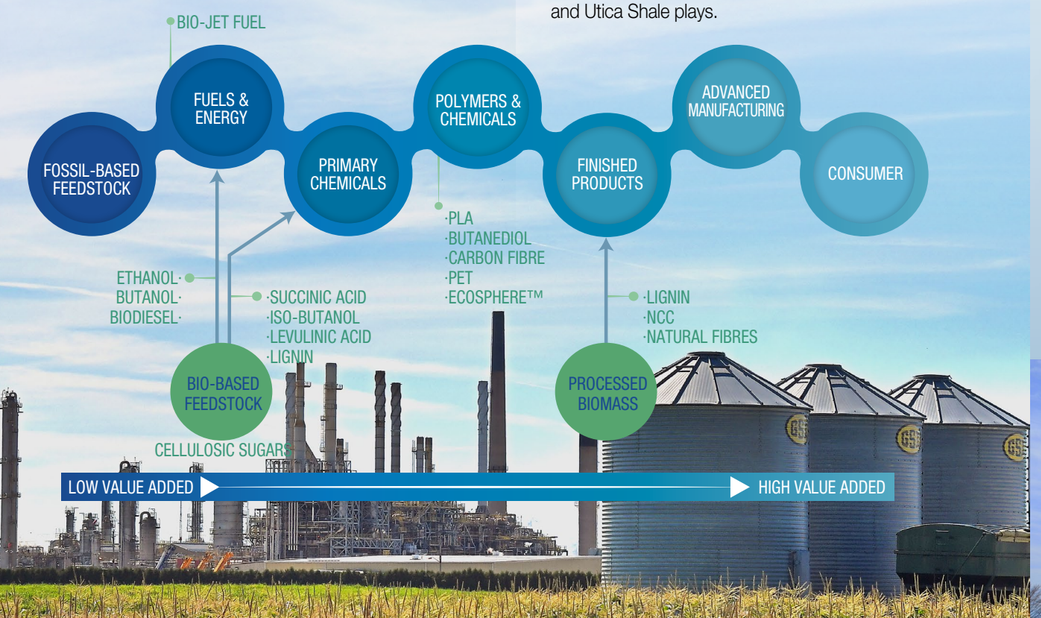
ABOUT THE SARNIA-LAMBTON HYBRID CHEMISTRY CLUSTER

By integrating the established petrochemical and refining industry with Ontario's most abundant supply of agricultural feedstocks, Sarnia-Lambton is Canada's premier location for the development of and investment in clean, green, and sustainable chemistry technologies, and the nation's first and most established hybrid chemistry cluster.

The Sarnia-Lambton Hybrid Chemistry Cluster is recognized worldwide as North America's leading centre for bioindustrial manufacturing and R&D, with companies at every development stage, from bench scale to pilot plant to full-scale commercialization.

HYBRID CHEMISTRY VALUE CHAIN



FEEDSTOCK AVAILABILITY

Lambton County - a leading producer of soybeans, corn, and wheat - offers access to high-volume sources of renewable and fossil-based materials from across Sarnia-Lambton and Southwestern Ontario.

Renewable Feedstocks
– Southwestern Ontario

- Corn ..... *265 million bushels*
- *Soybeans*..... *121 million bushels*
- Wheat..... *72 million bushels*
- Residual Biomass ..... *2,100, 000 tonnes* (corn stover and wheat straw)
- Sugarbeets ..... *30,000 acres* (potential)
- High-Purity Sugars and Starches
- Municipal Solid Waste and Waste Oils

Fossil Based Feedstocks

Pipeline supply of crude oil, bitumen, natural gas, and natural gas liquids from Western Canada, and Marcellus and Utica Shale plays.

COMMERCIALIZATION HUB

The Hybrid Chemistry Cluster is supported through a commercialization hub process encouraging the development of an idea from research, to incubation, to acceleration and commercialization. This allows technologies and products to be developed from concept to production, all while supported by local organizations and infrastructure, accelerating growth and increasing profitability.

Companies are currently operating industrial bio-based facilities at every stage, from bench scale to pilot plant to full-scale commercialization.

Bioindustrial Innovation Canada Provides strategic investment, advice, and services to developers of clean, green and sustainable technologies, aiding in the commercialization of sustainable chemistry-based products.

INNOVATION, RESEARCH, AND DEVELOPMENT

Lambton College Research & Innovation
A global leader for collaborative applied research, development, innovation, education, entrepreneurship, and commercialization – facilities include the Centre of Excellence in Energy and Bio-Industrial Technologies.

Ranked as one of Canada's TOP 3 RESEARCH COLLEGES for three consecutive years

Western Sarnia-Lambton Research Park
Canada's largest clean-tech incubator, the Commercialization Centre provides companies access to office, laboratory and pilot plant infrastructure for research and commercialization.

2016 Outstanding Research Park Award

CONTACT US

SARNIA-LAMBTON ECONOMIC PARTNERSHIP
1086 Modeland Road
Building 1050, Suite 100
Sarnia, ON, Canada N7S 6L2

519-332-1820
contact@sarnialambton.on.ca
sarnialambton.on.ca
SLEconomicDev
sarnialambtonecpart

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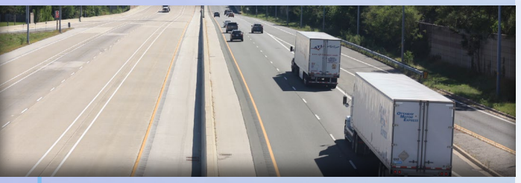
TRANSPORTATION

Located on the Canada/USA border in the heart of the Great Lakes Basin, Sarnia-Lambton provides access to major road, rail, water, air and pipeline corridors to ensure a smooth flow of inputs and end-products across the hybrid chemistry value-chain.

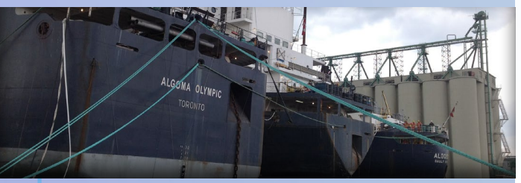
Rail

Mainline Class I railroad service from Canadian National (CN) and CSX Transportation. The St. Clair Tunnel allows movement of goods to the US Midwest, US Gulf Coast, and eastern US ports.



Road

Linked to the Ontario 400-series highway system via Highway 402, and with access to the U.S. Interstates I-69 and I-94 by the twin-span Blue Water Bridge border crossing, Sarnia-Lambton is located within a one-day drive to 65% of the US market, and major Ontario and Quebec markets.



Water

Direct access to several 700+ foot liquid loading docks along the St. Clair River allow ships to access the Atlantic Ocean via the St. Lawrence Seaway System.

INDUSTRIAL INFRASTRUCTURE & UTILITIES

Sarnia-Lambton has the infrastructure, utilities and industrial base to support all forms of industrial activity, including the capital-intensive manufacturing of newly developing clean, green, and sustainable bio-based technologies.

- 2,800 MW of natural gas, solar, & wind generated power.
- Pipeline supply of abundant and affordable natural gas from the Enbridge Gas Dawn Hub – Canada's largest natural gas trading hub.
- The St. Clair River provides billions of litres per day of cooling and process water supply, and wastewater capacity exists.

COMPANIES IN THE HYBRID CHEMISTRY CLUSTER

BIO/RENEWABLE BASED

Cargill · LCY BIOSCIENCES INC · Woodland Biofuels · Cellulosic Sugar Producers Co-operative® · ORIGIN · BENEFUEL® · FORWARD WATER TECHNOLOGIES · SUNCOR · FORGE HYDROCARBONS

FOSSIL BASED

ARLANXEO Performance Elastomers · ENBRIDGE Life Takes Energy · PEMBINA · CABOT · PRAXAIR · PLAINS ALL AMERICAN PIPELINE, L.P. · CF · INEOS STYROLUTION · TransAlta · DOW · NOVA Chemicals® · Imperial · SUNCOR · Shell

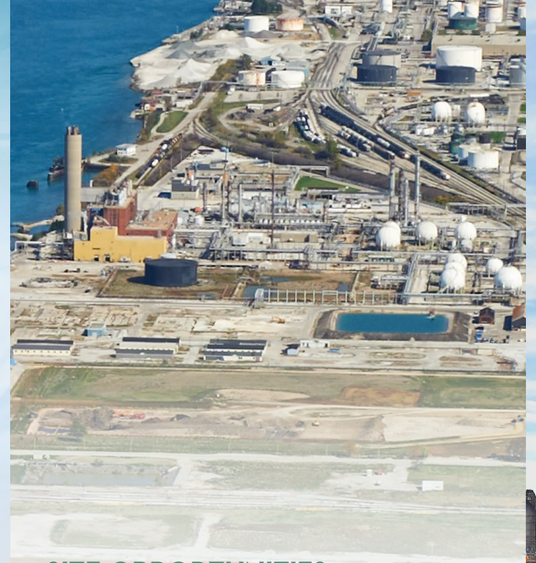
WORKFORCE & TRAINING

Sarnia-Lambton has a labour force of 64,500, with over 21,700 people employed in manufacturing and service industries and businesses. The total labour force within a 100km radius is almost 550,000.

- Dependable and abundant supply of skilled labour. The region's talent pool is exceptionally strong in the areas of science, engineering, process operations, instrumentation, metal fabrication and managerial ability.
- Lambton College works cooperatively with bio-based companies to provide technology and trades programs that meet industry demand for skilled employees.

INDUSTRIAL SUPPORT

Industrial support services infrastructure to support the Hybrid Chemistry Cluster from site selection to operation. This is accommodated by the 1,200 industrial related companies in the sectors of manufacturing, construction, utilities and communications, industrial services, warehousing and transportation, and highlighted by the **Sarnia-Lambton Industrial Alliance.**



SITE OPPORTUNITIES

Greenfield and brownfield sites are available for the development of new hybrid chemistry facilities that require heavy industrial zoning and have large utility requirements.

The **Bluewater Energy Park** and **Bio-Industrial Park Sarnia** are fully serviced industrial parks ideal for pilot, demonstration, and full-scale chemical facilities, with direct connections to extensive shared infrastructure. Services at both sites include:

- **"Behind-the-fence" energy pricing with potential savings of 35-40% on energy costs.**
- **Potential to save up to 20% on capital costs through shared infrastructure.**
- Electrical distribution throughout sites.
- CSX and CN rail access with spur lines throughout site.
- Access to natural gas, hydrogen, nitrogen and compressed air via pipeline.
- Steam at multiple pressures.
- Service water, fire water and wastewater lines throughout the sites.
- 700+ foot marine terminals for ocean and lake freighter service.

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HYBRID CHEMISTRY CLUSTER