



ONTARIO EAST SUPPLY CHAIN ANALYSIS

MARCH 2021





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1. Introduction

The Ontario East Economic Development Commission engaged MDB Insight to develop an updated supply chain analysis to support the region's investment attraction activities. The region had previously identified opportunity sectors Food and Beverage, Advanced Manufacturing, Logistics, Distribution and Warehousing. The project team engaged in four activities:

A Supply Chain Trends Analysis

Three trends were explored that impact the identified sectors:

- **Artificial Intelligence (AI):** The development of new technology to support production, sales and logistics.
- **Supply Chain:** Strengthening fragile supply chains and reshoring.
- **Technology Adoption:** The increasingly necessary investment in technology to support productivity gains.

A Supply Chain Data Analysis

Utilizing EMSI Analyst, the identified sectors were analyzed at the 4-Digit NAICS level to identify sub-sectors and spending on imports. The data available through EMSI Analyst on employment and business counts are based on projections, and the import spending tables are based on 2017 Statistics Canada data. The analysis is not intended to provide exact figures but to showcase targeting data to identify sectors to investigate further. Eight sub-sectors were identified that hold promise within the three sectors identified by the OEEDC.

Figure 1: Identified Sub-Sectors

Identified Sub-Sectors
Plastic product manufacturing
Motor vehicle parts manufacturing
Aerospace product and parts manufacturing
Electrical equipment manufacturing.
Agricultural, construction and mining machinery manufacturing
Pharmaceutical and medicine manufacturing
Farms
Other support services



Ontario East Stakeholder Engagement

The preliminary findings of the sector analysis were shared with 17 Ontario East members on February 26. The group shared a wide range of feedback and broadly agreed with the identified sectors. The group also shared 53 significant investments in their communities since 2015, most of which aligned with the identified sectors:

- Advanced Manufacturing – 15 Investments
- Food and Beverage – 23 Investments
- Logistics, Distribution and Warehousing – 10 Investments.

Trade Data and Next Steps

Ontario trade data was accessed to identify specific markets for import substitution and investment attraction. The markets that were the biggest sources of imports to Ontario in 2019 represent the highest value targets for further supply chain investigation.

Figure 2: Source of Imports to Ontario 2019

Top Three Countries	Top Three States
United States (53%)	Michigan (7%)
China (12%)	Ohio (5%)
Mexico (7%)	New York (4%)

Source: Government of Ontario: Trade Fact Sheet¹

¹ Ontario Trade Fact Sheet, sourcefromontario.com/tradefactsheet/en/page/tradefactsheet_ontario.php



2. Supply Chain Trends

A scan of influential trends affecting the supply chains of OEDC's target sectors reveals three major themes.

Artificial Intelligence: The development of new technology to support production, sales and logistics.

AI has enhanced technology and analytics that support the identified sectors and the broader economy of Eastern Ontario.

- **Hyper-Personalized Sales:** Consumption patterns are being analyzed at the personal and company level, supporting targeted products and sales channels. For example, Coca-Cola utilized AI in custom fountain drink dispensers to develop new products².
- AI is a growing aspect of manufacturing. 29% of AI implementations are for maintaining machinery and production assets³.
- **North America Is Confident in Automation:** Over half of respondents to a North American survey of manufacturing leaders feel they meet or exceed industry standards on automation processes⁴.
- **New Product Development:** Including regionalized products and increased demand for plant proteins⁵.
- The Government of Canada has invested in Artificial Intelligence for its Logistics Supercluster Support Program⁶.
- Boston Consulting Group's recent study, *The Rise of the AI-Powered Company in the Postcrisis World*, found that in the four previous global economic downturns, 14% of companies were able to increase sales growth and profit margins⁷ through being early adopters of technology. This adaptation of AI includes machine learning to improve processes, sorting and packaging.

Supply Chain: Strengthening fragile supply chains and reshoring.

- **Leaving Large and Costly Cities:** More than 51% of respondents said their clients are considering moving their business operations from city centres to suburban and rural locations. One respondent

² How Artificial Intelligence is Revolutionizing Food Processing Business, towardsdatascience.com/how-artificial-intelligence-is-revolutionizing-food-processing-business-d2a6440c0360

³ 10 Ways AI Is Improving Manufacturing In 2020, forbes.com/sites/louiscolombus/2020/05/18/10-ways-ai-is-improving-manufacturing-in-2020/?sh=3314672f1e85

⁴ Reshoring creates opportunities for manufacturers in 2020, blog.thomasnet.com/reshoring-creates-opportunities-for-manufacturers-in-2020

⁵ Exploring four key food trends for 2020, canadianhogjournal.com/2020/06/01/exploring-four-key-food-trends-for-2020

⁶ Artificial Intelligence for Logistics Supercluster Support Program, nrc.canada.ca/en/research-development/research-collaboration/programs/artificial-intelligence-logistics-supercluster-support-program

⁷ The Rise of the AI-Powered Company in the Postcrisis World, bcg.com/en-ca/publications/2020/business-applications-artificial-intelligence-post-covid



said that clients would move to Tier 2 and Tier 3 metros, and another said that decisions would be heavily influenced by proximity to supply chains⁸.

- Value Chain Redundancy⁹ (Biotech, Medical Devices and Pharmaceuticals): In a recent survey by Thomas, a New York-based industrial sourcing platform, two in three manufacturers (69%) indicate they are 'likely' to 'extremely likely' to re-shore (up from 54% in February 2020), with agricultural, energy/utilities and food and beverage leading in interest¹⁰.
- The Need for Skilled Labour and Apprenticeships: One in three (38%) companies surveyed are actively hiring. Industries engaged in apprenticeship programs were less impacted by the lack of skilled labour¹¹.
- Reshoring a top priority in 2020¹², Dana Gardener, principal analyst at Interarbour Solutions, indicated that 2020 was the year of disruption and 2021 will establish new norms. Site Selection Magazine's annual survey of site selection consultants in November of 2020 reported that 41% of their clients considered more reshoring projects¹³.

Technology Adoption: The increasingly necessary investment in technology to support productivity gains.

- Large Robotics Investments: Robotics and AI are projected to infiltrate all stages of the supply chain¹⁴ with investment expected in manufacturing, logistics, packing and sorting, palletizing, depalletizing, material handling, semiconductor and electronics logistics¹⁵.
- The trend towards increased automation is causing a reduction in the required workforce and shifting the skills needed.
- Remote Working (Employee Analytics Software): In Site Selection Magazine's annual survey of site selection consultants in November of 2020, 68% of respondents said they expected their clients' shift to more remote work to continue even after the pandemic subsides.

⁸ 5 Ways COVID-19 Changed Site Selection, siterelection.com/issues/2021/jan/site-selectors-survey-five-ways-covid-19-changed-site-selection.cfm

⁹ Canadian manufacturers in position to gain from supply chain disruptions, globaladvantageconsulting.com/canadian-manufacturers-in-position-to-gain-from-supply-chain-disruptions

¹⁰ Manufacturers Rethink Supply Chains, Eye Reshoring After Events of 2020, ttnews.com/articles/2020-events-force-manufacturers-rethink-reshoring-operation-plans

¹¹ COVID-19's Impact on North American Manufacturers, inboundlogistics.com/cms/article/covid-19s-impact-on-north-american-manufacturers

¹² Supply chain trends for 2021 include reshoring, searcherp.techtarget.com/feature/Supply-chain-trends-include-reshoring-digitization

¹³ Five Ways the Pandemic Has Changed Site Selection, iedconline.org/blog/2021/02/02/business-attraction-and-marketing/five-ways-the-pandemic-has-changed-site-selection (Member Only Portal)

¹⁴ Robotics and AI Trends: The 2021 Edition, <https://insights.roboglobal.com/robotics-and-ai-trends-the-2021-edition>

¹⁵ Industrial Logistics Robots Market, marketwatch.com/press-release/industrial-logistics-robots-market-latest-trends-and-growth-opportunities-analysis2022-2031-fanuc-schaffer-krones-2021-01-14?tesla=y&tesla=y



- eCommerce Boom: Shopify's annual trends report reported offline spending shifted online with products rarely bought online are now eCommerce staples. And immediacy, convenience, and speed are top consumer demands¹⁶.
- Canada is Lagging Behind Peers: Canada ranks 12th of 16 peer countries in the Conference Board of Canada's innovation rankings¹⁷. Underinvestment in machinery and equipment drives Canada's lagging productivity growth indicating Canadian firms are behind the curve in technology adoption¹⁸.
- New Digital Tools: The development and adoption of digital twins and digital supply networks, which are recreated digital copies of physical assets, allow for deeper productivity analysis and support greater workforce agility¹⁹.

¹⁶ The Future of Ecommerce, shopify.ca/enterprise/the-future-of-ecommerce

¹⁷ Innovation, conferenceboard.ca/hcp/provincial/innovation.aspx

¹⁸ SUPPORTING BUSINESS SCALE-UP AND TECHNOLOGY ADOPTION, cme-mec.ca/blog/initiatives/supporting-business-scale-up-and-technology-adoption-encouraging-business-scale-up

¹⁹ Deloitte 2021 Manufacturing Outlook, deloitte.com/us/en/pages/energy-and-resources/articles/manufacturing-industry-outlook.html



3. Supply Chain Analysis of Ontario East’s Key Sectors

The Ontario East Economic Development Commission identified three sectors for the supply chain analysis; Food and Beverage, Advanced Manufacturing and Logistics, Distribution and Warehousing. Utilizing EMSI Analyst, the three sectors were analyzed at the 4-digit NAICS level to identify workforce and business concentrations in specific sub-sectors and their import spending.

Eight sub-sectors were identified for further investigation due to their relative strength in Eastern Ontario, significant spending on imports and alignment with industry trends. The table below illustrates the common threads between those eight sub-sectors, the organization’s three target sectors, and the industry trends identified above.

Figure 3: Common Threads Between Target Sub-Sectors

Sub-Sectors	Food and Beverage	Logistics, Distribution and Warehousing	Advanced Manufacturing	Trends Impacting the Sub-Sector
Plastic product manufacturing	Significant Imports	Significant Imports	Significant Imports and Major Sector	Supply Chain, AI, Technology Adoption
Motor vehicle parts manufacturing	-	Significant Imports	Significant Imports and Major Sector	Supply Chain, AI, Technology Adoption
Aerospace product and parts manufacturing	-	Significant Imports	Significant Imports and Major Sector	Supply Chain, AI, Technology Adoption
Electrical equipment manufacturing	Input Sector	Input Sector	Significant Imports, Significant Sector	Supply Chain, AI, Technology Adoption
Agricultural, construction and mining machinery manufacturing	Major Input Sector	-	Significant Imports	Supply Chain, AI, Technology Adoption
Pharmaceutical and medicine manufacturing	-	-	Significant Imports	Supply Chain, AI, Technology Adoption
Farms	Major Sector and Significant Imports	Significant Imports	Input Sector	Supply Chain, AI, Technology Adoption
Other support services	Significant Imports	Input Sector	Input Sector	AI, Technology Adoption

The sub-sector with the highest commonality between the sectors is Plastic Product Manufacturing. The sector has a significant workforce, and business concentrations in the region and its products are major inputs into all three OEEDC identified sectors.



3.1 Food and Beverage Overview

Employment in the Food and Beverage sector in Eastern Ontario is projected to grow 7.1% by 2027, 2% faster than employment growth in the sector at the national level. The figure below highlights Food and Beverage sub-sectors identified by the sector analysis. The sectors were chosen based on the number and concentration of employees and businesses in the region and large employers.

Figure 4: Eastern Ontario Food and Beverage Sector Overview

Sector	Employees (2021)	LQ (2021)	Number of Businesses	Large Employers 100+
Beverage manufacturing	2,334	0.87	152	1
Dairy product manufacturing	2,111	1.32	34	8
Bakeries and tortilla manufacturing	1,259	0.40	120	2
Grain and oilseed milling	575	1.28	8	3
Cannabis product manufacturing	195	1.15	6	1
Other food manufacturing	525	0.23	106	3

Source: Stats Canada, Emsi 2020.1

The figure below highlights imported purchases by the food and beverage sector in Eastern Ontario and represents opportunities for supply chain redundancy and substitution.

Figure 5: Imported Purchases from the Food and Beverage Sector in Eastern Ontario

Purchases from	Imported Purchases	% Imported Purchases
Farms	\$483,735,966	47.1%
Plastic product manufacturing	\$17,642,024	33.0%
Other support services	\$1,581,857	36.7%
Boiler, tank and shipping container manufacturing	\$22,335,467	70.0%
Sugar and confectionery product manufacturing	\$17,515,650	44.0%
Converted paper product manufacturing	\$12,567,145	21.8%

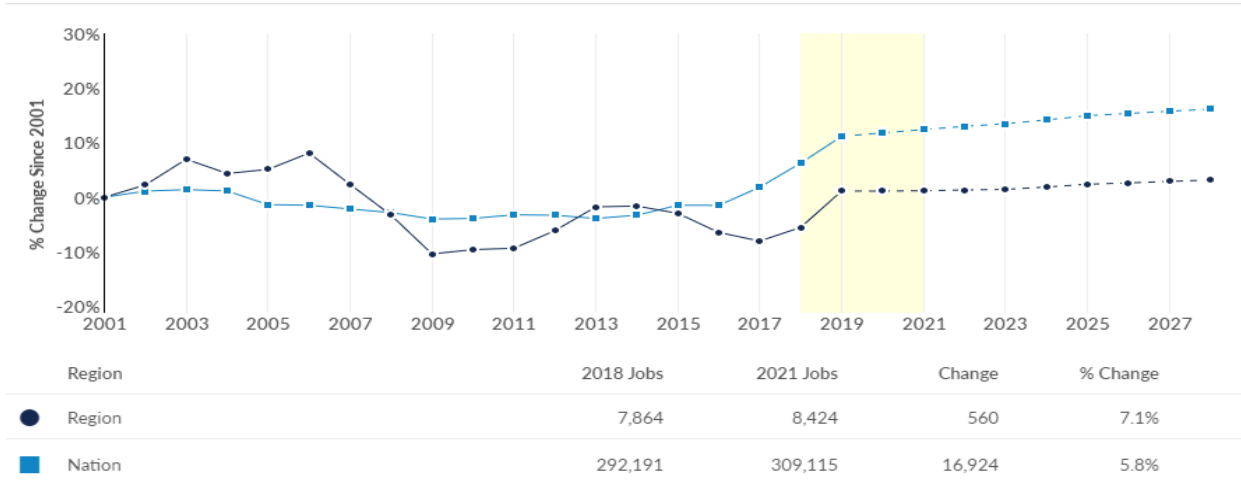
Source: Stats Canada, Emsi 2020.1



The following figure indicates the projected employment trends in Eastern Ontario in the food and beverage sector. Employment in the region is projected to grow by 560 jobs or 7.1%, compared to the national projection of 16,924 or 5.8%.

Figure 6: Employment Trends in Food and Beverage (Ontario East versus Nation-wide)

Regional Trends



Source: Stats Canada, Emsi 2020.1



3.1.1 Food and Beverage Sector Employment Trends

The following figure highlights the growth projections of sub-sectors within the food and beverage sector in Eastern Ontario. The sub-sectors with the highest number of projected jobs in 2021 are:

- Beverage manufacturing (2,334 jobs)
- Dairy product manufacturing (2,111)
- Bakeries and tortilla manufacturing (1,259).

Figure 7: Highest Industry Location Quotient Food Processing

Description	2018 Jobs	2021 Jobs	Change %	2021 LQ
Animal food manufacturing	217	219	2	0.37
Grain and oilseed milling	717	575	(142)	1.28
Sugar and confectionery product manufacturing	301	255	(47)	0.45
Fruit and vegetable preserving and specialty food manufacturing	177	131	(45)	0.12
Dairy product manufacturing	1,847	2,111	264	1.32
Meat product manufacturing	802	783	(19)	0.21
Seafood product preparation and packaging	12	13	1	0.01
Bakeries and tortilla manufacturing	1,106	1,259	153	0.40
Other food manufacturing	544	525	(19)	0.23
Beverage manufacturing	2,111	2,334	223	0.87
Tobacco manufacturing	25	23	(2)	0.23
Cannabis product manufacturing	<10	195	Insf. Data	1.15
Total	7,864	8,424	560	

Source: Stats Canada, Emsi 2020.1



3.1.2 Food and Beverage Sector Businesses by Size

The following table showcases the number of businesses by size in each Food and Beverage sub-sector. The top sub-sectors by the number of businesses with 100+ employees are:

- Dairy product manufacturing (8 businesses)
- Grain and Oilseed Milling (3)
- Other Food Manufacturing (3).

Figure 8: Food and Beverage Sector of Businesses by Size

Description	Number of Employees								Indeter- minate	Total
	1-4	5-9	10-19	20-49	50-99	100-199	200-499	500+		
Beverage manufacturing	35	28	19	22	3	1	0	0	44	152
Bakeries and tortilla manufacturing	25	23	17	7	3	2	0	0	43	120
Other food manufacturing	16	17	8	7	2	1	2	0	53	106
Meat product manufacturing	5	8	6	1	1	0	1	1	13	36
Dairy product manufacturing	5	4	4	4	2	5	2	1	7	34
Animal food manufacturing	3	3	3	5	1	0	0	0	9	24
Fruit and vegetable preserving and specialty food manufacturing	4	2	1	0	2	2	0	0	11	22
Sugar and confectionery product manufacturing	3	2	3	2	0	1	0	0	7	18
Grain and oilseed milling	0	0	0	0	0	0	3	0	5	8
Cannabis product manufacturing	1	0	1	1	0	1	0	0	2	6
Seafood product preparation and packaging	1	0	0	0	0	0	0	0	1	2
Total	98	87	62	49	14	13	8	2	195	528

Source: Stats Canada, Emsi 2020.1



3.1.3 Food and Beverage Sector Purchases

The following table showcases the purchases made by Ontario East's Food and Beverage companies. The top sub-sectors for imported goods are:

- Farms (\$483,735,966 in imported goods)
- Meat product manufacturing (\$37,460,980)
- Farm product merchant wholesalers (\$30,987,020).

Figure 9: Food and Beverage Sector Purchases (sorted by \$ value of imported purchases)

Purchases from	In-region Purchases	% In-region Purchases	Imported Purchases	% Imported Purchases	Total Purchases
Farms	\$542,494,822	52.9%	\$483,735,966	47.1%	\$1,026,230,788
Meat product manufacturing	\$12,167,868	24.5%	\$37,460,980	75.5%	\$49,628,848
Farm product merchant wholesalers	\$6,625,885	17.6%	\$30,987,020	82.4%	\$37,612,905
Other food manufacturing	\$18,072,956	41.3%	\$25,687,048	58.7%	\$43,760,004
Boiler, tank and shipping container manufacturing	\$9,586,230	30.0%	\$22,335,467	70.0%	\$31,921,698
Plastic product manufacturing	\$35,809,636	67.0%	\$17,642,024	33.0%	\$53,451,660
Sugar and confectionery product manufacturing	\$22,304,839	56.0%	\$17,515,650	44.0%	\$39,820,489
General freight trucking	\$22,866,326	57.2%	\$17,126,644	42.8%	\$39,992,970
Food merchant wholesalers	\$27,980,478	62.5%	\$16,821,854	37.5%	\$44,802,332
Specialized freight trucking	\$14,718,734	47.9%	\$16,035,816	52.1%	\$30,754,550
Fruit and vegetable preserving and specialty food manufacturing	\$2,396,810	13.4%	\$15,509,827	86.6%	\$17,906,637
Oil and gas extraction	\$75,889	0.6%	\$12,952,621	99.4%	\$13,028,510
Warehousing and storage	\$12,367,975	49.2%	\$12,791,820	50.8%	\$25,159,795
Converted paper product manufacturing	\$45,167,527	78.2%	\$12,567,145	21.8%	\$57,734,672
Electric power generation, transmission and distribution	\$16,609,682	57.7%	\$12,197,190	42.3%	\$28,806,871

Source: Stats Canada, Emsi 2020.1



3.2 Logistics, Distribution and Warehousing Overview

Employment in the Logistics, Distribution and Warehousing sector in Eastern Ontario is projected to grow 13.2% by 2027, over twice as fast as the sector is projected to grow at the national level at 6%. The figure below highlights the Logistics, Distribution and Warehousing sub-sectors identified by the sector analysis. The sectors were chosen based on the number and concentration of employees and businesses in the region and large employers.

Figure 10: Eastern Ontario Logistics, Distribution and Warehousing Sector Overview

Sector	Employees (2021)	LQ (2021)	Number of Businesses	Large Employers 100+
Support activities for road transportation	1,592	0.85	264	2
Specialized freight trucking	3,077	0.51	638	2
Warehousing and storage	2,237	0.66	200	5
General freight trucking	5,083	0.42	1,501	7
Support activities for air transportation	3,042	1.51	94	9
School and employee bus transportation	3,647	1.65	117	11

Source: Stats Canada, Emsi 2020.1

The figure below highlights imported purchases by the Logistics, Distribution and Warehousing sector in Eastern Ontario and represents opportunities for supply chain redundancy and substitution.

Figure 11: Imported Purchases from the Logistics, Distribution and Warehousing Sector in Eastern Ontario

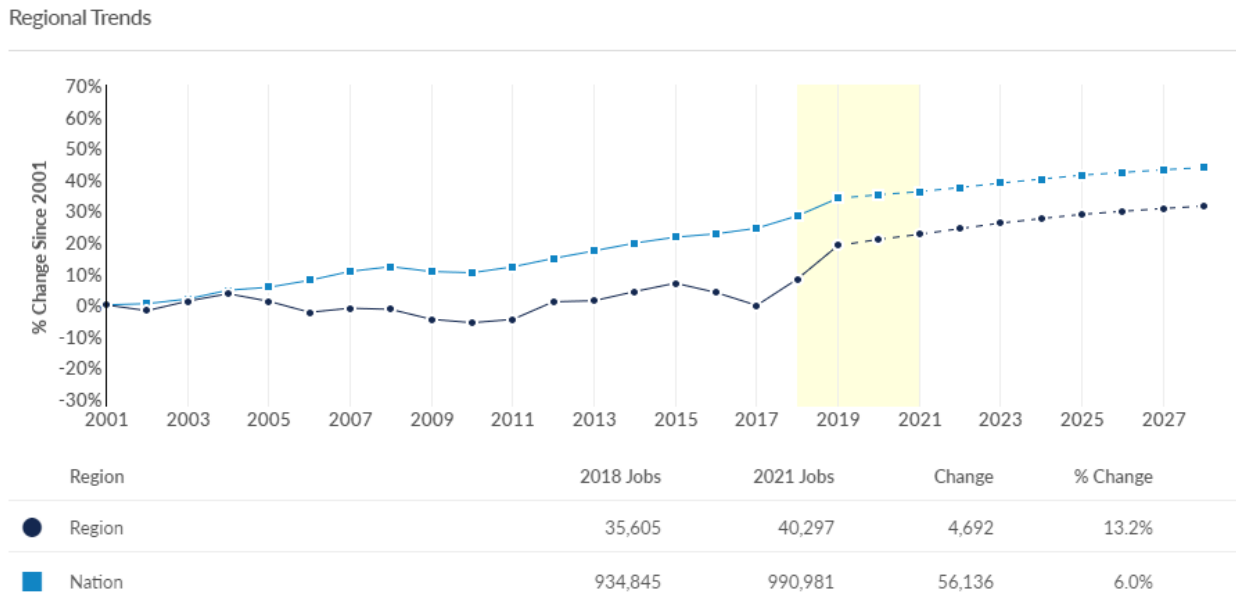
Purchases from	Imported Purchases	% Imported Purchases
Computer systems design and related services	\$4,845,107	12.9%
Aerospace product and parts manufacturing	\$7,282,947	16.4%
Plastic product manufacturing	\$10,116,467	44.9%
Rubber product manufacturing	\$8,220,148	23.1%
Motor vehicle parts manufacturing	\$66,128,394	42.7%
Other transportation equipment manufacturing	\$6,633,400	22.8%

Source: Stats Canada, Emsi 2020.1



The following figure indicates the projected employment trends in Eastern Ontario in the Logistics, Distribution and Warehousing sectors. The region is projected to grow by 4,692 jobs or 13.2%, compared to the national projection of 56,136 or 6%.

Figure 12: Employment Trends in Logistics, Distribution and Warehousing (Ontario East versus Nation-wide)



Source: Stats Canada, Emsi 2020.1



3.2.1 Highest Industry Location Quotient by Labour

The following figure highlights the growth projections of sub-sectors within the Logistics, Distribution and Warehousing sector in Eastern Ontario. The sub-sectors with the highest number of projected jobs in 2021 are:

- General freight trucking (5,083 jobs)
- School and employee bus transportation (3,647)
- Specialized freight trucking (3,077).

Figure 13: Highest Industry Location Quotient Selected Logistics, Distribution and Warehousing Sub-Sectors

Industry	2018 Jobs	2021 Jobs	% Change	2021 LQ
Scheduled air transportation	1,476	1,638	11	0.46
Non-scheduled air transportation	335	446	33	0.60
Rail transportation	610	583	(4)	0.29
Deep sea, coastal and Great Lakes water transportation	13	10	(25)	0.01
Inland water transportation	49	76	55	0.52
General freight trucking	4,464	5,083	14	0.42
Specialized freight trucking	2,586	3,077	19	0.51
Urban transit systems	1,523	1,565	3	0.42
Interurban and rural bus transportation	175	147	(16)	0.73
School and employee bus transportation	3,302	3,647	10	1.65
Charter bus industry	743	794	7	2.38
Other transit and ground passenger transportation	565	600	6	1.51
Scenic and sightseeing transportation, land	45	75	68	0.98
Scenic and sightseeing transportation, water	185	151	(19)	2.01
Support activities for air transportation	2,786	3,042	9	1.51
Support activities for rail transportation	50	58	14	0.23
Support activities for water transportation	228	231	1	0.30
Support activities for road transportation	1,714	1,592	(7)	0.85
Freight transportation arrangement	542	540	(0)	0.23
Other support activities for transportation	197	190	(3)	0.56
Couriers	2,216	3,043	37	0.90
Local messengers and local delivery	473	734	55	0.60
Warehousing and storage	2,193	2,237	2	0.66
Total (All Logistics, Distribution and Warehousing)	35,605	40,297	13	

Source: Stats Canada, Emsi 2020.1



3.2.2 Logistics, Distribution and Warehousing Businesses By Size

The following table showcases the number of businesses by size in each sub-sector of the Logistics, Distribution and Warehousing sector. The top sub-sectors by the number of businesses with 100+ employees are:

- School and employee bus transportation (11 businesses)
- Support activities for air transportation (9)
- General freight trucking (7).

Figure 14: Logistics, Distribution and Warehousing Businesses By Size

Description	Number of Employees								Indeterminate	Total
	1-4	5-9	10-19	20-49	50-99	100-199	200-499	500+		
Taxi and limousine service	33	18	14	12	0	2	0	0	2,563	2,642
General freight trucking	310	54	29	31	12	6	1	0	1,058	1,501
Specialized freight trucking	159	43	42	24	15	2	0	0	353	638
Couriers	35	8	13	23	7	1	3	0	325	415
Local messengers and local delivery	31	4	8	4	0	1	0	0	295	343
Support activities for road transportation	53	31	19	18	2	1	1	0	139	264
Other transit and ground passenger transportation	3	4	3	3	3	0	0	0	207	223
Warehousing and storage	41	17	16	17	6	2	2	1	98	200
Freight transportation arrangement	37	15	10	8	3	1	0	0	46	120
School and employee bus transportation	6	6	13	18	11	9	2	0	52	117
Support activities for air transportation	15	3	5	6	1	5	4	0	55	94
Other support activities for transportation	16	3	3	2	1	0	0	0	65	90
Non-scheduled air transportation	4	2	1	2	1	0	0	0	49	59
Postal service	5	0	1	3	0	0	0	2	22	33
Support activities for water transportation	6	3	2	0	1	0	0	0	20	32
Scheduled air transportation	3	1	0	3	2	0	2	0	8	19
Scenic and sightseeing transportation, water	2	2	2	2	2	1	0	0	4	15
Charter bus industry	0	2	0	1	1	1	1	0	5	11
Support activities for rail transportation	0	1	2	2	1	1	0	0	4	11
Inland water transportation	2	1	0	0	0	0	0	0	7	10
Urban transit systems	0	0	0	1	3	1	1	1	3	10
Rail transportation	0	0	1	0	6	0	0	0	0	7
Interurban and rural bus transportation	0	0	0	1	1	0	1	0	4	7
Deep sea, coastal and Great Lakes water transportation	0	1	0	0	0	0	0	0	4	5
Scenic and sightseeing transportation, land	0	1	0	1	0	0	0	0	3	5
Other pipeline transportation	0	0	0	0	0	0	0	0	4	4
Pipeline transportation of natural gas	1	0	0	0	0	0	0	0	0	1
Pipeline transportation of crude oil	0	0	0	0	0	0	0	0	0	0
Total	762	220	184	182	79	34	18	4	5,393	6,876

Source: Stats Canada, Emsi 2020.1



3.2.3 Logistics, Distribution and Warehousing Purchases

The following table showcases the purchases made by Ontario East's Logistics, Distribution and Warehousing companies. The top sub-sectors for imported goods are:

- Petroleum and coal product manufacturing (\$260,722,610 in imported goods)
- Specialized freight trucking (\$99,831,427)
- General freight trucking (\$90,296,424).

Figure 15: Logistics, Distribution and Warehousing Sector Purchases (sorted by \$ value of imported purchases)

Purchases from	In-region Purchases	% In-region Purchases	Imported Purchases	% Imported Purchases	Total Purchases
Petroleum and coal product manufacturing	\$114,963,572	30.6%	\$260,722,610	69.4%	\$375,686,182
Specialized freight trucking	\$101,036,936	50.3%	\$99,831,427	49.7%	\$200,868,363
General freight trucking	\$170,911,185	65.4%	\$90,296,424	34.6%	\$261,207,609
Motor vehicle parts manufacturing	\$88,778,898	57.3%	\$66,128,394	42.7%	\$154,907,292
Freight transportation arrangement	\$27,430,771	40.9%	\$39,563,705	59.1%	\$66,994,476
Depository credit intermediation	\$24,345,682	40.0%	\$36,447,303	60.0%	\$60,792,985
Insurance carriers	\$34,779,397	48.9%	\$36,301,495	51.1%	\$71,080,893
Rail transportation	\$13,388,474	27.9%	\$34,557,926	72.1%	\$47,946,400
Scheduled air transportation	\$23,312,568	48.5%	\$24,800,463	51.5%	\$48,113,031
Management of companies and enterprises	\$5,621,314	22.6%	\$19,306,312	77.4%	\$24,927,627
Deep sea, coastal and Great Lakes water transportation	\$194,357	1.2%	\$16,271,172	98.8%	\$16,465,528
Petroleum and petroleum products merchant wholesalers	\$3,969,710	20.2%	\$15,711,942	79.8%	\$19,681,652
Lessors of real estate	\$38,325,247	71.7%	\$15,127,062	28.3%	\$53,452,309
Full-service restaurants and limited-service eating places	\$35,703,516	74.1%	\$12,495,358	25.9%	\$48,198,873
Commercial and industrial machinery and equipment rental and leasing	\$13,283,107	51.9%	\$12,304,360	48.1%	\$25,587,467
Building equipment contractors	\$34,761,070	74.3%	\$12,036,037	25.7%	\$46,797,107
Oil and gas extraction	\$56,893	0.5%	\$11,598,986	99.5%	\$11,655,878
Wired and wireless telecommunications carriers(except satellite)	\$34,245,133	75.1%	\$11,344,267	24.9%	\$45,589,400
Plastic product manufacturing	\$12,416,666	55.1%	\$10,116,467	44.9%	\$22,533,133
Rubber product manufacturing	\$27,431,509	76.9%	\$8,220,148	23.1%	\$35,651,657
Utility system construction	\$8,970,842	53.1%	\$7,915,213	46.9%	\$16,886,055
Aerospace product and parts manufacturing	\$37,137,962	83.6%	\$7,282,947	16.4%	\$44,420,908
Other transportation equipment manufacturing	\$22,523,241	77.2%	\$6,633,400	22.8%	\$29,156,641
Computer systems design and related services	\$32,619,073	87.1%	\$4,845,107	12.9%	\$37,464,180

Source: Stats Canada, Emsi 2020.1



3.3 Advanced Manufacturing Overview

Employment in the Advanced Manufacturing sector in Eastern Ontario is projected to drop 0.5% by 2027, compared to 1.4% growth projected at the national level. The figure below highlights Advanced Manufacturing sub-sectors identified within the sector analysis. The sectors were chosen based on the number and concentration of employees and businesses in the region and large employers.

Figure 16: Eastern Ontario Advanced Manufacturing Sector Overview

Sector	Employees (2021)	LQ (2021)	Number of Businesses	Large Employers 100+
Navigational, measuring, medical and control instruments manufacturing	3,291	2.55	70	8
Plastic product manufacturing	2,859	0.58	96	9
Printing and related support activities	2,541	0.81	282	7
Other electrical equipment and component manufacturing	2,291	2.73	53	6
Motor vehicle parts manufacturing	1,913	0.45	34	6
Aerospace product and parts manufacturing	1,885	0.63	26	5
Medical equipment and supplies manufacturing	1,722	1.36	112	5
Semiconductor and other electronic component manufacturing	1,345	1.33	52	4
Resin, synthetic rubber, and artificial and synthetic fibres and filaments manufacturing	1,006	4.44	6	2

Source: Stats Canada, Emsi 2020.1

The figure below highlights key imported purchases by the Advanced Manufacturing sector in Eastern Ontario and represents opportunities for supply chain redundancy and substitution.

Figure 17: Imported Purchases from the Advanced Manufacturing Sector in Eastern Ontario

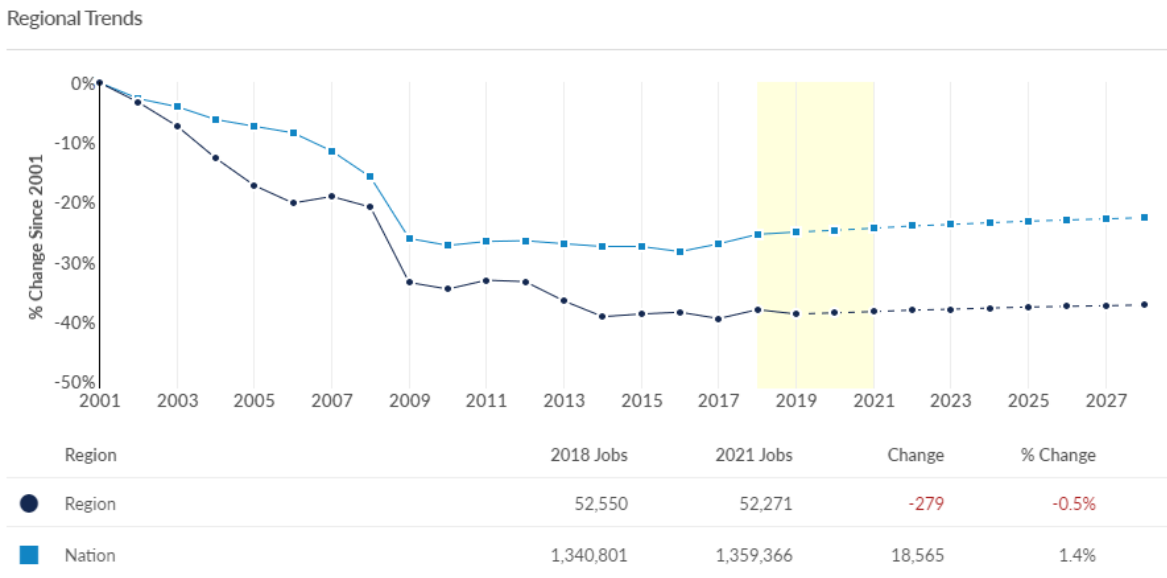
Purchases from	Imported Purchases	% Imported Purchases
Agricultural, construction and mining machinery manufacturing	\$24,592,781	72.1%
Plastic product manufacturing	\$112,799,510	38.7%
Pulp, paper and paperboard mills	\$161,253,934	71.6%
Electrical equipment manufacturing	\$33,027,980	27.2%
Motor vehicle parts manufacturing	\$174,812,248	32.1%
Aerospace product and parts manufacturing	\$95,067,708	37.1%
Pharmaceutical and medicine manufacturing	\$36,826,122	57.5%
Semiconductor and other electronic component manufacturing	\$56,809,090	14.9%
Basic chemical manufacturing	\$550,505,144	51.3%

Source: Stats Canada, Emsi 2020.1



The following figure indicates the projected employment trends in Eastern Ontario in the Advanced Manufacturing sector. The region is projected to shed by 279 jobs or 0.5% compared to the national projection of growing 18,565 or 1.4%.

Figure 18: Employment Trends in Advanced Manufacturing (Ontario East versus Nation-wide)



Source: Stats Canada, Emsi 2020.1



3.3.1 Highest Industry Location Quotient by Labour

The following figure highlights the growth projections of sub-sectors within the Advanced Manufacturing sector in Eastern Ontario. The sub-sectors with the highest number of projected jobs in 2021 are:

- Navigational, measuring, medical and control instruments manufacturing (3,291 jobs)
- Plastic product manufacturing (2,859)
- Other miscellaneous manufacturing (2,695).

Figure 19: Highest Industry Location Quotient Selected Advanced Manufacturing Sectors

Industry	2018 Jobs	2021 Jobs	% Change	2021 LQ
Navigational, measuring, medical and control instruments manufacturing	3,268	3,291	23	2.55
Plastic product manufacturing	2,859	2,859	0	0.58
Other miscellaneous manufacturing	2,606	2,695	88	0.96
Printing and related support activities	2,768	2,541	(227)	0.81
Other electrical equipment and component manufacturing	1,980	2,291	311	2.73
Household and institutional furniture and kitchen cabinet manufacturing	2,210	2,050	(160)	0.70
Motor vehicle parts manufacturing	2,045	1,913	(132)	0.45
Soap, cleaning compound and toilet preparation manufacturing	2,016	1,900	(116)	1.91
Aerospace product and parts manufacturing	1,729	1,885	156	0.63
Architectural and structural metals manufacturing	1,729	1,871	142	0.50
Cement and concrete product manufacturing	1,708	1,832	123	0.94
Medical equipment and supplies manufacturing	1,563	1,722	159	1.36
Semiconductor and other electronic component manufacturing	1,301	1,345	44	1.33
Machine shops, turned product, and screw, nut and bolt manufacturing	1,318	1,311	(7)	0.60
Other wood product manufacturing	1,255	1,263	8	0.53
Converted paper product manufacturing	1,278	1,129	(149)	0.68
Other general-purpose machinery manufacturing	973	1,061	89	0.56
Resin, synthetic rubber, and artificial and synthetic fibres and filaments manufacturing	1,366	1,006	(359)	4.44
Commercial and service industry machinery manufacturing	910	992	82	0.95
Total (All Advanced Manufacturing Industries)	52,550	52,271	(279)	

Source: Stats Canada, Emsi 2020.1



3.3.2 Advanced Manufacturing Businesses By Size

The following table showcases the number of businesses by size in each sub-sector of the Advanced Manufacturing sector. The top sectors by the number of businesses with 100+ employees are:

- Plastic product manufacturing nine businesses;
- Navigational, measuring, medical and control instruments manufacturing eight businesses;
- Other miscellaneous manufacturing seven businesses.

Figure 20: Selected Advanced Manufacturing Businesses By Size

Description	1-4	5-9	10-19	20-49	50-99	100-199	200-499	500+	Indeterminate	Total
Other miscellaneous manufacturing	89	42	23	15	7	0	0	1	251	428
Printing and related support activities	78	38	30	6	6	6	1	0	117	282
Household and institutional furniture and kitchen cabinet manufacturing	41	25	10	10	1	3	1	0	102	193
Other wood product manufacturing	27	21	6	10	3	3	0	0	113	183
Machine shops, turned product, and screw, nut and bolt manufacturing	41	15	15	16	6	0	0	0	53	146
Medical equipment and supplies manufacturing	29	19	10	10	4	3	2	0	35	112
Architectural and structural metals manufacturing	15	17	15	15	6	5	1	0	27	101
Other fabricated metal product manufacturing	20	9	6	4	4	0	0	0	55	98
Plastic product manufacturing	17	11	10	4	12	4	5	0	33	96
Cement and concrete product manufacturing	11	11	27	9	6	4	0	0	12	80
Navigational, measuring, medical and control instruments manufacturing	4	15	9	13	3	2	5	1	18	70
Sawmills and wood preservation	16	5	8	4	2	1	0	0	22	58
Other general-purpose machinery manufacturing	11	10	4	3	3	0	1	0	26	58
Cut and sew clothing manufacturing	10	3	2	0	0	0	0	0	41	56
Other electrical equipment and component manufacturing	9	3	4	1	9	3	3	0	21	53
Semiconductor and other electronic component manufacturing	4	4	8	3	7	1	3	0	22	52
Metalworking machinery manufacturing	11	3	8	4	2	1	0	0	16	45
Office furniture (including fixtures) manufacturing	9	2	1	2	2	1	0	0	26	43
Communications equipment manufacturing	6	5	3	2	1	0	0	0	23	40
Ventilation, heating, air-conditioning and commercial refrigeration equipment manufacturing	4	3	3	0	2	4	1	0	23	40
Industrial machinery manufacturing	4	5	5	6	6	0	0	0	9	35
Motor vehicle parts manufacturing	6	4	4	0	0	2	4	0	14	34
Aerospace product and parts manufacturing	3	3	0	1	0	4	1	0	14	26
Total (All Manufacturing Industries)	688	416	331	259	137	81	47	12	1,604	3,575

Source: Stats Canada, Emsi 2020.1



3.3.3 Advanced Manufacturing Purchases

The following table showcases the purchases made by Ontario East's Advanced Manufacturing companies. The top sub-sectors for imported goods are:

- Basic chemical manufacturing (\$550,505,144 in imported goods)
- Oil and gas extraction (\$527,794,918)
- Metal ore mining (\$477,537,054).

Figure 21: Selected Advanced Manufacturing Inputs

Purchases from	In-region Purchases	% In-region Purchases	Imported Purchases	% Imported Purchases	Total Purchases
Basic chemical manufacturing	\$523,611,672	48.7%	\$550,505,144	51.3%	\$1,074,116,816
Oil and gas extraction	\$8,089,783	1.5%	\$527,794,918	98.5%	\$535,884,701
Metal ore mining	\$82,448,452	14.7%	\$477,537,054	85.3%	\$559,985,506
Non-ferrous metal (except aluminum) production and processing	\$167,483,521	33.8%	\$328,353,018	66.2%	\$495,836,539
Petroleum and coal product manufacturing	\$42,359,597	12.1%	\$307,181,138	87.9%	\$349,540,735
Motor vehicle parts manufacturing	\$370,286,338	67.9%	\$174,812,248	32.1%	\$545,098,585
Pulp, paper and paperboard mills	\$63,993,392	28.4%	\$161,253,934	71.6%	\$225,247,327
Iron and steel mills and ferro-alloy manufacturing	\$349,103,553	73.5%	\$125,858,937	26.5%	\$474,962,490
Plastic product manufacturing	\$178,478,954	61.3%	\$112,799,510	38.7%	\$291,278,463
Electric power generation, transmission and distribution	\$151,049,568	61.0%	\$96,462,223	39.0%	\$247,511,790
Aerospace product and parts manufacturing	\$161,073,416	62.9%	\$95,067,708	37.1%	\$256,141,124
Management of companies and enterprises	\$24,593,554	22.8%	\$83,280,229	77.2%	\$107,873,784
Alumina and aluminum production and processing	\$244,394,968	76.4%	\$75,586,034	23.6%	\$319,981,002
Sawmills and wood preservation	\$24,336,999	25.9%	\$69,722,841	74.1%	\$94,059,841
General freight trucking	\$96,110,747	58.4%	\$68,397,225	41.6%	\$164,507,972
Specialized freight trucking	\$59,379,681	46.9%	\$67,126,768	53.1%	\$126,506,449
Semiconductor and other electronic component manufacturing	\$324,042,913	85.1%	\$56,809,090	14.9%	\$380,852,003
Other chemical product manufacturing	\$58,824,708	57.0%	\$44,353,547	43.0%	\$103,178,254
Pharmaceutical and medicine manufacturing	\$27,244,231	42.5%	\$36,826,122	57.5%	\$64,070,353
Electrical equipment manufacturing	\$88,187,076	72.8%	\$33,027,980	27.2%	\$121,215,055
Agricultural, construction and mining machinery manufacturing	\$9,522,403	27.9%	\$24,592,781	72.1%	\$34,115,184
Pesticide, fertilizer and other agricultural chemical manufacturing	\$14,156,145	37.8%	\$23,261,315	62.2%	\$37,417,460
Other fabricated metal product manufacturing	\$33,298,761	61.3%	\$21,018,236	38.7%	\$54,316,997

Source: Stats Canada, Emsi 2020.



4. Ontario Trade Data

Due to the in-region purchases data being derived from 2017 Statistics Canada data, Ontario trade data was sourced to provide a more up-to-date, higher-level view of the total value of imports and major goods sources. The figure below highlights the steady growth in imports and exports between 2010 and 2019 and indicates the province had import values of over \$350 billion. The high value of inputs suggests significant opportunities for import substitution and strengthening the value chain in Ontario.

Figure 22: Ontario's Exports and Imports (Goods)

\$C millions	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total Exports	\$168,184	\$180,481	\$187,070	\$189,796	\$208,198	\$235,524	\$249,337	\$240,414	\$243,732	\$252,984
Total Imports	\$235,076	\$255,071	\$261,871	\$269,693	\$295,601	\$325,431	\$333,811	\$347,428	\$354,769	\$363,453

Source: Statistics Canada, International Trade Division, August 2020 (08/20)

The figure below details the markets that are the biggest sources of imports. These countries and states represent the highest value targets for import substitution and investment attraction.

Figure 23: Ontario Import Sources (2019)

By Country (% of All Ontario Imports)	
United States	53.78%
China	12.41%
Mexico	7.97%
Japan	3.21%
Germany	2.65%
Korea, South	1.83%
Italy	1.33%
Vietnam	1.15%
Switzerland	1.09%
United Kingdom	0.90%
By US State (% of All Ontario Imports)	
Michigan	7.66%
Ohio	5.49%
New York	4.42%
Indiana	3.86%
Illinois	3.02%
Texas	2.71%
Pennsylvania	2.28%
California	2.21%

Source: Government of Ontario: Trade Fact Sheet²⁰

²⁰ Ontario Trade Fact Sheet, sourcefromontario.com/tradefactsheet/en/page/tradefactsheet_ontario.php



5. Engagement Results

The preliminary findings of the sector analysis were shared with 17 representatives of the Ontario East Region on February 26, 2021. The group shared a wide range of feedback on both the identified sectors and trends; the key themes are identified below.

Overall

Participants agreed that businesses in their region had been rapidly adopting more technology across all three target sectors, emphasizing automation. The participants agreed new technology drives the need to create more training and support services locally, with colleges identified as potential leaders. The participants also identified cleantech and data centres as sectors of interest.

Concerns Over Data Accuracy

A concern raised by the group was the input/output figures from EMSI are derived from 2017 trade data and may yield incomplete conclusions. This concern highlights the need to stay on-top of data sources continuously and perhaps look to proprietary pay-to-access data if the information is deemed important enough.

Food and Beverage/Food Processing

Participants indicated significant opportunities and growth in the Food and Beverage sector, including food processing, logistics, supply chain, sustainable food and product packaging (plastic alternatives).

Advanced Manufacturing

Participants agreed that the advanced manufacturing sector has significant opportunities for the region, with many local firms growing and adopting higher automation levels.

- Due to the COVID-19 pandemic, the group agreed that the reshoring of pharmaceuticals, medical instruments, vaccines, feedstocks, and PPE were all ongoing opportunities.
- The group identified increased opportunities for all biomaterials, including value-added processing of agricultural and forestry products.
- The group identified local/regional material and process innovation, including sustainable building materials, cleantech and green chemistry as opportunities.

Transportation, Logistics and Warehousing

Participants agreed there are significant opportunities in logistics, particularly in support of the food processing sector. The group identified the last mile to consumer logistics demands to support more sustainable local supply chains.



Investments in Eastern Ontario Since 2015

Participants were asked to share any major investments in the region in the engagement session over the last few years. The group identified the following investments.

Figure 24: Major Investments in Eastern Ontario Over the Last Few Years

Sectors	Number of Investments
Food and Beverage	23
Advanced Manufacturing	15
Logistics, Distribution and Warehousing	10
ICT	2
Energy	2
Cleantech	2
Tourism	2
R&D	1
Government	1

Investments Since 2015	Community	Sector
Roseburg MDF	Renfrew (County)	Advanced Manufacturing
Feihe	Kingston	Food and Beverage
Frulact	Kingston	Food and Beverage
Glass House Botanics, Medical Cannabis	Renfrew (County)	Food and Beverage
Walmart Logistics - 1.5 million square foot distribution centre - 1000 new employees	Cornwall	Logistics, Distribution and Warehousing
Big River Technologies (Fin Tech)	Gananoque	ICT
Hexo - 300 jobs cannabis processing and packaging	Ottawa	Food and Beverage
Warehouse development (250000 Sq ft)	South Dundas	Logistics, Distribution and Warehousing
Cleantech Commons	Peterborough	CleanTech
Kawartha Dairy warehousing (dairy)	Kawartha Lakes	Food and Beverage
3M \$70 M - PPE - face mask	Brockville	Advanced Manufacturing
Mariposa Dairy (dairy)	Kawartha Lakes	Food and Beverage
Logistics x2	Bay of Quinte	Logistics, Distribution and Warehousing
Food Processing x 2	Bay of Quinte	Food and Beverage
Plastics x 1	Bay of Quinte	Advanced Manufacturing
Consumer Goods x1	Bay of Quinte	Advanced Manufacturing
Two large sawmills with automation and expansion, forestry/wood processing,	Renfrew County	Advanced Manufacturing
Cannabis Facilities (3)	South Dundas	Food and Beverage
Vision Transport - 200,000 sqft distribution centre	Belleville / Bay of Quinte	Logistics, Distribution and Warehousing
Greenfield Global - \$75M - Speciality Alcohol	Johnstown	Food and Beverage
Kerry Foods, / plant acquisition, Food processing,	Renfrew (County)	Food and Beverage
Truss Beverage - 60 jobs Cannabis beverages	Belleville	Food and Beverage



Investments Since 2015	Community	Sector
Leclerc- Breakfast bar facility \$30 million + investment	Cornwall	Food and Beverage
Multi-Billion energy project	South Dundas	Energy
Li-Cycle	Kingston	CleanTech
Fairlife, Central Smith Dairy	Peterborough	Food and Beverage
Ag Food support industry development	-	Food and Beverage
Olymel expansion - 200 new employees	Cornwall	Food and Beverage
Variety of brewing, cider, winery, artisan food	-	Food and Beverage
220,000 sq.ft. plastics - German	Belleville / Bay of Quinte	Advanced Manufacturing
Loblaw new distribution centre - WITRON automation	Cornwall	Logistics, Distribution and Warehousing
Newterra waterworks equipment	Brockville	Advanced Manufacturing
Giant Tiger distribution centre	Johnstown	Logistics, Distribution and Warehousing
Canadian Nuclear Laboratories \$1.2B site revitalization	Renfrew (County)	Government
Hain Celestial - Yves Veggie Cuisine Plant	Bay of Quinte	Food and Beverage
Flying Colours \$40M	Peterborough	Advanced Manufacturing
Canarm HVAC manufacturing	Brockville	Advanced Manufacturing
Vantage Foods seafood processing plant	Belleville / Bay of Quinte	Food and Beverage
Wills Transfer warehouse	South Stormont, Brockville	Logistics, Distribution and Warehousing
Canadian Rail Equipment and Works	Johnstown	Advanced Manufacturing
Xplornet \$40M investment	Cornwall	ICT
Lonza expansion and acquisition	Kingston	Advanced Manufacturing
CMP Advanced Mechanical Solutions warehouse and DC	Cornwall	Logistics, Distribution and Warehousing
Local Leaf Farm	Kingston	Food and Beverage
Deslaurier plant acquisition, investment expansion	Renfrew (County)	Advanced Manufacturing
Amazon - DC another to come	Ottawa	Logistics, Distribution and Warehousing
Northern Cable	Brockville	Advanced Manufacturing
Garrison Petawawa, ~\$800 million site revitalization and expansion	Renfrew (County)	Government
Shell - \$16M expansion	Brockville	Energy
Divine Labs	Kawartha Lakes	R&D
Le Boat - \$16M	Smiths Falls & Rideau	Advanced Manufacturing
1000 Islands Helicopter Tours	Leeds and the Thousand Islands	Tourism
1000 Islands Tower	Leeds and the Thousand Islands	Tourism
BUSL Cidery, Kings Lock Craft Distillery, Windmill Brewery, Westport Brewery, Scheuermann Winery, Green Gables Winery	Leeds & Grenville	Food and Beverage



6. Conclusion

The supply chain analysis report has identified eight targets for the Eastern Ontario Economic Development Commission. These sub-sectors have been selected by:

- Sector selection by the OEEEDC
- Concentrations of workforce and businesses in Eastern Ontario
- Value of inputs in Eastern Ontario
- Alignment to the industry trends of AI, Technology Adoption and Supply Chain strengthening
- Engagement with regional representatives indicating a majority of new investments since 2015 align to the identified sectors.

Figure 25: Identified Sub-Sector Matrix

Identified Sub-Sectors	Sector Alignment	Trend Alignment	Engagement
Plastic product manufacturing	Yes	Yes	Yes
Motor vehicle parts manufacturing	Yes	Yes	Yes
Aerospace product and parts manufacturing	Yes	Yes	Yes
Electrical equipment manufacturing	Yes	Yes	Yes
Agricultural, construction and mining machinery manufacturing	Yes	Yes	Yes
Pharmaceutical and medicine manufacturing	-	Yes	Yes
Farms	Yes	Yes	Yes
Other support services	Yes	Yes	-

Next Steps

The project team recommends coordinating interviews with Eastern Ontario businesses in the selected sub-sectors and target markets to validate opportunities and refine the region's value proposition.