



ENERGY AND EMISSIONS INVENTORY

DRAYTON VALLEY

2015-2018

Pulling
Together

DRAYTONVALLEY.CA



The purpose of this document is to provide an overview of the energy use and associated greenhouse gas emissions in Drayton Valley during the period of 2015 to 2018.

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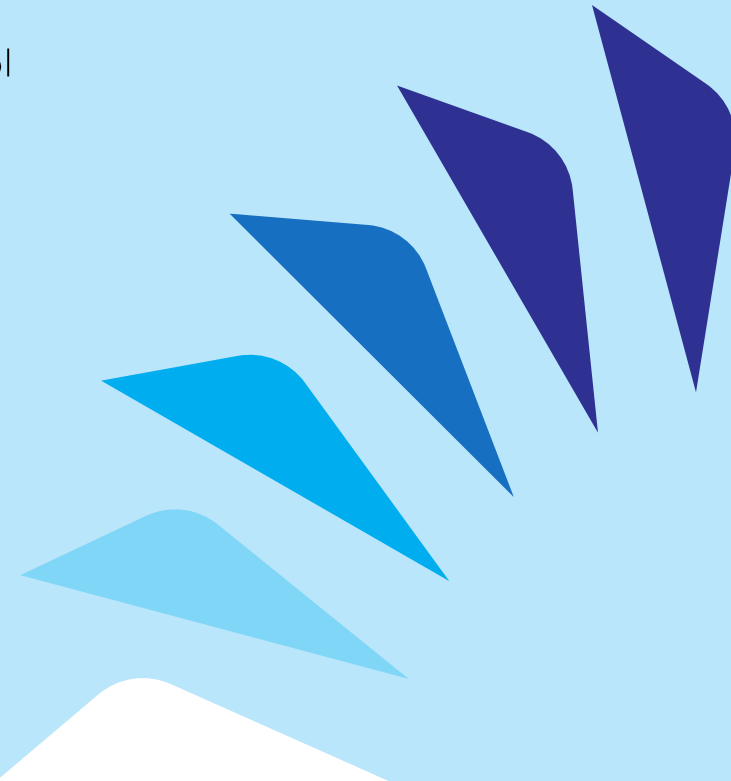
This preparation of this document was carried out with assistance from the Government of Canada and the Federation of Canadian Municipalities. Notwithstanding this support, the views expressed are the personal views of the authors, and the Federation of Canadian Municipalities and the Government of Canada accept no responsibility for them.

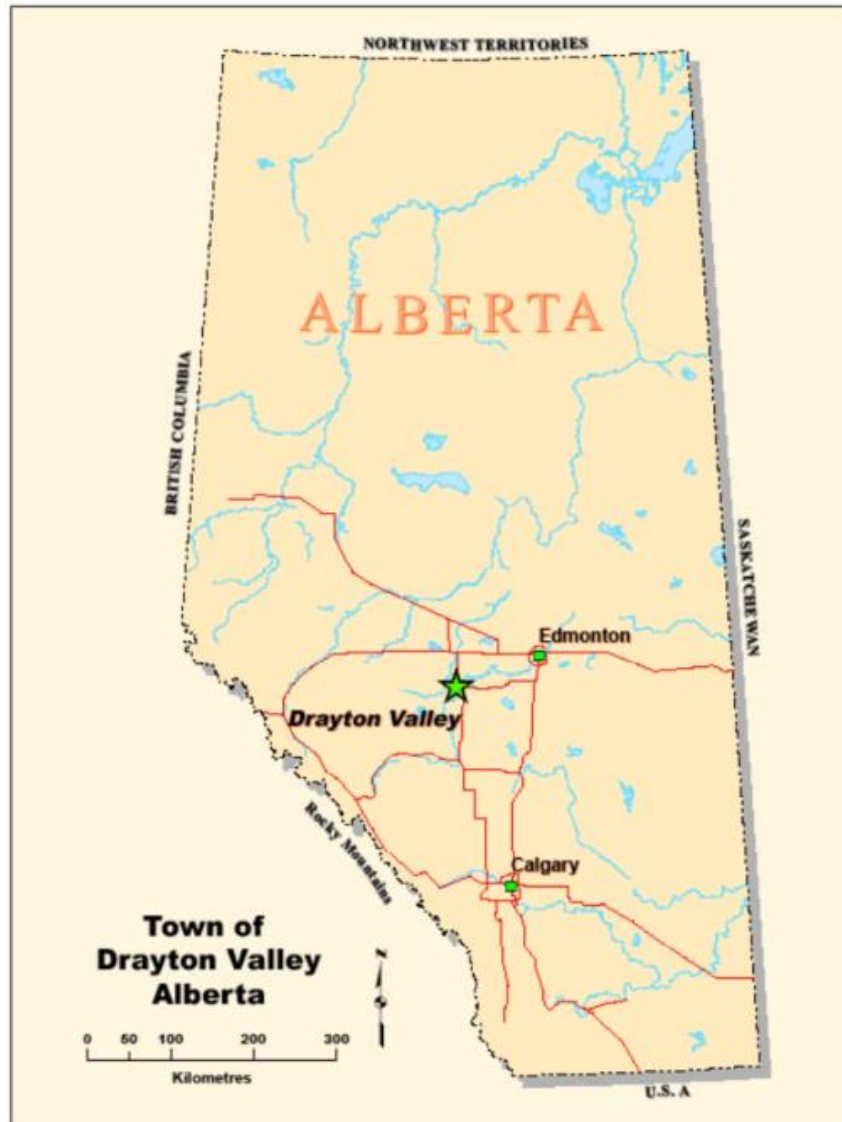


The Town of Drayton Valley would like to thank everyone who gave their time to provide information and professional consultation to complete Milestone 1 of the Federation of Canadian Municipalities (FCM) Partners for Climate Protection Program (PCP) Milestone Framework.

This inventory report would not have been possible without the support, advice and contribution from:

- **Town of Drayton Valley:** The Council and Administration
- **Natural Step Canada:** Matt Mayer and Scott Clements
- **Delphi Group:** Matt Beck and Bryce Edwards
- **Community Energy Association:** Pat Bell
- **Greenplanet Analytics:** Rob Macintosh
- **Alberta Urban Municipalities Association:** Jennifer Espanol
- **ATCO Gas:** Chance Herring and Jessica Zelada
- **Fortis:** Vincent Campbell
- **GFL Environmental Inc:** Mike Horvath
- **Kent Group:** Jason Parent and Michelle Vanderelst
- **Municipal Climate Change Action Centre:** Ronak Patel
- **NuSolar:** Cody Jordan and Tom Brunner
- **Ecocharge:** Steven Manchuk





Drayton Valley is located in west-central Alberta, adjacent to the North Saskatchewan River and is surrounded by forests of aspen, spruce and pine.

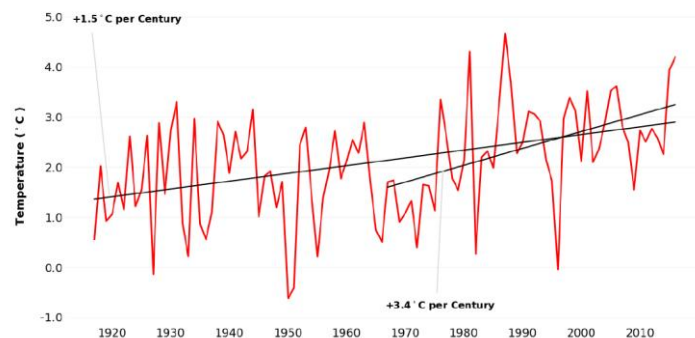


Key economic drivers consists of the oil and gas industry, the forestry industry, the agricultural industry and the emerging tourism industry.

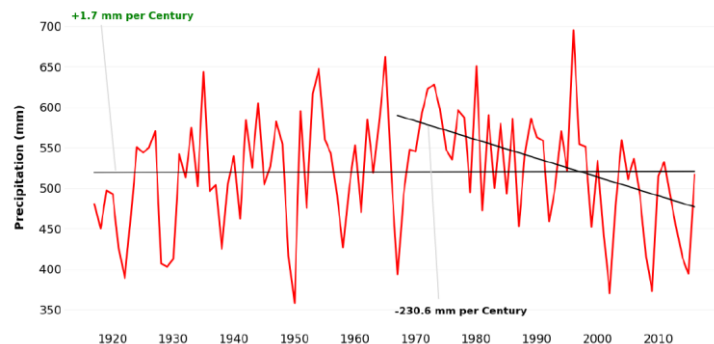


In 2016, Drayton Valley had a population of 6,867 within a geographical area of 13.2 km². Average age of residents is 36.5. About 18% have trades certification and 43% have a college or university degree.

The *Brazeau County Climate Resilience Action Plan* records the observable changes in temperature, precipitation and extreme weather events over the last century in the Brazeau County and Drayton Valley area. The rate of warming observed over the last 50 years is high, at 3.4°C per century, while mean annual precipitation has declined at 231 mm per century.



Mean annual temperature in Brazeau County 1917-2016



Mean annual precipitation in Brazeau County 1917-2016



By 2050, the same report predicts that the mean annual temperature in Brazeau County, and thus Drayton Valley, will increase between +5.6 °C to +6.2°C. Annual precipitation is also expected to increase by +7% to +13% by 2050.



+ 5.6 °C to +6.2 °C



+ 7% to 13%

Projected changes in average temperature and precipitation will likely have adverse impact to the community, including:

- Increased risk of drought and flooding
- Increased strain on water resources
- More common heatwaves
- More frequent wildfires
- More intense ice, snow, hail or windstorms

In 2015, with Council Resolution #217/15, the Town of Drayton Valley (TODV) officially joined the Federation of Canadian Municipalities (FCM) Partners for Climate Protection Program (PCP). Under the same resolution, the Town commits to achieving the milestones set in the PCP five-step Milestone Framework.

This report presents the findings from completing Milestone 1.



The PCP five-step Milestone Framework is intended to help municipal governments take action to reduce emissions while creating opportunities to:

Save \$\$

Access Funds

Invest in Local Economies

Demonstrate environmental stewardship

Build & maintain core infrastructures

Build resiliency

Improve Air Quality

Improve Local Health

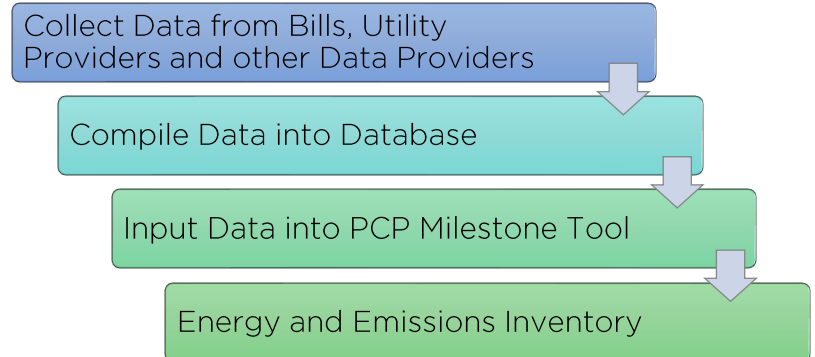
The goal for Milestone 1 of the PCP Milestone Framework is to build an emissions inventory. This enables the Town to identify emissions sources and relative significance of each source, thus establishing a solid foundation for decision making on how to cost-effectively reduce emissions. This inventory will also provide a baseline for monitoring, evaluating and comparing performance over time.

The PCP Milestone Framework defines two categories of inventory, the corporate inventory and the community inventory.

PCP Milestone 1: Baseline Emissions Category and Forecast	Corporate GHG Inventory	<ul style="list-style-type: none"> Measures emissions resulting from municipal operations and services. Municipal has direct control/influence and is accountable as a corporate entity. Sources of emissions include municipal buildings, municipal fleet, water & sewage treatment, street lighting and solid waste.
	Community GHG Inventory	<ul style="list-style-type: none"> Measures emissions generated by key activities within territorial boundary of the local government Sources of community emissions include residential, commercial & institutional, industrial, transportation and solid waste

The Drayton Valley energy and emissions inventory was prepared in accordance with PCP Protocol. Data was collected primarily from consumption bills for corporate inventory and from utility providers for community inventory. This data is then compiled into a database that can be easily appended in future years.

The PCP Milestone Tool, a web-based GHG emissions calculator, is then used to calculate both the corporate and community inventories.

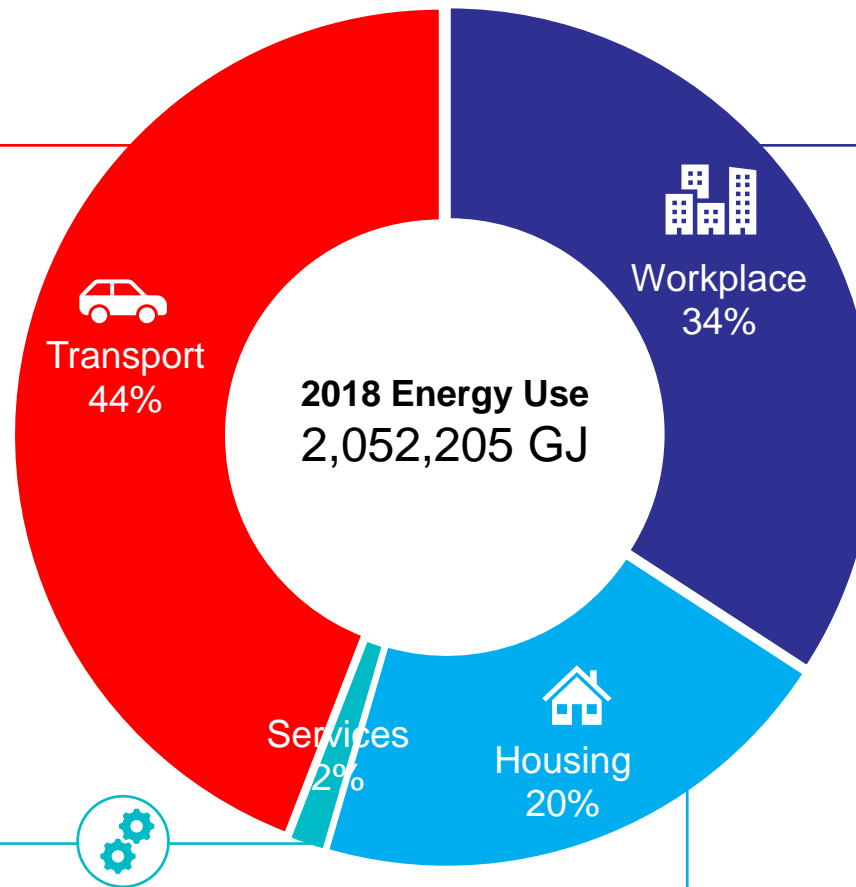


You can't manage what you can't measure

Vehicles in Drayton Valley use gasoline, diesel and ethanol blends. Examples of vehicles include cars, motorcycles, trucks, busses, off-road vehicles, fire trucks, landscaping and farming equipment.

This energy use captures consumption in both the municipal fleet and the community fleet.

Services include energy consumed to provide landfill services, water & sewage treatment and streetlights to Drayton Valley.



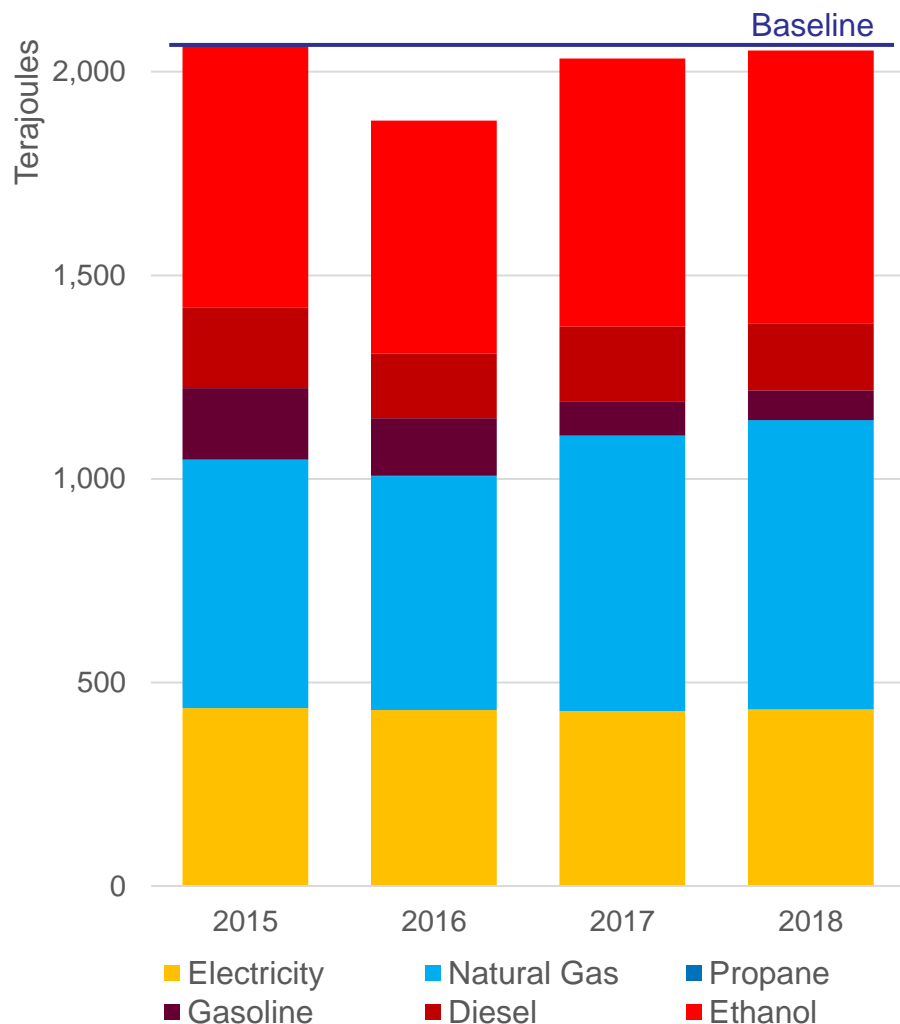
Drayton Valley homes are using energy in the form of electricity and natural gas for their lighting, consumer appliances, water heating, refrigeration and space heating and cooling.

Workplace energy use includes energy consumed in municipal, commercial & institutional and industrial buildings.

All buildings would basically require energy for lighting and space heating. Then, in addition to this basic use, energy use will vary depending on the type of business.

For instance, a restaurant would require more energy for cooking appliances and refrigerators while a laundromat would require more electricity to run their washer and dryers.

Energy consumption in Drayton Valley decreased drastically in 2016 but has bounced back almost to baseline 2015 levels in 2017 and 2018. The dip can most likely be attributed to population and business contraction due to the economic downturn. In the long-term, it is important to decouple economic growth from energy use to ensure wealth creation does not cause GHG emissions to increase in the future.



Energy consumption can be influenced by many factors, such as:

- Local climate and local economy.
- Personal choices and actions.
- Town design in terms of mobility and accessibility. For instance, is it easier to walk to the grocery store, or drive?
- Age and envelope efficiency of building stock. Older buildings may not be well insulated and will require more energy to heat to a comfortable level for its occupants.

How can we reduce energy use without affecting business operations or comfort levels?

Greenhouse gases (GHG) are gases that allow sunlight to pass through the atmosphere but prevents the heat from leaving. Overall, GHGs are a good thing. Without GHGs, our planet would be too cold, and life as we know it could not exist. Unfortunately, for the past couple of hundred years, human activities have been adding a huge volume of GHGs, making the planet warmer.

The main GHGs considered under the PCP Protocol are carbon dioxide, methane and nitrous oxide.

Carbon dioxide is released when burning fossil fuels like coal and oil, includes petroleum products like gasoline and diesel.

Methane is produced when organic material decomposes, such as in our landfills.

Nitrous oxide increases with human activities like agriculture, fuel combustion, wastewater management and certain industrial processes.

Global warming potentials are used to convert methane and nitrous oxide emissions into the units of CO₂equivalent, or CO₂e. This enables us to compare the emissions from the various greenhouse gas emissions.

Wondering what produces 1 tonne of CO₂ equivalent?



25 round trips from Drayton Valley to West Edmonton Mall in a diesel truck.



Five economy-class, round trips from Edmonton to Vancouver.



Heating ECDC for one week in winter.



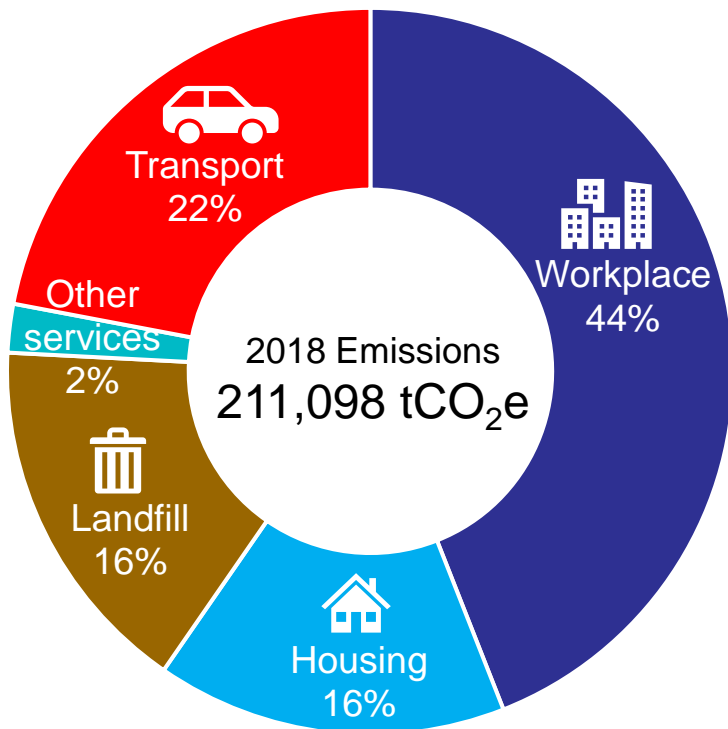
Running an Energy Star refrigerator* for 3.5 years.

Did you know?

Carbon emissions should not prevent you from living your life to the fullest! Carbon offsets offer a way to balance out your pollution by investing in projects that reduce emissions of carbon dioxide or other greenhouse gases in the atmosphere.

Before we look at the different sectors, let's first compare our current lifestyle to our grandparents' lifestyles when they were at the same age. A modern person's lifestyle is usually much more convenient with easier access to products and services. However, that convenience comes with a cost as a modern person's lifestyle requires a lot more energy.

Then, consider where Drayton Valley is located. We are in rural Alberta where it is cold most of the year while the distances between places where we work, live, shop and play are far. These are the factors that would increase our energy use when compared to urban places like Toronto, Vancouver or even Edmonton. Increased energy use in turn leads to higher energy costs and greenhouse gas (GHG) emissions as well.



In fact, in 2018, over 80% of GHG emissions produced in Drayton Valley came from energy use. The combustion of natural gas and propane for heating, as well as gasoline, diesel and ethanol blends to run vehicles produce carbon dioxide.

Electricity use also contributes to GHG emissions since most of Alberta's electricity is generated from coal and natural gas plants.

The decomposition of organic materials in our one and only landfill produces methane emissions and this makes-up the remaining share of GHG emissions in Drayton Valley in 2018.

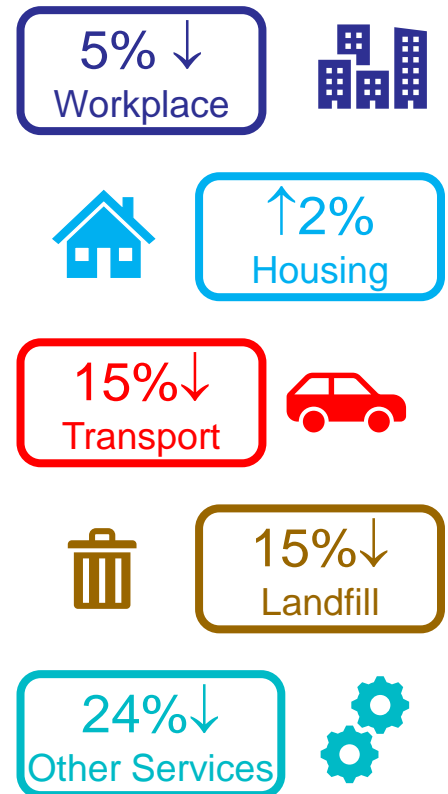
GHG emissions per capita for Drayton Valley was 28.6 tonnes CO₂e per person in 2018. This is high even when compared to other municipalities in Alberta. Reducing energy use and waste is the right step towards reducing emissions and Drayton Valley is ready to work together and find shared solutions to this emissions challenge.

Overall greenhouse gas (GHG) emissions for Drayton Valley in 2018 reduced by over 8% compared to the 2015 baseline emission levels. Almost all sectors shows large reductions, except for housing which showed a minimal 1.6% increase. This is a highly encouraging trend, but it must be cautioned that the underlying cause could still be economic downturn. As before, we should strive to decouple emissions from economic growth so that emissions continue to reduce even as the economy prospers.

Another factor that would have contributed to the emissions reduction would be a shift in the type of fuel used to provide services. This is because emissions generated from energy use are affected not only by the **amount** of energy use, but also the **type** of energy used.

- **Electricity Generation:** Almost 90% of the installed electricity generation capacity in Alberta are thermal plants that run on fossil fuels. From 2015 to 2018, the share of electricity produced from coal has decreased and taken up by natural gas. Since coal generates almost double the amount of emissions compared to natural gas, the switch from coal to gas at provincial level will have positive impact on GHG emissions reductions in Drayton Valley.
- **E10 Fuel Consumption:** Both ethanol blends and gasoline can be used for gasoline-run vehicles. In Drayton Valley, E10 ethanol blend is used. This means that up to 10% of the E10 ethanol blend can be ethanol that has been blended with gasoline. Ethanol in Canada is mostly made from corn and wheat. E10 ethanol blend generates roughly 35% less emissions compared to pure gasoline. From 2015 to 2018, the share of ethanol blends consumed in Drayton Valley has increased from 63% to 74%. The positive impact of increased shifting to ethanol blends is reflected in the 15% emissions reduction in transport sector.

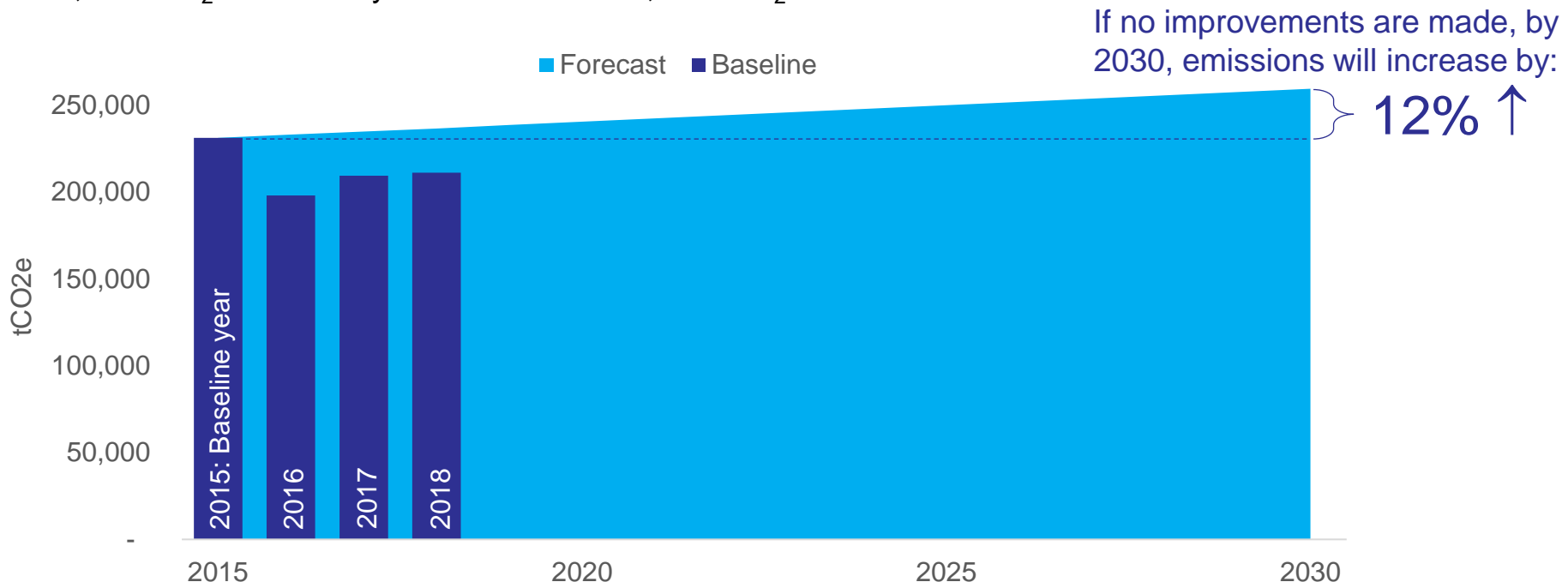
Changes in Emissions from 2015 to 2018



A business-as-usual (BAU) emissions forecast was developed for Drayton Valley for the time period from 2015 up to 2030. This forecast was based on a population growth of 0.77% expected for this time period, which is consistent with the current growth experienced in Drayton Valley.

Under this scenario, it is assumed that no new action is implemented by either the municipality or the community to reduce emissions. It is also assumed that no new government policy is introduced for efficiency improvements, and that no technological advances for better energy use take place in Drayton Valley.

With these assumptions in place, it is projected that under this scenario, emissions will grow from 231,236 tCO₂e in 2015 by 12% to reach 259,432 tCO₂e in 2030.



What can be done to reduce emissions?

Energy Audit at five Town facilities

Fluorescent lights at five Town facilities changed to LED



Preserve Our Ultimate Resource
(P.O.U.R) program initiated in 2015



29kW rooftop solar and solar streetlight at CETC

1kW rooftop solar at Early Childhood Development Centre

13kW solar wall, solar tubes and green roof at New Water Treatment Plant

Electric Vehicle Charger
installed at Ramada Hotel



No single-use plastic bags at grocery stores

Straw-insulated, solar PV
powered residential home



1,207 Fortis streetlights
changed to LED

Take-it or Leave-It Center at
Aspen Waste Management

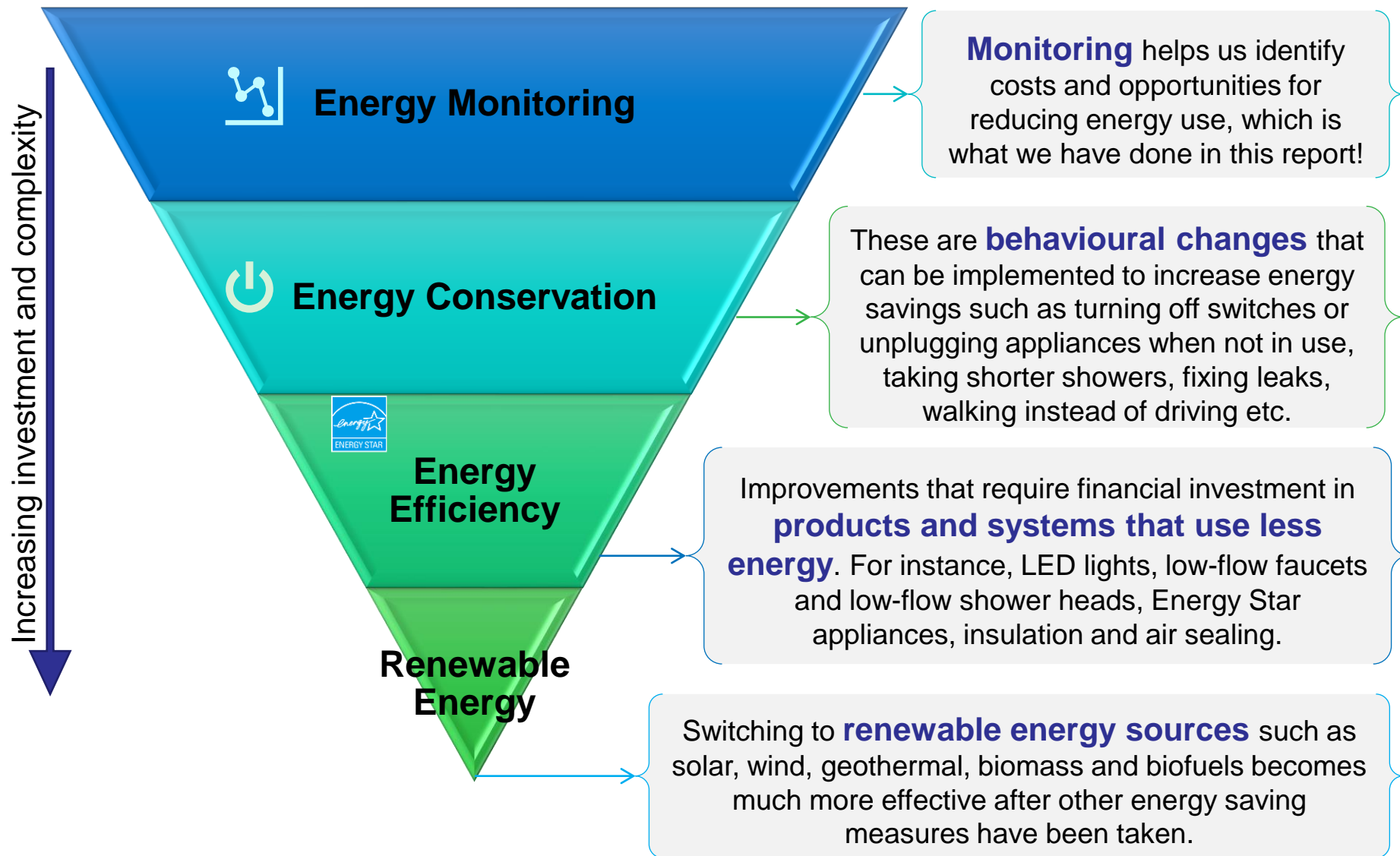


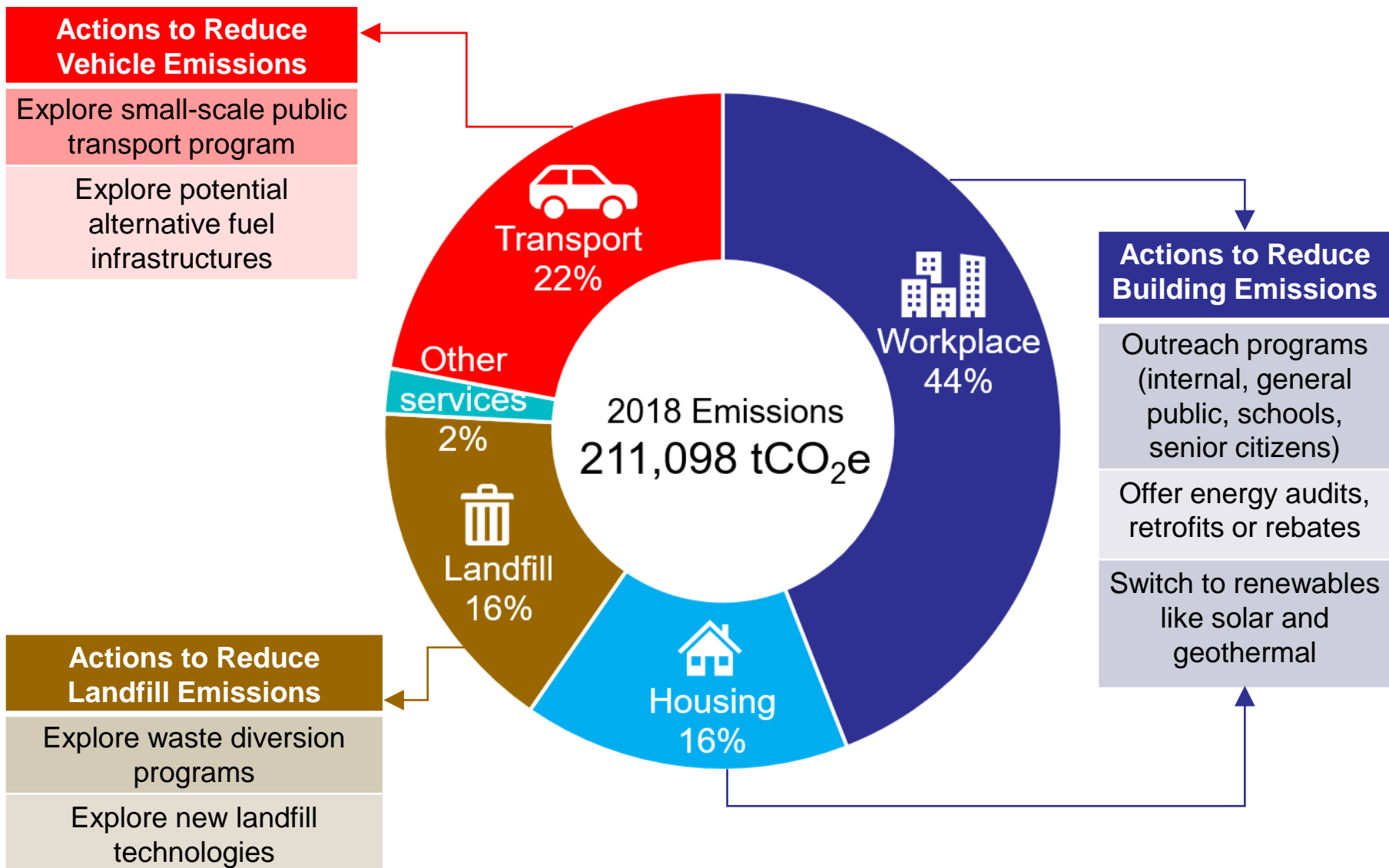
Recycling depot on
Industrial Road



Action for Energy Programs at the Rotary-Pembina Nordic Outdoor Education Centre



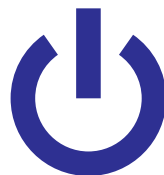




The best way to conserve energy is to start small by consistently reducing wastage at home and at work!



Reduce
water use



Reduce
energy use



Reduce
waste



Support
local



Optimize
travel

If you want to explore energy efficiency or renewable energy opportunities for your home or business, these programs may help!

- Preserve Our Ultimate Resource (P.O.U.R): <https://www.draytonvalley.ca/protect-our-ultimate-resource/>
- Solar for Schools Program: <https://mccac.ca/programs/solar-for-schools-program/>
- Green Loan Guarantee Program for Businesses: <https://efficiencyalberta.ca/financing/green-loan-guarantee-program>
- Zero Emissions Vehicles Purchase and Lease Incentives: <https://www.tc.gc.ca/en/services/road/innovative-technologies/zero-emission-vehicles.html>

Share your thoughts, comments, feedback and suggestions with us
at energy@draytonvalley.ca.

Look out for Drayton Valley's **Local Energy Stewardship Plan**
coming out in Summer 2020!

ENERGY AND EMISSIONS DATA TABLES

2015-2018



	Electricity Use (kWh)	Electricity Use (GJ)	Electricity Emissions (tCO2e)	Electricity Expenditure (\$)	Natural Gas Use (GJ)	Natural Gas Emissions (tCO2e)	Natural Gas Expenditure (\$)	Propane Use (L)	Propane Use (GJ)	Propane Emissions (tCO2e)	Propane Expenditure (\$)
Municipal Facilities	3,176,144	11,434	2,690	\$ 354,439	20,839	1,052	\$ 136,526	5,252	133	8	\$ 1,938
Airport	89,764	323	76	\$ 14,236	-	-	\$ -	5,252	133	8	\$ 1,938
Other Amenities	65,930	237	56	\$ 11,664	-	-	\$ -				
Public Works Building and Shop	70,530	254	60	\$ 7,145	753	38	\$ 5,166				
Town Office Complex	277,690	1,000	235	\$ 29,954	1,619	82	\$ 10,615				
Maintenance Buildings	8,352	30	7	\$ 2,575	350	18	\$ 2,831				
Clean Energy Technology Centre	31,891	115	27	\$ 6,327	157	8	\$ 1,055				
Park Valley Pool	406,102	1,462	344	\$ 39,406	5,074	256	\$ 32,983				
Omniplex Arena	1,649,249	5,937	1,397	\$ 158,567	9,105	459	\$ 56,180				
Early Childhood Development Centre	49,582	178	42	\$ 7,237	389	20	\$ 3,015				
Mackenzie Conference Centre	227,684	820	193	\$ 36,316	1,659	84	\$ 10,776				
Historical Society Museum	3,647	13	3	\$ 1,250	152	8	\$ 1,592				
Rotary Park Building	-	-	-	\$ -	252	13	\$ 2,188				
Elanor Pick-Up Arts Centre	33,023	119	28	\$ 4,979	405	20	\$ 3,078				
Splash Park	11,091	40	9	\$ 2,435	-	-	\$ -				
RV Park	237,781	856	201	\$ 29,527	96	5	\$ 1,283				
Urban Housing Program	13,829	50	12	\$ 2,821	828	42	\$ 5,764				
Lights	885,020	3,186	750	\$ 484,882							
Park Lights	17,269	62	15	\$ 8,248							
Street Lights	803,312	2,892	680	\$ 456,693							
Traffic Lights	64,439	232	55	\$ 19,941							
Water Treatment	2,209,907	7,967	1,874	\$ 212,665	3,444	174	\$ 21,613				
Old Water Treatment Plant	1,688,351	6,078	1,430	\$ 152,295	1,769	89	\$ 10,718				
New Water Treatment Plant	195,857	716	168	\$ 25,062	1,194	60	\$ 7,355				
Water Reservoir	325,699	1,173	276	\$ 35,308	481	24	\$ 3,540				
Sewage Treatment	3,641,834	13,111	3,084	\$ 308,823	342	17	\$ 3,819				
Lab	-	-	-	\$ -	74	4	\$ 1,020				
Brazeau Business Park Lift Station	2,383	9	2	\$ 3,215	-	-	\$ -				
Sewer Blower Building	3,323,320	11,964	2,815	\$ 275,314	-	-	\$ -				
Sewer Plant UV	316,131	1,138	268	\$ 28,413	268	14	\$ 2,106				
Sewer WWTF Outfall	-	-	-	\$ 915	-	-	\$ -				
Lift Station Greenfield Subdivision	-	-	-	\$ 966	-	-	\$ 693				

	Gasoline Use (L)	Gasoline Use (GJ)	Gasoline Emissions (tCO2e)	Gasoline Expenditure (\$)	Diesel Use (L)	Diesel Use (GJ)	Diesel Emissions (tCO2e)	Diesel Expenditure (\$)	Ethanol (E10) Use (L)	Ethanol (E10) Use (GJ)	Ethanol (E10) Emissions (tCO2e)	Ethanol (E10) Expenditure (\$)
Fleet	2,455	86	6	\$ 2,334	80,690	3,091	220	\$ 76,637	49,506	1,676	75	\$ 49,347
Firehall	2,455	86	6	\$ 2,334	1,584	61	4	\$ 1,452				
Public Works					79,106	3,030	216	\$ 75,185	49,506	1,676	75	\$ 49,347

The municipal fleet fuel use does not include fuel used by contractors, staff and Council using their own vehicles for municipal operations.

	Electricity Use (kWh)	Electricity Use (GJ)	Electricity Emissions (tCO2e)	Natural Gas Use (GJ)	Natural Gas Emissions (tCO2e)	Diesel Use (L)	Diesel Use (GJ)	Diesel Emissions (tCO2e)	Solid Waste (tonnes)	Solid Waste Emissions (tCO2e)	Solid Waste Expenditure (\$)
Waste Management	31,672	114	27	463	23	62,340	2,388	170	21,054	39,792	\$ 226,346
Aspen Waste Management	31,672	114	27	463	23	62,340	2,388	170	21,054	39,792	\$ 226,346

Energy Use for Solid Waste estimated based on 2018 data.

Town of Drayton Valley	2015
Total Corporate Energy Use (GJ)	68,274
Total Corporate Emissions (tCO2e)	49,963
Total Corporate Expenditure (\$)	1,879,370

2015 Corporate Inventory for Town of Drayton Valley

	Electricity Use (kWh)	Electricity Use (GJ)	Electricity Emissions (tCO2e)	Natural Gas Use (GJ)	Natural Gas Emissions (tCO2e)	Unspecified Emissions (tCO2e)
Stationary Energy	111,441,922	401,192	94,387	585,570	29,551	3,111
Residential	21,248,513	76,495	17,997	285,946	14,430	-
Commercial	72,009,089	259,233	60,989	295,675	14,921	-
Streetlights	57,490	207	49	-	-	-
Industry	18,126,830	65,257	15,353	3,949	199	-
Unspecified Sources	-	-	-	-	-	3,111

	Gasoline Use (GJ)	Gasoline Emissions (tCO2e)	Diesel Use (GJ)	Diesel Emissions (tCO2e)	Ethanol (E10) Use (GJ)	Ethanol (E10) Emissions (tCO2e)
Transportation	175,266	11,603	191,854	13,774	643,261	28,840
Cars	75,364	4,989	24,941	1,791	276,602	12,401
Light-duty vehicle	98,149	6,498	32,615	2,342	360,226	16,150
Heavy-duty vehicle	1,753	116	134,298	9,642	6,433	288

Vehicle composition for Drayton Valley was estimated based on vehicle composition for Alberta.

	Waste Emissions (tCO2e)
Waste	9
Wastewater	1
Composting	8

Drayton Valley	2015
Total Community Energy Use (GJ)	1,997,143
Total Community Emissions (tCO2e)	181,273

	Electricity Use (kWh)	Electricity Use (GJ)	Electricity Emissions (tCO2e)	Electricity Expenditure (\$)	Natural Gas Use (GJ)	Natural Gas Emissions (tCO2e)	Natural Gas Expenditure (\$)	Propane Use (L)	Propane Use (GJ)	Propane Emissions (tCO2e)	Propane Expenditure (\$)
Municipal Facilities	3,399,239	16,071	2,511	\$ 393,149	19,926	1,217	\$ 156,730	5,577	141	9	\$ 2,230
Airport	86,065	310	64	\$ 14,040	-	-	\$ -	5,577	141	9	\$ 2,230
Other Amenities	67,073	241	50	\$ 12,754	380	19	\$ 3,012				
Public Works Building and Shop	55,427	200	41	\$ 5,902	668	34	\$ 4,788				
Town Office Complex	281,508	1,013	209	\$ 30,047	1,715	87	\$ 11,429				
Maintenance Buildings	21,972	79	16	\$ 5,044	674	34	\$ 5,683				
Clean Energy Technology Centre	334,063	1,203	249	\$ 49,467	1,988	100	\$ 13,139				
Park Valley Pool	375,708	5,187	262	\$ 34,080	1,353	280	\$ 35,679				
Omniplex Arena	1,670,809	6,015	1,243	\$ 161,039	9,577	483	\$ 55,825				
Early Childhood Development Centre	48,735	175	36	\$ 7,268	478	24	\$ 3,651				
MacKenzie Conference Centre	218,224	786	162	\$ 37,410	1,550	78	\$ 10,344				
Historical Society Museum	3,558	13	3	\$ 1,292	148	7	\$ 1,609				
Rotary Park Building	-	-	-	\$ -	159	8	\$ 1,722				
Elanor Pick-Up Arts Centre	66,743	240	50	\$ 8,511	279	14	\$ 2,411				
Splash Park	16,723	60	12	\$ 2,584	-	-	\$ -				
RV Park	135,968	489	101	\$ 20,096	96	5	\$ 1,311				
Urban Housing Program	16,663	60	12	\$ 3,615	861	43	\$ 6,127				
Lights	923,376	3,324	687	\$ 474,975							
Park Lights	14,649	53	11	\$ 8,432							
Street Lights	844,022	3,038	628	\$ 445,441							
Traffic Lights	64,705	233	48	\$ 21,102							
Water Treatment	2,800,629	10,082	2,084	\$ 310,209	5,539	280	\$ 35,947				
Old Water Treatment Plant	1,665,203	5,995	1,239	\$ 143,175	1,224	62	\$ 7,723				
New Water Treatment Plant	867,831	3,124	646	\$ 135,632	3,908	197	\$ 25,053				
Water Reservoir	267,595	963	199	\$ 31,402	407	21	\$ 3,171				
Sewage Treatment	2,922,025	10,519	2,174	\$ 248,157	248	13	\$ 3,354				
Lab	-	-	-	\$ -	92	5	\$ 1,149				
Brazeau Business Park Lift Station	2,548	9	2	\$ 3,670	-	-	\$ -				
Sewer Blower Building	2,644,425	9,520	1,967	\$ 218,783	-	-	\$ -				
Sewer Plant UV	275,052	990	205	\$ 23,639	156	8	\$ 1,498				
Sewer WWTF Outfall	-	-	-	\$ 1,004	-	-	\$ -				
Lift Station Greenfield Subdivision	-	-	-	\$ 1,061	-	-	\$ 707				

2016 Corporate Inventory for Town of Drayton Valley

	Gasoline Use (L)	Gasoline Use (GJ)	Gasoline Emissions (tCO2e)	Gasoline Expenditure (\$)	Diesel Use (L)	Diesel Use (GJ)	Diesel Emissions (tCO2e)	Diesel Expenditure (\$)	Ethanol (E10) Use (L)	Ethanol (E10) Use (GJ)	Ethanol (E10) Emissions (tCO2e)	Ethanol (E10) Expenditure (\$)
Fleet	8,707	305	20	\$ 7,858	63,829	2,445	175	\$ 56,455	44,853	1,519	68	\$ 41,439
Firehall	6,019	211	14	\$ 5,486	1,878	72	5	\$ 1,634				
Public Works	2,688	94	6	\$ 2,372	61,951	2,373	170	\$ 54,821	44,853	1,519	68	\$ 41,439

The municipal fleet fuel use does not include fuel used by contractors, staff and Council using their own vehicles for municipal operations.

	Electricity Use (kWh)	Electricity Use (GJ)	Electricity Emissions (tCO2e)	Natural Gas Use (GJ)	Natural Gas Emissions (tCO2e)	Diesel Use (L)	Diesel Use (GJ)	Diesel Emissions (tCO2e)	Solid Waste (tonnes)	Solid Waste Emissions (tCO2e)	Solid Waste Expenditure (\$)
Waste Management	31,672	114	24	463	23	62,340	2,388	170	16,703	31,569	\$ 213,133
Aspen Waste Management	31,672	114	24	463	23	62,340	2,388	170	16,703	31,569	\$ 213,133

Energy Use and Expenditure for Solid Waste estimated based on 2018 data.

Town of Drayton Valley	2016
Total Corporate Energy Use (GJ)	73,084
Total Corporate Emissions (tCO2e)	41,023
Total Corporate Expenditure (\$)	1,943,636

	Electricity Use (kWh)	Electricity Use (GJ)	Electricity Emissions (tCO ₂ e)	Natural Gas Use (GJ)	Natural Gas Emissions (tCO ₂ e)	Unspecified Emissions (tCO ₂ e)
Stationary Energy	108,939,216	392,182	81,049	548,688	27,689	2,279
Residential	20,170,201	72,613	15,006	272,462	13,750	-
Commercial	70,744,138	254,679	52,632	273,498	13,802	-
Streetlights	61,913	223	46	-	-	-
Industry	17,962,963	64,667	13,364	2,728	138	-
Unspecified Sources	-	-	-	-	-	2,279

	Gasoline Use (GJ)	Gasoline Emissions (tCO ₂ e)	Diesel Use (GJ)	Diesel Emissions (tCO ₂ e)	Ethanol (E10) Use (GJ)	Ethanol (E10) Emissions (tCO ₂ e)
Transportation	141,898	9,394	153,546	11,023	570,809	25,591
Cars	61,016	4,039	19,961	1,433	245,448	11,004
Light-duty vehicle	79,463	5,261	26,103	1,874	319,653	14,331
Heavy-duty vehicle	1,419	94	107,482	7,716	5,708	256

Vehicle composition for Drayton Valley was estimated based on vehicle composition for Alberta.

	Waste Emissions (tCO ₂ e)
Waste	29
Wastewater	1
Composting	28

Drayton Valley	2016
Total Community Energy Use (GJ)	1,807,123
Total Community Emissions (tCO ₂ e)	157,054

	Electricity Use (kWh)	Electricity Use (GJ)	Electricity Emissions (tCO2e)	Electricity Expenditure (\$)	Natural Gas Use (GJ)	Natural Gas Emissions (tCO2e)	Natural Gas Expenditure (\$)	Propane Use (L)	Propane Use (GJ)	Propane Emissions (tCO2e)	Propane Expenditure (\$)
Municipal Facilities	3,263,137	11,746	2,460	\$ 423,216	25,886	1,306	\$ 200,996	5,671	144	9	\$ 3,055
Airport	63,953	230	48	\$ 13,176	-	-	\$ -	5,671	144	9	\$ 3,055
Other Amenities	77,656	280	59	\$ 15,100	442	22	\$ 3,880				
Public Works Building and Shop	46,585	168	35	\$ 5,711	675	34	\$ 5,566				
Town Office Complex	281,454	1,013	212	\$ 32,218	1,860	94	\$ 14,495				
Maintenance Buildings	21,489	77	16	\$ 5,268	877	44	\$ 8,419				
Clean Energy Technology Centre	274,558	988	207	\$ 47,935	2,656	134	\$ 20,467				
Park Valley Pool	356,874	1,285	269	\$ 37,379	5,306	268	\$ 40,610				
Omniplex Arena	1,617,810	5,824	1,220	\$ 175,831	9,812	495	\$ 71,425				
Early Childhood Development Centre	45,959	165	35	\$ 7,620	493	25	\$ 4,321				
Mackenzie Conference Centre	197,728	712	149	\$ 38,269	1,877	95	\$ 14,517				
Historical Society Museum	4,547	16	3	\$ 1,435	205	10	\$ 2,172				
Rotary Park Building	-	-	-	\$ -	320	16	\$ 3,018				
Elanor Pick-Up Arts Centre	72,273	260	54	\$ 10,033	334	17	\$ 3,113				
Splash Park	23,535	85	18	\$ 3,386	-	-	\$ -				
RV Park	159,277	573	120	\$ 24,853	111	6	\$ 1,517				
Urban Housing Program	19,439	70	15	\$ 5,002	918	46	\$ 7,476				
Lights	930,253	3,349	702	\$ 518,916							
Park Lights	9,240	33	7	\$ 7,030							
Street Lights	856,271	3,083	646	\$ 489,804							
Traffic Lights	64,742	233	49	\$ 22,082							
Water Treatment	2,724,134	9,806	2,054	\$ 327,507	5,131	259	\$ 39,193				
Old Water Treatment Plant	1,603,039	5,771	1,209	\$ 149,819	1,315	66	\$ 9,669				
New Water Treatment Plant	857,629	3,087	647	\$ 144,379	3,632	183	\$ 27,486				
Water Reservoir	263,466	948	199	\$ 33,309	184	9	\$ 2,038				
Sewage Treatment	1,853,215	6,672	1,397	\$ 191,643	308	16	\$ 4,015				
Lab	-	-	-	\$ -	88	4	\$ 1,226				
Brazeau Business Park Lift Station	3,352	12	3	\$ 4,640							
Sewer Blower Building	1,548,072	5,573	1,167	\$ 155,054							
Sewer Plant UV	298,864	1,076	225	\$ 29,581	220	11	\$ 2,082				
Sewer WWTF Outfall	-	-	-	\$ 1,088							
Lift Station Greenfield Subdivision	2,927	11	2	\$ 1,280	-	-	\$ 707				

	Gasoline Use (L)	Gasoline Use (GJ)	Gasoline Emissions (tCO2e)	Gasoline Expenditure (\$)	Diesel Use (L)	Diesel Use (GJ)	Diesel Emissions (tCO2e)	Diesel Expenditure (\$)	Ethanol (E10) Use (L)	Ethanol (E10) Use (GJ)	Ethanol (E10) Emissions (tCO2e)	Ethanol (E10) Expenditure (\$)
Fleet	5,986	210	14	\$ 5,900	48,534	1,859	133	\$ 49,406	44,127	1,494	67	\$ 45,553
Firehall	5,939	208	14	\$ 5,851	1,541	59	4	\$ 1,534				
Public Works	47	2	0	\$ 49	46,993	1,800	129	\$ 47,872	44,127	1,494	67	\$ 45,553

The municipal fleet fuel use does not include fuel used by contractors, staff and Council using their own vehicles for municipal operations.

	Electricity Use (kWh)	Electricity Use (GJ)	Electricity Emissions (tCO2e)	Natural Gas Use (GJ)	Natural Gas Emissions (tCO2e)	Diesel Use (L)	Diesel Use (GJ)	Diesel Emissions (tCO2e)	Solid Waste (tonnes)	Solid Waste Emissions (tCO2e)	Solid Waste Expenditure (\$)
Waste Management	31,672	114	24	463	23	62,340	2,388	170	17,558	33,185	\$ 199,920
Aspen Waste Management	31,672	114	24	463	23	62,340	2,388	170	17,558	33,185	\$ 199,920

Energy Use and Expenditure for Solid Waste estimated based on 2018 data.

Town of Drayton Valley	2017
Total Corporate Energy Use (GJ)	69,570
Total Corporate Emissions (tCO2e)	41,819
Total Corporate Expenditure (\$)	2,009,320

2017 Corporate Inventory for Town of Drayton Valley

	Electricity Use (kWh)	Electricity Use (GJ)	Electricity Emissions (tCO ₂ e)	Natural Gas Use (GJ)	Natural Gas Emissions (tCO ₂ e)	Unspecified Emissions (tCO ₂ e)
Stationary Energy	110,768,825	398,767	83,517	644,371	32,518	3,661
Residential	20,625,682	74,252	15,551	321,546	16,227	-
Commercial	72,339,250	260,421	54,542	322,783	16,289	-
Streetlights	53,894	194	41	-	-	-
Industry	17,749,999	63,900	13,383	42	2	-
Unspecified Sources	-	-	-	-	-	3,661

	Gasoline Use (GJ)	Gasoline Emissions (tCO ₂ e)	Diesel Use (GJ)	Diesel Emissions (tCO ₂ e)	Ethanol (E10) Use (GJ)	Ethanol (E10) Emissions (tCO ₂ e)
Transportation	82,577	5,467	179,893	12,915	657,096	29,460
Cars	39,453	2,612	23,386	1,679	282,551	12,668
Light-duty vehicle	42,206	2,794	30,582	2,196	367,974	16,497
Heavy-duty vehicle	918	61	125,925	9,040	6,571	295

Vehicle composition for Drayton Valley was estimated based on vehicle composition for Alberta.

	Waste Emissions (tCO ₂ e)
Waste	20
Wastewater	1
Composting	19

Drayton Valley	2017
Total Community Energy Use (GJ)	1,962,704
Total Community Emissions (tCO ₂ e)	167,557

	Electricity Use (kWh)	Electricity Use (GJ)	Electricity Emissions (tCO2e)	Electricity Expenditure (\$)	Natural Gas Use (GJ)	Natural Gas Emissions (tCO2e)	Natural Gas Expenditure (\$)	Propane Use (L)	Propane Use (GJ)	Propane Emissions (tCO2e)	Propane Expenditure (\$)
Municipal Facilities	3,135,587	11,289	2,364	\$ 443,590	26,348	1,330	\$ 197,781	5,320	135	8	\$ 3,152
Airport	72,364	261	55	\$ 14,794	-	-	\$ -	5,320	135	8	\$ 3,152
Other Amenities	73,320	264	55	\$ 16,411	493	25	\$ 4,115				
Public Works Building and Shop	41,634	150	31	\$ 5,755	686	35	\$ 5,469				
Town Office Complex	270,384	973	204	\$ 34,008	1,944	98	\$ 14,747				
Maintenance Buildings	28,004	101	21	\$ 6,266	863	44	\$ 8,019				
Clean Energy Technology Centre	276,527	995	209	\$ 51,093	2,404	121	\$ 18,123				
Park Valley Pool	392,670	1,414	296	\$ 43,961	6,625	334	\$ 49,453				
Omniplex Arena	1,523,783	5,486	1,149	\$ 181,943	9,040	456	\$ 62,372				
Early Childhood Development Centre	45,377	163	34	\$ 8,203	429	22	\$ 3,715				
Mackenzie Conference Centre	204,960	738	155	\$ 40,573	1,875	95	\$ 14,237				
Historical Society Museum	6,660	24	5	\$ 1,766	277	14	\$ 2,597				
Rotary Park Building	-	-	-	\$ -	304	15	\$ 2,802				
Elanor Pick-Up Arts Centre	74,885	270	56	\$ 11,342	311	16	\$ 2,851				
Splash Park	12,799	46	10	\$ 2,954	-	-	\$ -				
RV Park	94,315	340	71	\$ 19,203	102	5	\$ 1,386				
Urban Housing Program	17,904	64	14	\$ 5,318	995	50	\$ 7,895				
Lights	767,300	2,763	579	\$ 528,120							
Park Lights	17,948	65	14	\$ 8,162							
Street Lights	684,908	2,466	516	\$ 497,362							
Traffic Lights	64,443	232	49	\$ 22,596							
Water Treatment	2,890,959	10,407	2,180	\$ 366,799	4,613	233	\$ 34,540				
Old Water Treatment Plant	1,795,893	6,465	1,354	\$ 179,825	1,306	66	\$ 9,514				
New Water Treatment Plant	842,543	3,033	635	\$ 152,798	3,132	158	\$ 23,138				
Water Reservoir	252,523	909	190	\$ 34,176	175	9	\$ 1,888				
Sewage Treatment	1,916,505	6,900	1,445	\$ 220,113	262	13	\$ 3,586				
Lab					78	4	\$ 1,110				
Brazeau Business Park Lift Station	3,252	12	2	\$ 5,467							
Sewer Blower Building	1,592,366	5,733	1,201	\$ 176,823							
Sewer Plant UV	308,540	1,111	233	\$ 34,363	183	9	\$ 1,807				
Sewer WWTF Outfall	-	-	-	\$ 1,107							
Lift Station Greenfield Subdivision	12,347	44	9	\$ 2,353	1	0	\$ 670				

	Gasoline Use (L)	Gasoline Use (GJ)	Gasoline Emissions (tCO2e)	Gasoline Expenditure (\$)	Diesel Use (L)	Diesel Use (GJ)	Diesel Emissions (tCO2e)	Diesel Expenditure (\$)	Ethanol (E10) Use (L)	Ethanol (E10) Use (GJ)	Ethanol (E10) Emissions (tCO2e)	Ethanol (E10) Expenditure (\$)
Fleet	8,344	292	19	\$ 9,728	50,286	1,926	138	\$ 59,577	41,832	1,416	64	\$ 49,381
Firehall	6,739	236	16	\$ 7,795	3,325	127	9	\$ 3,940				
Public Works	1,605	56	4	\$ 1,933	46,961	1,799	129	\$ 55,637	41,832	1,416	64	\$ 49,381

The municipal fleet fuel use does not include fuel used by contractors, staff and Council using their own vehicles for municipal operations.

	Electricity Use (kWh)	Electricity Use (GJ)	Electricity Emissions (tCO2e)	Natural Gas Use (GJ)	Natural Gas Emissions (tCO2e)	Diesel Use (L)	Diesel Use (GJ)	Diesel Emissions (tCO2e)	Solid Waste (tonnes)	Solid Waste Emissions (tCO2e)	Solid Waste Expenditure (\$)
Waste Management	31,672	114	24	463	23	62,340	2,388	170	16,322	33,933	\$ 186,706
Aspen Waste Management	31,672	114	24	463	23	62,340	2,388	170	16,322	33,933	\$ 186,706

Town of Drayton Valley	2018
Total Corporate Energy Use (GJ)	69,316
Total Corporate Emissions (tCO2e)	42,523
Total Corporate Expenditure (\$)	2,103,074

	Electricity Use (kWh)	Electricity Use (GJ)	Electricity Emissions (tCO ₂ e)	Natural Gas Use (GJ)	Natural Gas Emissions (tCO ₂ e)	Unspecified Emissions (tCO ₂ e)
Stationary Energy	111,920,391	402,913	84,386	678,418	34,236	3,671
Residential	20,761,399	74,741	15,654	342,305	17,274	-
Commercial	74,132,222	266,876	55,894	336,113	16,962	-
Streetlights	97,315	350	73	-	-	-
Industry	16,929,455	60,946	12,764	-	-	-
Unspecified Sources	-	-	-	-	-	3,671

	Gasoline Use (GJ)	Gasoline Emissions (tCO ₂ e)	Diesel Use (GJ)	Diesel Emissions (tCO ₂ e)	Ethanol (E10) Use (GJ)	Ethanol (E10) Emissions (tCO ₂ e)
Transportation	72,661	4,810	159,010	11,416	669,887	30,033
Cars	31,244	2,068	20,671	1,484	288,051	12,914
Light-duty vehicle	40,690	2,694	27,032	1,941	375,137	16,819
Heavy-duty vehicle	727	48	111,307	7,991	6,699	300

Vehicle composition for Drayton Valley was estimated based on vehicle composition for Alberta.

	Waste Emissions (tCO ₂ e)
Waste	24
Wastewater	1
Composting	23

Drayton Valley	2018
Total Community Energy Use (GJ)	1,982,889
Total Community Emissions (tCO ₂ e)	168,575

Fuel	Factor	Unit	Source
Electricity	0.0036	GJ/kWh	Canada Energy Boards, Energy Conversion Tables https://apps.cer-rec.gc.ca/Conversion/conversion-tables.aspx?GoCTemplateCulture=en-CA#s1ss2
Natural Gas	0.0373	GJ/m3	
Gasoline	0.03466	GJ/L	
Diesel	0.03868	GJ/L	
Ethanol	33.6	GJ/m3	
Propane	0.02559	GJ/L	https://www2.gov.bc.ca/assets/gov/taxes/sales-taxes/publications/conversion-factors-by-fuel.pdf

Fuel	Factor	Unit	Source
Electricity	750	gCO ₂ / kWh	Canada's National Inventory Report 1990-2017, Part 3, Table A13–10 - Electricity Generation and GHG Emission Details for Alberta
	0.04	gCH ₄ / kWh	
	0.01	gN ₂ O/kWh	
	750	gCO ₂ eq/kWh	
Natural Gas	1928	gCO ₂ /m3	Canada's National Inventory Report 1990-2017, Part 2, Table A6–1 - CO ₂ Emissions Factors for Natural Gas
Propane	1515	gCO ₂ /L	Canada's National Inventory Report 1990-2017, Part 2, Table A6–3 - CO ₂ Emissions Factors for Natural Gas Liquids
Gasoline	2307	gCO ₂ /L	Canada's National Inventory Report 1990-2017, Part 2, Table A6–13 - Emissions Factors for Energy Mobile Combustion Sources
Diesel	2681	gCO ₂ /L	Canada's National Inventory Report 1990-2017, Part 2, Table A6–13 - Emissions Factors for Energy Mobile Combustion Sources
Ethanol	1508	gCO ₂ /L	Canada's National Inventory Report 1990-2017, Part 2, Table A6–13 - Emissions Factors for Energy Mobile Combustion Sources

Pulling Together

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