



Advanced Manufacturing Council

2024 Final Report



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SECTION 1 :

Introduction

Made in Ontario: A call to action

Over the last two decades, Ontario's manufacturing sector has been subject to an increasingly stark and dire reality. Competing jurisdictions were outperforming Ontario, the cost of doing business in the province was soaring due to increased red tape and energy costs, and as a result, Ontario lost nearly 300,000 manufacturing jobs that played a critical role in supporting the province leaving some regions with tepid or negative job growth.

Today, Ontario is turning the corner on these twenty years of slow growth and charting a permanent path to renewal for its manufacturing sector.



Two lost decades

Between 2002 and 2022, the United States (U.S.) manufacturing sector's output grew by 3%, yet in Ontario it comparatively shrunk by 14%. In that same period, Ontario's manufacturing exports increased at a slower rate than all provinces, apart from Prince Edward Island.

These results have had a stark impact on Ontario's economic performance, framing the province as uncompetitive. Today, the province's Gross Domestic Product (GDP) per person – in other words, the average Ontarian's share of the province's prosperity – is nearly \$20,000 lower than in the U.S. Great Lakes region.

The choice is clear – Ontario needs to return to the business of being a global leader in the manufacturing sector. Those who invest in manufacturing and innovation will prosper. Those who do not will be left behind.

Climbing back from the last two decades will not be without challenge, but the effort is essential for the future prosperity of our province.

Ontario's manufacturing strengths are widespread, ranging from mature industries such as steel, aerospace, automotive, chemicals, medical/pharmaceutical manufacturing, mining and information and communications technologies (ICT) while also recognizing the emergence of growing industry opportunities, such as clean technology and the green economy. The province is also home to many world-class competitive companies.

However, the prosperity of the manufacturing sector today is threatened, having been eroded as our competitors progressed faster in improving their productive capacity. Many Ontario manufacturing companies have historically underinvested, failing to sufficiently adopt new technologies and techniques to compete with our advancing peers. These compounded shortcomings of the last twenty years have resulted in the U.S. manufacturing sector increasing its productivity almost three times faster than Ontario firms.

The results of this growing productivity gap are alarming. It not only threatens the sector's long-term competitiveness and the critical jobs it supports, but the broader standard of living of every resident in the province. It means less money in workers' pockets and less money for government to invest in health care, education, infrastructure and other essential services.

A generational opportunity

Fortunately, there are emerging signs of a manufacturing revitalization. In recent years, the Ontario government has taken meaningful actions to position manufacturers for success in a new economic era.

It has secured historic investments in Electric Vehicle (EV) platforms, battery plants and green steel that are enabling Ontario's auto sector to make a generational shift to the car of the future, setting up the domestic supply chain not just to avoid terminal decline, but to thrive for the next 20 years.

The province has also driven down business costs, reduced red tape, leveraged competitive strengths, capitalized on critical minerals, promoted the sector through programs like **Ontario Made** and taken the essential first steps to create a talent pipeline of skilled workers and tradespeople.

For the first time in years, Ontario is being proactive in attracting a wealth of emerging manufacturing opportunities that it should be primed to capitalize on, particularly as global manufacturers look to re-shore production to locations like Ontario, a location that provides secure supply chains and ready access to the strategic raw materials needed to thrive in competitive global markets.

Employment in the province is at a five-year high. Since 2020, the province has attracted nearly \$50 billion in new manufacturing investments, with these projects expected to create more than 23,000 new jobs in the coming years.

At the same time, unprecedented advancements in advanced robotics, artificial intelligence (AI) and predictive analytics provide Ontario manufacturers with opportunities to revolutionize production lines and increase productivity through tools like preventative maintenance.

A sprint to increase productivity

The Council is calling on the province to build on its actions to date and put in place a plan to solidify the resurgence of manufacturing for the years ahead.

The first order of attention must be a sprint to increase productivity, which will make or break the Ontario manufacturing sector in the decades to come.

This requires **participation and coordination from every level of government**, as well as a commitment from industry to act and pursue improvements at a timely pace.

It requires a government that continues to **seek efficiencies** and creates an economic environment with smart regulations, a low cost of doing business and an available pipeline of industrial land needed to build the manufacturing projects of the future.

It requires support for manufacturers to increase the **adoption of leading-edge technologies and processes** that boost productivity and reduce costs of products, as well as for industry-led research that provides a ready supply of new innovations.

It requires a comprehensive approach to supporting the **green transition**, particularly as federal carbon pricing is set to drive up the price of natural gas and put small manufacturers at risk.

It requires a workforce with the skills needed to be competitive, including the programmers, skilled trades workers and engineers to install, operate and maintain new technologies on the production line. This includes cultivating an education system from kindergarten through to graduate school that prioritizes the literacy, math, science and digital skills **needed to thrive in a 21st-century economy** and **support for existing workers** to bring their skills and expertise into this new age of manufacturing.

It is also important to include new Canadians in the advanced manufacturing transformation of our province and that is why the post-secondary education system must target science, technology, engineering and mathematics (STEM) and technology programs in recruiting students. This is where the jobs are now and will be in the future.

By working together, industry and government, as well as labour and academia, can secure Ontario's place as a manufacturing leader, all while creating good-paying jobs and enshrining a new age of prosperity for all people of Ontario now and into the future.

SECTION 2:

2035 vision for Ontario manufacturing

The vision

To grow Ontario's manufacturing sector to new production heights, increasing its prosperity and addressing a declining standard of living of Ontario residents relative to competing jurisdictions.

To secure manufacturing's status as the province's economic engine, Ontario must pursue an all-of-government strategy to close the productivity gap with the U.S. by 2035.



Proposed actions for government

Accelerate Technology Development and Adoption	Encourage Investment and Boost Manufacturing Exports	Build a Green Economy	Invest in Jobs and Skills of the Future
Immediate Priorities			
Support Ontario manufacturers in adopting innovative technologies, including by better using the power of tax credits and increasing program offerings.	Ensure Ontario is competitive in retaining and attracting investment where payback to government is acceptable. Ensure availability of land for industrial projects.	Use the Emissions Performance Standards (EPS) program proceeds to help eligible firms invest in high-impact emissions reductions.	Support the attraction of skilled workers and advanced skills training to boost technology adoption.
Transformative Actions			
Establish a one-window office to manage government innovation programs and provide clear guidance to businesses. Rebalance government programs and supports to drive applied R&D.	Expand Invest Ontario's funding and mandate based on payback and supporting province's long-term vision. Maintain affordable access to clean electricity. Maximize existing trade agreements and create a level playing field for manufacturers.	Support manufacturers of all sizes to decarbonize their production processes, including by creating Ontario tax credits and other programs.	Expand interest in manufacturing careers. Ensure all K-12 schools develop in-demand skills for tomorrow's workforce. Redirect curriculum funding to meet industry's job requirements and incentivize STEM and skilled trades education in the post-secondary sector.
Create an ongoing role for industry in policymaking			
<p>Establish a forum for sustained and substantive engagement with industry.</p> <p>Support regional talent councils with manufacturers.</p>			

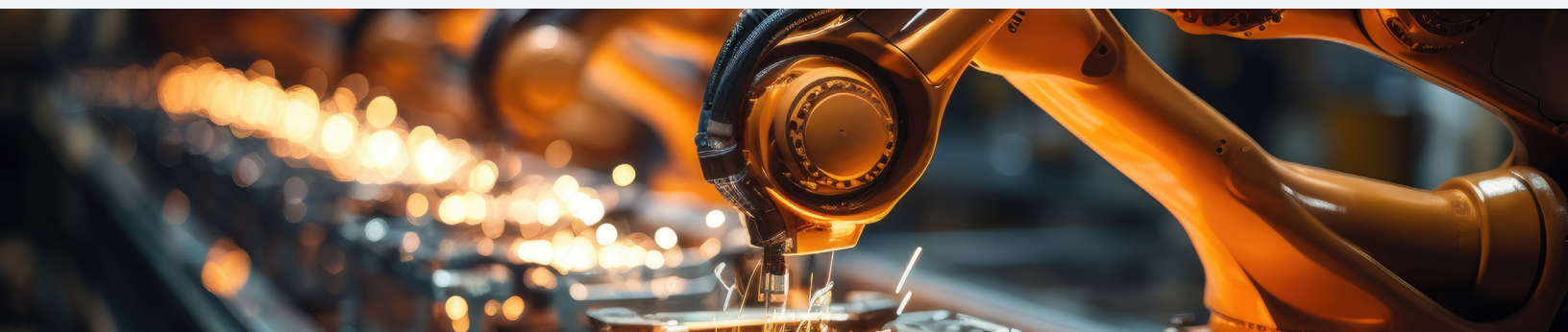
SECTION 3:

Areas of action for Ontario manufacturing

Goals for the sector

To deliver on the Council's 2035 vision for Ontario manufacturing, the government should push to achieve the following key goals:

- 1. Close the productivity gap: Increase manufacturing productivity by more than 25%**
 - From 2003 to 2023, manufacturing labour productivity in the U.S. increased by 2.1% per year, compared to 0.76% per year in Ontario.
 - To match U.S. growth rates, Ontario needs to increase its productivity by more than 25% over ten years.
- 2. Grow the manufacturing footprint: Increase manufacturing's contribution to Ontario's economy (real GDP) by 20% by 2035**
 - Over the last twenty years, Ontario's inflation-adjusted manufacturing GDP shrank by 0.71% per year, whereas it increased in the U.S. by 1.5% per year.
 - To begin to grow manufacturing to new production heights and match U.S. competitors, Ontario needs to increase its manufacturing GDP by 20% in the next ten years.



Accelerate technology development and adoption

THE CHALLENGE

As the manufacturing sector undergoes a once-in-a-generation transformation, Ontario's competitors are leveraging emerging technologies, such as AI and robotics, and making significant investments in research and development (R&D) and technology adoption to take the lead in the ongoing global productivity race. New technology is also imperative for manufacturers to meet their climate objectives and remain competitive in a new green economy.

- Ontario manufacturers lag in adopting productivity-enhancing technologies. In Ontario, only 28% of private investment in manufacturing from 2016 to 2022 went into intellectual property products, which includes patents and software required to adopt technologies like robotics and advanced analytics. In the U.S., this figure was much higher at 58%.
- Only 34% of Ontario manufacturers reported using automation or autonomous robots, with adoption being a much greater challenge for small and medium-sized companies.
- Ontario relies too heavily on public institutions for R&D – our province presently ranks a disappointing 21st among OECD countries for the proportion of R&D funded by business.

PROPOSED ACTIONS FOR GOVERNMENT

Immediate priority

1. Support Ontario manufacturers to adopt innovative technologies.

Suggestions for implementation

- Introduce tax credits and programs that offer direct support for manufacturers to adopt new technology.
- Make productivity improvements the primary objective of government business support programming and tax credits.
- Fund programs or organizations that provide facilities for testing new technologies and offer technology assessments for small and medium-sized manufacturers to identify potential opportunities for productivity improvements.
- Remove regulatory barriers (e.g., accepting international safety certifications for new technology) that slow the adoption of new technology.

Accelerate technology development and adoption *(continued)*

- Secure a competitive advantage by promoting connections between manufacturers and Ontario's technology sector, which is the third largest in North America.

Transformative actions

1. Establish a one-window office for manufacturers.

Suggestions for implementation

- Manage all provincial R&D, technology adoption and business expansion programs.
- Mandate office to provide guidance and information to manufacturers seeking to access government support, including federal programs and export advice.
- Use office to simplify rules and application processes for manufacturers.

2. Rebalance government programs and supports to drive applied R&D that is undertaken and brought to market by manufacturers.

Suggestions for implementation

- Put an emphasis on provincial government R&D funding projects that are industry-led and have potential commercialization outcomes.
- Remove requirements that government funded R&D projects include an academic partner.



Encourage investment and boosting exports

THE CHALLENGE

Ontario is in a race with competing jurisdictions to secure transformative manufacturing projects, given the jobs, export opportunities and local economic spin-off benefits that come with them. Competitors are offering significant economic incentives and adopting actively business-friendly policies to lure new projects and encourage their local companies to expand. In the U.S., the Inflation Reduction Act (IRA) poses a major threat to Ontario's success in securing manufacturing projects of the future.

- Manufacturing investment attraction in Ontario has increased over the last five years after being stagnant in the years prior.
- During the first quarter of 2024, industrial land vacancy in Ontario was 3.1% compared to 4.9% in Michigan and nearly 4.6% in Illinois. Industrial land costs in Ontario are nearly three times higher than in both states.
- Ontario's electricity rates for smaller industrial consumers are higher than several peer jurisdictions (e.g., Quebec, Texas, Ohio).

PROPOSED ACTIONS FOR GOVERNMENT

Immediate priorities

1. Ensure Ontario is competitive in retaining and attracting investment where payback to government is acceptable.

Suggestions for implementation

- Reform regulations that create supply chain bottlenecks and add little or no value to the health and safety of Ontarians and the environment (e.g., delivery of safety inspections, oversized and overweight freight shipment permits).
- Call on the federal government to reduce disruptions (e.g., port strikes, rail disruptions), that impact manufacturing supply chains and impact Ontario's reputation as a manufacturing investment destination.
- Fold all manufacturing-related support programs for small and medium-sized companies into one program and have one access point for information on all government manufacturing programs, regardless of who delivers them.
- Eliminate duplication in application requirements and procedures between federal and provincial programming.
- Explore enabling municipalities to offer property tax abatements and other forms of support to attract investment.

Encourage investment and boosting exports *(continued)*

2. Ensure availability of land for industrial projects.

Suggestions for implementation

- Protect existing employment lands, including through significant restrictions on the timing and conditions under which municipalities can convert employment lands to other uses.
- Create and enforce transition zones in and around industrial zoned lands.
- Proactively plan for the future by assessing employment land needs for potential investment and work with municipalities to identify lands to meet these needs.

Transformative Actions

1. Expand the funding and mandate of Invest Ontario as it matures so it matches offerings from peer jurisdictions, delivers payback and supports the province's long-term vision and economy.

2. Maintain affordable access to clean electricity.

Suggestions for implementation

- Ensure grid capacity is sufficient to meet future industrial demand, including by regularly reviewing needs of various regions across Ontario as the electrification shift occurs.
- Leverage Ontario's nuclear industry when planning for future nuclear energy projects.

3. Maximize existing trade agreements and create a level playing field for Ontario manufacturers.

Suggestions for implementation

- Encourage the province and broader public sector to do business with Ontario firms, Canadian companies and suppliers from countries with whom Canada has trade obligations, including by adopting a reciprocal procurement policy, or other equivalent policy, as a tool to meet this objective.
- Focus on ensuring fair and reciprocal trade, with no tariff barriers.

Build a green economy

THE CHALLENGE

A green economy transition is underway, including a shift towards electrification and alternative energy sources. The speed of this transition requires a rapid expansion of low-carbon technologies and products, a rethink of Ontario's overall competitive advantages and the continued development and adoption of technologies that allow manufacturers to transition to low-carbon production and grow in the emerging green economy.

- The cost of transitioning to the green economy for the Canadian manufacturing sector is estimated to be \$180 billion in investment costs and \$60 billion in operating costs by 2050.
- Carbon pricing on industry will significantly impact Ontario manufacturers of all sizes, notably small and medium-sized companies, relying on natural gas as a critical input to their operations. This could imperil their ability to stay in business and potentially cause them to move to more competitive jurisdictions.
- Out-of-date standards and regulations discourage technology adoption (e.g., carbon capture, hydrogen), creating a competitive disadvantage relative to the U.S..

PROPOSED ACTIONS FOR GOVERNMENT

Immediate priority

- 1. Use the Emissions Performance Standards (EPS) program to help eligible firms invest in high-impact emissions reductions with sufficient flexibility on delivery timelines.**

Transformative actions

- 1. Support manufacturers of all sizes to decarbonize their production processes.**

Suggestions for implementation

- Prepare Ontario tax credits and other programs to support the green transition.
- Offer dedicated support to help find alternatives to natural gas.
- Speed up the development of regulations for critical emerging technologies such as carbon capture utilization and storage (CCUS) and hydrogen.

Invest in jobs and skills of the future

THE CHALLENGE

For decades, manufacturing in Ontario was regarded as a source of stable, high-wage jobs and a pillar of local communities. However, the sector has changed dramatically in recent years and today's employers face growing talent and skills challenges as they adapt to the introduction of increasing manufacturing efficiencies, automation, robotics, and now AI and machine learning.

- Four out of ten manufacturers cite recruiting qualified staff as a significant or very significant barrier to adopting AI and robotics.
- A third of manufacturers report spending \$100 or less per employee on annual training, with only 15% of firms spending more than \$500.
- At least one in three workers in Ontario with an apprenticeship or trade certificate is aged 55 or over and nearing retirement.
- The proportion of women in manufacturing roles (29%) has remained virtually unchanged since the early 1980s, with women concentrated in sub-sectors relying less on skilled trades.

PROPOSED ACTIONS FOR GOVERNMENT

Immediate priority

1. Support the attraction of skilled workers and advanced skills training for the adoption of automation.

Suggestions for implementation

- Fund employer-led training for staff to install, operate and maintain equipment and new technology (e.g., automation, artificial intelligence), including by attaching funding for training to government support for new equipment.
- Incentivize the creation of co-op placements for students and recent graduates.
- Ensure recognition of immigrants' relevant credentials to fill vacant positions.



Invest in jobs and skills of the future *(continued)*

Transformative actions

1. Expand interest in manufacturing careers among all youth, including women and other under-represented groups.

Suggestions for implementation

- Build on Skills Ontario's work supporting and promoting growth in the construction trades by taking a similar approach for the manufacturing trades.
- Implement programs and incentives to address the longstanding shortage of women in technical and leadership positions in the sector.

2. Ensure all K-12 schools develop in-demand skills for tomorrow's workforce.

Suggestions for implementation

- Ensure shop classrooms and hands-on equipment are available at all high schools including new-builds and existing facilities.
- Adapt curriculum to provide more effective literacy and numeracy education in elementary schools.
- Review required teacher qualifications to ease the path for capable, skilled people to become Ontario secondary school teachers, particularly in math, science, technology and shop.

3. Incentivize STEM and skilled trades education in the post-secondary sector.

Suggestions for implementation

- Use post-secondary funding (e.g., tuition subsidies, tax credits) to incentivize students to follow education pathways for in-demand careers in the manufacturing sector. This could include exploring amendments to the funding formula for programs that considers the starting salaries of graduates and percentage of graduates getting jobs in a related field.
- Ensure colleges concentrate their efforts on skilled trades training.
- Increase funding for all qualified Canadian students to pursue graduate education in STEM.
- Base institutional funding for degrees and programs on graduating students' success in finding related work and their starting salaries.

Create an ongoing role for industry in policymaking

THE CHALLENGE

Ongoing and frequent engagement with industry will help government meet the needs of manufacturers, including by adapting programs and policies as needed to address new challenges and opportunities. A collaborative approach is crucial in maintaining Ontario's position as a leader in advanced manufacturing.

PROPOSED ACTIONS FOR GOVERNMENT

1. Establish a forum for sustained and substantive engagement with industry, including labour and academia.

Suggestions for implementation

- Mandate forum to provide advice on implementing Ontario's Advanced Manufacturing Strategy and produce an annual report on the Strategy's progress.

2. Support regional talent councils with manufacturers, including labour and academia.

Suggestions for implementation

- Mandate councils to identify a five to ten-year outlook for industry skill needs, help provide greater alignment of government programs to marketplace needs and offer timely recommendations to schools (elementary, secondary, colleges and universities) in an immediate geographic area.



APPENDIX A:

Council mandate and members

Mandate

In April 2023, the Ministry of Economic Development, Job Creation and Trade established an Advanced Manufacturing Council to inform the development of a 'whole-of-government' Advanced Manufacturing Strategy.

Building off the success of other Ontario strategies, including *Driving Prosperity*, *Taking Life Sciences to the Next Level* and *Ontario's Critical Minerals Strategy*, the **Advanced Manufacturing Strategy** will help boost the sector's long-term competitiveness and resiliency, including by positioning it to seize the opportunities at hand from the profound technological and economic transitions occurring worldwide.

The Council was comprised of leaders from across the sector. Members were chosen based on their ability to provide expert advice on the sector's key challenges and to ensure coverage across industries and all regions of the province.

From May to October 2023, the Council met to discuss four key thematic areas:

1. Accelerating technology development and adoption
2. Encouraging investment and boosting exports
3. Build a green economy
4. Investing in jobs and skills of the future

Council Members

Don Walker (Chair)
Former CEO
Magna International Inc.

Giles Gherson
President and CEO
Toronto Region Board of Trade

David Cassidy
Skilled Trades
Special Advisor to the
*Minister of Labour, Immigration,
Training and Skills Development*

Catherine Cobden
President and CEO
Canadian Steel Producers Association

Dennis Darby
President and CEO
Canadian Manufacturers and Exporters

Aynsley Foss
Issues and Policy Manager
Ontario Mining Association

Dr. Peter Frise,
Associate Dean of Engineering -
Professional Programs
University of Windsor

Natasha Gagnon,
CEO
Ontario Aerospace Council

Bob Masterson
President and CEO
*Chemistry Industry Association
of Canada*

Lisette McDonald
President and CEO
Southmedic Inc.



