



Local Energy Stewardship Plan

*for energy conservation and
reducing greenhouse gas emissions*

DECEMBER 2020

Pulling
Together

DRAYTONVALLEY.CA



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List of Abbreviations

CEIP: Clean Energy Improvement Program
CHP: combined heat and power
CO₂: carbon dioxide
tCO₂e: tonnes of carbon dioxide equivalent
ECM: energy conservation measures
FCM: Federation of Canadian Municipalities
GHG: greenhouse gas
GJ: gigajoules
HVAC system: heating, ventilation, and air-conditioning system
kW: kilowatt
kWh: kilowatt-hours
LED: light emitting diode
MCCAC: Municipal Climate Change Action Centre
PACE Program: Property Assessed Clean Energy
PCP Program: Partners for Climate Protection Program
POUR Program: Preserve Our Ultimate Resource
TODV: Town of Drayton Valley



Executive Summary

The Local Energy Stewardship Plan for Drayton Valley is developed to meet the Town's voluntary commitment to the Federation of Canadian Municipalities (FCM) Partners for Climate Protection Program (PCP Program). Preparation of this document included developing a greenhouse gas inventory, setting emissions reduction targets, stakeholder engagement, and outlining goals and actions to reduce energy use and emissions.

Inventory and Forecast Summary

An analysis of municipal (corporate) actions and community-wide consumption provided the following baseline and forecast for corporate and community emissions:

	Energy Use 2015	Baseline Emissions 2015	Forecast Emissions 2030
Corporate	68,274 GJ	49,963 tCO ₂ e	56,055 tCO ₂ e
Community	1,997,143 GJ	181,273 tCO ₂ e	203,377 tCO ₂ e

Reduction Target Summary

The Town of Drayton Valley adopted the following corporate and community emissions reduction targets through Council Resolution #130/20 on August 19, 2020:

- Reduce corporate emissions by 8% below 2015 levels by 2030
- Reduce community emissions by 6% below 2015 levels by 2030

Local Action Plan Summary

Transitioning to a path of responsible energy stewardship is not easy. The Town of Drayton Valley and its community has already started many actions that will reduce energy use and greenhouse gas emissions.

This local action plan identifies sixteen potential actions that could put Drayton Valley on track to meet the adopted targets. This list is not static but will be evaluated and updated from time-to-time as better information emerges.

The Town of Drayton Valley will work with other levels of governments, businesses, organizations, and residents to implement the action plan to accomplish, and hopefully exceed, these targets and maximize its benefits for residents and businesses in Drayton Valley.

The Town of Drayton Valley officially adopted the Local Energy Stewardship Plan with Council Resolution #194/20 on December 16, 2020.



Background

The Town of Drayton Valley developed this Local Energy Stewardship Plan as a guiding document for municipal and community collaborative actions that encourage sustainable energy use, reduce greenhouse gas emissions, and improve waste management.

WHAT IS THE LOCAL ENERGY STEWARDSHIP PLAN?

This Local Energy Stewardship Plan:

- describes the **current state** of energy use and greenhouse gas emissions in Drayton Valley;
- predicts **future energy requirements**; and
- identifies **practical opportunities** to use energy more efficiently, reduce greenhouse gas emissions and manage waste.

The plan was created through consultation and collaboration with local and external stakeholders. We consider the Local Energy Stewardship Plan as a ‘living document,’ providing a plan of action for today and flexible enough to adapt to the emerging conditions of tomorrow.

PARTNERS FOR CLIMATE PROTECTION (PCP)

The Local Energy Stewardship Plan is developed within a broader management framework as outlined by the PCP Program. The PCP Program is managed and delivered by the FCM and ICLEI – Local Governments for Sustainability Canada (ICLEI Canada). To date, over 350 Canadian municipalities participate in the PCP Program, with over 180 local action plans prepared¹.

The PCP Program guides municipalities through a five-step Milestone Framework, designed to help municipalities reduce emissions while creating opportunities to save money, build a diverse economy, generate lasting jobs, and protect the natural environment.



Figure 1: Five-step PCP Milestone Framework

¹ FCM Partners for Climate Protection Program, <https://fcm.ca/en/programs/partners-climate-protection>

Town of Drayton Valley's Commitment to the PCP Program

The Town of Drayton Valley officially joined the PCP Program in 2015 with Council Resolution #217/15. This resolution signaled the Town's commitment to reduce energy use and greenhouse gas emissions both in its municipal operations and within the community.

Compared to other countries worldwide, or even other municipalities in Canada, Drayton Valley has been blessed so far with minimal exposure to the impacts of climate change. Nevertheless, the Town recognizes that there are multiple co-benefits when mitigating the effects of climate change that makes it logical for Drayton Valley to make this commitment.

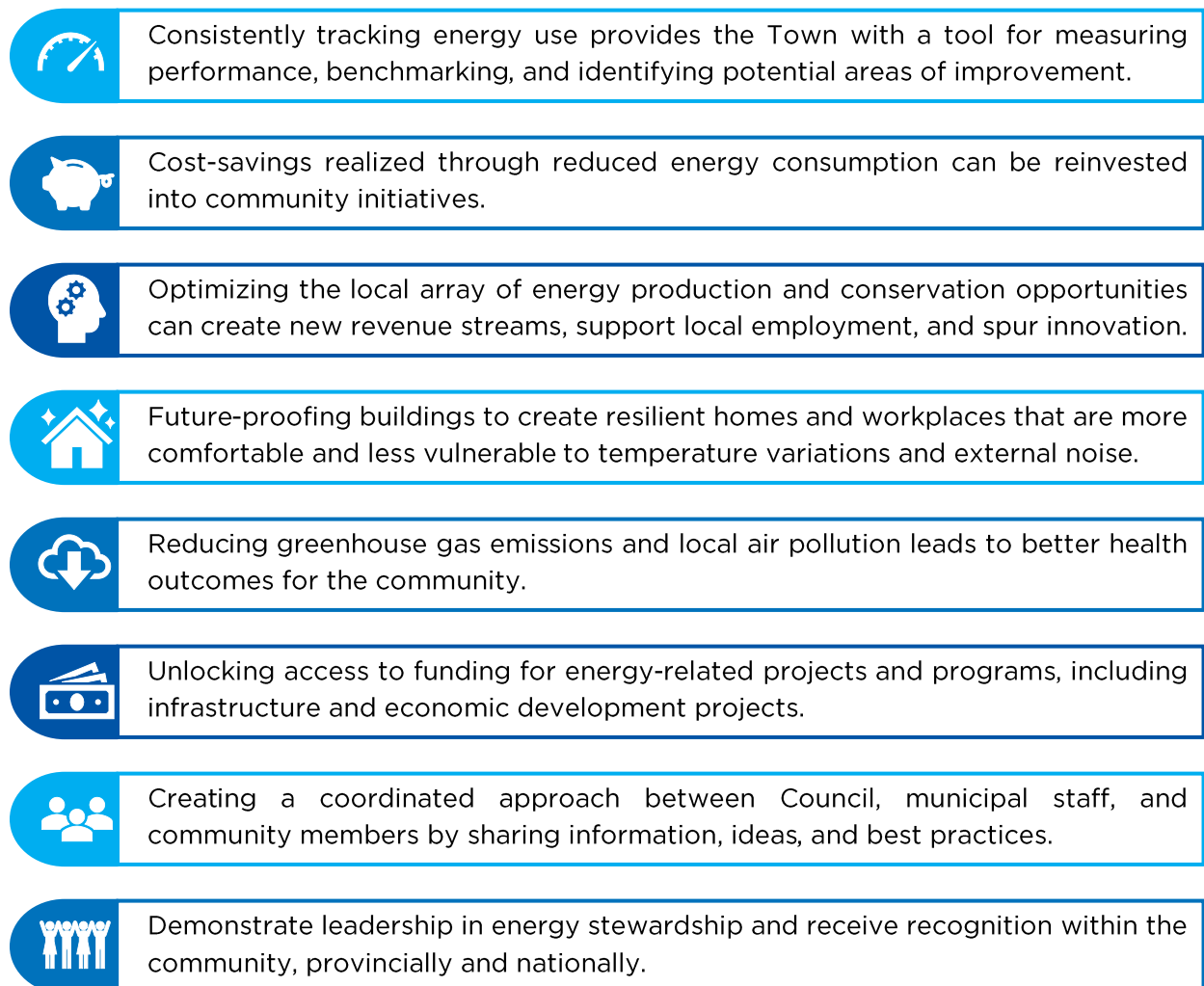


Figure 2: Co-benefits of committing to the PCP Program

Achieving PCP Milestones

The Town of Drayton Valley officially achieved PCP Milestone #1 on January 27th, 2020. To qualify for this achievement, the Town submitted an emissions inventory and a ten-year emissions forecast. The 2015-2018 Energy and Emissions Inventory Report is accessible from the Town's website at <https://www.draytonvalley.ca/drayton-valley-energy/>.

The energy and emissions inventory enables the Town to track energy use, emissions, and spending. With the forecast, Town can now measure progress over time.



The Town was officially awarded PCP Milestone #2 in October 2020 after Council formally adopted corporate and community emissions reduction targets in August 2020.

The next step is PCP Milestone #3 which requires a strategic action plan of how to achieve the adopted targets. The Town of Drayton Valley adopted the Local Energy Stewardship Plan for implementation with Council Resolution #194/20 in December 2020. This Local Energy Stewardship Plan encapsulates the reporting for both PCP Milestone #2 and Milestone #3, along with the 2019 energy and emissions inventory.

ALIGNMENT WITH EXISTING POLICIES AND PLANS

The Local Energy Stewardship Plan supports existing corporate documents within the Town, including:

- [Drayton Valley Strategic Plan 2019-2021](#): This Plan has goals related to recovery and resilience as well as improved services through better management of resources.
- [Drayton Valley Sustainability Vision 2019-2021](#): The Vision initiated measures like the *Town Sustainability Meeting*, *Waste & Recycling*, *Innovative Infrastructure*, and *Living Lightly*.
- [Drayton Valley Five Pillars for Economic Resiliency](#): Energy is one of the pillars identified to drive economic development in Drayton Valley.
- [Drayton Valley Social Development Plan 2020-2024](#): One of the goals, *A Distinct and Livable Community*, is for Drayton Valley to become a clean and green community.
- [Drayton Valley Integrated Waste Management Strategy 2013](#): This describes a long-term strategic plan for waste management and waste diversion for positive environmental outcomes.

New policies and plans developed by the Town, including the upcoming Municipal Development Plan and Infrastructure Master Plan, will integrate elements from the Local Energy Stewardship Plan as appropriate.

FINANCIAL IMPLICATIONS

The Town of Drayton Valley receives a generous financial contribution from FCM for the completion of the inventory and the development of the Local Energy Stewardship Plan. Moving forward, each emission reduction action recommended in this Local Energy Stewardship Plan will have its own financial and staff resource implications.

Financing these actions will depend on the action itself. Actions with clear business cases could undergo routine capital and operating budgetary processes. Other actions that are more innovative or has longer payback periods could become more attractive by leveraging additional financial resources. Potential financial resources include provincial and federal grants, loans, and other incentives or private sector contributions. Leveraging these resources would reduce financial risk and obligations associated with the action.

STAKEHOLDER ENGAGEMENT

Stakeholder engagement, internally within the municipality and externally with the community, is an essential feature of the Local Energy Stewardship Plan. Collaborative effort improves buy-in and accountability, thereby enhancing the results of the Plan.

Internal engagement includes consultation with Council, senior management, and other staff through various platforms, including Council's Regular Meeting and Governance & Priorities Meeting, the Sustainability Committee and the Economic Development Committee, and the Town Organization Sustainability Meeting.

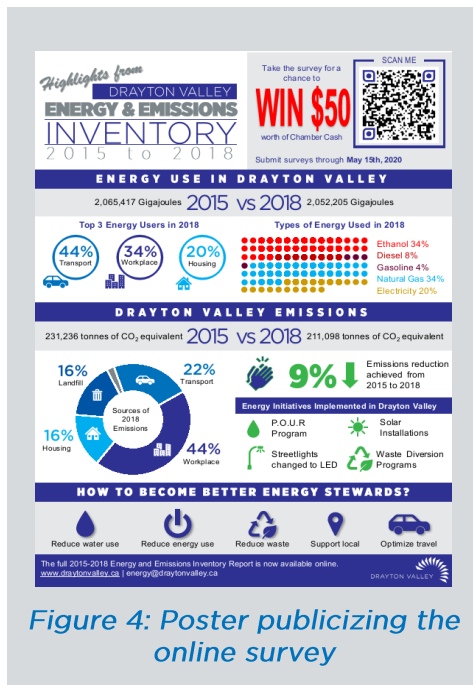


Figure 4: Poster publicizing the online survey

The Town developed an external engagement strategy which was approved by Council for implementation from March to April 2020. The COVID-19 pandemic severely curtailed the proposed engagement strategy. A host of engagement activities with local community groups and organizations had to be canceled.

Instead, the Town conducted an online survey from April 20th to May 18th, 2020. The aim was to gather feedback from businesses and residents on their priorities for energy stewardship and energy programming in Drayton Valley. The survey results were summarized in the "What We Heard Report" which is accessible from the Town of Drayton Valley's website at <https://www.draytonvalley.ca/drayton-valley-energy/>.

Feedback from all stages of stakeholder engagement was incorporated into the development of targets and actions in the Local Energy Stewardship Plan.

A Vision for the Future

By 2050, Drayton Valley is thriving and vibrant because the municipality, businesses, and residents have worked together to plan for and adapt to its evolving energy system by building upon the strengths and opportunities available to the community.

To us, this means that we have:



Figure 5: Our preferred energy future for Drayton Valley

Energy and Greenhouse Gas Emissions

UNDERSTANDING THE LOCAL CONTEXT

Drayton Valley is in west-central Alberta, in the heart of Brazeau County. The town sits atop a high plateau between the North Saskatchewan River and the Pembina River. There are agricultural lands to the east and forested foothills to the west. The closest city center is Edmonton, about 90 minutes away.

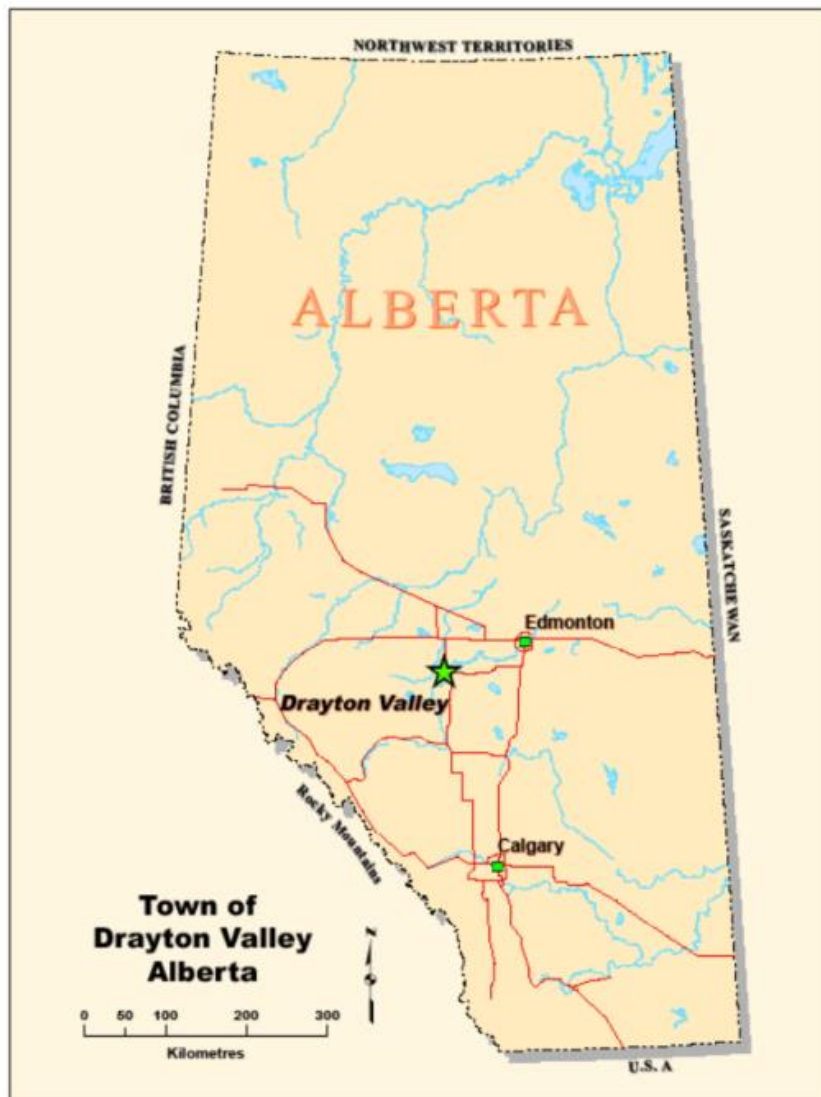


Figure 6: Location of Drayton Valley within Alberta

Located about 766.3 meters (2,750 feet) above sea level, the Town receives a fair amount of sunlight, ranging from roughly 17 hours in summer to 7 hours in winter. The average temperature range in the summer is between 10°C and around 25°C. The average temperature range in the winter is from -16°C to -6°C².

Key economic drivers consist of the oil and gas industry, the forestry industry, and the agricultural industry. The Town is cultivating new initiatives to build-up the local tourism and educational industries.

² Drayton Valley Economic Strategy (2016)

The 2016 federal census puts Drayton Valley population at 6,867 within a geographical area of 30.72 square kilometers³. Population growth is likely to remain slow in the next decade. The 2015-2018 Energy and Emissions Report for Drayton Valley estimates a 0.77% growth, with corresponding forecasted growth in energy use⁴.

The average age of residents is 36.5. About 18% have trades certification, and 43% have a college or university degree. Median family income is \$103,130, which is slightly higher than the provincial average of \$100,430⁵.

The Alberta government reported that Drayton Valley had 2,703 dwelling units in 2017, where over 60% are single-detached houses⁵. About 76% of residents own their own homes. Housing stock in Drayton Valley is generally older. At least a quarter was built during the oil boom in the early 1960s⁶. As older houses tend to be less energy efficient, this will impact residents' energy spending.

Over 90% of the working population of Drayton Valley work within the Town, with commuting times of less than 15 minutes³. Drayton Valley is well-connected to Edmonton, Red Deer, Calgary, Grande Prairie, and the mountain parks via Highways 22 and 39. The Drayton Valley Industrial Airport serves both the recreational and business needs of the area.

Residents enjoy access to recreational and sporting opportunities during the entire year. The Omniplex is the crown jewel of Drayton Valley, offering a wide variety of recreational experiences for the community. Omniplex facilities include two arenas, a curling rink, a fitness centre, the MacKenzie Conference Centre, and the West Valley RV Park and baseball diamonds. Drayton Valley has ten designated parks and playgrounds, five school playgrounds and four recreational ponds. There are 14 kilometers of paved walking paths, several parks golf courses within a half hour drive and a ski hill 10 kilometers away.

Fortis Alberta manages electricity services in Drayton Valley while ATCOGas provides natural gas services. Residents and businesses can choose to purchase electricity from a variety of energy retailers. The Town of Drayton Valley provides water, waste, and sewage services.

³ Statistics Canada Census Profile, 2016 Census for Drayton Valley

⁴ Drayton Valley 2015-2018 Energy and Emissions Inventory Report (2020) <https://www.draytonvalley.ca/drayton-valley-energy/>

⁵ Alberta Regional Dashboard – Drayton Valley, <https://regionaldashboard.alberta.ca/region/drayton-valley/#/>

⁶ Drayton Valley Municipal Development Plan (2012) <https://draytonvalley.ca/wp-content/uploads/2014/09/Municipal-Development-Plan.pdf>

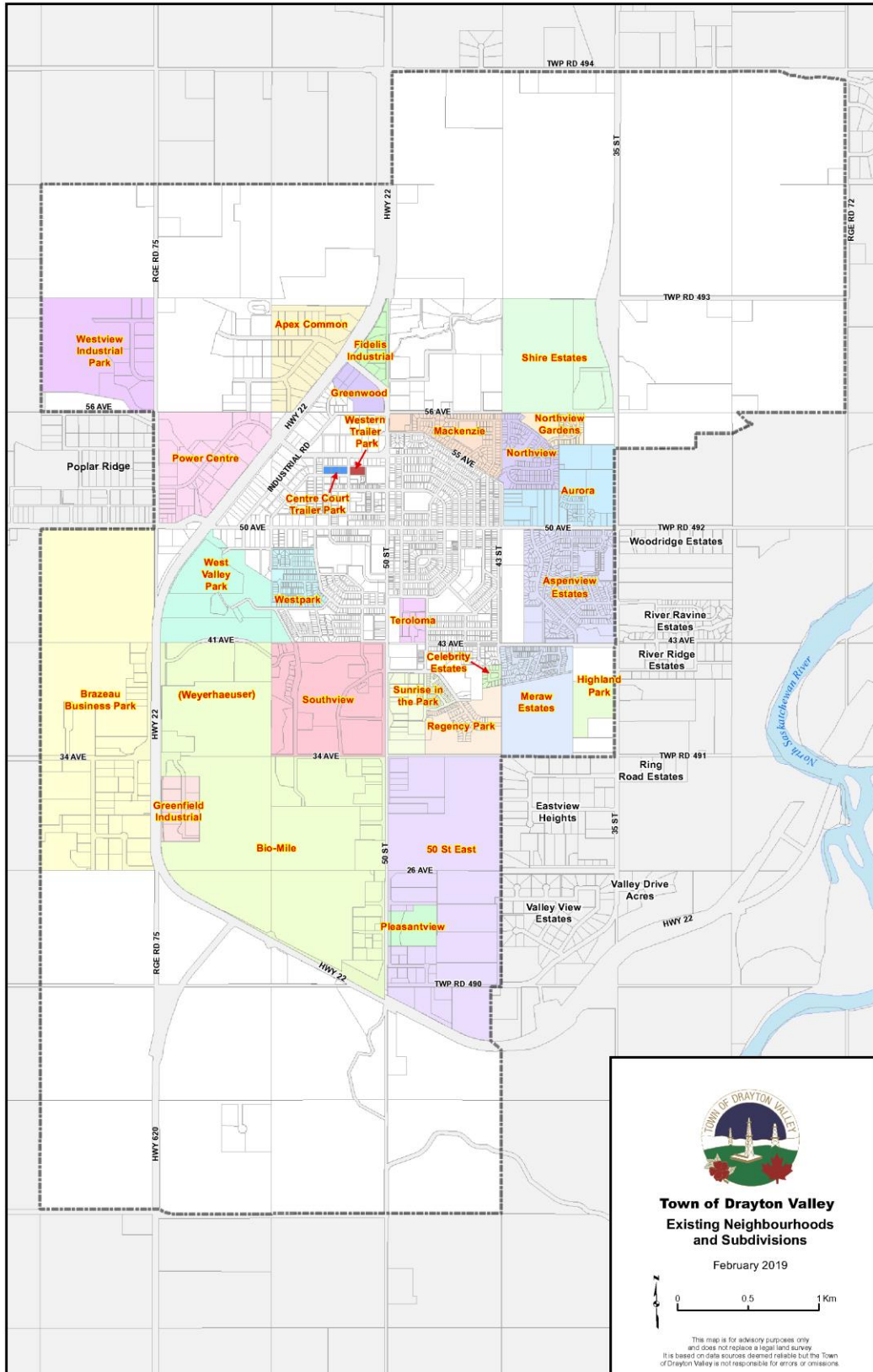


Figure 7: Neighbourhoods and subdivisions in Drayton Valley

DRAYTON VALLEY'S ENERGY USE AND EMISSIONS

Over the past five years, overall energy use has hovered at the 2 million gigajoule (GJ) level with a marked dip in 2016. Transportation fuel, which includes gasoline, diesel, and ethanol-blend, is the dominant fuel at 47%, followed by natural gas (32%) and electricity (21%).

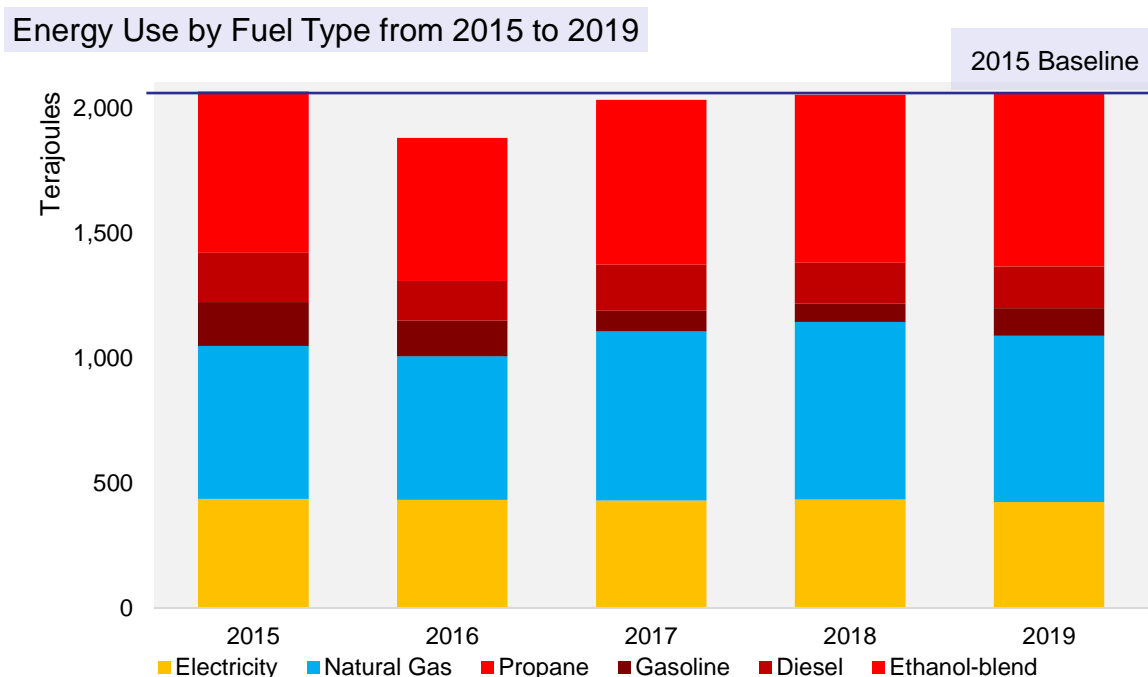


Figure 8: Drayton Valley energy use by fuel type, 2015-2019

Traditionally, energy is required to grow an economy and to meet the demands of a growing population. Furthermore, a modern lifestyle comes with modern appliances and services with higher energy demands. Decoupling energy use and economic growth is possible with energy efficiency. Energy efficiency can be achieved with better technology and smart behavioral changes.

A direct impact of energy use is greenhouse gas emissions, which are generated from human activities. Examples of activities that generate emissions are using gasoline for transportation, as well as natural gas combustion for electricity production and heating buildings.

In 2019, Drayton Valley's total emissions was 214,804 tonnes of CO₂ equivalent, a slight increase from 2018 emissions. This total is about 7% lower than emissions in the baseline year 2015.

The greenest and cheapest energy is the energy that is not used.

As total energy use has not changed much over the years, what is causing this positive reduction in emissions?

Greenhouse Gas Emissions by Sector from 2015 to 2019

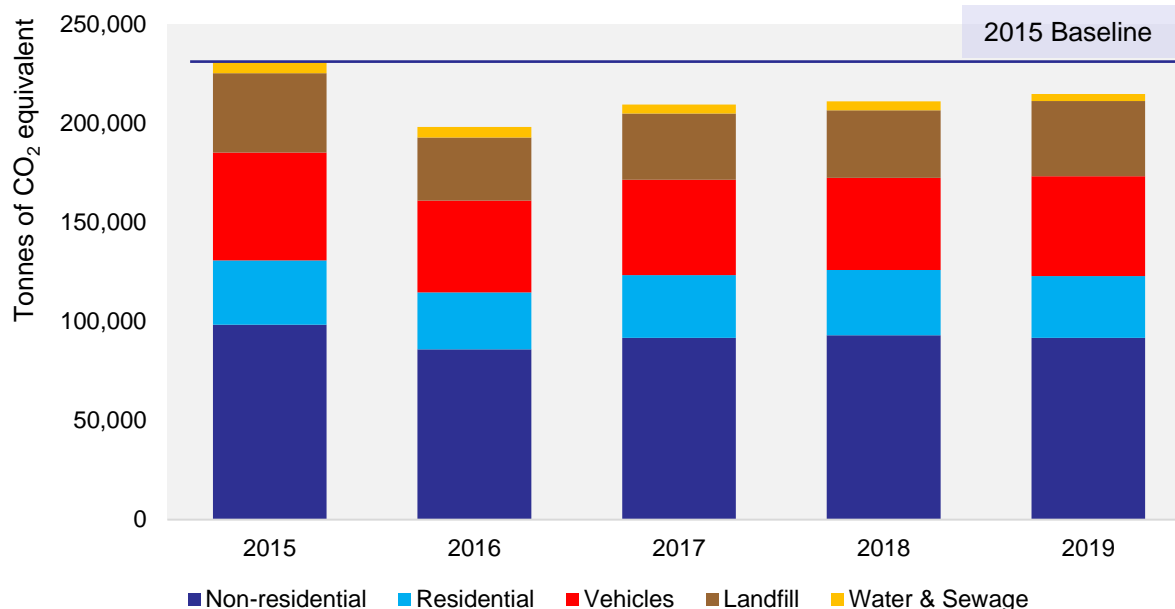


Figure 9: Drayton Valley emissions by sector, 2015-2019

Most of the positive reductions can be attributed to fuel shifting at the provincial level.

- Transportation Sector:** Most fuelling stations have switched from selling pure gasoline to E10 ethanol, a type of biofuel that blends gasoline with up to 10% ethanol. Ethanol is fuel produced from corn and wheat. Combusting ethanol generates fewer emissions compared to combusting gasoline.
- Power Sector:** Almost 90% of the total installed generation capacity in Alberta are thermal plants that run on fossil fuel combustion. From 2015 to 2018, the share of electricity produced from coal has steadily decreased and was by natural gas⁷. Since coal generates almost double the emissions of natural gas, the provincial-level switch from coal to natural gas has resulted in a positive impact on greenhouse gas emissions reductions in Drayton Valley.

⁷ Alberta Utilities Commissions Annual Electricity Data, <http://www.auc.ab.ca/pages/annual-electricity-data.aspx>

Greenhouse gas emissions per capita

Emissions per capita is a useful indicator for comparison and benchmarking with other municipalities, or with federal and provincial measurements. Assuming population growth of 0.77% since 2016, the total emissions for Drayton Valley translate to 30.6 tonnes of CO₂ equivalent emitted per person in 2019. Compared to other Albertan municipalities, Drayton Valley has one of the highest emissions per capita. Canada's recorded emissions per capita for 2017 was 19.6 tonnes of CO₂ equivalent per capita while at the provincial level, Alberta's was 64.3 tonnes of CO₂ equivalent per capita⁸.

Categorizing Emissions into Corporate and Community

In compliance with the PCP Milestone Framework, Drayton Valley's inventory and local action plan are reported in two categories: corporate and community.

- **Corporate measures** target emissions that are under direct municipal control.
- **Community measures** target emissions from the community at large.

⁸Canada Energy Regulator, Provincial and Territorial Energy Profiles – Alberta, <https://www.cer-rec.gc.ca/nrg/ntgrtd/mrkt/nrgsstmprfls/ab-eng.html>

CORPORATE ENERGY USE AND EMISSIONS

The corporate category zooms into municipal operations and services; this includes all activities over which the municipality would have direct control and is accountable for as a corporate entity. Sources of emissions include municipal buildings, municipal fleet, water & sewage treatment, street lighting, and solid waste.

Corporate Energy Use and Emissions Inventory

Energy use records the use of energy in municipal buildings, municipal fleet, and services. Fuel use by contractors, staff, or Council when using their own vehicle is not included.

Energy expenditure recorded in 2019 is high at 2 million dollars. Compare this to the Canadian average for annual local government energy expenditures of \$700,000 for municipalities with a population of less than 10,000⁹.

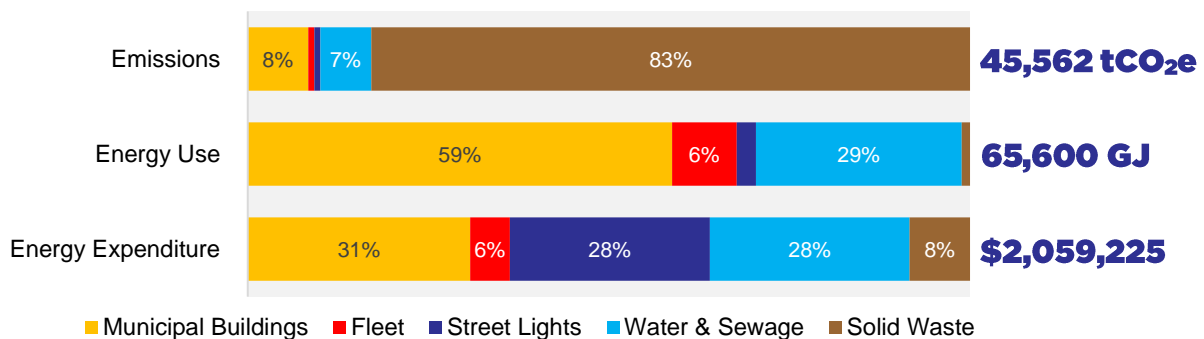


Figure 10: Corporate energy use, energy expenditure and emissions in 2019

Although 60% of the energy use comes from building operations, the bulk of emissions (over 80%) was generated in the waste sector. According to the PCP Protocol, since the Town owns Aspen Waste Management Facility, all emissions from waste processed at the facility is inventoried as corporate emissions. This means that regardless of whether the waste comes from the municipal, or from the community within Drayton Valley boundaries or even waste brought in from outside of Drayton Valley, it will still contribute to corporate waste emissions. This will be an important factor in setting the corporate target for the Town.

⁹ GMF Municipal Energy Roadmap (2020) <https://data.fcm.ca/documents/reports/GMF/2020/gmf-municipal-energy-roadmap.pdf>

Corporate Emissions Forecast

Based on the projected increase of Drayton Valley's population by 0.77% annually, the Town of Drayton Valley's corporate emissions is forecasted to reach 56,055 tonnes of CO₂ equivalent by 2030. This amount corresponds to a 12% increase over the 2015 baseline year emissions.

Corporate Emissions Reduction Target

Setting the corporate emissions reduction target for Drayton Valley requires us to consider several factors. The PCP Program recommends that municipalities set their corporate reduction target at 20% below the baseline within a ten-year period.

Corporate Emissions by Sector from 2015 to 2019

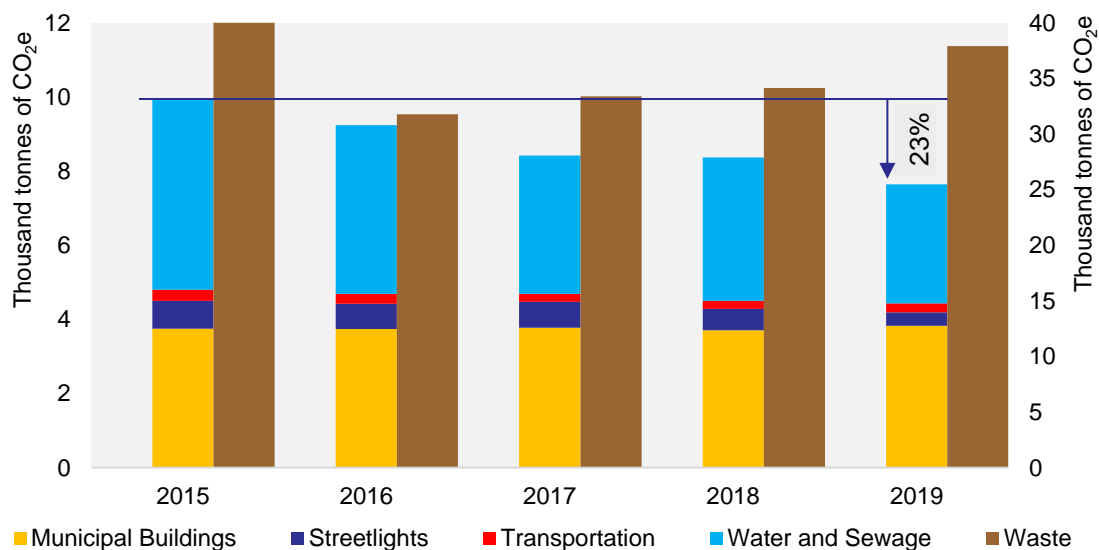


Figure 11: Corporate emissions by sector, from 2015 to 2019

However, when we analyze the corporate emissions since 2015, it is evident that if we remove waste sector emissions, the rest of the corporate sectors have actually reduced emissions by over 20%. The Town achieved this remarkable reduction through provincial-level fuel shifting, the Center for Water Intelligence plant replacing the aging water treatment plant, re-lamping of streetlights as well as other energy efficiency improvements.

For the waste sector, the Town is considering different technologies to prolong the operational life of the Aspen Waste management facility. One of the co-benefits sought for is methane emissions reduction. The Town will most likely sell carbon credits to make this project financially viable. Therefore, the emissions reductions achieved through landfill projects could not contribute towards the corporate emissions reduction target.

Understanding that the no-to-low-cost opportunities for corporate emissions reductions have mostly been realized, and considering the waste sector implications, it is unrealistic for the Town to set too ambitious a target for corporate emissions reduction. Furthermore, feedback from stakeholder engagement clearly indicates a lack of appetite for “Big Strides” goals as well. Given these constraints, the Town of Drayton Valley will set its corporate emissions reduction target to 8% below 2015 levels by 2030.

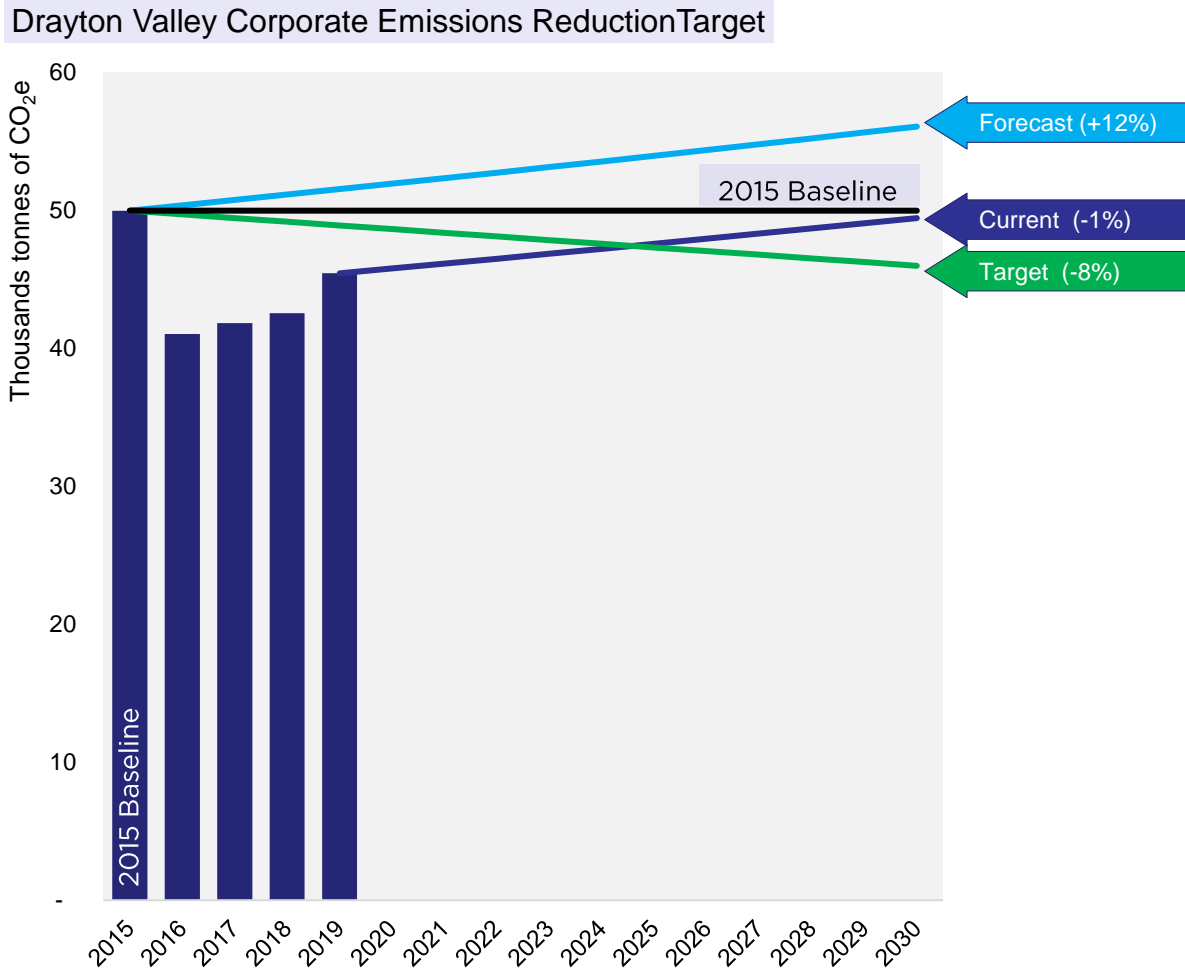


Figure 12: Corporate emissions target for Town of Drayton Valley

In Figure 12, “Forecast” represents what the emission would look like if no actions were taken at the municipal level to reduce emissions from 2015. The “Current” trendline represents the same scenario but starting from 2019 instead of 2015. “Target” trendline shows the Town of Drayton Valley’s adopted target of 8%. Potential actions that could contribute to this 8% corporate emissions reduction target will be described in a later section.

COMMUNITY ENERGY USE AND EMISSIONS

The PCP Protocol defines community emissions as greenhouse gas emissions generated by key activities within the territorial boundary of the local government. Sources of community emissions include residential, commercial & institutional, industrial, transportation, and solid waste. For this analysis, the non-residential category aggregates all categories that do not fall under either residential or transportation sectors.

Community Energy Use and Emissions Inventory

In 2019, the total energy used by the community was 1,996,856 GJ. In both the residential and non-residential sectors, electricity and natural gas are the primary fuel used; for space heating, lighting, running consumer appliances, and refrigeration. Fuel used in the transportation sector were petroleum products like diesel, gasoline, and ethanol-blend, with ethanol-blend having the highest share of 35%.

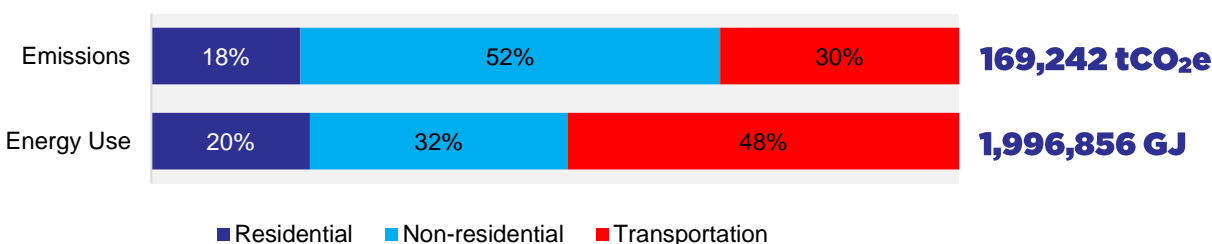


Figure 13: Community energy use and emissions in 2019

Note that while transportation sector consumed about half of the total energy used, this sector generated only 30% of the total community emissions. The largest share of community emissions come from electricity use. Alberta's power grid is still highly dependent on fossil fuel combustion, which makes it emissions intensive.

Community Emissions Forecast

Based on the projected increase of the Drayton Valley's population by 0.77% annually, the community emission is forecasted to increase from 181,273 tonnes of CO₂ equivalent in the 2015 baseline year to reach 203,377 tonnes of CO₂ equivalent by 2030. This amount corresponds to a 12% increase over the 2015 baseline year emissions.

Community Emissions Reduction Target

The PCP Program recommends that member municipalities adopt a target to reduce community emissions by 6% over the baseline within a ten-year period. Municipalities do not have direct control over emissions from buildings, transportation, and waste in the community. However, municipals could influence community-wide change with various policy instruments, ranging from outreach/education, non-financial incentives, financial incentives, and regulations.

In setting the community emissions reduction target for Drayton Valley, a bottom-up approach was applied that aggregates the emissions reduction potential for various actions. Actions identified to be technically feasible are analyzed further to determine their impact on emissions by the target year. We also sought stakeholder inputs to help us prioritize preferable actions.

With all the information available at this time, the Town of Drayton Valley decided to set an emissions target of a 6% reduction from 2015 baseline levels by 2030.

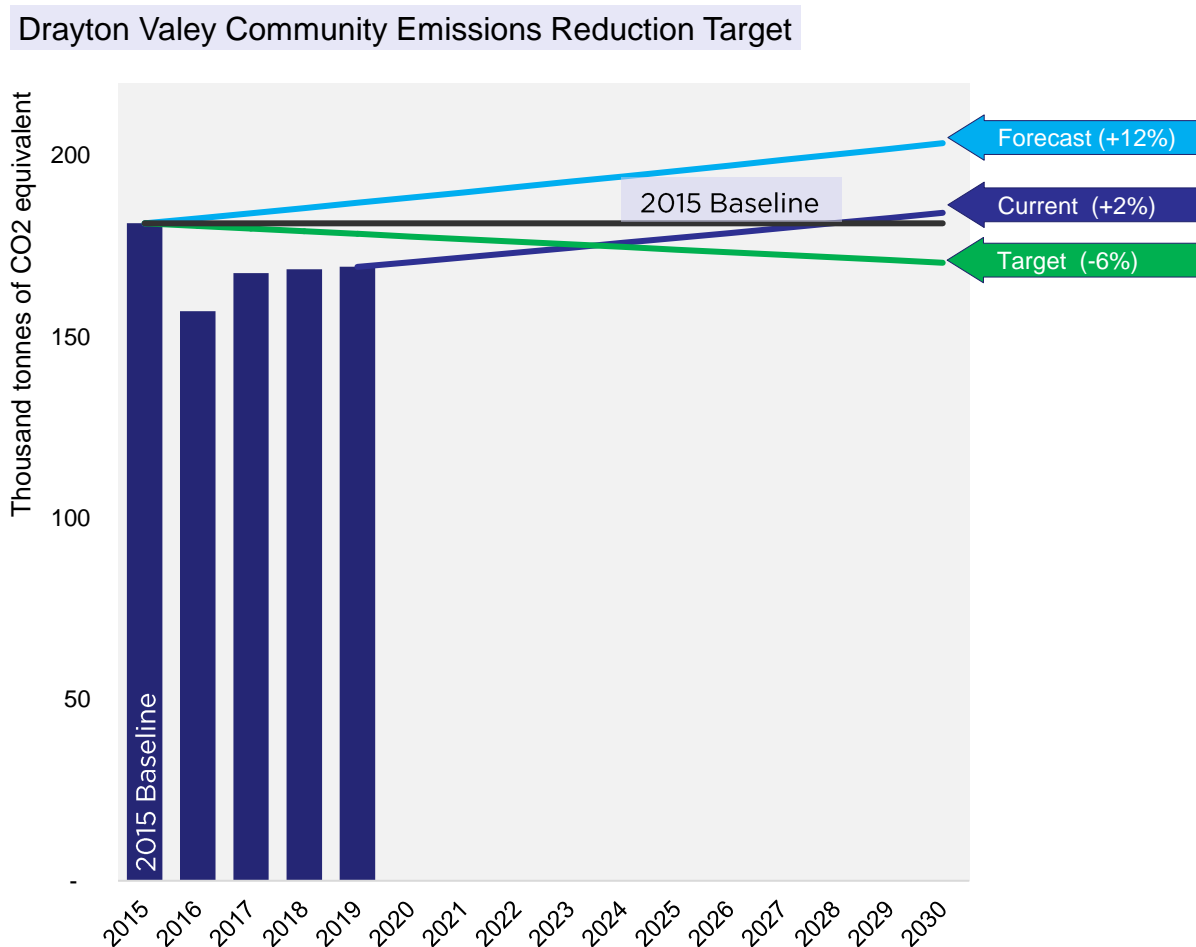
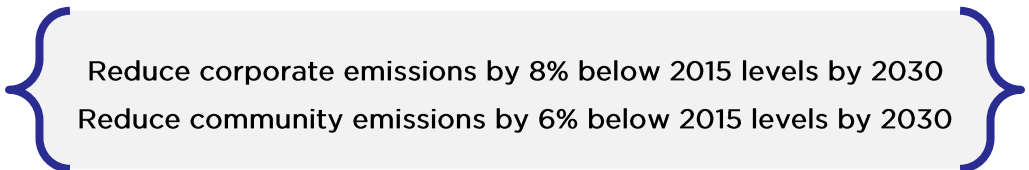


Figure 14: Community emissions target for Drayton Valley

The labels for the figure above are similar to Figure 12. Both “Forecast” and “Current” represent a no municipal-level intervention scenario but starting from different years. “Target” trendline shows the potential trajectory for a target of 6%. The potential actions that could contribute to this 6% community emissions reduction target will be discussed in the next section.

Local Action Plan

The Local Energy Stewardship Plan sets out the corporate and community emissions reduction targets for Drayton Valley as below:



Reduce corporate emissions by 8% below 2015 levels by 2030
Reduce community emissions by 6% below 2015 levels by 2030

The Town of Drayton Valley identified several opportunities that could potentially reduce corporate and community emissions, and thus put Drayton Valley on track to meet our targets. These potential actions were reviewed by Town Council, Administration Staff, and other stakeholders.

It is essential to recognize that these potential actions are recommended based on preliminary analysis, using a very narrow set of criteria. Cost is not fully quantified, nor are specific responsibilities assigned other than potential project leads. Further in-depth technical and financial analysis is required for each action to gain the necessary approval for actual implementation.

Furthermore, the list of recommended emissions reduction action is not static and will need to be continuously evaluated and updated. Actions that may seem feasible at the time of writing may no longer be realistic in the future. On the other hand, new emerging technologies with minimal support now could make better sense in a few years' time.

ACTION ON CORPORATE ENERGY USE AND EMISSIONS

The Town of Drayton Valley has made significant strides to reduce greenhouse gas emissions since becoming a member of the PCP Program in 2015:

- Facility improvements with more efficient HVAC equipment, LED lights, low-flow water fixtures, and building automation systems.
- Streetlights conversion to LED halved streetlight electricity use and continues to reduce the Town's electricity bill by over \$20,000 annually.
- Solar installations at the Early Childhood Development Centre, Clean Energy Technology Centre, the Center for Water Intelligence reduced emissions generated at these buildings.
- Off-loading the old Water Treatment Plant and shifting operations to the new, energy efficient, Center for Water Intelligence enables the Town to provide better service with less resources and at lower cost.
- The Center for Water Intelligence has a green roof that naturally regulates the building's temperature, is environmentally-friendly and aesthetically pleasing too.

Emissions reduction actions recommended are categorized into three main goals:

Goal #1: Reduce emissions from municipal operations

Goal #2: Reduce landfill emissions

Goal #3: Diversify energy supplies

Table 1 summarizes all recommended corporate actions. As before, this list is not exhaustive, neither is it static.

Table 1: List of corporate actions

Goal	Corporate Actions	Potential annual tCO ₂ e reduction by 2030
#1 Reduce emissions from municipal operations	Energy efficiency benchmarking, audits, and retrofits for existing buildings	380
	Improve water & sewage utility system to reduce leaks and infiltration	200
	Replace Park Valley Pool with a new, energy-efficient Aquatic Centre	35
	Initiate fuel-efficient driver training program	10
#2 Reduce landfill emissions	Investigate technologies for reducing landfill emissions	8,000
	Implement differential landfill tipping fees	1,000
#3 Diversifying energy supply	Install solar PV systems at municipal facilities	300
	Install combined heat and power system at municipal facilities	130

Goal #1 Reduce emissions from municipal operations

Municipal Buildings and Infrastructure

- Municipal facilities in Drayton Valley consumed 7,240,683 kWh of electricity, 31,190 GJ of natural gas, and 5,032 liters of propane in 2019, thereby producing total emissions of 7,041 tonnes of CO₂ equivalent.
- The top three consuming facilities in 2019 are the Ominplex Arena, the Old Water Treatment Plant, and the Park Valley Pool. The total consumption of these three buildings is more than all the rest of the facilities put together.
- Energy audits were performed at four of the Town facilities in 2011 – Civic Centre, Old Water Treatment Plant, Park Valley Pool and Ominplex. The Town has implemented some of the recommended Energy Conservation Measures (ECM) over the past nine years as resources became available. Example ECMs include installing Building Automation Systems, substituting aging HVAC for more efficient models, and replacing lamps with LEDs.

ACTION: Energy efficiency benchmarking, audits, and retrofits for existing buildings

The focus of any energy benchmarking and audit exercise is to provide a quantifiable look at where a facility stands compared to its peers, identify real savings opportunities, and determine a realistic energy reduction target and payback assessment. Building performance changes as building age and occupancy changes. Given that the last audit was performed almost ten years ago and only at selected buildings, it makes sense for the Town to factor in energy benchmarking, energy audits, and energy retrofits into its long-term operational planning.

- **COST IMPLICATIONS:** An energy audit can cost from \$5,000 to \$50,000 per facility depending on facility size and function, level of energy audit and scope of assessment. Operational improvements and behavioral shifts would likely be low-cost, but retrofits will depend on the modifications to be made.

- **POTENTIAL BENEFITS:**



Potentially reduce energy use by 2,700 GJ and emissions by 380 tCO₂e annually by 2030.



Improve working environment that leads to positive health and productivity outcomes.



Potential cost savings on annual energy expenditure. There are federal and provincial opportunities available from FCM and the Municipal Climate Change Action Centre (MCCAC).

ACTION: Improve water & sewage utility system to reduce leaks and infiltration




Retiring the aged water treatment plant has significantly improved water services in Drayton Valley. The new Center for Water Intelligence has a treatment capacity of 18 million liters per day compared to the 8 million liters per day capacity of the old Water Treatment Plant. This action now focuses on the water and sewage distribution system.

It was estimated that average water loss in the Drayton Valley in 2019 was 20%. This percentage is high compared to the typical average of 16%¹⁰. At the same time, average residential wastewater generation is also high at 500 liters/person/day compared to the 2015 standard of 300 liters/person/day¹¹. Potential causes for water loss include aging infrastructure, leaks, overflows, unauthorized consumption, administrative errors, data handling errors and metering inaccuracies¹⁰.

The Engineering Services Department has started to phase-out aging water and sewage infrastructure, for instance with the South Sanitary Trunk Main project and by lining manholes with natural seal product to reduce infiltration. The Town also has a number of initiatives to improve water use and water literacy in the community including the Preserve Our Ultimate Resource (P.O.U.R) program¹², the Waste & Storm Water Disconnect initiative and the Yellow Fish Road™ program. Putting in place a water efficiency strategy with associated timelines, staff and financial resources would positively reduce the amount of water the system requires, which means less energy required for pumping and treating water.

● **COST IMPLICATIONS:** Cost will depend on the recommended system upgrades and improvements to be identified in the upcoming Infrastructure Master Plan.

● **POTENTIAL BENEFITS:**

-  Potentially reduce energy use at water and wastewater facilities by 1,170 GJ and emissions by 200 tCO₂e annually by 2030.
-  Increase community trust in water utility and lower risk of property damage.
-  Reducing water demand would lower maintenance and operating costs; prolong lifetime of equipment and thus defer expensive capital.

¹⁰ EPA Water Audits and Water Loss Control for Public Water Systems (2013)
<https://www.epa.gov/sites/production/files/2015-04/documents/epa816f13002.pdf>

¹¹ Drayton Valley Water Master Plan (2016)

¹² Drayton Valley Preserve Our Ultimate Resource Program (P.O.U.R. Program)
<https://www.draytonvalley.ca/protect-our-ultimate-resource/>




ACTION: Replace Park Valley Pool with a new, energy efficient Aquatic Centre

Park Valley Pool was built in 1986 and has already exceeded its intended lifespan. With only 5 lanes and a combined lap pool and leisure swim tank, the Park Valley Pool is no longer meeting community needs. There are significant health and safety concerns, in addition to mechanical and structural issues.

The Park Valley Pool is the third highest energy consumer in the Town's fleet of buildings with an annual energy utilization intensity of 1,479 kWh/m². This intensity is double of what would be expected of a facility of similar size and function. A new Aquatic Centre is being developed that focuses on energy optimization to meet the 2017 National Energy Code for Buildings (NECB) and will cost less to operate than the existing Park Valley Pool.

- **COST IMPLICATIONS:** The target budget for the new Aquatic Centre project is \$18.5 million. The Town is securing contributions from various grants, loans, and corporate sponsors to fund the project¹³.

- **POTENTIAL BENEFITS:**

-  The energy utilization intensity will improve significantly as the new Aquatic Centre will offer more services but at similar energy use as the Park Valley Pool.
 -  The community will gain an affordable and accessible recreational facility that promotes a vibrant and healthy lifestyle. As the only facility of its kind within a one-hour radius drive, the new Aquatic Centre will encourage visitors and residents to spend time and dollars in the immediate area rather than seeking aquatic entertainment elsewhere, leading to positive economic and environmental outcomes for the community.
 -  The Park Valley Pool requires significant annual spending to continue operations – over \$250,000 in 2017 alone for maintaining the facility's structural and mechanical systems. For the new Aquatic Centre, minimizing operational costs is a key design consideration to be achieved through a combination of architectural, structural, mechanical, and electrical design measures. The target is to have an Aquatic Centre that will cost less to operate than the existing Park Valley Pool.

¹³ Validation Report for the Drayton Valley and Brazeau Aquatic Centre (2020)

Municipal Fleet

- The Town's municipal fleet consists of 57 vehicles, including three specialized fire-fighting engines for the fire department; parks and public works equipment like tractors, snow removers and mowers; and twenty light-duty trucks for Town operations.
- In 2019, it was found that the Town recorded consumption for gasoline was 3,388 liters, diesel consumption was 66,396 liters and ethanol-blend was 34,206 liters. This consumption generated 240 tonnes of CO₂ equivalent emissions.
- Given the weather conditions, municipal operational requirements, and current market availability, electric vehicles are not considered a feasible option for Town of Drayton Valley municipal fleet in the short term. This will likely change as technologies for electric vehicles battery and charging improves. In the interim, transition technologies, like biofuels and hybrid vehicles, are utilized as appropriate¹⁴.
- The Town's A-01-10 Idle Reduction Policy has been in place since October 2010. The policy applies to Town employees and Council to eliminate greenhouse gas emissions that would have been generated while a vehicle is left idling unnecessarily.

ACTION: Initiate fuel-efficient driver training program

Managing municipal fleet consists of managing three elements: the fleet vehicles, the vehicle operation, and the driver. This action focuses on providing a formal driver training program to Town staff to encourage fuel-efficient driving. The SmartDriver training course¹⁵ was developed for Natural Resources Canada and will be made available through the Town's SafetySync Platform. The course developer estimates that the training could improve fuel efficiency up to 25%.

- **RESOURCES IMPLICATIONS:** The training video is provided for free by Natural Resources Canada. Some staff resources will be required to adapt the video for the SafetySync Platform.

- **POTENTIAL BENEFITS:**



Lower fuel consumption, vehicle emissions, and related pollutants.



Improve road safety and driving experience, potentially scalable to community users.



Reduce operational and maintenance costs.

¹⁴ Drayton Valley Community Sustainability Plan – Achievement Review 2017

¹⁵ SmartDriver Training Series, <https://www.nrcan.gc.ca/energy-efficiency/energy-efficiency-transportation/greening-freight-programs/smartdriver-training-series/21048>

Goal #2 Reduce landfill emissions

- Landfill emissions account for the bulk of the corporate emissions inventory, about 83% in 2019. Since the Aspen Waste Management Facility is Town-owned, the PCP Protocol requires that all waste processed at the facility is accounted for in the corporate inventory.
- The facility itself is managed by GFL Environmental Inc. Landfilled waste is collected weekly by Environmental 360 Solutions Inc.
- The Town offers weekly curbside blue-bag pick-up for recycling as well as a recycling depot on the Industrial Road. In 2019, about 8% of waste was diverted from the landfill.
- There is a Take-it or Leave-it Centre located at the Aspen Waste Management Facility that allows residents to drop-off unwanted but usable items. Other residents can then take the items for free. This initiative keeps serviceable goods in use and out of the landfill longer.
- The Town does not offer organics waste collection. There is a community composting pilot initiative that collects organics waste from selected businesses in Town.
- The Town coordinates education and outreach activities throughout the year to encourage waste diversion and to manage large waste items. Examples of programs include Community Shred-it Events, Free Tipping Days, and Waste Reduction Week.

ACTION: Investigate technologies for reducing landfill emissions

The Aspen Waste Management Facility has about ten years of landfill life remaining, after which new landfill space will be required or waste will have to be transported elsewhere. The Town is investigating potential technologies that could sustainably prolong the life of the landfill. It is anticipated that carbon credits will be used to finance any project implemented. Therefore, emissions reduction from this project will be captured in the inventory but can not contribute towards the corporate emissions target.

- **RESOURCES IMPLICATIONS:** Administrative staff are currently researching and reviewing potential technologies for implementation.

● **POTENTIAL BENEFITS:**



Avoid production of methane, a potent greenhouse gas.



Testing out an innovative technology could be a source of community pride. Less leachate and odor from the landfill would improve the air, soil, and water quality in the area.



The waste management technologies currently under review each come with a big price tag. It is likely that the cost will be offset through innovation grants, sales of carbon credits and sales of recovered or diverted materials.

ACTION: Implement differential landfill tipping fees

The Town currently offers lower tipping fees for certain types of waste to encourage separation of waste at the source and thus divert waste from the landfill. In 2020, separated waste like clean concrete and asphalt are charged at \$17.25/tonne compared to \$67.00/tonne for mixed construction and demolition waste¹⁶. This action proposes that more materials be considered for lower tipping fees, namely wood, drywall, and shingles. This is in line with recommendations from both the Integrated Waste Management Strategy¹⁷ and the Community Sustainability Plan¹⁴.

- **RESOURCES IMPLICATIONS:** Administrative resources will be required to research, develop, and implement the new differential tipping fees procedures. There would be some cost involved in setting up diversion pads for separated incoming waste. Overall project cost is estimated at \$25,000 to \$50,000 with a timeframe of six to twelve months.

- **POTENTIAL BENEFITS:**

- 🔄 Diverted waste can be repurposed – for instance recycled wood can be used in construction, landscaping (mulch), as bedding materials, boiler fuel or as fibre for composite wood products. Less waste would mean less stress on the landfill.
 - 👥 Encourage businesses, especially in the construction and demolition sector, to be more conscious about managing their waste.
 - 💰 Lower tipping fees might reduce Town revenue but could be recouped from reduced maintenance and operations costs as well as extended usable life of the landfill. There may even be a market value for the un-mixed, diverted waste.

¹⁶ Town of Drayton Valley 2020 Fee Schedule, <https://www.draytonvalley.ca/wp-content/uploads/2020/05/2020-Fee-Schedule.pdf>

¹⁷ Town of Drayton Valley Integrated Waste Management Strategy (2013)

Goal #3 Diversifying energy supply

- The Town of Drayton Valley sources its electricity from Alberta's electrical power grid. Consumption charges for electricity in Alberta is relatively cheap, but the delivery charges can be pricy, usually taking up more than half of a consumer's electricity bills. Alberta's power grid is also emissions-intensive as it relies heavily on fossil fuels combustion⁷.
- Diversifying energy supply in Drayton Valley would positively impact our resiliency, energy costs and carbon footprints.

ACTION: Install solar PV systems at municipal facilities

The Town of Drayton Valley is an early adopter of solar. The first solar installation on a Town facility is the 1-kW rooftop solar photovoltaic system at the Early Childhood Development Center back in 2009. The Town now owns a few more installations, a 13-kW solar wall and a 7-kW rooftop solar system at the new Center for Water Intelligence as well as a 29-kW rooftop solar system and two solar-powered streetlights at the Clean Energy Technology Centre.

- **RESOURCES IMPLICATIONS:** The Town continues to monitor the declining solar system prices and funding available to finance solar projects. For now, the business case is not compelling enough for the Town to proceed with new solar installations. But with increasing electricity prices, this may change in the future. Solar installations are currently eligible for rebates from the MCCAC.

- **POTENTIAL BENEFITS:**



Fuel shifting to solar power would reduce emissions as Alberta's electrical power grid is carbon intensive.



Improve resiliency by reducing reliance on grid power. Introduce economic development opportunities for solar installers and solar businesses to grow in the community.



Reduce operating expenses with lower electricity bills. By paying less to utilities located out of Drayton Valley, money is kept local and can be invested in local projects.

ACTION: Install combined heat and power systems at municipal facilities

On-site cogeneration of heat and electricity or combined heat and power (CHP) systems generate electricity and capture exhaust heat to provide useful thermal energy in the form of steam or hot water. CHPs can be fueled by natural gas, oil, and biogas. The CHP technology works well in facilities that require consistent heat and electricity.

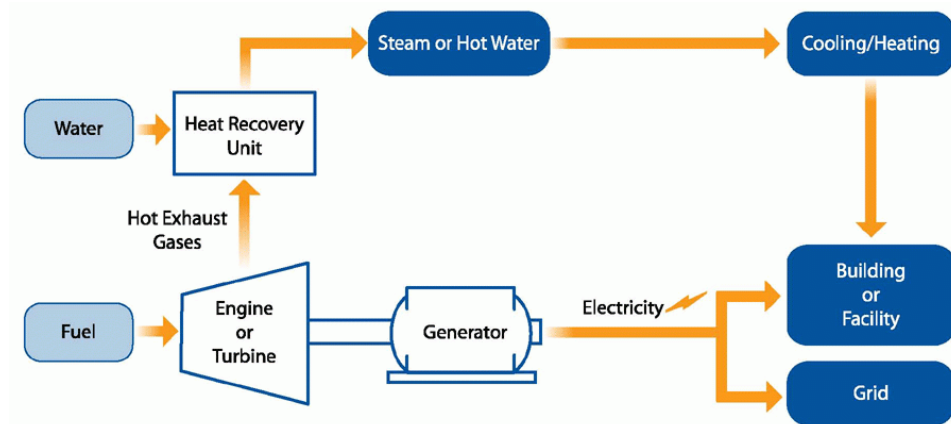





Figure 15: Common CHP configuration¹⁸

- **RESOURCES IMPLICATIONS:** Installing a CHP system either in a new or existing building would require a capital investment ranging from \$250,000 to \$275,000 for a 35kW to 60kW system¹³. Annual maintenance could probably be performed by Town staff.

- **POTENTIAL BENEFITS:**

-  CHP is extremely efficient and can displace the carbon-intensive electrical power grid in Alberta. For instance, a 60 kW CHP system could reduce emissions by 108 tCO₂e annually.
-  On-site generation means less reliance on grid power.
-  Natural gas consumption and bills will increase but as natural gas is cheaper than electricity, substantial net savings can be achieved. There is also an opportunity to act as micro-generator and earn credits that could go towards further electricity bill reductions¹⁹.

¹⁸ What is CHP? <https://www.epa.gov/chp/what-chp>

¹⁹ Micro-generation, <https://www.alberta.ca/micro-generation.aspx>

Opportunities for further corporate emissions reductions

Opportunities are ideas for projects, programs, and initiatives that have potential to help reduce emissions but were not considered feasible or a priority at this time. Reasons for this could be due to technology or resource constraints. These opportunities are still captured here for future consideration.

Table 2: Opportunities for further corporate emissions reductions

Additional Corporate Opportunities	Cost Implications	Estimated GHG reduction potential
<i>Adoption of climate change policies and GHG emissions considerations in all municipal plans, documents, and processes.</i>	Low	N/A
<i>Employee training and awareness programs to conserve water, energy, and other resources.</i>	Low	●○○
<i>Facilities operator training to optimize building performance.</i>	Low	●○○
<i>New Town facilities are net-zero buildings</i>	High	●●●
<i>Conduct a fleet review and develop a long-term fleet energy management strategy.</i>	Medium	N/A
<i>Vehicle replacement with a hybrid, electric, or alternative fuel vehicle.</i>	Medium	●○○
<i>Reuse waste heat from the ice rinks.</i>	Medium	●●○
<i>Install heat pumps to provide efficient heating.</i>	Medium	●●○

Cost Implications (Capital only)

Low: < \$10,000

Medium: ≥ \$10,000 to < \$100,000

High: ≥ \$100,000

GHG reduction potential (tCO₂e/year)

●○○: < 5

●●○: ≥ 5 to <30

●●●: ≥ 30

N/A: no estimation available or applicable

ACTION ON COMMUNITY ENERGY USE AND EMISSIONS

A resource-rich community, Drayton Valley is home to a world-class oil and gas sector. Clean technology innovation has driven significant improvements in the sector's operational performance while reducing waste, consumption, and environmental pollution. The oil and gas sector has provided many benefits to Drayton Valley. However, being too dependent on just this one industry has tied Drayton Valley to the rollercoaster of international oil prices. The boom and bust cycles generate economic and job insecurity that is not sustainable in the long-term. There is a need to develop all our resources, spread our investment, and create a balance in our energy economy.

Residents and businesses of Drayton Valley have already started answering the call for better energy stewardship. Some community initiatives that are already in place include:

- Preserve Our Ultimate Resource (P.O.U.R.) Program offers a credit on utility bills for installing water-saving fixtures or appliances¹².
- Local stores adopted a “no plastic bags policy”. By charging a small fee on plastics grocery bags, shoppers are encouraged to use reusable bags.
- A 1963 home on 44 Avenue was super-insulated with a new, patented straw bales process. This new process, combined with other retrofits, significantly reduced the building heating requirements. The home now generates excess power from its 8.5 kWh rooftop solar array, earning its net-zero energy rating²⁰.
- Electric vehicle charger installed at Ramada Hotel in 2019.
- Pilot community composting program with selected local businesses was initiated in 2020.

An online survey on energy stewardship was conducted in April 2020 to gauge the level of community support for different types of community actions²¹. Referring to Figure 16, building efficiency is clearly considered a priority. Respondents are also in support of environmental preservation and waste management initiatives like composting and recycling. There was less of an appetite for transport sector and renewables-related initiatives. These responses inform the actions recommended in this Local Energy Stewardship Plan.

²⁰ Drayton Valley NZE Retrofit Home Tour (2020) <http://ecosolar.ca/e12.pdf>

²¹ Energy Survey - What We Heard Report (2020) <https://www.draytonvalley.ca/wp-content/uploads/2020/06/Public-Survey-Summary-20200615.pdf>



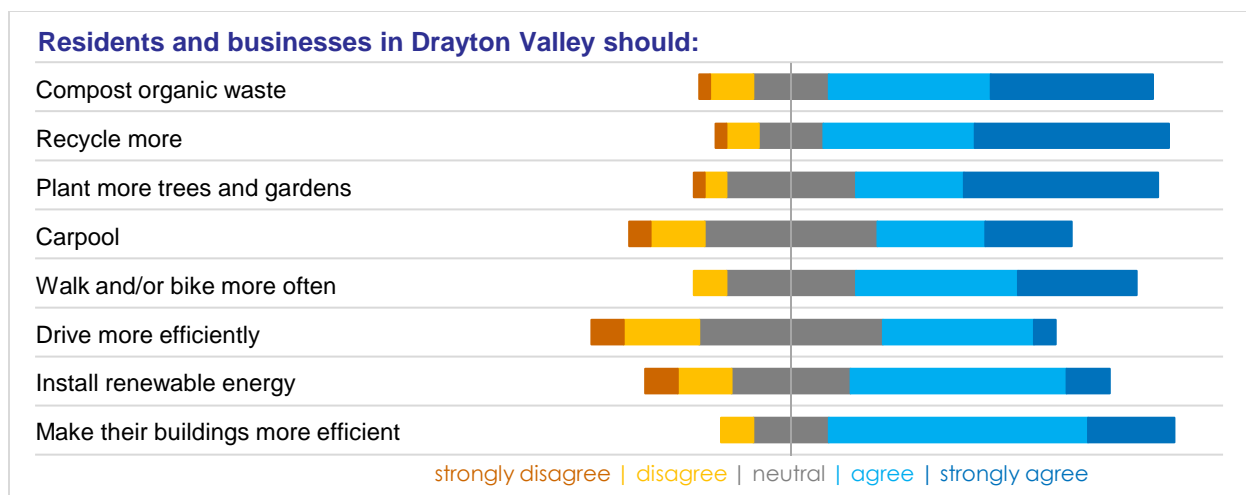


Figure 16: Level of interest in community actions for residents and businesses in Drayton Valley

Actions that could contribute to Drayton Valley’s community emissions reduction target can be categorized into four main goals:

- Goal #1:** Reduce building sector emissions
- Goal #2:** Reduce transportation sector emissions
- Goal #3:** Build-up sustainable and local energy production
- Goal #4:** Empower community action

Table 3 summarizes all recommended community actions. The municipal will not have direct control over these actions. Nevertheless, the Town of Drayton Valley could encourage climate action implementation through a host of policy instruments. Examples of policy instruments are awareness programs, financial and non-financial incentives as well as through rules and regulation.

Table 3: List of community actions

Goal	Community Actions	Potential annual tCO ₂ e reduction
#1 Reduce building sector emissions	Ensure new buildings comply with the updated National Energy Building Codes.	●○○
	Introduce PACE/CEIP Program to encourage building owners to pursue energy audits and energy retrofits	●●●
	Require new developments to include district energy systems where it is economically feasible	●●○
#2 Reduce transportation sector emissions	Initiate a driver behaviour program that focuses on cost-efficient driving techniques and habits	Q
	Investigate feasibility of an on-demand micro-transit system	●●○
#3 Build-up sustainable and local energy production	Engage with potential industrial and research partners to establish new energy industries in Drayton Valley (examples include geothermal power plants, geothermal heat pumps, hydrogen production, extended use of oil wells for geo-exchange, circular bioeconomy)	Q
	Encourage alternative energy installations at non-municipal buildings (this can include solar power, solar heaters, or heat pumps)	●●○
#4 Empower community action	Partner with local agencies to deliver energy stewardship programs	Q

GHG reduction potential (tCO₂e/year)

●○○: < 100

●●○: ≥ 100 to <500

●●●: ≥ 500

Q: Qualitative Action

Goal #1 Reduce building emissions

- Drayton Valley currently has more than 2,700 residential properties and approximately 380 commercial properties within its boundaries.
- Residential buildings consumed 20,038,512 kWh of electricity and 319,677 GJ of natural gas in 2019. Non-residential buildings consumed 89,874,543 kWh of electricity and 313,403 GJ of natural gas in the same year. Combined, use of electricity and natural gas generated a total of 114,820 tonnes of CO₂ equivalent emissions.
- About half of the private homes in Drayton Valley were built pre-1980s³. Older buildings are typically less energy efficient and can cost residents up to \$300 extra each year on utility bills⁹. This additional energy cost can be freed up for other spending.

ACTION: Ensure new buildings comply with the updated National Energy Building Codes.

Building codes are a quick way to improve energy efficiency in the building sector. The National Energy Code for Buildings 2017 and Energy Efficiency requirements of Section 9.36 of National Building Code-2019 Alberta Edition currently defines the minimum energy efficiency requirements for construction of new buildings in Alberta²².

A new National Energy Code for Buildings 2020 (NECB 2020) is now under development. Compliance with the new codes, once it is approved and adopted in Alberta, will contribute to developing high value jobs, improve social equity, and improve building comfort and resiliency.



IMPLEMENTATION CONSIDERATIONS: Adoption of building codes is a routine municipal process and would not require extra resources than normal. Existing procedures for building and development permits approval would likely continue, only with enhanced requirements based on the adopted codes.

²² Alberta Building Codes and Standards, <https://www.alberta.ca/building-codes-and-standards.aspx>

ACTION: Introduce PACE/CEIP Program to encourage building owners to pursue energy audits and energy retrofits

Investing in energy efficiency or renewable energy upgrades can be costly. Building owners may be worried about having upfront capital or selling the property before recouping their investment. The Property Assessed Clean Energy (PACE) financing program makes it easier to overcome these two specific barriers. Property owners will be able to immediately enjoy the advantages of their energy retrofits and pay for them over time through an assessment added to their property tax bill. The obligation is transferred from one owner to the next, along with the benefits.

The Town of Drayton Valley's Council formally expressed interest in adopting a PACE Program in 2019 when legislation enabled a made-in-Alberta approach to PACE financing. The program, now known as the Clean Energy Improvement Program (CEIP), is administered by the MCCAC.

PACE/CEIP energizes local economies by stimulating investment and creating business opportunities for local contractors and engineers. Property owners gain access to flexible, affordable financing to pay for upgrades that reduces their energy costs and improves the comfort and value of their properties.



IMPLEMENTATION CONSIDERATIONS: To setup PACE/CEIP, the Town of Drayton Valley will work with MCCAC to pass a Clean Energy Improvement bylaw and secure financing and loan terms. Outreach programs with property owners and local contractors will take place to raise awareness and gain program support.

ACTION: Require new developments to include district energy systems where it is economically feasible

District energy systems provide heating and cooling generated in a centralized location and distributed (usually through underground piping) to residential and commercial consumers. The heat is often obtained from a cogeneration plant burning fossil fuels. However, more district energy facilities are now sourcing heat from renewable energy like biomass, geothermal heating, and central solar heating²³.

Combining cogeneration and district energy will increase efficiency, lower overall emissions, and provide improved reliability and local resiliency. Buildings connected to district energy systems have lower capital costs (less maintenance, no boiler operators), and since no boiler room is required, they save valuable building space.

District energy systems are more easily integrated into new constructions where all its characteristics can be optimally incorporated²⁴. Adding district energy into an existing building or area is less easy, but possible with extensive retrofitting. For Drayton Valley, where there is consistent supply of cheap natural gas, it makes sense for new developments to consider district energy systems.



IMPLEMENTATION CONSIDERATIONS: The Town could encourage developers to explore and adapt district energy systems by making it part of the requirement for new large-scale residential, commercial, or industrial development in Drayton Valley.

²³ District Energy System – An Overview, <https://www.sciencedirect.com/topics/engineering/district-energy-system>

²⁴ District Energy and Co-generation for Public Buildings in Alberta (2016)
<https://www.alberta.ca/assets/documents/tr/tr-district-energy-and-cogen-for-alberta-final.pdf>

Goal #2 Reduce transportation sector emissions

- The total number of registered, motorized vehicles in Drayton Valley has decreased from 15,894 in 2015 by 8% to 14,645 in 2019²⁵.
- The share of types of vehicles have remained consistent. About 23% are diesel-powered while another 65% can run on gasoline and lighter blends of ethanol. The rest can switch between gasoline and other types of fuel like electric, butane, and propane – or are flex fuel vehicles which can accept ethanol up to E85²⁵.
- Based on sales volume data collected from retailers in Drayton Valley, it was found that ethanol-blend was by far the most consumed transport fuel in 2019 at 20,564,470 liters compared to gasoline at 3,159,650 liters and diesel at 4,201,670 liters.
- Total emissions from this sector in 2019 was 50,092 tonnes of CO₂ equivalent emissions. This accounted for 30% of the total community emissions in 2019.

ACTION: Initiate a driver behaviour program that focuses on cost-efficient driving techniques and habits

This action could be another opportunity to take advantage of the free efficient driver training courses developed by Natural Resources Canada: the SmartDriver Training¹⁵ and the Auto\$mart student driver training²⁶. The course shares strategies that could help drivers save up to 25% in fuel costs, cut down on vehicle maintenance, and reduce greenhouse gas emissions.

 **IMPLEMENTATION CONSIDERATIONS:** Lessons from both training programs could be incorporated into existing programming like the Financial Cents program, or through a stand-alone awareness campaign via social media. For even better outcomes, the Town could engage with local companies to reduce fuel use in commercial fleets. Another potential partnership would be with driving schools operating in Drayton Valley. As they work directly with learners, new drivers would develop safe, efficient driving habits from the start.

²⁵ Statistics provided by Alberta Transportation

²⁶ Auto\$mart driver training, <https://www.nrcan.gc.ca/energy-efficiency/energy-efficiency-transportation/personal-vehicles/automart-driver-training/21042>

ACTION: Investigate feasibility of an on-demand micro transit system

A micro-transit system combines the flexibility of on-demand mobility (like taxis) with fixed route scheduling (like busses) to extend the accessibility of transit service. Similar services are available in Town of Cochrane (COLT program²⁷), Town of Devon (Everyone's Community Bus program²⁸), and City of Belleville (Bus on Demand program²⁹). Elements from these programs could be easily replicable in Drayton Valley.

Drayton Valley already has a Drive Happiness program and a specialized transportation program. The specialized transportation program is operated by Drake's Handi-bus Ltd for seniors and those with mobility challenges. There is also the long-running DJ's Cab taxi service. The proposed micro-transit system will complement the existing systems by serving other segments of the population. The main objective for the fixed-route service is post-secondary student bussing to the Clean Energy Technology Centre. The second objective is to provide shared transit for commuting around Drayton Valley and to city centres like Edmonton and Spruce Grove. Providing bussing solely for students is not economically feasible. However, extending the use of the bus for on-demand mobility and private rentals would mitigate some of the cost.

In addition to reduced emissions and better local air quality, there are numerous benefits that derives from a local transit service. A reliable transit service unlocks access to goods and services for the segments of the population that cannot drive (like children and teenagers) or are unable to afford personal vehicles. Ending reliance on one private vehicle could reduce spending by up to \$10,000 annually per family³⁰. Businesses close to transit stops have a higher property value, and increased sales with higher traffic.



IMPLEMENTATION CONSIDERATIONS: Adding a transit service for Drayton Valley would require capital ranging from \$350,000 to over \$700,000, depending on whether the shuttle is electric or hybrid. An electric bus would be eligible for federal and provincial funding. The transit service could be developed and operated solely by the Town or as a partnership with a local transportation company.

²⁷ Cochrane On-demand Local Transit (COLT), <https://ridecolt.ca/>

²⁸ Everyone's Community Bus, <https://www.devon.ca/Services/Town-Services/Everyones-Community-Bus>

²⁹ Belleville Transit, <https://www.belleville.ca/residents/page/transit>

³⁰ The Top 10 Benefits of Public Transportation (2017)
<https://www.smartcitiesdive.com/ex/sustainablecitiescollective/top-10-benefits-public-transportation/1063096/>

Goal #3 Build-up sustainable and local energy production

- There are solar power and heat pump installations on private properties within Drayton Valley. Currently there are no statistics tracking these community installations.
- Drayton Valley Power was a 12-MW biomass electricity generating station that ended operations in 2016.

ACTION: Engage with potential industrial and research partners to establish new energy industries in Drayton Valley

Emerging technologies could leverage on existing assets, resources, and expertise in Alberta to build new energy industries for sustainable economic prosperity. Examples are:

- **Geothermal power plants:** The abundance of oil and gas wells in Alberta indicates high potential for geothermal sites. Unlike other renewable energy sources, geothermal power is consistent and not affected by weather. Geothermal plants can be dual-purpose, extracting heat for a local district energy system.
- **Hydrogen production:** Natural gas deposits in Alberta can be combined with carbon capture technology to produce hydrogen for replacing diesel in heavy duty vehicles³¹.
- **Geo-exchange with oil-wells:** Using a heat exchanger, waste heat from wellheads at oil sites can be extracted to provide low temperature heat to buildings like greenhouses.
- **Lithium production:** Lithium is a key component for batteries used in cellphones, electric vehicles, and large energy storage systems. Alberta is rich in lithium deposits. Companies in Alberta are developing an economic and sustainable method of lithium extraction, this could position Alberta as a global supplier in the future³².
- **Biofuel production:** Agricultural, forestry, or waste feedstocks blended into commercial petroleum-based gasoline and diesel produces biofuel³³.
- **Circular bioeconomy:** Use of biobased waste and residues like plastics, cosmetics, textiles, or building materials as resources for new bio-products and solutions.



IMPLEMENTATION CONSIDERATIONS: The Town of Drayton Valley is always welcoming to innovative clean energy technology projects and is ready to provide support on a case-by-case basis.

³¹ Building an Albertan Hydrogen Economy, <https://energyfutureslab.com/initiatives/albertan-hydrogen-economy/>

³² A Huge Opportunity: Alberta oilfields could give rise to lithium industry fuelled by electric cars (2020) <https://calgaryherald.com/business/local-business/alberta-oilfields-could-give-rise-to-homegrown-lithium-industry-as-electric-cars-spur-global-demand>

³³ Igniting jobs and economy through biofuels (2019) <https://www.alberta.ca/release.cfm?xID=67319A5AA96DC-BAD9-EF25-75A8D4ED0F4C3276>

ACTION: Encourage alternative energy installations at non-municipal buildings

Space heating and plug loads are the main sources for building emissions in a carbon-intensive province like Alberta. Switching to alternative energy sources is one potential solution to reduce emissions and become more self-sufficient.

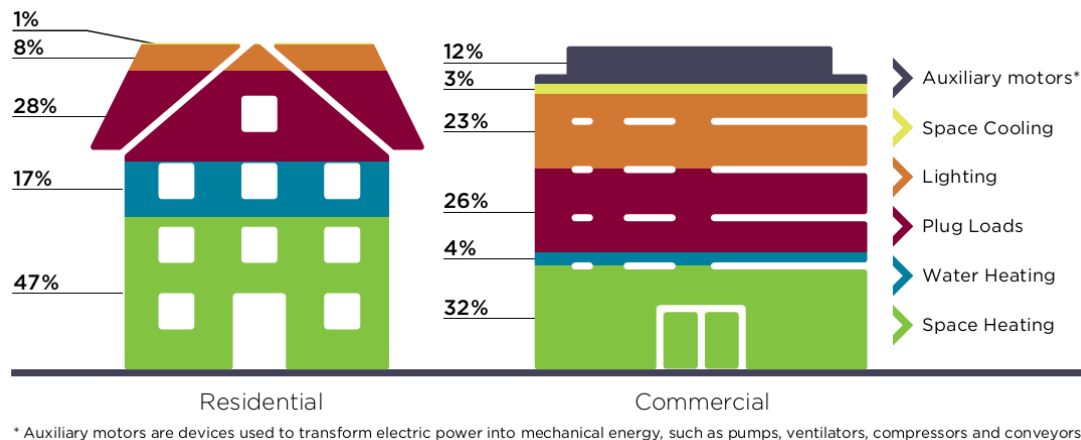


Figure 17: Average GHG emissions by end use for provinces with high-carbon grids³⁴

Potential technologies that Drayton Valley residents and businesses could consider for their private buildings include:

- Rooftop solar photovoltaic systems
- Solar water heaters
- Air-source or ground-source heat pumps

Each building is different in how it was built and operated. Building owners need to fully investigate the technical and economic feasibility of the technology for their own building before committing to a project.



IMPLEMENTATION CONSIDERATIONS: The Town of Drayton Valley could deploy municipal tools to raise awareness of provincial and federal incentives for alternative energy projects. Alternative energy installations could also be made eligible for PACE financing.

³⁴ FCM GMF's Municipal Energy Roadmap (Fig 8, 2020) <https://fcm.ca/en/resources/gmf/gmfs-municipal-energy-roadmap>

Goal #4 Empower community action

- Drayton Valley is home to several organizations and agencies, each with their own mandates.

ACTION: Partner with residents, businesses, organizations, and agencies in creative and accessible ways to build support and deliver energy stewardship goals

Energy stewardship cannot be the sole responsibility of the municipality. Working together with community members and pooling resources while leveraging on established organizational frameworks could lead to much better outcomes.

In 2020, the Town partnered with different community members to deliver programs centered around energy. COVID-19 measures in place have somewhat affected these programs.

- **Energy Bus Tour** with Eagle Point - Blue Rapids Parks Council: The first half of the program will take participants on a tour of energy efficient buildings in Drayton Valley. The second half will be a seminar on how to conserve energy at home.
- **Energy Conservation Tool Kit (E-CENT Kit)** with municipal library: The E-CENT kit assembles tools, tips, and strategies for determining building energy use. The kit will be available through the library's circulation system.
- **Energy-themed Escape Room** with municipal library: Escape rooms are games where players are confined to a room and tasked to find clues and solve puzzles to escape. This project is geared towards educating families of all ages about energy conservation in a fun and practical way.
- **Pilot Community Composting Program:** A Drayton Valley resident initiated a pilot community composting program in July 2020. For now, only two businesses are involved, IGA and Tim Hortons, as they refine their processes and logistics. The compost produced will either be used in an upcoming greenhouse or for bioremediation of orphan wells.

Incidentally, these programs are in line with what respondents to the online Energy Survey indicated as their top topics of interest²¹.



IMPLEMENTATION CONSIDERATIONS: The Town of Drayton Valley will continue to engage with residents, businesses, organizations, and agencies to foster a culture for energy stewardship in the community. Communication, education, and outreach programs are potential avenues for collaboration.

Implementation Strategy

Municipalities, in collaboration with municipal stakeholders, can positively influence how energy is used in their communities – thereby reducing greenhouse gas emissions and mitigating the harmful impacts of climate change. A solid implementation framework is necessary to ensure the actions recommended for reducing corporate and community emissions are accomplished in a timely and efficient manner.

Roles and responsibilities

The Town of Drayton Valley, led by the Chief Administrative Officer, will oversee the implementation of the Local Energy Stewardship Plan. This role includes regular monitoring and reporting of progress to multiple stakeholders. The Town will work collaboratively with residents, businesses, local organizations, utilities, industrial partners, and other stakeholders to initiate and fully realize the recommended actions and opportunities.

Resources and Funding

Resources required for each recommended action will vary, depending on the action. Some actions could be easily embedded through existing mechanisms, others may require new policies or regulations. Several of the more innovative actions will require substantial investment, at which point the Town and its strategic partners will take steps to access provincial, federal, or corporate incentives. The Alberta Funding Guide is an excellent resource for energy and emissions related incentives available for Alberta municipalities³⁵.

Up to the end of 2020, the Town has secured several grants for energy-related projects that will take place in 2021. Funders include the Government of Canada's Investing in Canada Infrastructure Program (ICIP), FCM Municipalities for Climate Improvement Program, MCCAC Municipal Energy Manager Program and Electric Vehicles for Municipalities Program, Fortis Alberta Save Energy Program, and Drayton Valley Community Foundation. The Town has set-up an annual operational budget of over \$200,000 for the next three years dedicated to energy initiatives. The bulk of this budget (about 70%) is earmarked for facility retrofits. The remainder is budgeted for corporate and community energy literacy programming, match funding for potential partnership projects, research, and advocacy efforts.

³⁵ Alberta Funding Guide (2019) <https://mccac.ca/app/uploads/Alberta-Funding-Guide.pdf>

Monitoring and Reporting

A monitoring and reporting framework will be set up to evaluate whether progress is being made towards meeting the emissions reduction targets and if any course correction is required. Regular reporting to staff, Council and the community is important as it builds awareness and keeps energy stewardship consistently on everyone's mind. At the same time, regular monitoring helps to manage the risks and uncertainties related to each action.

The basis of the framework is an annual update of the energy and emissions inventory, complemented by a review of the Local Energy Stewardship Plan every three years. This will keep climate actions on track through to 2030 and will enable Drayton Valley to achieve PCP Milestone #4 (Implementation) and PCP Milestone #5 (Monitoring and Reporting).

Indicators

Within the monitoring and reporting framework are indicators, selected based on data availability and linked to actions to provide a quantifiable progress tracker.

Table 4: Mapping indicators to corporate goals

Goal #1: Reduce emissions from municipal operations	Goal #2: Reduce landfill emissions	Goal #3: Diversifying energy supply	Indicator	Data Source
✓			Total corporate greenhouse gas emissions	TODV utility bills
✓			Building energy intensity	TODV utility bills
✓			Water consumption compared to total treated volume (m ³ or %)	Water annual audit report
	✓		Landfill methane emissions	Aspen Waste Management Annual Report
✓			Number of staff trained	SafetySync platform
		✓	Energy generated on-site	Installed monitoring platforms

Table 5: Mapping indicators to community goals

Goal #1: Reduce building sector emissions	Goal #2: Reduce transportation sector emissions	Goal #3: Build-up sustainable and local energy production	Goal #4: Empower community action	Indicator	Data Source
✓	✓	✓	✓	Total community greenhouse gas emissions	Energy delivery companies
✓			✓	Number of energy efficient buildings	Planning department and CEIP Program participants
✓	✓			Vehicle composition	Alberta license registration data
		✓		Number of renewable installations	Planning department
			✓	Number of community programs	Sustainability committee

APPENDIX A: 2019 ENERGY & EMISSIONS INVENTORY FOR DRAYTON VALLEY

2019 Corporate Energy and Emissions Inventory

	Electricity Use (kWh)	Electricity Use (GJ)	Electricity Emissions (tCO ₂ e)	Electricity Expenditure (\$)	Natural Gas Use (GJ)	Natural Gas Emissions (tCO ₂ e)	Natural Gas Expenditure (\$)	Propane Use (L)	Propane Use (GJ)	Propane Emissions (tCO ₂ e)	Propane Expenditure (\$)
Municipal Buildings	3,273,989	11,787	2,469	\$ 474,848	26,745	1,350	\$ 156,623	5,032	127	8	\$ 3,814
Airport	70,115	252	53	\$ 15,096	-	-	\$ -	5,032	127	8	\$ 3,814
Amenities	67,603	243	51	\$ 14,959	-	-	\$ -				
Public Works Building and Shop	47,190	170	36	\$ 6,577	667	34	\$ 4,438				
Town Office Complex	249,683	899	188	\$ 32,486	1,612	81	\$ 12,233				
Ford Building	825	3	1	\$ 1,214	342	17	\$ 2,624				
West Yard Storage	19,862	72	14	\$ 3,591	431	22	\$ 3,109				
Outdoor Ice Rink	11,177	40	8	\$ 2,398	91	5	\$ 1,224				
Clean Energy Technology Centre	305,144	1,099	230	\$ 54,538	2,312	117	\$ 13,491				
Park Valley Pool	405,617	1,460	306	\$ 46,353	5,429	274	\$ 30,852				
Omniplex Arena	1,581,104	5,692	1,192	\$ 193,365	11,013	556	\$ 56,088				
Early Childhood Development Centre	47,450	171	36	\$ 9,107	429	22	\$ 3,020				
MacKenzie Conference Centre	202,224	728	152	\$ 41,321	1,625	82	\$ 9,913				
Historical Society Museum	7,790	28	6	\$ 2,091	469	24	\$ 3,334				
Rotary Park Building	2,812	10	2	\$ 1,386	349	18	\$ 2,644				
Elanor Pick-Up Arts Centre	73,358	264	55	\$ 11,627	380	19	\$ 2,864				
Splash Park	12,080	43	9	\$ 2,761	-	-	\$ -				
Cause for Critters	24,867	90	19	\$ 4,771	499	25	\$ 3,459				
RV Park	133,201	480	100	\$ 24,023	111	6	\$ 1,313				
Affordable Housing Program	11,887	43	9	\$ 7,184	986	50	\$ 6,017				
Lights	484,400	1,744	365	\$ 568,735							
Park Lights	14,480	52	11	\$ 8,305							
Streetlights	406,028	1,462	306	\$ 537,799							
Traffic Lights	63,892	230	48	\$ 22,631							
Water Treatment	2,802,926	10,091	2,113	\$ 385,066	4,212	213	\$ 25,714				
Old Water Treatment Plant	1,807,462	6,507	1,363	\$ 188,439	519	26	\$ 3,360				
New Water Treatment Plant	751,115	2,704	566	\$ 160,623	3,485	176	\$ 20,480				
Water Reservoirs	244,349	880	184	\$ 36,004	208	11	\$ 1,874				
Sewage Treatment	1,163,768	4,190	877	\$ 155,445	233	12	\$ 3,157				
Lab	-	-	-	\$ -	90	5	\$ 1,084				
Brazeau Business Park Lift Station	4,376	16	3	\$ 5,293	-	-	\$ -				
Sewer Blower Building	882,976	3,179	666	\$ 115,246	-	-	\$ -				
Sewer Plant UV	273,573	985	206	\$ 32,204	142	7	\$ 1,362				
Sewer WWTF Outfall	-	-	-	\$ 1,143	-	-	\$ -				
Lift Station Greenfield Subdivision	2,843	10	2	\$ 1,559	1	0	\$ 711				

	Gasoline Use (L)	Gasoline Use (GJ)	Gasoline Emissions (tCO ₂ e)	Gasoline Expenditure (\$)	Diesel Use (L)	Diesel Use (GJ)	Diesel Emissions (tCO ₂ e)	Diesel Expenditure (\$)	Ethanol (E10) Use (L)	Ethanol (E10) Use (GJ)	Ethanol (E10) Emissions (tCO ₂ e)	Ethanol (E10) Expenditure (\$)
Municipal Fleet	3,388	119	8	\$ 3,522	66,396	2,541	180	\$ 73,974	34,206	1,160	52	\$ 35,848
Firehall	3,217	113	8	\$ 3,349	6,869	263	19	\$ 7,466	1,663	57	3	\$ 1,674
Omniplex	-	-	-	\$ -	-	-	-	\$ -	456	15	1	\$ 478
Town Office	172	6	0	\$ 173	-	-	-	\$ -	5,418	183	8	\$ 5,765
Water Treatment	-	-	-	\$ -	3,838	147	10	\$ 4,886	9,556	324	15	\$ 9,999
Public Works	-	-	-	\$ -	18,710	716	51	\$ 20,766	8,942	303	14	\$ 9,443
Parks	-	-	-	\$ -	36,979	1,415	100	\$ 40,856	8,171	278	12	\$ 8,489

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 (tCO ₂ e)	Natural Gas Use (GJ)	Natural Gas Emissions (tCO ₂ e)	Diesel Use (L)	Diesel Use (GJ)	Diesel Emissions (tCO ₂ e)	Solid Waste (tonnes)	Solid Waste Emissions (tCO ₂ e)	Solid Waste Expenditure (\$)
Waste Management											
Aspen Waste Management	31,283	113	24	471	24	53,959	2,067	145	16,121	37,723	\$ 172,479

Energy use for waste management estimated based on 2018 data.

Town of Drayton Valley	2019
Total Corporate Energy Use	65,600 GJ
Total Corporate Emissions	45,562 tCO ₂ e
Total Corporate Expenditure	\$2,059,225

2019 Community Energy and Emissions Inventory

	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	109,954,885	395,951	82,903	633,080	31,948	4,268
Residential	20,038,512	72,139	15,109	319,677	16,132	-
Non-residential	89,874,543	323,661	67,763	313,403	15,816	-
Streetlights	41,830	151	32	-	-	-
Unspecified Sources	-	-	-	-	-	4,268

	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	110,588	7,321	160,924	11,553	696,313	31,218
Cars	47,553	3,148	20,920	1,502	299,415	13,424
Light-duty vehicle	61,929	4,100	27,357	1,964	389,935	17,482
Heavy-duty vehicle	1,106	73	112,647	8,087	6,963	312

	Waste Emissions (tCO ₂ e)
Waste	31
Wastewater	1
Composting	30

Drayton Valley	2019
Total Community Energy Use	1,996,856 GJ
Total Community Emissions	169,242 tCO ₂ e

APPENDIX B: ACTION PLANNING FOR DRAYTON VALLEY

Corporate Action Planning

Goal	Corporate Actions	Annual tCO ₂ e reduction by 2030	Department Lead	Priority	Cost Implications	Timeline
#1 Reduce emissions from municipal operations	Energy efficiency benchmarking, audits, and retrofits for existing buildings.	380	Engineering Services	High	Medium	Medium
	Improve water & sewage utility system to reduce leaks and infiltration	200	Engineering Services	High	Medium	On-going
	Replace Park Valley Pool with a new, energy efficient Aquatic Centre	35	Community Services	Medium	High	Medium
	Initiate fuel-efficient driver training program	10	Engineering Services	Medium	None	Immediate
#2 Reduce landfill emissions	Investigate technologies for reducing landfill emissions	8,000	Engineering Services	Medium	High	Medium
		1,000	Engineering Services	High	Medium	Immediate
#3 Diversifying energy supply	Install solar PV systems at municipal facilities	300	Engineering Services	Low	High	Long
	Install combined heat and power system at municipal facilities	130	Engineering Services	Medium	Medium	Long

Cost

\$: < \$10,000
 \$\$: ≥ \$10,00 to < \$100,000
 \$\$\$: ≥ \$100,000

Timeline

Immediate: Within 2 years
 Medium: In 3-5 years
 Long: In 5-10 years

Community Action Planning

Goal	Community Actions	Priority	Policy Instrument	Potential annual tCO ₂ e reduction
#1 Reduce building sector emissions	Ensure new buildings comply with the updated National Energy Building Codes.	High	Regulatory	●○○
	Introduce PACE/CEIP Program to encourage building owners to pursue energy audits and energy retrofits	Medium	Outreach & regulatory (Federal and provincial financial incentives may be available)	●●●
	Require new developments to include district energy systems where it is economically feasible	Low	Regulatory (Federal incentives currently available)	●●○
#2 Reduce transportation sector emissions	Initiate a driver behaviour program that focuses on cost-efficient driving techniques and habits	High	Outreach & education	Q
	Investigate feasibility of an on-demand micro-transit system	Medium	Partnership & research support	●●○
#3 Build-up sustainable and local energy production	Engage with potential industrial and research partners to establish new energy industries in Drayton Valley	Low	Partnership & research support	Q
	Encourage alternative energy installations at non-municipal buildings	Low	Outreach (Provincial financial incentives available for schools)	●●○
#4 Empower community action	Partner with local agencies to deliver energy stewardship programs	Medium	Partnership	Q

GHG reduction potential (tCO₂e/year)

●○○: < 100

●●○: ≥ 100 to <500

●●●: ≥ 500

Q: Qualitative Action

APPENDIX C: MODELLING INPUTS AND ASSUMPTIONS

Data sources

Sector	Data Sources for Corporate Inventory	Data Sources for Community Inventory
Building	<ul style="list-style-type: none"> AMSC Energy Ecocharge NuSolar 	<ul style="list-style-type: none"> FortisAlberta ATCOGas
Transport	<ul style="list-style-type: none"> Corporate fuel invoices 	<ul style="list-style-type: none"> Kent Group Alberta Transportation
Waste	<ul style="list-style-type: none"> GFL Environmental Inc Aspen Management invoices 	

Energy Conversion Factors


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/m ³	
Gasoline	0.03466	GJ/L	
Diesel	0.03868	GJ/L	
Ethanol	33.6	GJ/m ³	
Propane	0.02559	GJ/L	https://www2.gov.bc.ca/assets/gov/taxes/sales-taxes/publications/conversion-factors-by-fuel.pdf

Emissions Factors

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 /m ³	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

Modelling Assumptions for Corporate Emissions

Corporate Actions	Assumptions	Annual tCO ₂ e reduction by 2030
Goal #1: Reduce Emissions from Municipal Operations		
Energy efficiency benchmarking, audits, and retrofits for existing buildings.	<ul style="list-style-type: none"> Examples of retrofits – LED retrofit, update building automation systems, weather insulation, high-efficiency windows Assume overall reduction of 5% in gas and electricity consumption from 2019 by 2030. 	380
Improve water & sewage utility system to reduce leaks and infiltration	<ul style="list-style-type: none"> The annual water audit estimated water loss in the utility system to be 20%. With improved utility systems, the electricity and gas consumption at water and wastewater facilities can be reduced by 10% by 2030. 	200
Replace Park Valley Pool with a new energy efficient Aquatic Centre	<ul style="list-style-type: none"> The new Aquatic Centre is designed to maintain the same consumption – even with increased occupancy, services, and programming. For this action, it is projected that to prevent energy consumption from increasing at the rate of 0.77% annually, the energy reductions must match growth rate and compound annually. 	35
Initiate fuel-efficient driver training program	<ul style="list-style-type: none"> NRCan estimates that the Smart Driver Training program can help save up to 25% of fuel costs and emissions. For Drayton Valley, it is projected that reduction will only occur for light and heavy duty vehicles, at about 15% reduction. 	10
Goal #2: Reduce landfill emissions		
Investigate technologies for reducing landfill emissions	<ul style="list-style-type: none"> Any technology applied at the landfill could reduce or even eliminate methane emissions. Assume successful reduction of methane by 50% from 2019 landfill emissions. 	8,000
Implement differential landfill tipping fees	<ul style="list-style-type: none"> Wood, drywall, and shingles was estimated to be over 4000 metric tons in 2019. Assume 25% is successfully diverted with this action. 	1,000
Goal #3: Diversifying energy supply		
Install solar PV systems at municipal facilities	<ul style="list-style-type: none"> Emissions reductions based on solar PV modelling exercises completed for the Omniplex and Clean Energy Technology Centre. 	300
Install combined heat and power (CHP) system at municipal facilities	<ul style="list-style-type: none"> Emissions reductions based on CHP modelling exercise completed for the Omniplex. 	130

A black and white photograph of three tall, lattice-structured metal towers, likely for fire observation or communication. The towers are arranged in a row, with the tallest on the left and two shorter ones to its right. The background shows a clear sky and the tops of evergreen trees. The towers have platforms at the top, and the middle one has some equipment or antennas mounted on it.

For further information, please contact:

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