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# The service station of the future

**Fuelling the renewable energy transition**

# The evolving landscape

**Planes, trains, and automobiles will continue to rely on refined petroleum products for the near future. At the same time, it is probably safe to say that as support for an energy transition to combat the effects of climate change continues to build around the globe, the many changes currently in play will reduce the share, absolute volume, and investment allure of these traditional energy sources.**

The demand for zero- or low-emission energy is growing. Consumer behaviour, investment practices, and technologies are changing in fundamental ways, as is the technology that can support the widescale commercialization of biofuels and other sources of renewable energy. Numerous market proof points illustrate this growing momentum behind a transition to clean energy, including:

- **Consumer interest**
  In a 2020 Deloitte study, nearly 75% of business respondents said their customers were demanding electricity from renewable sources, and 77% of businesses were actively publicizing their sourcing of renewables.
- **Investor pressure**
  BlackRock, with US$7 trillion in assets under management, has declared that "climate risk is an investment risk" and put its money where its mouth is, including by applying investor pressure on oil majors to commit to strategies that support energy transition. At BP's 2021 AGM, it even backed a shareholder resolution that BP's board opposed calling for faster climate action.[1]
- **Technology costs**
  The average market price for battery packs plunged from US$1,100 per kilowatt hour (kWh) in 2010 to US$156 per kWh in 2019, an 87% decrease in real terms.[2]

Almost 92% of all greenhouse gas (GHG) emissions in Canada were either directly or indirectly attributable to carbon-based fuels in 2020: about 26.6% came from the oil and gas sector, 23.7% from the transportation industry, 13.1% from buildings, 10.7% from the heavy industry (non-coal, oil and gas mining activities, smelting and refining, and the production and processing of industrial goods like fertilizer), 10.3% from agriculture, and 7.4% from waste, coal production, and forestry.[3]

These realities have prompted an impetus for transition across the oil and gas sector, with market leaders increasingly beginning to shift their business models to clean, or renewable, energy. The impact of this transition can be observed at the consumer level as well: there are an increasing number of hybrid and electric vehicles on the road - and they are fuelling up less frequently.

What does this mean for the gas station on the corner? Many fuel providers are evolving their product mix to incorporate lower-carbon biofuels. There are bolder plays, too: energy players around the world are revisiting their retail footprints, and many are choosing to recalibrate, retool, or even repurpose their networks.[4] With changes to fuel sources and mobility patterns, and the digital transformation of work and life, customers are beginning to embrace new ways of interacting with the service station. This article explores the various pathways fuel retailers can take to meet the shifting needs of their customers and to ultimately "future proof" their business models in the context of the energy transition.

# Three trends driving the evolution of service stations

Fuel retail has long been perceived by integrated energy players as a hedge against commodity price cycles. But it is also worth considering as a lever for strategic diversification. The higher prices commanded by crude today might suggest that organizations will be better positioned to make the investments required to achieve their net-zero commitments. As the only tangible touchpoint many energy companies have with end consumers, service stations will play a critical role in both the brand positioning and operational evolution that are required for carbon heavyweights to become energy transition leaders.

Fuel retail is compelling from a commercial standpoint as well: as drivers stop to refuel their cars, they frequently also pause to consider the food and beverage offerings of service stations. Moreover, these facilities are often found in prime real estate locations. Storefronts both in city centres and along major roads have an attractive opportunity to translate foot traffic to sales for a variety of consumer offerings beyond snacks. Amid the current economic uncertainty, fuel sales are likely to continue to decline, but it is equally clear that retailers could expand dominance through an evolving range of products and services in the forecourt.[5]

The transition to a clean energy future is no longer hypothetical. Curbside emissions regulations, advances in zero-emission vehicle (ZEV) technology, the proliferation of public charging stations, and public and time-bound net-zero pledges have bolstered consumer confidence in the viability of zero-emission goods and services. With relatively few organizations making bold moves to own and develop charging infrastructure, there's plenty of room for market players to lead in this space.

The sheer volume of service stations illustrates the magnitude of the opportunity: the United States alone was estimated to have over 6,000 fast-charging stations in 2022—and an estimated 145,000 gas stations.[6] With more than 25 global providers among original equipment manufacturers (OEMs), energy majors, and startups, a clear market leader has yet to emerge to truly "own" ZEV charging and its associated services.[7] There is also the possibility of winning market share by leveraging existing infrastructure, despite uncertainties such as the potential popularity of home charging stations.

To retain their leadership position in the transportation ecosystem, refiners and fuel retailers will need to evolve their models and offerings to align with existing and emerging alternative energy sources. Such energy players looking to future-proof their businesses should consider several key market trends. We have outlined three of them, including their implications, below.

## Trend 1: The rise in customer-centricity and its impact on expectations

Customers of today are digitally literate and expect a brand experience harmonized across channels. They increasingly seek faster, more secure, and more convenient opportunities to engage with brands and to shop. With fewer people visiting physical stores, retailers (including those selling fuel) need to rework their bricks-and-mortar networks to become destinations catering to customers' multiple needs. Because people grew accustomed to omnichannel retail during the pandemic, retailers are now faced with the challenge of providing a consistent experience and improving last-mile delivery at scale.

Fuel retailers may find it prudent to focus on their convenience offerings, since these can serve as a counterweight to a potential decline in fuel sales. We have seen a rise in customer-centricity in fuel and convenience retail over the past few years. Partnerships with food delivery services (think DoorDash and 7-Eleven) serve to simplify the purchase journey and provide consumers with convenient solutions. Serving the underserved or unbanked through banking kiosks can help convenience stores become a one-stop financial destination for such customers.[8] Loyalty integration programs, such as the one between Esso and PC Optimum, can also drive customer stickiness and margin growth.

Harnessing digital technologies is a first step toward delivering retail innovation, with a frictionless, optimized experience across multiple channels, including at vehicle service stations. One company aiming to do this is Johnson Controls, which, in collaboration with Zliide, is seeking to deliver a more robust and seamless customer experience using a new approach to self-checkout that eliminates register queues and streamlines shopping through secure instant checkouts, endless aisles, no-contact checkouts, personalized experiences, and more.[9]

Similarly, it is important to consider the data that exists outside owned environments. Acquiring customer data on footfall and dwell time in retail outlets near existing service stations through strategic partnerships with technology companies can help unearth insights to shape the service station of the future in ways that are the most relevant to customer needs.

### Implications

In the context of the energy transition and rising customer demands, fuel retailers may need to rethink the layout and product mix of their stores. Offering healthier or fresher groceries, for instance, might appeal to many customers. Pushing the envelope on the types of products offered and exploring adjacent or differentiated offerings from other sectors, such as fintech, might be worth considering. Energy players will need to set up the data and analytics infrastructure that will enable them to identify, interpret, anticipate, and address the needs of customers across their networks. With fortified data capabilities, fuel retailers can lead with convenience to offer frictionless customer experiences that don't necessarily include a trip to the pump.

## Trend 2: The evolution of transportation and emergence of the mobility hub

Moving around a city happens differently these days. People, especially millennials and Generation Z, are increasingly choosing to get around with rideshares, e-scooters, and public transit; ridership rose to more than 70% of pre-pandemic levels by September 2022.[10] There is an abundance of choice for alternative modes of transportation and it's getting easier to compare options across a variety of factors like price, provider, length of trip, and environmental impact. By 2026, transportation agencies will be building large mobility ecosystems and integrating their services across cities around the world.

As part of this ecosystem, autonomous vehicles will play a role in making mobility more accessible to all and will become less expensive as operations become more efficient. Their popularity is expected to rise: the projected compound annual growth rate (CAGR) for driverless cars is 31.3% from 2021 to 2030.[11] This will have a serious effect on fuel retailers—with fewer human drivers, there will likely be fewer trips to the convenience aisles of their service stations. Furthermore, battery technology continues to evolve (e.g., smaller, cheaper, longer life cycles), which means customers may no longer have to stop mid-journey to charge their vehicles. All these changes to the energy landscape make it imperative for fuel retailers to match consumers' new reality. It is also possible that the entire concept of a fuel station will become a thing of the past.

### Implications

With the adoption of ride-sharing and other new forms of mobility expected to grow, there will be far fewer customers looking to fill up on fuel and convenience items. Service station owners must therefore reinvent their facilities to create a compelling value proposition for customers to visit for refuelling or charging. They could entice shoppers by integrating shared mobility hubs in urban areas to optimize the location as a multi-mode transportation centre to meet multiple customer needs. Imagine a shared hub for e-scooters, bikes, Ubers, ZEVs, and delivery drones—with space for people to charge their devices (be they phones or vehicles), sip a coffee, and catch up on the news. In this vision, the service station becomes not just a necessary stopover but part of the journey, with less focus on refuelling and more on a range of offerings such as on-the-go products, household items, and package pick-up lockers that maximize the wallet share of local communities.[12]

## Trend 3: The impact of zero-emission vehicles on service stations

Governments and OEMs have generally recognized that the commercialization of ZEVs is worth pursuing. The market has seen continuous growth, reflecting efforts to reduce GHG emissions, the shift toward sustainable products, and the push to advance EV technology on a global scale. Commercialization, customer affordability, and investment in infrastructure are some of the bigger accelerators to mass-market adoption. California's plan to ban sales of gasoline-only vehicles by 2035 is another example of the many opportune tailwinds.[13]

Consumer interest in ZEVs is centred on the allure of lower fuel costs, environmental consciousness, and better driving experiences, thanks to the integration of next-gen technology. Two factors that would need to be overcome to promote widespread adoption: consumer perception and fleet turnover.

**Perception:** ZEVs are becoming more commercialized and more prevalent on the road, but many customers hesitate to buy them due to concerns about affordability and reliability, especially when it comes to range. Despite major investment, combined global sales of battery and hybrid electric vehicles in 2020 accounted for only 4.5% of the market.[14] One critical barrier to consumer confidence is a perception that

there is not enough charging infrastructure available. A lack of visible public charging stations adds to range anxiety among the general population, especially among those who weather long winters.

There are, however, important shifts under way that will help reshape public perception. Government regulations are providing support throughout the ecosystem, including some that were designed to drive the adoption of personal ZEVs. There have also been several important moves toward heavy transport electrification. The Government of Canada plans to invest $550 million in purchase or lease incentives for medium- and heavy-duty zero-emissions vehicles.[15] This will have widespread effects—for example, the more that individual drivers see ZEVs on the road, the more comfortable they will become with purchasing one for themselves.

**Fleet turnover:** While ZEVs are projected to reach 32% of new car sales around the world by 2030, slow turnover of existing ICE vehicles will be the largest barrier to mass adoption. Less than 1% of the approximately 250 million cars on American roads today are electric; to achieve close to 100% by 2050, US sales of gas-powered vehicles would need to end by 2035. But a slower pace of ZEV fleet turnover will still create existential shifts for traditional fuel retailers, even as consumer sentiment will (likely) create an increased demand for charging infrastructure. It remains imperative to monitor and respond to fleet changes, regardless of the pace at which they occur. As we see more and more ZEVs on the road, we're also seeing the development of more regulatory frameworks to support the transition. Climate-change concerns have led to aggressive global emissions targets and clean investments by governments. More than 40 governments have adopted a price on carbon, either through direct taxes on gasoline and diesel or through cap-and-trade programs. Financial incentives being offered in European Union countries include national and regional subsidies and tax exemptions to urge consumers to adopt ZEV solutions. Additionally, some European cities have decided to ban all internal combustion engines from their city centres, including Paris by 2030.

## Implications

Some consumers are anxious about the range of zero-emission vehicles, with their top concern tied to a perceived lack of charging infrastructure.[16] There is no doubt that the future of vehicular mobility is in flux, but it remains to be seen which power source—electric, hydrogen, or another emergent technology—will prevail in the mainstream. In any case, the mass adoption of ZEVs will require coordinated public-private investment and significant collaboration across industries. It is critical for energy companies to invest in converting today's networks to equip tomorrow's service stations with accessible charging infrastructure that can adapt to the rise of the zero-emission vehicle.

Major North American fuel retailers have already started investing in cross-country charging networks using existing service station real estate. They have no doubt realized they will need to cater to consumers who will be spending more time at the stations waiting to continue their journeys. It currently takes about 15 to 45 minutes—sometimes longer—to charge an electric vehicle's battery to 80%, depending on how depleted it was and the capacity of the charger.[17] Fuel retailers should be anticipating how they can enhance drivers' experiences by offering goods or services for purchase. Similarly, they will need to consider renovations to the site to accommodate a larger number of people for longer periods of time. Another important consideration is ensuring their locations have enough power: a bank of ZEV chargers in full use can demand as much power as an office building.[18] Those seeking to own space must experiment with different products, services, and business models. Scenario modelling is a useful tool to forecast needs and the likely impacts of the network configuration decisions being made today.

# Moving from gas stations to mobility experience hubs

Even as demand for cleaner vehicles grows, the public sector continues to invest in and incentivize the purchase of ZEVs. Players will need to adapt their existing infrastructure and work collectively and with the public to prepare for an electric future. Organizations can explore working with ZEV fleet owners and coordinating with smart-city planners and nascent mobility service providers. They can also look to develop mutually beneficial programs for fleets that may reduce the costs of ZEVs and charging while providing resources to the grid where and when it's needed. Shared investments will lessen the burden on the partnerships needed to build an ecosystem that meets the needs of governing bodies, vehicle drivers, and energy providers.

Fuel station owners have a variety of options to consider as they rethink their current business models and diversify their offerings to accommodate a future in which renewable energy is the norm. The possibilities expand well beyond physical infrastructure changes. Such a strategic shift means evolving into a mobility experience hub, where customer-centricity is a core service function. The question of how market leaders will transform their businesses is critical, as there are a number of strategic directions they could take.

Experimentation, piloting, and scenario modelling are all important levers. Digital tools will serve as the foundation of a successful approach and facilitate the strategic shift. The service station of the future will need to live up to consumers' heightened expectations of a digital journey and provide them with a personalized and seamless end-to-end experience.

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