Tay Valley Township

GREEN ENERGY AND CLIMATE CHANGE WORKING GROUP MINUTES

Friday, June 14th, 2024
2:00 p.m.
Tay Valley Municipal Office – 217 Harper Road, Perth, Ontario
Council Chambers

ATTENDANCE:

Members Present:	Chair, Councillor, Greg Hallam Councillor, Angela Pierman Bob Argue Jennifer Dickson Douglas Barr
Members Absent:	David Poch Gilbert Rossignol
Staff Present:	Noelle Reeve, Planner Allison Playfair, Recording Secretary

1. CALL TO ORDER

The meeting was called to order at 2:05 p.m.
A quorum was present.

2. AMENDMENTS/APPROVAL OF AGENDA

The Agenda was approved as presented.

3. DISCLOSURE OF PECUNIARY INTEREST AND/OR CONFLICT OF INTEREST AND GENERAL NATURE THEREOF

None at this time.

4. APPROVAL OF MINUTES

i) **Minutes – April 12th, 2024.**

The minutes of the Green Energy and Climate Change Working Group Meeting held on April 12th, 2024 were approved as circulated.

5. DELEGATIONS & PRESENTATIONS

None.

6. BUSINESS

i) **Climate Action Plan Update.**

- Update on Meeting with Public Works Manager about Municipal Office Retrofit Possibilities

  B. Argue discussed his handout *attached page 6* to convert the Municipal Office at 217 Harper Road from natural gas to an air source heat pump with the potential for solar panels to supply the electricity for the heat pump.

  B. Argue undertook a similar project for the Mississippi Mills Textile Museum which demonstrated the cost saving and greenhouse gas (GHG) reduction benefits for the museum.

  B. Argue noted that a retrofit of the Township at 217 Harper Road building would reduce the GHG emissions for heating the building by 93% which would be a significant contribution to meeting the Township's greenhouse gas reduction targets.

  B. Argue met with the Public Works Manager (PWM) and the Planner to discuss the proposal and the PWM recommended to have an engineer review the feasibility of the proposal through a grant from the Federation of Canadian Municipalities.

  The Working Group recommends that Council direct staff to pursue funding for a feasibility study of the proposal for an energy efficient retrofit to:
  - save the Township money on heating and cooling and maintenance costs;
  - be proactive before some component fails;
  - be prepared with a shovel ready project when funding is available;
  - meet the targets of the Climate Action Plan;
  - ensure continuation of operations during prolonged grid outages.

- Update on Blue Box Recommendation to Council

  The Planner advised the Working Group that a report went to the Committee of the Whole on June 4th on the implementation options for the Township under *Ontario Regulation 391/21 Blue Box*, under the *Resource Recovery and Circular Economy Act, 2016.*

  The Planner summarized the report to the Working Group. The Township will need to provide education for residents on the new process including what new materials are recyclable and what requirements there are to ensure contamination is kept to a minimum so the Township can achieve cost savings.

  The Working Group would like an update on the expanded range of recyclables that waste sites will accept.

- Composting Education County Outreach Materials

  The Planner reached out to Michelle Rabbetts on educational materials for composting they are working on. Because the Public Works Manager is at capacity with roads projects, the Planner asked the Working Group if they would be able to work on outreach to residents at waste sites about composting. Alternatively, for now the Township could add additional information on our website about how to compost.

  Another option is to combine composting education outreach with the outreach that will be needed for the new blue box recycling information prior to the new program starting in January. Some of the remaining funding from the County could be used to hire a waste communications strategist.

ii) **Communications**

- Lanark County Climate Change Committee Update

  The Planner advised the Working Group of the meeting that was held Thursday June 13, 2024 at the County on how Climate Change affects the Hazard Identification Risk Assessment. The County invited all the Community Emergency Management Coordinators (CEMC); all County senior management; Climate Network Lanark; and County Councillors.

  The Committee created exercises based on four likely Climate Change scenarios for Lanark County: extreme heat event, ice storm, extreme weather (tornado/flooding), and wildfire/drought.

  The Planner recommends that Tay Valley staff complete a similar exercise.

The County will seek public input on the risks associated with the scenarios as part of developing its Climate informed Hazard Identification & Risk Assessment (HIRA) and Adaptation Plan.

- Climate Network Lanark (CNL) Education Series

  The Planner informed the Working Group that Climage Network Lanark is continuing to hold public education sessions throughout the summer and fall. The next session will be on Hot Water Heaters on June 20th at the Smiths Falls arena. In September there will be a session on heat pumps and one on how to increase the resilience of your home, including to wildfires.

7. NEW/OTHER BUSINESS

None.

8. NEXT MEETING DATE AND PROPOSED AGENDA ITEMS

Next Meeting: Friday, August 16th, 2024 at 2:00 p.m.

9. DEFERRED ITEMS

**The following items will be discussed at the next and/or future meeting:*

- *None at this time*

10. ADJOURNMENT

The Working Group adjourned at 3:01 p.m.

Chair **Secretary**

BUSINESS

Retrofit of the TVT Municipal Office 217 Harper Road June 6 2024

This mini report provides a high-level snapshot of the current energy demands of the TVT Municipal Building and what a low-carbon retrofit might look like. It assumes that current heating and cooling units are nearing their useful lifetime and could be replaced with electric heat pumps. At the same time, a net metering solar array could be installed to offset future electrical demand.

Current Building:

Floor area: 732 m^2

Natural Gas (2023):	10,686 m^3	$5,535	25,660 kg CO^2
Electricity (2023):	34,453 kWh	$6,759	1,034 kg CO^2

Retrofit Potential:

- First is to consider any potential energy-efficiency improvements. This might include air-sealing, lighting, insulation, smart controls. Being a relatively new building, it is assumed that options are limited, which could be confirmed via an energy audit.
- Second, eliminate the natural gas heating systems and install a heat pump heating and cooling system. There are two potential systems: Air-source heat pump or a ground-source heat pump.
  - An air-source system is a less expensive installation but has a higher operating cost.
  - A ground-loop system, with greater cost and greater efficiency, requires a large area of land to install the trenches for the piping, typically 2.5 x the area of the building. This would require ~1800 m^2 of land (easily accommodated by the land to the north of the parking area). An alternative would be a vertical borehole system which requires less land but at a higher cost.
- Third, install a net-metering solar system to offset electrical costs. There are a number of options to consider:
  - A basic mini 10 kW system. This could generate ~11,350 kWh per year
  - The two pitched roof sections (120 m^2 per roof, 140° orientation, 30° slope) could each hold an 18 kW solar system that would generate a total of ~40,000 kWh per year.
  - Adjacent flat roof that could hold ~60 kW system, generating ~60,000 kWh per year
  - With a net-metering system, the solar generation should be less than the annual consumption (any surplus fed to the grid over 12 months does not receive any credit).
  - The current annual electricity use of ~35,000 kWh, plus the requirements for a ground-source heat pump of ~30,000 kWh would limit any installed solar capacity to around 60 kW.

Climate Considerations

The current building generates ~26,693 kg CO^2 per year

A retrofitted building could generate ~1,934 kg CO^2 per year, a 93% reduction.

Next Steps

- Determine expected remaining lifetime of existing natural gas units
- Confirm the availability of connection to the grid with the solar system
- Confirm the expected lifetime of the roof
- Conduct an energy audit to determine retrofit potential and estimate required heat load
- Assess the potential for ground-loop heat pump and/or air-source heat pump
- Estimate high level lifecycle costs and benefits

This is the natural gas and electrical consumption for 2023

CO2 Calculator	unit	# of units	GJ	kg CO2	Cost / Unit	Annual Cost	Carbon Tax @ $/t $170
natural gas	m3	10,686	398	25,660	$0.52	$5,557	$3,490
oil	litre	0	0	0	$1.45	$0	$0
electricity	kWh	34,453	124	1,034	$0.195	$6,718	$176
propane	litre	0	0	0	$1.08	$0	$0
gasoline	litre	0	0	0	$1.50	$0	$0
diesel	litre	0	0	0	$1.80	$0	$0
wood	kg	0	0	0	$0.23	$0	$0
Total			522	26,693		$12,275	$3,665

This chart can be used to convert different units of energy sources into GJ and kg of CO2

Include average cost of supply, delivery, transportation, taxes, etc. which will affect cost/unit

Space Heating — TVT Municipal Building

Comparing different heating systems. Plug in the annual heating requirements in GJ and this tool provides the relative kg CO2 generated by different fuel sources. A typical house would use 90 GJ/year. The efficiency of the specific heating system can be adjusted.

Annual Heating Requirements	GJ	378				Carbon Tax @ $/t
	Units	Efficiency	# of Units	kg CO2	Annual Cost	$170
Natural Gas	m3	95%	10,687	25,663	$5,557	$3,490
Propane	litres	95%	15,304	23,185	$16,528	$3,941
Oil	litres	83%	11,826	32,557	$17,148	$5,535
Wood	kg	70%	38,571	7,714	$8,871	$0
Electricity Baseboards/Furnace	kWh	100%	105,000	3,150	$20,475	$536
Electricity Air-Source Heat Pump	kWh	275%	38,182	1,145	$7,445	$195
Electricity Ground-S Heat Pump	kWh	350%	30,000	900	$5,850	$153

This tool estimates the GHG impact of installing Solar Power. Enter the size of the system in kW. Net Metering allows solar generated electricity to offset the cost of grid electricity (excluding distribution charges) used at the premise over a 12 month period.

Solar Power

Enter data in yellow fields

	Solar Generation		GHG factor	Hhld annual reduction	Number of Systems	Program reduction	Annual savings @ $/kWh
kW Size of Solar	kWh/month	kWh/year	CO2/kWh	kg CO2/year	#	kg CO2/year	$0.15
3	284	3,405	0.03	102	0	0	$0
5	473	5,675	0.03	170	0	0	$0
10	946	11,350	0.03	341	0	0	$0
50	4729	56,750	0.03	1,703	0	0	$0
60	5675	68,100	0.03	2,043	1	2,043	$10,215
Typical annual generation kWh/kW installed		1135	0.03	34			