upstream operations perspective



October 10, 2018

CANADIAN ENERGY. GLOBAL REACH.

Progress & the Montney formation

Progress is one of the largest natural gas resource owners in the North Montney with over 900,000 acres (60 TCF).

- Annually, we are required to report GHG emissions from our operations.
- ECCC and draft BC methane regulations cover areas that Progress reports annually
 - Fugitive emissions
 - Pneumatic devices
 - Venting
 - Stationary combustion
- The regulations are focused on limiting venting and increased monitoring.



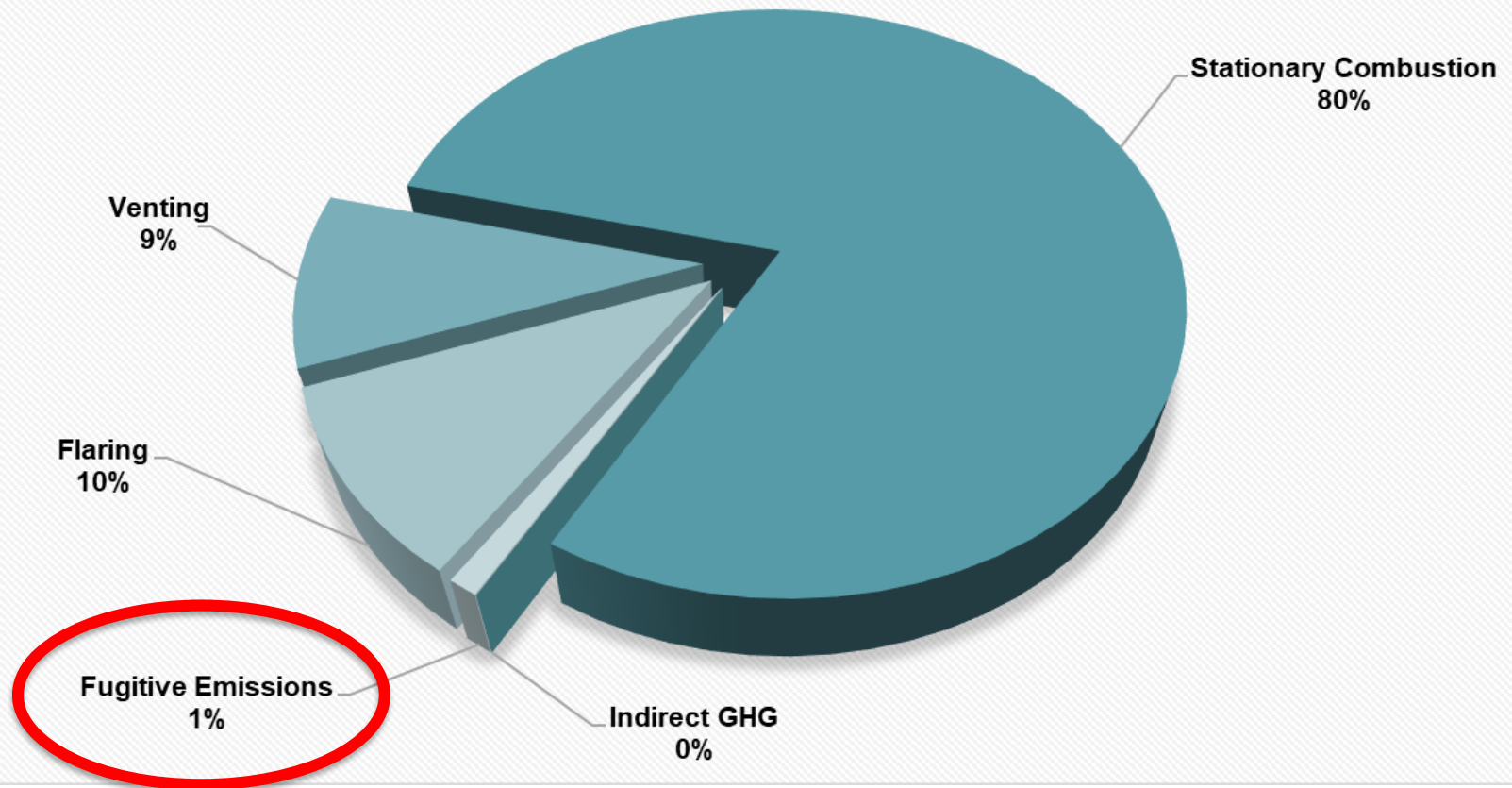
- Progress has a Fugitive Emissions Management Program (FEMP) in place for the following reasons:
 - Public and workplace safety
 - GHG management and reporting
 - Gas conservation
 - Regulatory compliance
 - *Flaring and Venting Reduction Guideline* in British Columbia –DPR 41(5)
 - CAPP Best Management Practice for Fugitive Emissions Management (2007)
 - CSA Standard Z620
 - Anticipated new or amended regulations
- Progress voluntarily took early action toward a 45% methane reduction target by enhancing its FEMP

2016 size and scope of FEMP

- Establishing a measured fugitive emissions baseline for all assets
 - Corporate focus on methane emissions management
 - All operating facilities down to the single well level were surveyed, and quantified for accuracy
- The inspection program ran from May until November

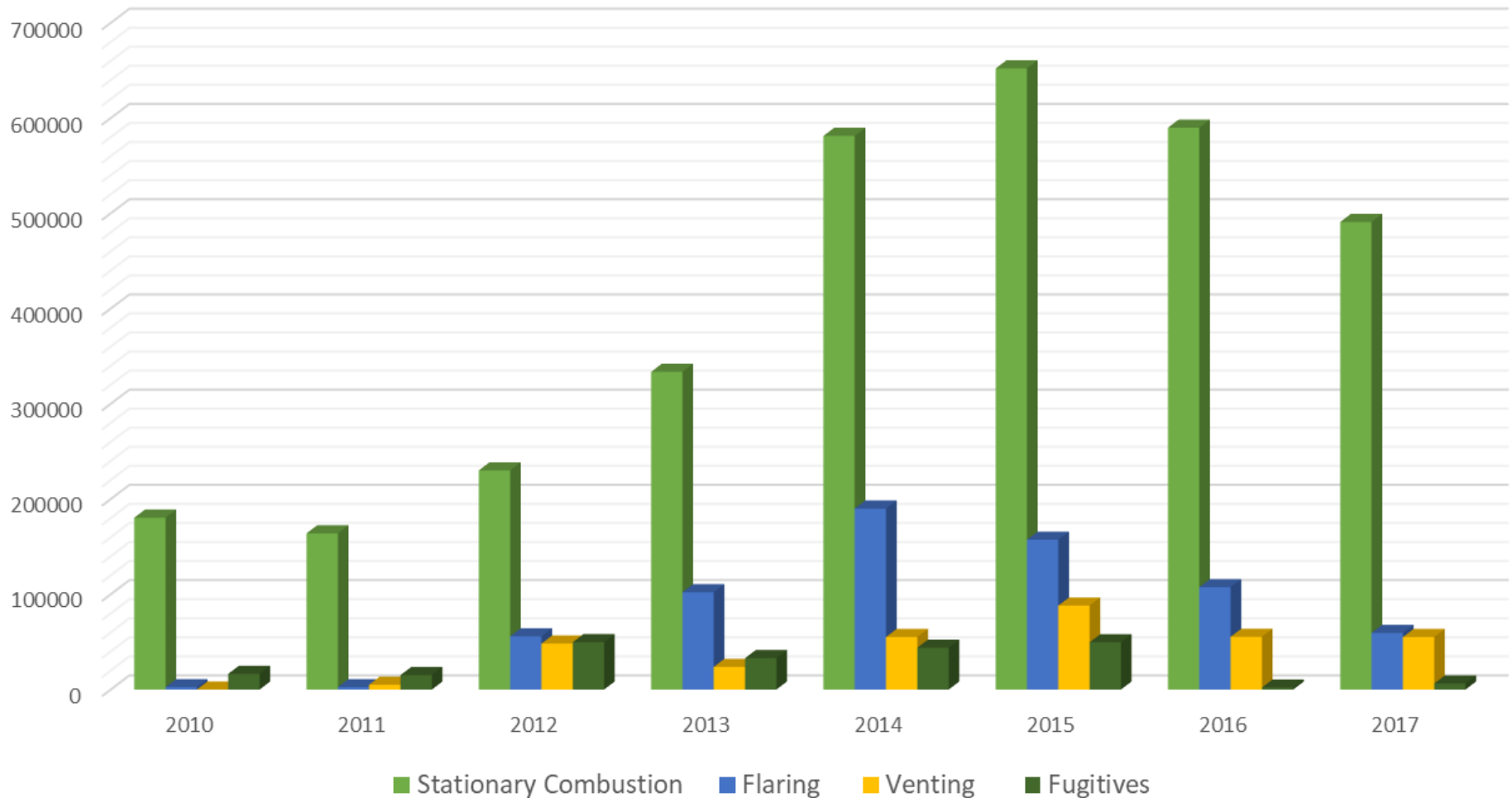


2017 Progress Energy Emissions Source Categories Expressed as Percentage



2010-2017 emissions profiles (tonnes CO₂_E)

2010-2017 Emissions Categories Trending

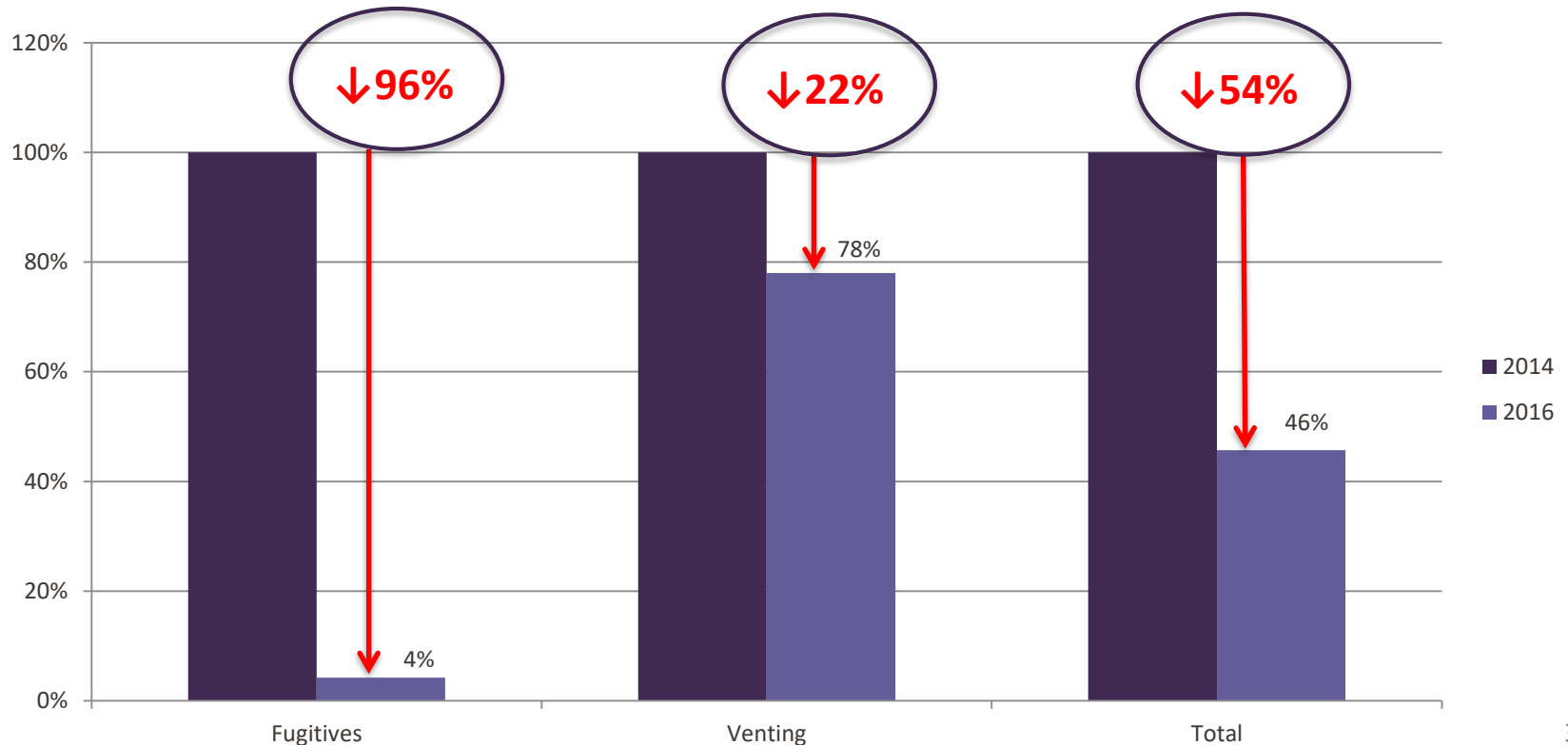


B.C. methane reduction target

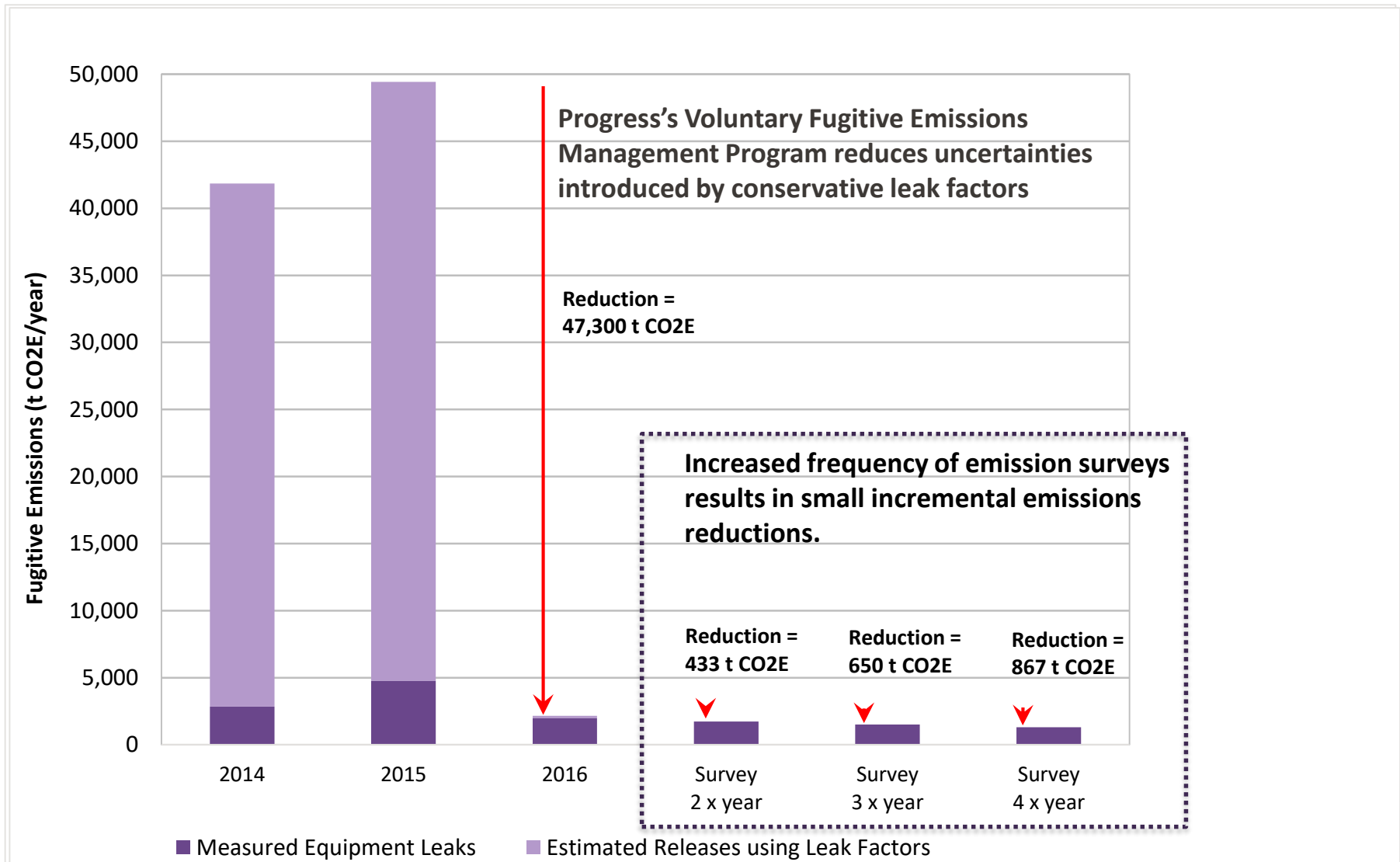
Industry target:

Reduce fugitive and venting emissions from infrastructure built before January 1, 2015 by 45% before 2025.

➤ Progress has reduced its emissions by **54%** by 2016



Progress verified & projected fugitive emissions



Current emission reductions activities:



- Diverting compressor rod packing venting with “Slipstream” technology (CIRCP)
- Replacing gas driven pneumatic controllers with low and no bleed models (CIRCP)
- Evaluating new technology and running pilots (fuel cells - solar hybrid, digital solar technology, I2P)
- For over a decade, all new well sites are constructed incorporating solar powered pumps and controllers

Solar powered multi-well pad



- Survey frequency must be risk and performance based
 - LDAR costs are directly proportional to the number of surveys
 - Avoid penalizing operators with low baseline emissions by forcing a LDAR program with minimal benefits
 - Flexibility to choose mitigation technologies that are uniquely suited for operations, improving cost-effectiveness
- Regulations need to be technology-agnostic.
 - Real-time leak detection technology is available today
 - Unclear how alternate technology is approved in Canada
- Electrification Incentives

- Unclear what data and assumptions were used to determine LDAR frequency from ECCC
 - Quality of inspections is more important than frequency
- Collaboration among industry, government, and academia is key to closing information gaps.
 - The B.C. Natural Gas Atlas, Our isotope data was provided to help differentiate anthropogenic and natural methane emission sources
 - Developing and testing drone-mounted laser sensors to measure greenhouse gas emissions (collaboration with Geoscience B.C., UVic, NASA)
 - B.C. OGC Field Equipment Fugitive Emissions Data Survey
 - B.C. Oil & Gas Methane Emissions Research Collaborative Technical Advisory Committee
 - CAPP Air issues and Methane committees