Submission for the Pre-Budget Consultations in Advance of the Fall 2025 Federal Budget

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Recommendations

1. That the government develop and implement a **National Semiconductor Strategy**.
2. That the government fund and implement expert-identified workforce development recommendations in relation to **addressing urgent talent shortages across the semiconductor sector**.
3. That the government implement sector-led recommendations to **close critical gaps in Canada's EV and power electronics supply chain** and advance domestic capabilities in automotive semiconductors.
4. **That the government enhance strategic domestic capacity in semiconductor fabrication and packaging,** focusing on select high-value segments of the supply chain critical for resilience and national security.

Executive Summary

Semiconductors are the critical infrastructure powering Canada's digital economy and future competitiveness. From EVs and medical devices to AI systems, defense technologies, and clean energy, microchips power nearly every innovation-driven sector. They are essential to economic growth, productivity, national security, supply chain resilience, and international alliances.

As countries invest billions to onshore and secure chip supply chains, Canada risks falling behind. We urgently need a national semiconductor strategy, backed by investment and a holistic policy approach, to avoid vulnerability to supply chain shocks, talent loss, and exclusion from global partnerships and commercial opportunities.

Canada has a strong foundation: world-class researchers, high-growth firms, leading-edge applications, academic-industry collaborations, and vibrant startups. Realizing this potential requires federal leadership.

To seize this strategic opportunity, we recommend Budget 2025 support four priorities:

1. Develop and implement a **National Semiconductor Strategy**.
2. Fund and implement workforce recommendations identified by experts to **address urgent semiconductor workforce needs.**
3. Execute sector-led recommendations to **close critical gaps in Canada's EV and power electronics supply chain** and advance domestic capabilities in automotive semiconductors.
4. **Enhance strategic domestic capacity in semiconductor fabrication and packaging,** focusing on select high-value segments of the supply chain critical for resilience and national security.

Background

Semiconductors enable nearly all technologies used by Canadians—including smartphones, laptops, datacenters, automobiles, medical imaging devices, aircraft, satellites, payment systems, agricultural equipment, and virtually all forms of communication. They're found in MRI machines, fighter jets, solar panels, and smart thermostats. No economic sector can function without them. In 2020 alone, Canada's semiconductor industry generated $28.8B in output and contributed $16.3B in value added to the economy.

Their significance extends far beyond consumer electronics. As the world undergoes simultaneous transformations—energy transition, digitalization, electrification, AI and automation—semiconductors are the central enabler.

- EVs contain 3,000+ chips, controlling everything from batteries to safety systems.
- AI systems rely on advanced chips to process massive datasets and train machine learning models at scale.

- Medical technologies like robotic surgery, diagnostics, and digital health tools require precision microelectronics.
- Telecommunications and 5G networks depend on secure, high-performance chips.
- Defense and aerospace systems require tamper-proof chips for guidance, surveillance, and cybersecurity.

According to the SIA, the global semiconductor market surpassed $600B USD in 2022 and is projected to exceed $1T USD by 2030. The World Economic Forum notes over $100T in global economic activity relies on chip-powered digital infrastructure. Chips are not only a key export commodity; they are the embedded infrastructure of global commerce and national resilience.

When chip supply is disrupted, effects are immediate and widespread. During COVID-19, global shortages led to:

- A $210B loss in global automotive revenue in 2021 (AlixPartners)
- Production shutdowns across automotive and electronics sectors
- Delayed delivery of everything from appliances to ventilators

Canada depends almost entirely on foreign semiconductor sources. Without domestic capacity or formalized trusted partnerships, we remain one of the most vulnerable countries to supply shocks and geopolitical instability.

Global peers are acting:

- The U.S. CHIPS and Science Act committed $53B in federal funding, plus $24B in tax credits stimulating $0.5T+ in private investment.
- The EU Chips Act deployed €43 billion to build semiconductor capacity.
- South Korea launched a $230B USD national plan.
- Smaller countries like Spain committed €10B+ in strategic investments.

Without a national plan and scaled investment, Canada risks exclusion from critical supply chains and future economic growth in advanced manufacturing, clean technology, and AI.

Canada has a narrow window to act. We have the ingredients: skilled engineers, academic excellence, natural resources, stable institutions, and clean energy. Without a coordinated national strategy, the risks include:

- Continued dependence on volatile offshore suppliers
- Talent loss to countries with bolder industrial policies
- Inability to support allied supply chain security and defense cooperation
- Missed economic opportunities in one of the fastest-growing sectors

Budget 2025 is a chance to change course. A national semiconductor strategy would secure Canada’s place in North America’s innovation economy, sending a powerful leadership signal to allies, trading partners, and future-focused industries at home.

Opportunity

Despite past underinvestment, Canada's semiconductor sector has clear competitive advantages:

- 100+ domestic and multinational companies across the value chain
- Strong concentration of R&D hubs in Ontario, Quebec, BC, and Alberta, supported by effective innovation ecosystems, including:
    - ventureLAB's Hardware Catalyst Initiative, Canada's only incubator dedicated to semiconductor and hardware startups, supporting 100+ companies, 700+ jobs, and $80M+ in capital raised
    - CMC Microsystems, a national platform supporting 12,000+ researchers and students with tools, training, and prototyping access, contributing to 250+ deep tech SMEs launches
- World-class post-secondary institutions in semiconductor design and manufacturing
- Access to clean energy, critical minerals, industrial land, and proximity to the U.S. market

Canada's national AI and quantum strategies recognize their strategic economic importance and national security implications. Semiconductors are foundational to both. AI growth drove explosive demand for semiconductor innovation, and Canada has significant opportunities across the AI hardware value chain—including front-end sensors, edge computing and AI datacenter applications. Quantum technologies and associated data networks also present significant opportunities, overlapping in AI. FABrIC projects already demonstrate Canadian developments with near-term applications in data/telecom and longer-term applications in quantum computing.

The global shift toward "friendshoring" and trusted supply chains presents a historic opening for Canada to lead as a secure North American semiconductor partner. Without a federal strategy, Canada risks losing talent, investment, and IP to jurisdictions offering more ambitious industrial policies.

Recommendations

1) Develop A National Semiconductor Strategy and Industrial Policy

Canada urgently needs a coherent, forward-looking national strategy to guide its semiconductor sector development—not piecemeal, reactive programs. Without one, we dilute impact, duplicate efforts, and miss critical market entry, investment attraction, and global alignment windows.

The strategy should define Canada's long-term vision for the sector—including its role in the global supply chain—and articulate policies, investments, and institutional mechanisms required to realize that vision. It must align federal and provincial priorities, and identify Canada's comparative advantages—from design and packaging to compound semiconductors and power electronics. This strategy must coordinate public investments and policy tools (e.g., IP

frameworks, skills development, FDI attraction), and signal to domestic and global stakeholders that Canada is committed to leadership in this critical sector.

Global competitors treat semiconductors as a national priority. Canada must do the same or risk marginalization in the next era of digital growth. Without a coordinated approach, we forgo not only GDP contributions and job creation, but also our ability to compete in the digital economy.

2) Implement Workforce Solutions Already Identified by the Sector

The health of Canada's semiconductor sector depends on one critical factor: talent. Without skilled workers to design, build, and scale semiconductor technologies, every other policy effort falters. From fabrication engineers to systems architects and embedded software developers, every part of the value chain relies on highly skilled workers—and there is a shortage across all roles. Without action, Canada faces severe talent bottlenecks stifling innovation, delaying projects, and pushing leading companies abroad.

CSC's Talent & Workforce Development Working Group, including leaders from academia, industry, and training institutions, spent a year analyzing these challenges and proposing scalable, evidence-based solutions in a report published in June 2025. These recommendations address urgent needs across the talent pipeline and are ready for implementation:

- Expand Graduate-Level Training: Increase support for Master's and PhD programs, to strengthen Canada's R&D talent pipeline—especially Canadian citizens and permanent residents for roles tied to sensitive IP and national security.
- Launch National Certification Programs: Equip engineering graduates and early-career hires with semiconductor-specific skills not taught in universities, reducing onboarding burdens and accelerating workforce readiness.
- Address Critical Skills Gaps: Invest in applied programs focused on high-need areas such as high-speed analog design, systems engineering, and advanced physical layout.

Government support is needed to activate them—through targeted funding, interdepartmental coordination, and cross-sector partnerships. If executed, these efforts will fill immediate skills gaps, creating new pipelines of diverse, future-ready talent to power Canada's innovation economy.

Semiconductor talent is not just a workforce issue—it's a competitiveness issue. Countries investing in talent will dominate global R&D, attract more investment, and build resilient industries. Canada cannot afford to lose time.

3) Advance Canada's Automotive Semiconductor Capabilities

EVs require triple the number of chips compared to combustion vehicles. Semiconductors are now the most critical (and constrained) input in the automotive industry. The EV transition is one of the most pressing industrial shifts of the coming decade, and semiconductors are its critical enabler.

Canada's automotive sector is one of the country's most valuable industrial engines, employing 500,000+ Canadians and contributing $12B+ annually to GDP. It's also one of the most vulnerable to disruption due to its dependence on increasingly complex semiconductor components.

CSC's industry-led Automotive Microchips Working Group Report, found that Canada produces minimal semiconductor content for automotive applications, risking ceding future growth to jurisdictions building vertically integrated systems. Our supply chain remains focused on traditional components, without coordinated strategy to address this growing gap. Without intervention, this threatens the competitiveness of Canada's $19B auto export industry and our ability to attract future EV platform mandates.

Industry experts from across the semiconductor and auto sectors already came together to diagnose gaps and develop actionable solutions. These include calls for R&D commercialization support, industrial partnerships, and investment in power electronics manufacturing. The federal government now has a blueprint—developed in collaboration with OEMs, suppliers, researchers, and startups—to build domestic capabilities in automotive chip design, testing, and power electronics. What is required now is federal commitment to act on these findings. Executing on these recommendations will support supply chain resiliency, secure jobs, and position Canada as a serious player in the electrified future of mobility.

4) Enhance Domestic Capacity in Semiconductor Fabrication and Packaging

Canada has made strategic investments in fabrication and packaging (e.g. IBM Bromont, C2MI, CPFC). To secure Canada's place in the global semiconductor supply chain and mitigate future vulnerabilities, we recommend further Canadian investments in fabrication and packaging facilities delivering national capability in critical elements of the value chain.

Rather than replicating high-volume manufacturing abroad, investments should focus on strategic domains: compound semiconductors, optical components, and multi-technology packaging—where Canada has competitive advantages and where trusted, domestic access is essential.

This would:

- Anchor industrial capabilities and IP creation in Canada
- Enable secure chip production for critical applications in AI, datacenters, defense, aerospace, and infrastructure
- Grow the overall economic impact of the sector through multiplier effects
- Create high-value jobs and attract investment
- Strengthen supply chain alignment with allies and national security objectives

As Canada increases defense spending and modernizes procurement, secure chip access is essential. Global partners are acting decisively to onshore critical capabilities. Canada must do

the same—establishing trusted production capacity at home is key to long-term resilience and global competitiveness.

Conclusion

Canada stands at a turning point. Advancing these recommendations will strengthen economic resilience, deepen allied supply chain integration, and grow a globally competitive semiconductor industry—boosting exports and securing Canada's role in shaping future technologies. But success requires a unified national strategy, strategic investment, and leadership in Budget 2026.The time for fragmented approaches is over.

Canada's semiconductor ecosystem urges the federal government to act: establish a national strategy, accelerate workforce readiness, and implement sector-specific supply chain interventions. We thank the Committee for its consideration.

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