



## Energy in Canada @ 150 and Beyond The Power of Electrification

By David Collie, President & Chief Executive Officer, Electrical Safety Authority

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*One in a series of papers prepared by Canadian energy sector leaders – at the invitation of the Energy Council of Canada – exploring key aspects of our ongoing national energy story on the occasion of the 150<sup>th</sup> anniversary of Confederation.*

**Summary:** David Collie calls for three key collective efforts to ensure that safety and technology keep pace with each other as the second electrical revolution progresses.

This summer we celebrated the 150<sup>th</sup> anniversary of Canada's Confederation. Throughout the year we've looked at the immense transformations our nation has experienced. The Canadian Pacific Railroad stitched the country together from coast-to-coast. The discovery of oil and gas in Alberta transformed a poor, agriculture-based economy into a global energy power. The St. Lawrence Seaway connected the industrial heartland of Quebec and Ontario to the Atlantic Ocean and ports around the world.

Of all the transformations in our history, the electrification of our nation is possibly the most transformative.

It's difficult to overstate how radically electricity has changed our lives. In less than a century electricity went from a physical curiosity to a necessity of daily life. Machines powered by electricity freed us from the toil that made up the bulk of people's lives in the age before electricity. Something as simple as doing a load

of laundry used to consume hours that are now free for learning, for family and for fun.

### A Second Electrical Revolution

Today we are seeing changes around the world that build on the first electrical revolution in ways that not long ago, we never would have imagined. Technology like artificial intelligence, micro-generation and power-over-ethernet are transforming not only the electricity sector, but the fundamental ways in which we interact with electricity.

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Technology often advanced faster than safety during the first electrical revolution.

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There are many long-term repercussions to consider for stakeholders throughout the system. Each will be affected in different ways – and the challenges for each will differ – but we all share the responsibility of ensuring the system remains safe and reliable.

The first electrical revolution was an era in which often technology advanced more quickly than safety. Over the course of a century we built a regulatory system that ensured safety was always in step with technology. As we stand



on the cusp of the second electrical revolution we must work together to ensure that safety and technology continue to move forward together.

### Maintaining Safety in a Time of Change

There are a number of ways to facilitate the evolution of the electrical system while also ensuring that the system remains safe for all stakeholders. Many of the initial steps have been taken, but it's up to all of us to keep up during an exciting period of change.

First, we need to focus on the end user.

Historically, electricity has been delivered from a centrally-managed system to an end-consumer without the consumer engaging with the system itself. As a consumer you simply had to plug in to be connected; generation, distribution and transmission was someone else's responsibility. No longer.

New technologies like micro-generation and large scale batteries are democratizing the electrical system. Some households and businesses are already turning from electricity recipients into mini power generators, even storing energy until it's needed. This changes the way they interact with the electrical system. It is up to governments, regulators, system operators, and product manufacturers to account for the end user and design systems with human engagement (and safety) in mind.

Next, we have to take a global view of safety standards and regulations.

As the pace of globalization increases, more and more products are being produced outside of Canada. At the same time, the pace of product

development from concept to commercialization has increased dramatically.

We need to use this opportunity to evolve the way we approach regulation by making our processes more flexible and adaptable and ensuring that safety principles are built in to the evolution of the electrical system.

Finally, we must address legacy systems through collaborative innovation.

Just because we're moving into a new world, we can't simply flip a switch and get rid of legacy risks like dangerous coil stove burners and improper or aging wiring in seniors' residences and low-income housing units.

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### We must embed safety into the fundamental fabric of innovation.

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The key is to engage stakeholders across the industry, including those that haven't traditionally been part of the electricity system. Builders, manufacturers, the financial community and home owners can also contribute their expertise and help the industry develop solutions that will give all consumers safe access to updated infrastructure and emerging technologies.

150 years ago, safety was an individual concern. As new technologies emerged, there was a slow but steady march toward the safety system we have in place today. Responsibility for safety today rests across a spectrum of stakeholders from individuals to organizations to governments. As we look towards our future, we must embed safety into the fundamental fabric of technological innovation and ensure that we all move forward **safely** together.



**Energy Council of Canada**  
**Conseil canadien de l'énergie**

**David Collie** has been Chief Executive Officer, President and Director of the Electrical Safety Authority, since 2009, and previously served as Chief Executive Officer and President of Burlington Hydro Electric Inc. He has a wealth of related industry experience gained in both the private and public sector, with distribution utility management expertise encompassing the full spectrum of electricity, water and natural gas systems. He held a role in the restructuring of Ontario's electricity industry and focused on bringing conservation initiatives to electricity customers in Burlington and the province. He holds MBA, CPA, FCPA and Chartered Director designations, and has completed a strategy and governance course at Harvard University.