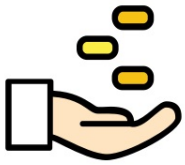
ELECTRO·FEDERATION CANADA

At-a-Glance

Transformers are vital & necessary components of any electrical system

...Without them, electricity could not be transmitted over long distances, or transformed to power urban centres and industrial complexes at useable voltage levels.

In 2014, transformer manufacturers contributed the equivalent of...



$1 billion in economic output

Transformers manufacturers contribute substantially to Canada's economic well-being

$200 million in procured Canadian goods & services

Total Canadian Payroll $120 million

Employs over 2,800 people throughout Canada

12 manufacturing plants across Canada

Threats & Opportunities

There is a strong need to replace Canada's aging infrastructure.

Many installed transformers are approaching (and even exceeding) the end of their useful 25-to-30-year service life.

All stakeholders must come together to engage in solutions that support a home-grown industry. Together, we must preserve and advance Canada's local transformer industry— a critical pillar that provides a secure and reliable electricity grid and brings tremendous economic benefits to Canada and social advantages to all Canadians.

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The Canadian Transformer Industry

Transformers are vital and necessary components of any electrical system…without them, electricity could not be transmitted over long distances, nor transformed to power urban centers and industrial complexes at useable voltage levels.

Canadian transformer manufacturing has been challenged over the past two decades by the continuing loss of skilled trades and technical resources, mainly due to a retiring workforce, and increasing offshore competition with injurious dumping margins up to 35%. There are only a few Canadian-based power transformer manufacturers remaining in, and investing in, Canadian operations. With their combined direct and indirect economic benefits, they still prove to be a very important contributor to the Canadian economy. Today, as the necessity for aging infrastructure replacement becomes more critical and the demand for efficient power transformation is even more essential, the time has come for all stakeholders to engage in solutions that preserve and advance Canada's interests by having a healthy, sustainable local transformer industry – a critical pillar in a secure and reliable electricity grid.

Canada: A Record of Leadership

Fifty years ago, the transformer industry's demand and health was at an all-time high, as utilities and industrial customers in Canada (and the U.S.) invested heavily in electrical infrastructure. During the expansionary period of the 1960s and 1970s, electrical equipment companies, including transformer manufacturers, experienced rapid growth and provided high-value jobs, especially in technical disciplines such as transformer electrical and mechanical design and drafting. There was a proliferation of engineers, technicians and trades involved in electrical wiring, high voltage testing, machining, welding, coil winding and insulation systems, many of whom immigrated to Canada from various parts of the world including Britain, Europe and Asia.

This influx of skills drove the development of local talent in engineering and manufacturing, and resulted in a critical mass of knowledge that not only advanced the Canadian grid system, but became recognized worldwide.

In fact, the world's first 735kV and 765kV power transformers were designed and manufactured in Canada. As the industry thrived, Canada's own expertise in transformer manufacturing and electromechanical design kept pace with the rest of the world.

Forces of Transformation

The 1980s and 1990s brought with them a downturn in economic conditions, and North America's entire electrical industry restructured and downsized. Closures, mergers, acquisitions and relocations to other countries or jurisdictions were commonplace within various electrical/electronic sectors, including consumer electronics, appliances, motors, lighting, high-and low-voltage circuit breakers and transformers. As new growth opportunities emerged in South America and Asia, many companies relocated skilled personnel and manufacturing operations; technical expertise and many supporting industries also followed the relocation.

Did You Know?
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However, a few companies retained their local operations and continued to invest and grow during this down period. After 2000, when the demand for electricity and electrical products, (including transformers) re-ignited, these remaining companies were challenged to meet this increased demand with their remaining knowledge, capacity and resources. The 2008 economic crisis tempered those pressures somewhat, but recently, electricity demand and growth opportunities have risen once again.

While a welcome development, such prospects have created a new dilemma of how domestic companies can ramp up and invest to serve these demands and sufficiently sustain these investments as they enter a new growth phase.

Current Opportunities and Threats

Imminent and inevitable investments to replace aging infrastructure, along with heightened demands for green energy initiatives—such as wind and solar—and continued demand from resource-based industries, are fuelling growth prospects for the entire transformer industry. In Canada alone, capital expenditures in new electrical infrastructures, including transformers, are forecasted to exceed $350 billion[1] over the next 20 years and total North American expenditures are forecasted at ten times that amount.

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1 Canadian Electricity Association (CEA), *Electric Utility Innovation: Toward Vision 2050*, 2015.

Many installed transformers are approaching—and even exceeding—the end of their useful 25-to-30-year service life; it is not unusual to find transformers 40 years of age and some even approaching 70 years. A significant number of successful transformer "life extension" programs have been employed over the past 20 years, but the reality is that, very shortly, this equipment will need to be replaced with more efficient units built to the latest standards and "smart" features.

As promising as this outlook is…the industry faces several constraints.

As mentioned earlier, the deteriorated markets of the 1980s and 1990s stripped the North American transformer industry of technologies and technical expertise, as well as critical manufacturing jobs and capacities. These now reside in countries that compete in North America at price levels very difficult to match. This loss of talent hampers the domestic industry's ability to 'staff up' and meet rising demands. As well, with the continuing retirement of baby boomers, these conditions are expected to worsen.

According to a 2010 Electrical Sector Council Survey[2], 74% of the industry's managers, 50% of its engineers and technicians and 53% of tradespeople are over the age of 45—now five years later, the average age now exceeds 50 years.

Moreover, dumping has become a critical issue, impeding the ability of companies who have stayed in North America to compete. Recently, the U.S. Transformer Fair Trade Coalition supported the U.S. Department of Commerce's preliminary determination that imports of liquid dielectric large power transformers from Korea are being dumped in the United States at an average dumping margin found to be 30%. Similarly, following complaints by two leading manufacturers in Canada, the Canadian Border Services Agency (CBSA) on October 22, 2012, determined that 100% of the subject goods imported from the Republic of Korea into Canada from October 1, 2010, to March 31, 2012, had also been dumped at a weighted average dumping margin of 20%.

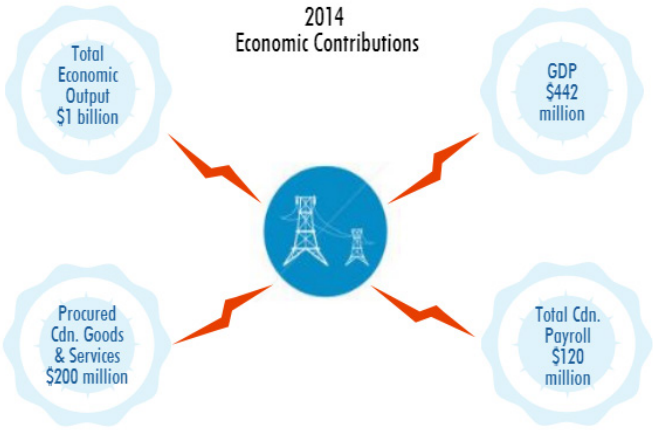
2 Canadian Electricity Association (CEA), *Canada's Electricity Industry 2010 and International Energy Agency World Economic Outlook 2008*.

Despite injurious dumping actions and numerous threats to its sustainability, the transformer industry continues to persevere, and at the same time return considerable benefits and value back to Canada as demonstrated below.

Returning Value to Canada

While less visible to governments and consumers than the automotive or consumer electronics sectors, transformer manufacturers contribute substantially to Canada's economic well-being in terms of GDP, employment, capital and research investments, secondary industries, tax revenues and local charities.

In 2014, Canada's power transformer industry invested nearly $120 million in wages, employed more than 2,500 skilled and trades people, and over 310 technical and engineering professionals in 12 manufacturing plants throughout Canada. In addition to paying educational, municipal, provincial and federal taxes, transformer manufacturers make annual contributions to local social, medical, arts and sports organizations and charities. All of these tangible contributions cannot be matched from the offshore importation of electrical transformers.



In addition to tangible economic contributions, the transformer manufacturing industry also provides many less quantifiable benefits. For example, it supplies ready-access to local technical support, expertise, product supply and local transformer repair and other services. Access to technical consultations, familiarity with local codes and standards, technical knowledge, local service and support under emergency conditions are intangible benefits that Canada's transformer industry offers industrial companies and utilities.

Historically, the electrical transformer industry acted as a primary catalyst in replenishing aging talent deficits by offering local graduates high-paying value-added jobs, also supporting university and technical college educational programs.

Moreover, the industry actively participates in Canada's professional technical, industrial and business organizations. These include local trade groups, chambers of commerce, charities, professional associations, and participation on technical committees for the Canadian Standards Association (CSA), Canadian Electrical Association (CEA), Electro-Federation Canada (EFC) and others. Annual membership fees contribute towards the improvement of existing standards and development of new ones. These include CSA Code updates, energy efficiency guidelines and anti-counterfeiting measures that help nurture these organizations and sustain their work for the betterment of the country.

A Call for Action

Given its value–in terms of GDP, employment, services and intellectual capital–the case for supporting and further developing Canada's local transformer industry is compelling. To neglect its very pressing needs, is to abandon considerable benefits—both tangible and intangible—and places Canada at risk of total reliance on offshore producers, some in countries with the potential of political instability, as a source of critical components for electrical supply systems. This would be unwise at a time when the country needs more transformers to continue growth and demands for infrastructure replacement.

For its part, the local transformer industry may once again be faced with having to reconsider future investment options. Innovative technological advancements could also be lost, by not having the local expertise or opportunity for local collaboration that generates new ideas and products based on Canadian/North American specifications and needs.

Taking On the Challenge

Meeting the challenges will take action on several fronts:

- Governments need to continue being vigilant towards unfair trade practices and supportive of the industry's anti-dumping efforts.

- It is even more imperative to be open to innovative procurement policies considering the extent of time before new opportunities for any transformer re-investment occurs. Transformers operate very efficiently and have life expectancies that exceed 25 years and more. Unlike other sectors, the window for new replacement opportunities do not reoccur for at least another 25 years and are essentially lost during this lifetime.

- Publicly-funded research and product/manufacturing development programs will need to encourage reinvestment in the domestic industry.

- Utilities and other users of transformers can support the industry through longer-term and/or modern and innovative procurement policies that recognize the longevity of these transformers and the local expertise, contributions, values and innovations this industry ultimately returns to Canada and to each jurisdiction.

- The overall industry needs to be more visible in demonstrating its strength and value.

- As business conditions strengthen, transformer manufacturers will need to invest in expanding capacity, new equipment, innovations and other initiatives to drive efficiency and competitiveness. Currency exchange is more a short-term opportunity rather than long-term advantage.

- The talent deficit needs to be filled through collaborative action among government, industry and educational institutions. Training, scholarship programs (i.e. EFC's Scholarship Foundation), mentoring programs and employment incentives can serve to reverse this inevitable trend—and protect and sustain high-value jobs in Canada.

In closing, it's important to note that oil-filled transformers, on average, operate at better than 98% efficiency and will always be essential to delivering a dependable supply of electric power. When one considers a transformer's role in preserving the integrity of Canada's (and North America's) electrical grid, the strategic importance of having a local supply of "Quality Engineered and Made in Canada" transformers for Canada's electrical utilities and large industrials, is clearly evident. Without it, we risk compromising our country's expansion and electrical infrastructure regeneration.

With good prospects for the industry's growth, the challenge is not only to expand investment, but rather, how to support a home-grown industry that can capitalize on these emerging opportunities, and provide safe, reliable electrical transformation, and continue to bring the economic benefits and social advantages to Canadians and Canada.

About Electro-Federation Canada

Electro-Federation Canada (EFC) is a national, not-for-profit industry association, representing over 250 member companies that manufacture, distribute and service electrical and electronics products in Canada. EFC members contribute over $10B to the Canadian economy, employing approx. 40,000 workers in more than 1,200 facilities across the country.

EFC members manufacture, distribute, market and sell a wide range of electrical products, including transformers, distribution equipment, industrial controls, lighting, motors and generators, wire and cable, wiring supplies and electric heating. These categories form the basis of EFC's Product Sections, offering a strong nucleus for members to discuss issues and opportunities pertaining to their company's product focus.

In addition, EFC maintains a strong focus on electrical safety, sustainability, advocacy, codes and standards, and also serves as a hub of networking, education, and industry research. Learn more at www.electrofed.com.

About EFC's Transformer Section

The Transformers Section is comprised of Canadian manufacturers of all dry type transformers, liquid-filled distribution transformers, power transformers and current or voltage instrument transformers of various classes. Learn more at www.electrofed.com/product-services/products/transformers.

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