



RMA
RURAL MUNICIPALITIES
of ALBERTA



Nichols
APPLIED MANAGEMENT INC.
MANAGEMENT & ECONOMIC CONSULTANTS

IMPACT OF CARBON PRICING ON RURAL ALBERTANS – MUNICIPAL CORPORATIONS



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1.0 EXECUTIVE SUMMARY

1.1. Introduction

The Rural Municipalities of Alberta (RMA) have expressed concerns with respect to the federal carbon pricing policy, specifically as it relates to the potential disproportionate impacts of the policy on rural Albertans and municipalities compared to their urban counterparts. Accordingly, RMA members have endorsed several resolutions related to carbon pricing and, with respect to [Resolution 2-22S](#), have engaged Nichols Applied Management (Nichols) to pursue two lines of inquiry regarding potential federal carbon pricing policy impacts on RMA members and rural Albertans:

- ♦ Part 1: The nature of the carbon pricing policy impacts on rural municipal corporations.
- ♦ Part 2: The potential distributional impacts to rural households as compared to urban counterparts.
- ♦ This report focuses on Part 1 of this work (the nature of carbon pricing policy impacts on rural municipal corporations in Alberta), while Part 2 is to be submitted under separate cover.

Methods and Data

To explore the extent to which rural municipalities in Alberta are impacted by the federal carbon pricing policy, the study team worked with the RMA to identify four rural communities that differ along key dimensions thought to influence the interactions between the tax and the municipal corporation (e.g., size, population density, km of roadways, etc.) to form the basis of a comparative analysis of the impacts of the carbon tax. The four selected municipalities include Northern Sunrise County, Parkland County, the MD of Willow Creek, and the Regional Municipality of Wood Buffalo (RMWB).

Policy Review

The *Greenhouse Gas Pollution Pricing Act* came into effect in 2018 and establishes the framework for the federal carbon pollution pricing system. Provinces can design their own carbon pricing system or utilize the federal system as a backstop. There are two components to the federal carbon pricing system:

- ♦ Fuel Charge – a regulatory charge applied to 21 different fossil fuels, including transportation and heating fuels such as gasoline, natural gas, and propane.
- ♦ Output-Based Pricing System (OBPS) – a performance-based system for large industrial emitters.

Alberta currently uses the federal backstop for the fuel charge and has a provincial policy for large industrial emitters. The federal fuel charge was \$50 per tonne CO₂e in 2022 and will increase by \$15 per year until reaching \$170 per tonne CO₂e in 2030. Some users are exempt from fuel charges for certain types of fuel usage including farmers, fishers, and greenhouse operators.

The federal carbon pricing policy is designed as a revenue-neutral pricing scheme in an effort to reduce distributional inequities associated with the policy. In Alberta and other provinces using the federal backstop, 90% of funds collected are returned directly to consumers through a fuel charge rebate known as the Climate Action Incentive (CAI). The other 10% is returned through other federal programs. In addition to the base CAI payment, there is a 10% supplement for residents of small and rural communities.

Analysis

There are two key pathways through which the federal carbon pricing policy is expected to impact rural municipalities in Alberta:

- ♦ Increasing the prices faced by municipalities on goods that are directly and indirectly impacted by the carbon tax such as fuel, heating, and electricity, or indirectly impacted by the carbon tax (i.e., emissions-intensive goods).
- ♦ Influencing the long-term viability of key industries (e.g., oil and gas extraction and processing) that constitute a meaningful portion of a municipality's assessment base, thereby impacting the value of assets available for taxation. Rural municipalities tend to host the majority of heavy industry associated with resource extraction and processing that underpin a considerable portion of the provincial economy.

Impacts to Operating Expenditures

Nichols has estimated the future impact on municipal spending, assuming that volumes of consumed natural gas, electricity, and fuel remain constant, while other expenses remain unchanged. Figure 1-1 (page 5) and Table 1-1 (page 6) describe the expected change in municipal spending due to the carbon tax between 2021 and 2030. Specifically, the data suggest that:

- ♦ Each municipality will likely experience a relatively large jump in 2023, the first year in which the carbon tax will increase by \$15/tonne per year;
- ♦ The carbon tax expense is expected to be three to four times greater in 2030 than it was in 2021, adding between \$200,000 and \$450,000 to annual expenses among the case study municipalities; and
- ♦ The carbon tax is expected to account for a small portion of the municipal budget, ranging from a low of 0.7% in Parkland County to a high of 1.7% in the MD of Willow Creek.

Figure 1-1 Estimated Municipal Spending on Carbon Tax Over Time, 2021 – 2030

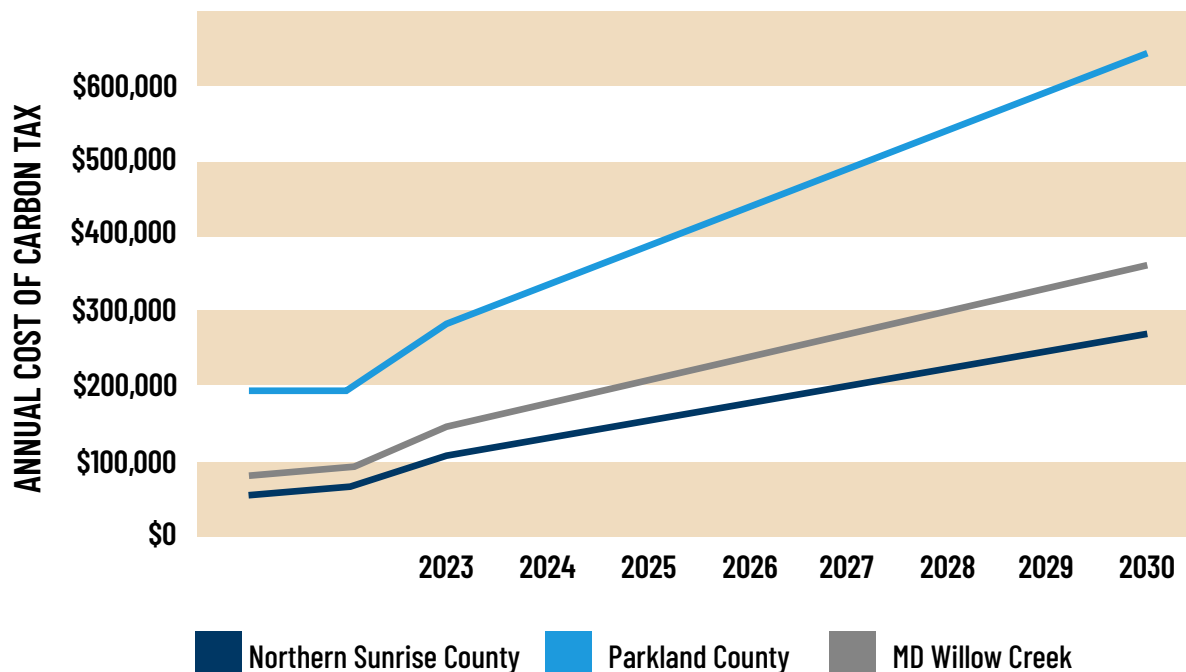


Table 1-1 Municipal Spending on the Carbon Tax Expense, 2021 vs 2030

SPENDING ESTIMATES	NORTHERN SUNRISE COUNTY	PARKLAND COUNTY	MD WILLOW CREEK
2021 spending on heat, power, & fuel	\$580,664	\$2,090,000	\$960,067
2021 estimated carbon tax cost	\$55,393	\$191,926	\$82,769
2021 carbon tax as % of total spend	0.2%	0.2%	0.4%
2030 estimated carbon tax cost	\$271,912	\$644,570	\$365,399
2030 carbon tax as % of total spend	1.0%	0.7%	1.7%
Increase in spending	\$216,519	\$452,644	\$282,630

Impacts to Assessment Base

Although the broader objective of the federal carbon pricing policy does not directly impact the current assessment base of municipalities, if the final demand for GHG-emitting producers (i.e., fossil fuels) declines, the long-term impact on the value of existing oil and gas activities may be negative as may the development in the sector overall. Conversely, new industrial assessment may emerge as renewable energy projects (e.g., wind farms, solar farms, etc.) are developed across the province. Municipalities that are heavily reliant on fossil-fuel-related assessment for tax revenue may need to shift the tax burden to other properties and encourage new economic development across other sectors. This dynamic is likely to play out slowly and over a long time-horizon. Key decisions regarding growth and re-investment will likely be made as industrial installations reach replacement age and as long-term capital plans for major industrial proponents are formulated.

Summary and Discussion

The additional operating expenditures related to the federal carbon tax represents a real increase in costs to municipalities. However, in the context of price volatility previously faced and managed by municipalities, the cost of fuel is not likely to be a primary concern or cost driver. Moreover, there are opportunities to mitigate the increase in costs through the adoption of more fuel-efficient vehicles or adding energy-efficient materials and features to existing as a part of the regularly planned capital expenditures.

The impact to the non-residential assessment base of a municipality is likely the most profound potential impact of a policy environment that seeks to reduce GHG emitting activities. Non-residential assessment is the financial lifeblood of most municipalities and those whose assessment base is particularly focused on oil and gas activities may be faced with the need to reduce spending or shift the existing tax burden elsewhere. The opportunity to mitigate this outcome does exist — municipalities may choose to work towards diversifying their local economy and, by extension, their non-residential assessment base. However, the tools available to municipalities with respect to investment attraction are limited and the timeline for successfully attracting new industrial growth is considerable.

It is noted that all municipalities are unique, and the extent to which the federal carbon pricing policy might impact the fiscal sustainability of a municipal corporation now and into the future will vary across communities. This work explores how rural municipalities in Alberta might be impacted by the federal carbon tax through several case study examples. This high-level analysis does not necessarily inform all municipal experiences; future changes with respect to socio-economic conditions, political decisions, and technological innovation will all continue to play a role in how the carbon pricing policy impacts rural communities in Alberta.

2.0 INTRODUCTION

2.1. About the Rural Municipalities of Alberta and its Members

The Rural Municipalities of Alberta (RMA) represents 69 rural municipal members, including 63 municipal districts and counties, five specialized municipalities, and the Special Areas Board. While the RMA's members are diverse, they also have several common characteristics, including large land masses, high levels of industrial activity in sectors such as oil and gas, forestry, agriculture, and renewable energy, and dispersed populations. Collectively, RMA members provide municipal governance to approximately 85% of Alberta's land mass, and the average RMA member covers an area of over 8,000 square kilometres.

Due to their large size, dispersed populations, and high levels of industrial activity, RMA members may be impacted by government policy and funding decisions in unpredictable or unintended ways. For example, per capita distribution of grant funding, while simple, can be problematic when calculating support for capital and operational costs incurred by rural municipalities because much of the services or infrastructure in rural municipalities exists to support industry and is not captured in per capita metrics. A similar challenge might exist in relation to the impact of carbon pricing on rural municipalities, and this report explores the extent to which rural municipal corporations are impacted.

2.2. Project Purpose

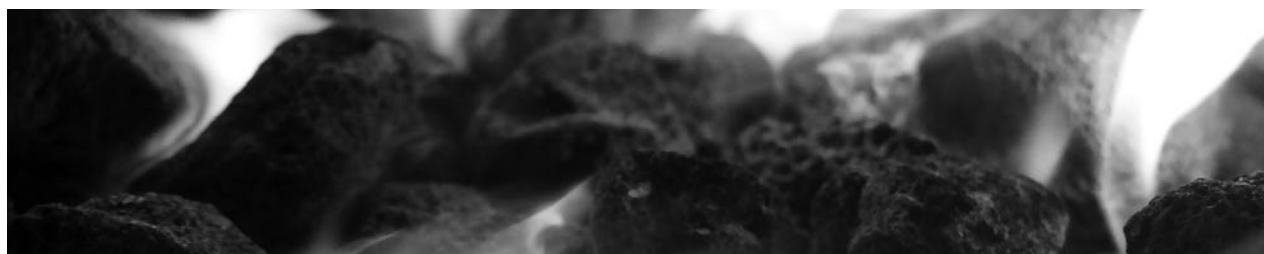
Carbon pricing has long been touted by economists as being a “first-best policy” to address the negative externalities associated with greenhouse gas emitting activities, particularly when the pricing policy is revenue neutral (i.e., tax revenues are redistributed to taxpayers rather than being retained by the government). However, while carbon pricing policies may indeed result in economically efficient levels of activity and associated greenhouse gas emissions, these policies do not necessarily ensure equity amongst economic agents. Indeed, carbon pricing policies (like any tax policy) can result in a range of distributional impacts across different household types depending on how the policy is implemented. For example, under certain conditions, carbon taxes on fuel can have regressive effects as lower-income households spend a larger share of their income on carbon-intensive goods and services (e.g., energy, utilities) as compared to high-income households. Similarly, rural households can be inequitably affected by carbon taxation depending on the policy approach as a result of high energy and utilities spending, as well as relatively higher spending on transportation and fuel, as compared to urban households. The Government of Canada has endeavoured to reduce distributional inequities associated with its pollution pricing policy by implementing a revenue recycling program and adjusting the fuel charge rebate (known as the Climate Action Incentive (CAI)) depending on household size and providing a 10% supplement for residents of rural communities. However, the extent to which these efforts reduce distributional inequities across Canadian household types remains to be seen.



Understanding the potential distributional effects of any government policy is paramount to ensuring policies are developed in a manner that not only supports economically efficient outcomes but, where possible, addresses inequitable outcomes across economic agents. The RMA has expressed concerns with respect to the federal carbon pricing policy, specifically as it relates to the potential disproportionate impacts of the policy on rural Albertans and municipalities compared to their urban counterparts. Accordingly, RMA members have endorsed several resolutions related to carbon pricing (Table 2-1).

Table 2-1 RMA Resolutions on Carbon Pricing

RESOLUTION #	RESOLUTION TITLE	SPONSOR MUNICIPALITY	LINK
19-23S	Non-Profit Exemption from Federal Fuel Charge	MD of Smoky River	https://rmalberta.com/resolutions/19-23s-non-profit-exemption-from-federal-fuel-charge/
16-22F	Exemption of Natural Gas and Propane for Agriculture Under the <i>Greenhouse Gas Pollution Pricing Act</i>	Parkland County	https://rmalberta.com/resolutions/16-22f-exemption-of-natural-gas-and-propane-for-agriculture-under-the-greenhouse-gas-pollution-pricing-act/
2-22S	Negative Impact of Carbon Tax on Rural Albertans	Northern Sunrise County	https://rmalberta.com/resolutions/2-22s-negative-impact-of-carbon-tax-on-rural-albertans/
9-18S	Exemption of Seniors Housing from Requirement to Pay Carbon Levy	Beaver County	https://rmalberta.com/resolutions/9-18s-exemption-of-seniors-housing-from-requirement-to-pay-carbon-levy/
1-17S	Carbon Levy Exemption of Natural Gas and Propane for All Food Production Uses	MD of Willow Creek	https://rmalberta.com/resolutions/1-17s-carbon-levy-exemption-of-natural-gas-and-propane-for-all-food-production-uses/
6-16F	Carbon Levy Exemption on Natural Gas and Propane Used for Agricultural Operations	County of St. Paul	https://rmalberta.com/resolutions/6-16f-carbon-levy-exemption-on-natural-gas-and-propane-used-for-agricultural-operations/
2-16F	Exemption of Municipalities from Carbon Levy	Leduc County	https://rmalberta.com/resolutions/2-16f-exemption-of-municipalities-from-carbon-levy/



With respect to [Resolution 2-22S](#), the RMA has engaged Nichols Applied Management (Nichols) to pursue two lines of inquiry regarding potential federal carbon pricing policy impacts on RMA members and rural Albertans:

- ◆ Part 1: The nature of the carbon pricing policy impacts on rural municipal corporations.
- ◆ Part 2: The potential distributional impacts to rural households as compared to urban counterparts.

This report focuses on Part 1 of this work (the nature of carbon pricing policy impacts on rural municipal corporations in Alberta), while Part 2 is to be submitted under separate cover. The balance of this report is outlined as follows:

- ◆ 3.0 Methods and Data: An overview of the methods and data employed.
- ◆ 4.0 Policy Review: A review of the Government of Canada's carbon pricing policy, including how this policy is applied in the Alberta context.
- ◆ 5.0 Analysis: Carbon Pricing Impacts on Municipal Corporations: Details of the quantitative and qualitative analysis conducted.
- ◆ 6.0 Summary and Discussion: A summary and discussion of study results.



3.0 METHODS & DATA

The potential for the federal carbon pricing policy to impact municipal corporations is not simply a question of whether or not the municipality is “rural” or “urban”, but indeed a more nuanced question of the structure of the municipality. To explore the extent to which rural municipalities in Alberta are impacted by the federal carbon pricing policy, the study team worked with the RMA to identify four rural communities that differ along key dimensions thought to influence the interactions between the tax and the municipal corporation (e.g., size, population density, km of roadways, etc.) to form the basis of a comparative analysis of the impacts of the carbon tax. The four selected municipalities include Northern Sunrise County, Parkland County, the MD of Willow Creek, and the Regional Municipality of Wood Buffalo.

Subsequently, the study team worked with each municipality to collect detailed expenditure data to support the development of financial models that could be used to isolate and explore the impacts of changes in the carbon tax on the operating expenditures and the assessment base of each municipality. At the time of this writing, the RMWB had not yet shared the detailed data to fully inform the analysis. The analysis will be updated when these data are received.



Figure 3-1 Map of Alberta With Four Case Study Rural Municipalities



4.0 POLICY REVIEW

This section provides an overview of the prevailing policy framework with respect to carbon pricing in Alberta.

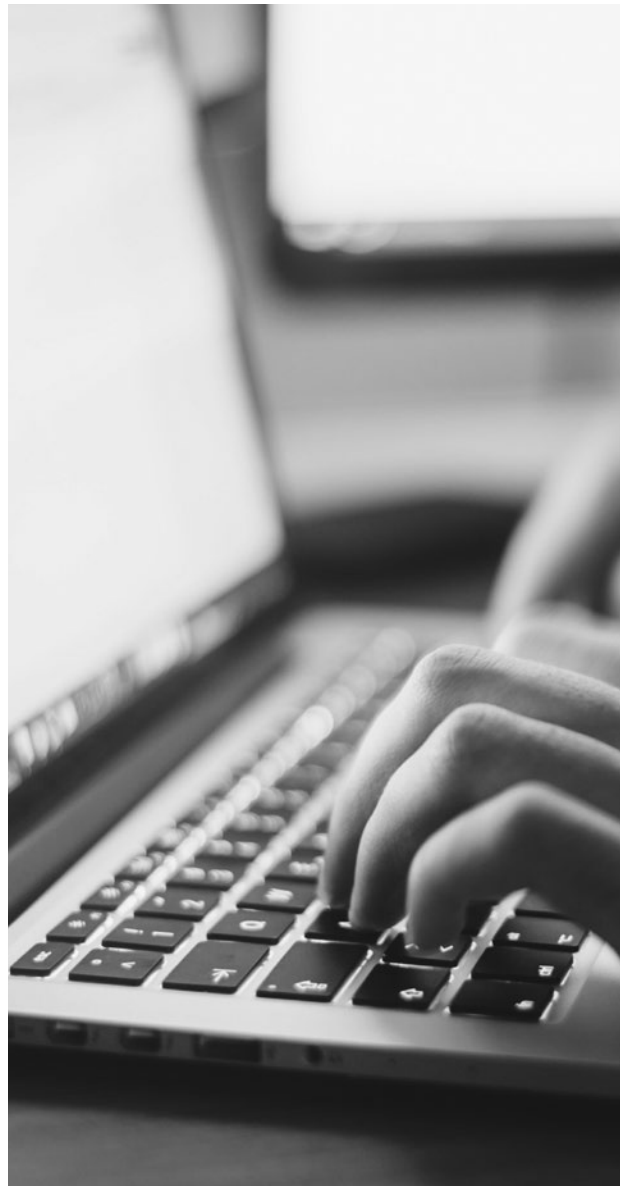
4.1. Policy Overview

The *Greenhouse Gas Pollution Pricing Act* came into effect in 2018 and establishes the framework for the federal carbon pollution pricing system (*Greenhouse Gas and Pollution Act* 2022). The intended goal of the act is to reduce greenhouse gas (GHG) emissions by placing a price on carbon pollution in Canada. There are two components to the federal carbon pricing system:

- ♦ Fuel Charge – a regulatory charge applied to 21 different fossil fuels, including transportation and heating fuels such as gasoline, natural gas, and propane.
- ♦ Output-Based Pricing System (OBPS) – a performance-based system for large industrial emitters.

Beginning in 2019, every province and territory in Canada was given the option to design its own carbon pricing system that meet the act's benchmark for emission pricing or choose the federal system. If the province or territory failed to establish its own carbon price or develop a system that failed to meet the minimum federal standards, then the federal system (i.e., federal 'backstop' policy) was put in place (ECCC 2022). Provincial and territorial carbon pricing systems are assessed annually to ensure they continue to meet the federal standard. As of 2022, the federal fuel charge policy was applied in Alberta, Manitoba, Ontario, Nunavut, Saskatchewan, and Yukon, while the OBPS was applied in Manitoba, Nunavut, Prince Edward Island, Saskatchewan, and Yukon (ECCC 2022).

Although the province of Alberta had its own carbon pricing system in place at the beginning of 2019 through the *Climate Leadership Act* (CLA) developed by the New Democratic Party (NDP) government, it was repealed in 2019 by the United Conservative Party (UCP) (GOA 2019). The UCP followed the CLA repeal by a challenge of the federal carbon pricing policy in court. The challenge was unsuccessful, and the federal fuel charge came into effect in Alberta on January 1, 2020. The Technology Innovation and Emissions Reduction (TIER) system is Alberta's provincial regulation for industrial GHG emissions and came into effect on January 1, 2020 (replacing the Carbon Competitiveness Incentive Regulation) (GOA 2022a). The TIER regulation meets the federal standards set by OBPS (ECCC 2022).



4.2. Federal Fuel Charge

The initial federal fuel charge rate for the 2019 fiscal year¹ was \$20 per tonne of carbon dioxide equivalent (CO₂e). The act specifies that the fuel charge would rise by \$10 per tonne annually until reaching \$50 per tonne on April 1, 2022 (GOC 2022a). Beginning in 2023, the fuel charge will increase by \$15 per tonne annually until it reaches \$170 per tonne in 2030 (GOC 2021). Table 4-1 (page 12) outlines the act's pricing for a selection of fuels from 2022 through 2030. A complete table for all 21 fuels can be found in Appendix A (page 37).

Table 4-1 Select Federal Fuel Charge Rates for Alberta, Manitoba, Ontario, and Saskatchewan, 2022 – 2030

FUEL	YEAR / TAX (\$ PER CO ₂ e)								
	2022 \$50	2023 \$65	2024 \$80	2025 \$95	2026 \$110	2027 \$125	2028 \$140	2029 \$155	2030 \$170
Gasoline (\$/litre)	0.1105	0.1431	0.1761	0.2091	0.2422	0.2752	0.3082	0.3412	0.3743
Propane (\$/litre)	0.0774	0.1006	0.1238	0.1470	0.1703	0.1935	0.2167	0.2399	0.2631
Natural Gas (\$/m3)	0.0979	0.1239	0.1525	0.1811	0.2097	0.2383	0.2669	0.2954	0.3240

Source: GOC 2021.

The federal fuel charge applies when fuel is delivered, transferred, used, produced, imported, or brought into a listed province and is generally paid initially by fuel producers and fuel distributors.

How are the Funds Used?

All of the funds collected through the fuel charge are returned to jurisdictions from where they are initially collected. The Government of Canada returns fuel charge proceeds collected as follows:

- ◆ In jurisdictions that choose to adopt the federal system (Yukon and Nunavut), funds are returned directly to the governments of those jurisdictions to use and distribute as they see fit (ECCC 2022).
- ◆ In those jurisdictions that do not meet the federal benchmark (Ontario, Manitoba, Saskatchewan, and Alberta), approximately 90% of the fuel charge proceeds are returned directly to households within each jurisdiction through Climate Action Incentive (CAI) payments (GOC 2022b).
 - ◇ The remaining 10% of the fuel charge proceeds are returned to each jurisdiction through federal programming to support schools, small and medium-sized businesses, and Indigenous communities to offset additional costs stemming from carbon pollution pricing or to improve their energy efficiency (ECCC 2022).

¹ The federal fiscal year is from April 1 of the given year until March 31 of the following year (i.e., April 2019 – March 2020)

4.2.1 Fuel Charge Relief

4.2.1.1 Exemptions

Some users are exempt from the federal fuel charges and can apply for an exemption certificate. The Government of Canada (2022c) outlines stakeholders eligible for exemption, including:

- ◆ Farmers, provided that:
 - ◇ The fuel is delivered to a farm;
 - ◇ The fuel is exclusively for use in the operation of eligible farming machinery or of an auxiliary component of eligible farming machinery; and
 - ◇ All or substantially all of the fuel is for use in eligible farming activities.
- ◆ Fishers, provided that:
 - ◇ The fuel is for use exclusively in the operation of an eligible fishing vessel; and
 - ◇ All or substantially all of the fuel is for use in eligible fishing activities.
- ◆ Greenhouse operators, who are eligible for relief on 80% of the fuel charge provided that:
 - ◇ The fuel is used exclusively for heating or producing carbon dioxide for the operation of a commercial greenhouse for growing any plants, including vegetables, fruits, bedding plants, cut flowers, ornamental plants, tree seedlings, and medicinal plants.
- ◆ Remote power plant operators.
- ◆ Users of aviation fuel in the territories.

Note that, while farmers are exempt from the carbon tax on fuel used for the operation of farming machinery, they are not exempt from carbon taxes on fuels used for heating and cooling of on-farm buildings and structures (e.g., grain dryers), apart from the greenhouse operator exemptions noted above.

4.2.1.2 Climate Action Incentive

For those provinces that do not meet the federal carbon pricing requirements (Ontario, Manitoba, Saskatchewan, and Alberta), the federal government states that approximately 90% of direct pollution pricing proceeds are returned to residents of those provinces through lump-sum, CAI payments (GOC 2022d). The remaining 10% of proceeds are returned through other federal programs to offset pollution costs and improve energy efficiency.

The CAI payment is tax-free, with eligibility automatically determined by the Canadian Revenue Agency when individuals submit their annual income tax return. In order to be eligible and receive CAI payments, an individual must be:



- ♦ A resident of Alberta, Saskatchewan, Manitoba, or Ontario on the first day of the payment month and the last day of the previous month; and
- ♦ At least 19 years of age.

An eligible child must be:

- ♦ Under 19 years of age;
- ♦ Living at home and under the care of the recipient adult; and
- ♦ Registered for the Canada Child Benefit.

For the 2020 fiscal year, eligible residents could claim the CAI as a refundable tax credit through their personal income tax returns². Table 4-2 (page 14) describes the basic CAI payment for these jurisdictions in 2020. As described in the table, CAI payments do not vary by income, but instead vary by province and household type. Payments vary across provinces due to the different types and quantities of fuels consumed in each jurisdiction. Payments also vary between household types to ensure households that likely pay more in carbon taxes each year (e.g., couples, families with children) are reimbursed relatively more. In addition to the base amount, there is a supplement for residents of small and rural communities (see Section 4.2.1.3).

Table 4-2 Base CAI Payments, 2020 (Received in 2021)

FAMILY MEMBER	ALBERTA	MANITOBA	ONTARIO	SASKATCHEWAN
Single adult (or first adult of a couple)	\$444	\$243	\$224	\$405
Second adult (or first child of a single parent)	\$222	\$121	\$112	\$202
Each additional child under 19 years	\$111	\$61	\$56	\$101
Example family of four	\$888	\$486	\$448	\$809

Source: ECCC 2022

NOTES

The 2020 CAI payment for Albertans reflected a 15-month period that consisted of three months (January – March 2020) at the \$20 per tonne carbon price and 12 months (April 2020 – March 2021) at \$30 per tonne.

Beginning with the 2021 fiscal year (residents receiving CAI payments in 2022), the Government of Canada changed the CAI payment method from a refundable tax credit claimed annually on personal income tax returns to quarterly payments received through the benefit system (GOC 2022e).

The base CAI payments for 2021 are shown in Table 4-3 (page 15).

² The CAI could also be claimed for the 2019 fiscal year, but not by Alberta residents because, at the beginning of the fiscal year, April 1, 2019, the province had its own carbon pricing program in effect.

Table 4-3 Base CAI Payments, 2021 (Received in 2022)

FAMILY MEMBER	ALBERTA	MANITOBA	ONTARIO	SASKATCHEWAN
Single adult (or first adult of a couple)	\$539	\$416	\$373	\$550
Second adult (or first child of a single parent)	\$270	\$208	\$186	\$275
Each additional child under 19 years	\$135	\$104	\$93	\$138
Example family of four	\$1,079	\$832	\$745	\$1,101

Source: GOC 2022e

Going forward, it is uncertain what the base payment amounts will be because they will be adjusted annually to reflect increases in the carbon price and updated levels of proceeds being generated in each jurisdiction (ECCC 2022). Also, because CAI payments are specified in advance of the related fuel charge year and are based on estimated levels of proceeds rather than actual proceeds, future adjustments may also reflect over or under payments from the previous year. Generally, CAI payments are intended to provide the majority of households with more than they pay in carbon taxes throughout a given year (GOC 2022d).

Going forward, it is uncertain what the base payment amounts will be because they will be adjusted annually to reflect increases in the carbon price and updated levels of proceeds being generated in each jurisdiction.



4.2.1.3 Supplement for Residents of Small and Rural Communities

In addition to the base CAI payment, there is a 10% supplement for residents of small and rural communities (GOC 2022f). The supplement applies only to residents of Alberta, Saskatchewan, Manitoba, and Ontario whose primary residence is outside a Census Metropolitan Area (CMA). In Alberta, there are three CMAs, which are listed with their associated municipalities in Table 4-4 (page 16). For the year 2021, individuals who reside outside of the listed municipalities will receive an additional \$53.90 for the first adult, \$27 for a spouse or partner, and \$13.50 per additional child. Based on 2021 CAI payments, a family of four, with two parents and two children, receives an additional \$107.90 on top of the \$1,079 base CAI amount.

Table 4-4 Alberta CMAs and Associated Municipalities

CMA	MUNICIPALITIES
Lethbridge	Lethbridge, Barons, Coaldale, Coalhurst, Lethbridge County, Nobleford, Picture Butte
Calgary	Calgary, Airdrie, Beiseker, Chestermere, Cochrane, Crossfield, Irricana, Rocky View County, Tsuu T'ina Nation No. 145 (Sarcee 145)
Edmonton	Edmonton, Alexander No. 134, Beaumont, Betula Beach, Bon Accord, Bruderheim, Calmar, Devon, Fort Saskatchewan, Gibbons, Golden Days, Itaska Beach, Kapasiwin, Lakeview, Leduc, Leduc County, Legal, Morinville, Parkland County, Point Allison, Redwater, Seba Beach, Spring Lake, Spruce Grove, St. Albert, Stony Plain, Stony Plain No. 135, Strathcona County, Sturgeon County, Sundance Beach, Thorsby, Wabamun, Wabamun No. 133A, Wabamun No. 133B, Warburg

Source: Statistics Canada 2022

NOTES

Individuals living in any of the above municipalities do not qualify for the small and rural community supplement.

4.3. Technology Innovation and Emissions Reduction

The TIER regulation is Alberta's provincial GHG pricing and emissions trading system and applies to facilities that emit over 100,000 tonnes of CO₂e per year. As it meets the federal standard, the federal OBPS is not applied to the facilities covered by TIER. Under the TIER regulation, facilities must meet a benchmark for emissions or otherwise comply in one of three ways (GOA 2022a):

- ♦ Submitting emission offsets obtained from non-regulated facilities;
- ♦ Submitting emissions credits; or
- ♦ Paying the prescribed price per tonne of CO₂e.³

³ The prescribed price was \$40 for the year 2021 and \$50 for 2022 (Emissions Management and *Climate Resilience Act* 2021).

5.0 ANALYSIS: CARBON PRICING IMPACTS ON MUNICIPAL CORPORATIONS

As noted previously, the scope of this report is limited to Part 1 of this work, exploring the impact of the carbon tax on municipal corporations. The impact of the carbon tax on households is addressed under separate cover.

There are two key pathways through which the federal carbon pricing policy is expected to impact rural municipalities in Alberta:

- ♦ Increasing the prices faced by municipalities on goods that are directly and indirectly impacted by the carbon tax such as fuel, heating, and electricity, or indirectly impacted by the carbon tax (i.e., emissions-intensive goods).
- ♦ Influencing the long-term viability of key industries (e.g., oil and gas extraction and processing) that constitute a meaningful portion of a municipality's assessment base, thereby impacting the value of assets available for taxation. Rural municipalities tend to host the majority of heavy industry associated with resource extraction and processing that underpin a considerable portion of the provincial economy.



Rural municipalities vary significantly in key dimensions that will impact expenditures on tax-affected items and the amount of assessment potentially impacted by carbon pricing. For example, municipalities with extensive road networks likely spend more on fuel related to road-maintenance equipment as compared to smaller municipalities with fewer roads. Similarly, communities in close proximity to oil and gas extraction likely host industrial assessment directly related to this industry, whereas municipalities more removed from oil and gas deposits are comparatively less exposed.

In an effort to explore the impacts across different communities, the report includes case studies of four municipalities of varying size, population, and geographic location, estimating the current and future cost of the federal carbon pricing policy for each. The four municipalities

chosen were Northern Sunrise County, Parkland County, the MD of Willow Creek, and the Regional Municipality of Wood Buffalo (RMWB). Table 5-1 (page 18) highlights the size, population, and dwelling units of each municipality, and demonstrates that:

- ♦ Northern Sunrise County covers a vast territory of over 2 million hectares with a relatively small population of under 2,000 people (i.e., extremely low population density).

- ♦ Parkland County is roughly one-tenth the size of Northern Sunrise, but possesses a population that is nearly 20 times larger (i.e., high rural population density).
- ♦ The MD of Willow Creek lies somewhere in between Northern Sunrise County and Parkland County in terms of size and population (i.e., moderate population density).
- ♦ The RMWB is a specialized municipality that is unique in a number of dimensions. It covers over 6 million hectares, including the oil sands, which comprises the majority of oil and gas activity in the province. As a result, the RMWB's non-residential assessment base is comprised almost entirely of oil sands projects and related processing facilities. Moreover, the RMWB hosts approximately 27,300 mobile workers in camps throughout the region and has made considerable capital investment into supporting the oil sands industry and the people who work in it.

The total length of open, maintained roads in each municipality was also considered as an indication of the level of effort and cost associated with heavy equipment usage. As seen below, the length of roads within a municipality is not necessarily dictated by its size or population. The RMWB, for example, is considerably larger and more populated than the other municipalities evaluated in this study, yet it has by far the lowest length of maintained roads. The data suggest that the regions with the most roads are those that have multiple urban centres or are in proximity to urban centres. It is also possible that the historic and current importance of agriculture within a municipality influences the length of roads, as a grid road system was developed in the early twentieth century in areas of the province most suited to agriculture. For instance, Parkland County and the MD of Willow Creek have the most roads despite covering the least amount of territory of the evaluated municipalities but are both located next to large urban centres (Edmonton and Lethbridge respectively). Additionally, both host relatively large agricultural industries compared to other municipalities farther north.

Table 5-1 Characteristics of the Case Study Municipalities

	NORTHERN SUNRISE COUNTY	PARKLAND COUNTY	MD OF WILLOW CREEK	RMWB
Population	1,711	32,205	6,081	106,059*
Total Area (ha)	2,145,028	255,877	456,952	6,573,020
No. of Dwelling Units	942	14,319	2,542	30,226
Population Density (persons/ha)	0.000798	0.125861	0.01331	0.01614
Dwelling Unit Density (units/ha)	0.000439	0.055960	0.005563	0.004598
Length of Roads (km)	1,158.0	2,140.7	2,259.2	619.0

Source: Alberta Municipal Affairs Municipal Profiles

NOTES

*RMWB population figure is from the 2021 municipal census.

A community's assessment base reflects the real assets available for taxation and the composition of each municipality is unique. A municipality's non-residential assessment base typically, when compared to residential properties, consumes fewer municipal services relative to the tax revenue they provide. Thus, the non-residential assessment base plays a significant role in determining the financial health of a community and the services it can provide to residents. In Alberta, a significant portion of a municipality's non-residential tax base is comprised of oil and gas related business or

properties. As such, a carbon pricing policy may disrupt the revenue base if it impacts the profitability or viability of some oil and gas related businesses. Table 5-2 (page 19) outlines the assessment base, including an estimate of what proportion comes from oil and gas activity, and general tax rates for each municipality. As presented in the table:

- ♦ Northern Sunrise County's assessment base is over 90% non-residential, the majority of which comes from oil and gas activity, which contributes to a relatively high per capita assessment base.
- ♦ Parkland County's assessment base about 40% non residential, less than 10% of which comes from oil and gas activity.
- ♦ The MD of Willow Creek's assessment base is a little over 50% non-residential and roughly half of that comes from oil and gas activity.
- ♦ The RMWB's assessment base is a little over 80% non-residential and approximately 95% of that comes from oil and gas activity.

Table 5-2 Tax Assessment Base of Case Study Municipalities, 2021

FINANCIAL PARAMETER	NORTHERN SUNRISE COUNTY	PARKLAND COUNTY	MD OF WILLOW CREEK	RMWB
Total assessment base	\$2,132,333,067	\$11,100,968,799	\$1,555,875,886	\$60,555,426,557
Per capita total assessment	\$1,246,250	\$344,697	\$255,859	\$555,534
Non-residential base	\$1,930,074,035	\$4,628,625,272	\$874,814,104	\$50,097,596,470
% Non-residential base	90.5%	41.7%	56.2%	82.7%
General residential mill rate	5.0000	4.2229	5.1990	1.2912
General non-res mill rate	13.0000	8.4455	9.3760	9.4237
% of total assessment from oil and gas*	74.8%	3.7%	27.3%	79.4%
% of non-res assessment from oil and gas*	82.6%	8.9%	48.5%	94.5%

Sources: 2021 MFIS data (GOA 2022b) and personal communication with municipalities.

NOTES

*Oil and gas activity assessment proportions were provided by the Northern Sunrise County, Parkland County, and the MD of Willow Creek. RMWB's proportion was estimated from public tax bylaw information as it did not elect to participate in these discussions.

Table 5-3 (page 20) provides a simple breakdown of property tax and non-tax revenues for each municipality in 2021, the most recent available from Alberta Municipal Affairs. The relative share of tax revenue as a proportion of total revenue as well as the split between residential and non-residential properties varies substantially across each municipality. Perhaps most notable is the



considerable portion of revenue derived from non-residential taxation in Northern Sunrise County and the RMWB, both of which rely heavily on oil and gas assets for taxation. When considered alongside key characteristics of each municipality (see Table 5-1 (page 18)), there is not perfect correlation between any one parameter and revenue sources apart from the obvious relationship that municipalities with larger populations are generating more revenue, presumably to provide services to a larger amount of people than their comparators.



Table 5-3 Revenue Summary of Case Study Municipalities, 2021

REVENUE	NORTHERN SUNRISE COUNTY	PARKLAND COUNTY	MD OF WILLOW CREEK	RMWB
Residential Tax Revenue	\$989,222	\$26,863,211	\$2,863,451	\$11,892,242
Non-res Tax Revenue	\$24,543,310	\$38,420,494	\$6,633,103	\$456,486,537
Total Property Tax Revenue	\$25,532,532	\$65,283,705	\$9,496,554	\$468,378,779
Total Revenue	\$33,200,079	\$148,581,759	\$18,671,402	\$683,040,355

Source: 2021 MFIS data (GOA 2022b).

5.1. Impacts on Municipal Spending

This section discusses the impact of the federal carbon pricing policy on municipal operating and capital spending in 2021.

5.1.1 Operating Expenditures

In an effort to delineate the impact of the carbon tax on operating expenditures, Nichols identified three broad categories of operating spending that are directly impacted by carbon pricing (i.e., the federal fuel charge):

- ◆ Space heating – the heating of municipally-owned buildings, predominantly with natural gas;
- ◆ Fuel for vehicles – gasoline and diesel for transport vehicles and heavy equipment; and
- ◆ Electricity for municipally-owned building – approximately 80% of the electricity generated in Alberta comes from the combustion of non-renewable fuels (i.e., natural gas), possibly resulting in increased electricity costs to end users.

To fully appreciate the degree to which a change in the carbon tax contributes to the prices faced by end users, including municipalities, it is helpful to decompose the contingent parts of each price. The final retail price for each of these fuels is made up of several components, such as the raw petroleum cost, operating or profit margins, and taxes, and tends to be highly variable as market forces and world events (e.g., COVID 19, international conflicts) impact supply chains and inventory levels. The following is a summary of pricing for each fuel type, as well as electricity, in Alberta.

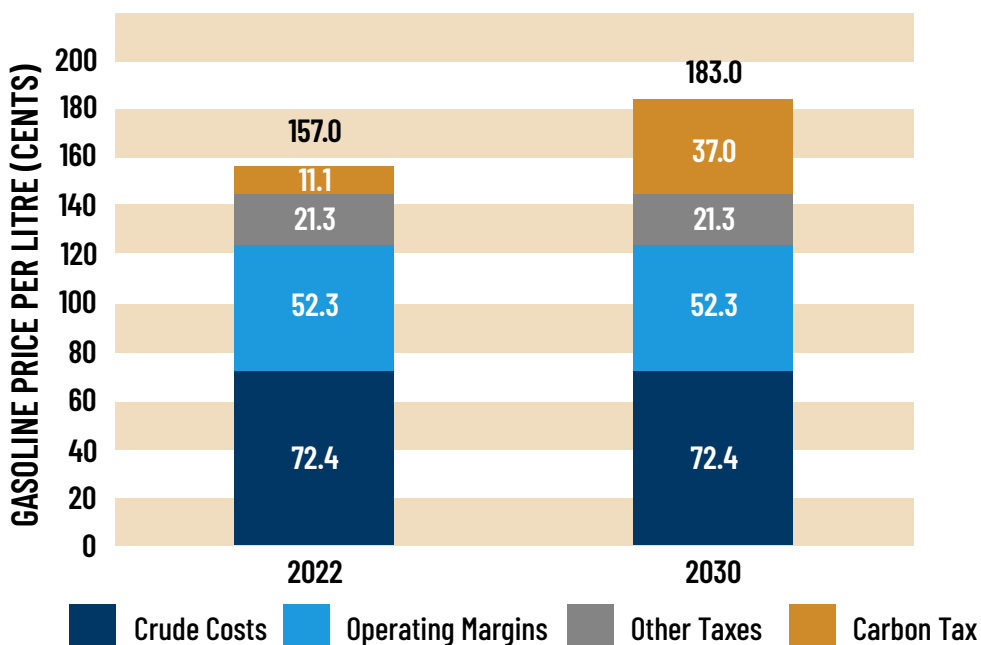
Gasoline

Gasoline is a refined petroleum product that is made from crude oil. Figure 5-1 (page 21) shows the average retail price (\$1.57 per litre) of gasoline in Alberta in 2022, as well as the components of that price. Specifically, it shows that:

- ◆ Nearly half (46%) of gasoline costs go towards the crude oil it is made from;
- ◆ Refining and marketing operating margins combine to account for roughly one-third (33%) of the gasoline price; and
- ◆ The carbon tax accounts for 7% of the final retail price, while other federal and provincial taxes account for a further 14%.

In 2022, the federal fuel charge added 11.05 cents per litre to the price of gasoline in Alberta. As pump prices fluctuated throughout the year, this accounted for between 6 to 9% of the total price paid at the pump. In 2030, the federal fuel charge is expected to rise to 37 cents per litre in Alberta. Assuming all other price components remain unchanged, this would increase the retail price of gasoline to \$1.83 per litre, up 17% from 2022, with the carbon tax accounting for 20% of the total pump cost.

Figure 5-1 Components of Gasoline Retail Price in Alberta, 2022



Source: Canadian Fuels 2023.

NOTES

Prices based on average values in Calgary, Alberta during 2022.

Diesel

In recent years the per litre price of diesel has, on average, tended to be slightly higher than that of gasoline. The average retail price of diesel in 2022 was \$1.74 per litre, 14% higher than the average price of gasoline. The federal fuel charge applied to diesel for that year was 13.41 cents per litre, which accounted for 8% of the average price. In 2030, the federal fuel charge is schedule to rise to 45.57

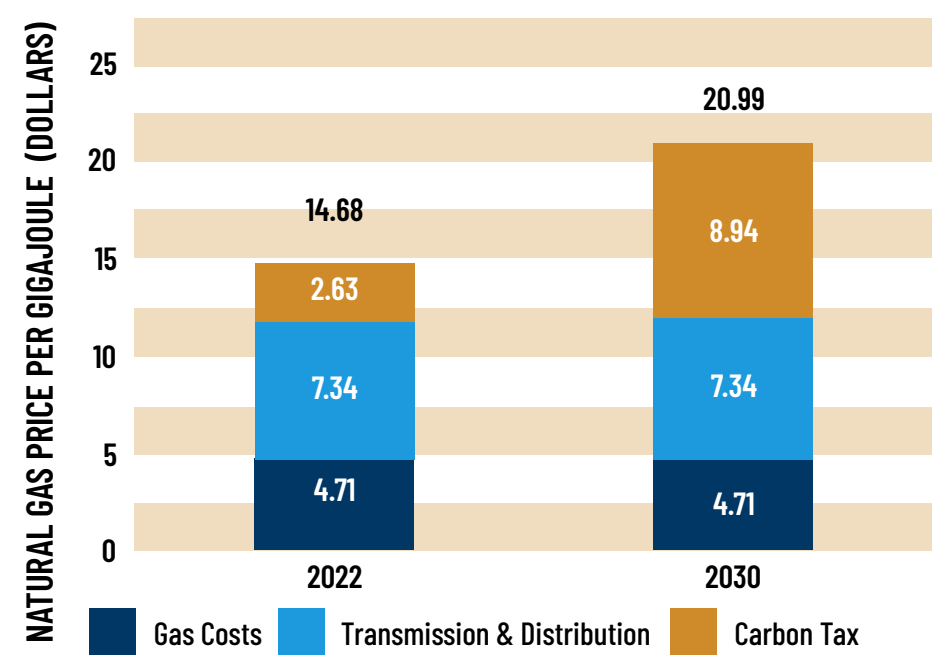
cents per litre in Alberta. Assuming all other price components remain unchanged, this would increase the retail price of diesel to \$2.20 per litre, up 26% from 2022, with the carbon tax accounting for 21% of the total pump cost.

Natural Gas

The price paid by consumers for natural gas includes two broad components: the cost of the gas consumed and the cost of delivering the gas to the home or building (i.e., transmission and distribution). The carbon tax applies only to the gas itself. Transmission and distribution costs are a largely fixed fee designed to cover the costs of installing, operating, and maintaining the infrastructure that delivers energy to the home; these costs vary throughout the province based on location (customers in rural areas typically pay more) and service provider. Figure 5-2 (page 22) depicts the total and component price per Gigajoule price of bringing natural gas to the home in Alberta in 2022 and shows that:

- ♦ Approximately one-third (32%) of the cost is for natural gas itself;
- ♦ Transmission and distribution account for around half of the total cost; and
- ♦ The carbon tax is responsible for approximately 18% of the total cost of natural gas.

Figure 5-2 Components of Natural Gas Price in Alberta, 2022



Source: Alberta Utilities Advocate n.d. and GOA 2023.

In absence of transmission and distribution expenses, the carbon tax accounted for roughly one-third of the cost for natural gas in 2022. In 2030, the carbon tax on marketable natural gas is expected to rise to \$8.94 per GJ in Alberta and would account for roughly two-thirds of the cost of natural gas if gas prices otherwise go unchanged. Assuming the cost for transmission and distribution also remain unchanged, the average per GJ natural cost would rise approximately 43% by 2030 with the carbon tax accounting for roughly 43% of the total.

Electricity

Electricity is produced in a variety of different ways in Alberta, including from renewable sources such as wind or solar, and non-renewable sources such as natural gas or coal. In 2022, approximately 80% of Alberta's electricity was produced from the combustion of fossil fuels (Statistics Canada 2023a).⁴ It should be noted that large power-generating facilities in Alberta are subject to the Technology Innovation and Emissions Reduction Regulation (TIER), which is consistent with the federal standard for output-based pricing but a distinct program from the federal fuel charge. The degree to which the emission compliance costs faced by electricity producers will be passed on to consumers is subject to uncertainty. For the purposes of this analysis, it has been assumed that an increased cost of natural gas, stemming from the federal fuel charge, used in electricity production is passed on to end users.⁵

It should also be noted that the price of electricity is highly volatile and subject to supply and demand forces that are likely independent of natural gas prices. Alberta's electricity market is an energy-only design where electricity suppliers choose a price at which to offer their electricity for sale at every hour and the Alberta Electric System Operator (AESO) dispatches as much electricity as is required beginning with the lowest offer price (Utilities Consumer Advocate 2023). Electricity offered above the cut-off price will not be sold. The sale of electricity is the main source of revenue for producers, so they need to price their offers to the power pool to recover all of their costs, including variable operating costs such as fuel. As such, although an increase in the cost of natural gas may lead to increased electricity costs overall, there are many factors that affect final price and the impact of the carbon tax on that price is uncertain. The assumption invoked in this analysis is aggressive and most likely over-estimates the impact of the carbon tax on the price of electricity purchased by municipalities.

Table 5-4 (page 25) details the amount spent by each municipality on heat / natural gas, power / electricity, and



4 A significant portion of electricity generation in Alberta has historically come from coal. However, the province has been phasing out coal-fired production and expects to be fully transitioned by the end of 2023. <https://www.alberta.ca/climate-coal-electricity.aspx#:~:text=Alberta%20will%20phase%20outcoal%2Dpowered,Overview>

5 Note that facilities regulated by TIER may be exempt from paying the federal fuel charge on fuel inputs to compensate for their compliance with output-based emissions standards. As such, the compliance costs faced by power-generation facilities may not be a result of the federal fuel charge on natural gas inputs, but other compliance activities associated with emissions-reduction.

gasoline / diesel fuel in 2021, and estimates of the proportion of that spending that was due to the carbon tax. It shows that in 2021:

- ♦ Northern Sunrise County spent a little under \$600,000 on natural gas, electricity, and fuel. This amount represented 2.1% of total operating expenses, with the carbon tax proportion accounting for about one-tenth (0.2%) of total spending. Per capita spending on all three items was significantly higher in Northern Sunrise than in the other municipalities, which is in line with overall expenses. Fuel was the largest component of the above spending (60% or \$350,000), although Northern Sunrise spent just under half of what either of the other two municipalities spent on fuel, and also has approximately half the length of roads to maintain.
- ♦ Parkland County spent just over \$2,000,000 on natural gas, electricity, and fuel. This amount represented 2.2% of its total operating expenses, with the carbon tax proportion accounting for about one-tenth (0.2%) of total spending. Per capita spending on all three items was significantly lower in Parkland than in the other municipalities, reflecting its relatively large population. Fuel was the largest component of the above spending (46% or \$960,000) and Parkland spent more on fuel than the other municipalities, although Northern Sunrise spent just under half of what either of the other two municipalities spent on fuel and has the highest road density.
- ♦ The MD of Willow Creek spent a little under \$1,000,000 on natural gas, electricity, and fuel. This amount represented 4.6% of its total operating expenses, with the carbon tax proportion accounting for about one-tenth (0.4%) of total spending. Per capita spending on all three items was significantly higher in Willow Creek than in Parkland despite similar per capita spending overall. The MD of Willow Creek spent approximately twice as much on fuel as Northern Sunrise and has nearly twice the length of maintained roads.
- ♦ At the time of this writing, the RMWB had not yet provided the required data to Nichols to be included in the analysis.



Table 5-4 Municipal Spending and Carbon Tax Portion on Fuel, Natural Gas, and Electricity, 2021

SPENDING ESTIMATES	NORTHERN SUNRISE COUNTY	PARKLAND COUNTY	MD OF WILLOW CREEK
Total expenses	\$27,154,672	\$96,609,752	\$20,925,470
Heat / natural gas	\$70,812	\$211,400	\$32,609
Power / electric	\$157,378	\$922,300	\$165,615
Fuel	\$352,474	\$956,300	\$761,844
Total heat, power, and fuel	\$580,664	\$2,090,000	\$960,067
Heat, power, and fuel as % of spending	2.1%	2.2%	4.6%
Carbon tax spending	\$55,393	\$191,926	\$82,769
Carbon tax as % of spending	0.2%	0.2%	0.4%
Per capita spend on heat, power, and fuel	\$339.37	\$64.90	\$157.88
Per capita spend on carbon tax costs	\$32.37	\$5.96	\$13.61
Fuel expenditure per km of road	\$304.38	\$446.73	\$337.22

Source: Total expenses are based on 2021 MFIS data (GOA 2022b); heat, power, and fuel expenditures based on data provided by each municipality; carbon tax spending based on Nichols calculated estimates.

Both Northern Sunrise County and Parkland County had approximately 2% of their total operating expenses go towards natural gas, electricity, and heating. The MD of Willow Creek spent more than double (4.6%) that proportion, largely due to a comparatively large spend on fuel. In all three cases, the carbon tax accounted for an estimated 10% of heat, power, and fuel spending. Fuel was the largest component of carbon-tax related spending for all three municipalities and accounted for between 40% and 75% of the estimated carbon tax expenditure. The two municipalities with greater lengths of maintained roads spent more on fuel and the amount spent on fuel per km of maintained road was fairly consistent between municipalities, ranging from a low of \$304 per km to a high of \$447 per km. This suggests that total road length may serve as a rough proxy for municipal fuel expenditures and determining which municipalities will be most impacted by the carbon tax.

In sum, despite the considerable differences between these municipalities, the proportion of the annual operating budget that was consumed by the fuel carbon tax in 2021 was relatively small and varied across a relatively narrow range between 0.2% and 0.5%.



5.1.1.1 Forward Looking Impacts

As noted previously, the carbon tax is scheduled to increase until 2030 when it will be capped at \$170 per tonne. Nichols has estimated the future impact on municipal spending, assuming volumes of consumed natural gas, electricity, and fuel remain constant and other expenses remain unchanged. Table 5-3 (page 20) and Table 5-5 (page 26) each depict the expected change in municipal spending due to the carbon tax between 2021 and 2030. Specifically, the data suggest that:

- ◆ Each municipality will likely experience a relatively large jump in 2023, the first year in which the carbon tax will increase by \$15 per tonne per year;
- ◆ The carbon tax expense is expected to be 3 – 4 times greater in 2030 than it was in 2021, adding between \$200,000 and \$450,000 to annual expenses among the case study municipalities; and
- ◆ The carbon tax is expected to account for a small portion of the municipal budget, ranging from a low of 0.7% in Parkland County to a high of 1.7% in the MD of Willow Creek.

Figure 5-3 Estimated Municipal Spending on Carbon Tax Over Time, 2021 – 2030

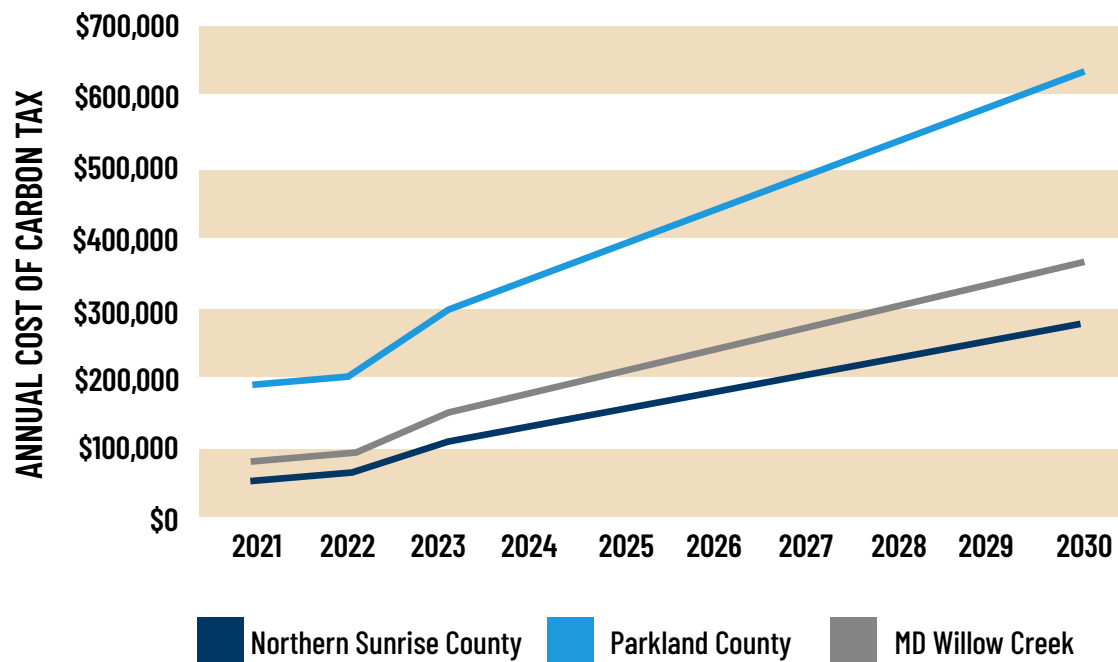


Table 5-5 Municipal Spending on the Carbon Tax Expense, 2021 vs 2030

SPENDING ESTIMATES	NORTHERN SUNRISE COUNTY	PARKLAND COUNTY	MD OF WILLOW CREEK
2021 spending on heat, power, and fuel	\$580,664	\$2,090,000	\$960,067
2021 estimated carbon tax cost	\$55,393	\$191,926	\$82,769
2021 carbon tax as % of total spend	0.2%	0.2%	0.4%
2030 estimated carbon tax cost	\$271,912	\$644,570	\$365,399
2030 carbon tax as % of total spend	1.0%	0.7%	1.7%
Increase in spending	\$216,519	\$452,644	\$282,630

Where exactly the burden of these additional costs will fall is uncertain and subject to decisions made by municipal councils and administrations with respect to residential and non-residential tax rates. For illustrative purposes, the study team has assumed that the burden will fall entirely to residential rate payers. Table 5-6 (page 27) shows the average residential tax bill in each municipality in 2021 and how it is expected to change due to the carbon tax increase through 2030. The table demonstrates that, if the added expense is not absorbed elsewhere in the budget, then residents may see an increase in their annual tax bill to cover the carbon tax costs, ranging from a low of \$26 per household in Parkland County to a high of \$63 per household in the MD of Willow Creek.

Table 5-6 Residential Tax Bill Increase Required to Pay for Carbon Tax Costs in 2030

	NORTHERN SUNRISE COUNTY	PARKLAND COUNTY	MD OF WILLOW CREEK
Average residential tax bill in 2021*	\$1,074	\$1,909	\$1,393
Increase due to carbon tax in 2030	\$27	\$26	\$63
% Increase of residential tax bill	2.6%	1.4%	4.5%

Source: GOA 2022b.

NOTES

*Nichols calculated values based on 2021 MFIS data (GOA 2022b). Data for RMWB not yet available.

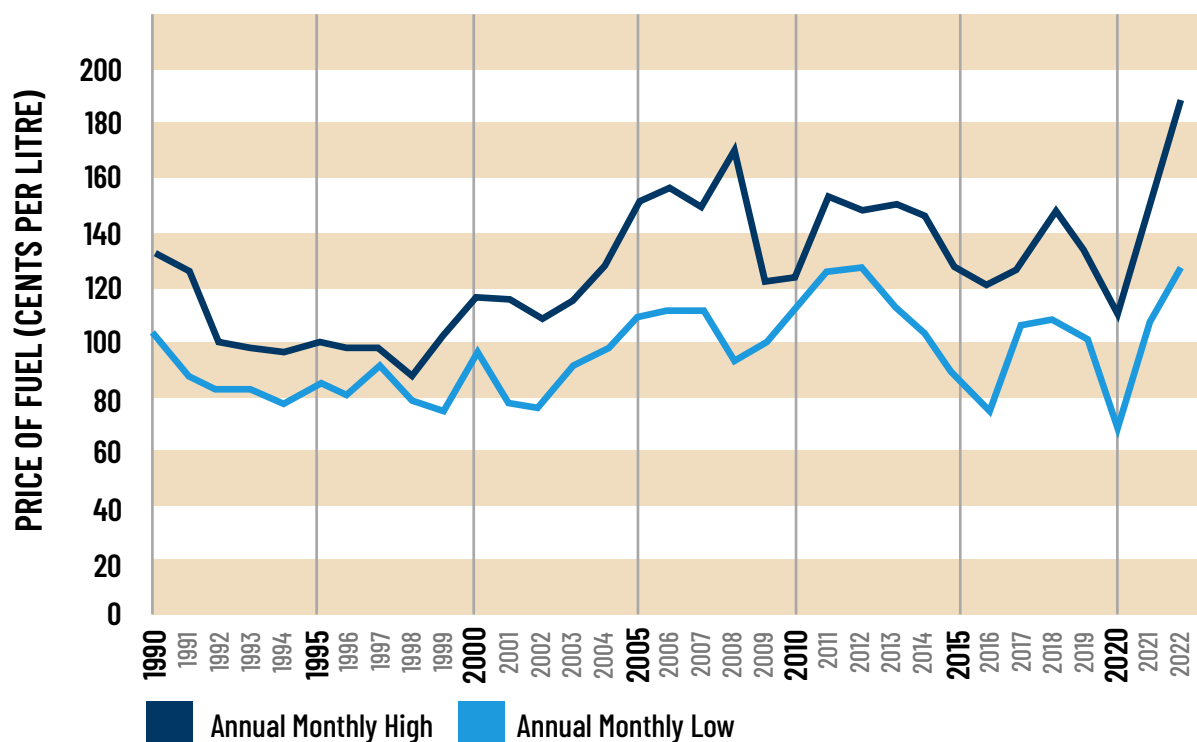
5.1.1.2 Historical Fuel Cost Management

Although the anticipated increase in the carbon tax does represent a notable increase in expenses faced by municipalities, it should be noted that all users of fossil fuels, including municipalities, have had to manage and plan for highly variable prices over time. For instance, after enjoying historically low natural gas prices for several years, Alberta residents saw the cost rise in 2022 to an average of \$4.7 per GJ (or 17.5 cents per cubic metre), up over 50% from just \$3.10 per GJ in 2021. Similarly, the price of diesel has changed by at least 15% and as much as 42% year over year, and has had a monthly average high price (\$1.93) that is more than double the monthly low (\$0.86).

Perhaps most illustrative of the volatility faced by consumers is the price of gasoline in real (inflation adjusted) terms. Figure 5-4 (page 28) shows that buyers of fuel have historically navigated prices that fluctuate by between 30 and 50 cents per year. In this context, the added cost of the carbon tax is nominal and within the range of prices previously faced by consumers and municipalities.



Figure 5-4 Average Annual Gasoline Price and Range Over Time, (in real \$2022)



Source: Statistics Canada 2023.

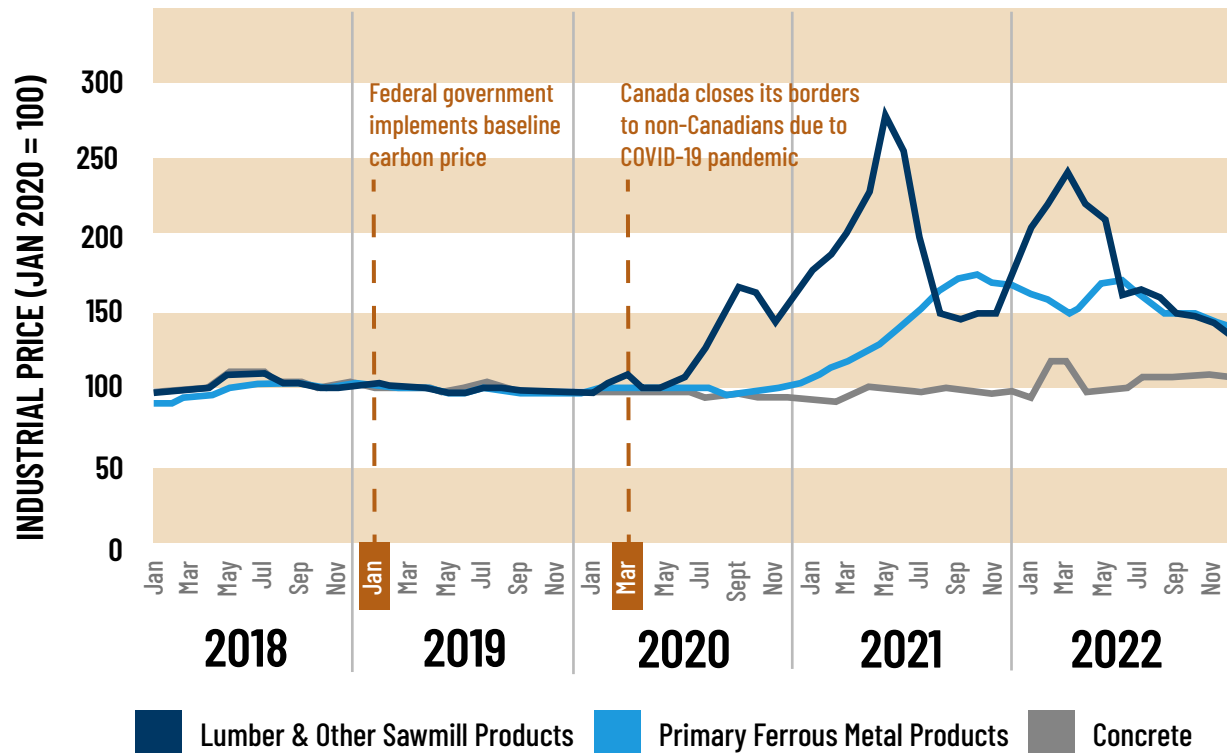
5.1.2 Capital Expenditures

Separate from spending on fossil-fuel-related goods as a part of operations, municipalities undertake major capital projects as a part of their regular activities. These projects vary substantially over time and across municipalities, and could include the new construction or replacement of roads, bridges, municipally owned buildings, etc. Nichols identified four key commodities that represent key inputs into major capital projects and conducted a preliminary and high-level exploration of the degree to which changes in these commodity prices are related to the federal carbon tax, including steel, lumber, asphalt, and concrete.

Figure 5-5 (page 29) shows the relative prices, as compared to their January 2020 price of steel, lumber, and concrete in Canada from 2018 through 2022. It demonstrates that prices for all three of these commodities were relatively constant in 2018 and 2019 but have experienced significant variance since 2020. Specifically:

- ♦ Lumber and other sawmill products increased in price by approximately 170% between May 2020 and May 2021, and have been highly volatile since then. They were on a downward trend at the end of 2022, up approximately 35% from where they started in 2018.
- ♦ Primary ferrous metal products, which include steel and steel products, increased in price by approximately 75% between September 2020 and September 2021. The prices been volatile since then, ending 2022 on a downward trend similar to lumber.
- ♦ Concrete prices were not consistently tracked by Statistics Canada until 2020 but remained relatively unchanged in 2020 and 2021 before experiencing some volatility in 2022. They ended the year on an upward trend.

Figure 5-5 Canadian Monthly Industrial Product Price Index by Product Group, Jan 2018 – Dec 2022



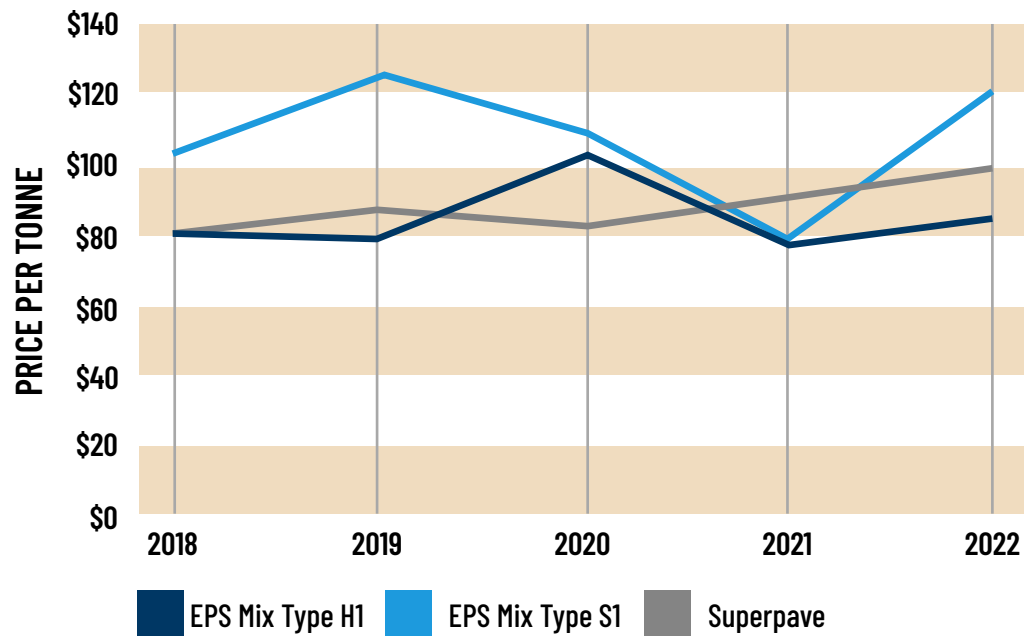
Source: Statistics Canada 2023c.

Alberta Transportation and Economic Corridors tracks the unit prices for goods and materials used in Government of Alberta construction projects, including for multiple types of asphalt concrete pavement. Table 5-6 (page 27) highlights the average annual price for three different types of asphalt between 2018 and 2022 and shows that prices have generally been volatile with no obvious trends, although the price of all asphalt types rose in 2022 relative to 2021.

Alberta Transportation
and Economic Corridors tracks the unit prices for goods and materials used in Government of Alberta construction projects, including for multiple types of asphalt concrete pavement.



Figure 5-6 Annual Average Price for Asphalt Concrete Pavement Types in Alberta, 2018 – 2022



Source: Alberta Transportation and Economic Corridors 2023.

Although price increases on fuel and coal as a result of the federal carbon tax likely led to an increased production cost for steel, lumber, asphalt, and concrete, there does not appear to have been a significant impact on the final sale price of these commodities. During 2019, the first year of the carbon tax, there is no discernible rise in the price of steel, lumber, or concrete. During 2020 through 2022, the prices for these three commodities tended to be highly volatile, with lumber often rising or falling by 10 to 20% per month, while ferrous metal rose or fell by 5% per month, likely impacted by larger market forces such as the impacts of COVID-19. Alberta concrete prices have been up and down with no apparent trend in either direction.

5.2. Impacts on Assessment Base

Broadly speaking, the carbon tax aims to force users of fossil fuels to internalize the cost of emissions into their decision making and to increase the cost of energy derived from fossil fuels vis-à-vis alternatives. The policy is part of a larger federal government policy framework that reflects global objectives to reduce GHG emissions. Although this broader objective does not directly impact the current operating budget of municipalities, if the final demand for GHG-emitting producers (i.e., fossil fuels) declines, the long-term impact on the value of existing oil and gas operations and related processing facilities may be negative as may the rate of growth and development in the sector overall. Conversely, new industrial assessment may emerge as renewable energy projects (e.g., wind farms, solar farms, etc.) are developed across the province. The value of oil and gas installations and forms of renewable energy projects are not necessarily equivalent, nor is it likely the case that new renewable energy projects will locate within municipalities that are currently home to oil and gas projects. As such, municipalities that are heavily reliant on fossil-fuel-related assessment for tax revenue may need to shift the tax burden to other properties and encourage new economic development across other sectors.

The described dynamic is likely to play out at a relatively modest pace and over a long time-horizon. Key decisions regarding growth and re-investment will likely be made as industrial installations reach replacement age and as long-term capital plans for major industrial proponents are formulated and implemented. Oil and gas assessment is not expected to suddenly vanish, nor will it be replaced immediately.

The future of the oil and gas industry in Alberta is unclear. Indeed, considerable uncertainty exists with respect to technological innovation and the global attitude towards fossil fuels that may prolong or further curtail the sector's outlook. For illustrative purposes, the study team has generated estimates of hypothetical residential tax bills in each of the four municipalities in the event that the oil and gas-related assessment base were to be reduced in value by 10% and that no offsetting assessment growth were to materialize.

Table 5-7 (page 31) shows the potential loss of municipal revenue under the assumptions noted above. Specifically, in this hypothetical scenario:

- ♦ Northern Sunrise County, with its high proportion of oil and gas related assessment value, would lose in the range of \$2 million in tax revenue annually, or 6.2% of its total revenue.
- ♦ Parkland County, with its relatively low proportion of oil and gas related assessment value, would lose approximately \$350,000 in tax revenue annually, or 0.2% of its total revenue.
- ♦ The MD of Willow Creek would lose approximately \$400,000 in tax revenue annually, or 2.1% of its total revenue.
- ♦ The RMWB, with an extensive oil and gas related assessment base, would lose approximately \$43.5 million in tax revenue annually, or 6.4% of its total revenue.

Table 5-7 Hypothetical Impact on Municipal Tax Revenue and Budget With 10% Decrease to Oil and Gas Related Assessments

	NORTHERN SUNRISE COUNTY	PARKLAND COUNTY	MD OF WILLOW CREEK	RMWB
Estimated oil and gas related assessment value in 2021	1,593,984,820	411,042,670	424,284,840	46,210,162,144
10% decrease	159,398,482	41,104,267	42,428,484	4,621,016,214
Decrease in tax revenue	\$2,072,180	\$347,146	\$397,809	\$43,547,071
% Decrease in total revenue	6.2%	0.2%	2.1%	6.4%
Increase to non-res tax rate to cover loss	9.0%	0.9%	5.1%	10.4%

If these municipalities are not able to absorb the loss in tax revenue that would result from a smaller oil and gas assessment base, they would either need to:

- ♦ Reduce expenditures (services) by a corresponding amount; or,
- ♦ Increase taxes paid by the remaining assessment base to maintain service levels.

Assuming that the loss was entirely to be made up by the non-residential tax base, Northern Sunrise County would need to raise tax rates the most (9%), while Parkland County could offset losses with a relatively modest (0.9%) increase. It is also likely that residential rates would be increased along with the non-residential rates, although to what extent would depend on the municipality and its leadership.

6.0 SUMMARY AND DISCUSSION

The additional operating expenditures related to the federal carbon tax represents a real increase in costs to municipalities. However, in the context of price volatility previously faced and managed by municipalities, the cost of fuel is not likely to be a primary concern or cost driver. Additionally, the assumptions invoked with respect to the relationship between electricity generation, emissions compliance costs, and the price faced by end users are aggressive and likely overestimate the cost to municipalities.

Moreover, there are opportunities to mitigate the increase in costs through the adoption of more fuel-efficient vehicles or adding energy efficient materials and features to existing as a part of the regularly planned capital expenditures. The degree to which capital expenditures will ultimately yield net savings to the municipal corporation is subject to uncertainty and will require careful analysis on a case-by-case basis.

Although municipalities, and indeed all other end-users, are facing unusually high costs for some construction-related inputs relative to historic levels, the federal carbon tax does not appear to be driving these commodity price changes. Rather, supply chain issues which manifested during the pandemic coupled with rapid inflation are the primary cause of these price increases.

The impact to the non-residential assessment base of a municipality is likely the most profound potential impact of a policy environment that seeks to reduce GHG emitting activities. As noted earlier, non-residential assessment is the financial lifeblood of most municipalities. Those whose assessment base is particularly focused on oil and gas recovery or processing may be faced with the need to reduce spending or shift the existing tax burden to other members of industry and residents.

The opportunity to mitigate this outcome does exist — municipalities may choose to work towards diversifying their local economy and, by extension, their non-residential assessment base, in advance of the wind-down of the fossil fuel sector. Insight into the process by which municipalities may actively seek to diversify their local economy and assessment base can be gleaned from the recent actions of communities impacted by the phasing out of coal-fired electrical generating stations and associated mining activities. In brief, municipalities have taken the following steps:

- ◆ Conduct a detailed market analysis to identify potential industries or investors who may contemplate locating in the community. Key dimensions of this analysis typically include:
 - ◇ The delineation of existing assets and features (e.g., value chains) within the region;



- ◇ The identification of industries that may be compatible with these assets and the specific needs of potential investors (e.g., rail access, process water, etc.); and
- ◇ A competitiveness analysis to determine the degree to which the community in question may be an appealing location for compatible industries.
- ◆ Complete a conceptual design and servicing plan to provide lands that will meet the needs of the identified industries.
- ◆ Complete a fiscal impact assessment by drawing on the information regarding potential growth and the cost of servicing to determine if, when, and to what degree the investment in designing and building a new industrial or commercial business park may yield economic growth and new non-residential assessment.
- ◆ Develop an investment attraction strategy to actively draw in potential investors identified in the market study.

The tools available to municipalities with respect to investment attraction are limited and the timeline for successfully identifying, attracting, and subsequently taxing new industrial growth is considerable. In many cases, a planning horizon in excess of several decades is advisable and the degree to which the assessment related to oil and gas can fully be replaced will vary considerably across municipalities. In extreme cases where oil and gas assessment constitutes the vast majority of a non-residential assessment base, full diversification and replacement is unlikely.

All municipalities are unique, and the extent to which the federal carbon pricing policy might impact the fiscal sustainability of a municipal corporation now and into the future will vary across communities. This work explored how rural municipalities in Alberta might be impacted by the federal carbon tax through several case study examples. It is worth acknowledging that this high-level analysis does not necessarily inform all municipal experiences, and that future changes with respect to socio-economic conditions, political decisions, and technological innovation will all continue to play a role in how the carbon pricing policy impacts rural communities in Alberta.

Although municipalities, and indeed all other end-users, are facing unusually high costs for some construction-related inputs relative to historic levels, the federal carbon tax does not appear to be driving these commodity price changes.



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APPENDIX A: FEDERAL FUEL CHARGE RATES

Table A-1 Federal Fuel Charge Rates for Alberta, Manitoba, Ontario, and Saskatchewan, 2022 – 2030

FUEL	UNIT	YEAR / TAX (\$ PER CO ₂ e)								
		2022 \$50	2023 \$65	2024 \$80	2025 \$95	2026 \$110	2027 \$125	2028 \$140	2029 \$155	2030 \$170
Aviation gasoline	litre	0.1244	0.1592	0.1959	0.2326	0.2694	0.3061	0.3428	0.3795	0.4163
Aviation turbo fuel	litre	0.1291	0.1678	0.2065	0.2453	0.2840	0.3227	0.3614	0.4001	0.4389
Butane	litre	0.0890	0.1157	0.1424	0.1691	0.1958	0.2225	0.2492	0.2759	0.3026
Ethane	litre	0.0509	0.0662	0.0815	0.0968	0.1121	0.1273	0.1426	0.1579	0.1732
Gas liquids	litre	0.0832	0.1081	0.1331	0.1581	0.1830	0.2080	0.2329	0.2579	0.2828
Gasoline	litre	0.1105	0.1431	0.1761	0.2091	0.2422	0.2752	0.3082	0.3412	0.3743
Heavy fuel oil	litre	0.1593	0.2072	0.2550	0.3028	0.3506	0.3984	0.4462	0.4941	0.5419
Kerosene	litre	0.1291	0.1678	0.2065	0.2453	0.2840	0.3227	0.3614	0.4001	0.4389
Light fuel oil (Diesel)	litre	0.1341	0.1738	0.2139	0.2540	0.2941	0.3342	0.3743	0.4144	0.4545
Methanol	litre	0.0549	0.0714	0.0878	0.1043	0.1208	0.1373	0.1537	0.1702	0.1867
Naphtha	litre	0.1127	0.1465	0.1803	0.2142	0.2480	0.2818	0.3156	0.3494	0.3832
Petroleum coke	litre	0.1919	0.2452	0.3018	0.3584	0.4149	0.4715	0.5281	0.5847	0.6413
Pentanes plus	litre	0.0890	0.1157	0.1424	0.1691	0.1958	0.2225	0.2492	0.2759	0.3026
Propane	litre	0.0774	0.1006	0.1238	0.1470	0.1703	0.1935	0.2167	0.2399	0.2631
Coke oven gas	cubic metre	0.0350	0.0455	0.0560	0.0665	0.0770	0.0875	0.0980	0.1085	0.1190
Marketable natural gas	cubic metre	0.0979	0.1239	0.1525	0.1811	0.2097	0.2383	0.2669	0.2954	0.324
Non-marketable natural gas	cubic metre	0.1293	0.1654	0.2035	0.2417	0.2799	0.3180	0.3562	0.3944	0.4325
Still gas	cubic metre	0.1350	0.1396	0.1718	0.2040	0.2362	0.2684	0.3006	0.3328	0.3650
Coke	tonne	158.99	206.68	254.38	302.07	349.77	397.46	445.16	492.86	540.55
High heat value coal	tonne	112.58	145.02	178.48	211.95	245.41	278.88	312.35	345.81	379.28
Low heat value coal	tonne	88.62	115.21	141.8	168.38	194.97	221.56	248.14	274.73	301.31
Combustible waste	tonne	99.87	129.82	159.78	189.74	219.7	249.66	279.62	309.58	339.54

Source: GOC. 2021.