



## NEW RESEARCH GIVES GREEN LIGHT TO ELECTRIFYING BC'S VEHICLE FLEET

British Columbia has sufficient underutilized generation capacity in its electrical grid to support the introduction of more than two million plug-in electrified vehicles, enough to eventually replace nearly every registered vehicle in the province, provided that recharging occurs in off-peak demand periods, according to new research from the Pacific Institute for Climate Solutions (PICS).

The “*Electrifying the BC Vehicle Fleet: Opportunities and Challenges for Plug-in Hybrid, Extended Range & Pure Electric Vehicles*” report is the latest in a series of PICS independent research white papers to government. PICS is a collaboration of BC’s four research-intensive universities hosted and led by the University of Victoria (UVic).

The report examines the possible benefits and obstacles related to widespread adoption of plug-in hybrid electric vehicles, extended range electric vehicles, and fully electric vehicles in British Columbia. These vehicles—collectively referred to as plug-in electrified vehicles (PEVs)—have the potential to significantly impact BC’s electricity and transportation sectors.

“The transportation sector currently contributes 36 per cent of the province’s total greenhouse gas emissions,” says the report’s co-author and spokesperson, UVic engineering professor Curran Crawford. “If BC is to meet its 2020 emission reduction targets, incentives and regulations for alternative technologies need to be put into place.”

The report notes that BC’s electrical generators have the capacity to charge nearly 2.5 million light-duty vehicles—almost the same number of registered gasoline-powered vehicles on BC roads right now—even during winter when there is heavy grid demand.

In summer, the generators could theoretically support more than 8.8 million vehicles. However, such high volumes could be detrimental to the grid and force up electricity prices if charging occurred during day and early evening peak-demand periods. Also, some distribution lines in the grid would likely have to be upgraded.

“Passenger and heavy-duty vehicles account for 23 per cent of BC’s greenhouse gas emissions and PEVs offer an excellent opportunity to significantly reduce that load. PEVs also suit BC drivers’ habits, given that 79 per cent of commuters use vehicles to make one-way trips of 6.5 km, which can be made on electric power alone.

“However, large-scale introduction would require external controls and/or consumer incentives to ensure overnight recharging.”

While PEVs don’t present insurmountable technical problems for the BC system, says Crawford, they could lead to a loss of revenue for BC Hydro if less electricity is available to be traded with BC’s

neighbours. Also, electrified transportation is absent in the current mandates of both BC Hydro and the BC Utilities Commission.

“This results in a disjointed energy planning approach which could present a major barrier to embracing PEVs and the benefits they will bring in lowering GHG emissions in the province as a whole,” says the report.

The report also suggests a vehicle odometer tax be created to offset the loss of gasoline tax revenue (currently used for road maintenance) caused by people switching to PEVs.

Other issues covered include PEVs’ potential as a storage facility for intermittent clean energy from wind and solar, and for selling energy back to the grid during peak demand periods; the need for government investment in socially equitable public recharging infrastructure and battery recycling/disposal schemes; and BC business opportunities offered by PEVs.

The full report can be read at [www.pics.uvic.ca](http://www.pics.uvic.ca).

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