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**Canadian Energy Centre** 

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### **EXECUTIVE SUMMARY**

In December 2020, the federal government announced that the carbon tax would be increased to \$170 per tonne by 2030, an increase of \$130 per tonne from \$40 in 2021, or 325 percent higher. The 325 percent increase in the federal carbon price between now and 2030 will have a significant impact on the gasoline prices that Canadians will pay at the pump.

This is important because in 2019 there were over 25.4 million automobile registrations. Depending on the province and type of vehicle, the increase in the carbon tax on a fill-up will be between 297 and 350 percent. Between 2021 and 2030, gasoline costs associated with the carbon tax are expected to rise from 8.8 cents per litre to 39.6 cents per litre, an increase of 350 percent over those nine years.<sup>1</sup>

# The impact of the carbon tax on fill-up costs: 7 percent of the fill-up in 2021; 24 percent in 2030

In 2021, the carbon tax is estimated to comprise nearly 7 percent of annual fuel costs. Estimates indicate that in 2030, the carbon tax will comprise nearly one-quarter (24 percent) of fuel costs, assuming remaining components of the gasoline cost structure stay the same.

# Carbon tax fuel costs for Canada's top five vehicles in 2021 and 2030

The top five vehicles sold in Canada in 2019 were the Ford F-Series, Dodge Ram, Toyota RAV4, Honda Civic, and Honda CR-V.

Below are the estimated annual gasoline fuel costs for these vehicles in 2021. The carbon tax portion is between \$161 and \$257, or about 7 percent of the fill-up costs:

#### Ford F-150:

\$3,931 in annual fuel costs, with the federal carbon tax comprising \$257 of that cost.

#### • Dodge Ram 1500:

\$3,931 in annual fuel costs, with the federal carbon tax comprising \$257 of that cost.

#### Toyota RAV4:

\$2,654 in annual fuel costs, with the federal carbon tax comprising \$174 of that cost.

#### Honda Civic:

\$2,453 in annual fuel costs, with the federal carbon tax comprising \$161 of that cost.

#### Honda CR-V:

\$2,587 in annual fuel costs, with the federal carbon tax comprising \$169 of that cost.

Below are the estimated annual fuel costs for these vehicles in 2030. The carbon tax portion is between \$723 and \$1,158, or about 24 percent of the fill-up costs, assuming that the remaining components of the gasoline cost structure stay the same:

#### • Ford 150:

\$4,832 in annual fuel costs, with the federal carbon tax comprising \$1,158 of that cost, an increase of \$901, or 350%, from 2021.

#### • Dodge Ram 1500:

\$4,832 in annual fuel costs, with the federal carbon tax comprising \$1,158 of that cost, an increase of \$901, or 350%, from 2021.

#### Toyota RAV4:

\$3,263 in annual fuel costs, with the federal carbon tax comprising \$782 of that cost, an increase of \$608, or 350%, from 2021.

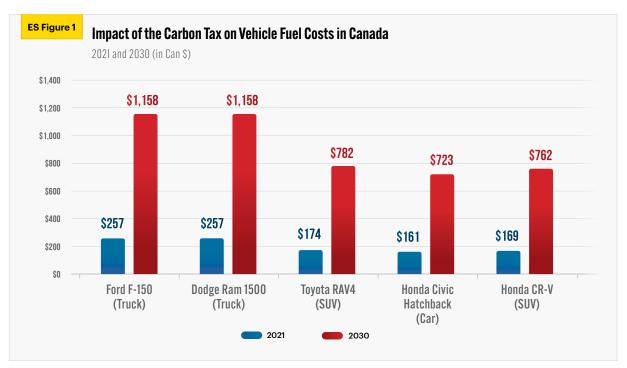
In this review of the effect of carbon taxes on gasoline price, we avoid speculating on possible carbon tax rebates to consumers. Such developments are dependent on the whim of government policymakers and such policy may or may not be implemented nine years in the future.

#### Honda Civic:

\$3,015 in annual fuel costs, with the federal carbon tax comprising \$723 of that cost, an increase of \$562, or 350%, from 2021.

#### Honda CR-V:

\$3,180 in annual fuel costs, with the federal carbon tax comprising \$762 of that cost, an increase of \$593, or 350%, from 2021.





In December 2020, the federal government announced that the carbon tax would be increased to \$170 per tonne by 2030, an increase of \$130 per tonne from \$40 in 2021, or 325 percent higher. The carbon tax applies to 21 types of fuel and combustible waste that emit CO2, including gasoline that Canadians purchase at the retail level (Canada Revenue Agency, 2021).

The 325 percent increase in the federal carbon price between now and 2030 will have a significant impact on the gasoline prices that Canadians will pay at the pump. This is important because in 2019, there were over 25.4 million automobile registrations (Statistics Canada, 2021b). Canadians are likely to notice the effects of the carbon tax increase most acutely in the summer, when their family vacation often takes the form of a driving holiday.

This CEC Research Brief examines the impact that the 325 percent increase in the carbon tax will have on the annual fuel bill for the five most popular vehicles that Canadian motorists own. Depending on the province and type of vehicle, the increase in the carbon tax on a fill-up will be between 298 percent and 350 percent. The estimated fuel cost arising from the carbon tax are for gasoline-only vehicles.

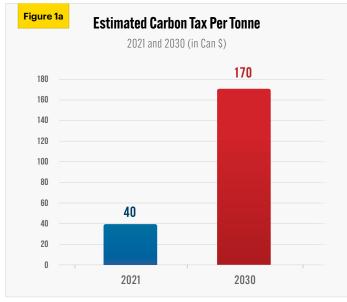
### IMPACT OF THE CARBON TAX

# ON RETAIL GASOLINE PRICES

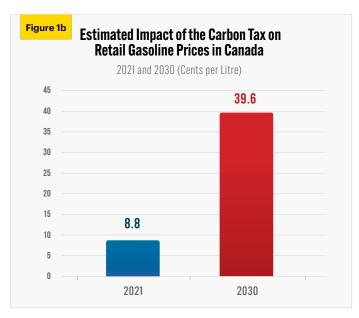
As of April 1, 2021, the carbon tax on gasoline is 8.8 cents per litre, based on the application of the \$40 per tonne carbon tax, and is estimated to reach 39.6 cents per litre by 2030, based on the application of the \$170 per tonne carbon tax (see Figure 1a) (Global News, 2020). Between 2021 and 2030, the gasoline cost associated with the carbon tax is expected to rise from 8.8 cents per litre to 39.6 cents per litre, an increase of 350 percent over the next nine years (see Figure 1b).<sup>2</sup>

### The effect on retail gasoline prices in Canada

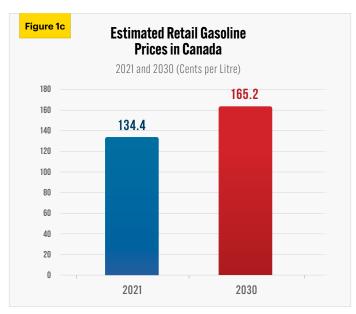
As of May 2021, the retail price for regular unleaded gasoline in the 18 metropolitan areas surveyed by Statistics Canada averaged 134.4 cents per litre (see Figure 1c). This price includes 8.8 cents per litre to cover the \$40 per tonne carbon tax in 2021.







<sup>&</sup>lt;sup>2</sup> The discrepancy in the percentage increase in the carbon tax between 2021 and 2030 (up by 325 percent nationally and 298 percent in B.C.) and the gasoline fuel costs associated with the carbon tax (up 350 percent nationally and in Ontario, and up 297 percent in B.C.) are due to differences in the effective carbon tax rates and gasoline fuel charges affected by the carbon tax for those provinces that fall under the federal regime (Ontario) and those that have their own provincial regime (B.C.). There will also be disparities in effective gasoline fuel costs among provinces that fall under the federal carbon tax regime and provinces that have unique provincial cap-and-trade regimes, such as Quebec and Nova Scotia.



Source: Authors' calculations from Canada Revenue Agency, 2021.

Assuming that there will be no change in the remaining cost structure for regular unleaded gasoline to 2030 (which is highly unlikely given expected increases in crude oil prices, costs to refine, transport, and sell gasoline at retail outlets, and fuel and excise taxes), the cost for a litre of regular unleaded gasoline at the retail level in Canada is expected to rise to an average of 165.2 cents by 2030 (see Figure 1c) (Statistics Canada, 2021a). Approximately 39.6 cents per litre (about one quarter, or 24 percent) of this overall cost will be due to the application of the \$170 per tonne carbon tax on gasoline by 2030.

### THE IMPACT OF THE CARBON TAX ON FILL-UP

### COSTS FOR THE FIVE MOST POPULAR VEHICLES IN

CANADA: COMPARING 2021 WITH 2030

Below is a list of the top five vehicles in Canada based on new vehicle sales figures for 2019, obtained from Auto Trader (2020). They are:

- 1. Ford F-Series (145,064 new vehicle sales)
- 2. Dodge Ram (96,673 new vehicle sales)
- 3. Toyota RAV4 (65,248 new vehicle sales)
- 4. Honda Civic (60,139 new vehicle sales)
- 5. Honda CR-V (55,859 new vehicle sales)

#### 2021 carbon tax costs: 7 percent of a fill-up

For the five most popular vehicles that Canadians drive based on 2019 sales figures, the carbon tax is estimated to comprise nearly 7 percent of annual fuel costs in 2021, assuming that drivers use regular unleaded gasoline3 (see Figures 2a and 2b).

#### Ford F-150:

- Annual fuel costs in 2021 are estimated at \$3,931, with the federal carbon tax comprising \$257 of that total.
- A single fill-up of the Ford F-150 gas tank in 2021 costs an estimated \$149, with the carbon tax comprising \$10 of that total.

#### Dodge Ram 1500

- Annual fuel costs in 2021 are estimated at \$3,931, with the federal carbon tax comprising \$257 of that total.
- A single fill-up of the Ram 1500 gas tank in 2021 costs an estimated \$134, with the carbon tax comprising \$9 of that total.

#### **Toyota RAV4:**

- Annual fuel costs in 2021 are estimated at \$2,654, with the federal carbon tax comprising \$174 of that total.
- A single fill-up of the RAV4 gas tank in 2021 costs an estimated \$74, with the carbon tax comprising \$5 of that total.

#### **Honda Civic:**

- Annual fuel costs in 2021 are estimated at \$2,453, with the federal carbon tax comprising \$161 of that total.
- A single fill-up of the Civic gas tank in 2021 costs an estimated \$63, with the carbon tax comprising \$4 of that total.

#### Honda CR-V:

- Annual fuel costs in 2021 are estimated at \$2,587, with the federal carbon tax comprising \$169 of that total.
- A single fill-up of the Honda CR-V gas tank in 2021 costs an estimated \$71, with the carbon tax comprising \$5 of that total.

#### 2030 carbon tax costs: 24 percent of a fill-up

With the federal price of carbon set to increase to \$170 per tonne by 2030, the impact on gasoline prices that year is expected to be quite dramatic. For the five most popular vehicles that Canadians drive, based on 2019 sales figures, the carbon tax is estimated to comprise nearly one-quarter (24 percent) of one-time and annual fuel costs in 2030, assuming that drivers use regular unleaded gasoline. This is

a Natural Resources Canada's (NRCan's) annual Fuel Consumption Guide provides information on fuel consumption (litres per 100 kilometres and annual litres of gasoline consumed) based on an annual driving distance of 25,000 kilometres for a variety of light duty vehicles, including cars, trucks, and SUVs. For the five most popular vehicles sold in Canada in 2019 and key fuel consumption statistics and assumptions, see Appendix A.

compared to a carbon tax cost of nearly 7 percent in 2021 and assumes that the remaining components of the gasoline cost structure stay the same (see Figures 2a and 2b).

#### Ford F-150:

- Annual fuel costs in 2030 are estimated at \$4,832, with the federal carbon tax comprising \$1,158 of that total, an increase of \$901, or 350 percent, from 2021.
- A single fill-up of the Ford F-150 gas tank in 2030 will cost an estimated \$183, with the carbon tax comprising \$44 of that total, an increase of \$34, or 350 percent, from 2021.

#### Dodge Ram 1500:

- Annual fuel costs in 2030 are estimated at \$4,832,
  with the federal carbon tax comprising \$1,158 of that total, an increase of \$901, or 350 percent, from 2021.
- A single fill-up of the Ram 1500 gas tank in 2030 will cost an estimated \$165, with the carbon tax comprising \$40 of that total, an increase of \$31, or 350 percent, from 2021.

#### Toyota RAV4:

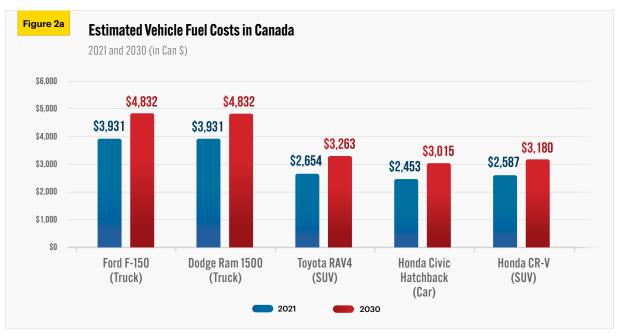
 Annual fuel costs in 2030 are estimated at \$3,263, with the federal carbon tax comprising \$782 of that total, an increase of \$608, or 350 percent, from 2021.  A single fill-up of the RAV4 gas tank in 2030 will cost an estimated \$91, with the carbon tax comprising \$22 of that total, an increase of \$17, or 350 percent, from 2021.

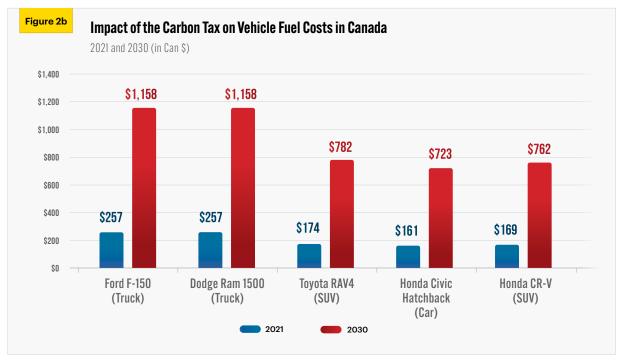
#### Honda Civic:

- Annual fuel costs in 2030 are estimated at \$3,015,
  with the federal carbon tax comprising \$723 of that
  total, an increase of \$562, or 350 percent, from 2021.
- A single fill-up of the Civic gas tank in 2030 will cost an estimated \$78, with the carbon tax comprising \$19 of that total, an increase of \$15, or 350 percent, from 2021.

#### Honda CR-V:

- Annual fuel costs in 2030 are estimated at \$3,180, with the federal carbon tax comprising \$762 of that total, an increase of \$593, or 350 percent, from 2021.
- A single fill-up of the Honda CR-V gas tank in 2030 will cost an estimated \$88, with the carbon tax comprising \$21 of that total, an increase of \$16, or 350 percent, from 2021.





Source: Authors' calculations from Natural Resources Canada, 2021.

# 2021 carbon tax costs in British Columbia: 6 percent of a fill-up

For the five most popular vehicles that Canadians drive, based on 2019 sales figures, British Columbia's provincial carbon tax is estimated to comprise over 6 percent of one-time and annual fuel costs in that province in 2021, assuming that drivers choose regular unleaded gasoline.<sup>4</sup>

#### Ford F-150:

- Annual fuel costs in 2021 in B.C. are estimated at \$4,548, with the provincial carbon tax comprising \$291 of that total.
- A single fill-up of the Ford F-150 gas tank in 2021 in B.C. costs an estimated \$172 with the carbon tax comprising \$11 of that total.

#### • Dodge Ram 1500:

 Annual fuel costs in 2021 are estimated at \$4,548, with the provincial carbon tax comprising \$291 of that total.  A single fill-up of Ram 1500 gas tank in 2021 in B.C. costs an estimated \$155, with the carbon tax comprising \$10 of that total.

#### Toyota RAV4:

- Annual fuel costs in 2021 in B.C. are estimated at \$3,071, with the provincial carbon tax comprising \$197 of that total.
- A single fill-up of the RAV4 gas tank in 2021 in B.C. costs an estimated \$86, with the carbon tax comprising \$5 of that total.

#### · Honda Civic:

- Annual fuel costs in 2021 in B.C. are estimated at \$2,838, with the provincial carbon tax comprising \$182 of that total.
- A single fill-up of the Civic gas tank in 2021 in
  B.C. costs an estimated \$73, with the carbon tax comprising \$5 of that total.

<sup>&</sup>lt;sup>4</sup> The discrepancy in the percentage of one-time and annual fuel costs associated with the carbon tax (7% nationally and in Ontario, and 6% in B.C.) are due to a number of factors, including (1) differences in the effective carbon tax rates; (2) differences in the gasoline fuel charge applied to the carbon tax for those provinces that fall under the federal regime (Ontario) and those that have their own provincial regimes (B.C.); and (3) differences in the remaining cost structure for regular unleaded gasoline, such as provincial fuel taxes. The federal carbon tax is not levied in addition to a provincial carbon tax where it exists, as in British Columbia, but to avoid the imposition of a federal carbon tax, provinces must mimic, to some degree, the federal carbon tax.

#### Honda CR-V:

- Annual fuel costs in 2021 in B.C. are estimated at \$2,993, with the provincial carbon tax comprising \$192 of that total.
- A single fill-up of the Honda CR-V gas tank in 2021 in B.C. costs an estimated \$82, with the carbon tax comprising \$5 of that total.

# 2030 carbon tax costs in British Columbia: 21 percent of a fill-up

With the price of carbon set to increase to \$170 per tonne by 2030, the impact on gasoline prices in B.C. by 2030 is expected to be quite dramatic. For the five most popular vehicles that Canadians drive, based on 2019 sales figures, the carbon tax is estimated to comprise over 21 percent of one-time and annual fuel costs in B.C. by 2030, assuming that drivers choose regular unleaded gasoline. That compares to a carbon tax cost of just over 6 percent in 2021, and assumes that the remaining components of the gasoline cost structure stay the same.

#### • Ford F-150:

- Annual fuel costs in 2030 are estimated at \$5,414 in B.C., with the provincial carbon tax comprising \$1,158 of that total, an increase of \$867, or 297 percent from 2021.
- A single fill-up of the Ford F-150 gas tank in B.C. in 2030 will cost an estimated \$205, with the carbon tax comprising \$44 of that total, an increase of \$33, or 297 percent from 2021.

#### Dodge Ram 1500:

 Annual fuel costs in 2030 are estimated at \$5,414 in B.C., with the provincial carbon tax comprising \$1,158 of that total, an increase of \$867, or 297 percent from 2021.  A single fill-up of the Ram 1500 gas tank in B.C. in 2030 will cost an estimated \$185, with the carbon tax comprising \$40 of that total, an increase of \$30, or 297 percent from 2021.

#### Toyota RAV4:

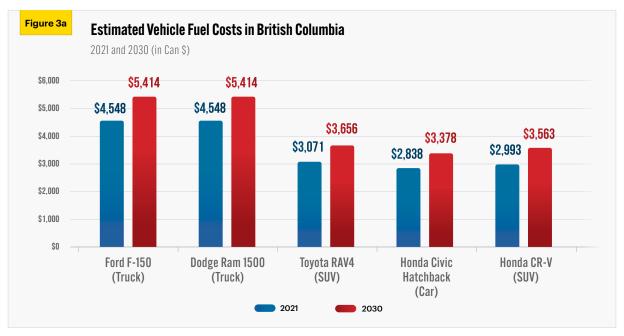
- Annual fuel costs in 2030 are estimated at \$3,656 in B.C., with the provincial carbon tax comprising \$782 of that total, an increase of \$585, or 297 percent, from 2021.
- A single fill-up of the RAV4 gas tank in 2030 in B.C. will cost an estimated \$102, with the carbon tax comprising \$22 of that total, an increase of \$16, or 297 percent, from 2021.

#### Honda Civic:

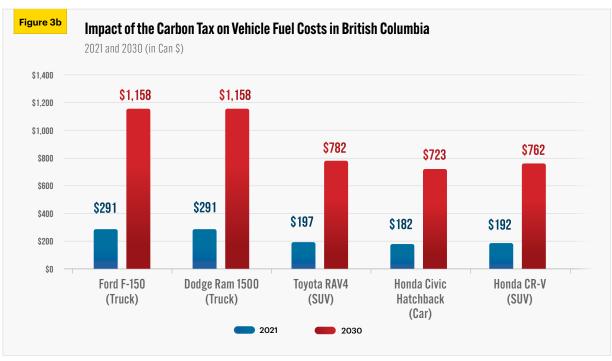
- Annual fuel costs in 2030 are estimated at \$3,378,
  with the provincial carbon tax comprising \$723 of that total, an increase of \$541, or 297 percent, from 2021.
- A single fill-up of the Civic gas tank in 2030 in B.C. will cost an estimated \$87, with the carbon tax comprising \$19 of that total, an increase of \$14, or 297 percent, from 2021.

#### Honda CR-V

- Annual fuel costs in 2030 are estimated at \$3,563 in B.C., with the provincial carbon tax comprising \$762 of that total, an increase of \$571, or 297 percent, from 2021.
- A single fill-up of the Honda CR-V gas tank in 2030 in B.C. will cost an estimated \$98, with the carbon tax comprising \$21 of that total, an increase of \$16, or 297 percent, from 2021.



Source: Authors' calculations from Canada Revenue Agency, 2021.



Source: Authors' calculations from Natural Resources Canada, 2021.

# 2021 carbon tax costs in Ontario: 7 percent of a fill-up

For the five most popular vehicles that Canadians drive, based on 2019 sales figures, the federal carbon tax is estimated to comprise nearly 7 percent of one-time and annual costs in Ontario in 2021, assuming that drivers choose regular unleaded gasoline (see Figures 4a and 4b).

#### • Ford F-150:

- Annual fuel costs in 2021 in Ontario are estimated at \$3,887, with the federal carbon tax comprising \$257 of that total.
- A single fill-up of the Ford F-150 gas tank in 2021 in
  Ontario costs an estimated \$148, with the carbon tax comprising \$10 of that total.

#### Dodge Ram 1500:

- Annual fuel costs in 2021 in Ontario are estimated at \$3,887, with the federal carbon tax comprising \$257 of that total.
- A single fill-up of the Ram 1500 gas tank in 2021 in Ontario costs an estimated \$133, with the carbon tax comprising \$9 of that total.

#### Toyota RAV4:

- Annual fuel costs in 2021 in Ontario are estimated at \$2,625, with the federal carbon tax comprising \$174 of that total.
- A single fill-up of the RAV4 gas tank in 2021 in
  Ontario costs an estimated \$73, with the carbon tax comprising \$5 of that total.

#### Honda Civic:

- Annual fuel costs in 2021 in Ontario are estimated at \$2,425, with the federal carbon tax comprising \$161 of that total.
- A single fill-up of the Civic gas tank in 2021 in Ontario costs an estimated \$62, with the carbon tax comprising \$4 of that total.

#### Honda CR-V:

- Annual fuel costs in 2021 in Ontario are estimated at \$2,558, with the federal carbon tax comprising \$169 of that total.
- A single fill-up of the Honda CR-V gas tank in 2021 in Ontario costs an estimated \$70, with the carbon tax comprising \$5 of that total.

# 2030 carbon tax costs in Ontario: 24 percent of a fill-up

With the price of carbon set to increase to \$170 per tonne by 2030, the impact on gasoline prices in Ontario by 2030 is expected to be quite dramatic. For the five most popular vehicles that Canadians drive, based on 2019 sales figures, it is estimated that the carbon tax will comprise over 24 percent of one-time and annual costs in Ontario by 2030, assuming that drivers choose regular unleaded gasoline. This compares to a carbon tax cost of about 7 percent in 2021, and assumes that the remaining components of the gasoline cost structure stay the same (see Figures 4a and 4b).

#### Ford F-150:

- Annual fuel costs in 2030 are estimated at \$4,788 in Ontario, with the federal carbon tax comprising \$1,158 of that cost, an increase of \$901, or 350 percent from 2021.
- A single fill-up of the Ford F-150 gas tank in Ontario in 2030 will cost an estimated \$182, with the carbon tax comprising \$44 of that cost, an increase of \$34, or 350 percent from 2021.

#### • Dodge Ram 1500:

- Annual fuel costs in 2030 are estimated at \$4,788 in Ontario, with the federal carbon tax comprising \$1,158 of that cost, an increase of \$901, or 350 percent from 2021.
- A single fill-up of the Ram 1500 gas tank in Ontario in 2030 will cost an estimated \$164, with the carbon tax comprising \$40 of that cost, an increase of \$31, or 350 percent from 2021.

#### Toyota RAV4:

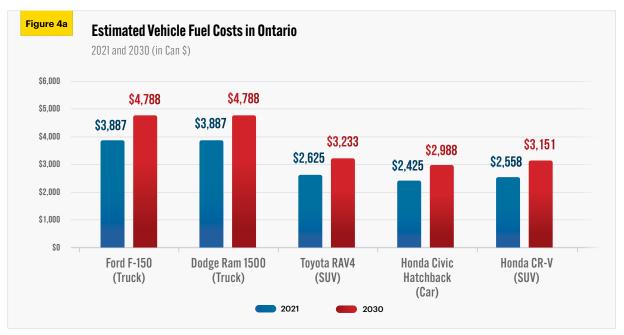
- Annual fuel costs in 2030 are estimated at \$3,233 in Ontario, with the federal carbon tax comprising \$782 of that cost, an increase of \$608, or 350 percent, from 2021.
- A single fill-up of the RAV4 gas tank in 2030 in Ontario will cost an estimated \$90, with the carbon tax comprising \$22 of that cost, an increase of \$17, or 350 percent, from 2021.

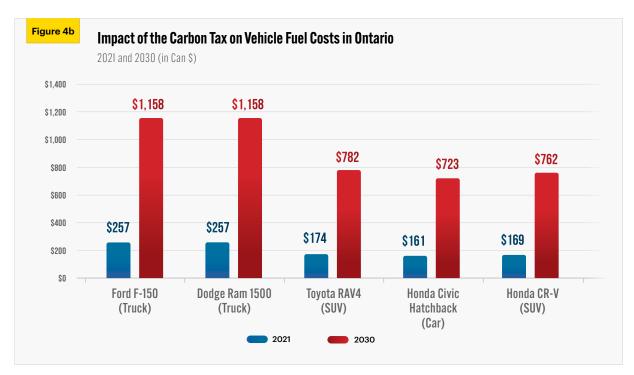
#### Honda Civic:

- Annual fuel costs in 2030 are estimated at \$2,988, with the federal carbon tax comprising \$723 of that cost, an increase of \$562, or 350 percent, from 2021.
- A single fill-up of the Civic gas tank in 2030 in Ontario will cost an estimated \$77, with the carbon tax comprising \$19 of that cost, an increase of \$15, or 350 percent, from 2021.

#### Honda CR-V:

- Annual fuel costs in 2030 are estimated at \$3,151 in
  Ontario, with the federal carbon tax comprising \$762 of that cost, an increase of \$593, or 350 percent, from 2021.
- A single fill-up of the Honda CR-V gas tank in 2030 in Ontario will cost an estimated \$87, with the carbon tax comprising \$21 of that cost, an increase of \$16, or 350 percent, from 2021.





### CONCLUSION

The increase in the carbon tax from \$40 per tonne (\$45 per tonne in B.C.) in 2021 to \$170 per tonne in 2030 is expected to have a dramatic impact across the country on the operating costs of the most popular vehicles that Canadians drive, as the specific cases of B.C. and Ontario illustrate.

In 2021, between 6 and 7 cents of every dollar of regular unleaded gasoline sold in Canada is associated with the application of the carbon tax. By 2030, between 21 and 24 cents of every dollar of regular unleaded gasoline sold in this country will be associated with the application of the carbon tax. This represents an increase of 297 to 350 percent, depending on whether the vehicle is operated in Ontario, in B.C., or elsewhere in Canada.

### **APPENDIX**

#### Key Statistics on Fuel Consumption and Litres of Fuel Consumed by Vehicle Make and Model

Make/Model	Engine Size (litre)	Cylinders	Fuel Type	Fuel Tank Capacity (litres)	Fuel Consumption (litres per km)	Annual litres of regular gasoline consumed
Ford F-150 (truck)	3.5	6	Regular unleaded	87 to 136 (average of 111)	11.7	2,925
Dodge Ram 1500 (truck)	3.6	6	Regular unleaded	87 to 125 (average of 100)	11.7	2,925
Toyota RAV4 (SUV)	2.5	4	Regular unleaded	55	7.9	1,975
Honda Civic Hatchback (Car)	1.5	4	Regular unleaded	47	7.3	1,825
Honda CR-V (SUV)	1.5	4	Regular unleaded	53	7.7	1,925

Source: Natural Resources Canada, 2021.

### REFERENCES

Auto Trader (2020). Top 10 Best Selling Cars in Canada in 2019. <a href="https://bit.ly/3wGjm0g">https://bit.ly/3wGjm0g</a>.

Canada Revenue Agency (2021). Fuel Charge Rates. < <a href="https://bit.ly/36CXJDz">https://bit.ly/36CXJDz</a>>.

Connolly, Amanda (2020). The carbon tax is going up. Here's how much more you could pay at the pumps. Global News. <a href="https://bit.ly/3zbOSVZ">https://bit.ly/3zbOSVZ</a>>.

Natural Resources Canada (2021). 2021 Fuel Consumption Guide. <a href="https://bit.ly/2T8JeEq">https://bit.ly/2T8JeEq</a>.

Statistics Canada (2021a). Table 18-10-0001-01: Monthly average retail prices for gasoline and fuel oil, by geography. <a href="https://bit.ly/3B4ryLd">https://bit.ly/3B4ryLd</a>.

Statistics Canada (2021b). Vehicle registrations, by type of vehicle. <a href="https://bit.ly/3i7pZnj">https://bit.ly/3i7pZnj</a>.

#### **About the**

### **Canadian Energy Centre**

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#### About the authors

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