

Priorities Committee Meeting_Nov22_2022

REPORT FOR INFORMATION

Infrastructure Capacity to Support Electric and Hydrogen Vehicles

Report Purpose

This report provides information on infrastructure capacity to support electric and hydrogen vehicles in response to the Council motion passed on April 26, 2022.

Our Prioritized Strategic Goals

Goal 3 - Responsible Development

Goal 3 Priority - Environmental stewardship that addresses climate change and demonstrates responsible use of land and natural resources

Report

A) Community infrastructure capacity to support home-based electric vehicle (EV) charging

Existing capacity to support home-based EV charging varies based on several factors at different scales.

At the individual property scale, the typical 100-amp service can be a limiting factor to accommodating an EV charger. In the home, there may be multiple existing high-demand appliances competing for energy supply such as air conditioning units, hot tubs, steam showers and cooktops. The Energy Code limits the allowable load based on the service size for safety reasons. To address the limitations and allow for the installation of an EV charger, a larger amperage service to the home is one option that may be considered (i.e., increasing the service to 150 or 200 amps). Alternatively, in some cases, an energy management system can be used to prioritize power supply within the home.

At the street and neighbourhood scale, power companies may have capacity to accommodate increased energy load to some properties; but there could be limitations that would allow some residences to access increased service but not others. The network capacity varies by area and the County is not aware of any widespread study by Fortis to determine opportunities and limitations at this time.

The SouthGrow Regional Initiative's EV Charging Program (EVCP) delivered in partnership with the Municipal Climate Change Action Centre (MCCAC) provides funding to organizations for the installation of EV charging infrastructure to support and accelerate the adoption of EVs in Alberta. We communicated this funding opportunity to several local businesses through a variety of communication channels via Economic Development and Tourism (EDT) to encourage the installation of EV infrastructure within our community.

Natural Resources Canada commissioned a study in 2021 to update the federal government's understanding of Canada's overall charging infrastructure needs and how these are likely to evolve as the national EV fleet continues to grow. On August 26, the Minister of Natural Resources released the report "Canada's Public Charging Needs – Updated Projections" by Dunskey Energy + Climate Advisors. The Report provides an updated analysis of the 2018 Optimal Charging Ratio for Canada Report, to reflect an accelerated timeline for achieving 100% zero-emissions vehicles (ZEV) market share of new sales.

The updated analysis concluded that, by 2030, Canada will need to have around 200,000 publicly accessible chargers, with a ratio of one charger for every 24 EV and with the chargers varying in

Priorities Committee Meeting_Nov22_2022

charge-time. The conclusion assumed a 15% market share of new vehicle sales by 2025, the 60% by 2030 and 100% by 2035 targets are in line with federal mandate.

The analysis also outlined five key findings, all of which validate and support the federal government's ongoing efforts to deploy charging infrastructure across the country:

1. There is "a need for a significant acceleration in charging infrastructure deployment over the next five to 10 years".
2. Adequate deployment of charging infrastructure will require "\$20 billion of total investment over the next three decades" (the study "does not assess what portion of this infrastructure would require support from the federal government" and does not speak to the roles that provincial and municipal governments will need to play).
3. The "primary driver for the number of charging ports is capacity requirements within community clusters".
4. Improving home charging access will help Canada achieve its EV adoption and infrastructure targets.
5. For households that do not have access to charging at home, "public charging infrastructure can potentially serve as a substitute".

The federal government is deploying charging infrastructure, with the goal of supporting 84,500 new chargers across Canada by 2027. These new chargers are intended, in part, to catalyze private investment. The federal government's funding of these 84,500 chargers — along with a host of other measures to promote EV adoption — will help establish a business case for the private sector to fund the rest of the network and get Canada's EV charging network to the scale outlined in the report.

As a value-add for supporting local businesses, EDT has built and continually develops a GIS business directory map, a resource for sourcing companies, products, services, and expertise located in Sherwood Park and the rural areas of the County, as well a layer showing where Electric Car Charging Stations are located.

[Business Directory \(arcgis.com\)](https://arcgis.com)

B) County infrastructure capacity to support EV and hydrogen vehicles

EV charging station addition assessments for Strathcona County recreation centres (April 2022). We engaged Williams Engineering Canada to assess the feasibility of adding EV charging stations to six sites (Millennium Place, Kinsmen Leisure Centre, Glen Allen Recreation Centre, Emerald Hills Aquatic Centre, Community Centre Parkade, Ardrossan Recreation Centre) to ascertain the technical and cost requirements associated with adding a Flo dual Level 2 EV charger to each site based on historical maximum power used at the site at a given time, existing power distribution equipment in the site, available panel capacity, and ease with which to run power to the parking lot. The assessment categorized the six locations by "relative ease of install" which resulted in the Community Centre Parkade being the primary location for this retrofit.

As mentioned previously, the SouthGrow Regional Initiative's EVCP delivered in partnership with the MCCAC provides funding to organizations for the installation of EV charging infrastructure to support and accelerate the adoption of EVs in Alberta. Strathcona County applied to and received a rebate of \$10,000 to be applied to the Community Centre Parkade installation. We are currently working through the procurement process with the goal of having a dual Level 2 EV charger installed in Q1 2023.

Priorities Committee Meeting_Nov22_2022

C) Planning for new community infrastructure

Council directed administration to investigate a Property Assessed Clean Energy (PACE) Program for potential application in Strathcona County. The PACE Program has been adopted within Alberta and rebranded as the Clean Energy Improvement Program (CEIP).

CEIP is an innovative financing approach aimed at improving accessibility of energy efficiency upgrades and renewable energy installations in Alberta municipalities. Property owners can finance projects with a competitive interest rate, repayment terms of up to 25 years, and have the option to pay the project off at any time. The project financing is tied to the property, not the property owner, and repayment is made through their regular property tax bill.

With support from Alberta Municipal Services Corporation and our municipal partners across the province, an internal multi-disciplinary administration team has initiated the process for the implementation of CEIP for our residents in 2023. The full application for grant funding to initiate CEIP was submitted to the Federation of Canadian Municipalities (FCM) on October 31st, 2022. It is anticipated that a decision will take no greater than six months.

To bridge the gap between now and the availability of CEIP, we encourage the use of the Canada Greener Homes Grant and Canada Greener Homes Loan programs to support energy efficiency improvements in private residences.

It can also be noted that we are in discussions with developers regarding new community development in Bremner and ensuring we are supporting not only energy efficiency, but energy innovation. Further information on those discussions will follow.

D) Fleet transition

EV Feasibility Study (November 2021). Through funding available from the MCCAC we engaged WSP Canada Inc. to assess and prioritize the top six light-duty vehicles, three vehicles in each of the on-road and off-road vehicle groups, for replacement with battery EV. The following study objectives were addressed:

- understand the marketplace, availability, and maturity of EV
- analyze trade-offs on vehicle capital cost (purchase), operating cost (fuel, electricity, and maintenance), technology maturity, impact to current operations and greenhouse gas (GHG) reduction potential
- develop actionable implementation measures and prioritization ranking of EV opportunities, top three road vehicles and top three off-road vehicles
- assess charging infrastructure, maintenance, safety, and other needs for the transition

Based on the findings of this study there is a recommendation for Strathcona County to initiate a transition to EVs for both their on-road and off-road light-duty vehicles. To support the operation of these vehicles, Level 2 charging stations will also need to be installed. The recommended vehicles to prioritize for EVs along with the estimated capital cost for vehicles and charging stations, operational cost savings, payback period and GHG emissions reduction were provided. The environmental benefit related to reduced GHG emissions is apparent and however the deployment is realized, either through electric and other low or ZEV for other segments of their fleet (i.e., heavy-duty vehicles), will be of value to the organization and community. It was also recognized that hydrogen technology is a strategic opportunity due to the ongoing industry developments in Alberta and Strathcona County Transit's pilot of hydrogen fuel cell buses.

Priorities Committee Meeting_Nov22_2022

While we have this information to inform decisions moving forward, the recent inflation will drive some creativity looking into 2023 and how we manage our fleet and the required infrastructure. We do not have any planned EV purchases for the 2023 budget cycle.

Strathcona County is working with the City of Edmonton to have the new hydrogen bus acceptance tested and inspected before the units can allow for revenue service. We are also continuing to work through the bus storage and refueling logistics.

More details on these and associated initiatives will be communicated in Q1 2023 under the Environmental Framework update to Council.

Council and Committee History

- April 26, 2022 Council approval: THAT administration prepare a report for Council's consideration by the end of 2022 on:
- a) the capacity of existing community infrastructure needed to support home based electric vehicle charging and what would be required to increase that capacity;
 - b) the capacity of existing County infrastructure needed to support electric and hydrogen vehicles and what would be required to increase that capacity; and
 - c) the capacity of existing and planned infrastructure in new communities to support the future development of electric and hydrogen vehicles; and
 - d) options and implications of transitioning to an electric and/or hydrogen fleet of vehicles; and
- March 8, 2022 Priorities Committee received an update on the Environmental Framework (June to December 2021).
- June 29, 2021 Council approved the Environmental Framework

Other Impacts

Policy: N/A

Financial/Budget: N/A

Legislative/Legal: N/A

Interdepartmental: Environmental Framework Integration Team, Fleet and Facility Management

Master Plan/Framework: Environmental Framework