

EXECUTIVE SUMMARY

As greenhouse gas (GHG) emissions continue to rise and contribute to global warming, there has been a growing recognition of the urgent need to mitigate climate change and minimize its adverse impacts. In response to this pressing challenge, various entities, including the Town of Aurora, have taken proactive steps to reduce GHG emissions and mitigate the effects of global warming. In 2019, the Town declared a climate emergency, demonstrating its commitment to addressing climate change.

The 2024 Energy Conservation and Demand Management Plan (ECDMP) update embodies the Town's ambitious vision for a sustainable future. It sets ambitious GHG reduction targets from Town operations beyond the five-year cycle to include medium and long term planning, initiating a vision of net-zero by 2050. The energy and GHG emissions plan is centered on Town-owned assets, including emissions from: Town-owned buildings, fleet, corporate solid waste, public lighting and Town-owned water/ wastewater facilities. The energy and emissions plan for the community is assessed under a separate plan, the Town's Community Energy Plan, which includes an emissions inventory and reduction plan for buildings, transportation and waste.

The Town joined the Partners for Climate Protection (PCP) program in 2018, which consists of a five-step Milestone Framework that guides action against climate change. The 2024 ECDMP fulfills the first three PCP Milestones for the first time by expanding emission sources being reported on (to include public lighting and waste). Milestone 1 to 3 include creating a baseline emissions inventory and forecast, setting emissions reduction targets, and developing a local action plan. The remaining Milestones are implementation of the action plan and monitoring and reporting on progress which will be fulfilled going forward. By following this framework, municipalities can make informed decisions, engage the community, and contribute significantly to national climate change mitigation efforts.

The plan also meets the requirements under the Ontario Regulation 25/23, Broader Public Sector: Energy Reporting and Conservation and Demand Management Plans (O. Reg. 25/23), requiring public agencies such as municipalities to report their buildings' energy consumption and GHG emissions annually. O. Reg. 25/23 also requires these public agencies to develop ECDMPs, and update them every five years.

Over the past five years, the Town has made remarkable progress, driven by a collective determination and innovation. From the Town's previous ECDMP from 2019, which covered the window from 2019-2023, the Town decreased electricity consumption by 2% and natural gas consumption by 30%. This resulted in an overall reduction in GHG emissions of 20%, surpassing the goal of 16%. The completed and in-progress projects from the 2019 ECDMP are listed in Table 1.

Table 1: Summary of measures implemented during 2019 ECDMP

Status	Measure
Complete	Aurora Public Library: Demand control ventilation Aurora Public Library: Replace rooftop HVAC Fleet: Develop Green Fleet Action Plan Fleet: Implement anti-idling initiative Fleet: Incorporate ethanol 10 in all gasoline-fueled vehicles Fleet: Measure vehicle distance traveled and fuel consumed Fleet: Purchase some electric and hybrid-electric assets Fleet: Replace low tier diesel equipment Various: Lighting retrofits to LED

Table 1: Summary of measures implemented during 2019 ECDMP (continued)

Status	Measure
In progress	Aurora Community Centre: Replace compressors
	Aurora Community Centre: Replace fan coil units
	Aurora Community Centre: Replace two heating boilers
	Aurora Family Leisure Complex: Arena low-e ceiling
	Aurora Family Leisure Complex: Replace humidicon equipment
	Aurora Family Leisure Complex: Upgrade of climate control
	Aurora Town Hall: Replace forced air and gas furnaces
	Stronach Aurora Recreation Complex: Low-E ceilings
	Stronach Aurora Recreation Complex: Replace plumbing fixtures in arena change rooms
	Stronach Aurora Recreation Complex: Replace screw compressor
	Various: Lighting retrofits to LED

The 2024 ECDMP update set the following short, medium and long term targets for the Town's corporate emissions compared to the 2018 Baseline: short term (2024-2029) 20% reduction by 2030, medium term (2030-2035) 50% by 2035 and long term (up to 2050) net-zero by 2050. To continue progressing towards a 50% reduction in GHG emissions by 2035 and net zero by 2050, the Town has identified short, medium, and long term plans in this updated ECDMP.

Table 2 summarizes the proposed actions to be undertaken until the next ECDMP.

Table 2: Summary of planned actions to undertake in the short term (2024-2029)

Action	Reduction in GHG emissions (tCO ₂ e/yr)
Investigate and implement demand control ventilation	12
Remaining lights to LED	-25
Remaining measures from 2019 ECDMP	58
Remaining occupancy sensors	0
Remaining water fixtures to low-flow	196
High efficiency boiler replacement	4
Optimum start/stop	4
Decarbonize 2 vehicles	18
Ice resurfacers vehicle decarbonization	1
Decarbonize 10 pieces of equipment	15
Pool covers at Rec. centres	25
ASHRAE Level 3 Energy Audits for all facilities	Unquantifiable
Net-Zero Pathway study based on energy audit outcomes	Unquantifiable
Infrastructure assessment for electrification; facilities and fleet	Unquantifiable
Electrical infrastructure upgrade budget	Unquantifiable
Renew Green Fleet Action Plan and continue to make operational improvements from following the plan	26
Perform solid waste audits and develop a Waste Reduction Plan	Unquantifiable
Employee training for operation and maintenance of new technologies for energy savings	Unquantifiable
performance monitoring	Unquantifiable
Incorporate life cycle cost analysis into budgeting, planning, and asset management	Unquantifiable
Develop sustainable building standard for new and major renovations	Unquantifiable
Implement Green Procurement Policy	Unquantifiable
Investigate opportunities to convert public lighting fixtures to LED	Unquantifiable

Note that a negative ("-") percent reduction in GHG emissions indicates that the Town's GHG emissions are anticipated to increase for that measure, although overall energy use would decrease.

The Town is reaching a critical point in achieving a net-zero future. Through the implementation of the 2024 ECDMP, the Town is completing the remaining low hanging fruit energy measures that are considered market-ready, higher payback projects as well as lower-cost operational changes and piloting smaller-scale projects. They are important measures to implement before making a more aggressive jump of switching to low-carbon technologies and renewable energy sources that often require major investment. Outlined in the 2024 ECDMP are crucial feasibility studies required in the short term to successfully access newer, more complex technologies in the medium term that require additional consideration such as infrastructure upgrades and employee training

for implementation.

Achieving the carbon reduction goals requires concerted efforts in change management, ensuring seamless transitions towards greener practices. Deep engagement of stakeholders, including working groups with regular touchpoints, will be instrumental in fostering ownership and support. Active tracking of progress is essential to monitor our carbon reduction initiatives' effectiveness and make timely adjustments. Together, through strategic coordination and relentless commitment, we can pave the way towards a greener, more resilient Aurora.

Table 3 summarizes the baseline (2018) GHG emissions for each asset, the current state of GHG emissions, and the projected GHG emissions if all of the proposed actions are undertaken according to this plan.

Table 3: Summary of existing and projected GHG emissions from this plan

Asset type	GHG Emissions (tCO ₂ e/yr)					Percent Reduction from Baseline (%)			
	2018	2022	2029	2035	2050	2022	2029	2035	2050
Buildings	2,857	2,072	2,063	1,304	893	27	28	54	69
Corporate Fleet	556	556	500	438	336	-0	10	21	40
Public Lighting	59	56	123	137	171	5	-110	-133	-192
Pump Stations	1	1	2	2	3	11	-97	-118	-173
Waste	416	416	416	374	0	0	0	10	100
Total	3,889	3,100	3,104	2,256	1,403	20	20	42	64

Note that a negative ("-") percent reduction in GHG emissions indicates that the GHG emissions for that asset increased over the indicated time frame.

Important to note from Table 3 is that the carbon emission factor of the Ontario grid, also considered the emission intensity of the grid, is expected to increase between 2024-2029 and erode some of the Town's emissions reduction progress. An increased intensity means that even though electricity use by the Town decreases during that time, it increases GHG emissions nevertheless increase. This effect is clear when looking at electricity consumed by public lighting and the water/wastewater sector which is projected to remain constant over the next five years; however, the GHG emissions increase during this time. This also results in relatively constant overall Town GHG emissions from 2022 to 2029, because although the electricity and natural gas consumption is projected to decrease over this period through the plan's implementation, the increase in the electricity grid carbon intensity is projected to offset the progress.

The 5-year vision of this plan is to foster a more sustainable community by reducing electricity consumption by **12%**, natural gas consumption by **10%**, propane consumption by **100%**, ethanol 10 by **10%**, and biodiesel 5 by **11%**. Despite the projected increase in grid carbon intensity, we anticipate achieving a GHG reduction of **20%** from 2018 by 2029. This is also anticipated to decrease the annual utility costs by \$319,184, or **11%**.

Looking ahead to the medium and long term, once the Town has established the necessary framework to take more aggressive actions to reduce their GHG emissions, the GHG emissions are projected to decrease by **42%** by 2035 and **64%** by 2050. This comes close to meeting the target of 50% reduction by 2035 and makes substantial progress towards achieving net zero by 2050. To realize this vision and contribute meaningfully to global climate mitigation, it is recommended that the Town leverage insights from the Energy Audits performed in the short term, remain informed about cutting-edge technologies, implement the lowest-carbon alternatives wherever feasible, and consider the purchase of carbon offsets once the Ontario carbon offset market matures. The current plan would fall short of the net zero target, but advances in technology are quickly evolving brining the Town closer to a net-zero future.