

## Electric Car In Sitka

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Written by Sitka Sentinel Staff Writer  
Tuesday, 29 February 2006

Walt and Megan Pasternak have a new rule at their house: the first one out the door gets the electric car.

The Sitka couple's ZENN 2.22LX arrived on the barge last Thursday, and so far they have logged 60 miles in it. Megan said that's enough to let her see its suitability for a town with less than 20 miles of highway.

"It's perfect for Sitka," she said.

The Pasternaks have two other vehicles -- a Toyota RAV4 and Ford Ranger pickup -- but their new Canadian-built ZENN has become their first choice for nearly all their driving.

They had been thinking about getting a high efficiency car for some time, and had been looking at a SmartCar, which gets 40 miles to the gallon of gas. But when they were in Seattle last November, Megan read a local magazine story about the ZENN.

ZENN stands for Zero Emissions No Noise.

They went to the Seattle dealer, M.C. Electric Vehicles, took a test drive in the battery-powered ZENN, and took to it immediately.

"It was almost a snap decision," Megan said. "But if you don't do it now, what are you waiting for? They will always come up with newer (technology) but why keep pumping crap into the air?"

The Pasternaks received a discount from the \$20,000 list price for acting as "ambassadors," and answering questions from interested consumers. Megan said she and Walt learn something every day about the vehicle, often from others in Sitka who seem to have been following the product. Megan said they welcome calls from potential buyers.

"It's a learning process," she said. "I'm sitting here reading the book for the second time, because you don't know what they're talking about until you're in the car."

The ZENN gets 35 miles on a single battery charge. Top speed is 37 mph, with 35 a sustainable cruising speed. It takes four hours and five kilowatts of electricity to bring a fully depleted battery up to 80 percent charged. The draw on AC power tapers off as the battery approaches full charge.

The Pasternaks keep extension cords handy, and Megan said she is still getting into the habit of "opportunity charging" -- plugging in to the nearest available outlet when away from home. The car has electric windows, electric and manual locks and a functioning heating system but no air conditioning.

Megan said it isn't as quiet as she expected, but that's because a lack of insulation in the aluminum frame and the polycarbonite sides don't keep out road noise. The only glitch so far has been a short caused during the installation of an AM/FM stereo. But a quick bit of troubleshooting solved the problem.

The car weighs in at a featherweight 1,200 pounds, but Megan said she feels safe because she is a careful, defensive driver. She hasn't tried the ZENN on snow but the car has front-wheel drive, and can be equipped with snow tires.

Sitka Electric Utility Director Charlie Walls said he had heard about the Pasternaks' car and is interested to see how it performs in Sitka.

"At this point it's very much an emerging technology," he said. "We're watching that. It has some potential in the long run for Sitka. It's a pioneering technology. This time they have a chance of getting them established."

As the price of oil -- now at about \$100 a barrel -- continues to go up, the interest in hybrids and electric cars will increase, Walls said. "The next thing to come is plug-in hybrids, then all electrical," he said. "What we're seeing is forerunners of what's to come."

Walls has made announcements in the last few weeks about the low water levels at the hydroelectric dams, and the need for such conservation measures as turning off home electric heaters when alternative heat is available.

Battery-powered cars will not be a significant draw on the electric system until there are a lot more of them in Sitka, he said.

The city is working on plans to raise the height of the Blue Lake Dam, which will increase the local hydro resources significantly, and Walls will be in a Sitka delegation heading to Washington, D.C., next month to get support for the \$25 million project.

"In a few years from now, we could have the capacity to handle the addition of (electric cars)," he said. "We think it has some real potential, and it'll be real attractive to Sitkans five years from now."

There is at least one other all-electric vehicle in Sitka. The Coast Guard Air Station uses it to transport materials short distances on Japonski Island.

Megan said so far she gives the ZENN high marks, and hopes to spread the word about her car and its benefits to the environment with a new personalized license plate.

If its's not already taken, she wants it to read: "NO CO2."

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# OLR RESEARCH REPORT

August 8, 2008

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## LOW SPEED ELECTRIC VEHICLES

By: James J. Fazzalano, Principal Analyst

You asked for information on the states that allow low speed electrically-powered motor vehicles to be registered and operated on public roads.

### SUMMARY

Federal standards were first established for low speed motor vehicles in 1998. These standards define them and establish mandatory equipment requirements for them. We were able to identify 40 states that have granted statutory authority for low speed vehicles, referred to in some of the states as "neighborhood electric vehicles" to operate on certain types of roads. In all but Rhode Island, the authority extends to all roads of a certain type anywhere in the state. Rhode Island authorizes them only for operation on Prudence Island. As you know, Connecticut law does not authorize operation of low speed vehicles on public roads.

Every state that statutorily authorizes operation of low speed vehicles requires them to be registered. In the majority of cases, the statute has an explicit requirement for registration. However, in some states, the requirement is established indirectly in that these vehicles are defined as "motor vehicles" and the state's general registration law requires motor vehicles to be registered unless exempted. None of these states exempt low speed vehicles.

Most of the states limit the operation of low speed vehicles to roads for which the speed limit is set at not more than 35 miles per hour. Idaho, West Virginia, and Rhode Island limit them to roads with speed limits of 25 miles per hour or less. New Jersey authorizes them for roads up to 25 miles per hour, but allows state and local authorities to allow them for roads of up to 35 miles per hour if they choose. Maryland limits them to roads of 30 miles per hour or less. Kansas allows them to be operated on roads of up to 40 miles per hour and Montana allows them on roads of up to 45 miles per hour. Colorado only authorizes municipalities to determine where they may operate; the law does not set a speed limit maximum as the other states do.

Of the 40 states, 30 allow low speed vehicles to cross roads with higher speed limits. Most of the states that allow such crossings do so only at intersections. Maryland, Rhode Island, and Vermont limit this authority by designating the maximum speed of roads that may be crossed. Illinois, Maryland, and Vermont further limit the authority to cross to intersections that are “controlled”, that is, governed by a traffic light or a four-way stop. New Jersey requires crossing at a signalized intersection, or at a non-signalized intersection if approved by a state, county, or local authority, when the road being crossed has more than two lanes, is divided, or has a speed limit over 35 miles per hour. California permits crossing a state highway at an uncontrolled intersection only if the state highway agency approves it.

The federal standard for low speed vehicles requires them to be capable of reaching at least 20 miles per hour and not more than 25 miles per hour. The majority of states we found adopt this as the standard in their definition of a low speed vehicle. However, several establish only a maximum speed of 25 miles per hour without specifying a minimum speed. These include Arizona, Colorado, Hawaii, Utah, and Vermont. Indiana and Montana specify a maximum speed of 35 miles per hour with no minimum speed. Washington defines two classes of vehicles—“medium speed vehicles” with a minimum speed of 30 miles per hour and a maximum of 35 miles per hour and “neighborhood electric vehicles” with a minimum speed 20 miles per hour and a maximum speed of 25 miles per hour.

★ Michigan, unlike any of the other states, specifically requires low speed vehicles to operate as far to the right side of the road as practicable.

The laws of all of the 40 states, except for Oregon and Colorado, make explicit reference to these low speed vehicles having to comply with the federal standards. Iowa, Michigan, Missouri, Texas, and West Virginia explicitly adopt the federal definition of a low speed vehicle by reference.

More than half of the states allow state, county, or local authorities to further restrict low speed vehicle operations, or even prohibit them entirely on some or all roads if it is the interest of public safety. In Wisconsin, low speed vehicles can only be operated if a municipality adopts a permissive ordinance. Illinois has a similar requirement that allows them only if a municipality has adopted a permissive ordinance. The Illinois law requires the municipality to consider the volume, speed, and character of traffic before approving an ordinance. Colorado has a permissive law, that is, low speed vehicles are only allowed to operate when a local authority has permitted it by ordinance or resolution.

Recently, the governor of Kentucky issued an executive order requiring the state motor vehicle agency to develop procedures for registering electrically-powered vehicles for use on public roads. The order covers vehicles capable of moving up to 50 miles per hour, so they probably should not be considered low speed vehicles in the same sense as the other states have authorized. Kentucky does not authorize low speed vehicles statutorily.

## **FEDERAL STANDARDS FOR LOW SPEED VEHICLES**

The National Highway Traffic Safety Administration (NHTSA) first adopted regulatory standards for low speed vehicles in 1998. The NHTSA regulations define a low speed vehicle (LSV) as a motor vehicle that (1) has four wheels; (2) can attain a speed in one mile on a paved, level surface of at least 20 miles per hour and not more than 25 miles per hour; and (3) has a gross vehicle weight rating of less than 3,000 pounds (49 CFR Sec. 571.3). The regulations do not limit LSVs to being electrically-powered.

The regulations require all LSVs to be equipped with: (1) headlamps, tail lamps, and stop lamps; (2) front and rear turn signals; (3) red reflex reflectors on both sides and the rear; (4) an exterior mirror on the driver's side and either an exterior mirror on the passenger side or an internal mirror; (5) a parking brake; (6) a windshield that conforms to the federal standard for glazing materials; (7) a vehicle identification number that conforms to federal standards; and (8) a seat belt meeting federal standards at each designated seating position (49 CFR § 571.500).

Most of the states that allow the operation of low speed vehicles on some roads require them to meet these federal standards. Of the 40 states we identified with low speed vehicle laws, only Oregon's and Colorado's laws appear not to explicitly refer to compliance with the federal regulations.

### STATES THAT AUTHORIZE OPERATION OF LOW SPEED ELECTRIC VEHICLES

Table 1 provides information for the 40 states we found with laws allowing low speed vehicles to be operated on some roads. The states typically refer to them as low speed vehicles (LSV) or neighborhood electric vehicles (NEV). The laws in Montana and Washington refer to them as medium speed vehicles (MSV). The table identifies (1) the maximum speed limit for roads for which their operation is authorized; (2) whether they are allowed to cross roads with higher speed limits and any limitations that apply, (3) what characteristics define these vehicles under the state's law, (4) the minimum and maximum operating speeds for these vehicles, and (5) if there is authority to regulate them at the state or local level that goes beyond the general statutory authorization for them to operate.

**Table 1: States Permitting Operation of Low Speed Motor Vehicles**

	Maximum Speed Limit of Roads Where Operation is Allowed	Crossing Higher Speed Roads Permitted	Definition of LSV/NEV/MSV	Vehicle Operating Speed		Local Authority to Regulate or Prohibit
				Min	Max	
* Alaska	35	Yes, at intersection	4 wheels State weight, equipment, and safety standards must be consistent with federal standards	20	25	Local government may further restrict operations
Arizona	35	Yes at designated intersection	4 wheels Emission-free	---	25	
California	35	Yes, at intersection Only permitted at uncontrolled intersection with state highway if state agency approves	4 wheels 3,000 lbs. max.	20	25	Local authorities may restrict use. Local or state authority may prohibit use if in the best interest of safety and appropriate signs are posted

# ZENN - Vehicle in Sitha

From Wikipedia, the free encyclopedia  
(Redirected from Zenn)

**ZENN** (*Zero Emission, No Noise*) is a 2-seat battery electric vehicle currently in production and built by ZENN Motor Company designed to qualify as a Neighborhood Electric Vehicle. It has a range of up to 40 miles (64 km) and does not exceed 25 mph (40 km/h). On earlier production models, there was an option of a 'Discovery Pack' which increased the ZENN's range a few miles. It now comes standard.

The vehicle is based on the Microcar (brand) MC2, in production in France since the early 2000s, and produced under license from Microcar's parent company Beneteau Group. The Microcar MC2, and the short wheelbase MC1, are sold in Europe with diesel engines.


Electric power is stored in six 12V lead-acid gel batteries, which has a recharge cycle of 8 hours. Valve regulated (low maintenance) lead-acid wet cells are available at extra cost.

Also optional are a retractable fabric sunroof, air conditioning, audio entertainment center, and AC motor, stated to be better for hill climbing. The 2008 model has a standard AC motor.

On January 16, 2007 EESstor, Inc. announced plans to ship 15 kilowatt-hour Electrical Energy Storage Units (EESU) to ZENN Motor Company by end of 2007 for use in the ZENN electric vehicles. As of Nov. 2008, this has not happened. If it were to happen, it would make the ZENN the first production vehicle to use EESU. As of April 30 2007 ZENN Motor Company owned approximately 3.8% of the equity of capacitor developer EESstor, after an investment of \$2.5M US.<sup>[1]</sup>

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ZENN	
	
Manufacturer:	ZENN Motor Company
Location:	Headquarters in Toronto Ontario, production in St. Jérôme, Quebec
Also known as:	Feel Good Cars
Production Years:	2006–present
Class:	NEV\LSV
Length:	3.1 m
Width:	1.6 m
Height:	1.4 m
Charging connector:	Extension cord to standard domestic 110V outlet
Charge time	80% - 4 hours, 100% - 8 hours
Curb Weight:	1,200 lb (544 kg)
GVRW:	1,705 lb (773 kg)
Battery type:	lead-acid batteries
Range:	50-80 km (30–50 miles)
Maximum speed:	40 km/h (25 mph)

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Doors:	3-door hatchback
MSRP:	\$12,000–\$16,000

## Licensing agreement with EEStor

EEStor was founded in 2001 by Richard D. Weir and Carl Nelson, former senior managers in disk-storage technology at IBM and Xerox. The Company maintains a low profile, but others in the automotive and CleanTech communities are calling their storage technology ‘game changing’. Such a breakthrough has the potential to transform the energy sector and the automobile industry in particular.

The following is how the EESU is claimed to compare to other batteries used for electric cars<sup>[2]</sup>

	<b>Ceramic EESU</b>	<b>NiMH</b>	<b>La(Gel)</b>	<b>Lithium-ion</b>
Weight (kg/lbs)	<b>135/300</b>	780/1716	1660/3646	340/752
Volume (litres/cubic inches)	<b>74.5/4541</b>	293/17,881	705/43,045	93.5/5697
Discharge rate	<b>0.02%/30 Days</b>	5%/30 Days	1%/30 Days	1%/30 Days
EV Charging time (full) - 100% charge	<b>3-6 min</b>	>3.0 hr	3-15 hr	>3.0 hr
Life Reduced with deep cycle use	<b>none</b>	very high	high	very high
Hazardous Materials	<b>none</b>	yes	yes	yes
Temperature vs. effect on energy storage	<b>negligible</b>	high	very high	high

ZMC entered into an agreement with EEStor dated August 24, 2004 (with subsequent amendments dated November 26, 2004, September 30 2005, August 8, 2006 and January 22, 2007) to acquire in perpetuity the worldwide exclusive rights to use EEStor's EESU in the following markets:

All-electric 4-wheeled personal transportation uses for vehicles with a curb weight up to 1,400 kilograms (3,100 lb), net of the battery weight, and For golf carts and similar-styled utility vehicles, and The aftermarket conversion of any internal combustion passenger vehicle to electric drive

The EEStor Technology Agreement also provides ZMC with non-exclusive, worldwide use to manufacture higher power and heavier vehicles.

About half of Zenn's IPO was used to invest in EEStor.

## Skepticism from Experts about EEStor



Three technology experts hired by potential investors to investigate EESor's technology have stated "it's not possible", "extremely unlikely that it's possible", "there's extreme skepticism", "there's nothing there", "it's ridiculous thinking", "it's beyond science fiction", and "I'm surprised that Kleiner has put money into it". [3] [4] [5]

## City ZENN

The **cityZENN** is planned to be a fully certified, highway capable vehicle with a top speed of 125 kilometres per hour (78 mph) and a range of 400 kilometres (250 mi). Powered by EESor, the cityZENN will be **rechargeable in less than 5 minutes**, feature operating costs 1/10th of a typical internal combustion engine vehicle and be 100% emission-free at the point of use. The **Zero Emission, No Noise** cityZENN will be designed to meet the transportation requirements of a large percentage of drivers worldwide. [6] It is due to be launched in Fall 2009. Also according to Ian Clifford a normal household outlet with 110 volt supply can fully charge the EESor powered CityZENN in 4 hours for a 250 miles (400 km) range and a normal household outlet with 220 volt supply can fully charge the EESor powered CityZENN in 2 hours for a 250 miles (400 km) range. A fast charge in about 5 minutes will be possible at special charge stations. CityZENN target price is around \$25000 - \$30000.[7]

## Legalization in Canada

Although the company is headquartered in Toronto, and the car is manufactured in St- Jérôme, the vehicle was first introduced in the United States. Federal regulations set up by Transport Canada to approve low speed vehicles (LSVs) for public road use excluded the ZENN and other NEVs from Canadian roads. ZENN's battle with Transport Canada over LSV regulations has been periodically mentioned in Canadian news.[8]

The ZENN car met all the regulatory requirements in the United States; the same regulations adopted by Transport Canada in 2000. It took 2 years of political red tape before ZENN received its National Safety Mark from the Canadian Ministry of Transport. The safety mark was granted after a report by the CBC[9] caused public outcry against the governments lack of interest in environmentally friendly alternatives to fossil fuel vehicles.

Since August 16, 2000, British Columbia has allowed LSVs on its roads, but this exception to the federal law was designed mainly for large slow-moving farm equipment. Although the ZENN was technically legal in British Columbia, the cars would have needed to be equipped with warning signs and yellow flashing lights to distinguish themselves as slow-moving. ZENN Motor Company did not see these conditions as viable to establish a retailer market. After ZENN received its National Safety Mark, the province of British Columbia vowed to improve their support for electric vehicles, and granted the right to each municipality to make LSVs legal on their roads. As of November 2008, The City of Vancouver and the township of Oak Bay, a suburb near Victoria are the only municipalities to grant LSV use.

In Ontario, LSVs can be used on roadways within provincial or municipal parks and conservation areas (when driven by an authorized park employee) or on private property.

On June 17, 2008, Quebec announced a pilot project for the ZENN, which would allow residents of Quebec to drive a ZENN in Canada.[10] On October 4th, 2008 ZENN Motor Company opened up a retailer

out of its production plant in St. Jérôme with a factory direct approach to sales. This marked the first time a ZENN or any other low-speed commercial vehicle could be sold in Canada.

## Awards

In the Michelin Challenge Bibendum 2006, ZENN received the highest overall rank in the Urban Car category.

## Gallery



## Competitors in light electric vehicles

- Aixam (neighborhood electric vehicle)
- Bolloré Blue Car
- Buddy
- Citroen Berlingo Electrique
- Dynasty IT
- G-Wiz (REVA)
- Italcarr
- Mini E
- Nissan Nuvu
- Pininfarina B0
- Renault Z.E.
- Smart EV (production car)
- Subaru R1e (2009)
- The Kurrent (neighborhood electric vehicle).
- Th!nk City (production car).
- ZENN

## Comparison with selected light electrical cars

Maker	Top speed	Range
Kewet Buddy	80 km/h	40 - 80 km

CityEl	63 km/h	80 - 90 km
Dynasty IT	40 km/h	50 km
REVA	70 km/h	80 km
The Kurrent	40 km/h	60 km
Th!nk City	100 km/h	170 km

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## External links

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- The Challenge Bibendum Paris 2006: wrap-up (<http://www.challengebibendum.com/challenge/front/affich.jsp?codeRubrique=43&lang=EN&newsID=17927>)
- Low-Speed Vehicle Pilot Test FAQ (<http://www.mto.gov.on.ca/english/dandv/vehicle/emerging/lsv-faq.htm>)
- Support for legislation change in Canada to allow Zenn Cars to be sold here. (<http://www.iwantazenn.com>)
- <http://www.eestorbatteries.com> - Information, News, Articles, and Discussion Board for EESstor Batteries and Zenn Motor Company.

## In The News

- Battery Breakthrough? - 1/22/2007 (<http://www.technologyreview.com/Biztech/18086/>)
- Better Batteries Charge Up - 8/05/2008 (<http://www.technologyreview.com/Energy/21171/>)

Retrieved from "<http://en.wikipedia.org/wiki/ZENN>"

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