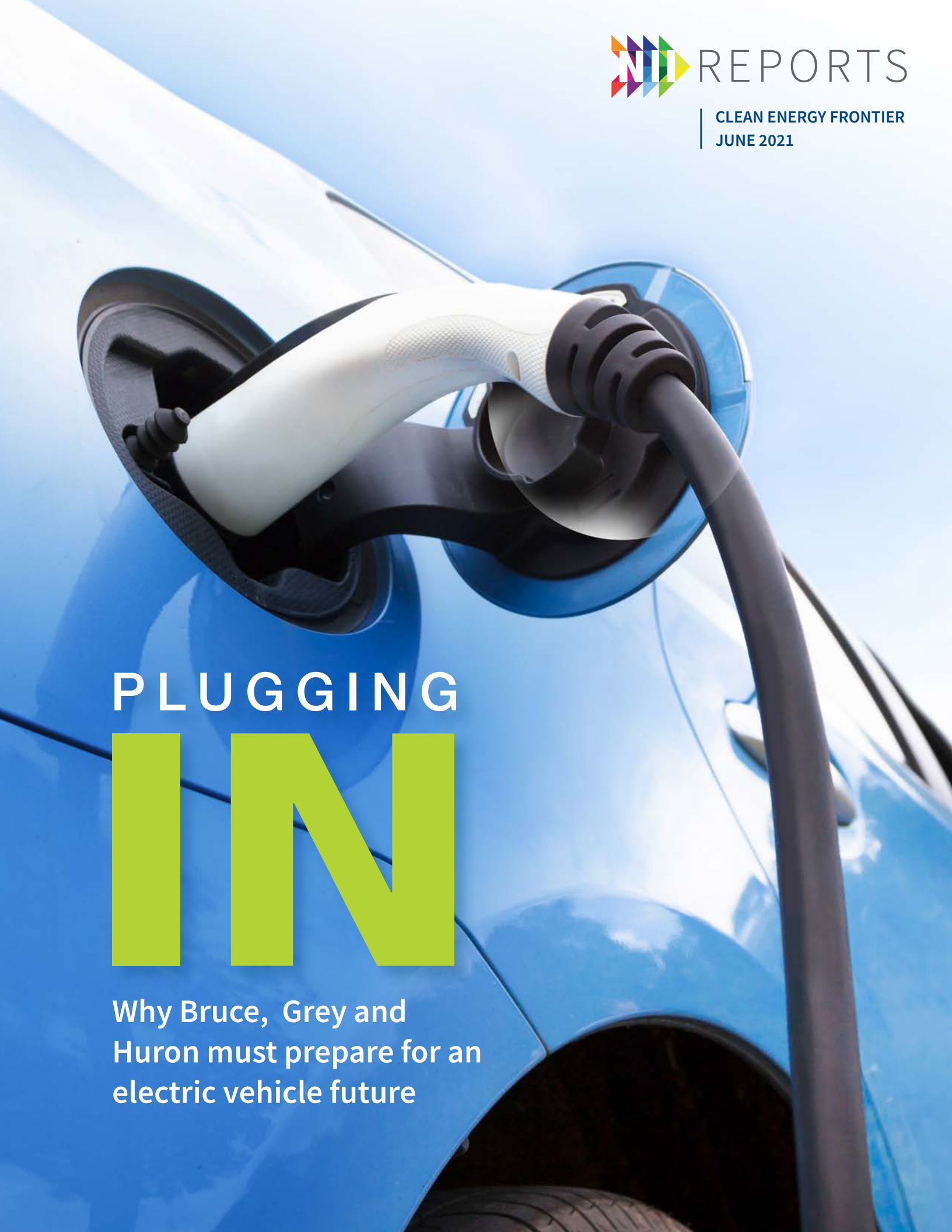


REPORTS

CLEAN ENERGY FRONTIER
JUNE 2021

# PLUGGING IN

## Why Bruce, Grey and Huron must prepare for an electric vehicle future


An EV future is coming. Are we ready for it?

# “Explore the Bruce”
# “Colour it Your Way”
# “Ontario’s West Coast”

The slogans have evolved over time but the message to road-trippers in Ontario and beyond has always been the same: come visit us in Bruce, Grey and Huron. Whether it is the allure of cottages and beaches, woodland trails, ski hills or the beauty of rolling farmlands, our three counties have been attracting ever-increasing numbers of families and other travellers for generations, turning tourism into a pillar of our economy. And those visitors almost all arrived the same way.

**They drove here.**

Our region’s tourist economy has been built to accommodate car travel. For the last century or more, those cars—and motorcycles, too—have been powered by gasoline or diesel fuels, running on the 20th century technology of the internal combustion engine. Cars are a defining feature of the modern world, delivering mobility to people that has become synonymous with freedom (or the hell of the daily commute). They have also contributed to the unsustainable amounts of carbon dioxide being pumped into the atmosphere, with the effect of disrupting the earth’s climate in potentially alarming ways. Scientific evidence and an emerging political consensus put us at the point of surpassing the planet’s carbon “budget”, its ability to absorb what we burn. More and more governments, businesses, investors, and citizens are seeking ways to lower emissions of warming greenhouse gases like carbon dioxide and, in the process, forcing major changes to the way we live.

Enter the era of the electric vehicle (EV). There is widespread agreement, from climate scientists to auto and energy industry analysts, that an accelerated shift to electric



cars running on clean electricity (such as that already produced in Ontario) can have a profound impact on decarbonizing our economy. Plenty of governments see it that way, mandating that a greater percentage of cars sold in the coming years must be zero-emissions vehicles (ZEVs)—vehicles that are able to operate without emitting carbon, including fully-electric vehicles, hybrid vehicles, and hydrogen-powered vehicles. Big car companies—not just Tesla—agree. The last two years have witnessed a race by auto manufacturers to one-up each other in pledges to electrify their fleets.

This nascent revolution remains barely visible. The portion of EVs on the road is still small, and deep driver prejudices and fears are yet to be overcome (get used to hearing the phrase "range anxiety" as the EV revolution picks up). But the combination of government action, technology advances in areas like extended battery life, and trillions of dollars of auto industry investment is creating a force for change that will be hard to hold back.

And with that, the very nature of the traditional road trip will change too. Gas stations, once a standard stop on the car journey, will have to offer the EV driver a place to plug in to recharge. The site of street-side charging stations will no longer seem futuristic. EVs, and the chargers to keep them moving, will gradually come to dominate the mobility infrastructure of the 21st century.

> ***'EVs, and the chargers to keep them moving, will gradually come to dominate the mobility infrastructure of the 21st century.'***

This shift raises fundamental questions for a Bruce, Grey and Huron region dependent on cars to get people here. How ready are we for such a fundamental shift in transportation technology? Does the EV-owner living outside the area believe it'll be easy to get a charge on the peninsula, or along the Huron shore? Can they, in fact, get that charge? And will perceptions that we are too far away or too lacking in chargers—range anxiety—lead EV drivers to look elsewhere when planning their vacations or day trips?

Those questions inspired this research study by the Nuclear Innovation Institute's Clean Energy Frontier program. We partnered with Plug'n Drive, a leading Canadian not-for-profit organization that is accelerating the adoption of electric vehicles, to determine how EV drivers see our region as a destination. And we looked at the existing charging infrastructure to see how ready we are to greet them.

The answers provide a sharp warning. Our charging infrastructure is currently dispersed and small. Ontario ZEV and EV drivers sense that. And we have yet to come together as a region to develop a coherent strategy to respond to an EV future: installing the right type of charging capacity, where drivers need it, then getting the word out that we've done so.

It's hardly too late. The report that follows lays out the extent of the challenge we face, but it also shows the enormous opportunity to attract the next generations of visitors if we get it right. The EV revolution is just around the corner. This report shows the importance of being ready to meet it.


TESLA
2D

# Top Takeaways

1. More than **83%** of the 528 ZEV/EV drivers surveyed believe it is “difficult” or “very difficult” to access public charging in the Bruce, Grey, Huron area.

2. Across the Bruce, Grey and Huron region, there are just **45** accessible charging stations with 111 individual plugs. Three-quarters of these chargers are Level 2 or “opportunity chargers” requiring a lengthier wait for charging than their Level 3 – DC/Quick charger counterparts, which represent the remaining quarter of chargers. The dispersed distribution of these chargers does not constitute a regional charging “network.”

3. For road trip vacations and weekend getaways, more than **70%** of EV drivers stated that they would only choose locations or would give preference to locations where they know they can access public charging infrastructure.

4. When travelling in their EV, only **13%** of EV drivers prefer to use overnight charging stations (Level 2 chargers). By comparison, 42% prefer highway stop locations (Level 3) and 36% prefer Level 2 on-street charging.

5. Global EV sales are increasing. 2020 was a record year, despite the COVID-19 pandemic, with **3 million** EVs sold worldwide accounting for 4% of global sales.



## Chapter 1:

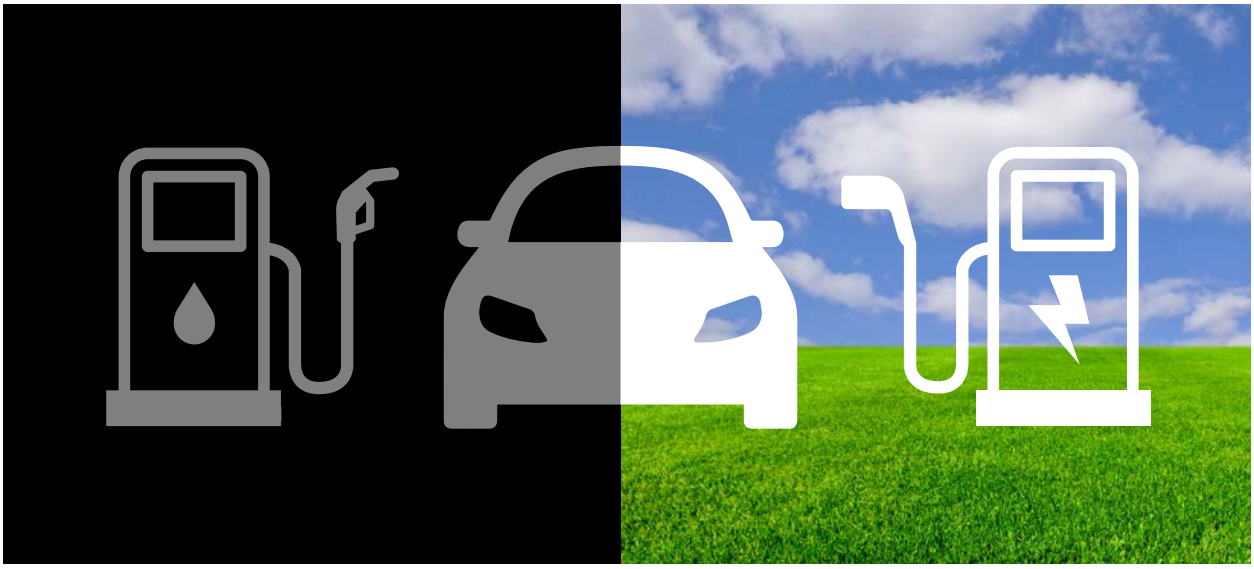
# The EV transition is underway. And accelerating.

Electric cars are not a new technology. The first prototypes emerged on the streets of Paris and London in the late 1800s and, for a time, electric cars looked ready to compete in North America with gasoline-powered internal combustion engine (ICE) technology.

Instead, by the early to mid-1900s, the cheap and easy availability of fossil fuels had won the day with drivers. Since then, there have been periodic bursts of enthusiasm for EVs, none of which led to them capturing much market share.

But none of the conditions that are driving the current enthusiasm

*'EV sales rose to over three million worldwide, achieving a new vehicle market share of over 4% and making 2020 a record-breaking year for electric mobility.'*





for electric cars and trucks existed during those previous spasms of interest. Chief among them is the imperative of decarbonizing the global economy to combat climate change, a challenge that is creating a universal market for EVs and ZEVs. Investment is following, as the auto industry—on all continents—pivots to embrace a new economic opportunity. And designers, led by Elon Musk at Tesla but with an ethos for style now spreading throughout the industry, are altering perceptions of electric vehicles, appealing to the driver's heart (look at the love for the Ford's electric F-150 Lightning truck) as well as their environmental conscience.

As a result, the conversation around EVs has gone mainstream. Governments, industry and drivers now talk about having more ZEVs and EVs on the road in the near future, with estimates in the mid-term suggesting that the EV's time is about to arrive.

There are several reasons for the increase in uptake and newfound resiliency of the EV market, primarily:

1. Policy support remains strong in many jurisdictions.
2. Manufacturing improvements are delivering lower battery costs and greater range.
3. The auto industry has made commitments to offer more diversity of EV models and increase EV manufacturing capacities.

According to the International Energy Agency, in 2020 the global electric vehicle stock hit the 10 million-mark, with battery electric vehicles outpacing plug-in hybrids to account for more than 65% of total EV sales.[1]

Overall, the global auto market for all types of passenger vehicles was significantly affected by the economic repercussions of the COVID-19 pandemic with the first four months of 2020 seeing a drop of more than 30% in total auto sales.[2] Despite this, EV sales rose to over three million worldwide, achieving a new vehicle market share of over 4% and making 2020 a record-breaking year for electric mobility.


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EXHIBIT 1

# BIG AUTO is making a BIG BET on EVs.

**Table 1** - Commitments from auto manufacturers on EV share of global sales

| COMPANY | TARGET |
|---|---|
| Ford Motor Company | EVs to account for 40% of global sales by 2030 |
| General Motors | 100% carbon-free light duty vehicle sales by 2035 |
| VW Group | EVs to account for 40% of global sales by 2030 |
| Honda | EVs to account for 2/3 of global sales by 2030 |
| Subaru | EVs to account for 40% of global sales by 2030 |

PHOTO CREDIT: FORD.CA



Major automotive brands have been making commitments to increase EV production, supporting an all-EV future. As recent as May 2021, Ford Motor Company's President and CEO Jim Farley, discussing the role of EVs in Ford's lineup, stated: "This is the greatest opportunity for growth and value creation since Henry Ford started scaling the Model T."[3] This came as part of an announcement from Ford that the company plans for 40% of its global sales to be EVs by the year 2030.

***'This is the greatest opportunity for growth and value creation since Henry Ford started scaling the Model T.'***

Ford's commitment to an EV transition further connected with consumers when they rolled out the brand-new F-150 Lightning. The iconic F-150 familiar to many in Bruce, Grey and Huron is going to have an electric counterpart. And consumers are excited about it: in only 48 hours after launching the F-150 Lightning, Ford received more than 44,500 reservations for the truck that will not go on sale until next year.[4] And Ford is not alone—Table 1 provides a sample of notable EV sales targets set by auto manufacturers.

Furthermore, advances in battery technologies that EVs rely on are charging the market. Improved battery technologies such as new chemistry compositions and manufacturing processes have begun to alleviate some concerns around range anxiety and, more importantly, have significantly reduced the cost of battery production.

Notably, a recent report from BloombergNEF stated that lithium-ion battery pack prices fell by 89% between 2010 to 2020.[5] This, combined with the auto industry's commitment to roll out more affordable nameplates, is sure to lead to greater EV adoption regardless of household income.



EXHIBIT 2

# Government policies across Canada are driving adoption.

Several governments in Canada have committed to an EV future. Supportive policies from provincial governments in Quebec and British Columbia have positioned these provinces as national leaders in adoption. In 2020, 8.4% of new cars sold in BC were EVs; in Quebec, it was 6.7%. The clearest policy signal has been the outright ban on the sale of new gasoline-powered passenger cars and trucks by the year 2035 in both provinces.

At the national level, the Government of Canada has also called for 100% of vehicle sales to be ZEVs by the year 2035. These targets are backed by a host of government-sponsored incentive pro-grams across jurisdictions to entice consumers to purchase an EV.

The trends being seen globally have reached Canada. Recent analysis of Canada's Energy Regulator (CER) data by Strategic Policy Economics shows that by 2030, Canada could see EVs account for six million of the total 27 million vehicles on the road across the country—greater than a 20% share of the total light vehicle stock. And the CER data projects that internal combustion engine vehicles would be eliminated from Canada's light vehicle stock by 2045.[6]



**BY 2035, THERE COULD BE**

**2.8 MILLION ZEVs ON THE ROAD IN ONTARIO**

In Ontario, the analysis sets out a similar trajectory as that of the national level, projecting 2.8 million ZEVs on the road by 2035. This projected growth in Ontario comes despite the fact that the Government of Ontario retired its EV incentive program, keeping overall sales to only 2% of new car sales in 2020.

But while Ontario has been slower at adopting EVs, that is likely to change as it feeds its appetite to build them. Ontario's automotive







industry is one of the biggest in the world, but it has lagged in producing EVs—until now. The last year has seen several significant investments in EV production, from the $1 billion all-electric van investment that General Motors will make in Ingersoll, to the $1.8 billion Ford Motor Co. is spending with the backing of both the federal and Ontario governments to keep several thousand workers employed on Oakville assembly lines producing five EV models. Stellantis, the new incarnation of Fiat Chrysler, is also investing in EVs in Windsor. All that investment carries knock on benefits for everything from demand for aluminum to mining for the minerals that go into making batteries.

Ontario is also well-positioned to reap clean energy benefits from a shift to electric vehicles because of its clean electricity grid. An electric car is only as clean as the power used to make it and move it. And Ontario's grid is clean, the result of relying on carbon emissions-free nuclear power for 60% of its electricity, with most of the rest coming from hydro power and a small but growing portion of renewables.

> ***'Ontario is also well-positioned to reap clean energy benefits from a shift to electric vehicles because of its clean***

This convergence of clean electricity and investment in an EV manufacturing supply chain offers a path to economic prosperity. It's also a cultural shift that will raise the profile and importance of EVs in the province that should be matched by an increase in consumer adoption.



EXHIBIT 3

# What happens in the U.S. matters here.

Meanwhile, the integrated North American auto industry means that U.S. policies have a powerful effect on what will happen in Canada. The Biden administration has unveiled ambitious and aggressive action on EVs, including a $174 billion (USD) commitment to "win the EV market."[7] Their proposal includes support for EV manufacturing in the United States, point of sale rebates for consumers, and, vitally, building a national network of 500,000 EV chargers by the end of this decade.[8]

Some of Ontario's nearest neighbours are also moving aggressively on the EV front—representing big sources of potential visitors to the Bruce, Grey and Huron region. In April 2021, New York State introduced a bill banning the sale of internal combustion engines after the year 2035. If the bill passes, it will make New York the fourth U.S. state to have a gas car ban policy in place.[9]

New York State already ranks second among U.S. states for the number of EVs sold and number of public charging stations installed.[10] The state's Energy Research and Development Authority counted 69,047 electric vehicles on the road. The New York rebate program began in April 2017. Despite the economic challenges brought on by the COVID-19 pandemic, New York State experienced its all-time highest EV sales growth year in 2020, with 19,831 total EV registrations.

> ***'Some of Ontario's nearest neighbours are also moving aggressively on the EV front—representing big sources of potential visitors to the Bruce, Grey and Huron region.'***

Meanwhile, U.S. Department of Energy data released in August 2020 put total EV registrations in Michigan at 4,210, placing it 23rd in the U.S. for EV sales.[11] But Michigan is building electric vehicles. In September 2020, Ford committed to the construction of the Rogue Electric Vehicle Centre in Michigan, where the all-electric Ford F-150 is scheduled to begin manufacturing by mid-2022.[12]

The shift means that we can expect about 300,000 EVs on the road in Michigan in 2030. It assumes nearly all will have at least 200 miles range—a modest assumption, given how fast EV technology is improving.

EXHIBIT 4

# Batteries are getting better.

New and improved battery technologies used in EVs are crucial to a real surge in demand. Limits on distance traveled on a single charge have been a prominent concern for potential EV buyers, creating the phenomenon of range anxiety and acting as a chill on sales. Drivers also balk at overly long charging times. And while the price of batteries has dropped significantly over the last decade, their cost is still high enough to be a major reason why gas and diesel-powered cars are less expensive up front.

As a result, massive investment has poured into improving the range of existing lithium-ion batteries and reducing the amount of time it takes to charge them. According to data from Canada's Energy Regulator (CER), the average range of an EV increased from 219 kms to 386 kms[13] between 2013 – 2019.



PHOTO CREDIT: SHUTTERSTOCK

Automakers are now offering extended-range units as part of their offerings for those who regularly travel longer distances.

But companies from Tesla to Toyota are also betting on next generation battery technology to change the paradigm. Some are looking at making solid-state batteries, though that commercial application seems to be at least a few years off. Others are experimenting with new materials, such as silicon, to vastly accelerate charging times or hold more energy. And manufacturers are focused on extending overall battery life, with Tesla's moonshot-loving Musk proposing to eventually put a "million-mile battery" in his cars.

Finally, the performance of lithium-ion batteries diminishes in extreme cold. This has led to the creation of battery thermal management systems that work to keep batteries within the right temperature range, a yet imperfect solution but a focus for investment among auto manufacturers.

## Chapter 2:

# Can I get a charge up here?

Increased adoption of EVs means increased demand for public charging infrastructure. For regions that rely on significant levels of tourism to support their local economies, it's critical that would-be tourists are confident they can access a sufficient and reliable network of charging stations while on the road. Imagine taking a road trip in your gas-fueled car without being sure that you will be able to find a gas station.

The Bruce, Grey, Huron region spans nearly 12,000 km2. Visitors to the region are often required to drive lengthy distances, not only from their homes (in the Greater Toronto Area, for example) but from point to point once they arrive. With local attractions in the region spread out across this vast geographic space, it is important to ensure that an accessible and reliable network of local charging exists to support the tourism economy.

Yet when EV drivers get here, they will find the EV charging network unevenly distributed throughout the region and lacking the type of charging that best suits their needs.

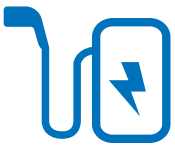
Publicly accessible data on the website ChargeHub.com[14], shows only 45 stations across the 12,000 km2 expanse. The number of individual plugs at these locations varies. Some stations have only one plug, while others have up to eight. Altogether, there are 111 different individual outlets that an EV driver in the region could access. These stations are distributed with similar numbers of stations and plugs across the three counties.



**LEVEL 1**

**1 HOUR = 8 KM**
of driving range

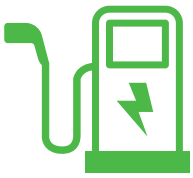
**AT HOME CHARGING**



**LEVEL 2**

**1 HOUR = 30 KM**
of driving range

**DESTINATION CHARGING**



**LEVEL 3**

**1 HOUR = 250 KM**
of driving range

**FAST / DC QUICK CHARGING**

While the number of charging stations and plugs in the region is important, the type of charger and where these chargers are located is even more significant. When it comes to charging an EV, there are 3 different “levels” of charging:

**LEVEL 1** refers to charging at home using a regular wall socket. All EV models come standard with a portable cord set that allows an owner to charge using any standard household outlet. This is the slowest form of charging. For every hour of charging, an EV can expect about eight kms of driving range.

**LEVEL 2** charging is often referred to as destination or “opportunity charging”. These types of chargers are used when a driver plans on staying at a destination for several hours or is looking to only “top up” quickly. For Level 2 chargers, drivers can expect about 30 kms of driving range per one hour of charging.

**LEVEL 3** chargers, also known as "Fast/DC-Quick Charging,” is the EV equivalent of a gas station. These chargers can take an EV’s battery from completely empty to 80% full in only 30-45 minutes. A one-hour charge at one of these locations translates into approximately 250 kms of driving range.



Our study focused on Level 2 and Level 3 charging.

More than three quarters of the chargers across the region are Level 2 or "opportunity chargers." The expectation is that these chargers would be located at restaurants, in downtown cores, or near popular attractions. Meanwhile, only 24% of the region's chargers are the Level 3 "service station-type" charging stations.*

To better understand the environment in which the region's chargers are located, we used mapping information on ChargeHub.com to qualitatively assign each charger into one of the following classifications:

1. **Highway Stop** - located adjacent to a highway or other major road, excluding those located next to roadside attractions or restaurants.
2. **On-Street / Opportunity Charger** - located next to a restaurant, local attraction, or the downtown core of a community.
3. **Overnight** - located at a hotel, motel, or bed and breakfast location.
4. **Business-use** - located at businesses seemingly for use by employees.

Table 2 presents the results of this analysis.

These results paint a different picture for each county within the region. Bruce County has chargers spread evenly across the different contexts. Meanwhile, Grey has a heavier concentration of chargers at overnight locations, and more than half of Huron County's chargers are on-street locations.

This information will be valuable in determining how the region's charging infrastructure stacks up against the expectations of EV drivers travelling to the region. One thing is clear: the current level of available charging desired by EV drivers is grossly below the demand that can be expected from the projected increase in the years ahead.

**Table 2 -** Charging locations around Bruce, Grey and Huron counties

| | TOTAL PLUGS | HIGHWAY STOP | ON-STREET | OVERNIGHT | BUSINESS USE |
|---|---|---|---|---|---|
| **BRUCE** | 36 | 12 | 11 | 6 | 7 |
| **GREY** | 39 | 8 | 12 | 16 | 3 |
| **HURON** | 36 | 1 | 20 | 5 | 10 |
| | 111 | 21 | 43 | 27 | 20 |

* It is important to note that stations that are not accessible to the public or were not functioning at the time of this study were not counted.

## Chapter 3:

# What do Ontario EV drivers want?

The limited ability to charge an electric vehicle is one problem. The perception that it is difficult to do so is another. How EV drivers see a region affects the decisions they make on where to drive, and where to spend their vacation and day-tripping money.

To gain an understanding of how current EV drivers view the local charging network in Bruce, Grey and Huron, we surveyed the network of over 2,100 EV drivers that Plug'n Drive has built. Since 2011, Plug'n Drive has established itself as a Canadian leader in the EV industry and is a trusted, unbiased source of information about EVs, charging stations and the electricity sector.

The survey took place in May 2021 and asked EV drivers a series of questions about their travel habits, their preferred public charging options when travelling, and their perception on the ability to find public charging in Bruce, Grey and Huron. In total, 528 drivers of EVs (70% battery-electric, 30% plug-in hybrid) responded to this survey, an impressive rate of response (27.1%) that ensures an accurate and reliable picture of EV driver attitudes across Ontario.

Here is what we found.

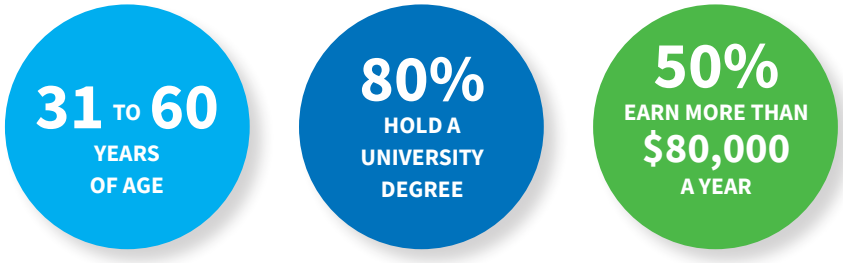
### Ontario EV drivers are well educated, affluent and able to travel.

Generally, EV drivers are educated, well-paid and represent multiple generations—most drivers are between the ages of 31 – 60 years of age. More than 80% hold an undergraduate or graduate degree, while 50% earn more than $80,000 per year.

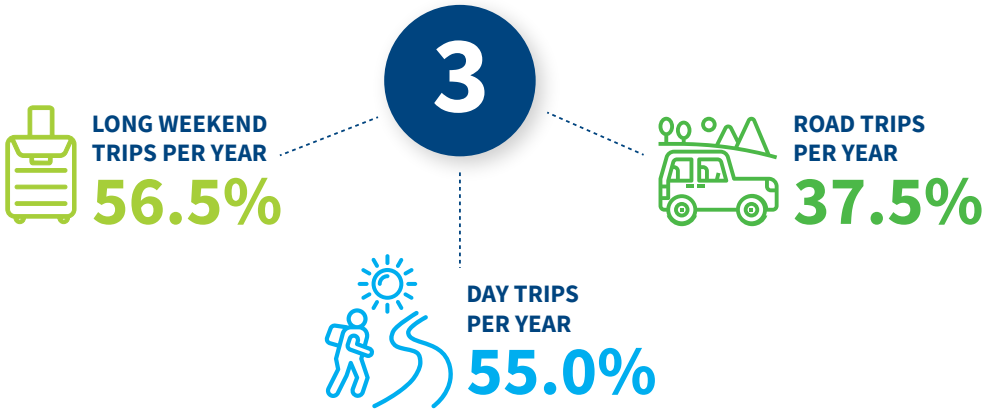
Three different types of travel habits were presented to EV drivers:

1. **Road-trip vacation** (defined as four days or more)
2. **Weekend getaways** (defined as three days or less), and
3. **Day trips** (more than 200 km away from their home but returning on the same day).

The results showed that EV drivers are well travelled. For all three types of travel activities, the



## TRAVEL HABITS OF EV DRIVERS




response “three or more times per year” was the most common answer.

EV drivers were also asked about the use of their EV when travelling. The results showed that for longer vacations like road trips, 41% of EV drivers prefer not to take their EV. However, they are more likely to use their EVs for weekend getaways and day trips. For weekend trips, more than half of respondents stated that they take their EV on two or more such trips per year. Meanwhile, for day trips more than 60% of EV drivers take their EV on at least one day trip each year.

## EV drivers decide where to travel based on access to charging

For road trip vacations and weekend getaways, more than 70% of EV drivers stated that they would only choose—or would give preference to—locations where they know they will be able to access public charging infrastructure.

Two-thirds said the same thing about the choices they make for day-trip travel.

EV drivers were asked how important access to public charging infrastructure is when it comes to deciding where they travel. For each type of potential trip (road trip – 46%, weekend getaway – 43%, and day trip – 40%), “Very Important” was the most common answer.

When asked why they do not take their EV on vacation, “Lack of Public Charging” was the most common response for all three types of travel outlined: 32% for road trip vacations, 34% for weekend travel, and 38% for day trips. Other responses were mixed and included factors like the inconvenience of public charging, a desire to charge at home and more.

## EV drivers want highway stop charging

Pulling over to the side of the road to fill up (while stretching and stocking up on coffee and snacks) isn’t going anywhere.

The difference is that filling up is more likely to mean a fast electric charge instead of pumping gas into the tank.

Our survey asked drivers which type of public charging they prefer to use when travelling, and over four in 10 said they are looking for a highway stop with fast-charging capability. The next most popular type was on-street Level 2 charging.

Notably, only 13% of respondents stated that they would prefer to use overnight charging locations. This carries significant implications for hotel and bed and breakfast owners, who might assume that installing chargers is essential to inducing EV drivers to spend the night. While still beneficial, the survey suggests that EV owners have other preferences and priorities when it comes to where and how they charge.

## EV drivers think it's tough to charge in our region

Finally, EV drivers were asked about their perceptions of the current EV charging network in Bruce, Grey and Huron. They were provided with a map with each individual region (Bruce, Grey and Huron) circled and were asked whether they thought accessing public charging infrastructure in each region would be "Very Easy," "Easy," "Difficult" or "Very Difficult."

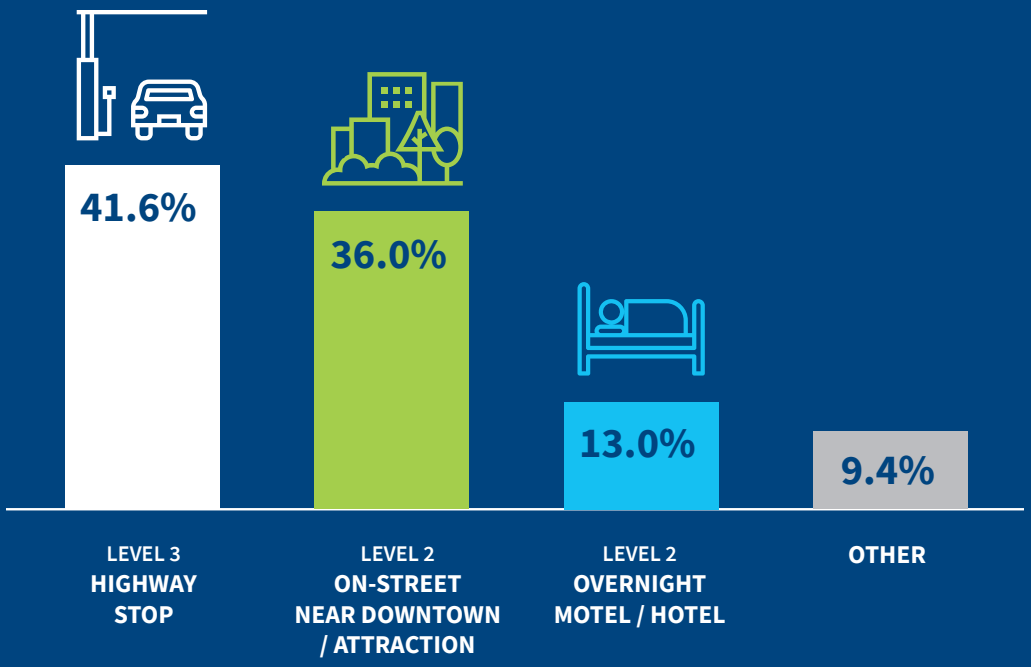
On average across the regions, 83% of respondents believe that it would be "Difficult" or "Very Difficult" to access public chargers here.

**83%**
believe it's **DIFFICULT** or **VERY DIFFICULT** to get a charge in **BRUCE, GREY, HURON**

This suggests that our region may already be losing out on attracting visitors who travel in their EV.

And it underscores the importance, once the regional charging network is expanded, of marketing that new reality to EV drivers who are heavily skeptical that they can get a charge here.

### TYPES OF CHARGING EV DRIVERS WANT




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30
30 MINUTE
GENERAL PARKING
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## Conclusion:

# A gap and an opportunity. But strategy is required.

When General Motors chair and CEO Mary Barra rolled out the company's commitment to "Zero Crashes, Zero Emissions, Zero Congestion", she made clear where she thought her industry's future lies. "Climate change is real," she said. "And we want to be part of the solution by putting everyone in an electric vehicle."[15]

Barra is hardly a lone voice. In the last year, automakers around the world have signalled that they see future profitability in a transition to electric fleets. And the growing number of pledges from governments and industry to reach "net zero" carbon emissions are almost certainly non-starters without that switch. Conditions are finally falling into place to make the long-hinted EV revolution a reality, a development that will send ripples through the economy. The implications extend from assessing its impact on future demand for electricity, down to the mechanics and garage owners who will one day find themselves needing new skills to service a car engine.

> ***'Some of Ontario's nearest neighbours are also moving aggressively on the EV front—representing big sources of potential visitors to the Bruce, Grey and Huron region.'***

But it is vital that the charging infrastructure be put in place to meet demand and encourage greater adoption. It's clear that Bruce, Grey and Huron counties do not currently meet that test. The few chargers that have been installed have been placed sporadically, without a vision that incorporates the preferences of EV drivers.

A strategic approach is needed from counties like Bruce, Grey and Huron that rely on transportation and tourism by passenger vehicle.

EV drivers are affluent, travel often, and prefer to travel to places where they know they will be able to access a reliable network of public charging stations. Unfortunately, more than 80% of EV drivers currently believe that accessing charging in Bruce, Grey and Huron will either be difficult or very difficult.

Changing this perception first requires fixing the reality on the ground. EV drivers told us they prefer to access charging at Level 3 charging stations along major

roads and highways, yet these types of chargers represent less than a quarter of the charging stations across the region. EV drivers also told us they seek access to Level 2 charging stations on-street when they are travelling. While the share of this type of charging station represents 39% of the small, existing regional network, vastly more of these chargers will be needed to service those who want a charge near local restaurants, attractions, and downtown cores.

Help exists to get there. The Government of Canada's Zero Emission Vehicle Infrastructure Program, funded through Budget 2019, is a five-year $280 million program that ends in 2024. The objective of this program is to "address the lack of charging and refuelling stations in Canada; one of the key barriers to ZEV adoption, by increasing the availability of localized charging and hydrogen refuelling opportunities where Canadians live, work, and play."[16]

Eligible recipients for this funding include electricity or gas utilities, companies, industry associations, research associations, standards organizations, Indigenous and community groups, academic institutions, and provincial, territorial, regional or municipal governments. This program presents an opportunity for rural regions to complement spending on EV infrastructure.

Other green infrastructure spending supports are almost certain to emerge as well.

But the region's governments and businesses must be strategic about how they install charging infrastructure. A coordinated approach is essential to installing the right kinds of chargers where they are needed, creating a seamless network of plugs that slams the door on fears like range anxiety. Once the infrastructure begins to be installed, the region will need a coordinated approach to marketing itself as an EV-friendly region.

As municipalities electrify their own vehicle fleets, consideration should be given to installing the accompanying charging infrastructure at publicly accessible locations. For example, the City of Owen Sound recently purchased two EVs for its fleet. A release from the City stated that the purchase would "also include the eventual installation of charging stations within the City Hall and Farmers' Market area, providing an EV charging option within the Downtown for residents and visitors."[17] This is the kind of leadership that municipalities in the region must demonstrate: fleet conversion accompanied by accessible public charging installations at points of interest.

Local infrastructure should also be integrated into a broader charging network. Wellington County recently launched an initiative with several regional governments to prepare a "regional EV charging station network to bridge the gap of charging infrastructure between Highway 401 and the Lake Huron-Georgian Bay area to the Bruce Peninsula."[18] These efforts at collaboration and cooperation are good news. The presence of a regional corridor from the Greater Toronto Area to the Bruce Peninsula will help ease concerns of EV drivers worried about not being able to get a charge.

The new reality will not arrive overnight. But it will come. Ontario seems increasingly likely to be at the forefront of that shift, driven by its place as an emerging manufacturer of 21st century electric vehicles and because clean nuclear power provides EV drivers with the full benefits of moving away from cars that run on fossil fuels. The signals are there and there is no excuse to be caught unprepared. The time to start plugging in to that reality is now.

# Recommendations

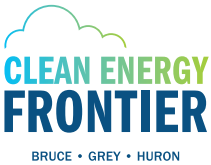
1. Develop a clear and coordinated strategy for installing EV charging capacity across the region. Individual municipal transportation planning should include commitments to public charging infrastructure enhancements, including leveraging the Federal Government's Zero Emissions Vehicle Infrastructure Program, and collaborate where possible to reduce installation costs.
2. Develop and share local expertise on EV technologies to better understand how the science and evolution of batteries might affect charging location decisions (such as the potential need for indoor charging in winter to reduce the effects of cold).
3. Focus new public charging infrastructure investments on Level 3 – Highway Stop charging locations.
4. Work with local restaurants, tourism operators, and local other points of interest (ex. provincial and national parks) to install Level 2 charging infrastructure.
5. Work alongside regional partners in developing plans. The counties of Bruce, Grey and Huron should continue to work with Wellington County toward the goal of establishing an electric vehicle charging station network strategy to create an EV charging corridor from Highway 401 to the tip of the Bruce Peninsula.
6. Communicate with EV drivers through tourism marketing efforts and Plug'n Drive's EV owner groups about the regional EV charging network.
7. Develop greater awareness with local auto mechanics about the emerging need for expertise in servicing electric vehicles.




The **Nuclear Innovation Institute (NII)** is an independent, not-for-profit organization that provides a platform for accelerating the pace of innovation in the nuclear industry.

Nuclear energy is a powerful force for decarbonization. It creates good jobs, drives economic growth and produces radioisotopes that are used—among other benefits—for cancer detection and therapies that save lives in Canada and around the world. The Institute is founded on the belief that the industry can enhance these vital contributions by adopting a structured approach to fostering innovation.

www.nuclearinnovationinstitute.ca




The **Clean Energy Frontier** program is an advocacy, awareness-raising and economic development program led by Bruce Power and Bruce County, operating within the Nuclear Innovation Institute. The program focuses on promoting the valuable contribution that Bruce, Grey and Huron bring to Ontario and Canada in the drive towards a net-zero future while building on the region's advantages in clean energy.

www.nuclearinnovationinstitute.ca/clean-energy-frontier




**Plug'n Drive** is a Canadian non-profit organization committed to accelerating the uptake of electric vehicles to maximize their environmental and economic benefits. Plug'n Drive is the founder and operator of the world's first Electric Vehicle Discovery Centre and is one of Canada's leading voices on the electrification of transportation.

www.plugndrive.ca

# Endnotes


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