



PREPARING FOR OUR ENERGY FUTURE

2020 Progress Report

INTRODUCING WR COMMUNITY ENERGY

When local councils approved the [Community Energy Investment Strategy](#) in 2018 and WR Community Energy was born a year later, Waterloo Region sent the message that it is committed to lasting and transformative solutions to our energy challenges. We are dedicated to a deep and sustained investment in a smart energy future.

WR Community Energy offers the support and resources needed to drive economic investment in the spaces where energy meets community-building and planning projects, grounded in its governance by a high-level strategic partnership that is unique in Canada.

“The story of modern cities and modern energy go hand in hand. As our cities evolve, our energy systems will evolve alongside.”

Michael E. Webber,
Power Trip: The Story of Energy



OUR GOALS, OUR PURPOSE

To improve and sustain Waterloo Region's economic competitiveness and quality of life through the coordination of targeted energy investments.

Significantly Improve the Energy Performance of Buildings

Promote construction of high performance and energy self-sufficient buildings.

Increase energy efficiency of existing buildings.

Transition to a Low-Carbon, Local Transportation Network

Increase use of clean, low-carbon fuels.

Cultivate a Supportive and Innovative Environment for Energy Investments

Raise energy literacy within the community regarding the need to evolve how we locally manage our energy.

Enhance Local Energy Generation and Security

Optimize use of local resources for energy generation.

Graphic developed in partnership with ClimateActionWR

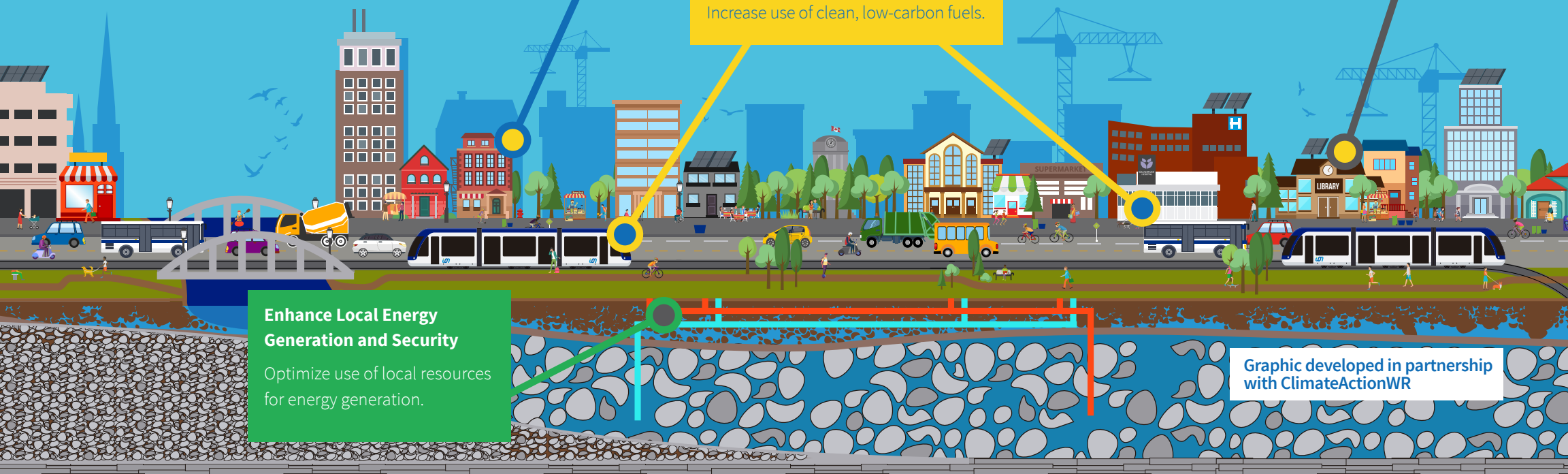




Photo Tomasz Adamski

COMMUNITY ENERGY MATTERS

**How we generate and use energy is changing.
It must.**

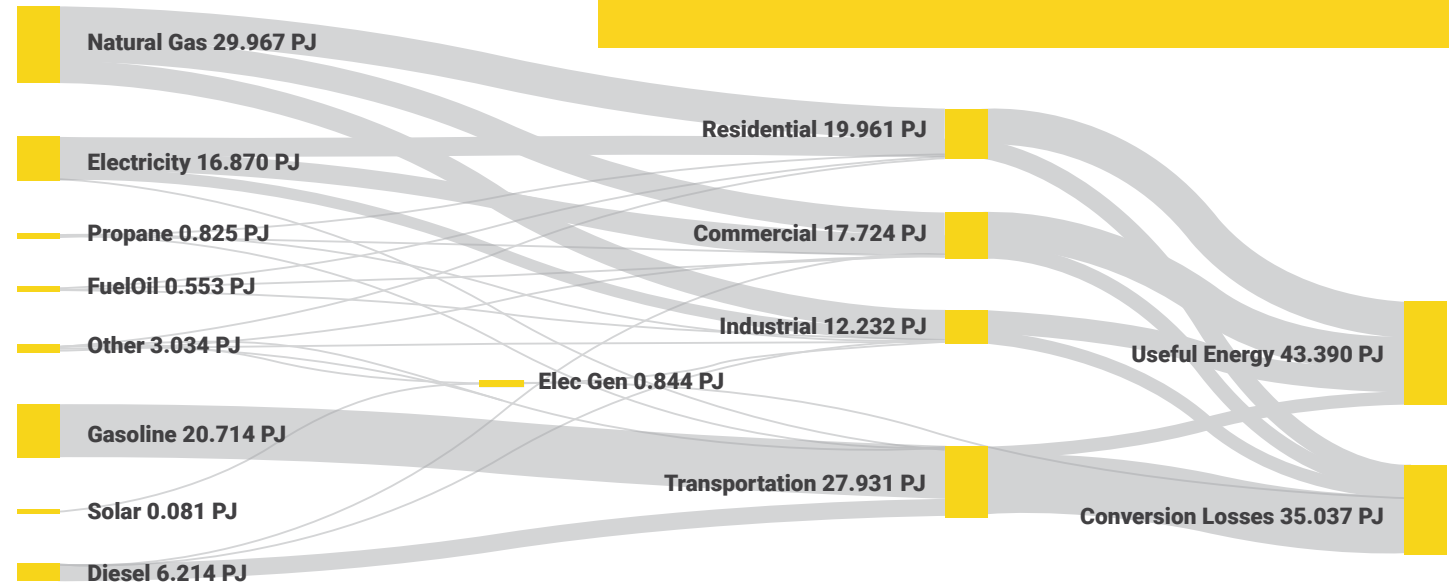
Our reliance on inexpensive fossil fuels exposes our world to great risk. July 2019 was globally the hottest month on record – ever. This corresponds to the highest atmospheric concentrations of greenhouse gases (GHGs) in the history of humanity. Waterloo Region is following this trend. Every year we need less energy to heat our buildings and more energy to cool them. This presents urgent challenges and important opportunities around fuel switching, grid management, and viable technologies.

Every community in the world will need to adapt to a changing climate and do their part to prevent further damage. We must transition off fossil fuels. At its heart, climate change is a global energy problem. Fortunately, this problem has local solutions.

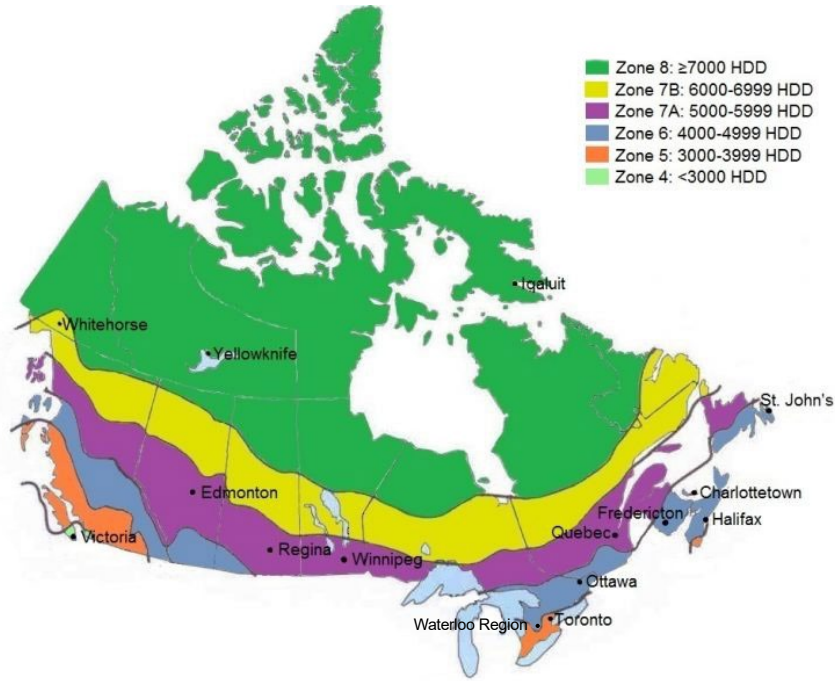
The best way we know to reduce GHGs is using clean, decarbonized energy. And this is becoming more affordable. After decades of global energy investments, renewable energy now costs as much as traditional fossil fuels per kilowatt hour (kWh).

Changing climates, energy needs, and technology affects how we build, heat, cool, and maintain our buildings. To thrive in the new energy future, Waterloo Region will need to change how we plan for and invest in energy.

We spend \$2.1 billion a year on Energy in Waterloo Region. 45% of it gets wasted. In essence, we spend nearly \$1 billion on pollution.



This diagram is called a Sankey plot. It is a way to display energy sources and uses, and how much of the energy we produce gets wasted. It tracks our energy as it gets used...and wasted. 45% of our energy turns into pollution in the form of greenhouse gas emissions, smog, and excess radiant heat. In short, we spend nearly a billion dollars a year importing environmental waste.



Our National Building Code sets minimum energy efficiency requirements by regional 'climate zones,' with 6 climate zones identified in Canada. As the warmest zone, Zone 4 requires the least amount of energy to heat, and as the coldest, Zone 8 requires the most. If warming trends continue, Waterloo Region will drop to Climate Zone 5 by 2040. That's the same zone as 1980s Victoria, BC. Climate zones impact the economics and technology viable to heat and cool buildings.

Recent local collaborations are setting us up for economic, social, and environmental success. The benefits of community energy investment include:

- economic development,
- reduced GHGs,
- environmental management,
- affordability,
- equity, and
- community health.

We are well-positioned to mitigate the risks and take advantage of a strategic opportunity. With a diversity of voices and the full support of our local utilities, WR Community Energy plays a critical role in building a resilient future.





MODERN CITIES REQUIRE MODERN ENERGY

In developing WR Community Energy, we discovered how well-positioned Waterloo Region is to take advantage of new energy opportunities.

The path to our new energy future is directed by the strategic oversight of high-level representatives from the three cities, the Region, and the five local electric and gas utilities. The innovative Governance Committee for WR Community Energy is a collaboration that takes us beyond the services that individual partners can provide on their own.

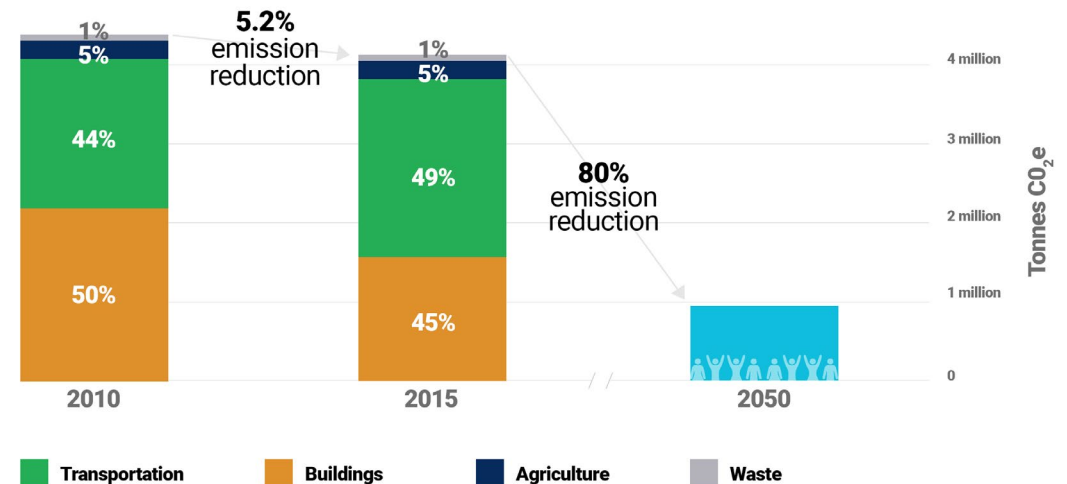
Integrated community energy approach is a significant departure from traditional energy planning approaches. Over the past few decades, Ontario's energy landscape has decentralized. Every house, farm, and vehicle is capable of producing or storing energy. The opportunities are significant – especially if we can build meaningful partnerships. Utility companies, urban planners, businesses, and community members all play a vital role. By capturing their diverse contributions, we can respond to and influence this new energy future. WR Community Energy is well-positioned to lead inclusive conversations and actions around local energy generation and security. We cannot rely on yesterday's silos of utilities, industry, and local governments to prepare us for a smart (that is to say interconnected, clean, and efficient) energy future.

Long-term, energy-conscious planning is a necessary investment in our future.

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Our cities have to be welcome, resilient, sustainable and livable for everyone... We need national targets to reduce our carbon output, and our cities need to pick up the pace.

Susan Koswan, The Record, May 27



GHG emissions from buildings are going down and they are no longer the largest source in our community. But in order to build on this success and reach our target by 2050, we need to not only change our existing buildings but also change how we build and power new buildings.

Community Collaboration

WR Community Energy is a partnership with the Region of Waterloo, the three urban municipalities, and our five local energy utilities. The Governance Committee meets 5 times a year and the program is managed by a dedicated staff person.





Photo Tomasz Adamski

UNLOCKING THE BENEFITS OF LOCAL ENERGY

WR Community Energy gives us a streamlined mechanism to assess energy investment opportunities that might otherwise be missed.

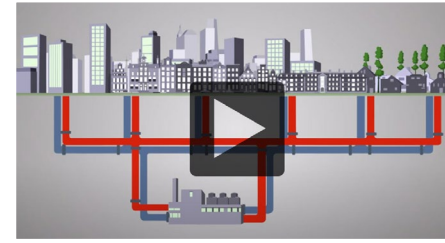
Since launching last year, WR Community Energy moved quickly to assess energy investment opportunities with a holistic, community-wide focus. An early example of the opportunities unlocked by a collaborative planning approach was a district energy community scan. WR Community Energy reviewed 12 sites across Waterloo Region, and selected a strong candidate on which to do a pre-feasibility study. The Innovation District in Kitchener offers the rare and unique opportunity to plan for what is essentially a whole new downtown powered in part by a local, sustainable energy source.

“ For municipalities in Southern Ontario who are striving to become Smart Energy Communities, their barriers are not the lack of technological solutions, but the absence of governance and business models to support their deployment at the scale that is needed.

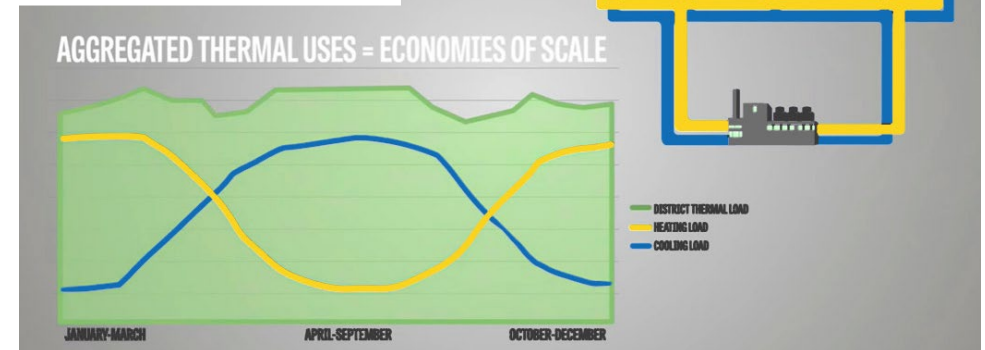
Karen Farbridge, Vice Chair [Quest Canada](#) Board of Directors

The study was unique in part because of its focus on the potential for open-loop geo-exchange technology. By using the steady temperature of underground aquifers to provide renewable heating in the winter and cooling in the summer, buildings in the area would reduce GHG emissions by 53%. In addition to making a profit and reducing GHGs, WR Community Energy found other benefits of District Energy including:

- Cost effective and resiliency
- Reduced building and maintenance costs
- In-ground sidewalk snow melting, which reduces municipal costs and salt contamination
- Economic development potential by attracting high-energy customers like technology or medical firms
- Expansion opportunities
- Keeping energy dollars local
- Local job creation



Want to learn more? Click on the [video link](#)



The United Nations calls District Energy a [secret weapon for climate action and human health](#) for its ability to ‘decarbonize’ heating and cooling and achieve energy efficiency requirements.



While this project is still in the early stages and more study is needed, it shows that WR Community Energy can bring together public sector, community, and energy leaders to find new ways of meeting diverse goals through targeted energy investments. We now have the mechanism to evaluate projects not just through the lens of energy-value return, but through the lens of social, economic, and environmental benefits.

WR Community Energy is the hub for energy planning in Waterloo Region. It brings together industry, government, and community leaders to enable and inspire transformative energy projects.



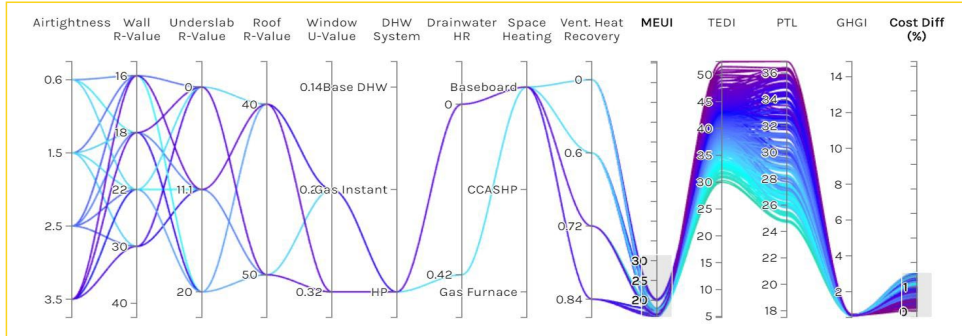
READY TO THRIVE IN AN UNCERTAIN FUTURE

The benefit of a community approach to energy is the commitment to integrate long-term energy management considerations into a broader vision of our future.

The energy landscape is constantly evolving. Since we started, the Save on Energy conservation programs have been scaled back and removed from the hands of our local electric utilities (LDCs), lowering our ability to drive energy conservation efforts. Currently, recovering from COVID-19 is seriously affecting the bottom lines of businesses, governments, and households. WR Community Energy allows us to see where we stand now and identify opportunities and threats ahead. As one crucial example, it is clear the burden of uncertainty is not equally shared. There is more we need to understand about energy and inequity.

To prepare for our future, we must have a consistent source of information on the issues as well as the opportunities. We have a lot to learn from neighbouring jurisdictions. We can localize these lessons to best meet our needs. In Waterloo Region, for example, our climate and environment is different from communities just 100 kilometers away, so planning must be location specific.

Fortunately, there are many tools and local expertise in Waterloo Region we can draw from. Grand River Energy (GRE) is one. They invest in innovative energy projects. Another tool is the Building Pathfinder tool. It is an energy-literacy tool that shows how most buildings in our climate zone can cost-effectively be built to high energy standards.



The Building Pathfinder tool was developed to assist with the energy literacy of building projects. It is intended as an educational resource for understanding the building performance impacts of design decisions.

The BioEn R&D Facility in Elmira is a Waterloo Region solution to a global problem. Currently, this facility generates 3MW of renewable electricity from organic waste and avoids the equivalent of 2,000 tonnes of GHG emissions / year. When the facility transitions to renewable natural gas production in the next few years, it will save close to 16,000 tonnes of GHG emission / year.

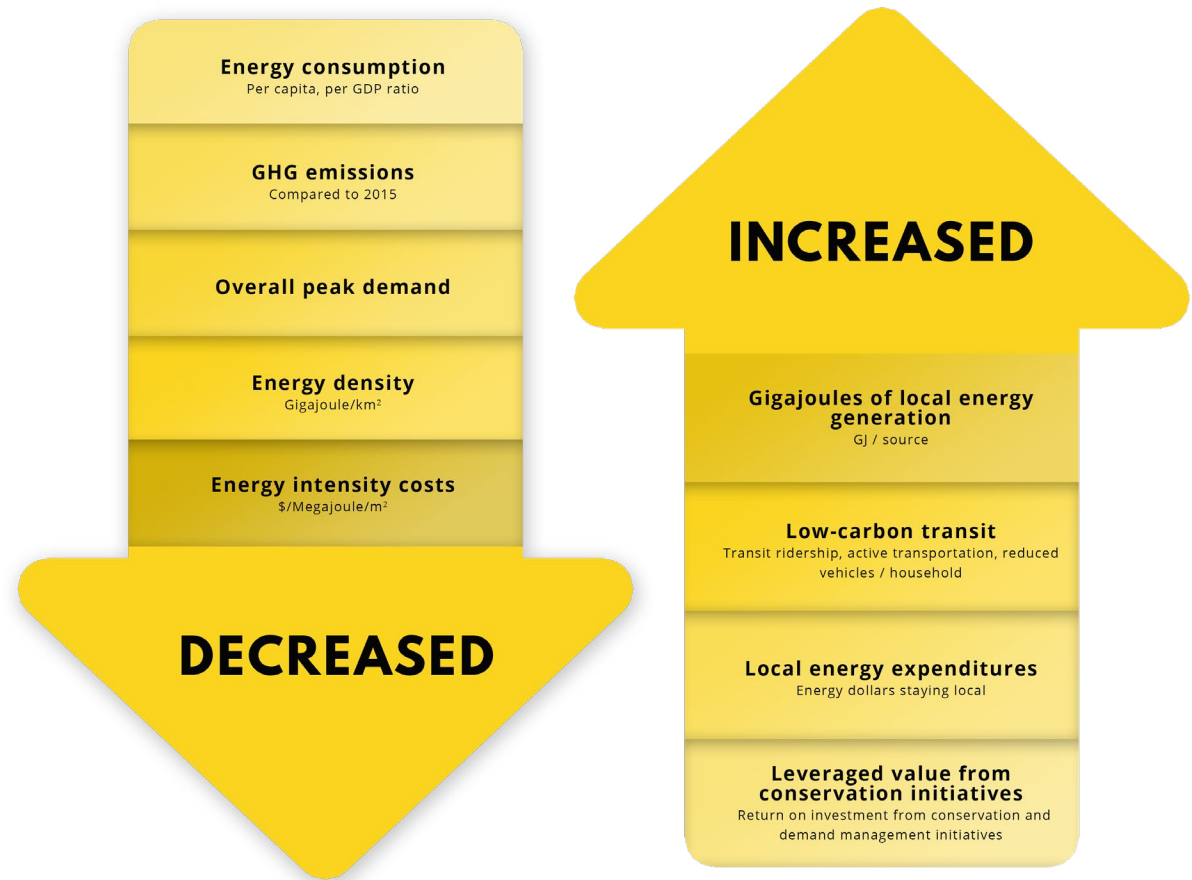


WR Community Energy cultivates a supportive and innovative environment for energy investments. To facilitate cross-sector collaboration, we need a common vocabulary, a suite of solutions, enabling policies, and understanding of the roles and interests of all stakeholders. The first step to reaching this goal is to build relationships and boost energy literacy in our region.

In the first full year of WR Community Energy, we are already seeing the emerging value from the ground work we are laying. We've had hundreds of conversations with developers, community change-makers, industry leaders, planners, architects, and many others. We are developing an unprecedented understanding of our interrelated energy challenges and opportunities. The role of partnerships is vital to preparing our community to take advantage of the upcoming energy transition. These early wins help us build momentum and promote our community as a place to make smart energy investments, and reinvest in jobs and innovation.

WR Community Energy is ready to support the Community Energy Investment Strategy through actionable solutions that reduce greenhouse gas emissions, enhance local energy resiliency, and encourage investments in local energy.

MEASURING PROGRESS



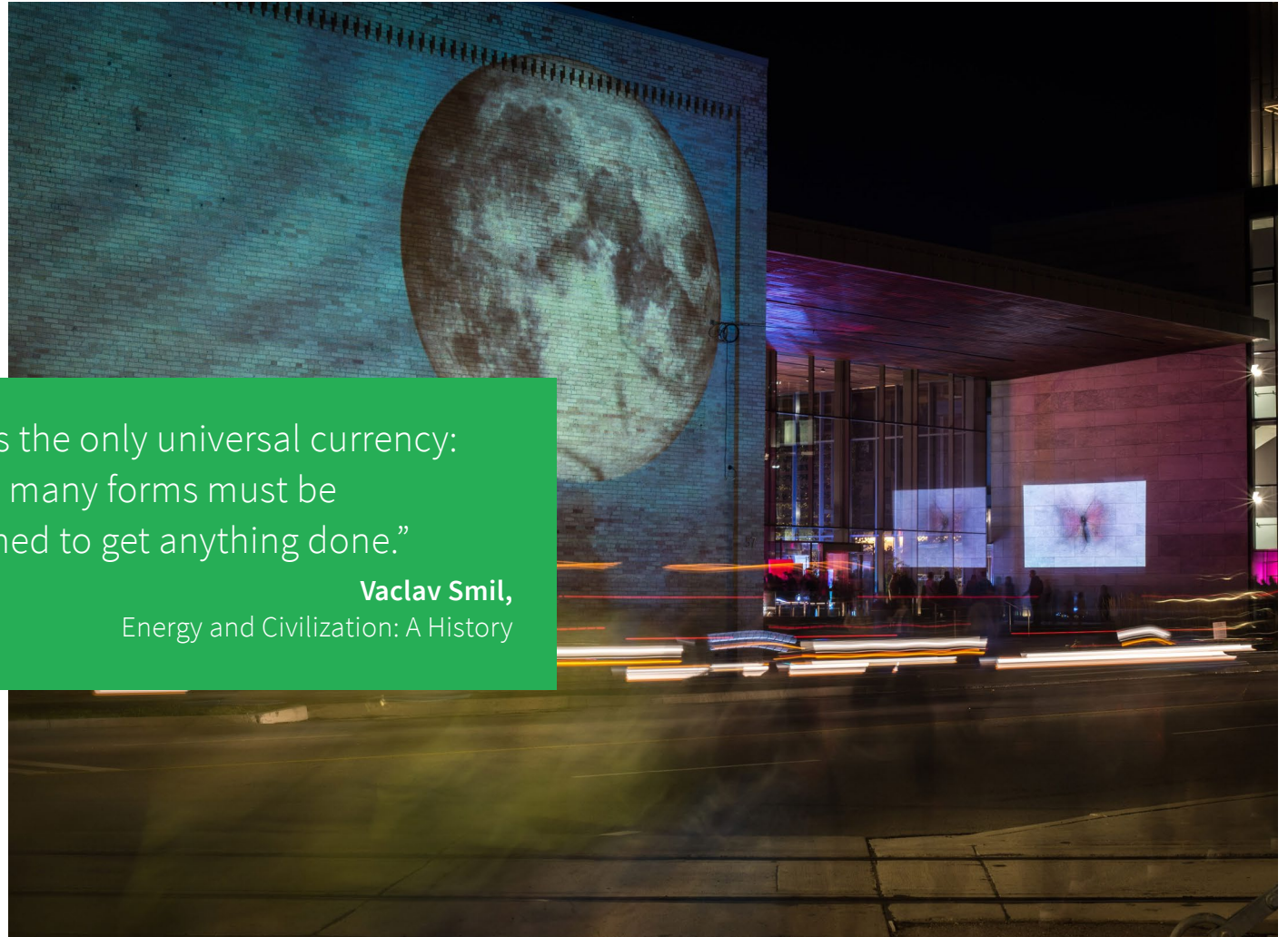
WHAT'S NEXT?

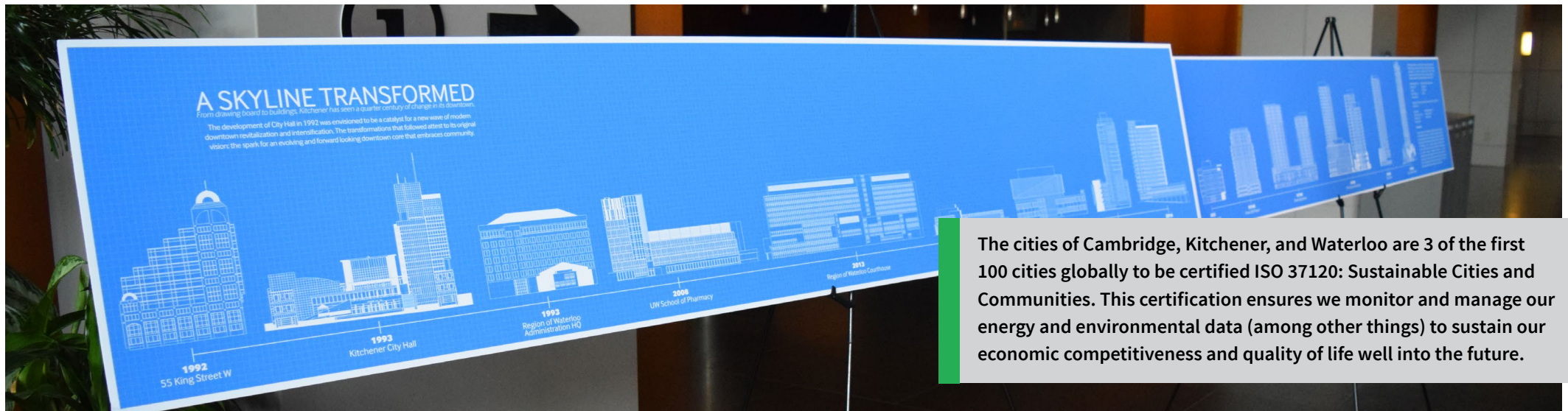
Municipalities have proven to be global leaders in the fight against Climate Change. We have the same opportunity to be leaders as we guide the energy transition towards solving our economic, environmental, and quality of life needs. By addressing these issues at a community scale, we can tap into specialized knowledge and optimize the benefits.

Photo Adam Clark

“Energy is the only universal currency: one of its many forms must be transformed to get anything done.”

Vaclav Smil,
Energy and Civilization: A History





We know that our environment and our economy must thrive together. When our big decisions fully include considerations of our buildings, infrastructure, environment, and long-term social good, we ensure sustainability is at the foundation of a strong economy. WR Community Energy partners are local— we live, work, and play here – and have an in-depth understanding of our unique context in Waterloo Region. And, most importantly, we are building our children and grandchildren’s future, and will commit to evaluating and adjusting community needs over time.

Moving forward, our community will be asked to consider and enable opportunities that integrate energy into long-term planning, economic, and social issues. WR Community Energy is already supporting the development of these opportunities such as energy generation and sharing, housing and affordability, electric vehicles and charging stations, efficiency in new builds, and renewable energy. In all cases, WR Community Energy will ensure energy, industry, and community projects come together to enable a better, more sustainable future in Waterloo Region.



**WR
COMMUNITY
ENERGY**


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