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The World's First Electric Vehicle Discovery Centre

A Game Changer for Electric Vehicle Market Transformation

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Executive Summary

Consumer research in Ontario, Canada revealed that in order to accelerate the adoption of electric vehicles (EVs) a new way of socializing EVs to mainstream society was required. A new business model for increasing EV awareness and driving EV sales was created in 2017 with the establishment of the world's first Electric Vehicle Discovery Centre (EVDC) – a one stop shop for consumers to explore and test drive a wide variety of EV makes and models and learn about home and public charging solutions. The EVDC has been a game changer for industry and consumers alike, benefitting the needs on both sides of the demand and supply equation. The success of the EVDC has been made possible through an innovative partnership model that unites the automotive, charging, financial and electricity sectors with the singular purpose of accelerating EV uptake. Consumers are provided with a brand neutral environment in which to explore the EV driving lifestyle while a customer referral system puts the suppliers of EV products and services directly in contact with potential customers. Having attracted and surveyed over 14,000 visitors and provided over 6,000 EV test drives, the EVDC has proven to be very successful at shaping public perceptions of electric vehicles while driving EV sales. The EVDC is a sustainable business model that can easily be replicated in other jurisdictions in order to accelerate the world's transition to electric transportation.

1 Consumer Research

- 1.1 The concept was the result of in-depth consumer research published in the May 2017 report *Driving EV Uptake in the Greater Toronto and Hamilton Area*^[1]. Survey findings indicate a significant lack of awareness about EV technology and its benefits among gas car owners. This, coupled with the persistent supply-side barriers of not**

being able to find an EV on a dealership lot in Canada^[2] and the limited availability of different EV models in Canada^[3] led to the evolution of the EV Discovery Centre.

Market Policy and Overview

To prevent greenhouse gas (GHG) emissions from pushing global warming beyond 2°C – a threshold of irreversible harm – the International Energy Agency estimates that 40% of new vehicle sales worldwide must be plug-in electric vehicles by 2040 (with most remaining vehicles fueled by bio-fuels)^[4]. In Canada, the transportation sector accounts for 25% of total nation-wide GHG emissions. Fortunately, Canada also has one of the cleanest electricity grids in the world with almost 81% of all electricity generated in the country coming from low emitting and renewable energy sources (Hydro: 59%, Nuclear: 15%, Renewables: 7%)^[5]. Due to the nature of Canada's electricity sector, large scale EV adoption would have a significant impact on GHG emissions reduction in the country with drivers capable of reducing their car's emissions by as much as 90% per year in some jurisdictions^[6].

Despite the obvious environmental benefits of electric transportation in Canada, EVs still make up less than 1% of all new vehicle sales in the country. As of December 31, 2018, there were 93,091 total registered EVs on the road in Canada^[7] compared to 22,678,328 total registered passenger vehicles^[8]. It is clear that as a solution for reducing Canada's GHG emissions in the transportation sector, EVs currently remain too few to make a significant difference.

1.2 Supply-side Barriers to EV Adoption in Canada

While many Canadian drivers show interest in electric vehicles, research has identified various obstacles that keep most car buyers from making the switch^[9]. Some of these obstacles can be described as supply-side barriers that reflect the difficulty in finding an EV at a car dealership in Canada^[2] or the limited variety of EV models available for sale in Canada^[3]. In addition, many dealership sales personnel simply appear to not know much about them^[10].

1.3 Demand-side Barriers to EV Adoption in Canada

Plug'n Drive research published in the May 2017 report *Driving EV Uptake in the Greater Toronto and Hamilton Area*^[1] uncovered many common misconceptions about electric vehicles that Canadian drivers have:

- The top reason gas car owner respondents cited for not purchasing an EV was price, with 31% of all survey respondents believing EVs are too expensive. Other notable objections included limited choice (8%), being unable to afford any new car (8%) and a general sense that EVs are an unproven technology (5%).
- The next reasons cited by gas car owners for not purchasing an EV were range anxiety or the fear of running out of charge mid-trip (13%) and the inconvenience/availability of EV charging infrastructure (12%). Ironically, the survey also discovered that EV drivers drive further and more often than gas car drivers. EV owners were 20% more likely to drive very frequently and cited an average 46 kilometre round trip versus an average 32 kilometre round trip for gas car owners.
- Gas car owners know very little about available EV incentives with 62% of all respondents indicating they knew nothing about available EV incentives.
- Most gas car owners believe that the burning of fossil fuels contributes to climate change and global warming, but barely half of all survey respondents believe switching to an EV can have a significant impact on global climate change.
- Gas car owners are far less likely to be exposed to EVs prior to making an automotive purchasing decision, with nine out of ten gas car owners never having been exposed to an EV before purchasing their car. On the opposite side of the spectrum, more than 40% of EV owners surveyed were introduced to EVs by a friend, relative or colleague prior to purchasing one.

1.4 Recommendations for Eliminating Barriers to EV Adoption in Canada

With knowledge of the real, and imagined, barriers to EV adoption, Plug'n Drive formulated a number of recommendations for government and industry to help fill the existing consumer knowledge gaps and accelerate EV sales in order to maximize the significant GHG emissions reduction that the wide-scale electrification of transportation in Canada could make possible. On the supply-side of EV uptake, government policies – such as zero emissions vehicle (ZEV) mandates or low-carbon fuel standards can help. Recent Federal Corporate Average Fuel Economy (CAFE) standards in the U.S. led to a surge in EV interest and development by U.S. auto manufacturers in 2011^[11].

On the demand-side of EV uptake, awareness strategies are needed to improve driver understandings of electric vehicles in order to remove psychological barriers that are preventing the mass-market acceptance of the technology. These strategies should address driver perceptions of the cost of EVs with consideration given to available incentives and the overall cost of ownership of EVs when compared to internal combustion engine vehicles, knowledge of the driving range capabilities of EVs relative to daily driving distances/needs and stronger knowledge of the association between car choice and GHG emissions.

A cross-sector approach between government, private sector industry and the non-profit/charitable sectors represents the highest chance of success for the total market transformation of the transportation sector to electric vehicles.

2 Electric Vehicle Discovery Centre Business Model

The EVDC thrives on partnerships that are mutually beneficial for consumers and industry. EV ambassadors (the majority of whom are EV owners) work with consumers to help them choose the right EV solution for their lifestyle. Companies are provided with a centralized location from which to promote their EV products and services while driving sales through experiential marketing, brand awareness and direct customer referrals

2.1 Historical Development

At the time of construction, the EVDC was partially an extension of the EV programming set out in the Province of Ontario's *Five Year Climate Change Action Plan: 2016-2020*^[12]. At the time, the Province of Ontario set a goal of having 5% of all new vehicle sales in the province to be plug-in electric by the year 2020 with a number of programs and initiatives put forward in the Climate Change Action Plan (CCAP) to accomplish that goal. Consumer education was identified as a top priority for accelerating EV sales and the EVDC was included as a key component of the Province of Ontario's EV strategy. The EVDC officially opened its doors in April 2017 in partnership with a number of public and private sector sponsors and stakeholders.

Unfortunately, the CCAP was cancelled by a newly elected provincial government in July 2018, but the innovative business model and strong private sector partnerships have ensured the EVDC's continued operation and success.

2.2 Sponsorships and Partnerships

The EVDC thrives on a partnership model that is mutually beneficial for consumers and industry. EV ambassadors (the majority of whom are EV owners) work with consumers to help them choose the right EV solution for their lifestyle. Industry providers are given access to a centralized location from which to promote their EV products and services while driving sales through experiential marketing, brand awareness and direct customer referrals.

2.2.1 Automotive Sector

In North America, dealership support of electric vehicles has been found by Consumer Reports to often be inadequate^[10]. Many dealerships in Canada do not carry EV inventory and many sales staff are not properly

informed about, or acquainted with, the nuances of electric driving. This includes home charging, public charging, the cost to drive and the environmental and economic benefits of using electricity instead of fossil fuels. The EVDC fills this knowledge gap through partnership arrangements with the corporate head offices of the automotive manufacturers. The automotive manufacturers pay an annual sponsorship fee to be represented at the EVDC and cars for showcase and test drive. In exchange, Plug'n Drive recognizes their involvement on an EVDC exclusive website and Plug'n Drive trained EV ambassadors, (many of whom are EV owners themselves), inform visitors about the unique features of each EV make and model in a sales-free, no-pressure environment.

All visitors to the EVDC are also encouraged to test drive one or more EV models to experience electric driving firsthand. All test drive participants are required to complete a short survey that captures their demographic information, gauges their level of EV knowledge before and after their visit and provides an opportunity to opt-in to further communication from the automotive manufacturers. In this way, the EVDC not only provides EV education and awareness, but also has the capacity to generate customer leads that may translate into further EV sales and their associated GHG emissions reduction.

To date, the EVDC has secured partnership agreements with the Canadian head offices for Audi, BMW, Chevrolet, Ford, Honda, Mercedes-Benz, Mitsubishi Motors and Volkswagen.

2.2.2 Electricity Sector

The EVDC maintains a relationship with the electricity sector through a program called “Charge My Car” to increase public awareness of the advantages of using electricity instead of fossil fuels. At the EVDC, visitors can learn about the essential role the electricity sector plays in the EV industry, including the GHG emissions reduction impact of using electricity instead of fossil fuels, the economic benefits of charging at home overnight utilizing surplus baseload generation and the energy storage potential of smart grid technologies.

The EVDC contains a dedicated zone in the showroom that explains how home charging and public charging works. The EVDC also carries Canada's largest selection of home charging station brands, which allows visitors to see and purchase home charging stations. All charging station customers are given the opportunity to share their address information with their local electricity provider. This information is then used by Charge My Car's electricity partners to track EV usage in their service areas, inform load management strategies and identify key neighbourhoods where local transformer equipment upgrades may be required to ensure grid reliability.

2.2.3 Financial Sector

The EVDC has partnered with one of Canada's leading financial institutions, Toronto Dominion (TD), to create a zone within the EVDC for visitors to learn about discounted insurance rates that are only available to EV drivers through TD Insurance while learning more about TD's other sustainability initiatives.

2.2.4 Electric Vehicle Supply Equipment Sector

The EVDC works with Canada's EV charging station suppliers to help visitors become acquainted with EV charging. Visitors learn about the different levels, or speeds, of charging as well as the various plug standards (J1772, CHAdeMO and CCS). Visitors also learn about home charging station products and installation steps as well as various public charging resources for drivers, businesses and condominiums.

2.3 Fee-For-Service Revenue Streams

In addition to long-term partnerships and commitments, the EVDC offers a number of fee-for-use services that generate additional revenue and add additional value.

2.3.1 External Events

The EVDC functions as both an educational facility and event venue. Inside the EVDC, a meeting room and conference centre is maintained called OPG PowerPlace. OPG PowerPlace is supported by Ontario Power Generation (OPG), which is one of Ontario's two electricity generators. OPG PowerPlace is equipped with

all of the equipment needed to host employee training workshops, product training sessions, board meetings, presentations, etc. Doubling as an event venue has allowed the EVDC to not only generate additional revenue, but also to attract individuals that would otherwise have never considered visiting. In the first year of operation, the EVDC successfully hosted 95 events that, combined, attracted 3,800 visitors.

2.3.2 Charging Station Sales

The EVDC carries Canada's largest selection of home charging station brands, including: ChargePoint, Elmec, Flo, Juicebar, Juicebox, Siemens and Sun Country Highway. Most major department stores across Canada do not currently carry charging station inventory. The EVDC provides visitors with the opportunity to have their questions about charging answered, to see home charging stations in-person and, ultimately, to purchase and install their home charging station.

3 Success of the Electric Vehicle Discovery Centre

The EVDC business model has proven integral to increasing consumer awareness of EV technology and driving EV uptake in Ontario.

3.1 Test Drives

As of September 1, 2018, the EVDC has provided EV test drives for 5,533 individuals. All test drive participants receive a feedback survey that, to date, has been completed by 427 individuals^[13]. Of those individuals, 84% report that the test drive experience made them more likely to purchase an EV and 33% report that they have purchased an EV since their last visit. Of the 67% who have not purchased an EV since their last visit, 86% plan on purchasing in the next three months to two years clearly indicating that the EVDC has been extraordinarily successful at facilitating the transition from fossil fuel powered vehicles to electric vehicles.

The EVDC has provided EV test drives for over 6,000 individuals. Participants receive a feedback survey^[13]. Of those individuals, 84% report that the test drive experience made them more likely to purchase an EV and 33% report that they have purchased an EV since their last visit. Of the 67% who have not purchased an EV since their last visit, 86% plan on purchasing in the next three months to two years clearly indicating that the EVDC has been extraordinarily successful at facilitating the transition from fossil fuel powered vehicles to electric vehicles.

3.2 Visitors

As of September 25, 2018 the EVDC has attracted 9,343 visitors from diverse demographic groups through a combination of targeted marketing campaigns and word of mouth advertising. Of these visitors 2,220 (24%) had never considered, or were undecided about, an electric vehicle prior to visiting.

The EVDC has attracted over 14,000 visitors from diverse demographic groups through a combination of targeted marketing campaigns and word of mouth advertising. Of these visitors 2,220 (24%) had never considered, or were undecided about, an electric vehicle prior to visiting.

3.3 Events

As of September 25, 2018, the EVDC has successfully hosted 115 events for the private sector (8%), public sector (17%), government branches (15%), non-profit/charitable sector (23%) and youth organizations (37%), which have attracted 4,625 visitors. These events have allowed the EVDC to spread the EV message to diverse audiences that have unique positions and perspectives within the EV industry.

4 Conclusion

The EVDC has proven an effective business model for increasing EV uptake. Through a combination of public sector partnerships, sponsorships and fee-for-use services, the EVDC has proven to be a financially sustainable business model that benefits consumers and the providers of EV products and services. The EVDC business model can be easily replicated in other jurisdictions in order to accelerate the progression from fossil fuel based transportation to electric.

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Dav Cvitkovic, Chief Operating Officer, Plug'n Drive

Dav Cvitkovic is currently the Chief Operating Officer of Plug'n Drive and served as project manager to spearhead the launch of the world's first EV Discovery Centre in Toronto. Dav has over 20 years of fundraising and marketing experience in the non-profit sector leveraging insights gained from senior leadership positions across Canada and in the U.S. to help organizations align their strategic vision and fundraising results to optimize revenue and brand performance. Dav thrives at identifying opportunities, finding synergies, driving change and understands the complexities of national organizations and matrix structures.



Cara Clairman, President and CEO, Plug'n Drive

Cara Clairman is the President and CEO of Plug'n Drive. In just over six years, Cara has taken Plug'n Drive from an idea to a thriving non-profit organization that is recognized as a Canadian leader in the electric vehicle industry. Prior to launching Plug'n Drive, Cara spent 12 years working at Ontario Power Generation (OPG), initially as OPG's environmental lawyer and later as the Vice President of Sustainable Development.