COW July 8, 2019
CW-08-19 File#210-01

Corporate Energy & Emissions Management Plan

Tom Pedlar – Coordinator, Project Management – Energy

The City of Burlington's Preferred State

1. The City produces no net carbon releases from its activities, aligning with its Corporate Strategic Plan target.
2. The City manages its energy in a way that reduces the burden on ratepayers.
3. Staff members have the training and information they require to manage their energy use.
4. Burlington collaborates with others both inside and outside the corporation.
5. The City remains aware of initiatives in other municipalities and organizations.
6. The City is constantly piloting and evaluating innovative ways of increasing energy efficiency, use of renewable energy and reduction of GHG emissions.
7. New equipment is chosen with a consideration of its need/necessity energy use, emissions and life-cycle cost.
8. The City measures and monitors energy use and GHG emissions to ensure continual improvement.
9. Council and senior management have the knowledge of energy use and emissions from City operations.
10. The City takes advantage of incentives offered by various utilities and other levels of government.

Scope 1 Emissions

Fuel burned by our corporate fleet

Fuel burned by our corporate facilities

Scope 2 Emissions

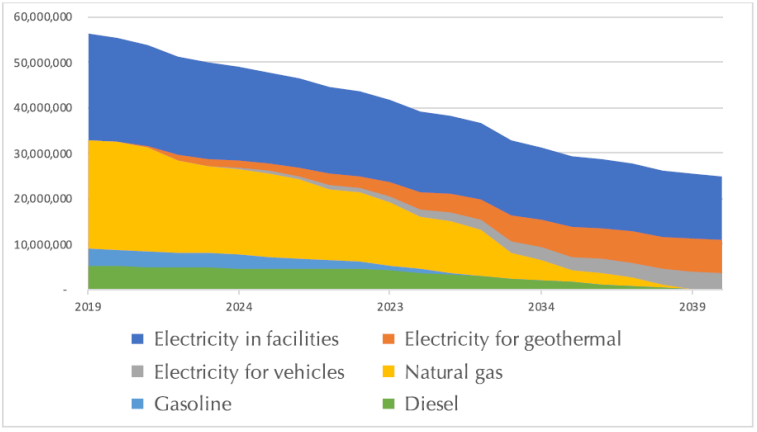
Electricity used by City Operations

One Possible Scenario

Assumptions

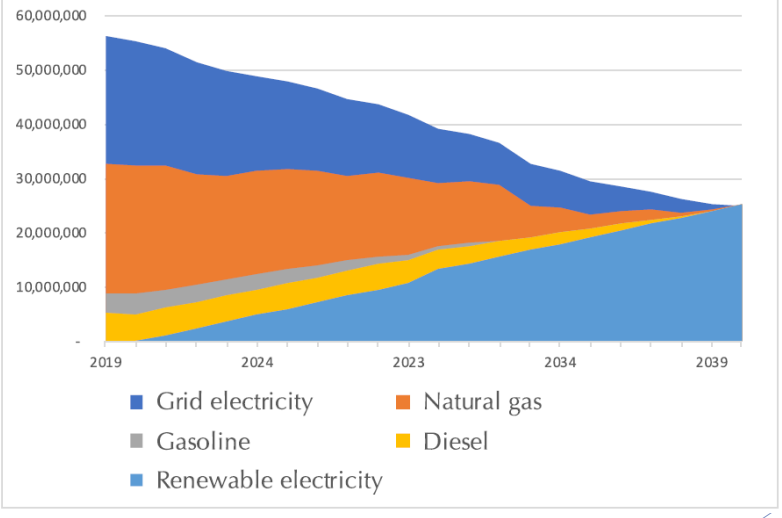
- Geothermal is used as alternative to NG for buildings
- 1MW of solar PV is installed every year
- Assumptions have been made about the cost of technology that are very general.
- Programming levels in our facilities will stay steady.
- A very linear reduction has been assumed although that will not be the case.
  - Installations will follow capital renewal of systems and facilities.
  - Rooftop solar installation should follow roof system replacements.

One Possible Scenario - Results



Changes in demand under the net zero scenario (ekWh/a)

One Possible Scenario - Results



Changes in energy supply under the net zero scenario (ekWh/a)

One Possible Scenario - Costs

Year	Total costs	Total savings	Net cost
2019	$200,000	$0	$200,000
2020	$475,000	-$110,000	$365,000
2021	$4,051,000	-$389,000	$3,662,000
2022	$3,947,000	-$623,000	$3,324,000
2023	$3,844,000	-$899,000	$2,945,000
2024	$3,740,000	-$1,195,000	$2,545,000

One Possible Scenario Costs

Year	Total costs	Total savings	Net cost
2019	$200,000	$0	$200,000
2020	$475,000	-$110,000	$365,000
2021	$4,051,000	-$389,000	$3,662,000
2022	$3,947,000	-$623,000	$3,324,000
2023	$3,844,000	-$899,000	$2,945,000
2024	$3,740,000	-$1,195,000	$2,545,000
2025	$4,000,000	-$1,510,000	$2,490,000
2026	$3,900,000	-$1,810,000	$2,090,000
2027	$3,940,000	-$2,100,000	$1,840,000
2028	$3,920,000	-$2,420,000	$1,500,000
2029	$4,320,000	-$2,740,000	$1,580,000
2030	$6,250,000	-$3,220,000	$3,030,000
2031	$4,230,000	-$3,580,000	$650,000
2032	$4,230,000	-$3,890,000	$340,000
2033	$4,070,000	-$4,110,000	-$40,000
2034	$3,930,000	-$4,390,000	-$460,000
2035	$3,890,000	-$4,650,000	-$760,000
2036	$3,880,000	-$4,950,000	-$1,070,000
2037	$3,870,000	-$5,250,000	-$1,380,000
2038	$3,880,000	-$5,510,000	-$1,630,000
2039	$3,870,000	-$5,800,000	-$1,930,000
2040	$3,470,000	-$6,060,000	-$2,590,000

Targets

Target area	Current baseline	2020 target	2024 target	2040 target
Grid electricity (MWh)	**24,115,335**	**23,500,000** (3% reduction)	**18,200,000** (25% reduction)	**-** (100% reduction
Natural gas (10^3 m^3)	**2,272,256**	**2,270,000** (0% reduction)	**1,800,000** (21% reduction)	**-** (100% reduction)
Gasoline (L)	**409,133**	**390,000** (5% reduction)	**320,000** (22% reduction)	**-** (100% reduction)
Diesel (L)	**484,193**	**470,000** (3% reduction)	**440,000** (9% reduction)	**-** (100% reduction)
Renewables capacity (MW)	**-**	**-**	**4**	**21**
GHG emissions (t CO_2eq)	**7.302**	**7,220** (1% reduction)	**5,800** (21% reduction)	**-** (100% reduction)

Quick Wins

- Establishing an ongoing staff training program
- Setting meaningful targets for departments and facilities
- Revision of the Green Fleet Strategy
- Adoption of a shadow price for carbon
- Approval of an updated Corporate Construction Standard
- New Facility Design and Construction

CITY OF Burlington