



# City of Guelph

## Energy & Climate Change Updates

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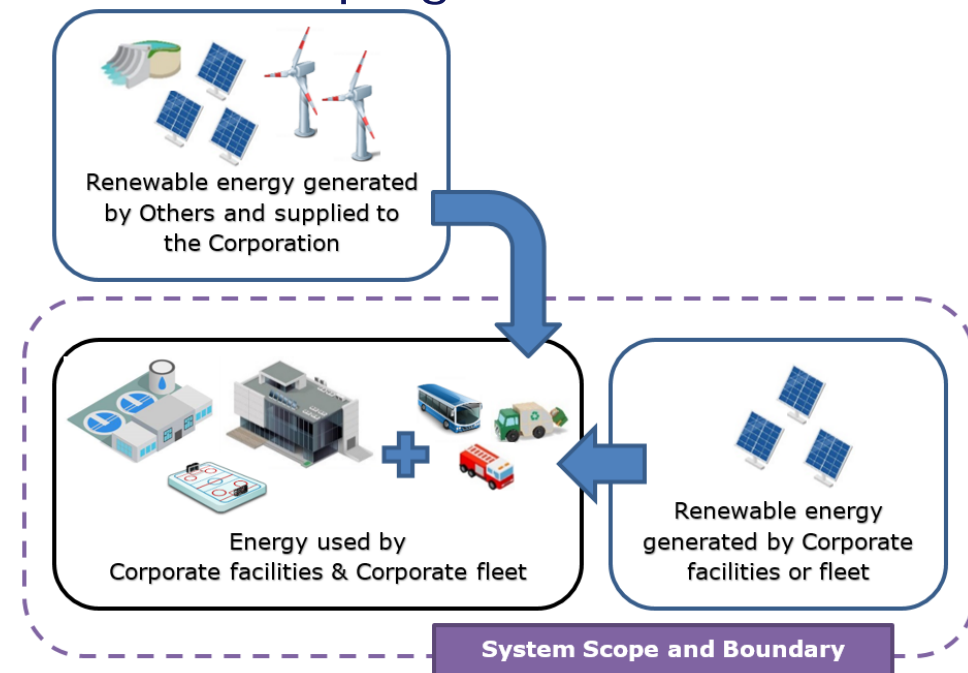
April 19, 2024

# Agenda

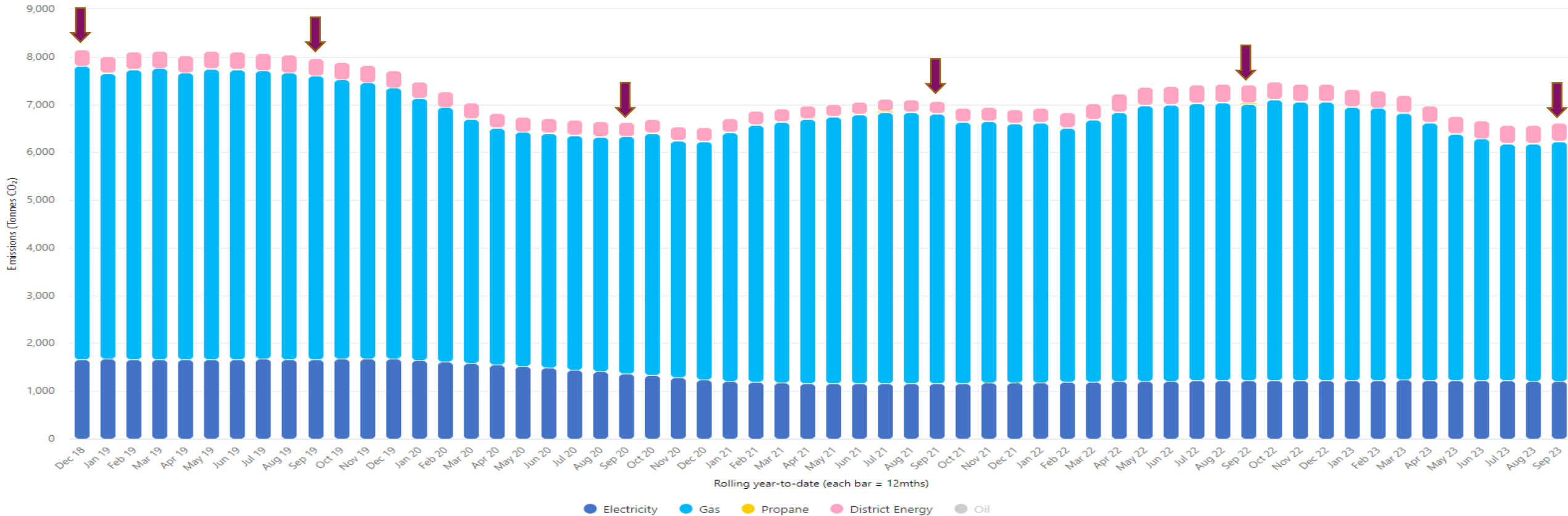
- Context & background
- Initiatives
  - ISO 50001 Corporate EnMS
  - Guelph Greener Homes
  - Capital projects
  - Renewables
  - Transit electrification
- Challenges
  - Budget cuts
  - Other priorities
  - Community emissions

# Context & background

- Population – 148,200 (2023)
- Single tier
  - **Facilities** – Admin, Community Centres, Firehalls, EMS, Libraries, Police, Transit Garage, Solid Waste (recycling, compost, retired landfill) Wastewater Treatment, Water Supply and Booster (ground water – limited treatment)
  - **Fleet** – Buses, Ambulances, Fire Trucks, Solid Waste Packers, Ice Resurfacers, Light Duty Trucks, Passenger, Construction, Landscaping
- Corporate emissions – 18,346 tCO<sub>2</sub>e (2023)
- Community emissions – 835,014 tCO<sub>2</sub>e (2022)
- Energy and Climate Change Team
  - Team resides in Facilities and Energy Management
  - 5 team members
  - \$1.15 million annual capital budget



# Facility GHG emissions trend



	2018	2019	2020	2021	2022	2023
Electricity	1,667	1,677	1,231	1,175	1,225	1,188
Natural gas	6,152	5,692	5,004	5,450	5,865	5,046
District energy	341	361	284	283	362	382
<b>Total [tCO<sub>2</sub>e]</b>	<b>8,165</b>	<b>7,730</b>	<b>6,519</b>	<b>6,923</b>	<b>7,469</b>	<b>6,629</b>

# Fleet GHG emissions trend



	2018	2019	2020	2021	2022	2023
<b>Total [tCO<sub>2</sub>e]</b>	<b>11,534</b>	<b>12,216</b>	<b>9,599</b>	<b>10,643</b>	<b>11,514</b>	<b>11,750</b>

# ISO 50001 Corporate EnMS

- Corporate-wide certification
- Benefits:
  - Formalized existing processes
  - Energy policy – top management support
  - Energy reviews
  - Continuous improvement
- Challenges:
  - Corporate-wide training
  - Getting others to really understand what it is... but do we need to?
  - Effort required to maintain





# Guelph Greener Homes

- Interest Free Loans – up to \$50k/applicant (\$13.75 million total)
- Low-income Household Grants – heat pump up to \$15k/applicant (\$1.5 million total)
- More than 350 registrants
- Challenges:
  - Reaching low-income households
  - Lots of hand holding
  - HER+ meltdown ripple effect
  - Low quality 'certified' energy auditors
  - Program flow control - potential hurt feelings when money runs out



A greener Guelph  
begins at home

# New Construction: Zero Carbon Building-Design

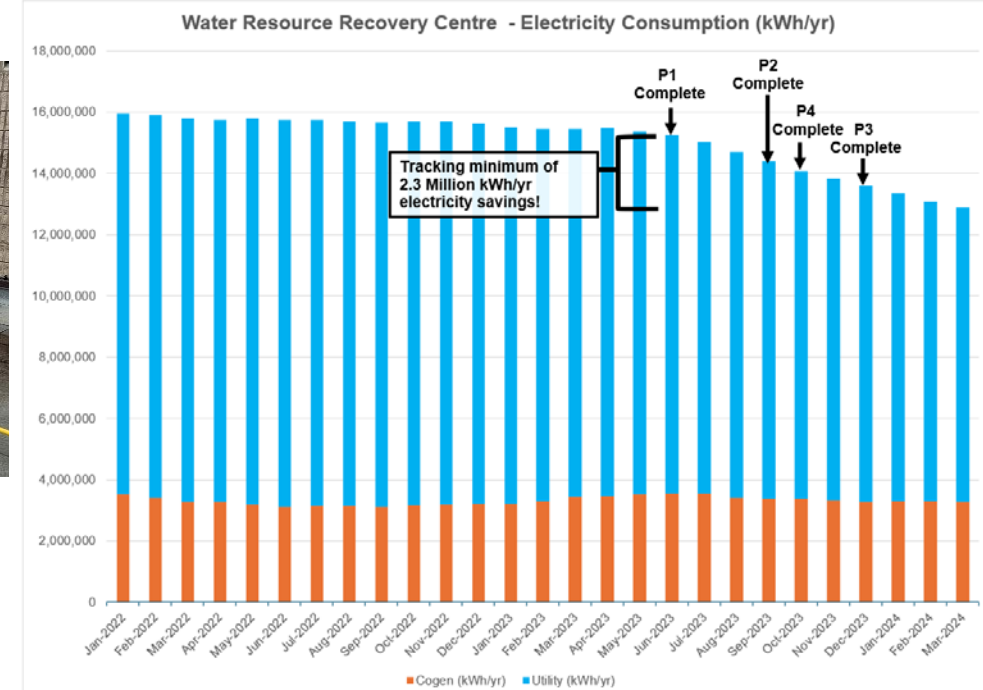
- Main Branch Baker Library (~180,000 sqft)
- South End Community Centre (twin pad + pool + gym + etc.)
- Design elements
  - Envelope design and commissioning review
  - Heat pump and heat recovery
  - Solar PV
  - Embodied carbon
  - Backup power
  - Construction management
- Challenges:
  - Resistant consultants
  - Point chasing-ish
  - Embodied carbon
  - Commissioning and training





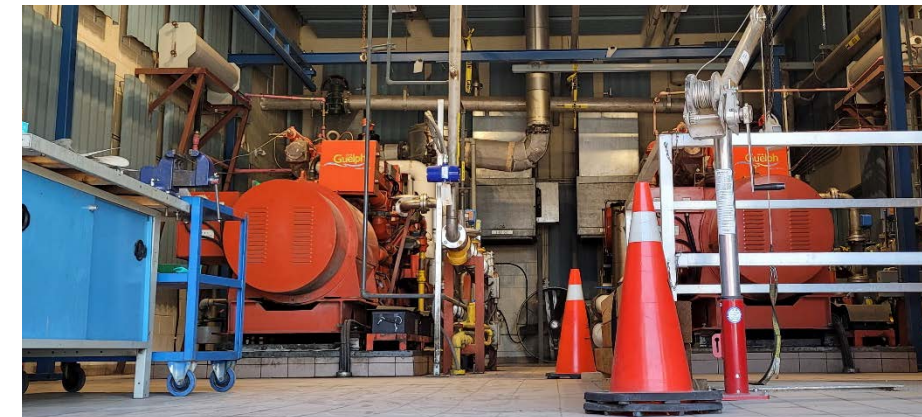
# Retrofits

- Aeration
- Heat pumps
- Retrocommissioning
- BAS master specification
- Lighting
- Challenges:
  - Limited funds
  - Old facilities and construction challenges
  - BAS misunderstood/disorganized



# Renewables

- Solar PV
  - O&M existing 12 sites – total 324kW
  - Contractor pre-qualification
  - Burke Well – 10kW new system
  - River Run – 150kW expansion
  - Wastewater – 180kW new system
- Renewable Natural Gas
  - Organic waste composting → anaerobic digestion + RNG (3,000-5,000 tCO<sub>2</sub>e)
  - Wastewater digester gas cogen → heat recovery/heat pump + RNG (1,000-3,000 tCO<sub>2</sub>e)
- Challenges:
  - Grid constraints
  - High capital, risk adverse
  - Economies of scale



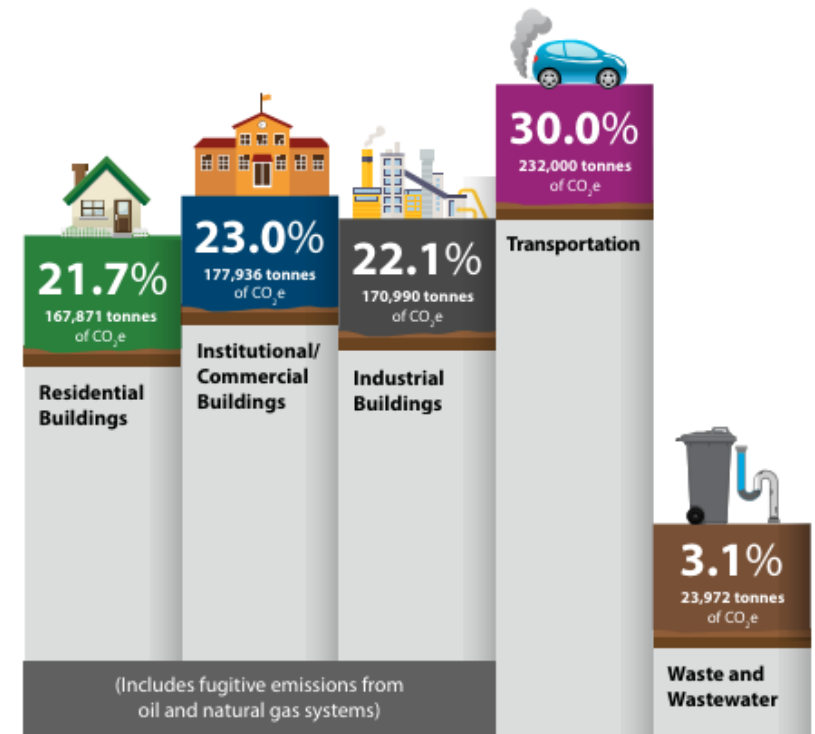
# Transit Electrification

- 7x long range 40 ft buses (90 tCO<sub>2</sub>e savings/bus)
- 4x 150kW fast chargers
- Design & construction – new Guelph Transit + Fleet Services Facility
- Design & construction – central terminal 450kW on-route chargers
- Challenges:
  - Market growing pains
  - Electrical and charger infrastructure constraints
  - High cost
  - Operations change management
  - Shiny distractions



# Challenges

- Other priorities
- Budget crunch
- Community emissions



Guelph's  
**Race To Zero**  
Community GHG Emissions



# Open discussion