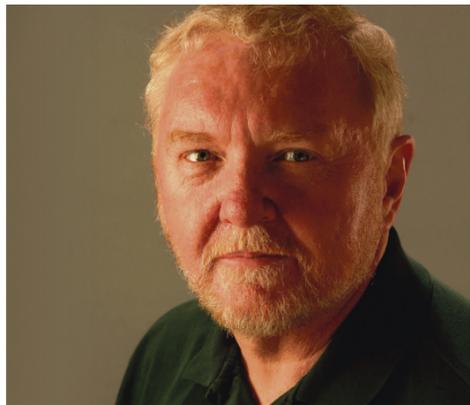


An Environmental and Economic Centrepiece for Canada



By **DON MACKINNON**
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Recent announcements by the Federal and Ontario governments demonstrate our decision-makers are increasingly recognizing the environmental and economic benefits of electric vehicles (EVs). Powering zero-emission vehicles with domestically produced, clean, low-carbon electricity is the best way to reduce greenhouse gas emissions (GHG) and smog causing pollutants from Canada's largest emitting sector – transportation. It is an effective way to generate employment, increase gross domestic product (GDP) and ensure long-term energy security.

According to Natural Resources Canada (NRCAN), more than 80 percent of Canada's electricity is generated from low-carbon sources – 59 percent from hydroelectric, 16 percent from nuclear and 5.2 percent from non-hydro renewables. Almost 20 percent still comes from high-carbon fossil fuel generation. Unlike provinces blessed with vast hydropower resources, such as Quebec, British Columbia and Manitoba, more than sixty percent of Ontario's electricity comes from 24/7, GHG emission-free nuclear. Moreover, Ontario's nuclear fleet helps backstop Quebec's electricity production, enabling its hydro reservoirs to refill.

A 2014 Intergovernmental Panel on Climate Change analysis of life-cycle emissions (tons of carbon dioxide equivalent per gigawatt-hour) of energy technologies shows solar PV (photo voltaic) at 53 tons, hydroelectric at 26, nuclear at 13 and onshore wind at 12. Utilizing these low carbon sources to “fuel” EVs could significantly reduce emissions in provinces like Ontario and Quebec, with over 19 million registered motor vehicles between them. In Ontario, nuclear generation, which is well suited for the overnight charging of EVs, already helps avoid the equivalent of 60 million tonnes of GHG emissions a year. That's the same as taking about 12 million vehicles off the road.

The economic benefits would be substantial too if Canada's auto sector is retooled to build and export zero-emission EVs. Canada's auto sector already makes the biggest contribution to manufacturing GDP and is the largest manufacturing employer. In Ontario, the output from the production facilities of five of the world's largest automotive companies accounts for 20 percent of the province's total GDP.

While Canada is the ninth largest vehicle producer in the world, production is shifting to lower wage jurisdictions like Mexico. States like Michigan have provided substantial funding to secure their automotive manufacturing leadership. Michigan's initiatives include establishing a Center for Automotive Research, developing a strategic plan, and setting up an American Center for Mobility. Michigan now hosts a major battery manufacturing facility and GM and Ford are building their EV models in the state.

Quebec, Ontario and B.C. have undertaken initiatives to develop EV technology clusters, while Electric Mobility Canada has been promoting a national EV Roadmap. Organizations like Ontario's Plug'n Drive have been encouraging the adoption of EVs and charging infrastructure. Last year, Quebec announced the details of a new five-year \$420 million vehicle-electrification plan. Ontario plans to electrify its GO Train system and provide over \$20 million for new EV charging infrastructure. Recently, the federal government committed \$16.4 million for EV fast-charging units and another \$46 million for next-generation EV charging technology Research & Development.

Our leaders know the value statistics for Canada's hydropower, nuclear and automotive sectors. Yet more could be done to exploit the existing and untapped synergies between low-carbon hydroelectric and nuclear generation and the necessary transition to domestic EV production and creation of other high value innovations. The energy security benefits shouldn't be forgotten either – in 2013 Canadians spent \$25 billion on oil imports.

Canada's vast renewable, forest and agricultural biomass resources represent another opportunity. In Europe, biomass is used to generate low-carbon electricity while producing high-value biofuels and chemicals. New biomass-based materials could displace those currently made from fossil fuels in domestically manufactured EVs.

Powering emission-free, domestically manufactured EVs with low-carbon, Made-in-Canada electricity can bring economic and environmental advantages. To compete with other leading economies, Canada will need to be better at leveraging these existing strengths and investments via a more comprehensive, integrated strategic plan.

Powering Transportation With Clean Electricity: Ontario's Extraordinary Opportunity

Transportation is our largest source of greenhouse gas (GHG) emissions.

Ontario's safe, reliable and affordable low-carbon nuclear, hydroelectric and biomass generation can power emission-free electric vehicles.

It's an outstanding way to reduce GHG emissions, create thousands of high-value jobs and ensure our energy security.

Success requires smart, strategic investments:

- Refurbishing Ontario's GHG emission-free nuclear generating stations at Bruce Power and Ontario Power Generation's Darlington site;
- Safely extending the operation of the 3,100 megawatt Pickering Nuclear Station by four years to 2025;
- Building two new nuclear reactors at the Darlington site;
- Investing in carbon-neutral biomass supply chain to fuel generating stations at Atikokan, Thunder Bay, Nanticoke and Lambton;
- Installing more electric vehicle charging infrastructure.

Leveraging Ontario's proven advantages — a \$6 billion a year, 60,000 job nuclear industry; a 400,000-job auto sector; Ontario's existing electricity assets; our forestry, agriculture and transportation sectors; and overnight electricity surpluses ideal for charging electric vehicles — can deliver unparalleled economic and environmental benefits.

For more information please go to: www.pwu.ca

FROM THE PEOPLE WHO HELP KEEP THE LIGHTS ON.

