

EASTERN ONTARIO GREEN CAREER GUIDE



A directory of environmental education and employment in the 1000 Islands Region. For people who want to change the world.

1000 Islands Region
WORKFORCE DEVELOPMENT BOARD

**EMPLOYMENT
ONTARIO**

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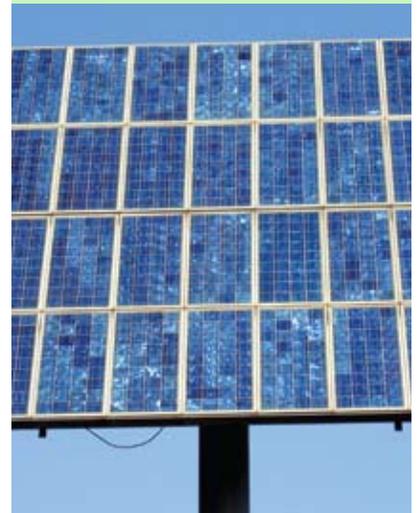
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About this Guide

The Eastern Ontario Green Career Guide is for people who wish to train for and find employment in the green economy. Whether you're a high-school student with an interest in the environment, or an adult professional who wants to transition into the green economy – this guide is for you.



In recent years, scientific evidence for human-caused global warming has become increasingly convincing. More than ever, we know that people need to reduce emissions of greenhouse gases such as carbon dioxide and methane, which, after they leave car exhaust pipes and factory smokestacks and rise into the earth's upper atmosphere, contribute to global warming. If we are to reduce greenhouse gases, cleaner sources of power than coal, oil and other fossil fuels for transportation and electrical generation are necessary. As the price of gas and oil creeps upwards, governments, businesses and consumers are looking for ways to minimize the amount and cost of the energy they use.

Of course, we can reduce energy use by changing our personal behavior – by doing things like turning off lights when we don't need them, or by walking or riding a bike instead of driving. But many of the major reductions we need will be brought about through the use of new and existing technology. In Ontario, for example, solar panels and wind turbines, which provide electrical power but don't emit greenhouse gases, are becoming more common. Other green technologies, such as fuel cells, are not as widely used or are in still the research and development stage. We can also reduce carbon

emissions in other ways by designing and building things – from computers and cars, to buildings and entire cities – so that they use less energy.

All of these things need trained people to invent, design, market, install, operate and manage them. These requirements open up a world of exciting educational and employment opportunities for people entering the green workforce for the first time, and for those who are already working and want to upgrade their skills or begin a new career.

Some of these opportunities are in Eastern Ontario, which is why we've written the Green Career Guide. It's a resource for anyone who aspires to become trained for, and work in the "green" – that is, renewable, alternative, or sustainable, or cleantech – energy sectors.

The Guide consists of two parts:

- The **Learning** section describes green-oriented educational programs in our corner of the province. While the programs listed here will equip you with skills and knowledge that you can apply anywhere they're needed, this section focuses mainly on programs that are directly linked to jobs in Eastern Ontario.
- The **Doing** section lists emerging and established green companies in Eastern Ontario that offer job possibilities for college and university graduates and experienced professionals.

If you'd like to start your own green business, the Doing section also includes a list of useful organizations and websites that can help you get up and running.

As you'll see, Eastern Ontario is a place where people – from high-school students, to adults with years of work under their belt – can acquire the know-how and experience necessary for first-time or continued employment in the Green Economy.

What is the Green Economy?

The Green Economy describes all activity "operating with the primary intention of reducing conventional levels of resource consumption, harmful emissions, and minimizing all forms of environmental impact. The green economy includes the inputs, activities, outputs and outcomes as they relate to the production of green products and services."

– Environmental Careers Organization (ECO) Canada

What exactly is a "green job"?

A "green" job is one that "works directly with information, technologies, or materials that minimize environmental impact, and also requires specialized skills, knowledge, training, or experience related to these areas."

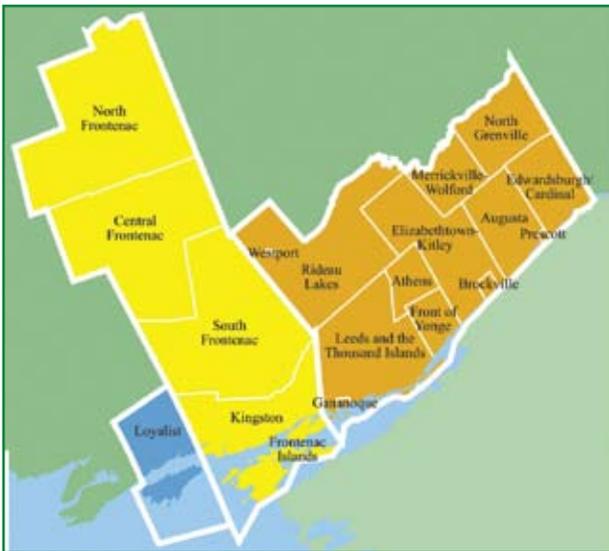
– ECO Canada



About Eastern Ontario

Eastern Ontario is famed around the world as a beautiful place to visit. Its beauty exists in the 1000 Islands, the St. Lawrence River and hundreds of inland lakes and rivers across the region. Some of those waterways are part of the [Frontenac Arch Biosphere Reserve](#), a globally significant UNESCO-designated ecosystem. Also popular with tourists is Eastern Ontario's history. Stately Victorian public buildings, churches and homes, the Rideau Canal, Fort Henry in Kingston and Fort Wellington in Prescott, and scores of picturesque farms are all vivid reminders of the area's military, cultural and agricultural past.

Eastern Ontario is proud of its heritage, but it's also moving into the future by becoming a home



the green economy, are active in Eastern Ontario. Some have built huge solar farms – in Napanee, Odessa, Brockville and Hawkesbury – and an 86-turbine wind farm on Wolfe Island, the second-largest in Ontario. Others are installing solar panels on the rooftops of homes or businesses so that their owners can sell the electricity produced by the units back to the provincial power grid. A new generation of farmers is enabling people in the region to eat healthy meat and vegetables grown close to home and forming the core of a growing local-food movement. Frontenac County and the City of Kingston are two municipalities that have committed to doing business in a sustainable manner.

Eastern Ontario is also lucky to have several educational institutions where top-notch green technical education and research is taking place. Most of it is happening at St. Lawrence College and Queen's University, which each year turn out new knowledge, technology and hundreds of highly skilled graduates. Other non-academic organizations, such as the National Farmers Union, offer workshops and internships for people looking to increase their green knowledge and skills.

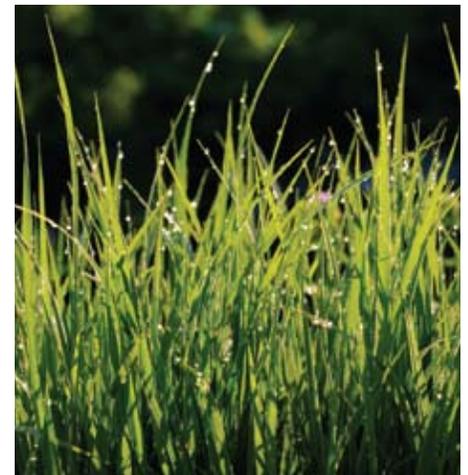
for all sorts of green practices and technologies. A new generation of skilled workers is building on the work of the previous generation, many of whose members have reached retirement age. Their goal, and the goal of cities and towns across the region, is to create meaningful jobs and a good quality of life for everyone without compromising the air, water and land that the region depends on.

Today, dozens of local and global companies, large and small and from virtually every sector of

The number of green jobs in Eastern Ontario is likely to grow in coming years as oil prices rise and more people turn to renewable energy sources and food grown and raised closer to home. The most promising area for jobs is the solar industry, thanks to companies such as Centennial Global Technology in Kingston, Upper Canada Solar in Brockville and a number of renewable energy firms and electrical contractors who install solar panels on roofs or on land that's not suitable for agriculture.

But other green technologies also hold promise for Eastern Ontario. One of them is biomass – organic material such as waste wood, switchgrass or hemp that is burned in stoves or furnaces to power electrical generators and generate heat. Geothermal systems – commonly known as ground source heat pumps – consist of pipes and special liquids that capture heat below the earth's surface and bring it above ground so it can be used to warm or cool homes and other structures. Demand for these systems, and for people who know how to install them, is also expected to grow in Eastern Ontario.

That's not all. As governments include more and stricter energy-efficiency requirements to building codes, there will be more demand for energy auditors and energy conservation managers. Energy auditors visit homes and businesses and use special instruments to measure the building's energy efficiency. Energy conservation managers help companies and organizations such as hospitals, school boards, and municipalities to identify ways to conserve energy and save money.



Lafarge North America has been experimenting with switchgrass as a supplement to coal in cement kilns at its plant in Bath, west of Kingston.

Learning

The phrase “green economy” can mean different things to different people. Because it can be defined in so many ways, it can be simple to link practically any course of study to one green profession or another. For example, a solar panel manufacturer needs bookkeepers and salespeople to run its company and sell its products, even though bookkeeping and sales are not in themselves “green”. In recognition of this, the Learning section describes only educational programs directly related to the production or delivery of green products or services. For more information about the programs offered at each institution or faculty, please visit their websites, which are included here.

Serious environmental education needn't start at the postsecondary level. The Limestone

District School Board offers a number of Focus Programs that expose high school students to green-oriented work and provide a solid foundation for more advanced study at college or university.

Some of the best green training and education opportunities in Eastern Ontario are offered at St. Lawrence College, which has campuses in Kingston, Brockville and Cornwall. Queen's University, in Kingston, also offers a wide range of academic programs that could lead to a green career in Eastern Ontario or anywhere in the world. Loyalist College in Belleville has a number of programs relevant to a green career. At present, Royal Military College in Kingston has no specific green programs, but several of its professors and graduate students work on significant environment-related projects.



Limestone District School Board students ask questions during a field trip to Harvesting House, the student-built home that showcases alternative-energy and conservation technologies.

“If I had one piece of advice for a young person in our area who wants a green job, it would be to get themselves into the ESET program at St. Lawrence College. A graduate from there can move into so many areas – solar design, installation, home audits. They even get their gas ticket! They come out well-rounded and can go down almost any path they want to.”

– Brad Leonard, owner and partner, Renewable Energy of Plum Hollow, Kingston

Limestone District School Board

The Limestone District School Board is the English public school board in Kingston, Frontenac, Lennox and Addington Counties. The Board's teachers work hard to develop environmental awareness and responsibility in their elementary and secondary students. The Board also encourages its schools to participate in initiatives such as the provincial [EcoSchool](#) program. More and more, the Board is using sustainable technologies that produce electricity, reduce energy bills and serve as real-life examples of sustainability-in-action for students. For example, several LDSB schools have solar panels on the roof or geothermal heating systems, and the Board recently installed a biomass boiler at the North Addington Education Centre in Cloyne. To oversee these and other green projects, the Board hired a full-time [Energy/Environment Technologist](#).

The LDSB's major green courses are offered through [Focus Programs](#). The programs are designed to give upper-year students knowledge and experience in a particular subject before they enroll in a more advanced post-secondary program or enter the workplace. Sometimes the Board partners with local businesses or St. Lawrence College to deliver a program.

The school board has also created an Environmental Sustainability Committee whose members may recommend that the Board establish and develop educational programs and practices related to environmental sustainability.

The Ontario Ministry of Education offers an Environmental Science course for Grade 11

students in the University/College and work-place streams. If you're a student interested in this course, ask your teachers or guidance counselor for more information.

Building Construction Internship Program (BCIP)

This four-credit course prepares students for careers in carpentry, construction management, roofing, plumbing and electrical work. Students work with local contractors to build a fully functioning home from the ground up. In 2010, BCIP students built [The Harvesting House](#), a "net-zero" house that includes a variety of green technologies that together produce as much energy as the house uses. *Instructors: Bruce Lonneberg or Dan Fisher*
613-546-1714

Energy Wise Program

The Energy Wise Program is for college-bound students who are interested in skilled trades and sustainable energy fields such as solar, wind and biomass. This course explores the science and technology needed to create and maintain the kind of renewable energy sources used in the typical home or business and which are rapidly becoming an important part of the local and global economy. *Instructor: Jeremy Armstrong*
613-386-3054

Environmental Leadership

Students study the effects of human activity on the environment and explore how to protect our natural resources. Students also deepen their appreciation for the outdoors

and enhance their leadership skills through winter camping, hiking and canoeing. *Instructor: Steve McLagan*
613-389-8932

Modern Design

A one-semester program in which students research, design, build and market projects using software and practical shop-related techniques. This course prepares students for higher-level study in civil, architectural, mechanical and industrial design with a focus on renewable and sustainable best practices. *Instructor: Angela Lowry*
613-376-3612

Great Lakes Adventure

This course, introduced in 2012, gives students a chance to explore Kingston as a unique historic tourist destination and home of an expanding marine industry. The program combines credits and co-op experiences. One highlight is a sailing experience on the St. Lawrence II, a well-known Kingston tall ship. *Instructor: Jo Bishop*
613-389-2130

Making the Difference

This program is designed for young men and women who want to change the world, one small step at a time. Students will be involved in local and global projects and work with non-government organizations (NGOs). Eventually the program will include an international travel opportunity. *Instructor: Brenda Scarlett*
613-389-8932

Loyalist College

In 2011, Belleville's [Loyalist College](#) opened the [Sustainable Skills, Technology, and Life Sciences Centre](#), a facility dedicated to a range of training in areas including manufacturing, skilled trades, biotechnology and environmental sciences.

Environmental Technician/Technologist

This program – two years for the diploma technician stream, three years for the technology stream – includes plenty of field work and hands-on instruction. Students sample and analyze environmental contaminants and study the underlying social systems that contribute to pollutants in water, soil and air.

The first-year curriculum introduces the basic principles and techniques of biology and organic chemistry and relevant computer and communication skills. After one year, students

can transfer into another Biosciences program or complete a work placement to graduate with an Ontario College Certificate as a Chemical Laboratory Assistant. The second year gives students hands-on experience with hydrology, field biology and chemical instrumentation. The work is more specialized and emphasizes legislation under the Environmental Protection Act. Successful graduates are eligible for a Technician diploma. Loyalist College recently signed a memorandum of understanding with Ontario's Ministry of the Environment (MOE) to incorporate the requirements for the entry-level Drinking Water Operator Course into the curriculum. Eligible students will be able to write the MOE entry-level operators exam following the completion of the Technician program.

Third-year students participate in team-building activities that focus on major envi-

ronmental projects determined by students' individual interests. Technology graduates gain applied skills in surveying, data analysis and computer-assisted design (CAD). Placements in the second and third years allow students to put their training into practice in an actual workplace setting. Overlapping areas of study enable students to fast-track to a second diploma in biotechnology or chemical engineering.

Potential career paths:

Industries that reduce and clean up waste; environmental investigations and enforcement for government agencies; water monitoring and wastewater treatment for municipalities; technical support for consulting engineers, urban and rural planners, and environmental consultants.

Royal Military College

[Royal Military College](#) (RMC) in Kingston has a number of academics [working on environmental issues](#), but offers no undergraduate programs that specifically target careers in environmental fields. However, RMC is home to the [Environmental Sciences Group](#) (ESG), a nationally known body that conducts site investigations, ecological and human health risk assessment, innovative remediation technologies and stakeholder involvement sessions around the country, particularly in the Canadian Arctic. The College is also home for the [RMC Green Team](#), a group of experts that helps the Department of National Defence deal with environmental issues at Canadian Forces sites around the country.



St. Lawrence College

(Kingston, Brockville and Cornwall)
www.sl.on.ca

[St. Lawrence College](#) (SLC), which has campuses in Kingston, Brockville and Cornwall, is a true leader in renewable energy education in Canada thanks to its pioneering training courses for renewable energy systems and wind turbine maintenance. The Energy Systems Engineering Technology program introduced in 2005 was immediately popular. Since opening its doors it has turned out over 100 graduates, virtually all of whom found employment within weeks or months of graduating.

The college's [Sustainable Energy Applied Research Centre](#) is a big plus for students in SLC's renewable energy programs. It matches students and faculty with companies in Eastern Ontario to develop, improve or test products or solve an energy-related problem presented by the business. These projects are a great way to get hands-on

experience working with a real client. The Centre always has a number of projects on the go. In one recent project, SLC teamed up with Queen's University to examine how snow affects the efficiency of solar photovoltaic panels – important knowledge for a northern climate like Canada's.

SLC also offers part-time green-oriented courses, such as one for licensed electricians who wish to broaden their knowledge by learning how to install solar panels, and another course for linepersons – the hardhatted people who maintain and repair the electrical lines on telephone poles and hydro towers – that teaches them how to safely connect solar systems to the electricity grid.

Energy Systems Engineering Technician/technology (ESET)

<http://eset.ati.sl.on.ca>

Students in the Kingston-based [ESET program](#) learn how to help individuals and organizations reduce their energy consumption and costs. Students work on the design and installation of sustainable energy technologies to help reduce the impact of energy use. Participants conduct energy audits, model existing conventional heating and lighting systems and specify energy-efficiency improvements for residential, commercial and industrial buildings. They are trained to determine the sizing, specification and use of solar photovoltaic, solar thermal and other sustainable energy systems.

“Our Energy Systems Engineering graduates working in the solar industry have done very well indeed. Our Wind Turbine Technician/Industrial Electrician Co-op Diploma Apprenticeship program has the distinction of being the only one in Canada that combines a Wind Turbine Technician diploma with in-school training to be certified as an Industrial Electrician. We confidently say that ours is the best program of its kind in Canada.”

– Don Young, Dean, Faculty of Applied Science,
St. Lawrence College



St. Lawrence College's Energy House (www.energyhouse.ati.sl.on.ca) is the site of ESET's practical laboratories in renewable energy. The off-grid training facility **at the Kingston campus** incorporates various types of renewable energy equipment for hands-on training in solar thermal and photovoltaic systems, ground source heat pumps, small wind, solar air heating and other sustainable energy technologies. It also serves as a public education centre.

St. Lawrence College

Environmental Technician

The Environmental Technician program, taught at the Cornwall campus, offers courses in water and air quality, waste management, occupational health and safety and environmental assessment. Program highlights include field courses and a four-week work placement. [The St. Lawrence River Institute of Environmental Sciences](#) is a partner in the program. The River Institute, located on the Cornwall campus, conducts scientific research on the river and surrounding environment. Its scientists help teach many of the program's science and field courses and work with SLC in ongoing program development. Students learn and work with these scientists on a variety of environmental issues.

Geothermal Engineering Technician (Kingston)

The use of geothermal heating and cooling technology is expanding rapidly in Canada. Higher fuel prices and growing concern about climate change from greenhouse gas emissions is creating a rapidly increasing demand for geothermal systems and an encouraging job market for geothermal technicians. The program, beginning in 2012, includes basic engineering courses in math and applicable sciences and thermodynamics. Graduates are trained to work in the geothermal field as systems installers and designers. The program is designed in cooperation with the Canadian GeoExchange Coalition, the industry's national governing body.

Solar Photovoltaic Systems for Electricians (Brockville)

This specialized course is for licensed electricians who wish to expand their skill set by learning about solar PV system design, operation and proper connection to homes and businesses. The 40-hour course includes independent study and in-class sessions. The instructors are licensed electricians with long experience in the solar industry and in working with adult learners. The class is limited to 20 participants.

Wind Turbine Technician (Kingston)

The Wind Turbine Technician program provides students with in-depth knowledge and hands-on experience of the electrical and mechanical aspects of wind turbines. Students learn about fibreglass repair techniques and wind turbine electronics, instrumentation and computer applications. They also receive safety training for working at heights and in confined spaces. Students in the program must have no fear of heights and be physically fit.

Note: This program follows the same curriculum as the Wind Turbine Technician/Industrial Electrician apprenticeship diploma program (below), but is not an industrial electrician apprenticeship training program.

Wind Turbine Technician / Industrial Electrician Co-op Diploma Apprenticeship (Kingston)

This program combines a registered Industrial Electrician apprenticeship with a Wind Turbine Technician Ontario College Diploma. Students will be registered as Industrial Electrician Apprentices while attending college. After graduation they must complete the remaining practical work experience requirements of the apprenticeship program to be eligible for certification as an Industrial Electrician.

This program provides students with a comprehensive understanding of the power generation, electronics and controls of wind turbines. Students gain in-depth knowledge and hands-on experience in all mechanical and hydraulic aspects of wind turbines and become familiar with fibreglass repair techniques. They also receive safety training for working at heights and in confined spaces.

Students also have the opportunity to be certified by BZEE, the German wind industry training institute, whose internationally recognized certification ensures broad access to wind turbine technician jobs. SLC is also working to include training for working on offshore wind turbines. Students have use of an on-site classroom at the nearby Wolfe Island Wind farm, the second-largest wind farm in Ontario.

Student Profile: Joe Hendry

Joe Hendry grew up in an environmentally conscious family where reducing, reusing and recycling was a normal part of everyday life. Now he's found a satisfying environmental career that helps others foster the same habits.

In 2003, after he'd finished high school in Lindsay, Ontario and worked with a local electrician for a couple of years, Joe landed a spot in the then-new Energy Systems Engineering Technology (ESET) program at St. Lawrence College in Kingston. He chose the three-year Technologist stream, a broad-based course of studies that taught him electrical and mechanical theory and how to design and install solar photovoltaic panels, solar walls, solar water heaters and geothermal systems.

equipment and the everyday behaviour of its occupants. Do people turn off lights and computers before leaving at night? Are windows left open on winter days when they shouldn't be? The audit results helped the school board figure out which technologies and practices would reduce the energy use and the expense of operating each building.

Having learned how to conduct energy audits at St. Lawrence College, Joe arrived at the perfect time to assist with the board's plans. He did his job so well that the board hired him on a casual basis after he graduated. When the board created its first-ever Energy/Environment Technologist position, Joe was a natural choice for the job. He began working full-time in July 2010.



Photo: Alec Ross

Dan and Joe Hendry

"It's been an exciting three years working for the school board. I'm putting everything I learned in St. Lawrence's ESET program to good use, and it's making a difference."

— Joe Hendry

Geothermal systems (also known as ground source heat pumps) transfer heat in the ground to the surface so that it can be used for home heating and cooling.

Each third-year ESET student completes a month-long work placement, and Joe's was with the Limestone District School Board in Kingston. At the time, the Board had just begun to examine the energy efficiency of many of its 53 elementary and 11 high schools. The process required school energy audits – detailed examinations of a building that provide useful information about the building's structure, mechanical and electrical

During his time with the school board, Joe has helped to realize many of the energy-audit recommendations. He has helped to install solar PV panels and solar walls at schools, replaced thousands of incandescent light bulbs with more efficient compact fluorescents, and automated a number of school heating and cooling systems so they don't waste gas or electricity. He also applied successfully for significant provincial grants that allowed these projects to take place.

The board's most innovative renewable-energy project to date is a biomass boiler Joe helped to install at the North Addington

Education Centre in Cloyne. Its boiler supplements the school's oil furnace by burning wood pellets as fuel to heat the school, which reduces the school's fuel-oil costs and releases of greenhouse gases. The project involved building two new structures – a shed for the boiler and a silo for 45 tonnes of wood pellets – and laying underground pipes to connect the boiler and the school. "It's been an exciting three years working for the school board," says Hendry, whose elder brother Dan is the school board's Sustainable Initiatives Coordinator. "I'm putting everything I learned in the ESET program to good use, and it's making a difference."

Student Profile: Murray Hodgson

Murray Hodgson's timing was perfect. As he was closing in on his Grade 12 graduation at Sydenham High School, construction crews were putting the finishing touches on an 86-turbine wind park on Wolfe Island, just south of nearby Kingston. Intrigued by the career possibilities offered by the region's newest green industry, Hodgson enrolled in the two-year Wind Turbine Technician/Industrial Electrician course at St. Lawrence College. The first three semesters involved on-campus course work in Kingston where Murray learned about the sophisticated computer, electrical and mechanical systems that make a wind turbine spin and generate electricity. Murray and his classmates also spent one day a week of the final semester at the wind farm's headquarters on Wolfe Island, which includes a classroom used by the college's students and instructors. There, they got first-hand exposure to how an actual wind farm operates and access to the turbines themselves. St. Lawrence College is one of the few schools in Canada that offers a wind-turbine technician training course, a functioning on-campus wind turbine, and an industrial-scale wind farm practically on its doorstep.

After he graduated from St. Lawrence in April 2011, Murray was one of two lucky people in his class to land a coveted job at the Wolfe Island facility, which today employs nine technicians, an office secretary and a site supervisor. The 20-year-old loves his job – his first ever. It's only a half-hour drive and a 25-minute ferry ride away from his Sydenham home. It pays over \$50,000 a year. And the view of Wolfe Island and the Kingston skyline from the turbines is fantastic – impressive enough to make Murray forget that he's perched 80 metres above the ground.



Photo: Alec Ross

Murray Hodgson, Wind Turbine Technician, Wolfe Island Wind Farm

"When you're up there every day, you forget about the height. But you're not bored!"

– Murray Hodgson

Queen's University

www.queensu.ca

[Queen's University](#) in Kingston is consistently ranked as one of Canada's top universities. Over the past decade it has seen steady growth in its courses and programs related to the environment and environmental sustainability. Most of these programs are based at the Department of Biology and in various departments within the Faculty of Engineering and Applied Science.

Green courses offered at Queen's include hands-on work and more academic and theoretical content than the programs at St. Lawrence College, which also contain theory but are more focused on technical skills. If you want to do environmental policy development, design more efficient solar panels or formulate green chemicals that



Photo: Dr. Stephen Loughheed

Researchers and students at the Queen's University Biological Station conduct research and participate in courses in ecology, evolution, conservation and environmental biology. The Station is located on 3000 hectares of protected natural habitat 50 km north of Kingston.

Queen's is also home to several organizations whose activities cover a wide spectrum of the green economy. Most of the people working in them are professors and graduate students, but they may be good places for high school students and university undergraduates to seek information about specialized environmental topics. These organizations include:

- [The Sustainable Bioeconomy Centre](#) – Focuses on bioenergy and other biomass opportunities within the Great Lakes region
- [Institute for Energy and Environmental Policy](#) – Brings together academics, researchers, policy and industry experts to promote trans-disciplinary solutions to environmental problems
- [GreenCentre Canada](#) A national centre of excellence for the development & commercialization of green chemistry technologies that conserve resources and use renewable and non-toxic materials for product development and manufacturing processes.
- [PARTEQ Innovations](#) – Queen's research commercialization office
- [Innovation Park](#) – A facility where academic, industrial and government researchers work together to cultivate ideas and technological discovery and, with help from commercialization and market development experts, bring innovations into the marketplace.
- [Queen's Centre for Energy and Power Electronics Research \(ePOWER\)](#) – Brings together academic and industrial researchers to develop applications in power transmission, alternative energy, power consumption and power application-specific integrated circuits.
- [Queen's - RMC Fuel Cell Research Centre](#) – The researchers here work to improve performance, reliability, and durability of fuel cells while reducing the cost of components and systems through innovations in materials, design and manufacturing.
- [The Queen's Solar Design Team](#) – A student-run team in the Faculty of Engineering & Applied Science. The team operates the Queen's Solar Education Centre, a small house built in the heart of the Queen's campus that incorporates some of the latest solar panels and solar design features. Students use it as a study centre. It is also used by school groups.

don't pollute our water, Queen's may be for you. If you want to install solar panels or ground source heat pumps, St. Lawrence College might suit you better.

Queen's professors and graduate students in various departments across the university are conducting research in:

- Alternative energy – Developing energy-saving improvements in electrical devices; fuel cells; solar heating systems and components; renewable energy engineering; energy policy
- Sustainability – Transitioning away from fossil fuels towards biofuels; waste management and safe containment of chemicals
- Green chemistry harmless chemical methods for separating oil and water, using carbon dioxide and air; impacts of reforestation on greenhouse gas emissions
- Environment – Natural and human impacts on lakes and ecosystems; environmental law and issues related to international climate change agreements, environmental governance, ecosystem management, environmental liability and water law; producing ethanol from renewable resources as a viable alternative for automotive fuel; the effect of climate change on northern ecosystems; food safety and environmentally responsible extraction of mineral resources
- Water Quality – Testing, analysis & monitoring devices; management

of heavy metal contamination in the Great Lakes; environmental chemistry, drinking water chemistry, wastewater treatment and groundwater remediation procedures; tools that protect municipal drinking water

Environmental Science (BSc)

Queen's multidisciplinary [Environmental Science program](#) provides grounding in the natural and physical sciences and examines the human and cultural aspects of environmental issues. Students must complete five basic science courses, including courses in each of biology, chemistry, geography, geological sciences and mathematics. Students may enroll in a Major program to obtain further expertise in science topics. Students who wish to focus in a specific area can enroll in the Subject of Specialization (SSP) program by choosing one of five options: Earth Systems Science (Geography), Environmental Biology, Environmental Chemistry, Environmental Geology or Environmental Life Sciences.

Students in all science programs are exposed to the social context of environmental issues in a series of "integrative" credits, including environmental history, sociology, economics, and policy. Graduates receive a Bachelor of Science (Honours, Environmental Science) degree that will equip them for an environmental science career or for graduate studies.

Potential career paths:

- Government agencies such as the Ministry of the Environment, Ministry of Natural Resources and Environment Canada
- Environmental assessment/
environmental effects monitoring/

environmental analysis

- Teaching/research
- Law/journalism/non-governmental organizations

Environmental Studies (BA, MES)

To work in the environmental field, students must appreciate the scope and complexity of environmental systems, have expertise in a related discipline and the ability to deal with an issue's socio-economic dimensions. That's why Queen's Environmental Studies programs require a concentration in both the environmental sciences and a humanities discipline. Environmental courses include core introductory science courses in areas such as biology, chemistry, geography, geological sciences and mathematics, and integrative courses in subjects including environmental history, sociology, economics, and policy. To complete their Bachelor's degree, students also select a discipline that provides strength in an area such as development studies, economics, human geography, history, sociology, philosophy, or political studies.

The Queen's School of Environmental Studies (SES) has strengths and areas of focus in:

- Analysis of chemicals, their fates in the environment, and pathways for exposure and effects in plants, animals, and humans
- Using a systems approach to understand the impact of human activities on climate change, biodiversity, ecosystem functions and human health
- Solving environmental problems and sustaining living resources through examination of cultural values, social justice and economics

Geo-Environmental Engineering

Students in this program (offered by the Faculty of Engineering and Applied Science) apply engineering and geological principles to detect, prevent, and remediate polluted groundwater and soil and rock contamination from sources including mining waste and oil spills. They learn to identify engineering issues related to site selection and preparation for landfills and other waste management facilities. The program also examines the critical role geology plays in the distribution and migration of groundwater and contaminants.

Potential career paths:

Industries and institutions including resource companies, governmental bodies, remediation teams and consulting groups.

Geography

Of the various sub-disciplines within Queen's Department of Geography, perhaps the one most relevant to a green career is [physical geography](#) (also known as physiography). Physical geographers are concerned with the natural features of the earth's surface, but their work often takes them into the realm of climate science and climate change.

Potential career paths:

Teaching, geographic information specialist, consulting in resource and human capital development, graduate work.

School of Policy Studies

It's possible to do a Masters in Public Administration (MPA) degree at Queen's that focuses on environment and energy issues.

The School of Policy Studies offers courses in renewable energy policy, conventional energy policy, environmental policy, science and policymaking, and Arctic issues.

Potential career paths:

Public service in the Ontario and federal governments.

School of Urban and Regional Planning

[Queen's School of Urban and Regional Planning](#) (SURP) offers a two-year Masters in Planning program that draws on the social sciences, engineering and design to teach students about how to create cities and towns that are environmentally, socially and economically sustainable. One of three areas of concentration for students is Environmental Services (i.e. environmental policy development, planning & management, and assessment).

Potential career paths:

Urban planning, consultancy, urban policy development.

Master's Program in Applied Sustainability

The objective of this program, introduced by the Faculty of Engineering and Applied Science in 2010, is to teach students how to create sustainable engineering solutions that take into account broader sustainability theory. To do this properly, engineering students need both technical education and insight into how public policy affects the success of engineering solutions to sustainability problems that involve many different disciplines, from engineering to social sciences. Faculty members from Chemical Engineering, Civil Engineering, Electrical and Computer Engineering, Geological Sciences

and Geological Engineering, Mechanical and Materials Engineering and Mining Engineering teach the courses. The School of Policy Studies also contributes courses and faculty who co-supervise Master's students.

Doing

A 2010 consultant's study for the Kingston Economic Development Corporation (KEDCO) identified green technology, renewable technology and biotechnology as the major green-related business sectors in the city and the surrounding region.

Of these, solar photovoltaic (PV) is the most active sector, currently offering the greatest employment potential. The sector is anchored at the manufacturing end by [Centennial Global Technology](#) in Kingston and supported by renewable energy companies and electrical contractors across the region who install solar PV arrays on businesses and homes whose owners have signed Feed-in-Tariff ([FIT and microFIT](#)) contracts with the Ontario Power Authority.

As of early 2012, these solar contractors are busiest in Kingston, where the local electrical utility, Kingston Hydro, has generally been quick to approve FIT connections to the provincial grid. In rural areas served by the provincial utility, Hydro One, these approvals have been slower in coming, resulting in fewer connections and less activity for contractors.

While the 86-turbine Wolfe Island wind farm is the second-largest in Ontario, its crew of nine maintenance workers is not expected to grow significantly in the near future. Other regional wind farms on Amherst Island and in Prince Edward County are still in the planning stages, but due to funding constraints and local opposition may not proceed for several years.



Brian Burt, the owner of Burt's Greenhouses in Odessa, heats his greenhouses in winter using a boiler fueled by wood chips. The system produces far less greenhouse gas emissions than Burt's former oil furnace. The wood system also produces biochar, a form of charcoal that can be used to enhance garden soil.

The most common **occupational skill categories** of workers in Canada's environmental sector are:

- Environmental health and safety (40% of environmental employees)
- Waste management (28%)
- Site assessment, remediation and reclamation (20%)
- Environmental communication and public awareness (19%)
- Environmental education and training (18%)
- Water quality (17%)
- Environmental policy and legislation (15%)
- Energy (including alternative/renewable energy or eco-efficiency) (10%)

— ECO Canada

Green and Green-Oriented Enterprises in Eastern Ontario

Sustainable Agriculture

Agrowchem Inc. – agricultural chemical engineering (Kingston)

Burt's Greenhouses – garden plants, biofuels, biochar (Odessa)

HigroCorp – nutrients for hydroponic growing (Kingston)

Forman Farms (Seeley's Bay)

Living Cities – accessible & sustainable agriculture (Kingston)

Local Family Farms – organic food retail (Verona)

Performance Plants Inc. – genetic engineering of seeds (Kingston)

Renewable Energy

37 Solar – solar panel sales & installation (Belleville)

Upper Canada Solar Generation Ltd. (Brockville)

SunEdison (formerly Axio Power Canada) – solar PV (Kingston)

Centennial Global Technologies – solar PV (Kingston)

Cleave Energy Inc. – solar (Picton)

Downunder Solar and Electrical – Solar (Kingston)

Gaia Power Inc. – Solar, wind, hydrogen, fuel cells (Kingston)

Hearthmakers – Energy & water conservation (Kingston)

La Forest Eco-Solar Systems – Solar PV installers (Bath)

McKeown and Wood Fuels Ltd. – solar thermal & PV (Napanee)

Renewable Energy of Plum Hollow Inc. – solar, woodstoves, small wind (Kingston)

Tackaberry Heating & Refrigeration Supply – solar (Kingston)

"[The] larger trend towards sustainability, efficiency and reduced environmental impact has meant that establishments outside of the traditionally defined environmental sector are also employing workers who can apply specialized skills to support environment-related activities."

– Angie Knowles, ECO Canada

Still growing after all these years

Renewable Energy of Plum Hollow was installing solar panels and small windmills in the 1970s, long before it was popular. Originally a small wood stove business, the pioneering Kingston company has become Eastern Ontario's best recognized provider of wood and gas stoves and renewable energy technology. Over the years the firm's installers and system designers – several of whom are graduates of St. Lawrence College's ESET program – have installed more than 2500 wood pellet-burning stoves, and 500 solar panels and small wind turbines at homes, cottages and businesses in the region. In addition to solar power, which received a huge boost in popularity from Ontario's microFIT program, Plum Hollow co-owner Brad Leonard sees woodstoves as a source of strong potential business growth as the price of oil rises. In 2011, Plum Hollow sold and installed twice as many woodstoves as it did the previous year, an upward trend Leonard thinks will only continue.

"The future will be in some sort of biomass fuel," says Leonard. "I don't know when it's going to hit, but it's going to hit. I think it's the next big thing."



Brad Leonard, Co-Owner of Renewable Energy of Plum Hollow

Green and Green-Oriented Enterprises in Eastern Ontario

Environmental Consultants

AEPAY Global Energy Corporation – sustainable energy solutions (Kingston)
Aureus Solutions Inc. – Environmental compliance planning (Kingston)
IBI Group – Architecture, planning, design (Kingston)
J.L. Richards and Associates – engineers, architects, planners (Kingston)
Natural Capital Resources Inc. – Business, marketing (Sydenham)
Pinchin Environmental (Kingston)
WESA – environmental consulting (Kingston)
XCG Consultants – environmental engineers (Kingston)

Environmental Engineering

AME Environmental Inc.
Aquafor Beech Ltd. (Kingston)
Aureus Solutions Inc. (Kingston)

Inspec-Sol – Environmental engineering (Kingston)
Malroz Engineering – Environmental engineering (Kingston)
McIntosh Perry Consulting Engineers (Kingston)
MR Wright & Associates Co. Ltd. (Kingston)
Scott Industrial Services – Environmental engineering; mechanical engineering
XCG Consultants – environmental engineers (Kingston)

Green Building

Bel-Con Design Builders (Belleville)
Cruickshank Construction Ltd. – road building (Kingston)
Eastern Ontario ICF – residential construction (Mallorytown)
Elliot Sage Design & Construction – residential construction (Picton)

Environmental Contracting Services – green building & engineering (Kingston)
Greenline Sustainable Builders (Inverary)
Hughes Downey Architects – architects (Kingston)
M. Sullivan & Sons. Ltd. – commercial and industrial; emerging sector, solar (Kingston)
New Leaf Custom Homes (Kingston)

Green Products & Services

AEPAY Global Energy Corporation (Kingston)
Bar Electric (Centreville)
Daltco Electric – Solar PV; solar thermal; power electronics
Downunder Solar & Electrical (Kingston)
Eco Alternative Energy (Sharbot Lake)
Eco-Net Technologies – Solar thermal (Kingston)
Four-O-One Electric Ltd. (Brockville)
George Whitmarsh Electric (Kingston)

Cleaner, safer chemistry, everywhere

GreenCentre Canada unites green chemistry researchers, industry partners, and commercialization, finance and marketing experts to bring green chemistry innovations from the laboratory to the marketplace. Green chemistry involves designing chemical products and processes that reduce waste, provide safer products and reduce the use of energy and resources. Although GreenCentre Canada is based at Queen's University's Innovation Park, the work it does is by no means confined to Kingston or Eastern Ontario. The chemists, engineers, and commercialization professionals working there collaborate with scientists and companies around the world.



Amy Holland, Product Development Scientist, GreenCentre Canada

Green and Green-Oriented Enterprises in Eastern Ontario

Hogan Brothers Electric (Kingston)
L&M Solar, a division of L&M Building Group Inc. (Kingston)

Laforest Eco-Solar Systems (Bath)

Nature's Powers (North Augusta)

NCP Carbide Precision Machining

(Kingston)

NEDCO (Kingston, Brockville, Belleville, Perth)

Oosterhof Electrical Services (Glenburnie)

Quantum Renewable Energy (Kingston)

R.W. Electric (Kingston)

Renewable Energy of Plum Hollow

(Kingston)

Sol Force Energy Inc. (Napanee)

Strathcona Solar Initiatives (Napanee)

Tackaberry Heating & Refrigeration

Supply – solar (Kingston)

Thompson Electric – Seeley's Bay

Total Solar Energy Consulting Inc.

(Kingston)

Upper Canada Solar Generation Ltd.

(Brockville)

Green Manufacturing

AzTech Associates – conservation & demand management accessories (Kingston)

Bombardier Transportation Canada Inc. – mass transit & monorail systems (Millhaven)

Centennial Global Technology – solar panel manufacturer (Kingston)

Hyroclave Systems Corp. – waste treatment technology (Kingston)

NCP Solar – solar panel mounting & racking systems (Kingston)

MLE Equipment – soil remediation systems (Brockville)

Novelis – rolled aluminum (Kingston)

SPARQ Systems Inc. – solar power inverters (Kingston)

Qubit Systems Inc. – instrumentation for biological science (Kingston)

Research and Development

Bombardier Transportation Canada Inc. – mass transit & monorail systems (Millhaven)

DuPont – solar PV, fuel cells (Kingston)

GreenCentre Canada – green chemicals & processes (Kingston)

Lafarge – concrete production, biofuel pilot project (Bath)

Green Technology

Acumentrics Canada Ltd. – fuel cells (Kingston)

AEPAY Global Energy Corporation – biofuels, fuel cell (Kingston)

Agrowchem Inc. – agricultural chemical engineering (Kingston)

Caduceon Environmental Labs – water quality testing (Kingston)

Eco Alternative Energy – Solar, wind (Kingston)

G&R Energy Management Solutions – solar installations, insulation – (Kingston, Brockville)

Green First Technologies Inc. – solar PV (Napanee)

Haven Home Climate Care – woodstoves, geothermal (Kingston)

Hearthmakers – Energy conservation, energy audits (Kingston)

HigroCorp – Nutrients for hydroponic growing (Kingston)

Joyce Energy Savings – Energy conservation, solar, wind (Kingston)

Norterra Organics – Waste management, bioenergy (Kingston)

Performance Plants Inc. – Genetic engineering (Kingston)

Polyferm Canada – biodegradable bioplastics (Kingston)

Quinte Battery & Renewable Energy Inc. – solar panels, inverters (Belleville)

Qubit Systems – instrumentation for biological sciences (Kingston)

Scott Environmental Services – biofuels (Kingston)

Switchable Solutions Inc. – Waste management (organic wastes) (Kingston)

Waste Management

Scott Environmental Group, Inc. – hazardous waste cleanup & disposal (Kingston)

Water

Caduceon Environmental Labs – water quality testing (Kingston)

Endetec – water quality monitoring (Kingston)

Utilities

Utilities Kingston – energy conservation, solar, water and wastewater treatment (Kingston)

Start Your Own Green Business

Do you have an idea for a green business? Do you have particular skills or knowledge that other people would be willing to pay for? If you do, then there are people in Eastern Ontario who can help you turn your idea or expertise into an actual company. Launching a new business involves doing market research to identify customers and competitors, writing a business plan and finding money for necessary equipment, rent and other startup costs. It's a lot of hard work. So is running the business once it's open. But any entrepreneur will almost always tell you that starting their own business is one of the most satisfying things they've ever done.

Here are some organizations whose staff can help you start your own business, green or otherwise:

KEDCO Entrepreneurship Centre

[The Entrepreneurship Centre](#), part of the Kingston Economic Development Corporation (KEDCO), provides advice, assistance and resources to help a new business succeed.

Launch Lab

Provides services similar to The Entrepreneurship Centre at KEDCO, but targeted specifically at technology entrepreneurs.

PARTEQ

Parteq's role is to identify new inventions and technologies resulting from research at Queen's University, and to help bring these innovations to the marketplace. Over the years it has helped to launch at least 19 successful companies in the healthcare and pharmaceutical fields.

Community Futures Development Corporation (CFDC)

CFDCs are community-based, not-for-profit corporations funded by Industry Canada. Their purpose is to stimulate community and economic development in rural areas. To that end they offer free business consulting, access to investment funding for new and existing businesses and other helpful services. Eastern Ontario CFDCs serve [Frontenac County](#), [Prince-Edward/ Lennox & Addington](#), the [1000 Islands region](#) and [Grenville County](#).

[Leeds & Grenville Small Business Enterprise Centre](#)

Located in Brockville, the Small Business Enterprise Centre offer business startup advice, sources of funding, resources, tools and no-cost consultations for entrepreneurs and owners of new businesses.



Profile: Seed to Sausage

Michael McKenzie spent a decade with the Canadian Forces all over North America as an infantryman, oceanographer and intelligence operator. He also had another life: In his spare time he enjoyed cooking, especially curing and dressing meats and making salamis that he'd give to friends. He became so good at sausage-making that his friends encouraged him to make his hobby a business. Since he was already considering a change in career, in 2009 he moved from his base in Victoria, B.C., back to Ontario and started contacting sausage makers across North America to learn what was involved in running a business. He knocked on the doors of fine restaurants and food retailers in Kingston, Ottawa and Toronto and left samples of his homemade salami for them to try. (These potential customers usually called back.) He spoke with cooks, restaurant owners and with entrepreneurship experts at KEDCO in Kingston and at the Central Frontenac Community Futures Development Corporation (CFDC) who helped him write a business plan. The CFDC tipped him off to a commercial building in Sharbot Lake that was affordable, appropriately zoned and the right size for a food-related business.

In 2011, McKenzie took the plunge and bought the property. Today, his young company, [Seed to Sausage](#), employs four people who every month turn out more than 900 kilograms of sausages containing locally and ethically grown meat, which is butchered on site in the company shop. The products contain fresh herbs and spices and as few chemical preservatives as possible. McKenzie and a handful of distribution companies deliver the lomo, lonzino, pancetta, artisanal bacon, chorizo, sopressata and other products to cities and towns across Ontario. The success of the venture is such that in early 2012 Seed to Sausage will open a retail storefront in Sharbot Lake.

McKenzie's big ambitions are based on a simple premise.

"I just want to make food that I can sell to the best restaurants in Canada and in the world," says McKenzie, 32. "I have values and ideals that I stick to when I make sausage, but people buy it because it tastes good."



Michael McKenzie, Seed to Sausage

Photo: Courtesy of Seed to Sausage

Appendix: Other Green Learning Programs & Resources

CRAFT Kingston – The Collaborative Regional Alliance for Farmer Training (C.R.A.F.T.) is an provincial organization of farmers who offer internships for people who would like to work on a farm. About a dozen farms and agriculture-related organizations are members of the Kingston chapter.

Employment Ontario Service Providers – help local residents and newcomers to the city prepare for and find employment. They typically have teams of career counselors, a resource library, and employment workshops for clients. Search online for 'Employment Agencies' in your community.

Kingston Technology Council – A broad-based networking group whose mission is to help grow the technology sector in Kingston.

Loving Spoonful – A Kingston organization that collects surplus food from grocery stores, caterers, restaurants, hotels and farmers – food that would otherwise go to waste – and delivers it to local emergency meal providers such as homeless shelters and hot meal programs. Loving Spoonful also works with other food justice initiatives such as community gardens, grow-a-row campaigns and farmers markets.

New Farm Project – Sponsored by the National Farmers Union, the NFP provides resources for new and experienced farmers in the Kingston area, including annual skills workshops and internships through C.R.A.F.T. Kingston.

Sustainable Kingston – Sustainable Kingston is an organization created by the City of Kingston as a way to implement the goals of the city's Integrated Community Sustainability Plan. This is the blueprint for Kingston's vision of being "Canada's most sustainable city." Sustainable Kingston partners are individuals and organizations who have voluntarily committed to the city's sustainability goals. They post a summary of their sustainable activities on the organization's website.

SWITCH – A Kingston-based networking group for businesses and researchers working in the sustainable energy field in Eastern Ontario. Its monthly meetings are a great place to network and connect with green employers, researchers and students.

Transition Kingston – As part of the global Transition Network, Transition Kingston promotes innovative, sustainable modes of living. Among other activities, it offers periodic skills-sharing workshops.

Environmental Careers Organization
ECO Canada is an organization whose purpose is to connect employers, educators, students and job-seekers in the environmental sector. It has regular internship and job postings and news articles about what's happening in various green sectors in Canada.

Sustainable Eastern Ontario
A network of environmental organizations and businesses in Eastern Ontario. A good

one-stop-shopping site to learn about green activities in our region.

Work Green

This is an excellent place to learn about different types of environmental careers. You can download a set of Green Jobs Profiles that target southwestern Ontario, but which contain information useful for an environmental job seeker anywhere.

GoodWork Canada

A green-job search engine.

The Green Pages

Green news from across Canada and the world, plus an excellent Canada-only job-search tool.

Great Green Careers

Another green job search engine.

WWOOF Canada

If you'd like to work on an organic farm in Canada or elsewhere in the world, this site can help you find one.

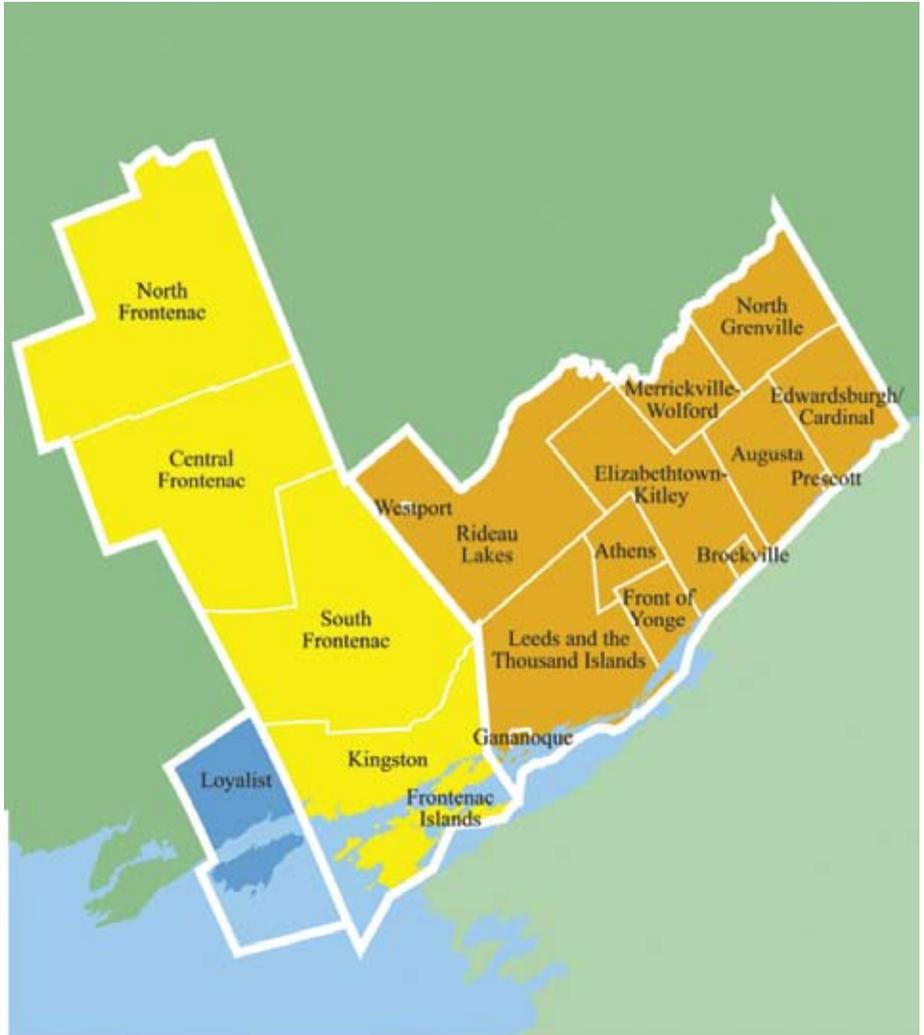
About the 1000 Islands Region Workforce Development Board

The 1000 Islands Region Workforce Development Board (WDB) was created in 1996 and has carried out over 90 projects and partnerships relating to workforce development. Its volunteer board of directors includes representatives from labour, business, education, training and equity organizations.

The 1000 Islands Region WDB represents a geographical area of approximately 7,300 square kilometers and a population of over 258,000 people. It is responsible for communities within the Counties of Leeds and Grenville, the County of Frontenac and Loyalist Township (in the County of Lennox and Addington). The Board receives its core funding from the Ministry of Training, Colleges and Universities.

The main role of the 1000 Islands Region WDB is to help improve the conditions of the local labour market by:

- Working with the community to identify and respond to important trends and issues in the local labour market;
- Facilitating a local planning process where community organizations and institutions agree to work together to address local labour market issues of common interest;
- Creating opportunities for partnership development activities and projects that respond to more complex and/or pressing local labour market challenges; and
- Organizing events and undertaking activities to promote education, training and skills upgrading.



The approximate geographical area covered in this guide

Messages of Support

The Counties of Frontenac and Leeds and Grenville are a hotbed of environmental activism with several progressive municipal administrations demonstrating an interest in sustainable economic development and environmentally conscious decision-making. This support has encouraged a wide range of Green Energy businesses and practices within existing companies.

The 1000 Islands Region Workforce Development Board, in consultation with community partners involved in green energy and grassroots environmental groups, has created the Eastern Ontario Green Career Guide to provide career direction and information on the green energy sector in this region.

Whether you are making employment choices, training decisions or choosing to start your own business, the Green Career Guide will help you make the necessary connections. Our hope is that you find the information useful to fulfill your needs.



Sandra Wright
Executive Director
1000 Islands Region Workforce Development Board

The City of Kingston is committed to achieving its goal of becoming “Canada’s most sustainable city”. We have taken several tangible steps in that direction by, for example, mandating that all newly constructed municipally owned buildings must meet or exceed high standards for energy efficiency and by procuring, whenever feasible, goods and services from local suppliers. These are only two examples of how Kingston is attempting to reduce our greenhouse gas emissions and our environmental footprint. This is an ongoing process and there is much more we can do, both within our corporation and across the community as a whole, to realize our vision of sustainability. Small, progressive changes, made by many, can create larger, lasting changes in the community’s collective mindset and in our daily habits.

If you are reading this guide, you are just the sort of person who will help us achieve our goal. Whether you are seeking training for a green career or exploring job opportunities in renewable energy, biotechnology or some other environment-related field, I hope you will find what you are looking for within Kingston or the surrounding region in South-Eastern Ontario. The Green Career Guide is an excellent and informative place to begin that search.



Mark Gerretsen
Mayor
City of Kingston

Messages of Support

Welcome to the Eastern Ontario Green Career Guide. This guide will help you navigate the many new and changing career options that our green economy is developing. As we move from reliance on fossil fuels for our energy to clean and renewable sources, there will be dramatic changes in our economy. If you are making choices about your career, you will find information in this guide that will help you. New and exciting careers are emerging in renewable energy fields like solar, wind and geothermal as well as in traditional sectors like automotive, construction and service sectors that are dramatically different than anything that now exists. I encourage you to fully investigate your options and I wish you every success in your future.



Chris Whitaker
President and CEO
St. Lawrence College

Queen's University is dedicated to equipping young men and women with the sort of knowledge and creativity that will be necessary to solve pressing environmental problems in Eastern Ontario and around the world. Part of that role involves leading by example, and in recent years Queen's has taken steps to reduce its environmental footprint by installing solar panels on many campus roofs and building a gas-fired co-generation plant that simultaneously heats campus buildings and offsets peak-hour demand on Ontario's electrical grid. Other green projects, large and small, have been implemented in every corner of the University. The approach on the academic front has been similarly broadly-based. Several courses and programs, including our Master's in Applied Sustainability and the Environmental Studies program, are structured to reflect the fact that most environmental issues don't exist in isolation, but also include economic, social and cultural dimensions. Every year, scores of Queen's students apply their multidisciplinary learning in these areas to sustainability projects that help improve Kingston and the surrounding region. Students in the School of Urban and Regional Planning, to cite but one example, have developed innovative design proposals for the rejuvenation of a troubled section of Kingston's main street.

Queen's is pleased to be part of the Eastern Ontario Green Career Guide, which describes some of our major green-oriented programs. However, what's listed here only hints at the extent of the biology, engineering, social science and other courses at Queen's that could lead to or contribute to a fruitful green career in green research, manufacturing or policy development, locally or farther afield. I invite you to visit our website at www.queensu.ca and explore the many opportunities we have to offer.



Steven N. Liss, PhD
Vice-Principal (Research)
Professor, Environmental Studies and Chemical Engineering
Queen's University

Messages of Support

KEDCO is committed to the key issue of long-term economic sustainability for the City of Kingston. We endorse the City's vision of Kingston as Canada's most sustainable city and we believe that a green economy is our future. Our unique positioning with three major academic institutions combined with innovative entrepreneurs who see the potential for Kingston to be a leader in bio-economy, alternative energy and green technologies ensures that we are well on our way to realizing our vision.

Green success stories abound in Kingston. Endetec, part of Veolia Water Solutions & Technologies, the world's largest environmental services company, provides automated microbiological testing to monitor the safety of water quality. Switchable Solutions, a spin –off company of GreenCentre Canada, has commercialized a green solvent to separate and reclaim both types of polystyrene into reusable pellets, potentially diverting as much as 50,000 tonnes from landfills every year in Ontario alone.

For those looking to join the green economy, the Eastern Ontario Green Career Guide is an excellent resource to the many academic programs, employers and resources available to you in the region. We look forward to you joining us in Kingston.



Jeff Garrah
Chief Executive Officer
Kingston Economic Development Corporation

The Kingston, Frontenac and Lennox and Addington (KFL&A) Area has New Energy in all senses of the word. Businesses, institutions, households and individuals are engaged in transforming our economy, our lifestyles and our communities so that they become even more economically and environmentally sustainable. KFL&A have joined forces to coordinate their efforts and to capitalize on a flood of new activity as the region develops its renewable energy resources and new economy opportunities.

The New Energy project is an ambitious, long-term initiative to position and market the Kingston-Frontenac-Lennox and Addington area as a region charting the path that other will soon follow. By sharing information, successes, and by coordinating efforts to help us all see the benefits of change, the New Energy Project has already begun to multiply current successes and to ensure that the region's new economy continues to grow even faster than the sum of its many impressive parts.

One of the most important elements of success is education and job creation. The region is already training an impressive number of students interested in the 'green economy' and has much to offer them. The Green Career Guide is an important tool for the New Energy Project, and gives students an overview of the educational opportunities that the region has to offer. The New Energy Project staff supports the development of the guide and looks forward to using it to attract and retain more educated students for our region's green economy.



Ruth Noordegraf
Coordinator, The New Energy Project

Special Thanks

The 1000 Islands Region Workforce Development Board would like to thank the following organizations for providing their input and expertise in the compilation of information contained in this report:

- St. Lawrence College
- Queen's University
- Ontario East Economic Development Corporation
- Launch Lab
- KEDCO
- Loyalist College
- The Limestone District School Board

We would also like to thank the many Economic Development organizations, Chambers of Commerce and employers in the 1000 Islands region who assisted in providing guidance and feedback in the development of this guide.

The content of this publication is provided for information purposes only and is not an endorsement of content or organizations listed within. The 1000 Islands Region Workforce Development Board assumes no responsibility to the user for the consequences of any errors or omissions.

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The views expressed in this document do not necessarily reflect those of Employment Ontario.



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