EV Express plus

Electric Vehicle Project
Montréal 2000

Quarterly News Bulletin – No. 1 – October 1999

EV EXPRESS PLUS, an open window on the *Montréal 2000 – Electric Vehicle Project*

The *Montréal 2000 – Electric Vehicle Project* will be extended beyond the established circle of the first electric vehicle users. The project aims to reach the scientific community, economic and political decision makers, vehicle fleet managers as well as the general public and will keep them updated on this project, the first of its kind in Canada. Media events, the launch of the Internet site and the publication of *EV Express Plus*, a quarterly news bulletin, will all contribute to keeping the public informed about the most recent developments in the *Montréal 2000 – Electric Vehicle Project*.

The publication of the first issue of this quarterly news bulletin is an integral part of the objective to offer a wide range of information. *EV Express Plus* will be published in French and in English and will be available on the Web site (http://www.ve-montreal2000.com). The news bulletin will provide results on this research and demonstration project. Through it, people will be able to learn more about the project's sponsors, its users and official suppliers. It will also provide an update on the most recent developments in the project.

On behalf of all the *Montréal 2000 – Electric Vehicle Project's* partners, we thank you for your interest in this imaginative and challenging project.

An Evaluation Project Unique in the World!

The approach taken in the *Montréal 2000 – Electric Vehicle Project* is distinctive for a number of reasons. Most importantly, it combines both the collection of technical data (most common in American projects) with the collection of data on vehicle performance and user perception (European approach). This is accomplished by the joint operation of three program committees: the Scientific Study Program, the User Support Program and the Communications Program. In addition, this EV demonstration project takes place in a region with a challenging winter climate for electric vehicles and this will provide data that is not readily available from other electric vehicle demonstration programs.

Scientific Study Program
In this element of the project, studies will be performed to evaluate EV performance and reliability as well as user satisfaction under normal Montréal weather conditions: cold winters and hot and humid summers.

User Support Program
A users group was formed that gathers together the first battery-powered electric vehicle users and buyers in Canada. This group gives individuals and participating organizations from federal and provincial departments, crown and municipal corporations as well as private companies a forum to exchange information on their experiences with their EVs. These organizations share the same objective - the promotion of greenhouse gas reducing transportation technologies. The users group directly supports the EV operators by providing them with a meeting place, training, assistance and advice.

Communications Program
The main objective of this program is to provide a wide range of information on the electric vehicles being used in the Project, the vehicle users and the project sponsors. This includes organizing media events, launching the Internet web site and the publication of a periodic news bulletin. The *Montréal 2000 – Electric Vehicle Project* has a logo that is visible on all the electric vehicles being driven in the Montréal area and on all publications related to the project.

In the Montréal area, there are 2 000 000 of vehicules circulating at temperatures ranging from 35°C to -35°C.

Canada Québec Hydro Québec CEVEQ

Participating Organizations

Participating organizations that have either ordered or received at least one EV for Phase I of the *Montréal 2000 – Electric Vehicle Project*

PARTICIPATING ORGANIZATIONS	MODEL	SUPPLIER
Environment Canada	1 Force (lead-acid batteries)	Solectria Corporation
Transport Canada	1 Force (lead-acid) 1 Ford Ranger (NiMH)	Solectria Corporation Ford of Canada
Hydro-Québec	6 Ford Ranger (NiMH) 2 Ford Ranger (lead-acid) 1 Force (NiMH)	Ford of Canada Ford of Canada Solectria Corporation
City of Montréal	2 Ford Ranger (lead-acid)	Ford of Canada
Services électriques Blanchette	1 Ford Ranger (lead-acid)	Ford of Canada
Transports Québec	2 Ford Ranger (lead-acid)	Ford of Canada
Bell Canada	2 Ford Ranger (lead-acid)	Ford of Canada

Portraits

Portrait of a user

City of Montréal

"We want to participate and set an example for other users"

In many countries, people have heard about projects concerning electric vehicles (EVs). The City of Montréal wishes to contribute to expanding world knowledge with experiments in the field of non-polluting transportation. "The City of Montréal's interest in electric vehicles goes a long way back", says Mr. Mario Bérubé, engineer at the City of Montréal and member of the *Montréal 2000 – Electric Vehicle Project's* Steering Committee. "Twenty years ago, municipal employees were already using small electric vehicles for some jobs such as solid waste collection. More recently, the City of Montréal has evaluated alternative fuel vehicles in its vehicle fleet".

The acquisition of two Ford *Ranger EV* compact pick-ups is part of an evaluation strategy enthusiastically endorsed by the City of Montréal's Vehicle Fleet Manager, Mr. André Guité: "We want to participate in this type of project and set an example for other users. We want to be among the first to experiment with this type of vehicle because our citizens expect our vehicle fleet to be more ecological in the future".

Both EVs have been permanently assigned to employees working in the Vehicle Fleet and Scientific Equipment Divisions. Mr. Robert Malo, from the Botanic Garden said he felt lucky to have been chosen to use an EV to carry out his duties.

Mr. Bérubé stresses: "The ultimate goal for the City of Montréal, is to have an operational and well established vehicle fleet when the time comes for Montréal to host the world's most important rendez-vous in the electric vehicle field, the 17th International Symposium on Electric Vehicles, in October 2000. This event will offer unique public exposure to the city of Montréal and to the province of Québec".

Transport Canada and Environment Canada

Evaluation of the project after using an EV for 4 months

In Montréal, at Transport Canada and Environment Canada, the integration of a first electric vehicle into their fleets was completed in May 1999. Both government departments decided on the *Force*, a 4-door sedan, manufactured by Solectria Corporation. These vehicles are powered by lead-acid batteries, giving them a range of 80 km.

Employees from both departments have had the opportunity to attend briefing sessions on EVs. Mr. Pierre Sylvestre, Scientific Advisor at Environment Canada, gave one of these presentations. "The aim of the meeting was to describe the vehicle and its characteristics. Of the 70 employees from the Environmental Protection Branch that attended the presentation, more than half of them were interested in driving the vehicle. These employees have received driver training. A personalized card will ensure these employees access to the vehicle".

At Environment Canada, employees use the vehicle for routine travel within a 35 km radius of their home base. "This range allows us to cover the whole of Montréal Island as well as part of the south shore without problems" explained Mrs. Louise Lepage, who is in charge of the vehicle fleet. "At present, seventeen employees have access cards and seven of them use the car on a regular basis for their urban travelling needs".

According to Mrs. Louise Émard, who is responsible for the vehicle at Transport Canada, chargers installed at Dorval and downtown Montréal allow maximum vehicle use. "The comments received are very positive. Five employees out of the thirty-four that have received special training have used the vehicle". Mr. Claude Guérette, of the Transportation Development Centre at Transport Canada, shares the same optimism. "The training offered has been greatly appreciated. The recent addition of a second electric vehicle, a Ford *Ranger*, powered with NiMH batteries and having a range of 125 km, will contribute to increasing interest in electric vehicles".

The Solectria *Force*.

First charger supplier/installer in Canada

Hydro-Québec supplies, free of charge, a charger for each electric vehicle

As part of the *Montréal 2000 – Electric Vehicle* Project, Hydro-Québec is the official supplier/installer of vehicle chargers. Hydro-Québec is also the charger supplier/installer for Ford of Canada's vehicles.

Available products for chargers are Level-2 conductive chargers. Power requirements: 208V or 240V – 40 A for each single-phase circuit. Power output is 6.6kW.

The charger manufacturer is Electric Vehicle Infrastructure Inc. (EVI). EVI offers single or dual pedestal wall charging systems. The link between the EV and the charger is provided through a dedicated power cord.

Hydro-Québec lends and installs, free of charge, an EVI charger for each electric vehicle that has either been purchased or leased for the duration of *Montréal 2000 – Electric Vehicle Project*. Mr. Serge Roy, in charge of the Electric Transportation Project, says: "This contribution is part of Hydro-Québec's involvement in the *Montréal 2000 – Electric Vehicle Project* as well as in the development of the first electric vehicle battery charging system network in the country. This will help develop the market for electric transportation.

Several public battery charging centres will be available

Participants can access most of the chargers installed at other participants' garages and electric vehicle dealers. Furthermore, some public battery charging stations will be installed, which means that for Phase I of the *Montréal 2000 – Electric Vehicle Project*, about twenty battery charging stations will be available throughout the metropolitan Montréal area.

Ford of Canada - Official Supplier

Fortier Auto Montréal Ltd. First dealer in Canada

Ford of Canada is now the first major motor vehicle manufacturer offering Canadians an electric vehicle (EV), a compact pick-up, the *Ranger EV*. The Ford *Ranger EV*, well known from its gasoline-powered version, is powered either by lead-acid batteries (80 km range) or NiMH batteries (125 km range).

Ford of Canada has certified Fortier Auto Montréal Ltd. (located on Louis-Hippolyte-Lafontaine Boulevard on the east side of the City of Montréal) as the first EV dealer in Canada. Fortier Auto Montréal Ltd. will provide the after-sales service for the Ford *Ranger EV*.

The Sales Manager, Mr. Gilles Fortin, is very enthusiastic about being the first dealer to offer the Ford *Ranger EV* in Québec and in Canada. "Ford is the major motor vehicle manufacturer in Québec and we are proud to offer this new product as part of the *Montréal 2000 – Electric Vehicle Project*. Two of our mechanics have received complete training in Detroit and our technical facilities are completed and ready to meet the demand. Furthermore, we have installed an additional battery charging station, located outside the garage premises, in order to help EV users passing through the area".

The Ford *Ranger EV*.

Solectria Corporation – Official Supplier

Clermont Chevrolet Oldsmobile of Montréal - *Force* Sedan and *CitiVan* Dealer

In order to qualify as an official supplier for the *Montréal 2000 – Electric Vehicle Project*, Solectria Corporation, an American company, had to meet Canadian vehicle standards. Solectria has signed an agreement with a dealer, Clermont Chevrolet Oldsmobile of Montréal, to provide after-sales service for their vehicles.

Mr. Mark Kopek, Vice-president of Solectria Corporation, pointed out that, "The *Montréal 2000 – Electric Vehicle Project* is the ideal springboard for a company that intends to launch a marketing campaign in Canada. Solectria is known and respected worldwide for its vehicle components (motors, controllers, battery recharging systems, etc.). Our products, such as the 4-door *Force* Sedan, sell very well in the United States. The evaluation of our vehicle, which is being carried out in Canada through the *Montréal 2000 - Electric Vehicle Project* Evaluation Program, will allow Canadians to see how our EVs perform, especially in the winter."

Mr. Maurice St-Onge, Vehicle Fleet Manager at Clermont Oldsmobile of Montréal is happy his company is learning about EVs through the *Montréal 2000 – Electric Vehicle Project*. "Our salespeople and technicians have the opportunity to meet EV specialists, to share information with these people and to learn a lot about EVs. Furthermore, the *Montréal 2000 – Electric Vehicle Project* offers support to those acquiring an EV, which means that our work is simplified, allowing us to provide excellent service, even when working with a new technology".

Evaluation of EVs under cold weather conditions

Results expected from the "Evaluation Program" are divided in four major categories:

1. Evaluate overall costs related to an Electric Vehicle, including the purchase of vehicles and chargers; energy consumption; corrective and preventive maintenance; failures; training provided to EV operators, etc. Overall costs will be compared with those related to conventional vehicle use in order to establish EV cost-effectiveness.

2. Document technical performance and reliability of vehicles and of charging systems under real use conditions: use of EVs within a fleet; daily mileage, distance covered and battery charging frequency; failure rate and duration; influence of season and temperature changes on driving and use of energy (heat/air conditioning); use of chargers (battery charging level, frequency, etc.).

3. Get information on EV drivers' and vehicle fleet managers' satisfaction: changes in driving patterns, battery life management, driver's opinion; problems encountered, evolution of perceptions of EVs.

4. Draw a theoretical comparison of EV impacts on the environment considering the following elements: air pollution, the potential for battery and vehicle recycling, etc.

The "Evaluation Program" is based on two reference points:

a. technical, including evaluation of electric vehicle performance and cost-effectiveness;

b. users, covering the electric vehicle performance as well as vehicle fleet managers' and drivers' perceptions. A global evaluation strategy allows consistency and integration of these elements.

To be acquainted with EV Technical Performance

A data acquisition system for each EV

The main data on the performance of the vehicles will be provided by the data acquisition systems installed inside each EV, logbooks completed by users and questionnaires designed for the project's partners and participants.

The data acquisition system is built by ISAAC Instruments Inc. of Chambly (Québec). The system has a data collection unit (black box) linked to various vehicle on-board data sensors. This small black box is the system core. It decides when data is recorded, according to pre-established parameters, and holds data until it can be transferred to a portable computer.

Data collected by the sensors:
- Vehicle Speed (km/h);
- Battery Charger (V);
- Accessory and Motor Currents (A);
- Outside Temperature (°C);
- Actual Position of Ignition Key.

Collected data will be used to assess:
- Motor and Accessory Energy Consumption (kWh);
- Recharged Energy (Ah);
- Distance Travelled (km);
- Pressure on the Accelerator Pedal.

Data can be stored for 6 weeks before it must be downloaded. Data is protected against any power supply interruption for a 10-year period (lithium batteries).

A Data Base will help evaluate EV performance

Once a month, data is recovered from the vehicle data acquisition system. It is then analyzed and stored in the data base. This data base is divided into seven sections (Participants, Chargers, Vehicles, Maintenance, Identification of vehicle parts, Trip Log and Battery Charging). Two of these sections are fed by the data acquisition system: the Trip Log Section and the Battery Charging Section.

Examples of parameters managed by the "Trip Log" Section:
- Vehicle's Number;
- Driver's Name;
- Date, Time and Duration of EV Use;
- Distance Travelled (km);
- Outside Temperature;
- Power Used (motor, accessories);
- Regenerative Braking, etc.

Examples of parameters managed by the "Battery Charging" Section:
- Vehicle's Number;
- Battery Charger's Number;
- Date, Time and Duration of Recharging;
- Recharged Energy, etc.

This News Bulletin is a *Montréal 2000 – Electric Vehicle Project*'s initiative
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