

**SENATE HEARING SLIP**

(Please Print Plainly)

DATE: 01-05-00

BILL NO. SB 300

OR

SUBJECT Low Speed

Vehicles

Ed Blum  
(NAME)

303 S. Peterson St. Ste 4  
(Street Address or Route Number)

Madison, WI 53704  
(City and Zip Code)

WI Motorcycle Riders Assn  
(Representing)

Speaking in Favor:

Speaking Against:

Registering in Favor:

but not speaking:

Registering Against:

but not speaking:

Speaking for information only; Neither for nor against:

Please return this slip to a messenger PROMPTLY.

Senate Sergeant-At-Arms  
State Capitol - B35 South  
P.O.Box 7882  
Madison, WI 53707-7882

**SENATE HEARING SLIP**

(Please Print Plainly)

DATE: 1-5-00

BILL NO. SB 300

OR

SUBJECT Low Speed Vehicles

DAVID MELLAHN  
(NAME)

W1938 Belle Mapps Ct.  
(Street Address or Route Number)

GREEN LAKE, WI, 54941  
(City and Zip Code)

SELF  
(Representing)

Speaking in Favor:

Speaking Against:

Registering in Favor:

but not speaking:

Registering Against:

but not speaking:

Speaking for information only; Neither for nor against:

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State Capitol - B35 South  
P.O.Box 7882  
Madison, WI 53707-7882

**SENATE HEARING SLIP**

(Please Print Plainly)

DATE: 1/5/00

BILL NO. 300

OR

SUBJECT Tray Speed Limit

Jeff Mack  
(NAME)

707 Deer Path  
(Street Address or Route Number)

STUCKEVAAR, WI 53177  
(City and Zip Code)

Gem Distributors  
(Representing)

Speaking in Favor:

Speaking Against:

Registering in Favor:

but not speaking:

Registering Against:

but not speaking:

Speaking for information only; Neither for nor against:

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P.O.Box 7882  
Madison, WI 53707-7882

**SENATE HEARING SLIP**

(Please Print Plainly)

DATE: 1/5/00

BILL NO. SB 300

OR

SUBJECT \_\_\_\_\_

Carson Frazee

(NAME)

\_\_\_\_\_  
(Street Address or Route Number)

\_\_\_\_\_  
(City and Zip Code)

DOT

\_\_\_\_\_  
(Representing)

Speaking in Favor:

Speaking Against:

Registering in Favor:

but not speaking:

Registering Against:

but not speaking:

Speaking for information only; Neither for nor against:

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Senate Sergeant-At-Arms  
State Capitol - B35 South  
P.O. Box 7882  
Madison, WI 53707-7882

**SENATE HEARING SLIP**

(Please Print Plainly)

DATE: 1/5/00

BILL NO. SB 300

OR

SUBJECT \_\_\_\_\_

Rep. David Bandomwehl  
49th Assembly Dist.

(NAME)

\_\_\_\_\_  
(Street Address or Route Number)

\_\_\_\_\_  
(City and Zip Code)

\_\_\_\_\_  
(Representing)

Speaking in Favor:

Speaking Against:

Registering in Favor:

but not speaking:

Registering Against:

but not speaking:

Speaking for information only; Neither for nor against:

Please return this slip to a messenger PROMPTLY.

Senate Sergeant-At-Arms  
State Capitol - B35 South  
P.O. Box 7882  
Madison, WI 53707-7882

**SENATE HEARING SLIP**

(Please Print Plainly)

DATE: 1/5/88

BILL NO. SR 200

OR  
SUBJECT \_\_\_\_\_

\_\_\_\_\_

(NAME) Paul Smith

12 W. Milwaukee  
(Street Address or Route Number)

Madison  
(City and Zip Code)

Mrs. Allison S. Chiel  
(Representing)

Speaking in Favor:

Speaking Against:

Registering in Favor:

but not speaking:

Registering Against:

but not speaking:

Speaking for information only; Neither for nor against:

**Please return this slip to a messenger PROMPTLY**

Senate Sergeant-At-Arms  
State Capitol - B35 South  
P.O. Box 7882  
Madison, WI 53707-7882

# Vote Record

## Senate Committee on Insurance, Tourism, Transportation and Corrections

Date: 11/4/00  
 Moved by: Senate  
 AB: \_\_\_\_\_  
 AB: \_\_\_\_\_ SB: 300  
 AJR: \_\_\_\_\_ SJR: \_\_\_\_\_  
 A: \_\_\_\_\_ SR: \_\_\_\_\_

Seconded by: Lasee  
 Clearinghouse Rule: \_\_\_\_\_  
 Appointment: \_\_\_\_\_  
 Other: \_\_\_\_\_

A/S Amdt: \_\_\_\_\_  
 A/S Amdt: \_\_\_\_\_ to A/S Amdt: \_\_\_\_\_  
 A/S Sub Amdt: \_\_\_\_\_  
 A/S Amdt: \_\_\_\_\_ to A/S Sub Amdt: \_\_\_\_\_  
 A/S Amdt: \_\_\_\_\_ to A/S Amdt: \_\_\_\_\_ to A/S Sub Amdt: \_\_\_\_\_

Be recommended for:

- Passage
- Introduction
- Adoption
- Rejection

- Indefinite Postponement
- Tabling
- Concurrence
- Nonconcurrence
- Confirmation

Committee Member

Sen. Roger Breske, Chair  
 Sen. Richard Grobschmidt  
 Sen. Jim Baumgart  
 Sen. Kevin Shibilski  
 Sen. Dale Schultz  
 Sen. Alan Lasee  
 Sen. David Zien

	<u>Aye</u>	<u>No</u>	<u>Absent</u>	<u>Not Voting</u>
Sen. Roger Breske, Chair	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sen. Richard Grobschmidt	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sen. Jim Baumgart	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sen. Kevin Shibilski	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sen. Dale Schultz	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sen. Alan Lasee	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sen. David Zien	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Totals: \_\_\_\_\_

Motion Carried

Motion Failed

**ROGER BRESKE**

STATE SENATOR

12th District

Capitol Address:  
State Capitol  
P.O. Box 7882  
Madison, WI 53707-7882  
(608) 266-2509

Home Address:  
8800 Hwy. 29  
Eland, WI 54427  
(715) 454-6575

Legislative Hotline:  
1 (800) 362-9472

*Specific Information Signs  
S.I.S.*



**COMMITTEE MEETING/AGENDA**

**THE CAPITOL - ROOM 201SE**

January 4, 2000

**I. CALL TO ORDER**

"The hour of 10AM having arrived, I will call this meeting of the Senate Insurance, Tourism, Transportation and Corrections Committee to order. The clerk will take the role."

**II. ASSEMBLY BILL 444**

"The first bill up today is AB444, legislation initiated by the Law Revision Committee."

*An amendment has been distributed  
No one registered to speak on this bill. Does Legislative Council have any comments on the bill?*

*The bill was unanimously approved by the Assembly Committee on Transportation and passed on a voice vote by the full Assembly.*

**III. SENATE BILL 257**

*We're going to take SB257 out of order at this time.*

"This legislation relates to minimum standards for life insurance policies in which the proceeds are assigned to funeral directors or funeral establishments."

*Work out By Rule*

**IV. ASSEMBLY BILL 482**

"Relating to: specific information signs advertising seasonal food service."

**V. ASSEMBLY BILL 551**

"This legislation is a comprehensive, technical bill initiated by OCI. I'd like to ask Eileen Mallow to give the committee a brief overview of the bill on behalf of the Commissioner."

*The bill ~~was~~ <sup>has</sup> passed the Assembly Insurance Committee unanimously and the full Assembly on a voice vote. I have received a request from a <sup>Sen. Sobel</sup> Committee member for a one week delay. I will honor this request, but will either paper ballot the bill after one week or schedule for our next Executive Session on January 19.*

**VI. SENATE BILL 292**

Relating to: prisoner reimbursement to county for booking costs.

*I have introduced an amendment to SB292, a copy of which has been circulated to members.*

**VII. SENATE BILL 300**

*Relating to low-speed vehicles, granting rule-making authority and providing a penalty.*

I will now close the public hearing portion of this hearing. And will now call the Committee to order for an Executive Session.

The clerk will take the roll.

The Chair would entertain a motion to adopt <sup>the amendment to</sup> AB444 – The Law Revision Committee Bill.

... *Entertain motion to adopt AB444 as amended.*

The Chair would entertain a motion to adopt AB482 – The Specific Sign Bill

...

The Chair would entertain a motion to adopt the amendment to SB292 – Booking costs for prisoners bill.

...

The Chair would entertain a motion to adopt SB292 as amended.

...

The Chair would entertain a motion to adopt SB300 – The low speed vehicle bill.

...

I will now close the Executive Session. The Committee stands adjourned.



## Wisconsin Department of Transportation

Tommy G. Thompson  
Governor

Charles H. Thompson  
Secretary

DIVISION OF MOTOR VEHICLES  
4802 Sheboygan Avenue  
P.O. Box 7949  
Madison, WI 53707-7949



**SENATE TRANSPORTATION COMMITTEE**  
**JANUARY 5, 2000**  
**SB 300: LOW - SPEED VEHICLES**  
**Testimony, Carson P. Frazier**

SB 300 creates a new category of motor vehicle in Wisconsin, called "low-speed vehicle." This bill is necessary because, in June 1998, the National Highway Traffic Safety Administration (NHTSA) promulgated rules that classify low-speed vehicles as motor vehicles. Wisconsin law doesn't currently deal with these vehicles.

Low-speed vehicles originally became popular in warm-climate states. LSV's have a top speed of 20 - 25 miles per hour. NHTSA equipment requirements are less stringent than for motor vehicles having top speeds above 25 miles per hour.

This bill almost completely embodies the Wisconsin Department of Transportation's policy recommendations for comprehensive treatment of low-speed vehicles. DOT has considered safety, operational, equipment, drivers' licensing, commerce and consumer protection aspects of this new type of motor vehicle. We believe our recommendation balances individual interests with state and local public interest in promoting safety of all traveling vehicles.

However, the bill contains one difference from Wisconsin DOT's policy recommendation. I'd like to talk about that for a minute.

DOT recommended that LSV operation be limited to local streets with posted speed limits of up to 25 mph – with local governments being able to restrict or prohibit LSV operation on those streets under their jurisdiction.

The reason is that LSV's cannot travel faster than 25 mph. We know that vehicles traveling at different speeds is a significant cause of crashes. Research has shown that the greater the speed differentials, the greater the chance of crashes. This is the research that we use to set speed limits at the "85<sup>th</sup> percentile" speed. I've attached a couple of graphs that illustrate this research conclusion. LSV's are very light and could be quite vulnerable in crashes.

SB 300 provides that, in addition to DOT's recommendation, local governments may by ordinance designate other local streets with posted speed limits up to 35 mph on which LSV's may operate.

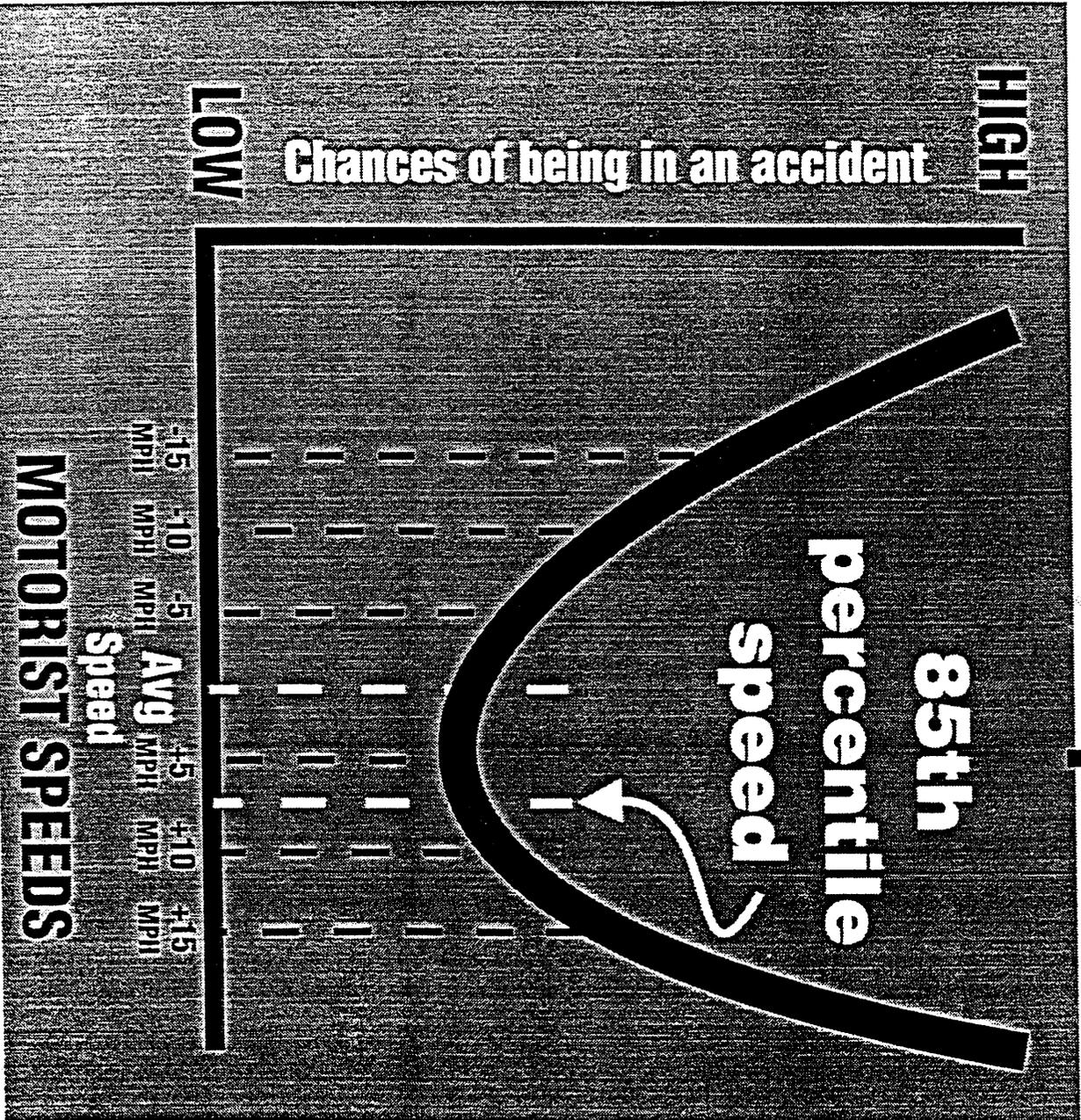
DOT strongly believes that, for safety reasons, LSV's should not be operating in traffic traveling at speeds above 25 mph. We all know that even on streets posted at 25 mph, some traffic will be going faster; and on streets posted at 35 mph, some traffic will be going 40 or 45 mph – or so. We all also know that slow-moving vehicles sometimes cause people to react with "road rage."

We certainly recognize that local governments have authority over their own streets. And, even with the added provision, SB 300 would still allow a local government to restrict or even totally prohibit LSV operation in its jurisdiction. Thus, the bill with this provision doesn't actually contradict DOT's position.

So, we won't oppose SB 300 as a result of this provision. But we do want to clearly state our concern – and the depth of our concern – about allowing LSV operation on streets posted above 25 mph. And, our concern is not arbitrary – it's based on well-established engineering research.

Thank you very much for considering SB 300.

# Accident Frequency Related to Speed



**EXHIBIT 9-3  
SPEED DIFFERENTIALS AND CRASH INVOLVEMENT**

Speed Differential (mph)	Crash Involvement	Involvement Ratio (related to 0 speed differential)
0	247	1.00
5	481	1.95
10	913	3.70
15	2,193	8.88
20	3,825	15.49

Source: H. Douglas Robertson, David L. Harkey, and Scott E. Davis, Analysis Group, Inc., "Safety Criteria for Longer Combination Vehicles," August 1987.

cases, larger engines may be necessary to maintain grade climbing performance, experience has shown that a more easily enforced approach is to specify minimum acceptable speeds on grades and minimum acceptable times to accelerate from a stop to 50 mph or to accelerate from 30 mph to 50 mph.

**Grades**

The Highway Performance Monitoring System (HPMS) provided the highway grade data for the 48 contiguous States and the District of Columbia. The highway types examined were rural freeway, rural multilane, rural two-lane, urban

freeway, and urban arterial. Exhibit 9-4 summarizes this information by mileage. It shows that almost half of the highway system has a grade of no more than 0.5 percent and that more than 80 percent

has a grade of no more than 2.5 percent.

In addition, highway design policies place limits on the steepness of grades. Federal policy for the Interstate

**HIGHWAY PERFORMANCE MONITORING SYSTEM**

The Highway Performance Monitoring System database is the primary source of information for the Federal government about the Nation's highway infrastructure. This is the most comprehensive nationwide data system in use for any aspect of the Nation's infrastructure. Data collection is the responsibility of the States, and it is updated each year. The States forward the data to the Federal Highway Administration, which maintains and uses these data for a variety of strategic planning and highway investment evaluation uses. The Office of Highway Information Management is responsible for receiving, reviewing, and tabulating these data.

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Transposing

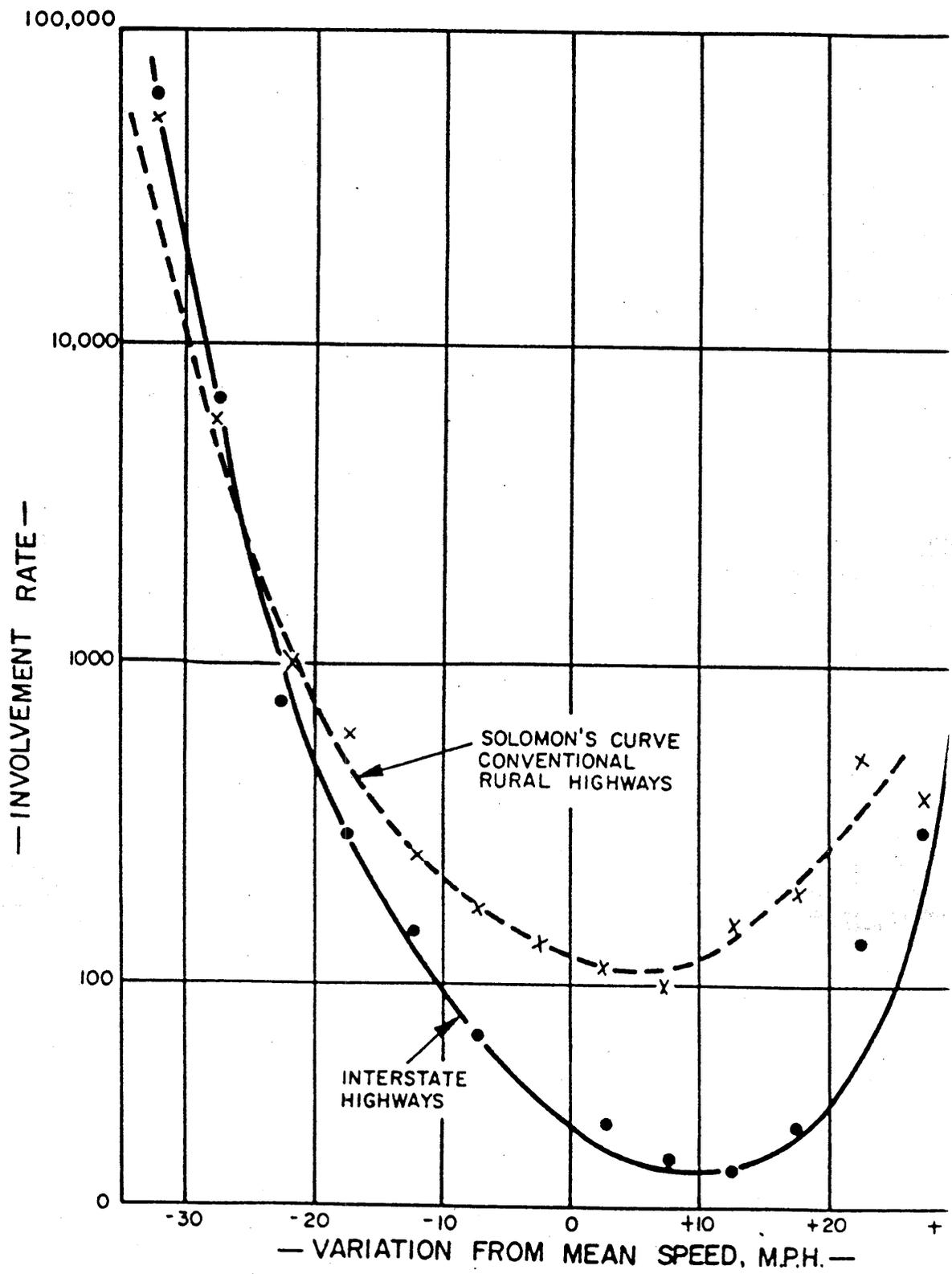
Figure 26.2. Accident involvement rate by variation from mean speed on study units. SOURCE: *Ramifications of the 55 mph Speed Limit*, Committee 4M-2, Institute of Transportation Engineers, Arlington, Va., March 1977.

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eets.



from: *Transportation and Traffic Engineering Handbook, 2nd Edition*  
(Institute of Transportation Engineers)



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rob.schuetz@recreation.bombardier.com

December 29, 1999

Delivered by Fax and U.S. Mail

Ms. Carson P. Frazier  
Division of Motor Vehicles  
Bureau of Vehicle Services  
4802 Sheboygan Ave.  
P.O. Box 7909  
Madison, WI 53707-7909

Senator Roger Breske  
State Capital  
P.O. Box 7882  
Madison, WI 53707-7882

Representative David Brandemuehl  
State Capital  
P.O. Box 8952  
Madison, WI 53708-8952

Dear Ms. Frazier, Senator Breske, & Representative Brandemuehl:

Thank you for informing me of SB 300 and AB 618 concerning Low Speed Vehicles. After a comprehensive review of the bills, I would ask you to consider Section 24. 346.94 (18) Low-Speed Vehicles on Roadway. Specifically, the use of Low Speed Vehicles on roadways with a speed limit of 25 or less miles per hour. As discussed in previous correspondence with you, your Department, and the Sponsor, establishing the statutory restriction of 25 mph roadways and allowing local jurisdictions to raise the limit to 35 mph roadways is completely contrary to all other states and the principle of "home rule".

Presently, California, Nevada, Arizona, Florida, North Dakota, and Hawaii have Low Speed Vehicle statutes that permit LSVs on roadways of 35 mph or less and authorizing local jurisdictions to restrict travel to lower speed limit roadways for public safety. Over 20 other states throughout the United States have allowed LSVs to be registered, titled, and license plated for use on public

roadways by way of regulation without restrictions. The laws concerning the impeding of normal traffic flow will always prevail, no matter where the vehicle will be driven.

It is my desire that Wisconsin law makers take into consideration the safety standards that the National Highway Traffic Safety Administration has mandated for LSVs, the excellent safety record that exists for the thousands of LSVs that are currently in use throughout the U.S. on 35 mph roadways, and the common goal of all; to pass uniform legislation from state to state.

It is for these reasons that I ask you to amend both bills to allow Low Speed Vehicles to be used on Wisconsin roadways, with a speed limit of 35 miles per hour or less, and authorize each jurisdiction to determine the need to restrict that use to lower speed limit roadways, in the interest of public safety.

Please read the above into public record when considering the proposed bills.

Sincerely,

A handwritten signature in black ink, appearing to read "Rob Schuetz". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

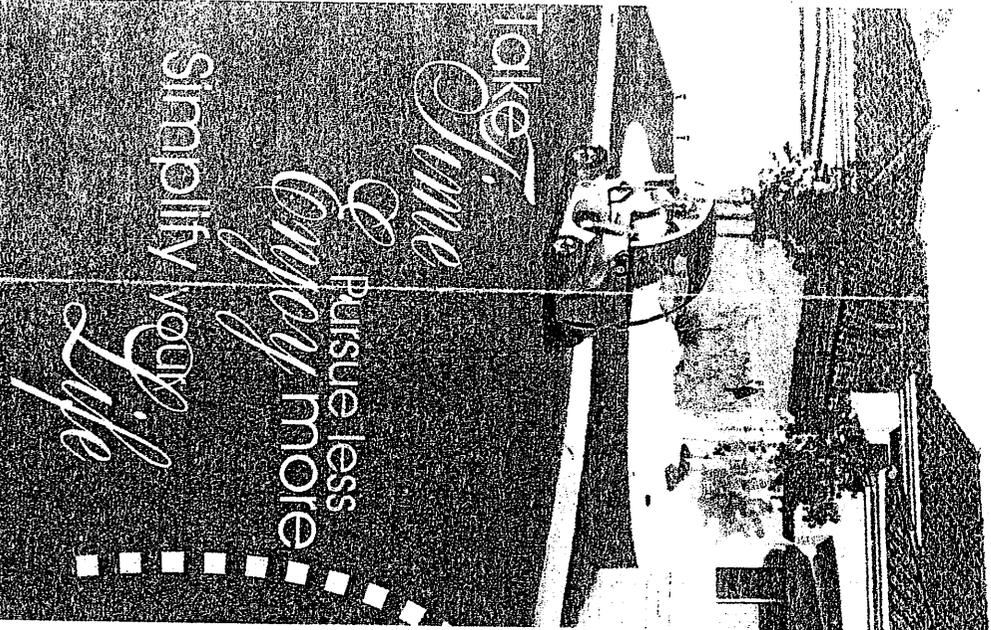
Rob Schuetz  
Public Affairs/Government Relations  
Bombardier Motor Corporation of America

Enclosure

**GEM™**

*Of Time*

functionality



*Take it*

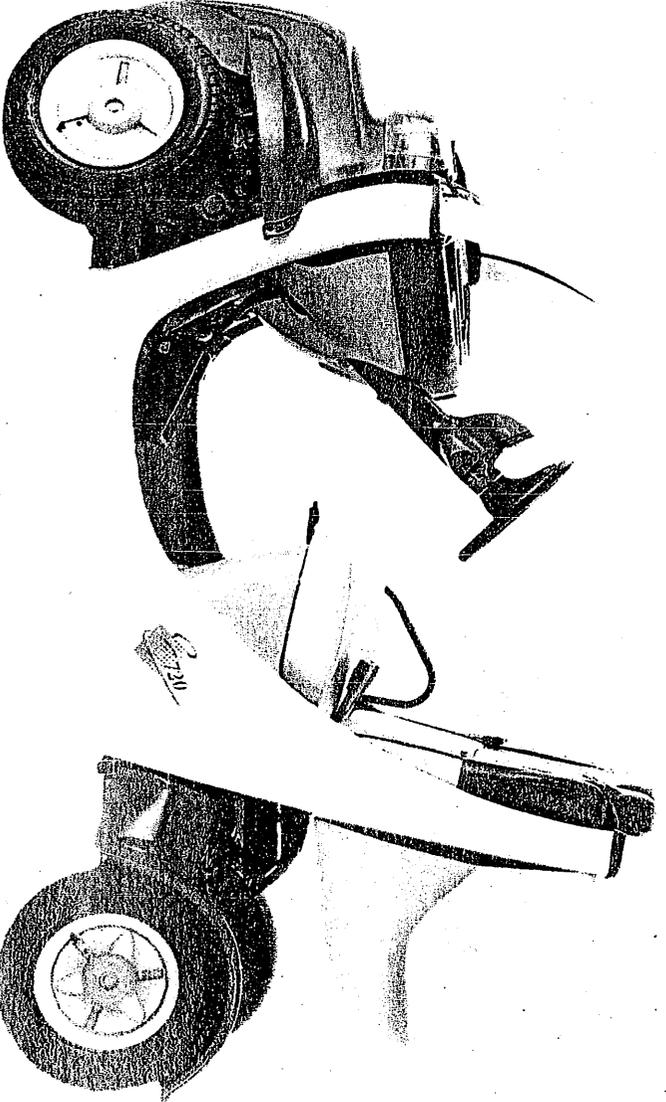
*Of Time*  
Pursue less  
Enjoy more

Simplify

*your life*

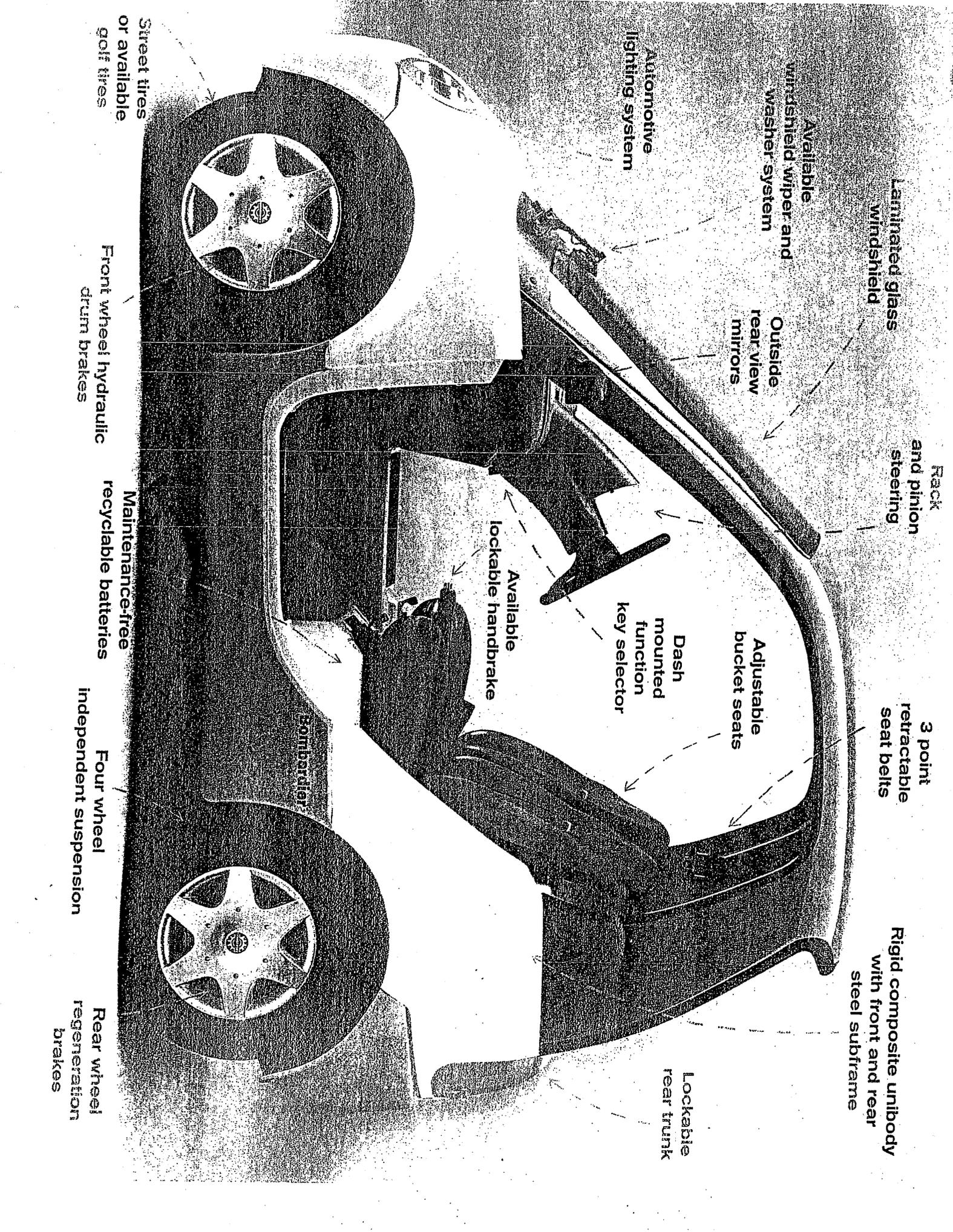


MULTI-PURPOSE



NEIGHBORHOOD ELECTRIC VEHICLE

*See GEM*



Laminated glass windshield

Available windshield wiper and washer system

Outside rear view mirrors

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3 point retractable seat belts

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Combarrier

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Two Rivers  
Watertown  
Waukesha  
Wausau  
Wauwatosa  
West Allis  
West Bend  
Whitewater  
Wisconsin Rapids

**Date:** January 4, 2000

**To:** Honorable Members, Senate Committee on Insurance, Tourism,  
Transportation and Corrections, and Assembly Committee on Transportation.

**From:** Ed Huck, executive director

**Re:** SB 300 and AB 618, low-speed vehicles

---

Members of the Wisconsin Alliance of Cities, meeting in West Bend in November, voted unanimously to oppose low-speed vehicle legislation that has since been introduced as Senate Bill 300 and Assembly Bill 618.

Our mayors and city managers are very concerned about the safety problems that would result from mixing low-speed vehicle traffic and conventional motor vehicle traffic on local streets and roads, even those with a speed limit of 25 mph or less.

The fact that communities could, by ordinance, further restrict the operation of low-speed vehicles did not win any support for the legislation. Instead of an opt-out provision, city leaders asked, why not make the decision to allow the operation of such vehicles entirely a local matter? "Why not an opt-in provision?" one mayor asked.

If you have any questions, please let us know.

Thursday, December 30, 1999



TOM AND RAY  
MAGLIOZZI  
CLICK & CLACK  
TALK CARS

## Electric GEMs are popular with drivers



Knight Ridder photo

Global Electric MotorCars have caught the eye of environmentalists and others looking to reduce pollution. Above, clowns drive several of the vehicles during this year's Thanksgiving Day parade in Detroit.

## The battery-powered cars can reach 25 mph

By Dan Shine  
Knight Ridder Newspapers

### Global Electric MotorCar

- **Base price:** \$7,695 two-seater; \$9,325 four-seater
- **Type:** electric vehicle
- **Standard equipment:** Rear brake lights and backup alarm, auto-style headlights, anchored three-point seat belts, windshield wiper and safety glass
- **Motor:** 72-volt shunt motor
- **Street speed:** 20 to 25 mph

It must have seemed like some sort of Pavlovian experiment. Every time Craig Walworth got up from his chair at his Grosse Pointe, Mich., neighborhood block party last summer, all the kids would stand through the day the scene was repeated. Walworth. Up stood the kids. The reason? The kids wanted a ride in Walworth's new car. "They would jump up every time I moved," he said. "They'd say, 'Are we going for another ride, Mr. Walworth?'"

Walworth hadn't purchased a purple Dodge Viper or some exotic sports import. What fascinated the kids was a vehicle that looks like a golf cart on steroids. It was a big hit at the party. Walworth gave rides to the kids into the night. The adults liked it as well.

"Everywhere I go and take them, people ask, 'What is it? How much does it cost?'" Walworth said. "People just get a kick out of them."

The cars, known as GEMs (Global Electric MotorCars), have been causing a stir since they were first sighted around the Detroit area this summer.

Global Electric MotorCars was started by a group of Detroit auto engineers in 1992 before a couple of investors bought it a few years ago and moved to Fargo, N.D. A plant there produces about 200 vehicles a month.

About 90 dealerships worldwide have sold nearly 5,000 GEMs. Arizona and California are the hottest markets for the electric cars.

Walworth, a sales representative for auto manufacturers, and three others bought the franchise for Michigan and portions of Ohio and Indiana.

The vehicles, which can reach a top speed of 25 miles per hour, are not yet street-legal in Wisconsin but bills proposed in both houses of the

Wisconsin legislature. "It was nice to be able to pop over to the other side of the park rather than getting in a pickup truck or your car," Babcock said. "We ran it out of power on purpose to see what it was like to recharge it. We just plugged it into an outlet, and a few hours later it was ready to go. It was that simple."

The cars are powered by six, 12-volt deep-cycle batteries and can travel 50 to 75 miles between charges, depending on speed, terrain and ambient temperature. The car is recharged in about eight hours by plugging into a 110-volt outlet. It costs about a penny a day to operate.

Walworth said he doesn't expect the GEMs to replace the family car. Instead, he sees the electric vehicle

### Hearing set

- **What:** Hearing by the Senate Insurance, Tourism, Transportation and Corrections Committee on a proposal to allow low-speed vehicles on streets
- **When:** 10 a.m., Wednesday
- **Where:** Room 201 Southeast in the Capitol
- **Details:** 1999 Senate Bill 300 would define low-speed vehicles and allow them on streets with posted speed limits up to 25 mph; local jurisdictions could expand that to 35 mph. Assembly Bill 618 is similar.
- **Information:** Carson Frazier, state Department of Transportation, 266-7857; Vaughn Vance, aide to state Sen. Roger Breske, D-Eland, sponsor of the Senate bill and chairman of the committee that is holding the hearing.

Why does a gallon go farther in summer?

By Tom and Ray Magliozzi

Dear Tom and Ray:

I have a 1988 Chevy Nova with 115,000 miles on it. It is well-maintained. During the summer, it gets a decent 34 miles per gallon, but in the winter, it gets only about 29 mpg on the same highway with the same driver. Why?

Tom: 'Cause it's cold out, Brian baby! Look at my brother. He eats 11 pink-frosted doughnuts on the average winter morning instead of his usual eight during July and August.

Ray: The reason cars run less efficiently in cold weather is because gasoline doesn't vaporize as well. The carburetor sends vaporized fuel into the cylinders. And in cold weather, some of it condenses and turns back into liquid gasoline. That portion doesn't burn and is essentially wasted. And that accounts for most of your 15 percent reduction in mileage.

Tom: Most cars spend more time warming up and idling in the winter, and in some areas, there's more wind resistance as well. But the loss of efficiency in gasoline combustion due to cold weather accounts for the vast majority of the lost mileage.

Dear Tom and Ray:

I have a '95 Kia Sportage, which, on the whole, I have liked very much. About a year ago, though, one of my power windows broke, causing the glass to slide down into my door. The window wouldn't go up anymore. The dealership said it would cost about \$350 to fix, so I had them put a block under the window instead to keep it closed. A few weeks ago, it fell into the door again, and I had to have it re-blocked. In the past month, two more windows have taken a dive, so to speak. Is this something with Kias, and is there some recourse? Can I get a kit to convert the car from power windows to manual windows? Thanks. — Dina

Ray: I don't know of any kit that turns power windows into roll-up windows, Dina. I've seen electric sunroofs with "emergency cranks" (because if THAT motor fails in the rain, you're in REAL trouble), but there's no such kit for windows as far as I know.

Tom: And in general, I'm afraid you're out of luck. You bought a cheap car. You got a great price, right? You even say that, on the whole, you like it very much. But most cheap cars are cheap because their components are, what? Cheap! And although there's no technical service bulletin on the window regulators, my guess is that

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JEEP WRANGLER



AS LOW AS  
\$14,  
4x4 soft top, cloth seats, g  
all-terrain tires, and sty

JEEP



4x4, 4-door, automatic, air con  
6-cylinder, power window  
\$20,595.00  
36 month lease with \$2351.3  
(includes \$275 refundabl



29 mpg on the same highway with the same driver. Why? — Brian

**Tom:** 'Cause it's cold out, Brian baby! Look at my brother. He eats 11 pink-frosted doughnuts on the average winter morning instead of his usual eight during July and August.

**Ray:** The reason cars run less efficiently in cold weather is because gasoline doesn't vaporize as well. The carburetor sends vaporized fuel into the cylinders, and in cold weather, some of it condenses and turns back into liquid gasoline. That portion doesn't burn and is essentially wasted. And that accounts for most of your 15 percent reduction in mileage.

**Tom:** Most cars spend more time warming up and idling in the winter, and in some areas, there's more wind resistance as well. But the loss of efficiency in gasoline combustion due to cold weather accounts for the vast majority of the lost mileage.

**Dear Tom and Ray:**  
I have a '95 Kia Sportage, which, on the whole, I have liked very much. About a year ago, though, one of my power window broke, causing the glass to slide down into my door. The window wouldn't go up anymore. The dealer said it would cost about \$350 to fix, so I had them put a block under the window instead to keep it closed. A few weeks ago, it fell into the door again, and I had to have it re-blocked. In the past month, two more windows have taken a dive, so to speak. Is this something with Kias, and is there some recourse? Can I get a kit to convert the car from power windows to manual windows? Thanks. — Dina

**Ray:** I don't know of any kit that turns power windows into roll-up windows, Dina. I've seen electric sunroofs with "emergency cranks" (because if the motor fails in the rain, you're in REAL trouble), but there's no sun kit for windows as far as I know.

**Tom:** And in general, I'm afraid you're out of luck. You bought a cheap car. You got a great price, right? You often say that, on the whole, you like it very much. But most cheap cars are cheap because their components are what? Cheap! And although there's no technical service bulletin on the window regulators, my guess is that they were underdesigned and probably ARE failing for other Kia owners as well.

**Ray:** My advice would be to look for a special on "blocks." If money's an issue and you're not planning to keep the car forever, I'd use blocks for all but the driver's window. That one you're really going to have to fix. You'll realize that after you miss a few "exact change" toll tickets while leaning out the door and have 8 gazillion cars honking at you and being unfriendly hand gestures.

**Tom:** Or when you ride with my rother the morning after he's eaten a meatball sub.

**Ray:** But that's the chance you take when you buy a bargain-price car, Dina. Overall, you may have one well — even after you pay for repairs. But annoyances like this are the risk you take when you buy a Kia instead of a more expensive Honda or Toyota.

**Tom and Ray Magliozzi work on Boston and their twice weekly columns are syndicated by King Features. Their national call-in program "Car Talk" is broadcast from 9 to 10 m. Saturdays on Wisconsin Public Radio (WHA-AM 970 in Madison and HHI-FM 91.3 in Highland). Have a question about cars? Write to Click & Clack Talk Cars in care of the Wisconsin State Journal, Box 8058, Madison, Wis. 53708. You can also e-mail them by visiting <http://cars.com> or the World Wide Web.**



Knight Ridder photo

Global Electric MotorCars have caught the eye of environmentalists and others looking to reduce pollution. Above, clowns drive several of the vehicles during this year's Thanksgiving Day parade in Detroit.

## The battery-powered cars can reach 25 mph

By Dan Shine  
Knight Ridder Newspapers

### Global Electric MotorCar

It must have seemed like some sort of Pavlovian experiment. Every time Craig Walworth got up from his chair at his Grosse Pointe, Mich., neighborhood block party last summer, all the kids would stand. All through the day the scene was repeated. Up stood Walworth. Up stood the kids.

The reason? The kids wanted a ride in Walworth's new car. "They would jump up every time I moved," he said. "They'd say, 'Are we going for another ride, Mr. Walworth?'"

Walworth hadn't purchased a purple Dodge Viper or some exotic sports import. What fascinated the kids was a vehicle that looks like a golf cart on steroids. It was a big hit at the party. Walworth gave rides to the kids into the night. The adults liked it as well.

"Everywhere I go and take them, people ask, 'What is it? How much does it cost?'" Walworth said. "People just get a kick out of them."

The cars, known as GEMs (Global Electric MotorCars), have been causing a stir since they were first sighted around the Detroit area this summer.

Global Electric MotorCars was started by a group of Detroit auto engineers in 1992 before a couple of investors bought it a few years ago and moved to Fargo, N.D. A plant there produces about 200 vehicles a month.

About 90 dealerships worldwide have sold nearly 5,000 GEMs. Arizona and California are the hottest markets for the electric cars.

Walworth, a sales representative for auto manufacturers, and three others bought the franchise for Michigan and portions of Ohio and Indiana.

The vehicles, which can reach a top speed of 25 miles per hour, are not yet street-legal in Wisconsin but bills proposed in both houses of the Legislature would allow them on streets where the posted speed limits are 25 mph or up to 35 mph in some cases. A hearing is scheduled for one of the bills in January.

There are two GEM dealers in Wisconsin, Clary Equipment and Leasing in Viroqua and GEM Distributors in Sturtevant, listed on the Global Electric MotorCars' World Wide Web site — [www.gemcar.com](http://www.gemcar.com).

The cars also can be shifted into "turf mode," which gives them a top speed of 15 mph on unpaved surfaces.

"When I got in it my first thought was, 25 miles per hour — geez that's slow," said Bob Kozak, who sells the cars at Koz's Equipment in Saline, Mich.

The egg-shaped cars range in price from about \$7,500 to \$10,000.

The cars also were featured in Detroit's America's Thanksgiving

- **Base price:** \$7,695 two-seater; \$9,325 four-seater
- **Type:** electric vehicle
- **Standard equipment:** Rear brake lights and backup alarm, auto-style headlights, anchored three-point seat belts, windshield wiper and safety glass
- **Motor:** 72-volt shunt motor
- **Street speed:** 20 to 25 mph

### Day Parade

Workers at the Grosse Pointe Woods municipal park in St. Clair Shores used a GEM for five days this fall. Bill Babcock, recreation supervisor for the city, said the employees had fun with the car. "It had a lot more giddy-up than I expected," he said. "It came in handy for chasing geese."

Babcock said the car was perfect for tooling around the 55-acre lake-front park. He said workers were able to drive the car along the boat docks while doing repairs, something that wouldn't have been possible with a pickup truck.

"It was nice to be able to pop over to the other side of the park rather than getting in a pickup truck or your car," Babcock said. "We ran it out of power on purpose to see what it was like to recharge it. We just plugged it into an outlet, and a few hours later it was ready to go. It was that simple."

The cars are powered by six, 12-volt deep-cycle batteries and can travel 50 to 75 miles between charges, depending on speed, terrain and ambient temperature. The car is recharged in about eight hours by plugging into a 110-volt outlet. It costs about a penny a day to operate.

Walworth said he doesn't expect the GEMs to replace the family car. Instead, he sees the electric vehicle as a complementary car.

GEMs have been shipped to Egypt, Japan, the Philippines, Mexico, Argentina and Australia. A Key West, Fla., company rents out the electric cars to tourists to get around the island.

The Air Force uses GEMs at a base in Arizona and Global Electric MotorCars is preparing a bid to outfit the U.S. Postal Service with vehicles in some of the country's warmer climates.

Walworth said the cars would be useful to ferry equipment, parts and people around large factories, such as auto plants or industrial complexes.

GEMs are equipped with headlights, safety belts, turn signals and windshield wipers. Drivers can get hard or soft doors, and a radio is optional. GEMs come in two-seat and four-seat models, and one ver-

### Hearing set

- **What:** Hearing by the Senate Insurance, Tourism, Transportation and Corrections Committee on a proposal to allow low-speed vehicles on streets
- **When:** 10 a.m. Wednesday
- **Where:** Room 201 Southeast in the Capitol
- **Details:** 1999 Senate Bill 300 would define low-speed vehicles and allow them on streets with posted speed limits up to 25 mph; local jurisdictions could expand that to 35 mph. Assembly Bill 618 is similar.
- **Information:** Carson Frazier, state Department of Transportation, 266-7857; Vaughn Vance, aide to state Sen. Roger Breske, D-Eland, sponsor of the Senate bill and chairman of the committee that is holding the hearing.

tion has a flatbed. Colors are green, yellow, white, red and blue.

The car is simple to operate. Flick a switch on the steering wheel to forward, neutral or reverse, and step on the gas. . . . electric.

Buyers get a 10 percent federal income tax credit; other incentives are available.

Walworth said being conscious of the environment "may be a novelty type of thing" for some people now, but he says the movement will grow stronger soon.

Walworth got involved in GEMs about two years ago when a friend read an article in The Wall Street Journal on the electric cars. He said he was interested from a business end, thinking there would be a growing market for the vehicles.

"Then it became a fun challenge," he said. "We thought, How can we make this work?"

In Arizona, where the cars are legal on public streets, Kozak said, people try to buy the GEMs as they're being unloaded off the truck.

Kozak has about a dozen in stock and said many customers have told him they will be back to buy one once they are street-legal.

He said he is excited to be a part of GEM, and his favorite quote about the car is that it is "slow, small and doesn't go very fast — it's perfect."

"We have no intention of getting it to go 50 mph," he said. "We don't want to compete with the automobile."

Walworth said he was skeptical that he would ever want a GEM in his garage. "I thought, Why would I want one?" he said. "But I've had a blast driving them. I can see myself having this around."

## One of country's first minivan buyers rewarded

Chicago Tribune

■ DaimlerChrysler president Jim Holden paid a surprise visit to the home of Chuck Fulton in Cedar Rapids, Iowa, to present him with the keys to a new Dodge Grand Caravan ES, the 8 millionth van produced by the automaker, formerly known as Chrysler Corp. The event was staged to celebrate that in November 1983 Fulton was driving along Interstate 80 when he spotted a car hauler carrying what he considered an unusual looking vehicle. He followed the carrier to the deal-

### TRANSPORTATION NOTES

ership, test drove a Dodge Caravan and bought one of the first Chrysler minivans built. Chrysler began producing minivans Nov. 2, 1983, in Windsor, Ontario.

■ As part of a "Team Behind the Team" program at General Motors, the automaker says it is donating 100 vehicles to athletes judged "Olympic hopefuls" by former Olympians "to help ease the financial burden that the quest for Olympic

glory places on them and their families."

■ J.D. Power and Associates, in its 1999 Used-Vehicle Market Assessment, reports that consumers are willing to spend an added \$400 for a "certified" used vehicle that's inspected, repaired and warranted by the dealership, but more than half of all used-car buyers are unaware that such "certified" used-car programs are offered. Of those who say 66 percent say they are very satisfied with the vehicle and would buy another one.

4x4, automatic, air, dark glass power window/locks/mirrors

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NO SECURITY DEPT  
36 month lease with \$2,314.00

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4x4, lift-top, cloth seats, gear-terrain tires, and style



4x4, 4-door, automatic, air conditioner, 6-cylinder, power windows/

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36 month lease with \$235.00 down (includes \$275 refundable)

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*Your friendly neighborhood vehicle™*

*No dear, there will never be electric vehicles.*

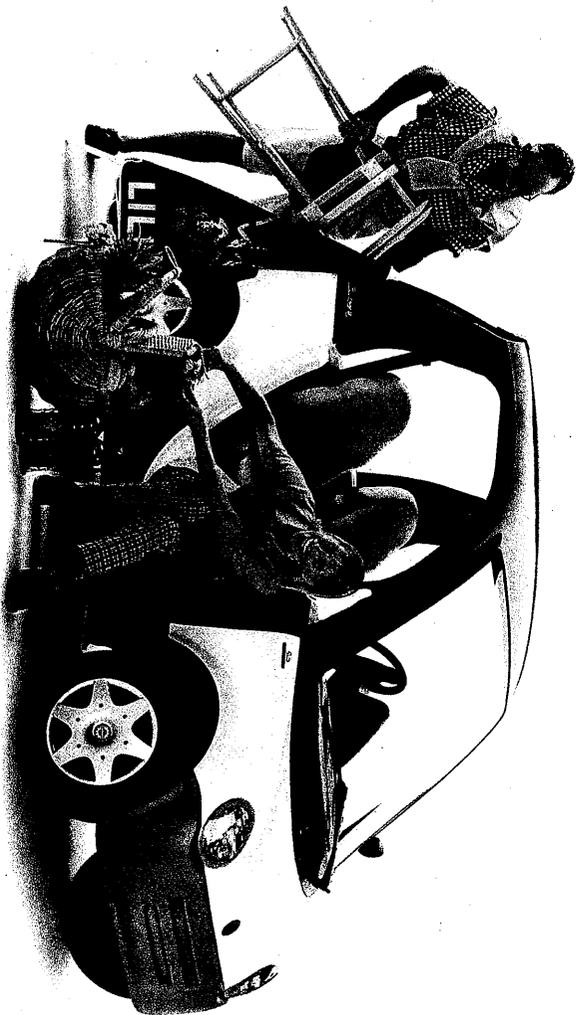


## THE BOMBARDIER NV *Introducing a brand new era in personal transportation.*



The Bombardier NV  
is recognized by the  
U.S. Department of  
Energy as a leader in  
improving air quality.

Evolution. Innovation. They're coming at you from all directions. Some you can do without. Others make you look up and say "why didn't they invent this sooner?" That's the case with the new Bombardier Neighborhood Vehicle™ (NV™ for short). It's the first mass-produced neighborhood electric vehicle on the planet, and it's as easy to charge as a cellular phone. No wonder people are paying attention. From major utility companies to automotive engineers, we've had all kinds of people showing up to see what all the fuss is about. No one leaves unimpressed. That's because the NV represents nothing less than a new era in personal transportation. That's the big picture. On a more personal scale, one trip around the block in the Bombardier NV and you'll see why we also call it **your friendly neighborhood vehicle<sup>SM</sup>**.



*Where there's a wheel, there's a way.<sup>SM</sup>*



1997 Sea-Doo XP



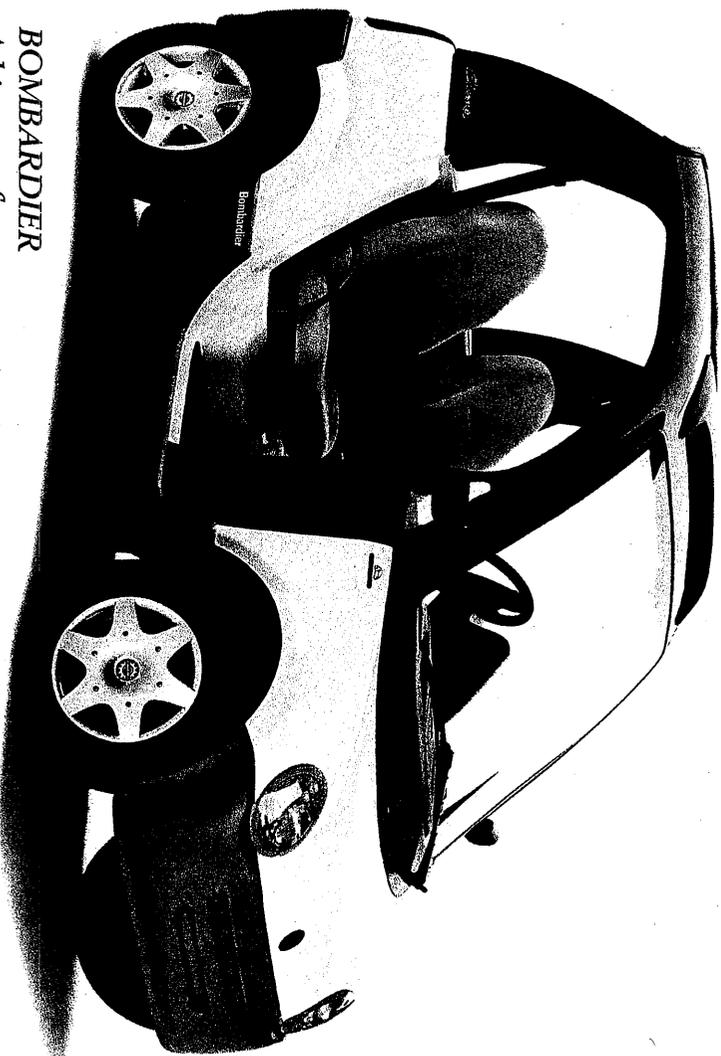
1998 Ski-Doo Formula III 600



Monorail Mark VI



Learjet 45



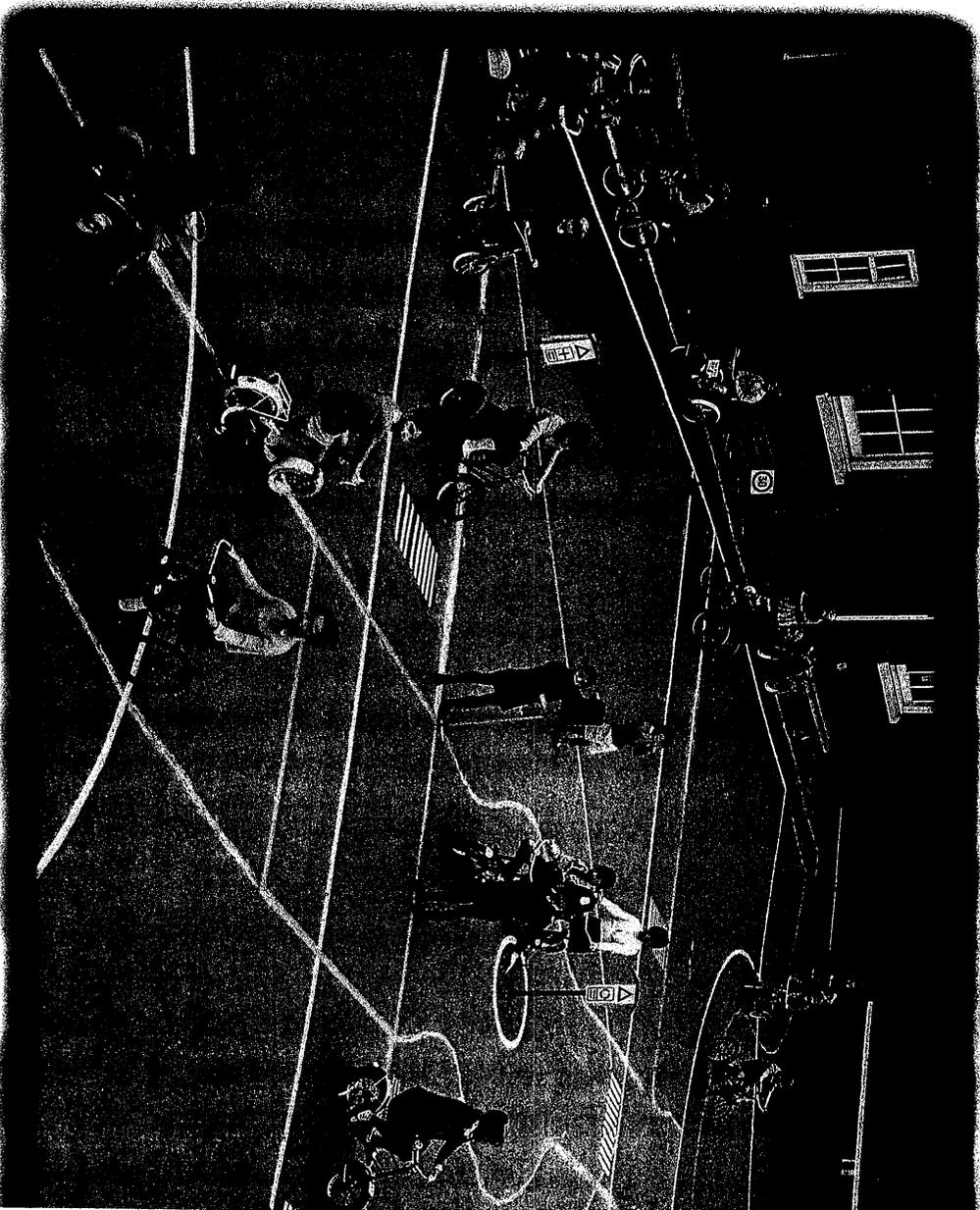
## **BOMBARDIER** *A history of transportation innovation.*



The story of this amazing company goes back to 1942, when Joseph-Armand Bombardier invented what he liked to call "the first car that rides on snow." His cherished vehicle became the forerunner of the world's first production snowmobile: Ski-Doo®. Today, more than half a century later, Bombardier is an \$8 billion company with 41,000 employees on five continents. During all these years a single principle sums up **the Bombardier philosophy—transportation innovation**. For example, in aerospace we've built a worldwide reputation by changing the way people fly with the Canadair® Regional Jet, the Learjet®

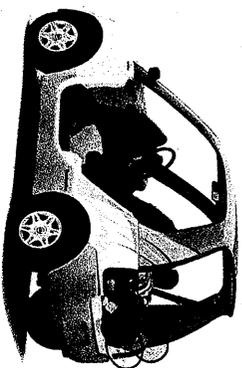
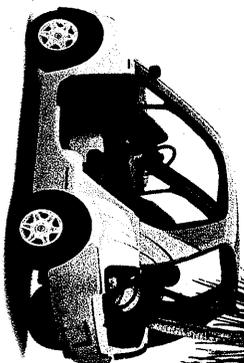
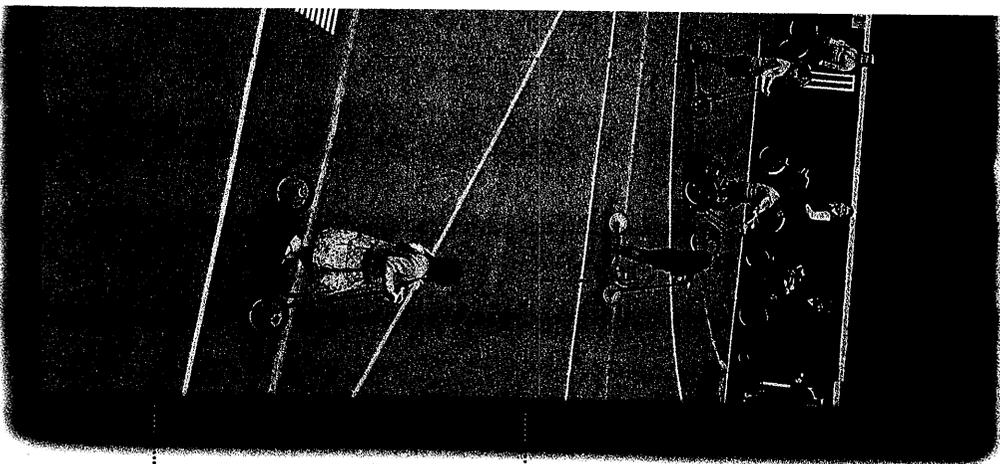
and the all-new Global Express® business aircraft. In marine transportation, we've become the market leader with Sea-Doo® watercraft. And in urban mass transit, we pioneered innovations like the Disneyworld monorail, the trains for the Euro Tunnel between England and France, the New York City subway cars, and we're about to introduce the first high-speed train (TGV) to North America. This impressive track record stands as proof of our commitment to transportation innovation on snow, in the air, on water, on rails and now, with the Bombardier NV, on the road.

*Come to think of it, we've all ridden a friendly neighborhood vehicle.*



**NONSTOP NEIGHBORHOOD FUN.**

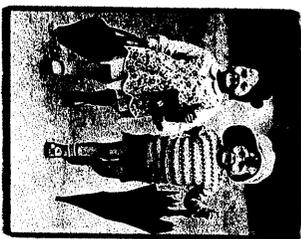
There's nothing like living the good life. Especially when you've earned it. Today it might be horseback riding or tap dancing or Aquafit, band practice or golf. And that's only until the sun goes down. Then there's the theater or dinner at the Riverside. No problem, the NV can keep up. And with the kind of honest good looks that'll soon make you the, ahem, **NV of the neighborhood**<sup>SM</sup>.



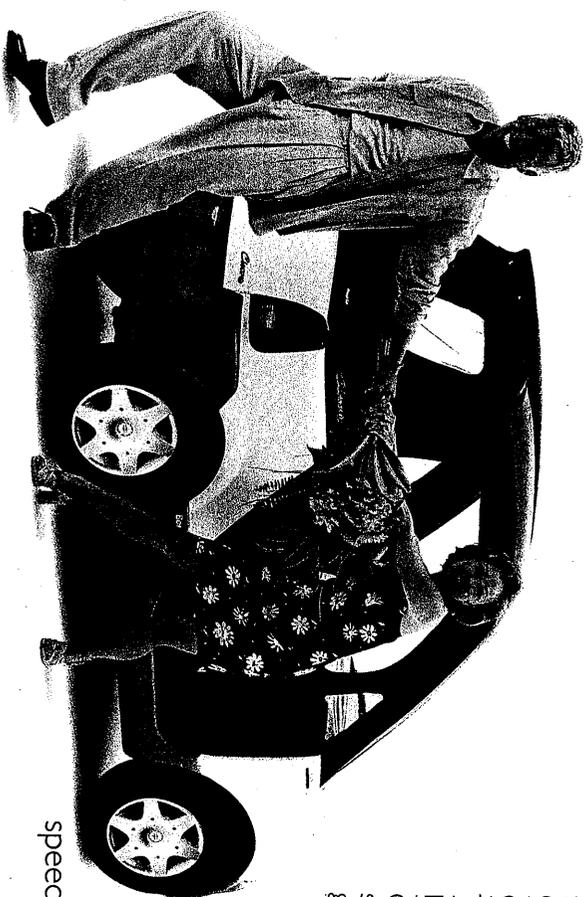


**SURPRISE. THE NV HAS TWO FRIENDLY PERSONALITIES.**

That's right. We make two NVs. First, there's the burgundy Class-E, which, charming as it is, leaves the two of you with decisions. Will it be the marina or the bridge club? Shakespeare in the Park or the art gallery preview? Whatever. There's one thing you'll both agree on. You're going in the NV.



*- Let's eat at my house.  
- No. My house!*

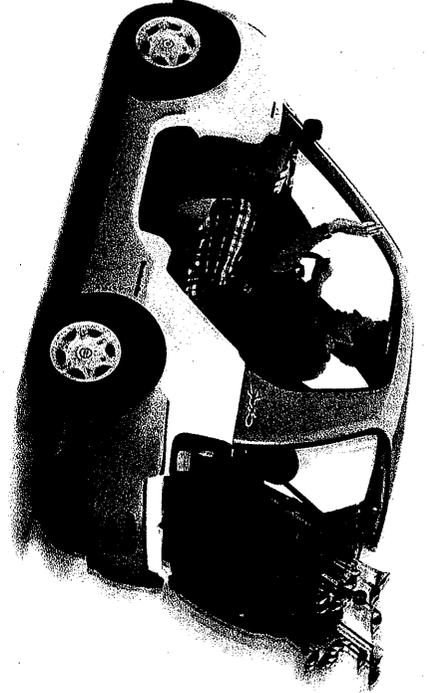


	CLASS-E	
	Street	Golf
Front wheel hydraulic drum brakes	•	•
Rear wheel regeneration brakes	•	•
Four-wheel independent suspension	•	•
Maintenance-free recyclable batteries	•	•
Automotive lighting system	•	•
Brake lights, horn	•	•
Low speed golf mode	•	•
Sun visor/license plate lamp	•	•
Lockable rear trunk	•	•
Street tires	•	•
Golf tires		•
Outside rearview mirror	2	1
Tinted laminated glass windshield	•	•
Deluxe speedometer/odometer	•	•
Golf accessories* (cardholder, steering wheel, golf bag holders, golf ball support)		•

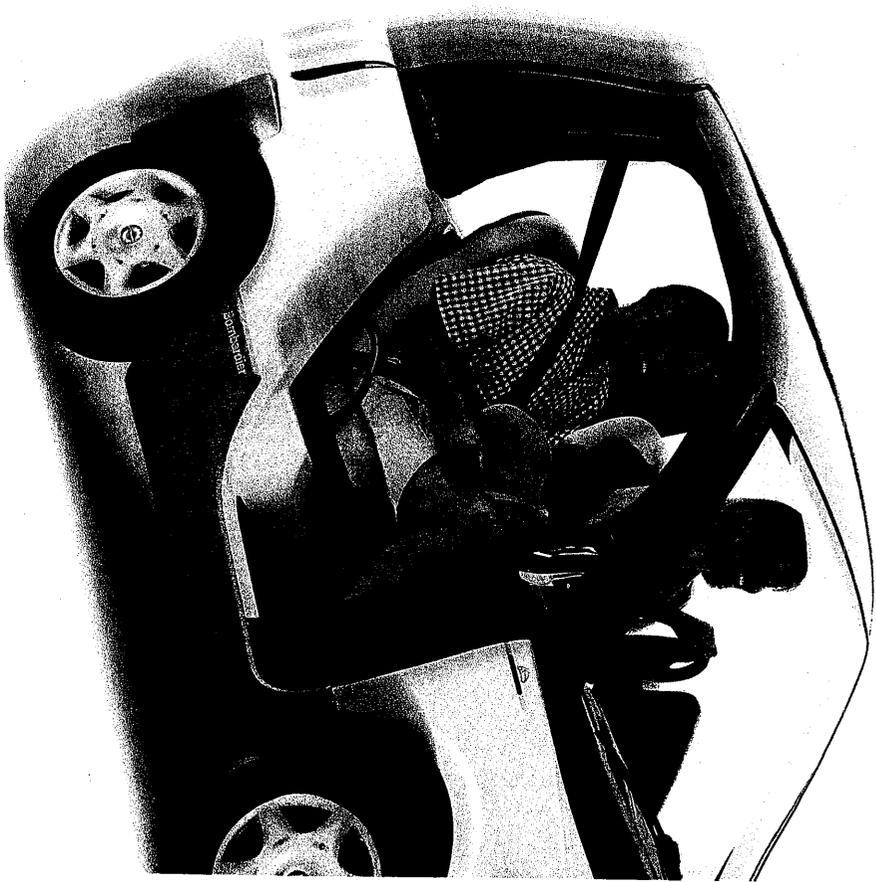
Deluxe speedometer/odometer Quick and easy plug-in

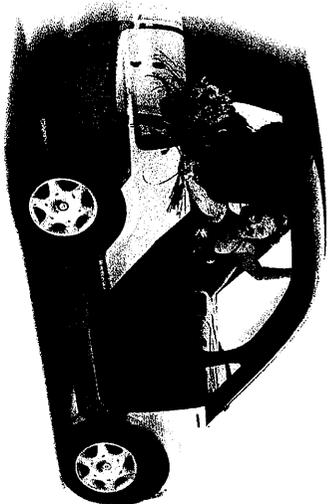






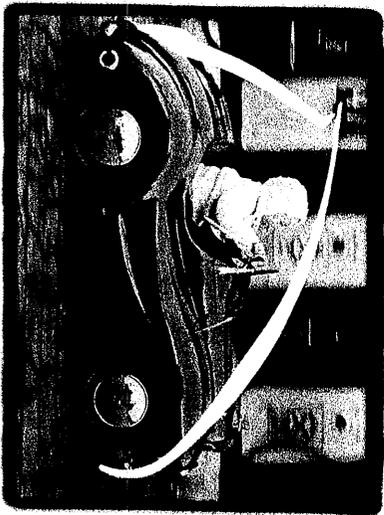
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A few years ago, we took a long, hard look at communities like yours. We realized there wasn't a vehicle on the planet specifically designed for your dozens of daily short trips. So we asked thousands of people what their dream vehicle would be. Then we built it. And perfected it through thousands of hours and miles of tests. Then we let hundreds of people test drive it, to see if it fulfilled their dream. The answer was yes. Now it's your turn. Don't miss out. Test drive an NV today, and get a head start on the next wave of personal transportation.





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USA

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Drivers and passengers should be advised that the Bombardier NV has been defined as a motor vehicle or low speed vehicle by the National Highway Traffic Safety Agency. It does not meet Federal Motor Vehicle Safety Standards. It is designed to be used in residential areas with low density traffic, and low speed zones. Refer to your local and state laws for specific details as to where it may be driven. The Bombardier Neighborhood Vehicle is recognized as a leader in improving air quality, strengthening the local economy, and enhancing public awareness of alternative fuels through commitment to and participation in the United States Department of Energy's Clean Cities Program. In keeping with the Bombardier commitment to product innovation, we reserve the right at any time to modify or discontinue specifications, design, models or equipment without obligation. NV, Sport-E, Class-E and the friendly vehicle logo are trademarks of Bombardier Inc. ® Trademarks of Bombardier Inc., and its subsidiary. ©1997 Bombardier Inc. All rights reserved. Printed in Canada.



*Sport-*  <sup>TM</sup>



*customize your own NV*



**Bombardier NV**

*Your friendly neighborhood vehicle<sup>SM</sup>*

*Cardholder steering wheel*

*Brake light*

*Automotive lighting system*

*Turf tires and hub-caps*

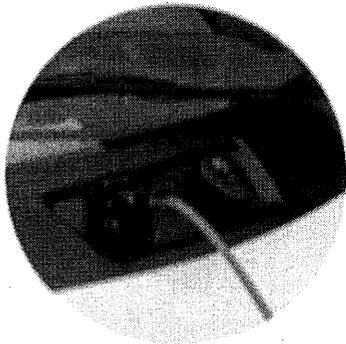


*Left outside rearview mirror*

*Decalcomania*

*Golf bag holders*

*Easy charging*



*Vehicles may differ from illustration.*

**Performance**

Range	30 miles approx.* (50 km)
Maximum Speed	Drive: 25 mph (40 km/h) Golf: 15 mph (25 km/h)
Gradeability	30 % (maximum load condition)
Charge Time*	8 hrs through standard 120 volt AC outlet

\* May vary according to driving style and conditions.

**Dimensions**

Length	100 in./254 cm
Width	55 in./140 cm
Height	61.25 in./156 cm
Wheel Base	65 in./165 cm
Weight	1,275 lbs./580 kg
Ground Clearance	5.75 in./15.3 cm
Curb to Curb	21 ft./6.4 m

**Power train**

Batteries	6 - 12V lead acid + 1 auxiliary for electrical accessories (maintenance free)
Charger	Onboard, 120V
Motor	72V, 4KW DC Shunt motor

**STANDARD FEATURES**

Maintenance-free recyclable batteries  
 Three-point retractable seat belts  
 Adjustable bucket seats  
 Automotive lighting system  
 Dash mounted function key selector  
 Rust-free composite unibody with front and rear steel subframe  
 Four-wheel independent suspension  
 Front wheel hydraulic drum brakes  
 Handbrake  
 Rear wheel regeneration brakes  
 Radial tires  
 Rack and pinion steering  
 Laminated glass windshield  
 Hub-caps

**Friendly Owner****Base Price****Available Accessories****Price**

- Rooftop air deflector
- Windshield wiper and washer system
- Soft door package
- Seat cover kit
- AM/FM stereo cassette system
- AM/FM stereo/CD
- Center console
- Cooler kit
- Trunk catch-all net
- Full body NV cover
- Extension cord kit
- Flat tire eliminator
- License plate light
- Decalomania

**Golf Option Package**

- 10" turf tires
- Low-speed golf mode
- Seeder bottle and rack
- Golf bag holders
- Golf ball support
- Card holder steering wheel

**Street Option Package**

- Lockable rear trunk
- Outside rearview mirror

**Freight and dealer's preparation****Total**

Ask about our financing and leasing program



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**STANDARD FEATURES**

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- Tinted laminated glass windshield
- Deluxe speedometer/odometer
- Three-point retractable seat belts
- Adjustable bucket seats
- Automotive lighting system
- Dash mounted function key selector
- Rust-free composite unibody with front and rear steel subframe
- Four-wheel independent suspension
- Front wheel hydraulic drum brakes
- Handbrake
- Rear wheel regeneration brakes
- Radial tires
- Rack and pinion steering
- License plate light
- Hub-caps
- Outside rearview mirror
- Sun visor with vanity mirror

**Friendly Owner**

**Base Price**

**Available Accessories** **Price**

- Rooftop air deflector
- Windshield wiper and washer system
- Soft door package
- Seat cover kit
- AM/FM stereo cassette system
- AM/FM stereo/CD
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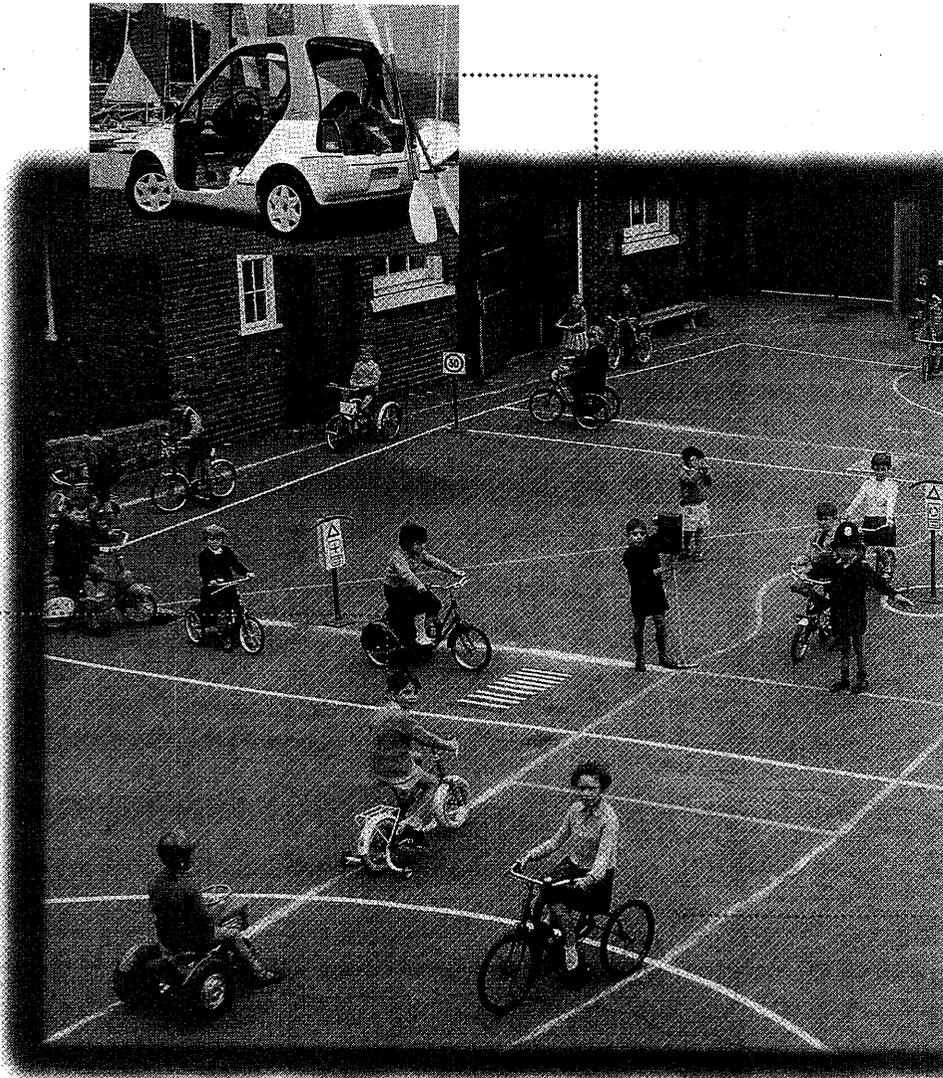
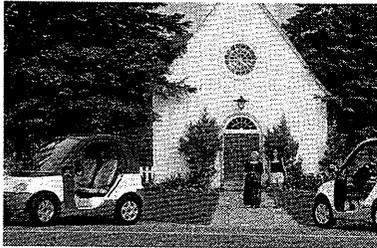
**Street Option Package**

- Lockable rear trunk
- Outside rearview mirror

**Freight and dealer's preparation**

**Total**

Ask about our financing and leasing program



*come to think of it, we've all ridden a friendly neighbor*

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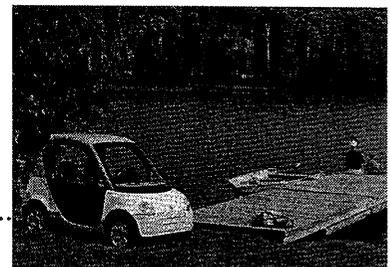
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**BOMBARDIER**  
RECREATIONAL PRODUCTS

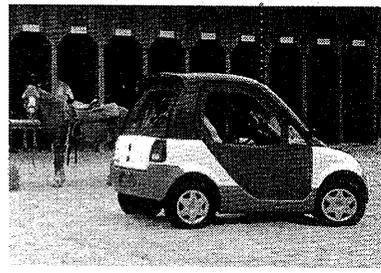


ood vehicle.



### NON-STOP NEIGHBORHOOD FUN

There's nothing like living the good life. Especially when you've earned it. Today it might be horseback riding, or tap dancing, or Aquafit, band practice or golf. And that's only until the sun goes down. Then there's the theater or dinner at the Riverside. No problem, the NV can keep up. And with the kind of honest good looks that'll soon make you the, ahem, NV of the neighborhood<sup>SM</sup>.



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Rooftop air deflector

Tinted laminated glass windshield

Windshield wiper and washer system

Street tires and hub-caps

Right outside rearview mirror

Deluxe speedometer / odometer



Soft door package



Vehicles may differ from illustration.

*Class-e*™



*customize your own NV*

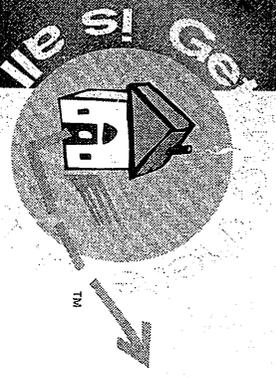


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NEIGHBORHOOD ELECTRIC VEHICLES



# The Neighborhood Electric Vehicle. It drives home the concept of fun.

Call it NEV, for short. What is it? The first of a new

generation of electric powered vehicles. And a great new

way to get from here to there. Where can you take it?

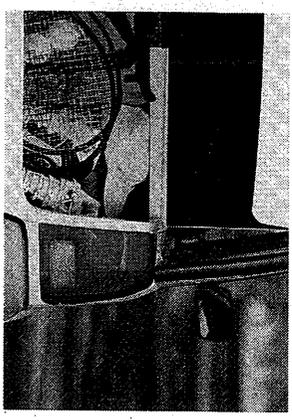
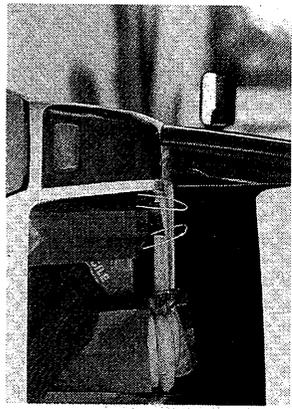
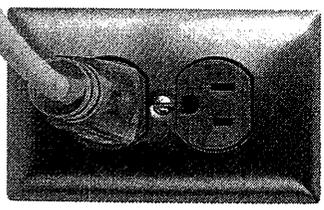
Almost anywhere the road leads in your community. How

will it make you feel? Free. To go where you want. When you

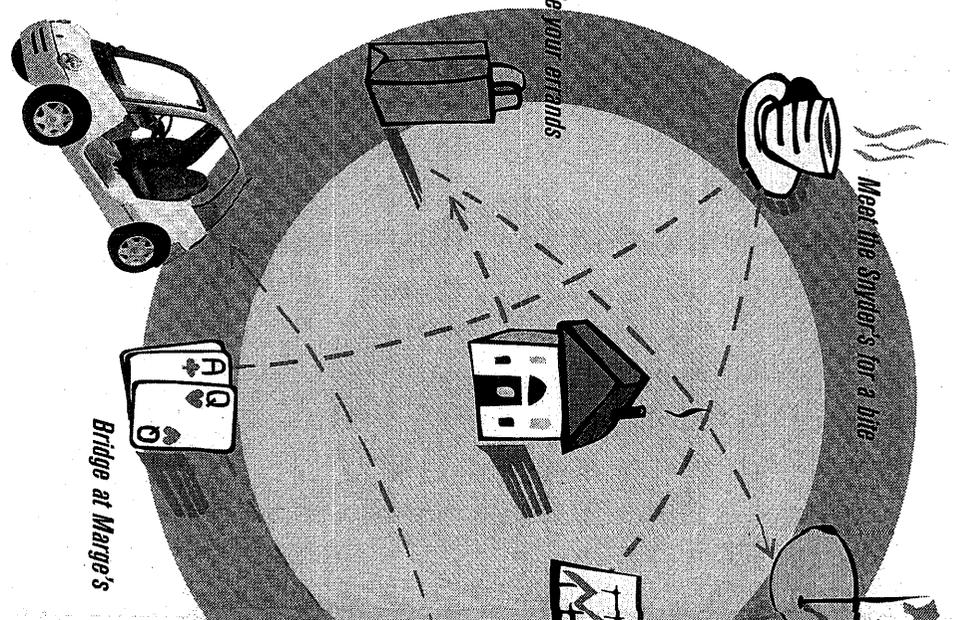
want. Simply. And comfortably. With the NEV, getting there

isn't half the fun. It's all of it.

*If you're  
looking for fun,  
we have the  
perfect outlet.*



*It's practical. It's spacious.  
The NEV trunk adds a whole new dimension.*



*...a quick round*

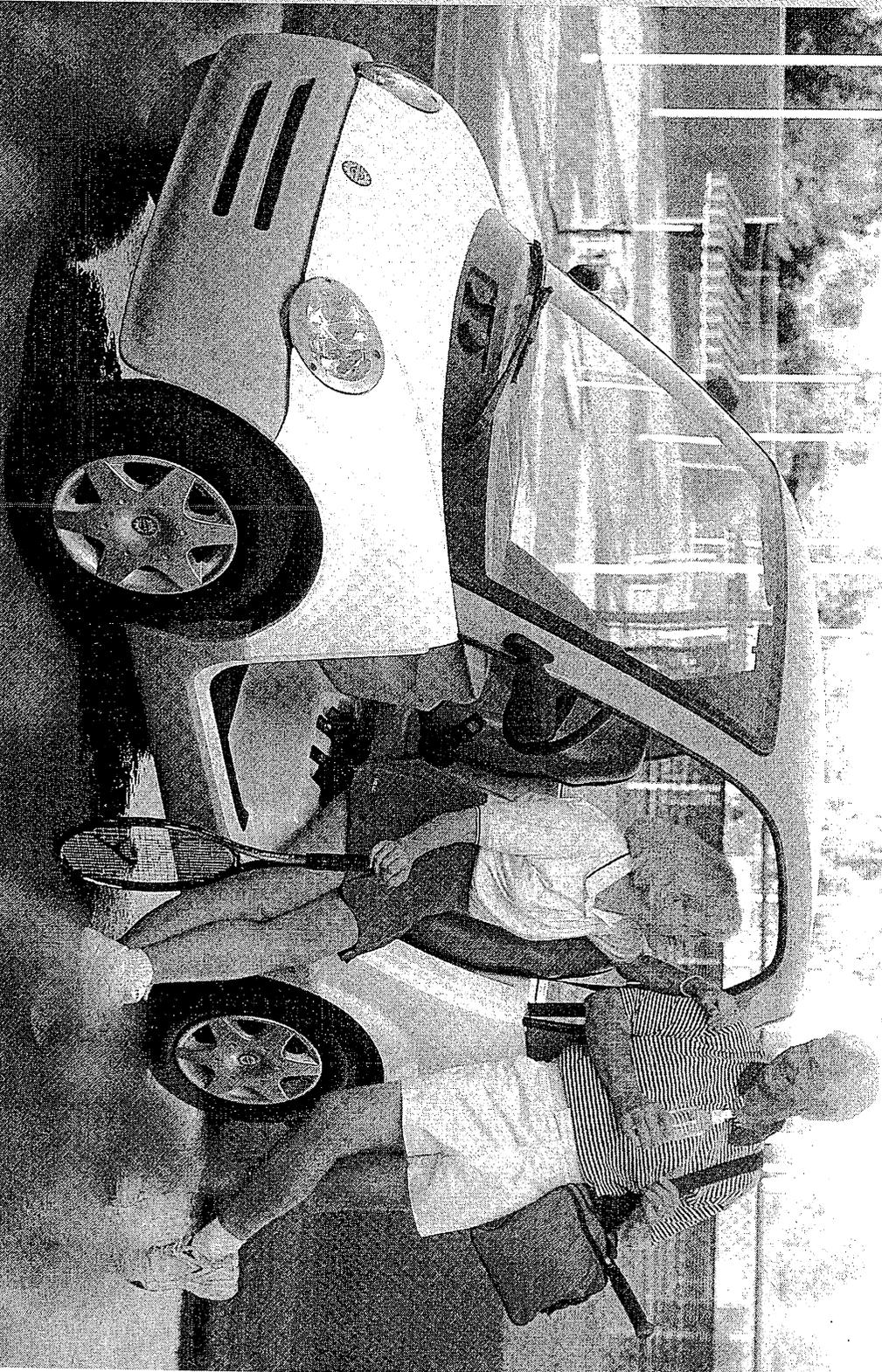
*...handle with stackrocker*

*...Ace Astrophysics class*

*30 mile range\*  
Where in your neighborhood can  
you go in a NEV? Where did you  
have in mind?*

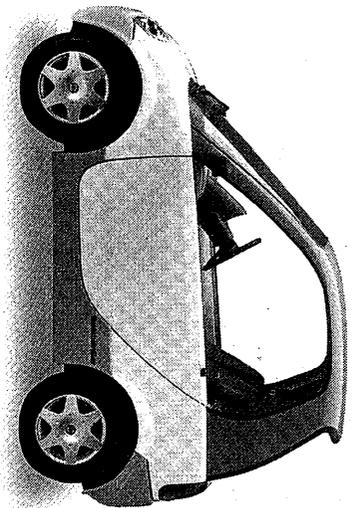
*Zero emissions add up  
to a cleaner environment.*

*\*Actual distance may vary according to  
driving style and conditions.*





**It took a lot of complex thinking to make a vehicle this simple.**



*Available doors put something between you and the outside world.*

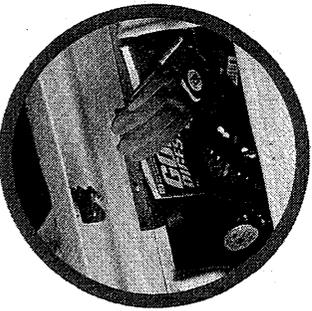
Plug it in. One charge can take you more than 30 miles. Sit in it. You'll notice the NEV

was specifically designed for easy entry and exit. Settle back in it. You'll be cradled in

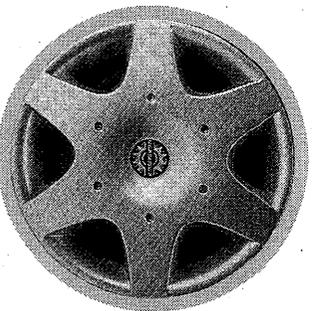
its ergonomically designed bucket seats. Drive in it. Feel how it handles the road. But wait.

The road may not be your final destination. You may be following a different course.

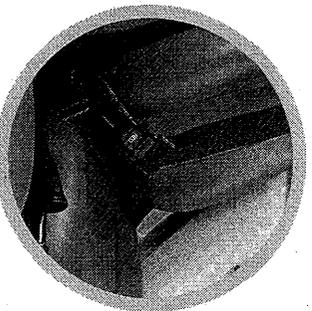
*The NEV can zip you almost anywhere within your community.*



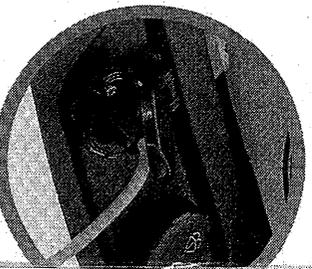
*Spacious glove compartment*



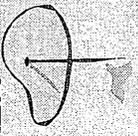
*Stylish automotive details*



*3-point retractable seatbelts*

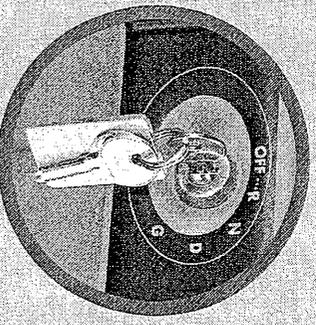


*Quick and easy plug-in*



Consider the  
**NEV with the Golf  
Option Package.**

- Special low speed  
golf mode
- Golf bag holder  
in trunk
- 10" turf tires
- Passenger side  
restraint system
- Service brake pedal  
with foot brake



*Truly simple operation*



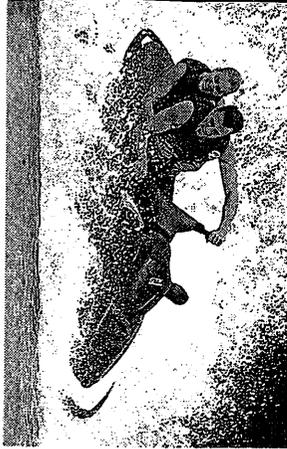


**We've been around the block a few times. Not to mention the world.**



Bombardier (say Bom-bar-dee-yay). The name may be new to you.

But we introduced Ski-Doo<sup>®</sup>, the world's first production snowmobile.



Built Sea-Doo<sup>®</sup> watercraft, the world's best-selling

boat. Created the Canadair<sup>®</sup> 50 passenger

regional jet. Designed subway cars

for the world's largest cities. And monorail systems.

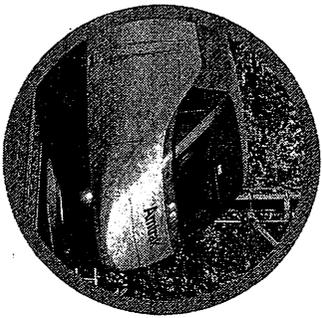
And the Learjet<sup>®</sup>. And have become the exclusive

builder of America's fastest train. We have a long record of



innovation behind us. With the NEV, the road ahead

looks every bit as promising.



**Specifications:**

Length  
100"/254 cm

Width  
55"/140 cm

Height  
61.25"/156 cm

Wheel Base  
65"/165 cm

Curb Weight  
1275 lb/580 kg

Gross Weight  
1725 lb/785 kg

Ground Clearance  
5.75"/15.3 cm

Curb to Curb  
21"/64 cm

72V, 4kW/DC  
shunt motor

6-12 V/L/A batteries

Onboard 110V charger

**Available**

**Accessories:**

Door kit

Seeder bottle & rack

AM/FM cassette  
stereo system

Windshield wiper &  
washer system

Side/rear rain curtain

Full body/NEV cover

Laminated glass  
windshield

Available  
windshield wiper and  
washer system

Outside  
rear view  
mirrors

Rack  
and pinion  
steering

3 point  
retractable  
seat belts

Rigid composite unibody  
with front and rear  
steel subframe

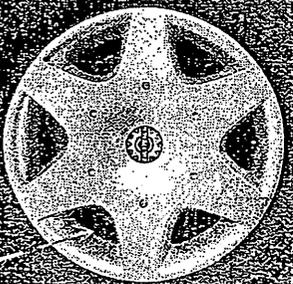
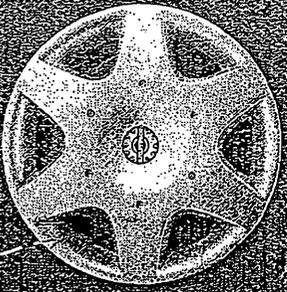
Lockable  
rear trunk

Automotive  
lighting system

Dash  
mounted  
function  
key selector

Available  
lockable handbrake

Bombardier



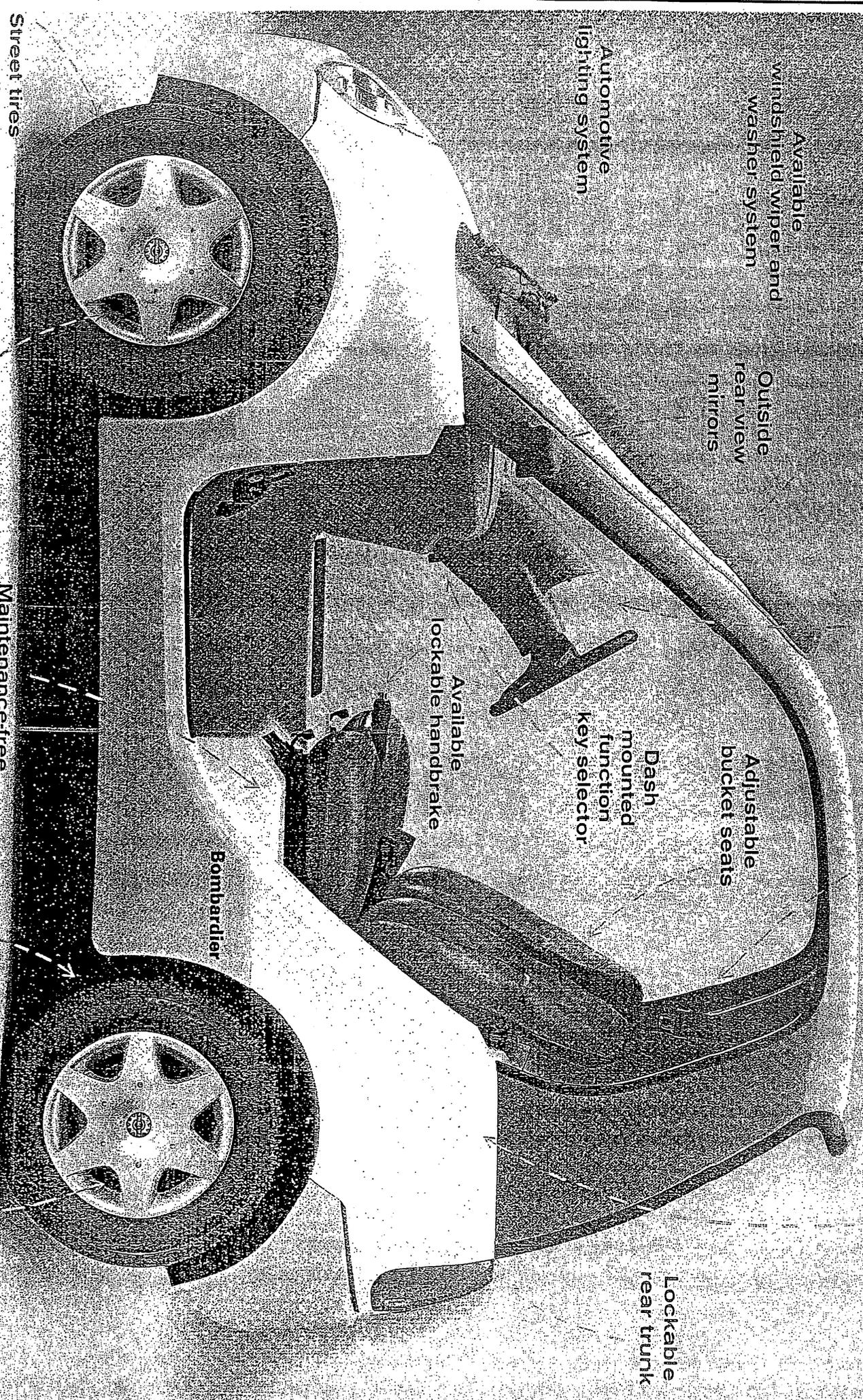
Street tires  
or available  
golf tires

Front wheel hydraulic  
drum brakes

Maintenance-free  
recyclable batteries

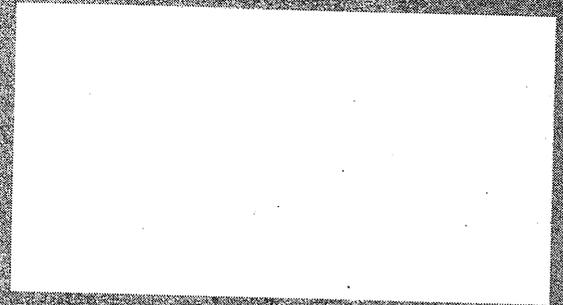
Four wheel  
independent suspension

Rear wheel  
regeneration  
brakes



### **Important Notice**

Drivers and passenger should be advised that the Bombardier NEV is not a motor vehicle as defined by the National Highway Traffic Safety Agency Nor does it meet Federal Motor Vehicle Safety Standards. It was designed to be used in residential areas with low density traffic, and low speed zones. Refer to your local and state laws for specific details as to where it may be driven.



**Bombardier**

NEIGHBORHOOD ELECTRIC VEHICLES

Bombardier Motor Corporation of America

2202 West Lone Cactus Drive, Suite 4

Phoenix, Arizona 85024-5505

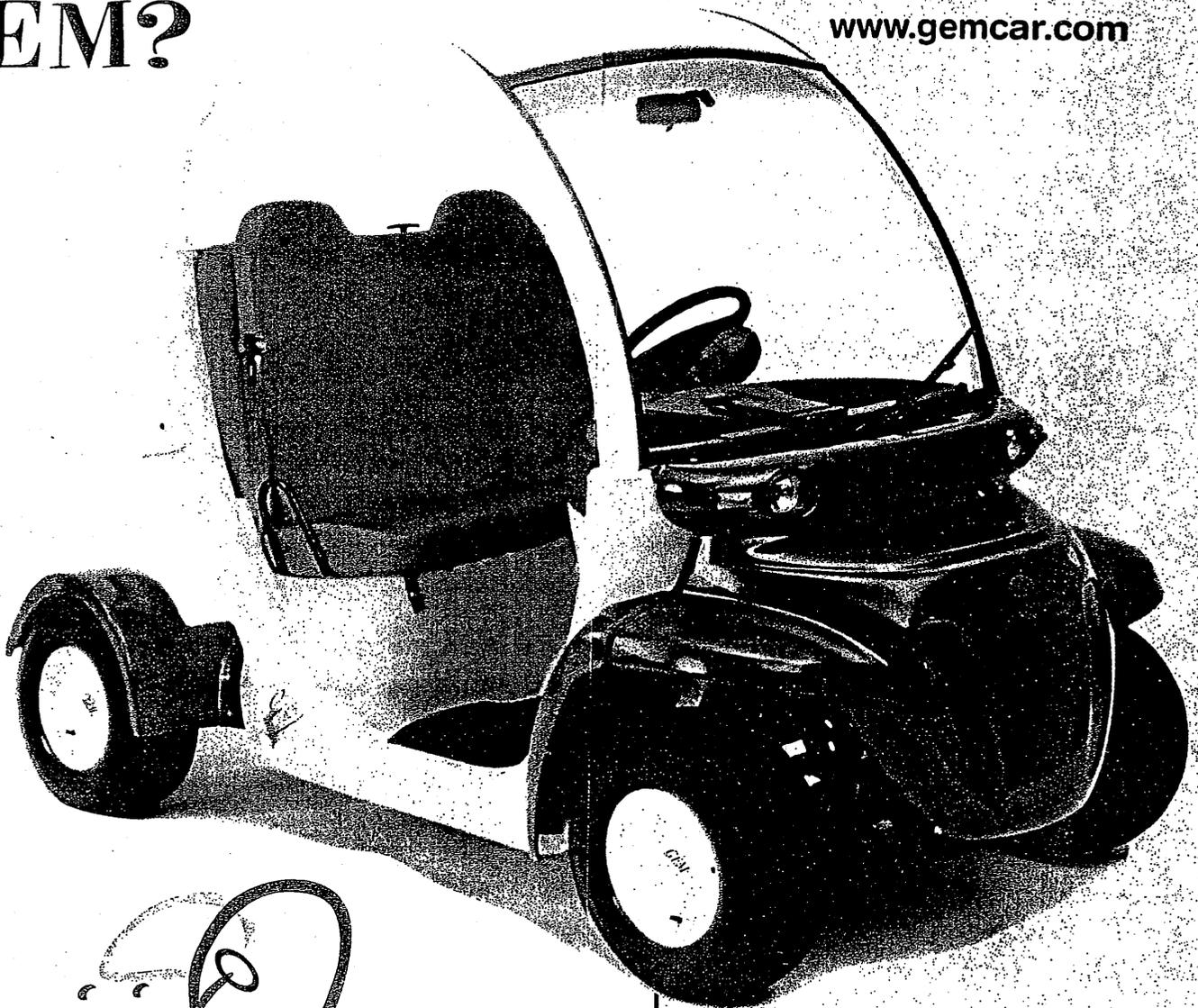
602-581-1515 Fax 602-581-2760

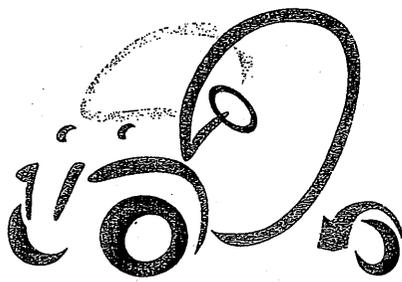
[bomb@goodnet.com](mailto:bomb@goodnet.com)

What could  
be better  
than a two  
passenger  
GEM?



[www.gemcar.com](http://www.gemcar.com)



  
**GEM**™

Global Electric MotorCars, LLC

Safe • Affordable  
Versatile • Practical  
Built To Last  
Makes You Smile

# Standard Features

Safe - GEM is equipped with front wheel drive, four-wheel hydraulic brakes, safety glass windshield with wiper, and three-point anchored seatbelts. Standard features include headlights, high-mounted brake lights and turn signals. And GEM stands as tall as a mini-van, making it highly visible even in the busiest traffic.



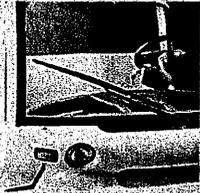
Rear Brake Lights and Backup Alarm



Automotive-Style Headlamps



Anchored Three-Point Seatbelts



Windshield Wiper and Safety Glass Windshield

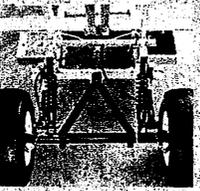


Adjustable Rear View Mirror

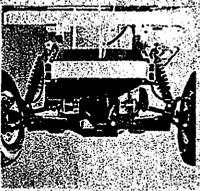


Steering Wheel and Turn Signal Control

# Frame/Suspension



Rugged, Heavy-Duty Chassis

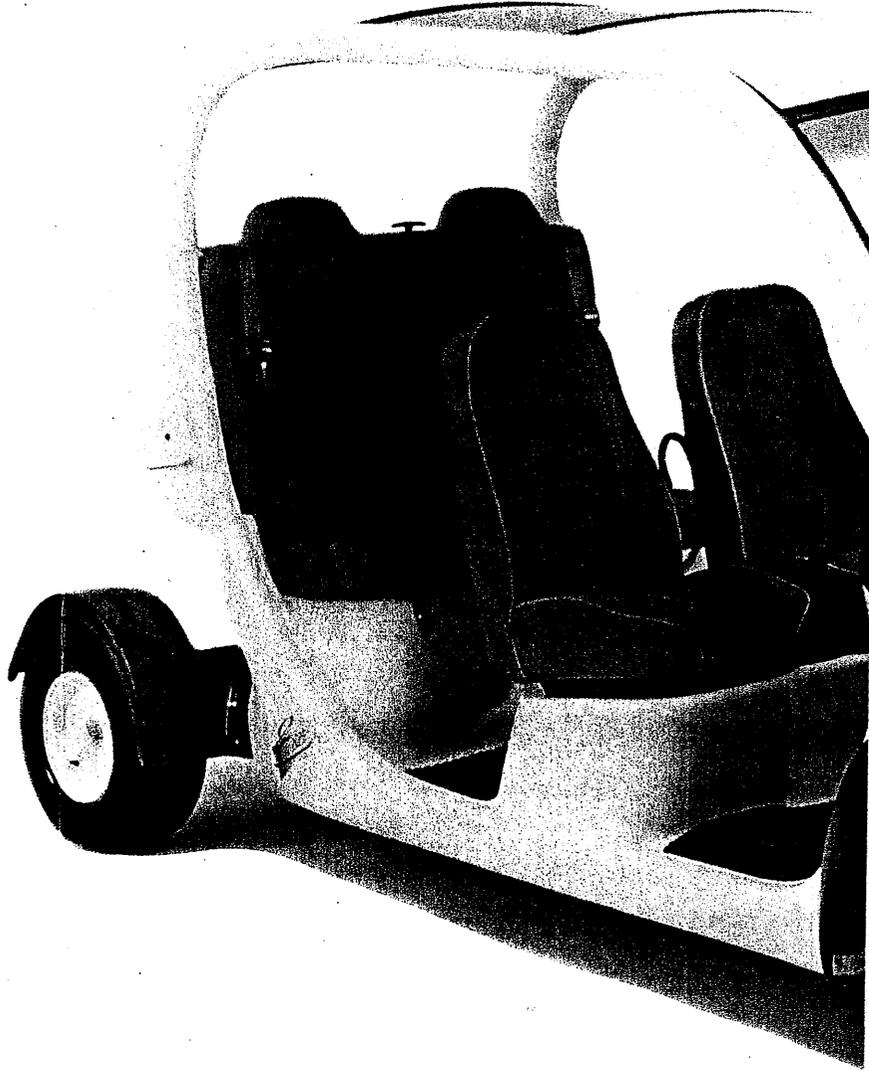


Smooth-Riding Suspension System



Global Electric Motor Cars, LLC  
Fargo, North Dakota

# A four passenger GEM, of course . . .



# The only 4 passenger Neighborhood Electric Vehicle (NEV) in America.

## Practical

GEM is "practical" because it goes "practically" anywhere. It's inexpensive to operate, reduces traffic congestion, and there are no exhaust emissions. GEM is quiet and quick. It's great for neighborhood residents, vacationers and professional people. GEM makes it easy to run errands. Pick up the kids. Zip to the store, to meetings, to job sites. GEM creates a new life-style of function and convenience!

## Affordable

GEM keeps cost down with low-maintenance batteries and an on-board charger that plugs into any 110-volt outlet to fully charge GEM in just 8 to 12 hours. The GEM has an operating cost of about a penny per mile and delivers plenty of value because it's built to last.

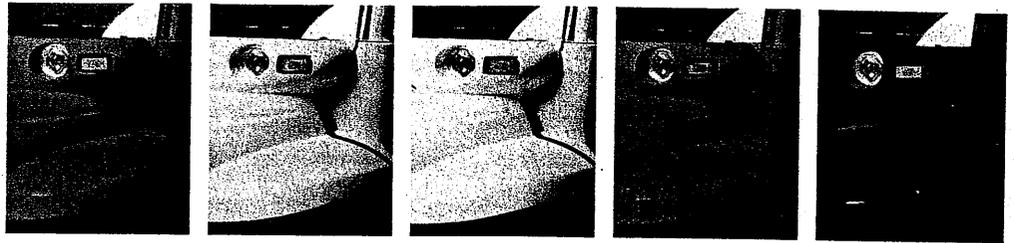
## Functional

GEM seats two or four passengers comfortably. Drive at street speed up to 25 m.p.h.

- Ask us about federal and state tax credits available to you and your company
- Complies to all safety standards established by the Department of Transportation for street use in most states. Check your state and local laws.

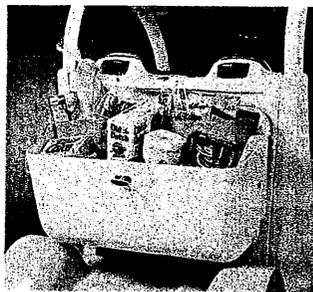
## Colors

GEM is available in a varied, vivid palette of hues: green, yellow, white, blue and red. GEM - it's the NEV that's colorful and cute!

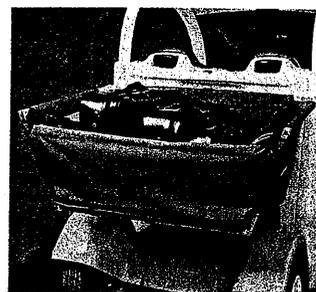


## Attachments

GEM's Changeable Modular Cargo Packs let you carry just about anything - from groceries to luggage to golf gear - and these handy units install in no time at all!



Swivel Pack



Utility Pack



Golf Pack



Global Electric MotorCars, LLC

For sales and dealer information:

**1-888-871-4367**

Fax: (701) 232-0600 [www.gemcar.com](http://www.gemcar.com)