



The incompatible truth: renewable fuels, vehicle compatibility and infrastructure

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Reducing the GHG emissions footprint of transportation is a primary focus for the climate policy agendas of the federal and provincial governments. Carbon taxes send a price signal to consumers to reduce their consumption of hydrocarbon fuels like gasoline and diesel – by whatever means they choose. Under the federal 'backstop' the carbon tax on gasoline and diesel will reach 12 cents per litre and 15 cents per litre respectively in 2022.

Mandating renewable fuel content is another popular option in governments' policy toolkits. The proposed federal Clean Fuel Standard will rely significantly on increasing levels of renewable fuel blending. Ontario, in its just released Environment Plan for the Province, proposes to increase the renewable fuel content requirement (ethanol) in gasoline to 15 percent as early as 2025. British Columbia's new CleanBC policy document proposes to amend the current BC Low Carbon Fuel Standard to double the required carbon intensity reduction to 20 percent by 2030.

Central to all of these regulatory proposals is the assumption that ethanol blend levels in gasoline can and will increase to 15 percent or more. In the case of Ontario, it also assumes that it can be done without adding to the cost of gasoline. Both of these assumptions are not valid.

The current national average ethanol blend level in gasoline is about 6.5 percent. It can be as high as 10 percent in regular gasoline at some retail outlets. This 10 percent blend level is the maximum permissible for more than 75 percent of vehicles on the road today – these vehicles weren't designed to operate on ethanol blend levels higher than 10 percent.

Testing by the Coordinating Research Council, the global leader for engineering and environmental studies on the interaction between automotive equipment and petroleum fuels, confirms that most vehicles on the road today could suffer engine and fuel system damage from using fuels containing higher levels of ethanol for which they were not designed. Vehicle manufacturers warn against the use of ethanol blends greater than 10 percent in vehicles not designed and validated for it. The risks extend to owners of motorcycles, ATVs, boats and outdoor power equipment.

This is a major impediment to widespread adoption of an E15 blend that regulators assume will enable them to achieve their renewable fuels objectives. Even with increasing sales of E15 compatible vehicles, the slow vehicle fleet turnover rate of nearly 10 years means that by 2025, only about 50 percent of the fleet will be validated for E15 use. The number of E15 compatible vehicles increases to about 70 percent of the fleet by 2030.



From this perspective, it's unreasonable to expect overall ethanol in gasoline blend levels to reach much more than 11 percent by 2030, without putting consumers at risk of vehicle malfunctions.

In addition to the vehicle compatibility issues, achieving higher blends like E15 would also involve significant costs for new facilities and infrastructure throughout the supply chain. Canada's 70 distribution terminals will require substantial capital infrastructure upgrades costing millions of dollars per terminal, and the 12,000 retail sites will require tank and dispenser additions and upgrades costing hundreds of thousands of dollars per site.

It's no coincidence that numerous independent analyses have concluded that renewable fuel blending regulations come with high per tonne GHG abatement costs. A 2018 report by the C.D. Howe Institute found that GHG abatement costs for existing low carbon fuel mandates in British Columbia and California, in which compliance is largely achieved by blending biofuels like ethanol, are \$200 per tonne.

Assumptions are a necessary part of the policy/regulation-making process. But Canadians expect policy-makers and regulation drafters to be realistic when making assumptions that inform their decisions. This isn't the case today on the renewable fuels/ethanol blending file. Consumers' interests aren't being well-served. In fact, they are at risk.

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