



ARTICLE

Electrical Vehicles and Carbon Pricing

Evolution of the Electric Market

Since the beginning of 2020, two long-simmering discussions in the energy space have gained momentum and captured attention to the extent that the subject of each are suddenly and increasingly viewed as inevitable elements of the evolution of the electric market. One is about the need to recognize the societal cost of carbon in organized electricity markets. The other regards the desirability of mandates that compel widespread adoption of Electric Vehicles (“EVs”). While developments on both fronts remain in their early stages, it is already clear that as the energy industry responds to the climate crisis, carbon pricing and EVs will be prominently featured.

It may be equally clear that there will be opportunities to invest in and benefit from new infrastructure and preferred technology types, risks and complications abound. Important questions about how policies are set, how they are implemented, and who will emerge as winners and losers from the shifts in paradigms cannot be known at this time.

Markets vs. Mandates

The different philosophies that underlie regulators’ and legislators’ approaches to carbon pricing and EVs are themselves significant to the discussion. Under most carbon pricing programs that have been proposed, including, for example the one by the New York Independent System Operator, which seems to be the farthest along and offer the most detail, a carbon price is set by an independent agency, which is then paid by generators in the electric market. The cost increase will cause electric prices to increase by an amount that varies based on the availability and efficiency of the units operating at any given time, system demand, and factors that change hour by hour.¹

¹ <https://www.nyiso.com/carbonpricing>

While the cost for a unit of carbon emitted (typically a ton) is established, the carbon-related cost of producing a unit of electricity (typically a megawatt hour) varies from plant to plant and hour to hour. In other words, costs increase for emitters in proportion to the amount of carbon they produce during the hours in which they operate. The extra payments collected will be refunded to ratepayers, channeled into incentives and programs that support the development of non-carbon generation, or both, while existing non-emitters will reap the benefits of higher revenues from raised market prices. Over time, the shift in the competitive balance can incent the retirement of inefficient resources, the retention of renewables or more efficient thermal plants, and the entry of new plants that emit little to no carbon.

Note that while the implementation of carbon pricing will require a specific price of carbon and its application in very specific ways, no specific outcome is specified. Competitive markets will be expected to reveal a mix of resources that reflects consumers' preferences and tolerances for cost and suppliers' ability to leverage technology to mitigate their emissions, among other factors. While increasing the cost of carbon will obviously tend to promote renewables at the expense of carbon generators, no quotas or mandates are assigned.

EVs will be supported more directly. The most likely path for widespread adoption seems to be explicit bans, either by legislation or executive action, on the sale of new, gasoline-powered cars by individual states or provinces. Bans have been announced or proposed in California, Quebec, and other jurisdictions.^{2,3}

In these cases, outcomes are more certain, though risks still exist. Most notably, a ban by regulatory fiat requires that a government undertaking an intervention pick the technologies that should and should not be allowed in the market. Moreover, it must do so based on imperfect information about an uncertain future. Choosing

incorrectly can increase costs, stall technological development, or yield unintended consequences.

In U.S. markets, overlaid on these uncertainties about the role of the government (and its regulators) and the manner in which it intercedes in markets are tensions between state governments and the Federal Energy Regulatory Commission ("FERC"), which oversees the wholesale markets. At present, the states appear to have assumed the leadership position, but there are areas which will clearly be the purview of the FERC and still others whose jurisdiction may be uncertain – or event contentious.

Creating New Markets

It is important to recognize that none of these proposals have yet been implemented in any North American market. While variously comprehensive and detailed proposals have been made, the manner in which actual market rules and regulations will be implemented is, mostly, completely unknown.

In some cases, the changes that will emerge will significantly change the we perceive familiar markets. For example, energy markets could, effectively, become carbon markets, given the expected high cost of carbon offsets and the low current cost of energy. If that happens, decisions regarding the ownership and development of new generation or transmission, the operation of the electric system, and the interplay between supply, demand, and price could all change fundamentally.

Likewise, a looming ban on gasoline powered cars could redefine segments of the automotive markets – such as, for example, the used car market or the roles and economics of dealerships – while familiar regulatory mechanisms, like the funding of roads through gasoline taxes, will require careful re-thinking.

² <https://www.gov.ca.gov/2020/09/23/governor-newsom-announces-california-will-phase-out-gasoline-powered-cars-dramatically-reduce-demand-for-fossil-fuel-in-californias-fight-against-climate-change/>

³ <https://www.lapresse.ca/actualites/environnement/2020-11-14/quebec/la-vente-de-vehicules-a-essence-interdite-des-2035.php>

Winners and Losers

For now, the uncertainties that pervade these markets almost categorically present challenges to firms across the supply chain. While certain types of volatility are actually good for some participants, regulatory uncertainty almost always puts downward pressure on new investments.

That said, some clarity exists. These trends clearly are, on balance, generally good for renewables and generally bad for carbon-emitting generators. Likewise, regulated utility companies will certainly have important roles to play both as owners of much of the electric infrastructure of relevance and also as buyers of energy on behalf of their retail customers; that their decisions to either “go it alone” or to meaningfully partner with technology providers as they undertake upgrades of their systems that will be required to meet new requirements, particularly as they relate to EVs, will be particularly impactful. Finally, the roles of the regulators and of the system operators are likely to become more complicated and, if anything, more crucial.

Firms that can navigate all the complexities that will characterize markets over the next decade are likely to enjoy first-mover benefits and competitive advantage. Early positioning and the ability to adapt to quickly changing paradigms are likely to be important and firms with the clear outlooks will be best situation to achieve both.

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