



Niagara Region  
Electric Vehicle Battery  
Manufacturing Sector Profile  
March 2023



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# Introduction

The demand for electric vehicles (EV) and related manufacturing industries are on a strong growth trajectory in Ontario. This trend is supported by public and government investment in the interest of achieving net-zero emissions by 2035, as well as advancing zero-emission vehicle infrastructure and critical materials resource development. All levels of government are seeking to invest in EV battery manufacturing projects in order to realize employment and business development benefits associated with the sector.

## **The Emerging Sector Profiles**

Niagara Region Economic Development retained Deloitte LLP to produce sector profiles for five emerging sectors: marine, health, film, sport tourism, and electric vehicle (EV)

battery manufacturing. In the design of the project, the aerospace sector was added to the analysis. These sectors were initially identified in '[Niagara's 10 Year Economic Development Strategy 2022-2032](#)'.

This sector profile features the investment and growth potential of EV manufacturing, EV battery manufacturing, and supply sectors. This profile was developed by defining the industries that make up and broadly support EV manufacturing. These industries were characterized using business and employment data and include support and supply businesses. From this broad overview, international, national, and local trends were considered to identify opportunities relevant to Niagara region's economy. A review of existing literature and a focus group was conducted with local partners to ground the findings in local perspectives. The data was analyzed to show a picture of the sector's future potential. This profile does not include a benchmarking of the sector, and further research is needed to accurately identify employment directly linked to the EV battery and EV manufacturing.

The following data sources were used in the development of this sector profile: Lightcast (formerly EMSI Economic Modeling) 2022, Vicinity Jobs 2022, FDI Markets, Statistics Canada, and Canadian Business Counts<sup>1</sup> June 2022.

## **Investment Attraction Highlights for the EV Battery Manufacturing Sector**

Opportunities in the EV and related auto manufacturing sectors have increased in recent years, as recent investments from \$4 billion in Ontario have created opportunities for the Niagara Region to capture new investment and support the growth of its existing business sectors. The EV sector and related manufacturing in Niagara Region is an emerging sector with high growth potential for further development with the support of employers in the region and larger players in the industry to identify mutual areas of interest and opportunity.

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<sup>1</sup> The June 2022 Canadian Business Counts were used to determine the total number of registered businesses in the Niagara Region. Statistics Canada's Canadian Business Counts Data provides a record of business establishments by industry and size. This data is collected from the Canada Revenue Agency (CRA). The business data collected for Niagara Region included all local businesses that met at least one of the three following criteria: Have an employee workforce for which they submit payroll remittances to CRA, or have a minimum of \$30,000 in annual sales revenue, or are incorporated under a federal or provincial act and have filed a federal corporate income tax form within the past three years.

## Key Highlights

**High potential sub-sectors:** Opportunities exist for local battery production, refurbishing and recycling. Another sub-sector related to automotive manufacturing is automotive textiles. The automotive textiles market is expected to be valued at US\$41.4 billion by 2030, with upholstery being the biggest segment due to the need for vehicle floor coverings and seats. Niagara region's traditional strength in steel production can also be leveraged for automotive chassis derived from green steel.

**Foreign Direct Investment (FDI) markets for attraction:** Analysis of prospective growth companies<sup>2</sup> in the EV battery manufacturing sector show 40% of high-growth companies worldwide are located in the United States and 13% are located in Canada. The autonomous vehicle and electrification market is clustered around traditional automotive hubs in North America. The mid-west United States, including Detroit (MI), Chicago (IL) and Columbus (OH) stand out as the key clusters in this segment. Beyond that, growing hubs include San Antonio (TX), Athens (TN), and Los Angeles (CA). Outside of North America, major automotive hubs are Germany, Israel, United Kingdom, France, Spain, and the Netherlands.

**Market value:** Electrification has a strong growth trend within the automotive sector and EVs are expected to account for 75% of car sales by 2030.<sup>3</sup> In terms of areas of growth, the revenue in the electric vehicle market in the United States will increase to US\$139.2 billion by 2027 from US\$61.3 billion in 2023 and is expected to register an annual growth rate of 22% from 2023 to 2027.<sup>4</sup> Canada also benefits from this growth, within the past three years Canada and Ontario attracted more than C\$17 billion in investments in electric vehicle batteries and battery materials.<sup>5</sup>

**Recent major investments:** EVSX, a subsidiary of St-Georges Eco-Mining Corporation is moving its battery recycling and battery mineral processing facility inside the Thorold

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<sup>2</sup> Research conducted by ROI, not verified by Deloitte LLP, breakdown of prospective growth industries.

<sup>3</sup> Why the automotive future is electric? McKinsey and Company, 2021  
<<https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/why-the-automotive-future-is-electric>>

<sup>4</sup> Statista, Electric Vehicles – United States, 2023.

<sup>5</sup> Invest Ontario, Canada and Ontario welcome historic investment from Volkswagen, March 2023, retrieved from < <https://www.investontario.ca/press-release/canada-ontario-welcome-historic-investment-volkswagen#:~:text=On%20August%202023%2C%202022%2C%20the%20Government%20of%20Canada,Canada%20is%20a%20destination%20of%20choice%20for%20investments.>>

Multimodal Hub to take advantage of reduced transportation time and costs. In addition, General Motors has informed its St. Catharines facility that, subject to completing support agreements with Federal and Ontario government partners, the company plans to invest at the plant to manufacture new Ultium electric drive units for General Motors (GM) fast growing electric vehicle lineup. THK Rhythm Automotive Canada received \$1 million in funding from the Province through the Regional Development Program towards a \$27 million investment to retool its linkage and suspension component manufacturing in Niagara region<sup>6</sup>.

## The EV Manufacturing Sector in Niagara Region

- **Sector-related employment:** Employment in sectors with potential to be relevant to EV battery and the broader manufacturing supply chain in Niagara region was estimated at 5,923 jobs in 2022. This speaks to Niagara region's existing strength in manufacturing. An important percentage of employment related to the sector comes from core industries such as motor vehicle manufacturing (15% of the sector's employment), and motor vehicle parts manufacturing (3% of the sector's employment).
- **Concentration of business activity:** Niagara region's concentration of business in the broader auto manufacturing supply chain as shown in the report's location quotient analysis is 1.05, which is slightly above average. However, the lack of a well-established supply-chain network specific to EV may deter prospective businesses from locating in the area, especially when considering the region will be competing with highly specialized vehicle manufacturing areas in the Ontario automotive corridor (including cities such as Oshawa, Oakville, Cambridge, Woodstock, Ingersoll, and Windsor). The region is anticipating a significant investment from GM at the St. Catharines Propulsion Plant. This investment would be expected to support around 500 jobs at the St. Catharines facility and enable the production of more than 400,000 EV drive units a year<sup>7</sup>. This investment would potentially increase the concentration and business activity in Niagara region.
- **Strong market access:** The region offers easy access to large markets, including both the Greater Toronto Area (GTA) and the United States through

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<sup>6</sup> Province of Ontario, Province Invests in Tillsonburg Automotive Parts Manufacturer to Boost Regional Economy, Nov 2021, retrieved from <<https://news.ontario.ca/en/release/1001249/province-invests-in-tillsonburg-automotive-parts-manufacturer-to-boost-regional-economy>>

<sup>7</sup> General Motors, retrieved from <<https://news.gm.ca/en/home/newsroom.detail.html/Pages/news/ca/en/2023/feb/0220-stcatherines.html>>



road, rail, air, and the St. Lawrence Seaway. These strengths contribute to opportunities for several of the emerging sectors with connections to manufacturing.



# EV Battery Manufacturing Sector Overview

The Electric Vehicle (EV) battery sector represents a specific product within a new sector. It is evaluated here along with the larger EV manufacturing sector and supply chain, including a range of industries that are linked to EV manufacturing, and are specifically relevant to attracting investment in EV battery manufacturing.

## **Defining the EV Battery and EV Manufacturing Sector**

EV manufacturing's core and related industries were defined using North American Industry Classification System (NAICS) codes. EV manufacturing and its supply chain include a range of businesses across the manufacturing and wholesale trade industries. These range from the manufacturing of electronic and digital components to the production of plastics and textiles used for product detailing and customization. Core

sectors for the EV manufacturing include engine, turbine and power transmission equipment manufacturing, motor vehicle manufacturing, motor vehicle body and trailer manufacturing, motor vehicle parts manufacturing, motor vehicle merchant wholesalers, new motor vehicle parts and accessories and merchant wholesalers.

Supply chain sectors that directly or indirectly provide services and contribute to the overall EV manufacturing supply chain include textile mills, leather production, paint and coating manufacturing, glass production, steel production, etc.

The definition for the EV sector includes a wide range of industries that are directly or indirectly linked to EV manufacturing and its broader supply chain, including EV batteries. Core NAICS for this sector exist at a detailed level (e.g., NAICS 335910 battery manufacturing, and NAICS 336320 motor vehicle electrical and electronic equipment manufacturing), nonetheless, access to data at this level is not readily available. Data is presented at the 4-digit NAICS level.

For this analysis, the codes shown below were used to collect employment and business counts and other numbers for the sector. In addition, and with the support of the Niagara Region's Project Team, the EV manufacturing supply chain subsectors were further classified into core, and support/supply chain subsectors. Figure 1 below identifies the core industry subsectors; these are highlighted in blue. It is important to note that only a portion of these would form part of the EV manufacturing supply chain. These NAICS focus on the production side, and does not include design, engineering or product marketing.

Figure 1 – Electric Vehicle (EV) Manufacturing and Supply Chain NAICS Codes

Industry	NAICS	Description
<b>Manufacturing</b>	3114	Textile product mills
	3161	Leather and hide tanning and finish
	3255	Paint, coating, and adhesive manufacturing
	3261	Plastic product manufacturing
	3262	Rubber product manufacturing
	3272	Glass and glass product manufacturing
	3279	Other non-metallic mineral product manufacturing
	3311	Iron and steel mills and ferro-alloy manufacturing
	3312	Steel product manufacturing from purchased steel
	3315	Foundries
	3321	Forging and stamping
	3323	Architectural and structural metals manufacturing
	3325	Hardware manufacturing
	3327	Machine shops, turned product, and screw, nut, and bolt manufacturing

Industry	NAICS	Description
	3329	Other fabricated metal product manufacturing
	3334	Ventilation, heating, air-conditioning and commercial refrigeration equipment
	<b>3336</b>	<b>Engine, turbine, and power transmission equipment manufacturing</b>
	3345	Navigational, measuring, medical and control instruments manufacturing
	3359	Other electrical equipment and component manufacturing
	<b>3361</b>	<b>Motor vehicle manufacturing</b>
	<b>3362</b>	<b>Motor vehicle body and trailer manufacturing</b>
	<b>3363</b>	<b>Motor vehicle parts manufacturing</b>
<b>Wholesale Trade</b>	<b>4151</b>	<b>Motor vehicle merchant wholesalers</b>
	<b>4152</b>	<b>New motor vehicle parts and accessories merchant wholesalers</b>
	4161	Electrical, plumbing, heating and air-conditioning equipment and supplies merchant wholesalers

# Sector Trends

Invest Canada states that electric vehicles and its supply chain are critical elements of the strategies that multiple countries are adopting to meet their environmental sustainability pledge of net-zero by 2050. Canada is well positioned to lead across all five segments of the EV battery supply chain, these include mining and mineral processing, cathode and anode manufacturing, chemical precursors, battery manufacturing, electric vehicle manufacturing, and part supply and recycling.<sup>8</sup>

An analysis by the Trillium Network for Advanced Manufacturing showed that between 2020 and 2022, Canada has attracted:

- At least \$1 billion of capital investment related to mining and battery materials manufacturing, \$5.2 billion related to EV battery cell and module manufacturing.
- \$6.9 billion related to EV assembly (not including investments in hybrid vehicles), and approximately \$1 billion related to EV battery components and recycling (combined).<sup>9</sup>

Niagara's most recent 10 Year Economic Development Strategy highlights the recent announcements of automakers investing \$4 billion in transformative electric vehicle investments at their Ontario assembly plants.<sup>10</sup> other examples of key investments include:

- Stellantis announced it will invest up to \$1.5 billion to upgrade its assembly plant in Windsor to build new electrified vehicles. A \$4.9 billion investment is also being made by LG Energy Solutions and Stellantis in Windsor, to produce lithium-based batteries for electric vehicles. This is the largest single investment in manufacturing to be made in Ontario and will serve as a catalyst for the establishment of a strong battery supply chain.
- GM announced it would invest \$1 billion in its plant in Ingersoll to produce their BrightDrop EV delivery van – the first all-electric vehicle produced by a mainstream automaker in Canada. With the recent announcement of potential investment, the drive units built at St. Catharines will be used in vehicles built on GM's flexible EV architecture, called Ultium. 2023 will be a breakout year for Ultium vehicles with the

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<sup>8</sup> <https://www.investcanada.ca/industries/batteries-and-electric-vehicles-ev>

<sup>9</sup> Developing Canada's Electric Vehicle Battery Supply Chain: Quantifying the Economic Impacts and Opportunities, September 2022.

<sup>10</sup> Niagara Region, Niagara's 10 Year Economic Development Strategy 2022-2032

electric Cadillac LYRIQ the affordable Chevrolet Equinox EV, Chevrolet Blazer EV, Chevrolet Silverado EV, GMC Sierra EV, and GMC HUMMER SUV EV all entering the North American market<sup>11</sup>.

- In November 2021, Tesla announced that they were opening a battery manufacturing facility in Markham.
- Magna International announcing \$470 million in electric vehicle product in Ontario in February 2023.<sup>12</sup>
- Volkswagen announced an EV battery facility in St. Thomas in March 2023.<sup>13</sup>

In a response to these investments, and the current federal agenda to increase support and investment for electric vehicles in Canada, we have seen these announcements and plans for upgrades or expansions to their manufacturing operations to support electric vehicle manufacturing.<sup>14</sup>

### **The Niagara Region Advantage**

From the region, industry has access to large consumer and employment markets that include both the GTA and the United States via road and rail, in addition to access to the global market via St. Lawrence Seaway, these transportation linkages are indispensable for moving and shipping EV components. The Seaway is an important corridor for North America cargo shipment and has recently seen a boom in general cargo shipments at the end of 2021, due to the increasing demand for manufacturing and building materials (i.e., iron ore, steel, cement, stone, and other raw materials).

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<sup>11</sup> General Motors, retrieved from

<<https://news.gm.ca/en/home/newsroom.detail.html/Pages/news/ca/en/2023/feb/0220-stcatherines.html>>

<sup>12</sup> Magna International, Magna Announces New Facility and Expands in Five Other Locations Across Ontario to Support New Business, Feb 2023, retrieved from

<<https://www.magna.com/stories/news-press-release/2023/magna-announces-new-facility-and-expands-in-five-other-locations-across-ontario-to-support-new-business>>

<sup>13</sup> Invest Ontario, Canada and Ontario welcome historic investment from Volkswagen, March 2023, retrieved from < <https://www.investontario.ca/press-release/canada-ontario-welcome-historic-investment-volkswagen#:~:text=On%20August%202023%2C%202022%2C%20the%20Government%20of%20Canada,Canada%20is%20a%20destination%20of%20choice%20for%20investments.>>

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<sup>14</sup> Conference Board of Canada, An Electrified Outlook for Motor Vehicle and Parts Manufacturing, December 2021.

According to the Chamber of Marine Commerce, general cargo shipments were up 60%.<sup>15</sup>

The Region offers a suite of incentives to entice investment in manufacturing through their Gateway CIP Program, which compliments other municipal program offerings, among other incentives, Niagara offers the Niagara Free Trade Zone (FTZ), Brownfield Incentives, the Niagara's Development Charges Reduction Program, and Industrial Development Charge incentives and grants. Significant cost savings and benefits including lower utility costs that create potential operational cost savings of up to 19% have been identified by analysis completed by Niagara Economic Development<sup>16</sup>. According to Niagara Region Economic Development, the region ranked 7<sup>th</sup> among 115 North American cities when comparing the cost of operating a manufacturing business; the Region ranked ahead of cities such as Toronto, Montreal, Cleveland, Detroit, Chicago, Pittsburgh, and New York.

The region has a number of physical features amenable to EV production. As of 2019, 1,849 of vacant employment lands were in the region's Economic Gateway Municipalities<sup>17</sup>, The inventory includes approximately 2,300 designated employment parcels totaling 6,550 ha of land (with an average parcel size of 2.6 ha)<sup>18</sup> The region has access to discarded graphite that can be repurposed for use in products such as lithium batteries in electric cars and robotics.<sup>19</sup>

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<sup>15</sup> <https://www.stcatharinesstandard.ca/business/2021/09/16/general-cargo-shipments-up-6051-on-st-lawrence-seaway.html>

<sup>16</sup> <https://niagaracanada.com/key-sectors/manufacturing/>

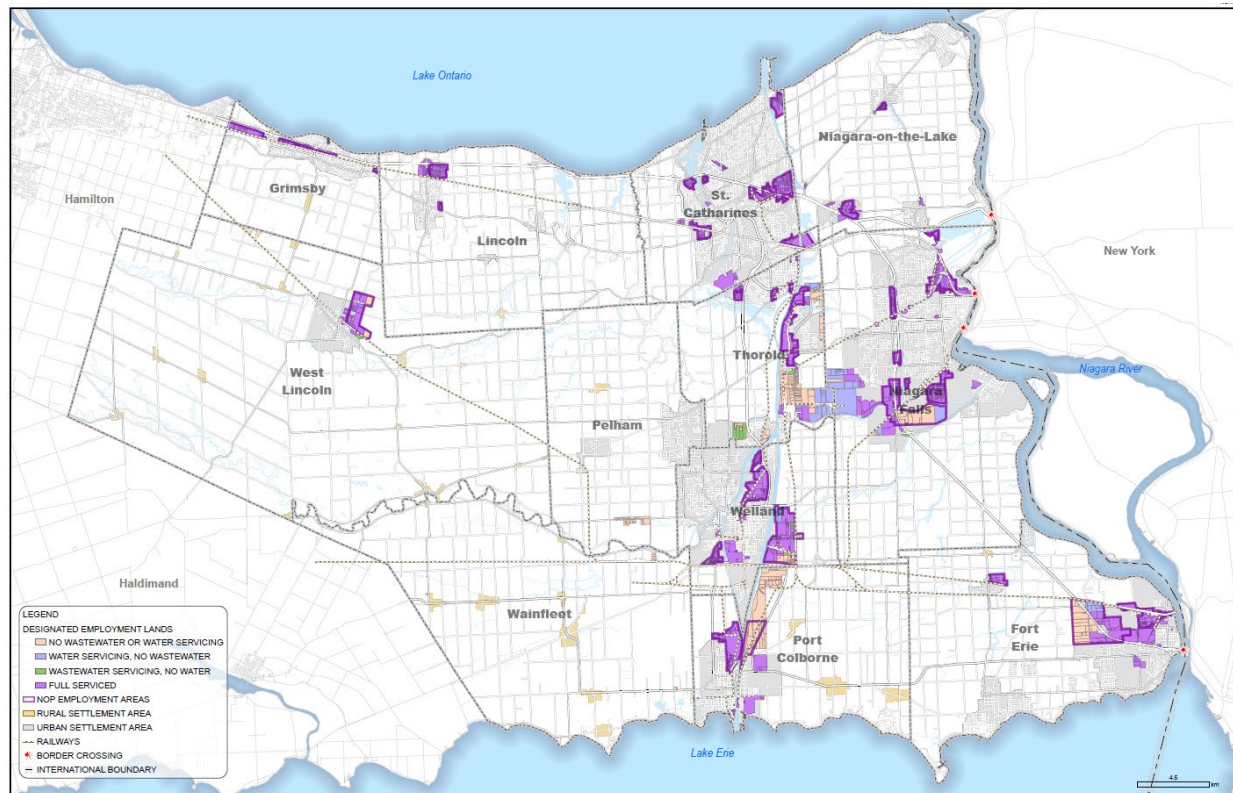
<sup>17</sup> Niagara Economic Gateway Municipalities include Thorold, Port Colborne, Welland, Niagara Falls and Fort Erie.

<sup>18</sup> Niagara Region's Official Plan – Niagara's Employment Area Strategy, 2020

<sup>19</sup> Niagara Region, retrieved from <<https://niagaracanada.com/graphite-mining-eyed-on-former-ucar-property-in-welland/>>



Figure 2 – Designated employment lands within the Niagara Region



Source: Niagara Region

## Employment and Business Structure in Niagara Region

According to Lightcast, employment in Niagara region's electric vehicle and supply chain sectors supported 5,923 jobs in 2022<sup>20</sup>. The largest subsectors are motor vehicle manufacturing (917 jobs or 15% of sector employment), new motor vehicle parts and accessories merchant wholesalers (228/4%), and motor vehicle parts manufacturing (158/3%).

EV battery manufacturing has an extensive supply chain in the region. Among the largest supply chain sectors by employment are architectural and structural metals manufacturing, and plastic product manufacturing.

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<sup>20</sup> Employment in some of these sectors may not be related to EV manufacturing.



Figure 3 – Employment EV and Supply Chain, Niagara Region, 2022

Description	Employment 2022	%
<b>Total Manufacturing and EV Related Employment</b>	<b>5,923</b>	<b>100%</b>
Motor vehicle manufacturing	917	15%
Architectural and structural metals manufacturing	820	14%
Plastic product manufacturing	649	11%
Electrical, plumbing, heating and air-conditioning equipment and supplies merchant wholesalers	565	10%
Machine shops, turned product, and screw, nut, and bolt manufacturing	563	9%
Iron and steel mills and ferro-alloy manufacturing	368	6%
Other fabricated metal product manufacturing	241	4%
Steel product manufacturing from purchased steel	229	4%
New motor vehicle parts and accessories merchant wholesalers	228	4%
Foundries	183	3%
Motor vehicle parts manufacturing	158	3%
Ventilation, heating, air-conditioning and commercial refrigeration equipment manufacturing	150	3%
Paint, coating, and adhesive manufacturing	138	2%
Other non-metallic mineral product manufacturing	134	2%
Navigational, measuring, medical and control instruments manufacturing	108	2%
Motor vehicle merchant wholesalers	92	2%
Engine, turbine, and power transmission equipment manufacturing	92	2%
Forging and stamping	67	1%
Glass and glass product manufacturing	58	1%
Rubber product manufacturing	57	1%
Textile product mills	45	1%
Other electrical equipment and component manufacturing	38	1%
Motor vehicle body and trailer manufacturing	25	0%
Hardware manufacturing	<10	Insf. Data
Leather and hide tanning and finish	0	0%

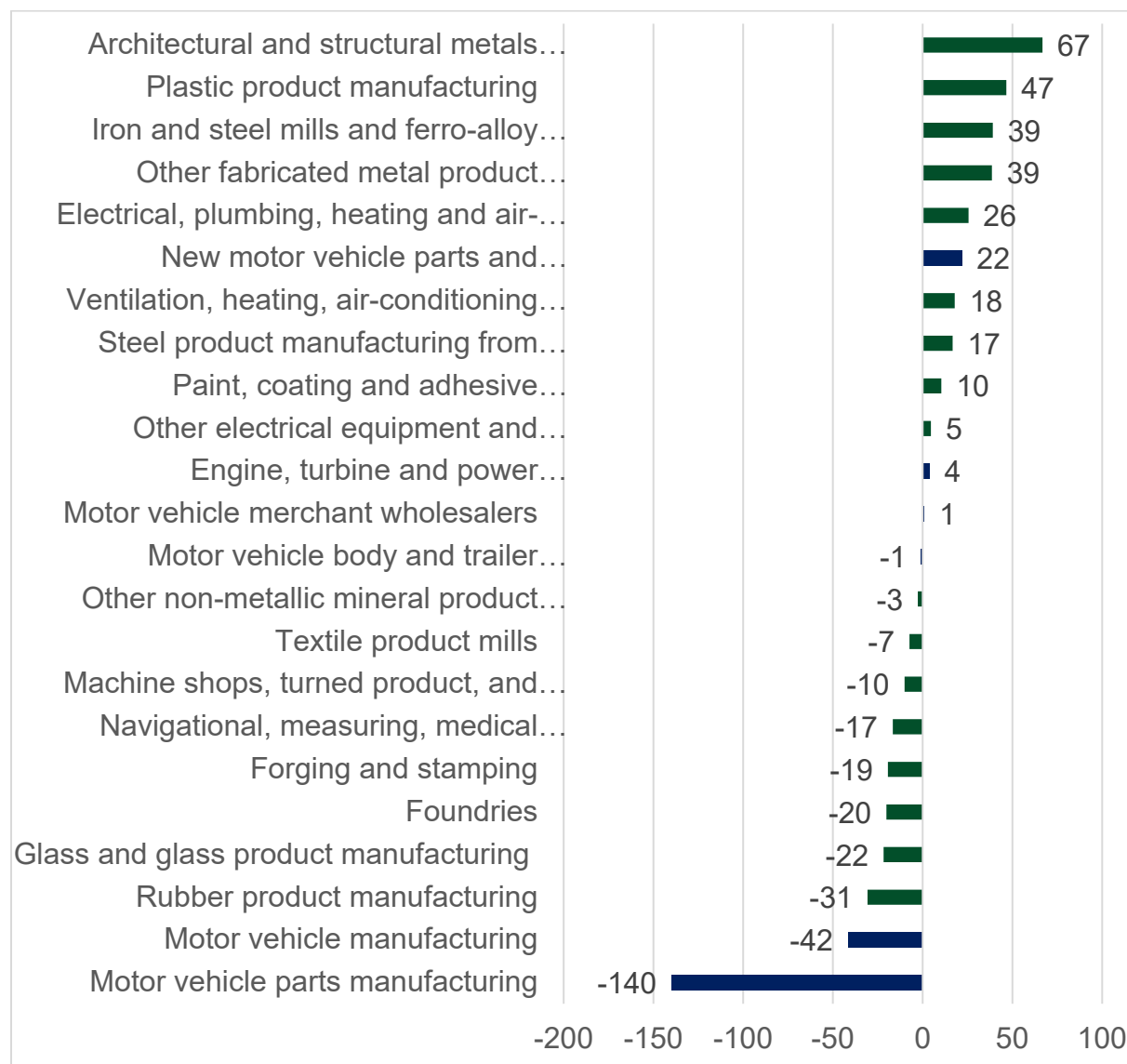
Source: Lightcast, 2022 - Datarun 2022.1

The projections presented below are based on regressions and utilize historic data 3, 5, and 10 years into the past<sup>21</sup>. The EV and supply chain related subsectors are expected to see some employment declines by 2028. Overall, the sector is expected to remain flat (-18 jobs: a 0.3% decline), compared to 2022. These losses will be driven by employment declines in key core sectors such as motor vehicle part manufacturing (-140 jobs or 89% decline), and motor vehicle manufacturing (-42 jobs or 5% decline). On the other hand, some employment gains are expected in sectors such as architectural and structural metals manufacturing (+67 jobs or 8% growth), and plastic product manufacturing (+47 jobs or 7% growth). The manufacturing sector is a leader in technology adoption industry, particularly automation and robotics technologies. Some of these declines could be the result of automation processes. Also, as production is moving towards light manufacturing – that, by nature, means smaller, tighter production processes with fewer people.

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<sup>21</sup> Lighcast, 2022. Datarun 2022.1

Figure 4 – Employment Change, Manufacturing and EV Related Sectors, Niagara Region, 2022-2028



Source: Lightcast, 2022- Datarun 2022.1 | Core industries highlighted in blue

382 businesses related to EV manufacturing and its supply chain were identified in Niagara region in June 2022. Most of these businesses (226), or 59%, had employees.

Industry sectors (core EV industries) with the largest number of businesses included new motor vehicle parts and accessories merchant wholesalers (29 businesses or 8% of businesses in the sector), and motor vehicle parts manufacturing (14/4%). Similar to the trend we saw with employment, the businesses with the largest number of establishments were in subsectors that are related to the sector's broader supply chain.

Figure 5 – Business Counts, Manufacturing and EV Related Sectors, Niagara Region, June 2022

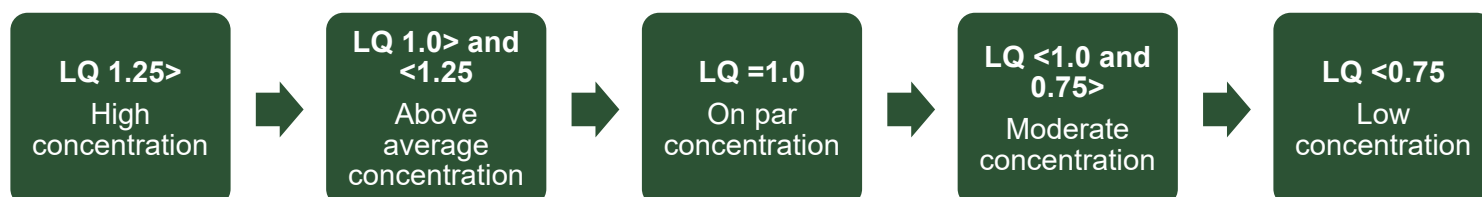
Description	With Employees	Without Employees	Total
<b>Total EV and Supply Chain</b>	<b>226</b>	<b>156</b>	<b>382</b>
Machine shops, turned product, and screw, nut, and bolt manufacturing	39	21	60
Electrical, plumbing, heating and air-conditioning equipment and supplies merchant wholesalers	33	13	46
Architectural and structural metals manufacturing	32	9	41
Other fabricated metal product manufacturing	12	19	31
<b>Motor vehicle merchant wholesalers</b>	<b>6</b>	<b>23</b>	<b>29</b>
<b>New motor vehicle parts and accessories merchant wholesalers</b>	<b>15</b>	<b>13</b>	<b>28</b>
Plastic product manufacturing	13	7	20
Textile product mills	9	8	17
<b>Motor vehicle parts manufacturing</b>	<b>10</b>	<b>4</b>	<b>14</b>
Other non-metallic mineral product manufacturing	7	4	11
Other electrical equipment and component manufacturing	6	5	11
Paint, coating, and adhesive manufacturing	7	2	9
Navigational, measuring, medical and control instruments manufacturing	6	3	9
Foundries	8	0	8
Forging and stamping	4	3	7
Ventilation, heating, air-conditioning and commercial refrigeration equipment manufacturing	6	1	7
<b>Motor vehicle body and trailer manufacturing</b>	<b>3</b>	<b>4</b>	<b>7</b>
Rubber product manufacturing	4	2	6
Iron and steel mills and ferro-alloy manufacturing	2	4	6
Glass and glass product manufacturing	0	5	5
<b>Engine, turbine, and power transmission equipment manufacturing</b>	<b>1</b>	<b>3</b>	<b>4</b>

Description	With Employees	Without Employees	Total
Steel product manufacturing from purchased steel	2	1	3
Hardware manufacturing	1	1	2
<b>Motor vehicle manufacturing</b>	<b>0</b>	<b>1</b>	<b>1</b>

Source: Canadian Business Counts, June 2022 | Provided by Niagara Region | Core industries highlighted in blue

## Location Quotient

As part of the economic baseline analysis, a Location Quotient (LQ) Analysis was completed to determine the concentration of employment in the EV battery manufacturing sector, in the Niagara region and relative to the rest of Ontario. The location quotient reveals what makes a region unique, in this case in comparison with other communities in Ontario. The following chart shows common LQ Classifications to interpret the figures in Figure 5.



The Niagara region shows a slightly above average concentration of EV and supply chain related businesses relative to Ontario. However, there is no evidence of a high concentration of businesses in any of the core vehicle and vehicle parts manufacturing except for engine, turbine, and power transmission equipment manufacturing (4 businesses – LQ 1.60). The Region displays a high concentration of businesses in some of the supply chain industry subsectors.

Figure 6 – Business Concentrations (Location Quotients), Manufacturing and EV Related Sectors, Niagara Region, June 2022

Description	LQs Total
<b>Total EV and Supply Chain</b>	<b>1.05</b>
Textile product mills	2.91
Iron and steel mills and ferro-alloy manufacturing	3.78
Foundries	2.93

Description	LQs Total
Forging and stamping	1.72
Paint, coating, and adhesive manufacturing	1.70
Engine, turbine, and power transmission equipment manufacturing	1.60
Rubber product manufacturing	1.51
Other non-metallic mineral product manufacturing	1.45
Architectural and structural metals manufacturing	1.30
Machine shops, turned product, and screw, nut, and bolt manufacturing	1.27
Motor vehicle body and trailer manufacturing	1.21
Other fabricated metal product manufacturing	1.06
Glass and glass product manufacturing	0.89
Motor vehicle merchant wholesalers	0.89
Motor vehicle parts manufacturing	0.88
New motor vehicle parts and accessories merchant wholesalers	0.88
Navigational, measuring, medical and control instruments manufacturing	0.82
Other electrical equipment and component manufacturing	0.81
Electrical, plumbing, heating and air-conditioning equipment and supplies merchant wholesalers	0.81
Steel product manufacturing from purchased steel	0.76
Ventilation, heating, air-conditioning and commercial refrigeration equipment manufacturing	0.76
Hardware manufacturing	0.68
Plastic product manufacturing	0.66
Motor vehicle manufacturing	0.37

Source: Canadian Business Counts, June 2022 | Provided by Niagara Region

## Job Demand

Between January 1, 2020, to November 30, 2022, a total of 547 job postings in industries related to the EV manufacturing sector and supply chain were recorded in the Niagara region. Most of these job postings were in the other fabricated metal product manufacturing (167 job postings), and other non-metallic mineral product manufacturing (75 job postings). Most of these job postings were advertised in 2022.

Figure 7 – Job Demand (Job Postings) by Industry Sector (Manufacturing and EV Related Sectors), Niagara Region, January 1, 2020, to November 30, 2022

NAICS	2020	2021	2022	Total Postings	%
<b>Total</b>	<b>107</b>	<b>156</b>	<b>284</b>	<b>547</b>	<b>100%</b>
3329 - Other Fabricated Metal Product Manufacturing	29	56	82	167	30.5%
3279 - Other Non-Metallic Mineral Product Manufacturing	9	11	55	75	13.7%
3362 - Motor Vehicle Body and Trailer Manufacturing	9	26	10	45	8.2%
3255 - Paint, Coating and Adhesive Manufacturing	11	9	19	39	7.1%
3315 - Foundries	11	6	22	39	7.1%
3327 - Machine Shops, Turned Product, and Screw, Nut and Bolt Manufacturing	11	9	7	27	4.9%
4161 - Electrical, Plumbing, Heating and Air-Conditioning Equipment and Supplies Wholesaler-Distributors	5	5	14	24	4.4%
3312 - Steel Product Manufacturing from Purchased Steel	2	4	13	19	3.5%
3261 - Plastic Product Manufacturing	4	11	3	18	3.3%
3323 - Architectural and Structural Metals Manufacturing	2	4	10	16	2.9%
4152 - New Motor Vehicle Parts and Accessories Wholesaler-Distributors	0	1	13	14	2.6%
4151 - Motor Vehicle Wholesaler-Distributors	0	5	5	10	1.8%
3361 - Motor Vehicle Manufacturing	6	0	3	9	1.6%
3272 - Glass and Glass Product Manufacturing	1	0	7	8	1.5%
3336 - Engine, Turbine and Power Transmission Equipment Manufacturing	1	3	4	8	1.5%
3345 - Navigational, Measuring, Medical and Control Instruments Manufacturing	2	1	4	7	1.3%

NAICS	2020	2021	2022	Total Postings	%
3363 - Motor Vehicle Parts Manufacturing	1	1	4	6	1.1%
3114 - Fruit and Vegetable Preserving and Specialty Food Manufacturing	0	3	2	5	0.9%
3334 - Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	2	0	3	5	0.9%
3262 - Rubber Product Manufacturing	0	0	3	3	0.5%
3321 - Forging and Stamping	1	0	1	2	0.4%
3359 - Other Electrical Equipment and Component Manufacturing	0	1	0	1	0.2%

Source: Vicinity Jobs

## Sector Development

### Federal Government Initiatives

The Canadian Federal Government has committed to achieving net-zero emissions by 2050 through the Canadian Net-Zero Emissions Accountability Act. Due to this legislation, there has been a shift in the types of vehicle manufacturing taking place in the Country and the government has committed to investing in this industry through programs such as the Net Zero Accelerator.

The Federal Economic Development Agency for Southern Ontario (FedDev Ontario) is investing in the electric vehicle supply chain and has invested more than \$47 million in 12 EV related projects, creating and maintaining more than 700 jobs since 2015.<sup>22</sup> Furthermore, Canada's Critical Minerals Strategy (backed by up to \$3.8 billion in federal support), proposed funding for critical minerals supply chain, from geoscience and exploration to mineral processing, manufacturing, and recycling applications, including

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<sup>22</sup> Government of Canada, Government of Canada invests in an end-to-end electric vehicle supply chain, Feb 16, 2023, retrieved from <  
<https://www.canada.ca/en/economic-development-southern-ontario/news/2023/02/government-of-canada-invests-in-an-end-to-end-electric-vehicle-supply-chain.html>>



support for research, development, and technological deployment, all relevant to EV battery manufacturing and its supply chain<sup>23</sup>.

## **Provincial Government Initiatives**

The Ontario Vehicle Innovation Network (OVIN) is a provincial initiative that looks to accelerate the development and commercialization of next generation electric and autonomous vehicles to support Ontario's role as the manufacturing hub of Canada, while leveraging the natural resources of Northern Ontario. A program that is offered through this initiative relevant to EV Battery Manufacturing is the Research and Development Partnership Fund – Electric Vehicle. This program helps small and medium businesses that require co-investments, and the support of other partners to develop, test, validate, and commercialize EV and battery focused technologies. OVIN also supports the talent development in the automotive sector in the province and has support for both internships for college and university students and fellowships for PhD graduates and post-doctoral fellows.

In 2019, the Government of Ontario launched "Driving Prosperity: The Future of Ontario's Automotive Sector" program. The two-phased initiative envisions to strengthen and build on Ontario's North American leadership in automotive assembly and part production, as well as position the province to be a leader in the development and commercialization and adoption of advanced manufacturing and mobility technologies<sup>24</sup>.

## **Recent EV Investments in Ontario**

As mentioned earlier in this report, some of the key investments in the EV sector in Ontario include:

- Stellantis announced it will invest up to \$1.5 billion to upgrade its assembly plant in Windsor to build new electrified vehicles.
- GM announced it would invest \$1 billion in its plant in Ingersoll to produce their BrightDrop EV delivery van – the first all-electric vehicle produced by a mainstream automaker in Canada. With the recent announcement of potential invest, the drive units built at St. Catharines will be used in vehicles built on GM's flexible EV architecture, called Ultium. 2023 will be a breakout year for Ultium vehicles with the electric Cadillac LYRIQ the affordable Chevrolet Equinox EV, Chevrolet Blazer EV,

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<sup>23</sup> Government of Canada, Prime Minister Office. Retrieved from <<https://pm.gc.ca/en/news/news-releases/2023/01/16/strengthening-global-electric-vehicle-supply-chains-canadian#:~:text=Permanent%20magnets%20and%20rare%20earth,support%2C%20announced%20in%20Budget%202022.>>

<sup>24</sup> Government of Ontario, Driving Prosperity: The Future of Ontario's Automotive Sector.

Chevrolet Silverado EV, GMC Sierra EV, and GMC HUMMER SUV EV all entering the North American market.

- In November 2021, Tesla announced that they were opening a battery manufacturing facility in Markham.
- A \$4.9 billion investment is being made by LG Energy Solutions and Stellantis in Windsor, to produce lithium-based batteries for electric vehicles. This is the largest single investment in manufacturing to be made in Ontario and will serve as a catalyst for the establishment of a strong battery supply chain.
- In 2023, the governments of Canada and Ontario announced an additional \$50 million in funding for the Oneida Energy Storage Project. This project is a 250-megawatt battery storage facility in Haldimand County and will support the operation of Ontario's clean electricity grid and has received \$170 million in funding from the Canada Infrastructure Bank. The project is expected to be operational in 2025 and will provide enough power to meet the peak demand of a city the size of Oshawa.<sup>25</sup>
- In mid-February 2023, Magna, one of the world's largest suppliers in the automotive industry, announced that it is expanding its operation across six locations in Ontario with a \$471 million investment. The vision for this investment is to expand and strengthen its electric vehicle parts production to meet the growing demand within the industry.<sup>26</sup>
- On July 20202, Umicore and the Government of Canada signed a Memorandum of Understanding (MoU) to finalize the support application of the project under the Strategic Innovation Fund. This MoU follows a signed agreement with Loyalist Township to secure a plot of land of about 350 acres in Loyalist, Ontario. Umicore is targeting to start construction in 2023 and operations at the end of 2025 with the potential to reach by the end of the decade an annual production capacity capable of powering approximately one million EVs<sup>27</sup>.
- On March 13, 2023, Volkswagen selected St. Thomas, Ontario for first overseas battery plant. The company's battery subsidiary will build what it calls a gigafactory in the community and intends to start production in 2027<sup>28</sup>.

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<sup>25</sup> Government of Ontario, Governments of Canada and Ontario Working Together to Build Largest Electricity Battery Storage Project in Canada, 2023.

<sup>26</sup> Invest Ontario, Magna Expands Ontario EV Operations with Brampton Plant and Five Upgraded Facilities, 2023.

<sup>27</sup> Umicore, New Release (July 13, 2022). Retrieved from<<https://www.umicore.com/en/newsroom/umicore-prepares-to-construct-battery-materials-production-plant-in-canada/>>

<sup>28</sup> Volkswagen to open its first North American EV battery plant in St. Thomas, Ont. | CBC News

## Global Market Drivers

### **Key subsectors: automotive chassis, electric motors, automotive textiles supply chain**

As the electric vehicle industry becomes a driving force in the automotive industry, the entirety of the automotive supply chain will be implicated from the materials used to supply automotive production to propulsion technology. In the United States, new federal targets to grow the electrification market through investments into charging infrastructure and other regulations bodes well for the potential in the American market. There are opportunities for electrification of vehicles over the coming decade even in modes where emissions are hard to abate such as for heavy-duty trucks, aviation, and shipping. As Niagara region is close to a strong steel production region (e.g., Hamilton is home to the world's largest integrated steel producer), automotive chassis derived from green steel is a key subsector worthy of note. Electrification in the automotive segment goes beyond materials used in the manufacturing process. Electric propulsion technology that enables the electrification of vehicles is growing. Implementation of stringent environmental policies and government regulations to control climate change across the globe has led to restrictions on the usage of traditional IC engines. This has propelled growth in clean technologies, including the electric battery and propulsion technology market (e.g, Government of Canada to require 100% of car and passenger truck sales be zero-emission by 2035 in Canada).

## Investment Trends & Location Factors

At least 10 projects were recorded in the electric vehicle market and its supply chain in Ontario from 2018 – 2022. Some of the most noteworthy projects include:

- In May 2022, Spain-based Wallbox, which develops electric vehicle charging equipment, opened a new warehouse in Mississauga, Canada. When complete, the warehouse will provide full logistics services, including warehousing, inventory management, and transportation to the local market
- In April 2022, Netherlands-based Stellantis, a multinational automotive manufacturing corporation, announced plans to establish a new battery R&D facility in Windsor, Canada. The 9,290 square meter facility, which will be located beside its existing manufacturing site, is expected to create 650 jobs. It will be dedicated to electric vehicle platform and battery research and is the company's first such lab in North America. The lab forms part of a \$2.8 billion investment plan announced by the company to ramp up its electric vehicle manufacturing and research operations in Canada. This will see two of its manufacturing sites, located in Windsor and Brampton, retooled to produce electric vehicles.
- In March 2022, Netherlands-based Stellantis invested \$4.1 billion to establish a large-scale electric vehicle battery manufacturing facility through a joint venture

with South Korea-based LG Energy Solution in Windsor, Canada by the first quarter of 2024. The JV company will produce lithium-ion battery cells and modules to serve North America. It will have an annual production capacity over 45-gigawatt hours and will create an estimated 2,500 new jobs. The new factory will be built at 9,865 Twin Oaks Drive and is supported by the City of Windsor and the Ontario government.

- In January 2021, General Motors Canada, an automotive manufacturer, and a subsidiary of US-based General Motors, invested \$800m into its manufacturing plant in Ingersoll, Canada. The investment equipped the plant, which makes Chevrolet Equinox SUVs, with the capabilities to build its EV600 electric delivery vans. The expansion is scheduled to be completed in 2023. The project created 699 jobs.

Patent activity shows that battery and rechargeable batteries have been dominating the electric vehicle patent segment and in particular R&D in batteries by big automakers. Daimler, Toyota, Volkswagen, Audi, and Ford have been a key driving force for acceleration in this segment. Trends in venture capital funding show there have been 470 investment rounds in the electric vehicle segment in 2022.<sup>29</sup> In general, venture capital firms are moving away from investment in pre-seed/seed stage and focusing on investing in existing deals<sup>30</sup>.

Examining motives and determinants for projects in the electric vehicle sector shows that location requirements for foreign direct investment into North America are a skilled workforce, which accounts for 39% of projects and government support, which accounts for 31% of projects. The regulatory environment also plays a stronger role than in any of the other target sectors. Lack of serviced industrial lands have also been cited by Niagara Region as a potential barrier to investment.

Figure 8 – Investment motives into the North American electric vehicle market

Motive	% of FDI Projects	% of Companies
Skilled workforce availability	39.4	41.1
Government support	33.8	33.8
Proximity to markets or customers	29.5	30.8
Regulatory environment	18.3	19.1
Domestic market growth	14.0	14.7
Industry cluster	14.0	14.7
Transport infrastructure	11.2	11.7

<sup>29</sup> Crunchbase, 2022.

<sup>30</sup> Ibid.

Motive	% of FDI Projects	% of Companies
Suppliers & joint venture partners	8.4	8.8
Technology and innovation	7.0	7.3
Universities and research hubs	4.2	4.4
Quality of life	2.8	2.9
Sites and property	2.8	2.9
Taxes & incentives	2.8	2.9

Source: fDimarkets

## Outlook

Electrification has a strong growth trend within the automotive sector and EVs are expected to account for 75% of car sales by 2030.<sup>31</sup> In terms of areas of growth, the revenue in the electric vehicle market in the United States will increase to US\$139.20 billion by 2027 from US\$61.30 billion in 2023 and is expected to register an annual growth rate of 22% from 2023 to 2027.<sup>32</sup> Electric vehicle market revenue in Asia is expected to reach US\$198.20 billion in 2023 and will grow by a compound annual growth rate (CAGR) of 14% from 2023 to 2027.<sup>33</sup> In Europe, the electric vehicle market is projected to reach US\$181.70 billion in 2023 and will grow by a CAGR of 17% which will result in a projected market value of US\$340.90 billion by 2027.<sup>34</sup>

Overall, the global automotive chassis market is valued at \$US48.37 billion and is expected to grow at a CAGR of 5% from 2022 – 2030.<sup>35</sup> Demand in this segment is also driven by European Union legislation requirements, for example, major car manufacturers such as Mercedes-Benz AG is investing into H2 Green Steel which is part of Mercedes-Benz's Ambition 2039, which includes a CO<sup>2</sup>-neutral vehicle fleet by 2039. Other examples include Volvo Group which has committed to using 100% green steel by 2050 as part of the global SteelZero initiative pioneered by industry leaders. A niche that is worth considering given Niagara's strengths in textile product mills is automotive textiles. The market is expected to be valued at US\$41.4 billion by 2030 and

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<sup>31</sup> Why the automotive future is electric? McKinsey and Company, 2021  
<<https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/why-the-automotive-future-is-electric>>

<sup>32</sup> Statista, Electric Vehicles – United States, 2023.

<sup>33</sup> Statista, Electric Vehicles – Europe, 2023.

<sup>34</sup> Ibid.

<sup>35</sup> Market Research Future, Automotive Chassis Market Research Report Information by Chassis Type, 2018.

in terms of application upholstery will be the biggest segment due to the need for vehicle floor coverings and seats.<sup>36</sup>

Deloitte predicts that by 2030, Battery Electric Vehicles will account for 81% (25.3 million) of all new EVs sold.<sup>37</sup> By contrast, Plug-in Hybrid Electric Vehicles sales are expected to reach 5.8 million by 2030. The light commercial vehicle market is expected to register the highest levels of growth within the overall market due to the need for retailers and transport fleets to respond to increasing demand in the distribution market, while doing so with a smaller carbon footprint. Growth in the North American battery market is driven by increased investments and decreasing battery prices. Relatedly, the electric motor market size registered a market value of US\$18 billion. Traction motors which are further divided into AC and DC motors are expected to be the leading motor type. In particular, AC segments that are used more regularly in electric vehicle manufacturing. It is predicted that Europe will be the biggest market in traction motors and will grow by 27% in market value by 2027.

### **Recruitment Zones<sup>38</sup>**

Examining prospective growth companies in this target sector shows that 40% of high-growth companies worldwide were located in the United States and 13% in Canada.<sup>39</sup> The autonomous vehicle and electrification market is clustered around traditional automotive hubs in North America. The Midwest including Detroit (MI), Chicago (IL), and Columbus (OH) stand out as the key clusters in this segment. Beyond that, growing hubs include San Antonio (TX), Athens (TN), and Los Angeles (CA). Outside of North America, major automotive hubs are in Germany such as Munich and Stuttgart. Growing automotive hubs are in Israel, United Kingdom, France, Spain, and the Netherlands.

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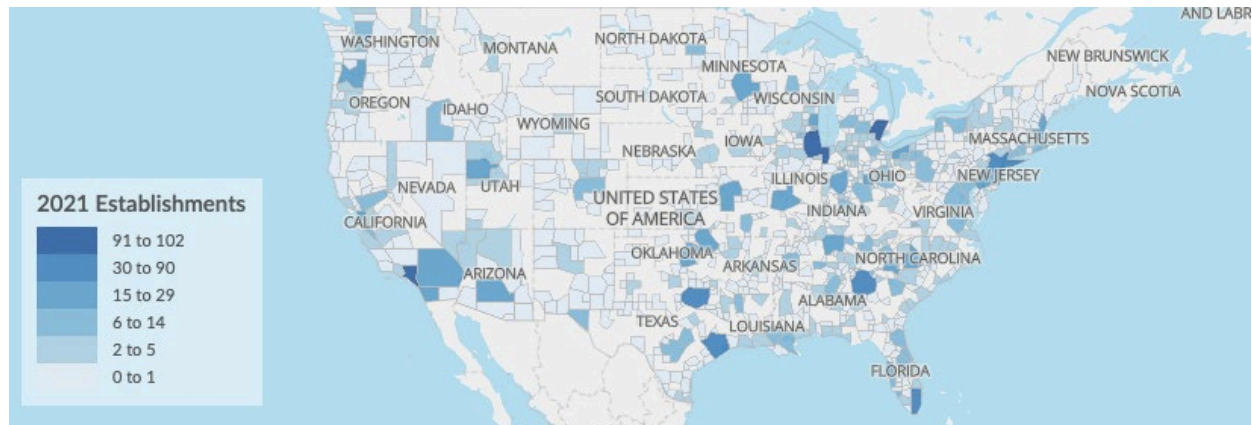
<sup>36</sup> Straits Research, Automotive Textiles Market Size is projected to reach USD 41.42 Billion by 2030, growing at a CAGR of 4.2%: Straits Research, 2022.

<sup>37</sup> Deloitte, Electric Vehicles, 2020.

<sup>38</sup> Recruitment zones refer to areas where Niagara Region can focus marketing and promotion efforts to attract potential investors.

<sup>39</sup> Gazelle.ai, 2023.

Figure 9 – Electric vehicle hubs in the United States



Source: Lightcast

# SWOT Analysis

The EV battery manufacturing sector and supply chain includes industries involved in the design, manufacturing, distribution, and miscellaneous services linked to EV manufacturing (textile supply, manufacturing of electronic components, etc.). Electric vehicle manufacturing and its supply chain are critical elements for Canada's emission reduction goals, and the country is well positioned to lead across all elements from manufacturing to EV battery supply chain. Recent investments in Southern Ontario reflect potential opportunities in the sector.

The following is an overview of the strengths, weaknesses, opportunities, and threats that face the EV and supply chain in Niagara region. This SWOT analysis utilizes the background research that was completed for the sector, as well as engagement from key stakeholders from the EV battery manufacturing sector in Niagara region.

Marketing messaging is recommended to align with the opportunities and strengths statements detailed below, which were drawn from stakeholder focus group sessions and uncovered through the research.

**Key subsectors:** automotive chassis, electric motors, automotive textiles supply

Electric Vehicle Battery Manufacturing SWOT	
Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• High concentration of businesses in the iron and steel production and textile production mills, relative to Ontario, and these industries can support EV manufacturing supply chains.</li> <li>• Strong support organizations in place for specialty manufacturing including the Trillium Network for Advanced Manufacturing, Niagara College – Walker Advanced Manufacturing and Innovation Centre, and Brock University.</li> <li>• Local manufacturers benefit from trade agreements including the Comprehensive Economic and Trade Agreement (CETA), and the Canada-USA-Mexico Agreement</li> </ul>	<ul style="list-style-type: none"> <li>• By June 2022, Niagara region showed a low concentration of businesses in the core motor vehicle manufacturing businesses.</li> <li>• Poor data availability at subsector level to measure the impact of EV battery manufacturing. Consider renewing the sector profile using core NAICS codes at 4 and 6-digit level as new industry data becomes available.</li> <li>• Skilled labour shortages were reported to be affecting the manufacturing sector and affect manufacturing. Unique location</li> </ul>



<p>(CUSMA). Under the CETA, EU tariffs have been eliminated on all Canadian auto parts.</p> <ul style="list-style-type: none"> <li>• Revised automotive rules under CUSMA have the potential to generate increased automotive production in North America, including in Canada, as well as additional sourcing opportunities for Canadian parts producers.</li> <li>• Designation as a Canadian Foreign Trade Zone (FTZ) helps companies access the federal, provincial and regional programs that support Canada's export development efforts. The FTZ designation make management of vehicle production plants easier, as no duty or tax is payable if production is export oriented.</li> <li>• Niagara College partners with Napa College for technician trainings and have made significant advancements in EV-related training.</li> </ul>	<p>requirements for foreign direct investment include a skilled workforce which accounts for 39% of project location decisions.</p> <ul style="list-style-type: none"> <li>• Local businesses engaged in this study did not express strong interest in EV battery investment and were concerned with overall cost.</li> <li>• Niagara's ageing demographic trends will require targeted efforts to build the labour force needed for this sector, particularly in technical professions.</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• Unique location requirements for EV manufacturing foreign direct investment into North America include government support, which accounts for 31% of projects, and there is widespread government support for EV manufacturing to support Niagara Region's efforts.</li> <li>• Automotive textiles are a related sector worth considering. The market is expected to be valued at US\$41.4 billion by 2030.</li> <li>• The whole automotive supply chain will be impacted by the demand for EV automotive production, with opportunities for environmentally sustainable approaches to production.</li> </ul>	<ul style="list-style-type: none"> <li>• The EV Battery and associated supply sectors are expected to see some employment declines by 2028. Overall, the sector is projected to remain flat in the upcoming years.<sup>40</sup></li> <li>• There are unique needs for serviced land that is specifically suited for an EV battery production facility. The region may find difficult to provide the land required for a full-scale battery manufacturing facility.</li> <li>• Canada's auto manufacturing sector is reliant on trade relationships across the Americas,</li> </ul>

<sup>40</sup> Lightcast, 2022. Datarun 2022.1

<ul style="list-style-type: none"> <li>• Niagara is located close to strong steel production region, automotive chassis derived from green steel is a key subsector.</li> <li>• Related opportunities for electrification can be seized over the coming decade as technology advances, even in heavy-duty trucks, aviation, and shipping.</li> <li>• Deepen relationships with existing automotive manufacturers in Niagara region, and bigger industry players such as the automotive industry to explore interest in EV manufacturing opportunities in Niagara region on an ongoing basis.</li> <li>• Niagara Region could take an active role and look to attract companies that produce goods required by other EV Battery manufacturing operations and become a bigger part of the global supply chain.</li> <li>• There is an opportunity for a recycling and battery refurbishing facility in the Region. This would get around the regulatory export concerns for EV batteries.</li> <li>• Investment by the Federal Government in the Canadian semiconductor and photonic industry will have implication for local manufacturers (semiconductors are used to power a broad range of everyday products including automobiles).</li> <li>• Further explore technology adoption and commercialization opportunities with local business and post-secondary education, as related to global trends in technology.</li> </ul>	<p>and competition as well as opportunity related to Mexico and the United States must be monitored. For example, the CHIPS and Science Act of 2022, a U.S. federal law offers incentives for semiconductor manufacturing and aims to increase US-based supply chain development.</p> <ul style="list-style-type: none"> <li>• The U.S. Inflation Reduction Act will pour billions into the American manufacturing sector over the next few years and could trigger a flight of investment capital south of the border, as well as result in fewer manufacturing jobs in Canada<sup>41</sup>.</li> </ul>
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<sup>41</sup> [financialpost.com/commodities/energy/u-s-inflation-act-impact-canada](https://financialpost.com/commodities/energy/u-s-inflation-act-impact-canada)

# Conclusion

EV battery manufacturing and associated supply sectors in particular, present opportunities for Niagara Region's investment attraction efforts. Niagara Region has related business clusters to build a case for EV investment, and with the support of all levels of government, can offer incentives for new investment and retooling of local manufacturers to access the ripple effects of current and planned EV manufacturing investment.

Niche opportunities in green auto parts manufacturing were identified for Niagara Region to consider in an FDI approach, as well as supply chain opportunities to supply larger manufacturers who are active in EV manufacturing. Electrification is expected to continue over time and extend beyond cars to other industries, setting the stage to build regional capabilities in this emerging sector as an opportunity for economic development.

The number of employment opportunities specific to the sub sector could be evaluated and monitored to show progress. In addition, workforce constraints, the need for specific parcels of fully serviced land, and the level of interest of the regional business community in the EV battery manufacturing opportunity are key constraints to consider.

For Niagara to build a presence in EV manufacturing, the efforts of the Region can be focused on developing the investment proposition for EV, and in working with area Municipalities and local employers to identify opportunities for new business and retooling.

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