# eTV's green WHEELS

*eTV's Green Wheels* is the quarterly newsletter for Transport Canada's ecoTECHNOLOGY for Vehicles program

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Test drive the future with eTV.

## WELCOME TO eTV's green WHEELS

What vehicle technologies are on the horizon? What kinds of partnerships are being developed to make advanced sustainable vehicle technologies available to Canadians? What's new with the ecoTECHNOLOGY for Vehicles (eTV) program? This newsletter, available free of charge both in paper copy and online on the eTV website, will explore answers to these questions and more.

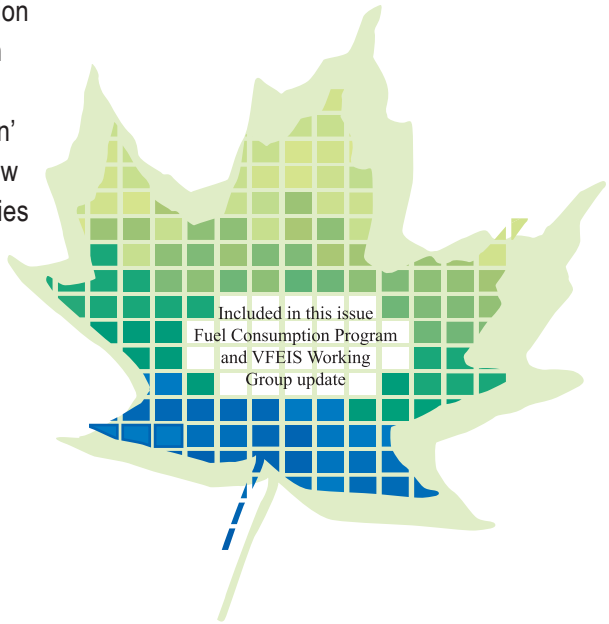
In this first issue, learn more about the eTV program and its sister program, the Fuel Consumption Program. Read about the kinds of technologies eTV is currently testing and the ones that are being considered and why. And find out how you can keep informed on eTV's activities.

We encourage you to register to receive the online version of the newsletter. But in the meantime, enjoy the premier edition of *eTV's Green Wheels*.

## ecoTECHNOLOGY for Vehicles

The eTV program is one of the six initiatives under the Government of Canada's ecoTRANSPORT Strategy. eTV explores how advanced technologies can help create a sustainable transportation system for Canadians by:

- researching new technologies
- testing and evaluating the safety and environmental performance of a range of emerging technologies for use in vehicles in Canada
- building partnerships with the automotive industry and consumers to address barriers to the introduction of advanced technology vehicles in Canada
- providing Canadians with 'hands-on' exposure and information about new and emerging advanced technologies at showcase events.



### *THE eTV FLEET*

The eTV fleet includes recent and emerging advanced environmental technologies for vehicles from around the globe. The eTV program conducts in-depth testing and evaluation of the safety and environmental performance of a range of emerging technologies for use in vehicles in Canada. While a small number of the technologies evaluated by eTV are available in Canada, most are specially imported to evaluate their performance in the Canadian environment. If testing shows that the technologies can help develop a more sustainable transportation system for Canadians, eTV will work in cooperation with both the industry and consumers to address barriers to introducing them in Canada. The results of these tests are shared with Canadians through the eTV website and at various showcasing events across the country.

Some of the vehicles currently in the eTV fleet include the Honda Accord Tourer i-CTDi, the Segway e167, Vectrix zero-emission fully electric motorcycle and a BionX power-assisted bicycle, among others. Specifications on the vehicles in the eTV fleet are available on the eTV website.



## Vectrix eTV puts the world's first fully electric motorcycle through its paces

On August 1, 2008, eTV acquired a Vectrix ZEV, the world's first fully electric zero-emission motorcycle, to evaluate the viability of this mode of transportation in Canada. The Vectrix and electric vehicles like it have the potential to help Canadians reduce their fuel consumption and greenhouse gas emissions.

Powered by a rechargeable Nickel Metal Hydride (NiMH) battery, this promising vehicle is constructed of lightweight aluminium. While the Vectrix is ideal for driving in urban settings, it also has the advantage of being fully certified as an open motorcycle on Canadians roads. This zero-emission vehicle can reach a speed of 0 to 80 km/h in 6.8 seconds and a top speed of 110 km/h.

The energy of a fully electric vehicle typically comes from being charged for 2-3 hours from a standard electrical outlet. The batteries provide the electric motor with the energy to propel the vehicle. The Vectrix ZEV is also equipped with regenerative braking, which recaptures the vehicle's kinetic energy via a generator and batteries. This allows the motorcycle to reuse energy that would normally be lost as heat through the brakes. Fully charged, the Vectrix has a maximum driving range of 110 km at a speed of 40 km/h.

The eTV engineers have begun to test the Vectrix's energy consumption, charging efficiencies, battery performance and street performance. Of particular interest are how well the Vectrix holds its charge as well as the cost benefits for consumers. Results will be available on the eTV website over the next few months. For more information on the Vectrix test plan and results, send an email to **etvp-petv@tc.gc.ca**

## BionX A new twist on an old mode of transportation

Recent advances in battery technologies have given rise to the development of several advanced vehicle concepts that were once considered impossible. Electric bicycles or power-assisted bicycles (PABs), once considered impractical because of heavy lead acid batteries, have become a reality with the advent of NiMH and lithium-ion battery chemistries.

PABs represent a viable alternative transportation solution for individuals looking to reduce their environmental footprint, while retaining the autonomy and freedom of a personal vehicle. Designed for urban commuting, PABs have developed a growing number of enthusiastic followers among cycling enthusiasts and urban commuters alike.

The eTV program purchased a BionX PL 350 retrofit kit in March 2008. The BionX system is unique among PABs because it is a conversion kit that can be added to nearly any conventional bicycle. For approximately $1800, this kit includes a 350 W brushless motor combined with a 36 V lithium manganese battery. The vehicle operates in tandem with the cyclist's own effort by adding electric propulsion at various levels, from 30% assistance to 300% assistance. Vehicle range varies according to the various assistance levels chosen by the cyclist. A complete BionX Technical Sheet is available on the eTV website.

Over the coming months, eTV will be conducting a number of tests and evaluations on the BionX PL 350, including battery cycle life, charging time, durability and regenerative braking performance. Vehicle performance will be measured under varying weather conditions and terrain, and at different assistance levels.

For more information on test plans and results about the BionX system, send an e-mail to **etvp-petv@tc.gc.ca**

### *TECHNOLOGIES FOR THE FUTURE*

### *TOUGH CHOICES FOR THE eTV PROGRAM*

Technological advances in automotive vehicle technologies are occurring at an increasingly fast pace. Manufacturers are introducing new technologies with greater frequency to address growing concerns over fuel prices and environmental regulations.

The wide array of technologies on the horizon offer some interesting choices for the eTV engineers. The challenge, however, is to focus on commercially viable products that serve a demonstrated market need in Canada. To help guide their decision making, the eTV engineers have developed a series of questions such as the following:

- *Does the technology help reduce greenhouse gas emissions?*
- *Does the technology help reduce fuel consumption?*
- *Will the technology be commercially viable and accessible to Canadians in terms of price and performance?*
- *Does the technology face any barriers to entry in Canada, for example lack of public awareness? Will the public be interested in knowing more about this technology?*
- *Will the technology be available to Canadians in the short to medium term?*
- *Can eTV conduct relevant, independent tests?*

Based on research into existing and emerging technologies and the answers to these and other questions, eTV will be focusing on the following over the coming year:

- *advanced (clean) diesel technologies*
- *advanced gasoline technologies*
- *hybrid electric vehicles*
- *plug-in electric and fully electric vehicles*
- *power-assisted bicycles.*

## HITTING THE ROAD WITH eTV

eTV showcase events provide Canadians with 'hands-on' exposure and information about new and emerging advanced technologies. The eTV team has been busy over the past several weeks, showcasing advanced environmental technologies for vehicles across the country.

At the end of June, the team was in Victoria, British Columbia, to greet the Tall Ships and to showcase the latest generation of power-assisted bicycles. Hundreds of people attending this cultural event had the opportunity to learn more about how advanced environmental technologies can help create a sustainable transportation system for Canadians.

Next up on the itinerary was the Nation's Capital. Ottawa residents came out in large numbers on August 2-4, 2008, for Project EcoSphere, an environmental fair hosted by Group EcoSphere and the City of Ottawa. The event featured several environmental community organizations, speakers and technologies, including Transport Canada's eTV showcasing team.

Then it was on to Trois-Rivières, Quebec, for the 39th edition of the Trois-Rivières Grand Prix, from August 15-17, 2008. The people of Eastern Quebec and tourists alike had a chance to see the eTV's Peugeot 206 HDi, which is the first light-duty diesel vehicle in its class to come equipped with an exhaust particulate filter. In addition, eTV showcased the Smart Roadster and the Vectrix ZEV, which is the world's first fully electric zero-emission motorcycle.

The eTV showcasing team will be on the move again soon.

Visit the eTV website for a complete list of upcoming showcasing events.


eTV Showcasing Team Members (left to right)
*Pat Procter, Manny Mangibin, Sarah Logan and Shawn Cook*

## FUEL CONSUMPTION PROGRAM

The Fuel Consumption Program (FCP) was established in 1975 to promote energy conservation in the transportation sector through the design, manufacture and sale of fuel-efficient light-duty motor vehicles. Since the creation of the Joint Government-Industry Voluntary FCP in 1975, the FCP has been collecting fuel economy data from the motor vehicle industry. In addition to collecting data from manufacturers or importers, the FCP conducts independent reviews of the submitted data by acquiring and testing various models of light-duty vehicles.

The FCP continues to be responsible for monitoring the automotive manufacturers' ongoing compliance with the voluntary Company Average Fuel Consumption (CAFC) goals. However, with the proclamation of the *Motor Vehicle Fuel Consumption Standards Act* (MVFCSA) on November 2, 2007, the FCP will assume the responsibility for monitoring compliance with the mandatory CAFC goals that are currently under development. Mandatory CAFC compliance is schedule to come into effect for model year 2011.

Finally, the FCP also manages the Vehicles Fuel Economy Information System (VFEIS) database, which is the primary tool for gathering and reporting on the fuel consumption information received from light-duty vehicle manufacturers and importers. The VFEIS database provides analytical information to support several government programs, including the Fuel Consumption Guide.

### VEHICLE FUEL ECONOMY INFORMATION SYSTEM WORKING GROUP

As a result of the proclamation of the MVFCSA, the FCP is developing a revised audit framework for monitoring compliance. This revised framework will outline how vehicles are selected for audit testing, how test results are communicated to manufacturers and follow-up procedures.

In conjunction with the updated audit framework, FCP will be consulting with industry on the re-design of the VFEIS database system. The VFEIS database is the FCP's primary tool for gathering and reporting on the fuel consumption information received from vehicle manufacturers and importers. It provides analytical information to support various government initiatives.

To begin the VFEIS redesign process, Transport Canada representatives met with industry representatives in Toronto on August 28, 2008, for the first meeting of the VFEIS Re-Design Working Group. Over the coming months, this working group of government and industry representatives will meet to discuss the business and reporting requirements and to develop a plan to design an efficient and effective reporting infrastructure.

For more information about the VFEIS Re-Design Working Group, or the FCP, please e-mail **fcp-pcc@tc.gc.ca**

## SHARING INFORMATION - eTV LAUNCHES ITS WEBSITE

Informing Canadians about new vehicle technologies - that's the second of eTV's objectives. In the information age, a website is key to providing access to accurate, up-to-date information about environmentally friendly vehicle technologies. For this reason, eTV has developed a website that offers Canadians detailed, easy to understand information about cutting-edge technologies. Over the past four months, eTV has added more than 200 pages of information on technologies, vehicles and the eTV program.

The visitor can click on the *Advanced Technologies* vehicle on the main page to access articles about alternative fuels such as *biodiesel, ethanol* and *compressed natural gas*, or about *common rail fuel injection systems*, *diesel particulate filters* and *bi-fuel* and *flexible fuel vehicles*, or about *small urban vehicles* or design features such as *spoilers, diffusers* and *wheel-well fairings*. And to help visitors to better understand the technology, a glossary provides explanations for some of the frequently used terms. As well, the FAQs answer some of the more general, commonly asked questions.

An important feature of the website is the information on the eTV fleet of test vehicles and technologies. *The eTV Fleet* section provides technical details on the vehicles as well as test plans and results. And visitors interested in seeing some of these technologies first-hand can check out the *Showcasing Events* section to find out when the eTV team will be in their area.

Just like the technologies it showcases, the eTV website is constantly evolving, with new and revised information being added regularly, so make it a point to check periodically to see *What's new.*

### eTV's GREEN WHEELS ONLINE

Make sure you never miss an issue of *eTV's Green Wheels* – register to receive the quarterly e-zine version of the newsletter.

Go to http://www.tc.gc.ca/etv and follow the links.