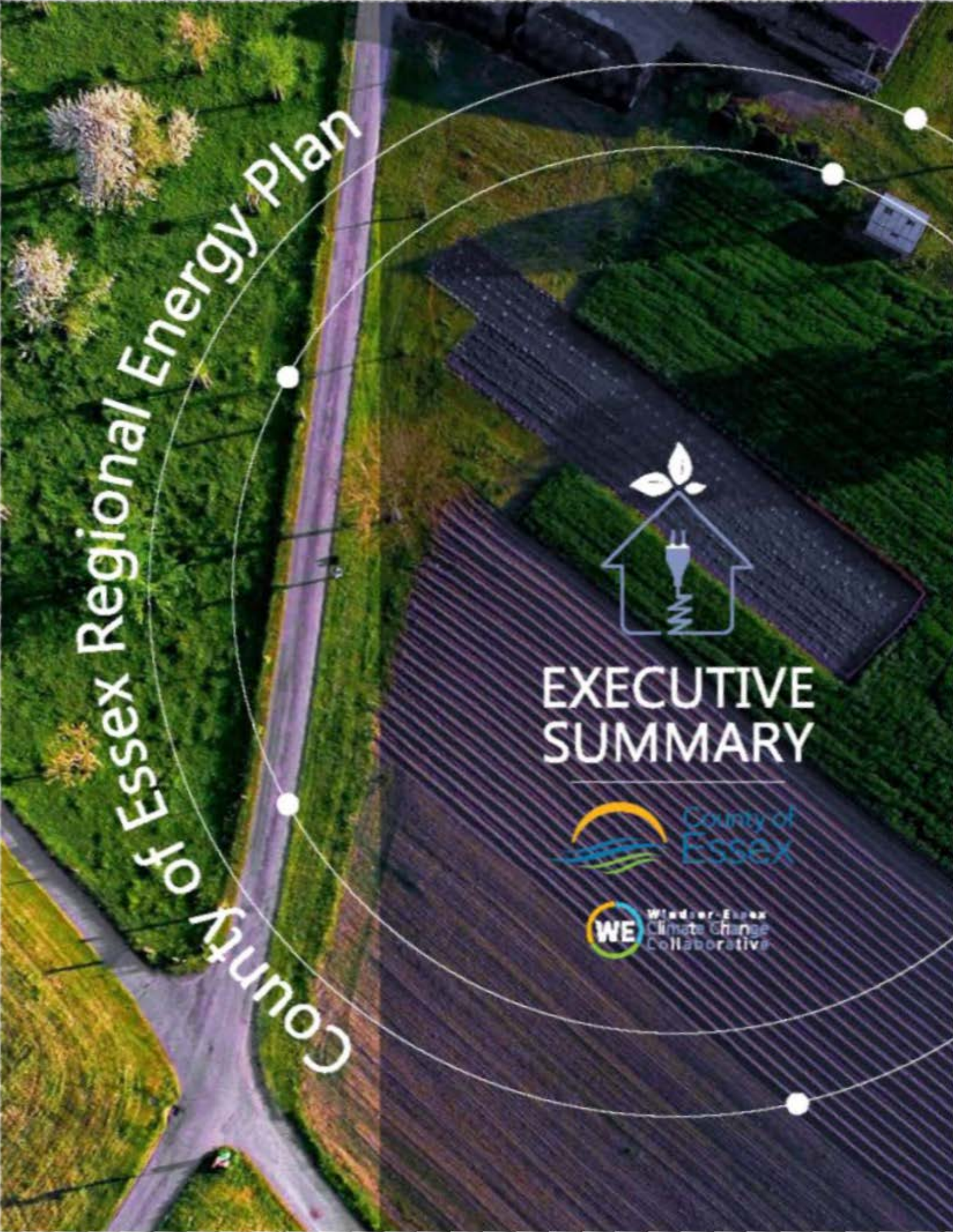

County of Essex Regional Energy Plan
EXECUTIVE SUMMARY
County of Essex
WE
Windsor-Essex Climate Change Collaborative

MESSAGE FROM THE TASK FORCE CHAIR

It's not about the science when it comes to climate change in Essex County, it's about the cost.

Most Windsor-Essex residents accept the reality of a changing climate, but are uncertain about what they can do, as individuals, in the face of such an existential threat.

They want to do their part, they want to leave a better world for their children and grandchildren, but they are worried about the costs of combatting climate change.

Will their municipal taxes go up? Will corporations pass on their increased green costs to the consumer in the form of higher prices? Will the high-paying automotive and manufacturing jobs that have long sustained this region dry up in the face of stringent emissions protocols?

These are important quality of life questions, but the cost of doing nothing far exceeds the cost of meeting the climate challenge head-on, of working together as a region to create new jobs, improving energy efficiency, leveraging funding opportunities, and building a diverse and sustainable economy.

In 2019 and 2020, our region was under flood watches and warnings for hundreds of days in a row. Lake levels remain at unprecedented highs. One-in-100-year flood events are happening with increased frequency. The status quo is not an option. We have to weigh the costs of moving forward against the costs of doing nothing. The cost of doing nothing could be catastrophic.

County Council declared a Climate Emergency to respond to this threat, and now we are backing it up with action.

The modelling work undertaken tells us the amount of energy used in the average home in Essex County is more than twice global best practice. Our per capita greenhouse gas emissions are about five times global best practices. We spend over $800M on all types of energy, most of which leaves the County.

"We need to step up, we need to step up and do our part. Especially for the younger generation, because they're going to inherit this climate and we certainly need to leave it in better hands. The only way we can do that is by starting to turn the tide and every one of us has the responsibility to do that."

The Paris Agreement is a call to action to all sectors of society government, business, civil society, and individuals.

Under the Agreement, Canada has committed to a target to reduce GHG emissions by 30% below 2005 levels by 2030. On April 22, 2021 the federal government increased this goal to 40 to 45%.

These local energy dollars go to Western Canada for oil and natural gas, or elsewhere in Ontario.

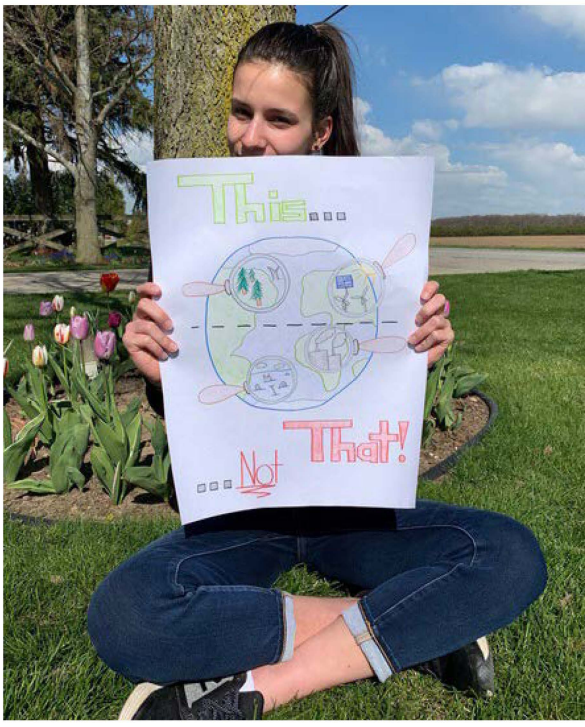
There are opportunities to harness that energy and keep those dollars from leaving the region, just as there are opportunities to significantly reduce our household energy consumption, which accounts for 22 percent of total energy use in our region. Retrofitting homes and embracing green practices won't just help the environment, it will lower energy bills, putting more money in your pockets and boosting our local economy.

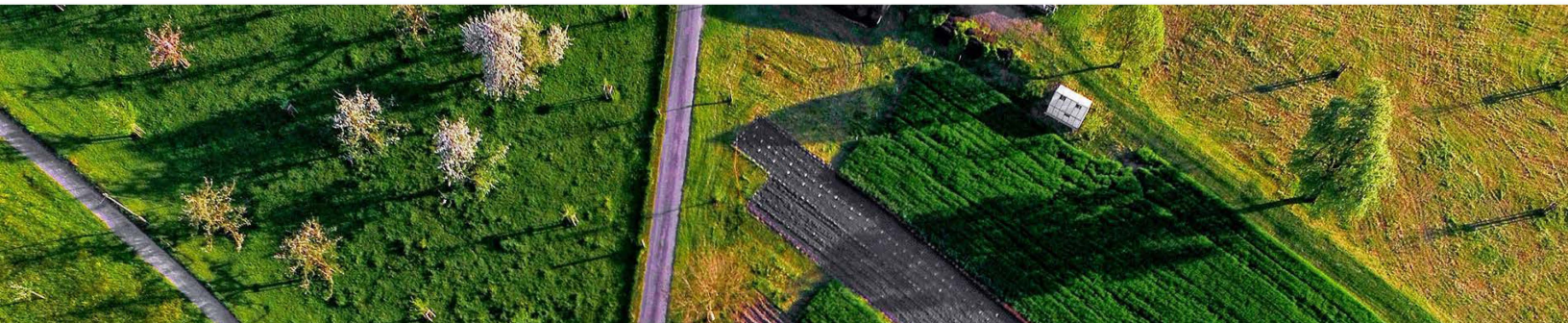
Municipalities have a responsibility to lead the way by focusing on creating energy efficiency within our own operations. This includes greening our municipal arenas, switching our vehicle fleets to electric, looking at policies to reduce in-person meetings and relying on technology rather than transportation. There are tremendous opportunities to save money and repatriate the energy costs that leave our region and transform them into investments in our local economy.

We have to focus on this incredible potential and not only on "what it will cost" when it comes to increasing energy efficiency and building a diverse and green economy. The transformation won't be easy, but the jobs and growth are there if we can commit to a common vision of sustainability and prosperity.

During the writing of this plan, we experienced a rapid and radical change to society because of a global pandemic – we shifted, virtually overnight, to remote work and becoming more mindful in our transportation and purchasing habits. The cumulative effect of empowered and informed individuals making smart, selfless choices can be transformative. We have an unprecedented opportunity to innovate and embrace a new normal. We must seize it together, creating jobs and a path to shared and sustainable prosperity and smart economic growth.

Gary McNamara, Warden, County of Essex
Chair, Essex County Regional Energy Plan Community Task Force





CONTEXT

Climate change is a fundamental threat to all life on the planet and people's livelihoods.

Scientists warn that the consequences of climate change for humans, animals, and plants will become more severe if the average global temperature continues to rise. In 2015, a historic agreement was signed in Paris by 195 countries to hold "the increase in the global average temperature to well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 degrees Celsius above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change".

In the past few years, climate change issues have become a greater priority for the Windsor Essex Region, and the community has been coming together to address climate concerns. A Climate Change Summit in 2018 resulted in the development of the Windsor Essex Climate Change Collaborative (WEC3) that brings together "community leaders, experts, regional stakeholders, and community members to move towards a low-carbon economy and improve our resilience to our changing climate". The regional collaboration is intended to build on the foundational work of local communities, including the City of Windsor's Climate Change Adaptation Plan and Community Energy Plan.

At the time of writing, 1,926 jurisdictions in 34 countries have declared a climate emergency. In September 2019, the Windsor Essex Environment Committee approved a recommendation to declare a climate emergency for the area. Since then, the City of Windsor, the County of Essex, the Town of Amherstburg, the Town of Tecumseh, and the Town of Essex have joined over 510 Canadian municipalities in declaring a climate emergency. These climate emergency declarations recognize the need for robust and permanent changes, that future climate performance must be a high priority in all decisions and called for cooperation in reducing emissions.

Since 60% of energy consumption and over half of all greenhouse gases (GHGs) in Canada are influenced by communities (e.g., the transportation of people, goods, and services, the powering of local industry and the heating, cooling, and lighting of homes and buildings), all levels of government have the ability to influence local action on climate change. In response, more than 400 Canadian communities have developed community energy plans to establish local priorities for reducing energy use and energy-related emissions. The Essex County Regional Energy Plan (ECREP) will support the County of Essex and its member municipalities take a leadership role in reducing GHG emissions within its geographic boundary from energy use.

While addressing climate change is an important reason to develop a Regional Energy Plan, it is not the only one. Another consideration is ensuring the County of Essex is positioned to manage the economic risks and opportunities associated with the modern energy transition. This energy transition is driving towards decarbonization and more localized and renewable energy sources. With global urbanization proceeding at an unprecedented rate and impacting rural sustainability, this energy transition has the potential to be a new source of rural jobs in addition to addressing environmental and energy security concerns.

The ECREP will allow Essex County to reap the economic benefits of the ongoing modern energy transition by ensuring reliable, cost-competitive energy services for residents and businesses. The opportunity to support local economic development is significant. Local job creation occurs in three ways: 1) direct jobs are created by businesses that support improvements to energy efficiency (e.g., construction trades) or design, build and/or operate local supply and distribution systems; 2) indirect jobs are created in supply chains that deliver goods and services to businesses in the direct job category, and 3) induced jobs are created when the newly-hired workers in direct or indirect jobs spend their new earnings on goods and services. The provision of competitive energy services also serves to attract and retain investment in a community. The modern energy transition allows the Essex Region to create local jobs via all three ways mentioned above.

COVID-19

This plan was started and completed while experiencing two global crises – the climate crisis and the Covid-19 global pandemic. Economic recovery from Covid-19 requires employment and sustained economic development. The climate crisis requires urgent restructuring of energy efficiency and supply at the community level to be carbon-free by 2050. There is growing recognition of an opportunity to bring these two imperatives together.

WHY UNDERTAKE COMMUNITY ENERGY PLANNING?

Community energy planning considers all local energy flows that impact activities within a community, from energy supply through distribution to its end use by consumers. In addition to responding to the trends described above, community energy planning offers several positive economic, environmental, social, and cultural benefits.

From an emissions perspective, community energy planning places emphasis on reducing energy-related emissions. Energy-related emissions arise from the heating and cooling of our homes and buildings, the powering of industries, and the movement of people and goods. Community energy planning may consider measures that address non-energy-related sources of emissions, e.g., local opportunities for waste-to-energy or methane-to-energy. The scope of community energy planning does not include measures that sequester carbon dioxide in forests or agriculture. Still, those land-use opportunities for reducing carbon in our atmosphere are being explored through other projects.

Community energy planning also identifies opportunities to keep energy dollars local by promoting energy conservation and efficiency and opportunities for local energy supply and distribution.

WE ARE READY: MAKING THE PLAN

The creation and implementation of a community energy plan is a community-wide effort.

All sectors of society – government, business, civil society, and individuals – have a role to play, whether it is reducing their energy consumption and GHG emissions through adopting new technologies or changing behaviour. Municipal governments (including the County of Essex and member municipalities) have an essential role to play through: Convening and Facilitating (REP planning and implementation), Policy Making, Economic Development, Leading by Example, and Promoting Energy Literacy & Climate Action.

A Community Task Force, consisting of 50 individuals from 7 municipalities, 2 First Nations, 2 post-secondary institutions, 4 utilities, 2 school boards and over 10 community organizations or businesses, were an integral piece of developing the ECREP through providing input and advice on key points.

In August and September 2020, community members shared their views on a proposed vision and principles and priorities for action through a community questionnaire. The responses were used to inform the final Regional Energy Plan. Nearly all respondents believed that taking local action on energy and climate change is of high importance and that we should be doing more to address energy and climate change in this region.

County of Essex

Windsor-Essex Climate Change Collaborative

Amherstburg, Ontario, Canada, Est. 1796

essex

Kingsville On the Lake

Lakeshore – Our Communities. Our Home.

LaSalle

Municipality of Leamington – live | play | work

Town of Tecumseh, Ontario · Canada

The City of Windsor, Ontario, Canada

Essex Region Conservation Authority – sustaining the place for life

Essex Power Corporation

E.L.K. Energy Inc.

hydro one

Enbridge – Life Takes Energy

ieso – Connecting Today. Powering Tomorrow.

Green SunRising

Garforth International

Ontario Greenhouse Vegetable Growers

Libro Credit Union

University of Windsor

St. Clair College

Caldwell First Nation

Bkejwanong Territory – Walpole Island First Nation

LURA – Listen · Understand · Relate · Advance

transit windsor

Windsor Essex CHC – Community Housing Corporation

Citizens Environment Alliance

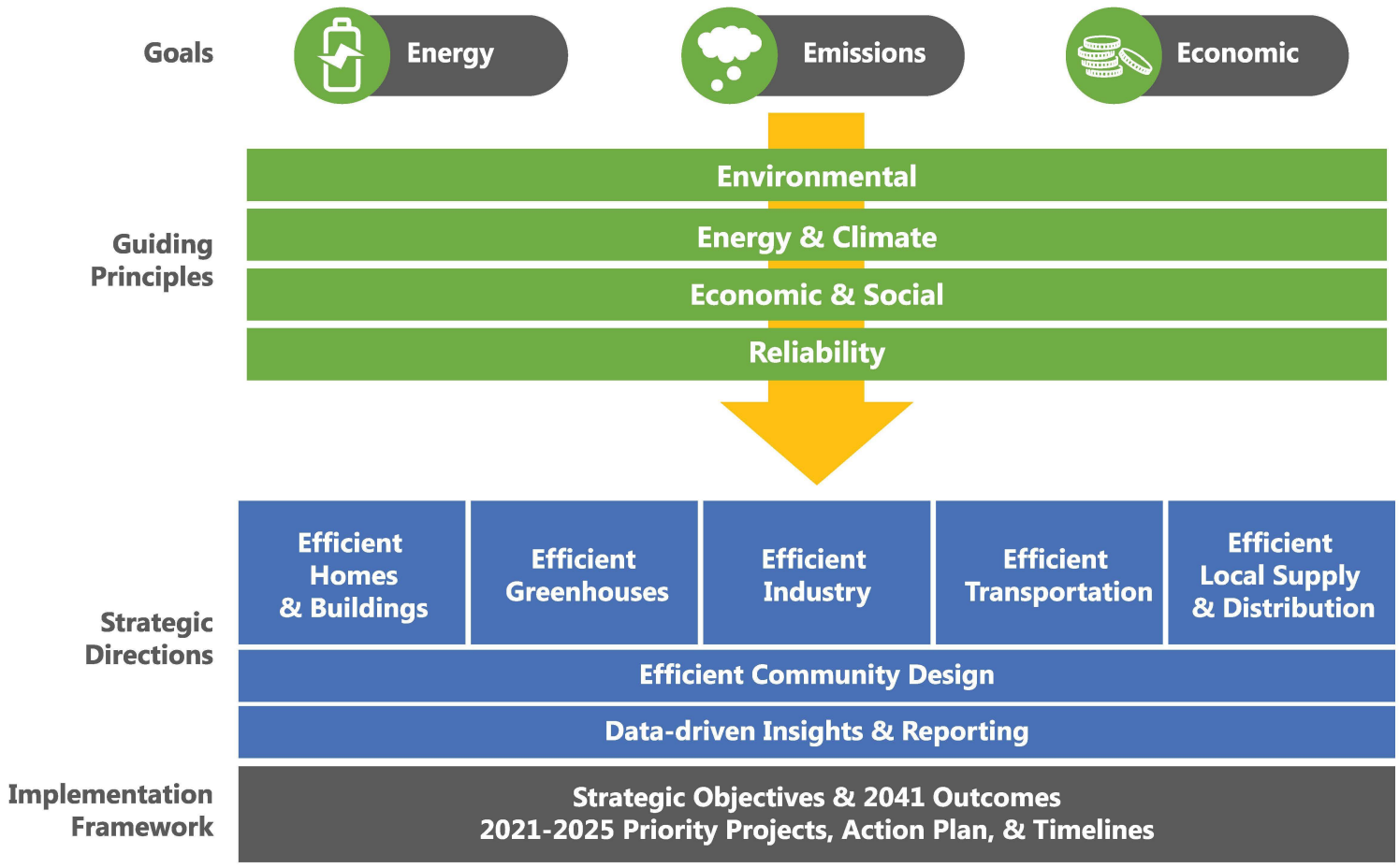
Greater Essex County District School Board

Windsor Essex County Environment Committee

Amherstburg Community Foundation

VISION FOR THE REGIONAL ENERGY PLAN

County of Essex Energy Vision



Vision

The Essex Region is an innovative, equitable and sustainable energy community that benefits the environment, economy, and quality of life for all.

Principles

Environmental

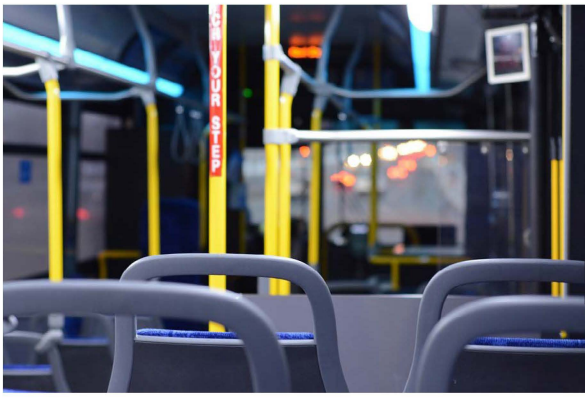
- Create a sustainable energy system that meets the needs of the present and future. The energy system creates a sustainable balance between the environmental, economic, social, and cultural needs of Essex Region.
- Recognize that the function, shape and layout of buildings, streets and environments support human health.

Energy and Climate

- Respect climate science and science-based decision-making. Work towards carbon neutrality.
- Test strategies against global best practices in terms of energy efficiency and emissions reduction targets.

Economic and Social

- Ensure all energy-related investments have acceptable risk-adjusted returns.
- Ensure energy costs are competitive with comparable communities.
- Create high-quality employment and train youth to pursue energy and environmental careers.
- Create energy solutions that are equitable across all sectors and demographics, strive for accessibility and affordability in the design and communication of programs.



Reliability

- Respect climate science and science-based decision-making. Work towards carbon neutrality.
- Test strategies against global best practices in terms of energy efficiency and emissions reduction targets.

WE ARE READY: EVIDENCE-BASED TARGETS

Effective energy plans require evidence-based targets.

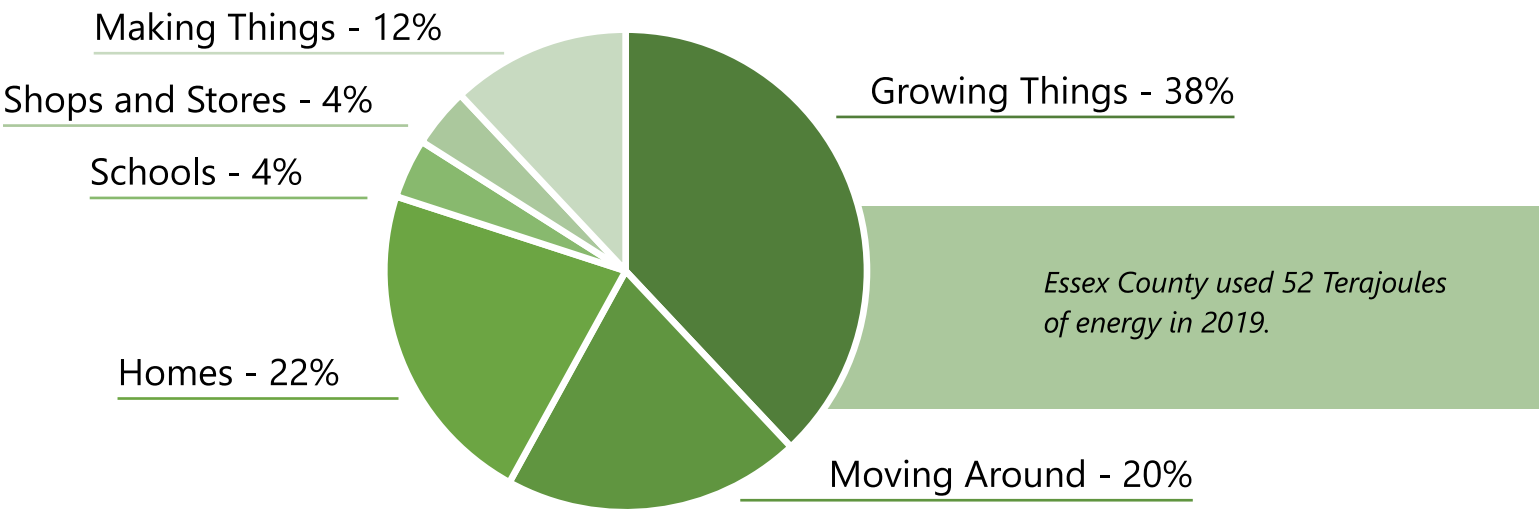
We started by collecting data. Data was used to establish evidence-based targets for the Essex Region, to support the development of goals, strategic objectives, targets, priority projects, and milestones for the Regional Energy Plan. This data included natural gas and electricity consumption for homes, buildings, and greenhouses relating to heating, cooling, lighting, fans, equipment, and other energy consumption sources. Transportation data was modelled based on county fuel use by vehicle type, and passenger and vehicle kilometres travelled. Large energy consumer usage and corporate (municipal) energy use were also reviewed and integrated. These analyses created baseline data to determine the state of energy use and consumption in the Essex Region in 2019.

Essex County's baseline data was compared with several comparable provincial, national, and global benchmarks to understand the opportunity to deliver community benefits through a Regional Energy Plan.

What We Learned

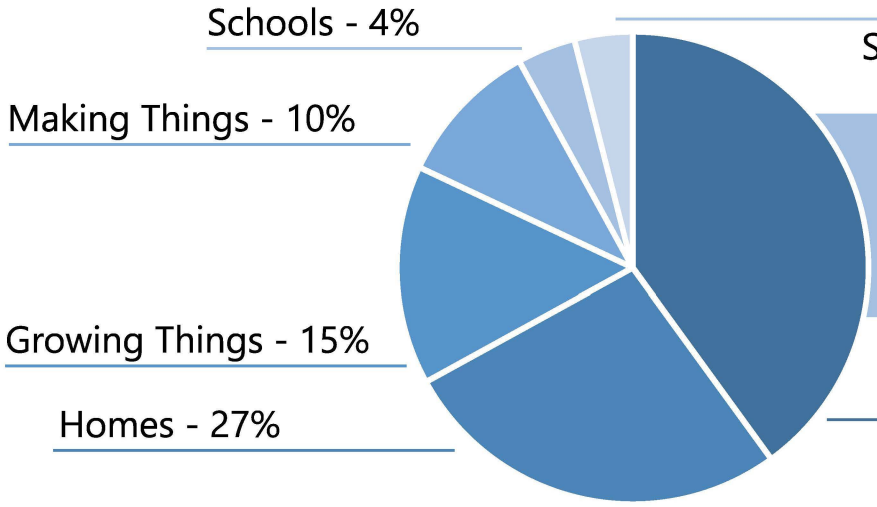
- *On average, homes and buildings in Essex County are approximately half as efficient as global benchmarks. There are many examples of places in Germany, Sweden, and Denmark, which have similar climates to the Windsor Essex Region, where energy efficient new builds and retrofits to older buildings have reduced energy consumption by 80%!*
- *Energy use per home is higher than the national and provincial average.*
- *Energy use in the residential sector per square metre (m2) is the same as the national average but more than twice global best practice*
- *Emissions per capita were higher than national and provincial averages.*
- *Per capita emissions are 5 times global best practice (3 times global best practice if the contribution of the greenhouse sector is removed) and about 8 times the Government of Canada target for 2050 based on the Paris Climate Agreement.*

What data has told us about energy use



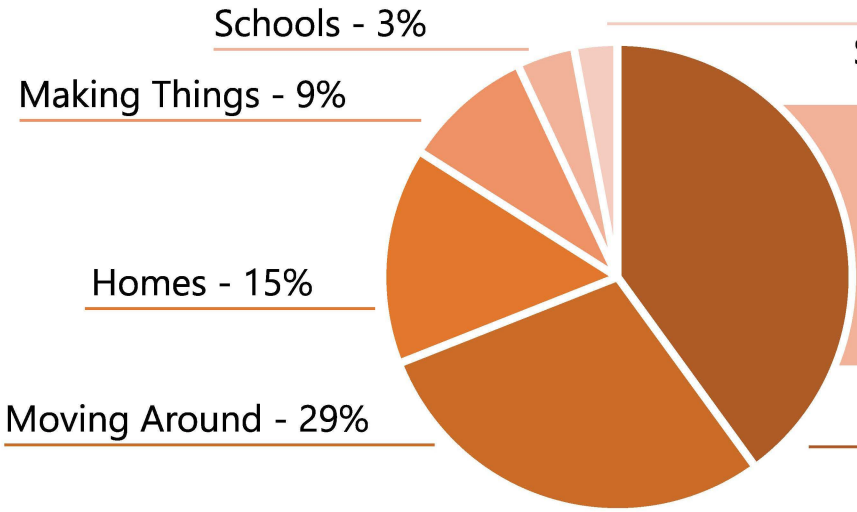
Essex County used 52 Terajoules of energy in 2019.

What data has told us about energy costs



$820 million was spent on electricity, natural gas, gasoline, and diesel within the Essex County community in 2019.

What data has told us about GHG emissions



In 2019, Essex County residents produced 11.5 metric tonnes of GHG emissions per person. Emissions were five times the global best practice and about eight times higher than the Paris Agreement.

STRATEGIES

Energy use, energy-related emissions and energy costs were modelled to 2041. Modelling shows us what our future might look like should no action be taken.

As the population and employment are expected to grow, we anticipate that site energy use will increase by 16% and source energy use by 21%. Greenhouse gas emissions are expected to remain relatively constant (approximately a 3% increase) by 2041 due to a projected increase in vehicle efficiency and reduction in the carbon intensity of the natural gas grid. From a cost perspective, utility costs are estimated to increase by 125% to 300% by 2041. These increases reflect both higher prices and population and employment growth).

Goals to reduce the predicted energy use, energy-related emissions and energy costs were established based on this modelling. In total, three simulations were considered to identify an energy strategy for Essex County. The simulations considered different combinations of integrated energy-related measures for all sectors and energy uses, distribution, conversion, and fuels and were tested to determine their ability to achieve the above energy consumption, GHG emissions and economic framing goals.

In 2019, the Essex Region spent $820 million on electricity, natural gas, gasoline and diesel. If we don't bend-the-curve on energy use through energy efficiency measures, this will increase to between $1.9 billion to $3.1 billion by 2041.

The Community Task Force approved the most aggressive simulation, which brings us closest to the Paris Agreement targets, aligned on the following strategic goals:

- Increase community-wide energy efficiency by at least 50% by 2041 from 2019 levels recognizing selected efficiency measures would consider the entire system from supply through distribution to end-use.
- Enable transition to carbon neutrality by reducing GHG emissions by at least 60% by 2041 from 2019 levels.
- Increase municipal water efficiency by 20% by 2041 from 2019 levels.
- Reduce community-wide energy and water costs in the range of $13 to $18 billion through 2041.

Strategic Directions	And Their Strategies
Strategic Direction 1 – Efficient homes and buildings	• Retrofit 80% of existing homes for an average efficiency gain of 35% • Retrofit 60% of existing buildings for an average efficiency gain of 35% • Require an energy performance label (EPL) on all homes when sold or rented. • Build 30% of new homes and building more efficient than Ontario Building Code (OBC) • Remaining homes and buildings fully meet the energy performance standards.
Strategic Direction 2 – Efficient Greenhouses	• Retrofit 60% of existing greenhouses to achieve 35% efficiency gain • Build 30% of new greenhouses more efficiently than the prevailing industry norms while ensuring remaining greenhouses meet those industry norms.
Strategic Direction 4 – Efficient Transportation	• Reduce the average trip length of light-duty vehicles by 20% • Increase active transportation (walking/cycling) to 5% of passenger kilometres travelled • Increase transit to 3% of passenger kilometres travelled. • Increase electric passenger vehicles to 80% (this includes light-duty vehicles – pick-up trucks and smaller vans) • Increase electric buses to 80% • Increase heavy-duty electric vehicles to 10% • Increase electric vehicle efficiency by 22% • Increase gasoline and diesel vehicle efficiency by 50%
Strategic Direction 5 – Efficient local supply and distribution	• Supply 15% of electricity demand with locally installed solar PV • Supply 10% of heating, cooling and hot water needs not served by district energy with solar thermal and heat pumps. • Supply 70% of existing and 90% of new target commercial, institutional and apartment buildings in higher density areas by district energy • Supply 40% of greenhouses with on-site or near-site integrated energy supply including combined heat and power, local biogas and recovered carbon dioxide injection.
Strategic Direction 6 – Community Planning	• Align all municipal roles in implementing the REP
Strategic Direction 7 – Data-driven insights & reporting	• Establish systems to enable data-driven insights and reporting.
Together, these strategies will:	• increase energy efficiency by 43% by 2041 • reduce annual greenhouse gas emissions by 60% by 2041 • Avoid between $28 billion and $48 billion energy costs between 2018 and 2050 based on low and high-cost projections (respectively).

2021 - 2025 PRIORITY PROJECTS

The following priority projects have been identified and includes lead community partners for the next five years to implement the strategies to meet the established energy plan targets. The Priority Projects are aligned with achieving the goals and objectives the Strategy and establish the first steps on that pathway. Embedded in those first steps are actions that will identify the systems, capabilities and resources that will be required as well as lay the next steps in the journey. Each priority project identifies a potential lead organization and timelines to ensure strategies advance holistically.

Action		Lead	2021	2022	2023	2024	2025
Governance							
0	Approve REP	Task Force & County Council					
1.1	Establish governance and implementation structure	Task Force					
1.2	Report on progress	Governance body TBD					
2.1	Complete Retrofit Business Case	TBC					
2.2	Form Retrofit Entity	TBD through Business Case					
2.3	Complete Retrofit Business Plan	Retrofit Entity					
2.4	Deliver Retrofit Program	Retrofit Entity					
3.1	Complete Growers Energy Co-operative Business Case	WEEDC, OGVG (TBC)					
3.2	Form Co-operative	TBD through Business Case					
4	Develop industrial best practice networks	WEEDC, LIUNA, OGVG, WCA					
5.1	Complete District Energy Utility Business Case	TBC					
5.2	Complete District Energy Utility Business Plan	TBD through Business Case					
5.3	Form District Energy Utility	TBD through Business Case					
Policy Alignment							
6	Align Economic and Employment Land Strategy	County of Essex					
7	Align Transportation Master Plan	County of Essex					
8	Align Official Plans and Secondary Plans	County & Lower Tier					
9	Align Corporate Energy and Emission Reduction Plans	County & Lower Tier					
10	Develop enabling policies and programs	County & Lower Tier					
Scale Projects							
11.1	Identify Manufacturing Cluster	County & Lower Tier; WEEDC					
11.2	Develop IEMP and implement	Private Sector Partners (TBC)					
12.1	Identify Net-Zero Community	County of Essex					
12.2	Develop IEMP and implement	Private Sector Partners (TBC)					
13.1	Form bio-energy partnership	TBD Private Sector					
13.2	Develop Master Plan and implement	Bio-energy Partnership					
14.1	Identify host community for e-mobility project	County & Lower Tier					
14.2	Develop project planning and implement	County & Lower Tier					
Education							
15	Develop program and implement	Regional Comm. Group (TBC)					
Measurement, Reporting & Optimization							
16	Create a “Smart Energy Region”	WEEDC, St. Clair College, U of W					

GOVERNANCE AND OVERSIGHT

The planning process to develop this strategy was deliberate in engaging a broad cross-section of the community to earn buy-in, build capacity and motivate action. Implementation will require ongoing oversight to ensure the strategy and priority projects are achieved. As part of the implementation plan, one of the priority projects includes the formation of a community stakeholder implementation body – or Implementation Task Force - that would oversee, coordinate, and report on overall progress to the community. This Implementation Task Force would be guided by a Terms of Reference, facilitated by a governing administrative body, and draw from the experience and expertise of the Community Task Force who guided the REP development.

Each of the priority projects has a lead agency defined. Lead agencies will look to secure partnerships with additional resources in the community to ensure that strategies maximize local knowledge, expertise and resourcing.

It is recommended that the REP is updated every five years to respond to changes in climate policy, energy policy, technology, and global best practice and the opportunities they provide to accelerate the local energy transition.

CONCLUSION

The Essex County Region Energy Plan is unique in many ways. First, it may be the only Canadian plan produced virtually, with no in-person meetings. The challenges of the global pandemic demonstrated the collective capacity for rapid and radical change. Throughout this crisis, there has been decisive, coordinated action from our community leaders. Now the same commitment needs to be applied to addressing the climate crisis.

The strategy outlined in this report establishes a pathway to reduce GHG emissions from 270 GJ per capita to 150 GJ per capita by 2050 (a 44% decrease in GJ per capita). In the fullness of time, global policy changes will influence markets, technologies will evolve in response to those changing markets, and communities like Essex County will be able to accelerate their transition towards net-zero emissions.

The strategy also puts Essex County on a pathway to reduce source energy consumption from 2.2 million to 0.59 million metric tonnes by 2050, resulting in a cumulative $28 billion in energy savings. The modelling undertaken to determine the potential cumulative savings from energy efficiency was conservative. The subsequent Supreme Court ruling on the constitutionality of the Federal price on carbon and announcements that it will rise to $170 tonnes by 2030 only makes the economic case for implementing this strategy more compelling for the residents and businesses of Essex County.

A fully virtual plan! The Task Force would have driven over 34,500km to come together for in-person meetings. This saved 6.6 metric tons of emissions!

Recovery from Covid-19 will be the best opportunity this century to invest money in the path towards a sustainable future: a low-carbon, resilient future. This strategy provides 'shovel-ready' plans to capitalize on any new funding for climate adaptation and alternative energy projects. This is what Windsor-Essex is good at – re-tooling, responding, innovating – we can lead the way through this critical next decade.

WE are ready.