Staff Report

Infrastructure Services Department *www.kitchener.ca*

REPORT TO:	**Community and Infrastructure Services Committee**
DATE OF MEETING:	**May 15, 2023**
SUBMITTED BY:	**Kate Daley, Senior Strategist, Carbon and Energy Planning, 519-741-2200 ext. 4246**
PREPARED BY:	**Kate Daley, Senior Strategist, Carbon and Energy Planning, 519-741-2200 ext. 4246**
WARD(S) INVOLVED:	**All**
DATE OF REPORT:	**April 14, 2023**
REPORT NO.:	**INS-2023-199**
SUBJECT:	**Kitchener Utilities Clean Energy Transition Update**

RECOMMENDATION:

That the project phases and approach for the Kitchener Utilities Clean Energy Transition be endorsed.

REPORT HIGHLIGHTS:

- The purpose of this report is to update Council on the progress of the project to develop the Kitchener Utilities (KU) Clean Energy Transition Strategy, and to seek Council's endorsement of the project phases and approach.
- The key finding of this report is that the KU Transition Strategy project is planned to happen in three main phases, where: Phase 1 in 2023 focuses on building relationships and understanding around values, goals, and scope through engagement; Phase 2 in 2023 focuses on determining the way forward together, through detailed option assessment and recommendation of an approach; and Phase 3 focuses on building consensus on the plan for implementation to 2030.
- The recommendation has no impact on the Capital Budget or Operating Budget. Financial implications of potential business directions will be addressed through Phase 2 of the project. Additional financial impacts to advance "quick wins" concurrent with strategy development will be addressed on an ongoing basis.
- Community engagement in Phase 1 will include relational engagement with Council, staff, stakeholders, community members, and customers.
- A summary of engagement conducted in Phase 1 will be provided to council, along with a supporting discussion paper.
- This report supports Environmental Leadership.

EXECUTIVE SUMMARY:

Kitchener Utilities' natural gas delivery business needs to evolve, both to align with the City's and the community's climate change commitments, and to respond to ongoing changes in the global, national, provincial, and local energy context as the clean energy transition continues.

These changes bring risks and significant opportunities for Kitchener Utilities, its customers, and community members. As a community-owned energy utility, KU is a unique asset to the community's energy transition.

This project will develop a multi-decade business strategy that will position Kitchener Utilities to secure a strong future for the energy utility and enable customers and community members to achieve the local clean energy transition. The strategy will align with the City's and the community's 2021 commitment to TransformWR, including achieving transformational change to accomplish the energy transition through work that will also build an equitable, prosperous, resilient low-carbon community.

The first phase of the strategy project, in 2023, will focus on engagement and building relationships and understanding around values, goals, and scope of the strategy. This will be followed by work to assess possible approaches and associated recommendations in 2024, with implementation planning accelerating in 2025.

Project Phase	Timing	Focus on…	Achieved through…
Phase 1	2023	building relationships and understanding around values, goals, and scope of the strategy	relational engagement with Council, staff, stakeholders, community members, and customers
Phase 2	2024	determining the way forward together	detailed, collaborative option assessment and recommendation of an approach
Phase 3	2025	building consensus on the implementation plan to 2030	developing a phased long-term implementation strategy to 2050 and a detailed first phase implementation plan to 2030

While developing a robust strategy to guide Kitchener Utilities for the next 30 years will take some time, during the strategy development project, staff will continue to advance work that maintains KU's options and act on time-sensitive items throughout the process.

Key themes of the Phase 1 engagement include: the function of energy as a system; scalable solutions; the changing role of natural gas; and the once-in a century opportunity to use the energy transition to advance equity, prosperity, and resiliency and build an even stronger Kitchener through multi-solving.

BACKGROUND:

Through active participation in the ClimateActionWR collaborative of municipalities and non-profit organizations, the City has committed to community greenhouse gas emissions (GHG) reduction targets of 50% by 2030, and 80% by 2050. Within Kitchener's boundaries, approximately one third of community GHG emissions are the result of natural gas use. As a partner in the ClimateActionWR initiative, the City has also endorsed the TransformWR community climate action strategy, which is centred on Six Transformative Changes that must be made by 2050 to address local GHG emissions while building an equitable, prosperous,

resilient low-carbon community through the transition off fossil fuels. A key Transformative Change in TransformWR is that “by 2050, businesses and homes no longer use fossil fuels for space heating and cooling, and water heating.”

As part of its endorsement of TransformWR, Council devoted staffing resources toward “developing, and implementing, a Kitchener Utilities Low-Carbon Sustainable Business strategy that will support the transition to reduce greenhouse gases.” This work also aligns with the City’s and Kitchener Utilities’ participation in WR Community Energy, a unique collaborative partnership between the three cities, the Region of Waterloo, and local electric and natural gas utilities to support the community’s energy transition.

REPORT:

A Changing Industry

Kitchener Utilities’ natural gas delivery business is preparing for change, both to support the City’s and the community’s climate change commitments, and to respond to ongoing changes in the global, national, provincial, and local energy context.

Cross-sectoral agreement on energy transition objectives has grown as the City’s involvement and participation in corporate and community climate and energy transition work has progressed. There is broad global agreement on the need to achieve net-zero emissions by mid-century, as well as a Canadian federal commitment to achieve net-zero carbon emissions by 2050, and to reduce emissions to 40-45% below 2005 levels by 2030. Discussions of Ontario’s energy future have also progressed. The Independent Electricity System Operator (IESO) is beginning planning for the simultaneous decarbonization and considerable expansion of the provincial electricity system, and the Ontario branch of Enbridge Gas has recently identified pathways to a net-zero future that emphasizes a diversified approach that relies on electrification tied with deployment of low- or zero-carbon gases, including renewable natural gas (RNG), hydrogen, and natural gas with carbon capture. The KU Clean Energy Transition Strategy project is occurring in this context of a changing energy landscape and increasing net-zero planning in the energy industry.

The natural gas provided through Kitchener Utilities is primarily used for two, very different, purposes. About 85% of the gas sold goes to residential and commercial customers, and is primarily used to produce low-temperature heat for space and domestic hot water heating. The remaining gas is used by industrial customers, who may use some gas for space and domestic water heating, but who often use significant amounts of natural gas to produce high-temperature heat as part of industrial processes.

Natural gas distribution utilities are recognizing a variety of business risks associated with the clean energy transition. As the energy transition progresses, it is expected that more customers will select exceptionally efficient and increasingly available decarbonized options, such as electric heat pumps, to meet their low-temperature space heating and water heating needs. Because most of Kitchener Utilities’ customers are using natural gas for low-temperature needs, Kitchener Utilities and other gas distributers could face lower revenues from a smaller customer base. Since the costs of natural gas delivery are paid by current natural gas customers, fewer

customers could mean higher distribution costs per customer, which along with rising carbon costs could affect affordability, and also influence customer fuel switching decisions.

For high-temperature uses, industrial customers will continue to need reliable means of sourcing high-temperature heat. This will require different solutions than those used for low-temperature heat, and is likely to include a continuing need for low-carbon gaseous fuels such as renewable natural gas and low-carbon hydrogen. Meeting these evolving industrial energy needs while addressing future changes in residential and commercial gas usage is a significant consideration for natural gas utilities.

Ensuring that community members have consistent access to affordable and reliable energy to meet their needs is a key priority during this work and at all stages of the energy transition.

Strong Opportunities for Kitchener Utilities

The energy transition brings significant opportunity for new business offerings, services, and revenue streams for energy utilities. Kitchener Utilities is in a strong position to provide leadership in local efforts to advance the energy transition while building an even stronger Kitchener.

Kitchener Utilities has a long history of energy innovation through change, and has served people in Kitchener for more than a century through considerable changes in energy systems. When the Town of Berlin purchased in the Berlin Gas Company in 1903, it had just over 500 customers, and generated its gas from coal. The gas was used for street lighting, and the company generated electricity with it to sell, in addition to providing flammable gas directly to customers. Over the next century, the utility oversaw its customers' transition to more affordable hydro-electric power, and the transition from its original coal gas production to more reliable carburetted water gas production, and eventually to providing more efficient natural gas.

Kitchener Utilities' greatest asset is its skilled staff dedicated to customer service, who are the foundation of the strong relationships it has built with customers and the community. As one of only two municipally owned natural gas distribution utilities in Ontario, Kitchener Utilities is in a unique position to build on its strong foundation and enable energy opportunities that are ideal for multi-solving, which could contribute to the City's work to advance equity, prosperity, and resilience in the community. Through recent participation in WR Community Energy, an innovative collaboration between municipalities and electric and natural gas utilities in Waterloo Region, both the City of Kitchener and Kitchener Utilities have built strong relationships with local partners working to advance community energy goals.

Potential business opportunities for Kitchener Utilities that provide new services could add considerable value for the community. KU could play a significant role in supporting customers and community members with transitioning their energy use in the future, in order to achieve their climate goals while future-proofing their energy use.

Project Overview

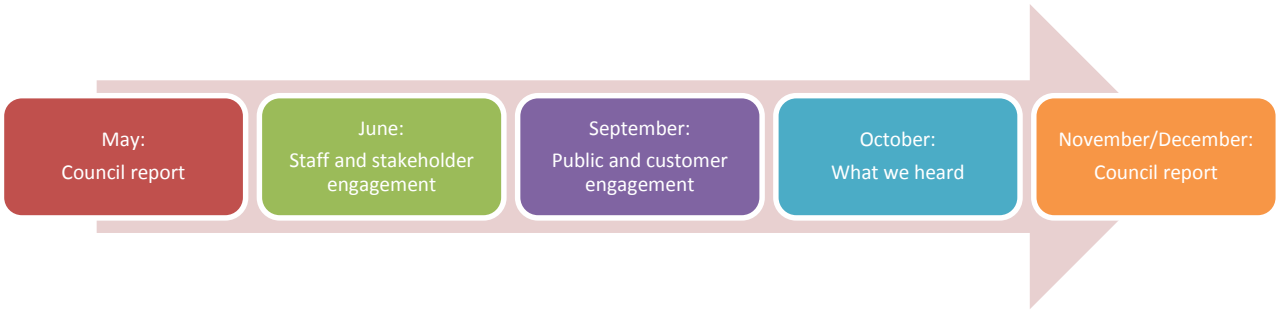
Considering these industry changes and the significant future opportunities, this project will develop a multi-decade business strategy that will position Kitchener Utilities to secure a strong

future for the energy utility and enable customers and community members to achieve the local clean energy transition. This strategy will align with the City's and the community's 2021 commitment to TransformWR, including achieving transformational change to accomplish the energy transition through work that will also build an equitable, prosperous, resilient low-carbon community.

The project will have three main phases, with the following key outputs:

Project Phase	**Timing**	**Focus on…**	**Achieved through…**	**With key outputs of…**
Phase 1	2023	building relationships and understanding around values, goals, and scope of the strategy	relational engagement with Council, staff, stakeholders, community members, and customers	- Engagement summary results - Discussion paper framing results and next steps - Preliminary option evaluation framework for Phase 2 - Progress report to Council
Phase 2	2024	determining the way forward together	detailed, collaborative option assessment and recommendation of an approach	- Public report assessing the full range of options and identifying a recommended approach concurrently - Summary of Phase 2 engagement results - Report to Council recommending an approach and next steps, including 2025 budget needs
Phase 3	2025	building consensus on the implementation plan to 2030	developing a phased long-term implementation strategy to 2050 and a detailed first phase implementation plan to 2030	- Phased long-term implementation strategy to 2050, including outlining phases of work to 2050, and key metrics and approaches to adjusting and course corrections - Detailed first phase implementation plan with details to 2030

The first phase in 2023 is about building relationships and understanding around values, goals, and scope. Engagement will be conducted through a range of online and in-person opportunities including an EngageWR survey, workshops, and drop-in sessions targeting a range of audiences. The main stages of work in 2023 are:



Staff will continue to advance work that maintains KU's options, act on time-sensitive items, and pursue "quick wins" while this robust strategy to guide Kitchener Utilities for the next 30 years is being developed.

Key Engagement Themes for Phase 1

There are several key themes that will feature in the relational engagement planned for Phase 1, including:

Energy as a Complete System
Achieving a net-zero carbon Kitchener will require looking at energy as a complete system. This means looking at the big picture and considering energy use with respect to how energy is sourced, how it is moved, where it is used, when it is used, how much is used, and how efficient that usage is. It also means considering energy use at different scales, such as at the household, neighbourhood, and community scale.

Scalable Solutions that Align with all Energy Futures
There are several different ways that net-zero GHG emissions could be achieved in Ontario, involving different technologies adopted on different timelines. These will depend on a combination of technological, economic, and social factors that may evolve in different ways over the next 30 years and beyond. At the same time, there are many common features of all these different energy futures, such as the need for considerably more electricity generation and the electrification of many energy uses.

There are many commercially available solutions to advance the clean energy transition, which need to be scaled up quickly to meet the steep emissions reductions needed by 2030 and beyond. These technologies enable the critical steps to achieve net-zero, which are: using less energy, using clean energy, and generating local clean energy.

This means that there is a lot that is known about Kitchener's energy future, despite some uncertainty. This information will facilitate future planning through this project that can set the City and community up for success in different possible energy futures.

The Changing Role of Natural Gas
All of the different ways that net-zero emissions could be achieved over the next few decades include a significant decrease in the amount of conventional natural gas used within building space and water heating applications. Low-carbon gaseous fuels, such as hydrogen and renewable natural gas, are expected to play an important role in different

energy futures, particularly to meet high-temperature heat needs in industrial settings. There are significant limitations on the availability of these fuels, however, and so they are not expected to replace current levels of natural gas use. This means that natural gas, and likely gaseous fuels in general, are expected to play a very different role in a net-zero future than they play today.

Multi-solving to Build a Stronger Kitchener

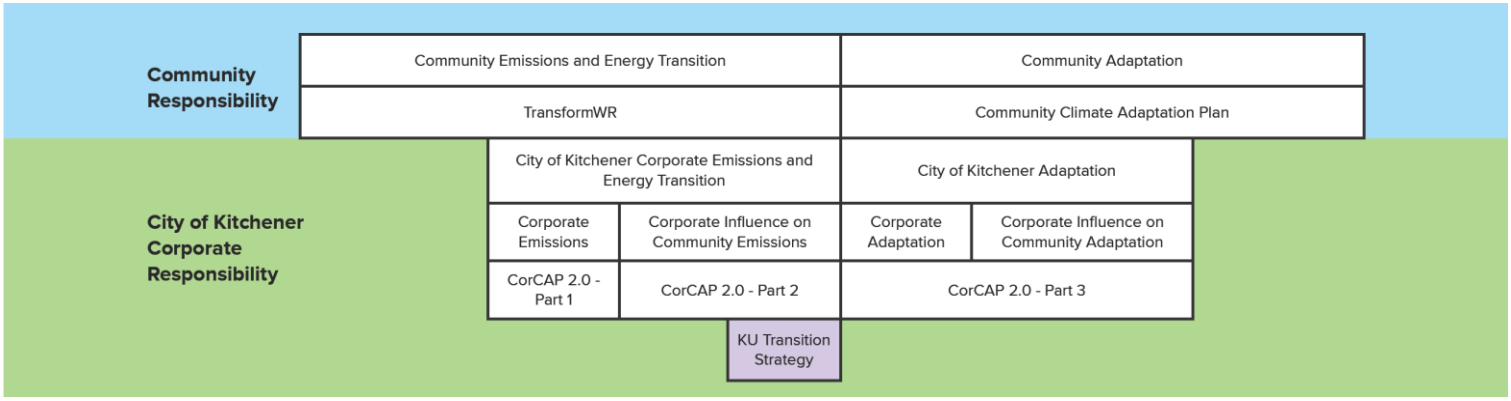
The energy transition is a critical opportunity for multi-solving, where work to address one problem can be designed to address other problems. The City and the community face multiple challenges related to equity and affordability, prosperity and economic development, and resilience in the face of shocks. These issues are integrally connected with each other and with the ways our society uses energy, and so they must be addressed together. There is limited local capacity to address all these items as separate issues, and solutions and projects that advance goals in multiple areas must be found. This multi-solving approach is the cornerstone of TransformWR, and communities that thrive in a low-carbon future will be those that use the energy transition as an opportunity to build a stronger community and ensure that no one is left behind.

Connections to Ongoing and Parallel Related Work

The KU Transition Strategy project is connected to several other ongoing projects, particularly:

Project	**Lead Dept.**	**Lead Division**	**Status**
Corporate Climate Action Plan (CorCAP) 2.0	DSD	Office of the GM/Sustainability Office	Part 1 in Progress
Downtown Kitchener District Energy Feasibility Study	DSD	Planning	In Progress
Green Development Standards	DSD	Planning (with WR Community Energy partnership)	In Progress
Dividend/Reserve Fund Reviews	FIN	Office of the CFO	Upcoming
Kitchener Utilities Vision and Mission Statement	INS	Gas & Water Utilities; Sanitary & Stormwater Utilities	Upcoming

The KU Transition Strategy is a subset of the work that will be addressed in Part 2 of CorCAP 2.0, and part of the City's work to implement the TransformWR strategy, as illustrated below:



STRATEGIC PLAN ALIGNMENT:

This report supports Environmental Leadership.

FINANCIAL IMPLICATIONS:

The recommendation has no impact on the Capital Budget or Operating Budget. Financial implications of potential business directions will be addressed through Phase 2 of the project. Additional financial impacts to advance "quick wins" concurrent with strategy development will be addressed on an ongoing basis.

COMMUNITY ENGAGEMENT:

INFORM – This report has been posted to the City's website with the agenda in advance of the council / committee meeting.

CONSULT – Community engagement in Phase 1 will include relational engagement with Council, staff, stakeholders, community members, and customers.

PREVIOUS REPORTS/AUTHORITIES:

- DSD-2021-94 Community Climate Action Plan – TransformWR Strategy

APPROVED BY: Denise McGoldrick, General Manager, Infrastructure Services

ATTACHMENTS:

None.