School of Public Policy
UNIVERSITY OF CALGARY

BRIEFING PAPER
Volume 16:34
November 2023

Comment on 'Reducing Canada's landfill methane emissions: Proposed regulatory framework'

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Conflict of Interest Disclosure

Winter is Departmental Science Advisor at Environment and Climate Change Canada, but this was not written in that capacity. The opinions are those of the author and do not reflect the position of Environment and Climate Change Canada or the Government of Canada.

Note: This document differs slightly (minor editorial changes) from a comment submitted to Environment and Climate Change Canada in May 2023.

https://doi.org/10.55016/ojs/sppp.v16i1.77619

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EXECUTIVE SUMMARY

Regulating methane emissions is an important policy tool for Canada because it offers a way to effectively limit near-term global warming. Environment and Climate Change Canada published a document in April 2023, proposing a regulatory framework for reducing landfill methane emissions. New regulations will set a much-needed standard for policy consistency across the provinces and territories, and this paper provides feedback on the framework.

In 2021, Canada's waste sector methane emissions were 14 per cent of total emissions, representing an 11 per cent increase since 1990. Waste sector emissions include municipal solid waste landfills, industrial wood waste landfills, solid waste biological treatment and incineration, and wastewater treatment and discharge, among others. Extending regulations to landfill methane will fill an important gap in Canadian emissions policy. With a federal framework in place, up to 90 per cent of municipal solid waste landfills and 19 per cent of all methane emissions would be regulated, compared to the current scenario in which 58 per cent of landfill methane is directly vented to the air. Currently, most provinces require only capture for use over flaring, or flaring over venting and these emissions are only indirectly regulated via offset markets.

Potential improvements include:

- Expanding the regulation's applicability to all landfills;
- Building benefit-cost analysis relying on social damages from emissions into threshold determination;
- Providing guidance on best-in-class options for compliance and increasing the stringency of the performance standard;
- Prioritizing capture for use over capture and destruction, and creating incentives for the same;
- Allowing for offset credit generation where facilities exceed the performance requirement;
- Ensuring provincial or territorial equivalency is granted only in the case of more stringent regulation; and
- Addressing the current inconsistency in regulation of industrial landfills.

Environment and Climate Change Canada's proposed framework is a crucial first step in eliminating a nationwide gap in emissions policy, but there is still much work to do to fine-tune the regulatory design.

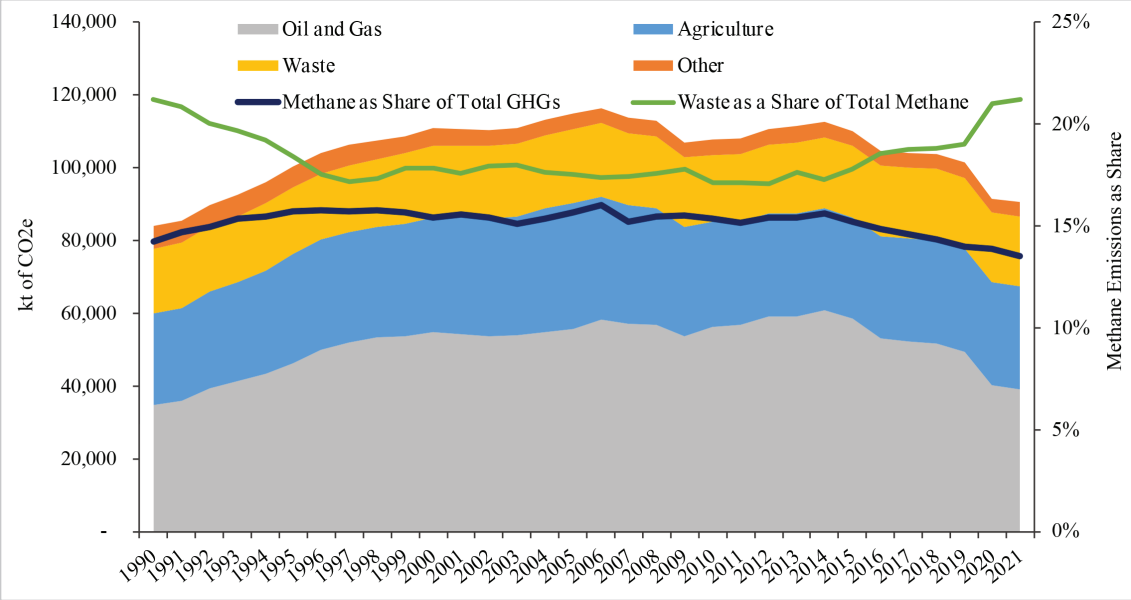
INTRODUCTION

This paper provides comments in response to the call for written feedback on the document "Reducing Canada's Landfill Methane Emissions: Proposed Regulatory Framework," published by Environment and Climate Change Canada in April 2023 (Environment and Climate Change Canada 2023c). Regulating methane emissions is an effective means to limit near-term global warming (IPCC 2021) and an important tool for emissions mitigation in Canada. Extending regulations to landfill methane will fill an important gap in Canadian emissions policy (Dobson, Goodday and Winter 2023). In what follows, we discuss the importance of waste sector methane as a supporting rationale for the proposed regulation, how the proposed regulation addresses existing policy gaps, and design elements to improve the proposed regulatory framework. Federal regulation of methane emissions — from landfills, other sources of waste and other economic sectors — has an important role in creating a minimum standard that is consistent across provinces and territories and supports policy harmonization.

As context, in 2021 Canada's waste-sector methane emissions were 21 Mt of CO_2e (0.96 Mt CH_4), 14 per cent of total emissions and an 11 per cent increase relative to 1990 (Environment and Climate Change Canada 2023b). Methane emissions as a share of total emissions remained relatively constant between 1990 and 2021 (Figure 1). However, the composition of methane emissions has changed over time. Waste emissions have become a larger proportion over the last decade — reaching a high of 21.2 per cent in 2021, the same share as in 1990 — due to plateauing agricultural production and emissions, and policy interventions to decrease oil and gas emissions (Environment and Climate Change Canada 2023b).

Sources of waste sector emissions consist of solid waste disposal (municipal solid waste landfills (17,238 kt CO_2e in 2021) and industrial wood waste landfills (696 kt CO_2e)), wastewater treatment and discharge (1,088 kt CO_2e), biological treatment of solid waste (178 kt CO_2e), waste incineration and open burning (0.8 kt CO_2e) and incomplete combustion of landfill gas used for heat or energy (2.8 kt CO_2e). Most waste sector methane emissions come from municipal solid waste (MSW) landfills (Figure 2), with some variation across provinces. If the federal regulations covered all MSW landfills in Canada, 90 per cent of waste methane emissions and 19 per cent of total methane emissions would be regulated.

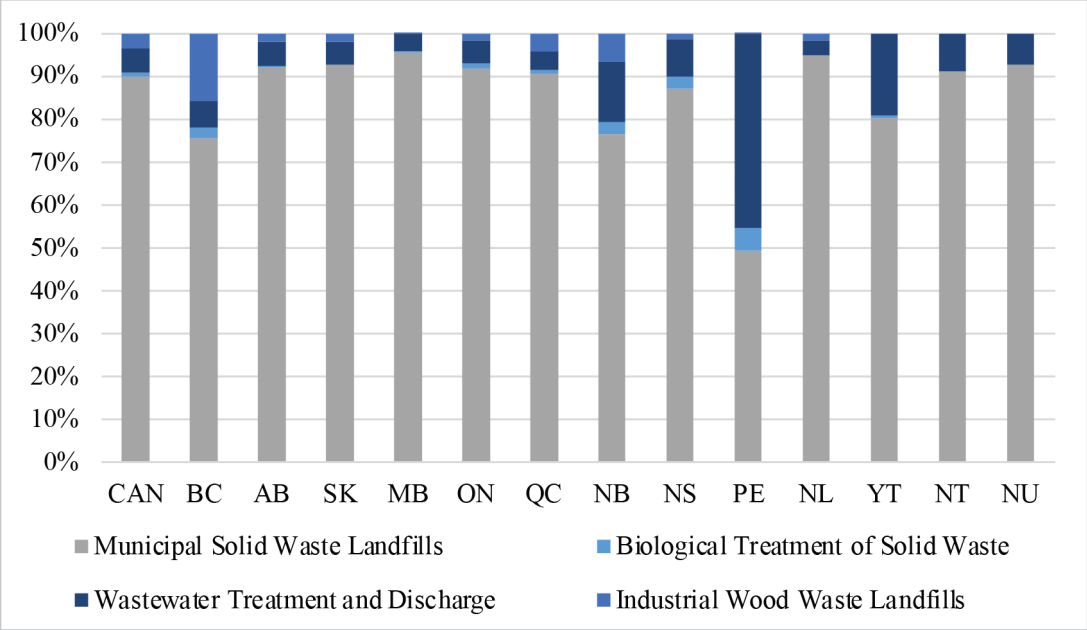
Figure 1: Historical Methane Emissions by Source, 1990–2021



Note: "Other" includes methane emissions from energy (stationary combustion and transport) and industrial process and product use. Conversion of CH_4 to CO_2e uses a GWP of 25.

Source: Author's calculations from Environment and Climate Change Canada (2023a).

Figure 2: 2021 Waste Methane Emissions Shares by Emissions Source and Jurisdiction



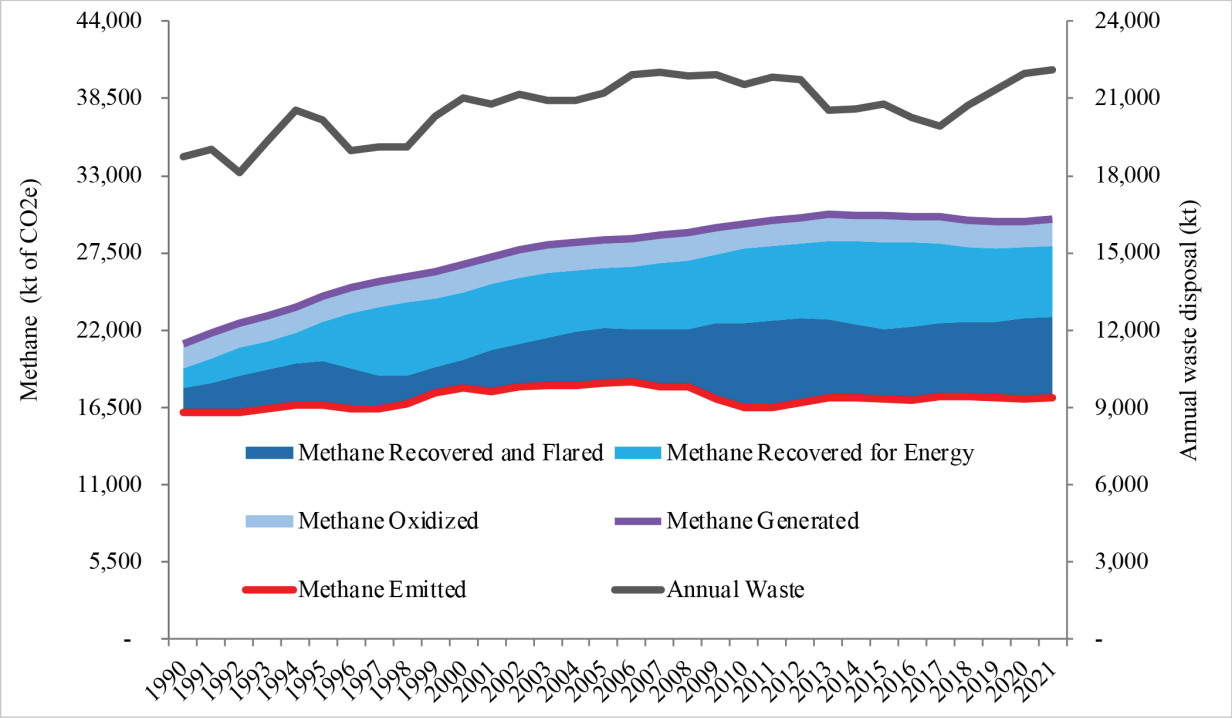
Note: Not included in the figure are methane emissions from incomplete combustion of landfill gas used for heat or energy (2.8 kt CH_4/0.01 per cent of waste methane emissions) and waste incineration and open burning (1 kt CO_2e/0.004 per cent). Estimates for the former are only available nationally.

Source: Reproduction of Figure 15 in Dobson, Goodday and Winter (2023). Updated using Environment and Climate Change Canada (2023a).

Importantly, methane emissions from landfills are a function of the volume of waste in place and are unavoidable. While total methane generation has increased over time, methane emissions from MSW landfills remaining relatively constant between 1990 and 2021 is entirely due to recovery of methane for use or flaring captured methane (Figure 3). However, the volumes captured for use and flared have remained steady at around 11,000 kt CO_2e (440 kt CH_4), and even decreased in 2021 to 429 kt CH_4. Fifty-eight per cent of landfill methane emissions remain uncontrolled and directly vent to the atmosphere. This suggests the existing policy and regulatory environment is insufficient to incent additional actions. A caveat to this comment is that the Government of Canada only recently enacted the Clean Fuel Regulations, which provides an alternative market for methane capture and use via offset credits. This instrument may incent additional methane recovery independent of the proposed landfill emission regulations.

However, the Clean Fuel Regulations only incent voluntary uptake, and so can be expected to have limited effectiveness in substantially reducing methane emissions from landfills. Similarly, offset markets in B.C., Alberta, Quebec and federally include protocols for landfill gas capture and combustion, though uptake is low (Dobson, Goodday and Winter 2023). As a regulatory instrument requiring compliance by covered facilities, the proposed landfill regulation will require methane control and ensure capture and flare or capture and use.

Figure 3: Methane Generation from Municipal Solid Waste Landfills, 1990–2021



Note: Methane emitted is equal to methane generated less the amounts of generated methane that are oxidized, recovered and flared, and recovered for energy (used as biogas for heat or electricity generation).

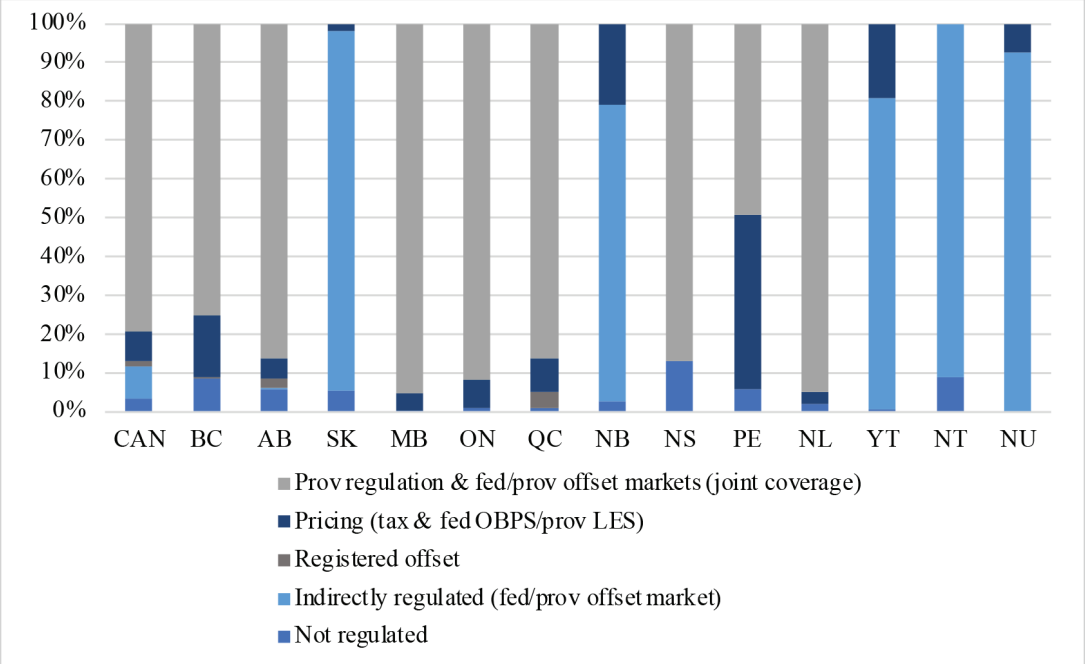
Source: Reproduction of Figure 16 in Dobson, Goodday and Winter (2023). Updated using Environment and Climate Change Canada (2023a).

We now turn to a detailed discussion of the regulatory and policy environment, and how the proposed regulation addresses current gaps and where gaps remain.

CURRENT STATE OF WASTE REGULATION IN CANADA

Dobson, Goodday and Winter (2023) identify numerous gaps in policy treatment of methane from waste; the discussion here draws heavily on their analysis. Though methane emissions from waste face a mix of direct and indirect regulation, including pricing, there is large variation in the presence and stringency of regulation (Table 1; Figure 4). Eighty-one per cent of Canada's waste methane emissions are regulated via provincial safety regulation of MSW landfill gas by B.C., Alberta, Manitoba, Ontario, Quebec, Nova Scotia and Newfoundland and Labrador. This coverage increases slightly to 82 per cent when accounting for Manitoba's and Quebec's inclusion of industrial landfills in those safety regulations. The regulations described in Table 1 do not directly target methane mitigation, a key flaw in existing regulatory treatment. Moreover, most provincial systems only require capture, with "no preferential treatment of capture for use over flaring, or flaring over venting" (Dobson, Goodday and Winter 2023). The proposed landfill methane emissions regulation would extend coverage to Saskatchewan, New Brunswick and the territories — currently without direct MSW landfill regulations — regulating up to eight per cent of waste emissions. These emissions are currently only indirectly regulated through offset markets. If the landfill regulations came into force and all point sources were subject to the regulation, 90 per cent of Canada's waste methane emissions would be subject to a mitigation protocol. The proposal closes a gap by ensuring minimum standards for all MSW landfills covered by the regulation.

Figure 4: Approximate Policy Coverage of Waste Methane Emissions by Jurisdiction



Note: The emissions shares are a best-case scenario in the absence of data on emissions by source cross-tabulated with the policy gaps in Table 1. The "not-regulated" category is an underestimate of indeterminate size. "Indirectly regulated" includes emissions covered by either provincial or federal offset protocols. Excludes stationary combustion emissions in pulp and paper. All B.C. (one) and Quebec (16) registered offset projects are capture and flare, not capture and use.

Source: Reproduction of Figure 19 in Dobson, Goodday and Winter (2023). Updated using Environment and Climate Change Canada (2023a).

Federal, provincial and territorial large-emitter systems also affect the waste sector, via inclusion of industrial landfills and wastewater treatment in facility definition. However, facility definition and regulated activities differ substantially across provinces, meaning the majority of waste methane emissions from large emitters are unpriced (Dobson, Goodday and Winter 2023).

Importantly, the presence of regulation is not a proxy for stringency. The threshold-based approach to landfill regulation using weight emplaced means the only incentive to capture landfill gas for landfills under the threshold is via accessing offset markets. However, only B.C., Alberta and Quebec have offset markets, and the federal offset protocol excludes landfills subject to provincial regulation, regardless of the stringency of the regulations.

Table 1: Provincial and Territorial Waste Methane Regulation, Exemptions and Interactions

		Direct Regulation		Large-Emitter Treatment	
	Policies	**Characteristics**	**Exemptions and Gaps**	**Characteristics**	**Exemptions and Gaps**
BC	Provincial carbon tax, large-emitter system, landfill regulation.	• Landfills with 100,000 t municipal solid waste in place or receiving 10,000 tonnes municipal solid waste per year must assess methane emissions. • If assessed methane generation exceeds 1 kt CH_4 per year, landfills must implement management practices. • Management practices include collection, flaring, cover use. • Requires captured gas to be flared unless alternative achieves equivalent emission reductions.	• Does not require capture for use as an alternative to flaring. • Only covers municipal solid waste landfills. • Excludes landfills below thresholds. • Threshold tied to waste in place rather than emissions. • No requirement to monitor or assess landfill gas until weight threshold reached.	• Performance standard for pulp and paper and wood products facilities with annual emissions above 10,000 t CO_2e. • Includes all sources of methane in facility total GHG quantification.	• Facilities below threshold. • Biomethane exempt from carbon tax. • Large emitter priced emissions are only from incomplete combustion. • Direct rebates of incremental carbon tax above C$30/tonne for emissions intensity below standard. Eligible facility emissions include combustion but exclude CO_2 from biomass. • Excludes landfills and wastewater treatment. • Landfill emissions indirectly priced through offset market.

	Policies	Direct Regulation		Large-Emitter Treatment	
		Characteristics	Exemptions and Gaps	Characteristics	Exemptions and Gaps
AB	Federal fuel charge, provincial large-emitter system and landfill regulation.	• Requires a plan for landfill gas management. • Plan may include detection, collection, flaring, venting or recovery for use.	• Does not require capture for use as an alternative to flaring. • Does not require capture or flaring as an alternative to venting. • No requirement to monitor.	• Output-based pricing for pulp and paper and wood products facilities, landfills, and wastewater treatment facilities with annual emissions above 100,000 t CO_2e. • Opt-in above 2,000 t CO_2e. • Includes all sources of methane in facility total GHG quantification. • Eligible offset protocols include landfills and waste-to-energy.	• Facilities below threshold. • Biomethane exempt from federal fuel charge. • Eligible facility emissions include combustion but exclude CO_2 from biomass.
SK	Federal fuel charge, provincial large-emitter system with federal top-up (transition to a full provincial system in 2023).	• No direct regulation of waste sector emissions other than requiring landfill cover.		• Output-based pricing facilities with annual emissions above 25,000 t CO_2e. • Voluntary participation for facilities above 10,000 t CO_2e. • Includes all sources of methane in facility total GHG quantification. • Includes industrial facility waste, landfill and wastewater emissions. • Includes pulp and paper industrial facilities.	• Facilities below threshold. • Biomethane exempt from federal fuel charge. • Eligible facility emissions include combustion, venting, flaring, waste, and wastewater but exclude CO_2 from biomass. • Excludes MSW landfills and non-industrial wastewater treatment facilities. • May exclude wastewater treatment independent of a regulated industrial facility.

	Policies	Direct Regulation		Large-Emitter Treatment	
		Characteristics	Exemptions and Gaps	Characteristics	Exemptions and Gaps
ON	Federal fuel charge, provincial large-emitter system and landfill regulation.	• Mandatory landfill gas collection for new or expanding sites with total waste disposal capacity greater than 1.5 million m^3 (2.5 million t waste). • Allows for landfills above threshold to show landfill gas generation is not of significant concern.	• Does not require capture for use as an alternative to flaring. • Excludes landfills below threshold. • Excludes non-MSW landfills. • Threshold tied to waste capacity rather than emissions. • No requirement to monitor or assess landfill gas until capacity threshold reached.	• Output-based pricing for facilities with annual emissions above 50,000 t CO_2e. • Voluntary participation for facilities above 10,000 t CO_2e. • Includes all sources of methane in facility total GHG quantification. • Priced emissions are all facility emissions. • Pulp and paper production and specific types of industrial wastewater processing are regulated industrial activities. • Includes landfills and wastewater treatment as regulated emissions sources in industrial facility definition.	• Facilities below threshold. • Excludes CO_2 from biomass combustion. • Excludes MSW landfills.

	Policies	Direct Regulation		Large-Emitter Treatment	
		Characteristics	Exemptions and Gaps	Characteristics	Exemptions and Gaps
QC	Provincial cap-and-trade system and landfill regulations.	• Mandatory landfill gas collection for landfills with a final cover or receiving 100,000 tonnes of waste per year. • Mandatory landfill gas collection within five years for landfills receiving less than 100,000 tonnes of waste per year. • Landfill gas collection system must have pumping device and methane must be combusted if not captured for landfills receiving 50,000 t or more waste per year or capacity above 1.5 million m^3. • Pulp and paper mills must have landfill gas capture systems in place upon closure.	• Does not require capture for use as an alternative to flaring. • Excludes landfills below threshold. • Threshold tied to waste capacity rather than emissions. • No requirement to monitor or assess landfill gas until capacity threshold reached.	• Cap and trade with free permit allocation for facilities with annual emissions above 25,000 t CO_2e and fuel distributors. • Voluntary participation for facilities above 10,000 t CO_2e. • Includes pulp and paper; emissions sources are production processes and wastewater treatment. • Includes wastewater emissions from other industrial sources. • Includes all sources of methane in facility total GHG quantification. • Priced emissions are all facility emissions. • Eligible offset protocols include landfills receiving less than 50,000 t of waste per year and have capacity below 1.5 million m^3.	• Facilities below thresholds. • Excludes CO_2 from biomass combustion. • Excludes methane from MSW and industrial landfills except through offset system.

	Policies	Direct Regulation		Large-Emitter Treatment	
		Characteristics	Exemptions and Gaps	Characteristics	Exemptions and Gaps
NB	Federal fuel charge and provincial large-emitter system.	• No direct regulation of the waste sector.		• Output-based pricing for facilities with annual emissions above 50,000 t CO_2e. • Voluntary participation for facilities above 10,000 t CO_2e. • Includes all sources of methane in facility total GHG quantification. • Pulp and paper and wood processing a regulated industrial activity. • Includes landfills and wastewater treatment as regulated emissions sources in industrial facility definition. • Priced emissions are all facility emissions.	• Facilities below thresholds. • Excludes CO_2 from biomass combustion. • Excludes waste fuel combustion used for heat or work. • Excludes landfills and wastewater treatment independent of a regulated industrial facility.
NS	Federal fuel charge, provincial output-based pricing system (transitioning from provincial cap and trade) and landfill regulations.	• Requires installation of venting or collection systems to control and manage landfill gas. • Requires new landfills to be assessed for waste-to-energy viability.	• Does not require capture for use as an alternative to flaring. • Does not require capture or flaring as an alternative to venting. • Excludes non-MSW landfills.	• Output-based pricing for facilities with annual emissions above 50,000 t CO_2e. • Voluntary participation for facilities above 10,000 t CO_2e. • Includes manufacturing and processing industrial facilities. **Cap and trade facility treatment** • Only includes methane from combustion in facility total GHG quantification. • Priced emissions are all facility emissions. • Includes pulp and paper as regulated industrial activity and CH_4 from biomass.	• Facilities below threshold. **Cap and trade facility treatment** • Free allocations based on historical combustion-only emissions. • Excludes CO_2 from biomass combustion. • Excludes wastewater treatment, non-combustion sources in waste and industrial process emissions. • Standards for specified GHG activities do not define emissions from pulp and paper landfills as an included source.

	Policies	Direct Regulation		Large-Emitter Treatment	
		Characteristics	Exemptions and Gaps	Characteristics	Exemptions and Gaps
NL	Federal fuel charge, provincial large-emitter system and landfill regulation.	• Requires installation of venting or collection systems to control and manage landfill gas. • Requires landfills to be assessed for waste-to-energy viability, and proponents to demonstrate venting or flaring more practical than conserving for use.	• Does not require capture for use as an alternative to flaring or venting. • Does not require flaring as an alternative to venting. • Excludes non-MSW landfills.	• Output-based pricing for facilities with annual emissions above 25,000 t CO_2e. • Voluntary participation for facilities above 15,000 t CO_2e. • Includes wastewater treatment for covered industrial activities.	• Facilities below thresholds. • Priced emissions are only from incomplete combustion. • Excludes all biomass emissions. • Excludes pulp and paper unless captured by general stationary combustion.
MB	Federal fuel charge and large-emitter system, provincial landfill regulation.	• Landfills with 750,000 t waste in place must assess mitigation opportunities and implement actions to mitigate via controlling, collecting, flaring or use.	• Does not require capture for use as an alternative to flaring. • Excludes landfills below threshold. • Threshold tied to waste in place rather than emissions. • No requirement to monitor or assess landfill gas until weight threshold reached.	• Output-based pricing for industrial facilities with annual emissions above 50,000 t CO_2e. • Includes all sources of methane in facility total GHG quantification. • Pulp and paper and wood processing a regulated industrial activity. • Includes landfills and wastewater treatment as regulated emissions sources in industrial facility definition.	• Facilities below threshold. • Excludes landfills and wastewater treatment independent of a regulated industrial facility.
PEI	Federal fuel charge and large-emitter system, provincial landfill regulations.	• Requires installation of venting or collection systems to control and manage landfill gas. • Requires new landfills to be assessed for waste-to-energy viability.	• Does not require capture for use as an alternative to flaring. • Does not require capture or flaring as an alternative to venting. • Excludes non-MSW landfills.		
YK	Federal fuel charge and large-emitter system.	• No direct regulation of the waste sector. • Class 1 landfills may require landfill gas monitoring.			
NU	Federal fuel charge and large-emitter system.	• No direct regulation of the waste sector. • Allows for open burning of solid waste.			
NT	Territorial carbon tax.	• No direct regulation of the waste sector. • Allows for open burning of paper products and untreated wood.		• Carbon tax with rebates, not applicable to waste sector.	• Tax only on fossil fuels. • Excludes landfills and wastewater management from rebates.

Note: Includes minor updates to reflect changes in emissions pricing. Nova Scotia transitioned from a cap-and-trade system to an output-based pricing system in January 2023 but the system is not yet fully implemented; specific treatment of facilities under the new system is currently unclear. Nova Scotia may retain facility treatment under the cap-and-trade system; these details are included in the table but may not apply.

Source: Reproduction of Table 2 in Dobson, Goodday and Winter (2023). Updates using Nova Scotia (1994, 2023).

CONSIDERATIONS FOR REGULATORY DESIGN

REGULATION APPLICABILITY CRITERIA

The proposed regulatory framework uses a threshold approach to determine which MSW landfills would be subject to the regulation, using weight of waste in place to determine applicability. This approach is problematic for two reasons.

First, any threshold-based approach means facilities below the threshold have little incentive to engage in methane emissions control activities, beyond that provided indirectly through offset protocols. The proposed threshold for open landfills of 100,000 tonnes solid waste-in-place or accepting more than 10,000 tonnes of waste per year may exclude some provinces and territories. For example, in 2016, the territories combined landfilled 91,553 tonnes of waste and Prince Edward Island had 29,045 tonnes of material landfilled (Environment and Climate Change Canada 2020). In 2020, the three territories had 18 active landfills and 96,294 tonnes landfilled (Statistics Canada 2023a, b); this averages to 1,660 tonnes per landfill. As the territories are currently without explicit landfill regulations (Table 1), this potential exclusion is particularly problematic. While there is a trade-off between regulatory burden and the benefits of regulation, choice of the threshold should explicitly weigh the expected cost of compliance and the cost of climate damages from uncontrolled methane.

Second, and more importantly, landfill methane emissions depend on the composition of waste, not simply the volume of waste emplaced (Environment and Climate Change Canada 2023b). Specifically, the quantity of organic material is the most important determinant of methane emissions, followed by landfill cover type (Dobson, Goodday and Winter 2023; Environment and Climate Change Canada 2023b). The composition of waste differs across provinces and territories (Environment and Climate Change Canada 2020), and a weight-based threshold risks excluding smaller landfills with high methane generation.

Opportunity for improvement: To avoid threshold effects and ensure full coverage, expand the regulation's applicability to all Canadian landfills, with exemptions from methane control requirements based on measured methane emissions.

METHANE GENERATION THRESHOLD

The proposed threshold for requiring landfills to operate a landfill gas collection and control system is 664 tonnes of CH_4 per year. The 2022 value for the social cost of methane is $2,203 (Environment and Climate Change Canada 2023d), implying a cost threshold of $1,462,792 (2021 Canadian dollars). An alternative way to think of this threshold is it values the annual forgone benefit of a more stringent regulation. While there is a trade-off between regulatory burden and the benefits of regulation, choice of the threshold for a landfill gas collection and control system should explicitly weigh the expected cost of compliance and the cost of climate damages from uncontrolled methane, and update each year based on the contemporaneous value of the social cost of CH_4.

Opportunity for improvement: Build benefit-cost analysis into threshold determination. Specifically, require the threshold for a landfill gas collection and control system to reflect the expected cost of compliance and the cost of climate damages, with damages measured by the social cost of methane.

REQUIREMENT TO CONTROL METHANE EMISSIONS

The proposed regulatory framework sets a performance standard for surface methane emissions limits, rather than prescribing a specific technology to mitigate emissions. Performance standards allow more flexibility in compliance and ensure emissions mitigation is the priority rather than compliance with technology type (Keohane and Olmstead 2016). However, there is an opportunity to provide guidance on best-in-class technology (e.g., landfill cover choice) to support compliance. Moreover, as capture technology or landfill cover options improve, the Government of Canada should consider increasing the performance standard's stringency.

Opportunity for improvement: Provide guidance on best-in-class options for compliance and consider increasing the performance standard's stringency.

REQUIREMENT FOR METHANE DESTRUCTION

The proposed regulatory framework requires recovered landfill gas to be combusted, processed for use or otherwise destroyed. Methane destruction is preferable to venting, and capture for use preferable to flaring or other destruction. The incentives for capture and use come in two forms: avoided carbon tax or fuel charge payments from combustion, and credits from offset systems. As the latter is voluntary, ensuring that the capture-and-use incentive remains requires ensuring landfill gas destruction is fully subject to emissions pricing at the prevailing rate. In addition, the regulatory framework could be revised to prioritize use over destruction, with an exemption based on a benefit-cost analysis that accounts for the climate damages of destruction over use, priced at the pertinent social cost of emissions.

Opportunity for improvement: Adjust the regulatory framework to prioritize capture for use over capture and destruction and create incentives for the same. This involves fully exposing landfill gas combustion to emissions pricing and requiring capture for use unless a facility is exempt based on a benefit-cost analysis that accounts for the climate damages of destruction.

INTERACTION WITH OFFSET PROTOCOLS

The MSW landfill methane protocol under the federal offset credit system excludes facilities with emissions reductions "as a result of federal, provincial or territorial regulations, municipal by-laws, or any other legally binding mandates such as operating permits," including "legal requirements to recover and destroy all or a portion of [landfill gas]" to reduce GHG emissions or control release due to safety or odour control (Environment and Climate Change Canada 2022). Presumably, the federal landfill methane regulations would also exclude covered facilities from this protocol. However, the presence of provincial or territorial regulation does not guarantee equivalent stringency or the presence of appropriate abatement actions (Table 1). To create additional abatement incentives, the federal offset protocol could be modified to allow for creation of offset credits where facilities exceed the performance standard for capture under the federal landfill methane regulations.

Opportunity for improvement: Allow for offset credit generation under the federal MSW landfill methane protocol where facilities exceed the performance requirement under the federal MSW landfill methane regulations.

PROVINCIAL AND TERRITORIAL EQUIVALENCY

Dobson, Goodday and Winter (2023) show significant gaps in waste emissions mitigation policy in Canada, and significant variation in treatment across provinces and territories (Table 1). The proposed regulatory framework and subsequent regulation will be important in closing gaps and ensuring consistency in methane mitigation from MSW landfills. Any determination of provincial or territorial regulatory equivalency should be based on whether the subnational regulations meet or exceed the federal regulations and their requirements or achieve a similar abatement level at lower cost.

Opportunity for improvement: Provincial and territorial equivalency should only be through meeting or exceeding the outcomes of federal MSW methane regulations.

LANDFILL DEFINITION

The landfills included in the proposed regulatory framework are MSW landfills. However, as Dobson, Goodday and Winter (2023) and Table 1 show, there is inconsistent treatment of industrial landfills across provinces and territories. Addressing this inconsistency is possible through the proposed MSW landfill methane regulation, by expanding the landfill definition to include industrial landfills not covered by provincial or territorial large emitter pricing systems. Alternatively, closing this gap may be better suited to the federal emissions pricing review and benchmarking process under the *Greenhouse Gas Pollution Pricing Act* and Output-Based Pricing System Regulation.

Opportunity for improvement: Address inconsistency in regulation of industrial landfills by expanding the proposed regulation to cover MSW and industrial landfills. Alternatively, explicitly address in the next interim review of emissions pricing systems.

CONCLUSION

Regulating methane emissions is an effective way to limit near-term global warming and an important policy tool for Canada. The proposed regulatory framework for reducing landfill methane emissions in Canada is a necessary and important step in filling a policy gap in current Canadian emissions policy. However, as described above, there remain opportunities for improvement in regulatory design.

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About the Author

Dr. Jennifer Winter is an Associate Professor in the Department of Economics and the School of Public Policy, University of Calgary, and the Departmental Science Advisor at Environment and Climate Change Canada. Her research evaluates climate policies, and examines the consequences and trade-offs of government regulation and policy on energy development. She has testified to the Senate of Canada and House of Commons on emissions pricing policies, and has advised governments in Canada in numerous capacities. Dr. Winter is actively engaged in increasing public understanding of energy and environmental policy issues, and she serves on several boards and advisory committees.

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EDITORIAL PRACTICES STATEMENT
This manuscript is a rapid contribution to the policy conversation that has been open-reviewed by at least one University of Calgary faculty member prior to publication.

ISSN
ISSN 2560-8312
The School of Public Policy Publications (Print)
ISSN 2560-8320
The School of Public Policy Publications (Online)

DATE OF ISSUE
November 2023

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