Region of Waterloo

Engineering and Environmental Services

Facilities and Fleet Management

To: Sustainability, Infrastructure, and Development Committee

Meeting Date: May 6, 2025

Report Title: Electrification of WRH Water Heaters

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1. Recommendation

That the Region Municipality of Waterloo direct staff to

a) Proceed with a pilot to exchange 84 gas powered hot water heaters to electric powered hot water heaters in Affordable Housing, funded through existing capital and operating budgets in 2025.
b) Continue the pilot into 2026 for 40 more hot water tanks exchanges, funded from the 2026 capital plan and operating budget, subject to Council deliberations.
c) Report back to Council on the results of the pilot to convert up to 124 gas powered hot water tanks to electric powered hot water tanks and, if positive, propose continuing the program from 2027 to 2034, subject to the 2026 and future budget deliberations as described in report EES-FFM-25-001, dated May 6, 2025.

2. Purpose / Issue:

To align with TransformWR and the draft Corporate Climate Action Plan, staff are recommending adoption of electric hot water tanks in Regional housing units, combined with a rebate program to offset tenant electricity costs. In the medium to long term, staff will examine opportunities to embed low carbon heating and cooling systems into Regional housing as part of asset management and capital prioritization process.

3. Strategic Plan:

This action aligns with the Strategic Plan priority area of Climate Aligned Growth. The shift from natural gas to electric DHW tanks is expected to cut 30% GHG emissions (700 tonnes) of impacted affordable housing units. This contributes towards the overall Regional GHG reduction target of 50% by 2030 as per PDL-CPL-21-30 and CWS-210622.

This action also aligns with the Strategic Plan priority areas of Homes for all and Equitable services and opportunities. This project enables our tenants to engage in

community wide decarbonization efforts and helps build environmentally sustainable homes and communities for them to live in.

4. Report Highlights:

- The conversion from natural gas to electric DHW tanks can reduce GHG emissions by 30% (700 tonnes).

- A pilot of 84 gas hot water tanks be converted to electric as part of the already funded replacement program and a rebate provided to tenants to cover the increased electricity costs from the saving in gas costs and existing budget in the 2025 budget.

- Staff will evaluate the pilot and, if positive, will propose the conversion of the rest of the tanks in the Affordable Housing portfolio over the next 10 years for the 2026 and future budget deliberations.

- The responsibility of utility costs is not uniform across the WRH portfolio. For the 629 units, the Region pays the natural gas bills of the units, and the tenants pay their electricity bills.

5. Background:

The PDL-CPL-21-30 and CWS-210622 outline targets to achieve 50% greenhouse gas (GHG) emissions reductions by 2030, following the TransformWR strategy endorsed by The Regional Municipality of Waterloo. The draft Corporate Climate Action Plan (PDL-GDS-25-004) outlines a target for the Region to achieve net zero greenhouse gas (GHG) emissions from energy sources by 2050, including Regional Housing. In support of TransformWR and the draft Corporate Climate Action Plan, Facilities and Fleet Management has explored options to reduce GHG emissions from natural gas usage for domestic hot water (DHW) tanks within the Region's Affordable Housing.

The GHG emissions reductions for housing by switching these tanks from natural gas to electricity will affect the tenants financially, increasing their electricity bills due to their utility bills payment structure. The tank switch will follow the end of life of the existing tanks. The six new buildings proposed under the WRH Revitalization program (CSD-HOU-19-18, dated November 5, 2019) are excluded from the costings in the report as the hot water heaters are not being replaced since they are new buildings.

Currently, the responsibility of utility costs is not uniform across the WRH portfolio. As sites are taken on, WRH has had to continue the existing utility compensation model that tenants are contractually bound to. The tanks replacement described in this report are for affordable housing units where the Region pays for the natural gas bills, and the tenants pay for the electricity bills. These 629 tenants will need to have their natural gas

powered domestic hot water tanks replaced in the next 10 years due to the end of the lifetime of tanks.

Staff is planning on replacing 629 gas powered hot water heaters to electric water heaters over the next 10 years. Funds are available in the approved capital budget in 2025 and the capital forecast to replace all 629 units as they meet their end of life. As part of a pilot, staff will be replacing 84 hot water tanks this year from approved budget and 40 next year, subject to budget deliberations. This will provide data from the pilot to inform future budgets.

Choices and rationale for technology to replace domestic hot water tanks are included in Table 1. Staff is recommending upgrades where currently applicable to electric heating for the reasons noted.

Table 1: Technologies evaluated in consideration of domestic hot water (DHW) tank replacements in Waterloo Regional Housing units.

DHW Technology	Climate Action Alignment	Technology Feasibility	Recommendation
Natural gas	No	Yes, this technology is currently being provided to the Region by utilities through a rental agreement.	Not recommended as this does not align with Regional climate change commitments.
Electric	Yes	Yes, this technology can be offered to the Region by utilities through a rental agreement.	Recommended in the short term due to availability and alignment with climate commitments.
Heat pump only	Yes	No, this technology preforms best when considered as part of broader heating and cooling system retrofit. For example, this technology captures heat provided by space heating to manage water temperatures, which may result in increased demand on existing natural gas space heating systems.	Not feasible as these are not offered by the utility companies as a rental option and would require further heating and cooling system investment to fully benefit from the technology.
Full heating and cooling system retrofit	Yes	Yes, heating and cooling system retrofits to low carbon alternatives will be considered holistically over the next 25 years, as assets reach their end of useful life.	Recommended in the medium to long-term as the Region embeds climate change into asset management and capital prioritization processes.

Facilities and WRH staff consulted with the corporate Sustainability and REDI teams and determined that the preferred option is to move ahead with the shift to electric and the Region offer a utility credit program to tenants (monthly rebate) to cover the electricity cost increases, allowing the Region to maintain commitment to the Corporate Climate Action Plan, and initiate the tenants to start participating in this process.

For the 2027 budget deliberations, staff will evaluate the credit program and complete a review of all the utility costs across the WRH portfolio. Staff will return to council with recommendations on continuing the credit program and recommendations to address any other utility cost inequities between sites. The 2027 and future budgets will include the next phase of the program subject to Council's approval in the budget process.

6. Communication and Engagement with Area Municipalities and the Public

This action would solely impact Region owned facilities.

7. Financial Implications:

	Current Year 2025 (costs already in the 2025 budget)	Over the Next 10 Years	Future Year(s)
Budget Impact	$17,400	$129,600	na
Capital Plan Impact	$84,000	$629,000	na
Tax Rate Increase	0.003%	0.022%	Subject to future budget deliberations
Impact to Average Household	$0.06	$0.43	Subject to future budget deliberations

For consideration in future budgets, the replacement of domestic hot water (DHW) tanks from natural gas to electricity will impact sixteen WRH sites and will be completed over the next ten years (2025 to 2034). The implementation of this program will occur when the DHW rental tanks are to be renewed. This timing will eliminate additional costs as the contracts are for a fixed term.

The table below illustrates the costs for the 10 year replacement program. The electricity rebate will be funded from the savings in gas which the Region pays for the gas powered hot water tanks and tax levy funds. Should the pilot be successful, this information will be brought back to Council for consideration in the 2026 and future budget years.

Estimated Financial Impacts Convert Domestic Hot Water (DWH) Tanks from Natural Gas to Electricity Rounded to $ Hundreds					
Year	**# of DHW Tanks Conversions**	**Electricity Cost Increase (Tenant Credit)**	**Natural Gas Cost Reduction to Region**	**Net Impact to Region**	**Capital Cost Conversion ($1,000 per unit)**
2025	84	$50,700	$33,300	$17,400	$84,000
2026	40	24,100	15,900	8,200	40,000
2027	110	66,300	43,700	22,600	110,000
2028	41	24,700	16,300	8,400	41,000
2029	83	50,000	33,000	17,000	83,000
2030	30	18,100	11,900	6,200	30,000
2031	52	31,400	20,600	10,800	52,000
2032	112	67,500	44,500	23,000	112,000
2033	25	15,100	9,900	5,200	25,000
2034	52	31,400	20,600	10,800	52,000
Totals	**629**	**$379,300**	**$249,700**	**$129,600**	**$629,000**

The hot water tank conversions scheduled for 2025 is a pilot of the tank replacement. During the initial pilot, staff will develop the credit program and issue the credits to tenants.

The capital cost of $84,000 for the work in 2025 can be accommodated within the approved 2025 WRH Capital Renewal budget. Through the capital budget process each year, Council will have the opportunity to extend the program to future years.

For the 2026 budget deliberations, staff will evaluate the credit program and complete a review of all the utility costs across the WRH portfolio. Staff will return to council with recommendations on continuing the credit program and recommendations to address any other utility cost inequities between sites. The 2026 and future budgets will include the next phase of the program subject to Council's approval in the budget process.

8. Conclusion / Next Steps:

Staff will continue the conversion of 84 hot water tanks in 2025 as a pilot and submit for consideration in the 2026 budget, the conversion of the rest of the tanks in Affordable Housing. The pilot is funded within the current 2025 operating and capital budgets.

9. Attachments:

Nil.

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