

FUELS

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Whither California ZEVs?

This year, in fact **this Friday**, should see further action on the in-limbo mandate for zero emission vehicles in California, as the state's Air Resources Board is to release a new scheme to replace the regulations that were rejected by a federal court last year.

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Energy Redux, 2003-Style

The Scramble Is On, Again, to Line Up House and Senate Support For Tax Breaks for Alternative Fuels, in the Name of Energy Security
The scramble to secure tax breaks for alternative fuels and other energy providers resumes tomorrow when a new Congress takes office.

All of the contentious energy subsidy issues are back on the table. But there are some new players who'll be making crucial calls on whether the alternative fuels industry achieves its holy grail – a 50-cent-per-gallon tax break for qualifying alternative fuels and a slew of tax incentives to purchase AFVs or build refueling infrastructure.

It's a Roller Coaster

This time around there are even wilder cards in play, as Congress makes another attempt to write energy legislation: the faltering economy and a possible Iraqi war.

On the plus side, war jitters have boosted oil prices to \$33 a barrel. That helps justify tax incentives to lessen America's dependence on imported Middle Eastern petroleum. But the faltering national economy makes it tougher to ginny up support for additional tax breaks to energy producers at a time when President Bush is still talking about yet another massive tax cut that, according to one recently national poll, is opposed by Americans by a margin of two to one.

Result: there's a roller coaster ride ahead. The big question is: "Who gets the biggest pieces of the subsidy pie?"

The biggest change of course is Republican control of the Senate.

[more on page 2](#)

Feel Good Feeling Even Better

Firm Plans a City Car, Major Challenge to GEMs in NEV Arena
Canada's Feel Good Cars plans new models of battery electric vehicles, including a freeway-capable city car, and has set an annual sales goal of some 5,000 units three years from now.



Feel Good Zenn at ETIC 2002 ride-and-drive

Key to the company's pitch is that its Zenn vehicle (for zero emission, no noise) is a full-function vehicle, with the *enclosed, all-weather body* of a conventional road car — allowing the firm to claim an advantage over more established NEV competitors such as Daimler's Global Electric Motorcars.

[more on Page 8](#)

Government

Energy Redux, 2003-Style *(continued)*

Presuming an energy subsidy bill develops, the ethanol industry lost a key insider advantage when Democrat Tom Daschle of South Dakota yielded his corn-cob gavel to the new Senate Majority Leader Bill Frist of Tennessee. Frist doesn't have many, if any, footprints on energy issues. His past expertise is in the fields of health care, education and labor.

Daschle was instrumental in expanding tax incentives and breaks for ethanol producers in the energy bill that died last year. But when Democrats lost control of the Senate, Daschle stepped down.

Ethanol Shoots for Post-MTBE Role

Possibly good for natural gas vehicles, the new leader of the Senate Energy and Natural Resources Committee is Pete Domenici of New Mexico. Domenici hails from a natural gas state and he'll have the lead role in crafting the Senate's energy package.

As in the House, Domenici will have to make a call on a mix of the nation's contentious energy dilemma:

- will alt fuel retailers get those tax credits?
- will the Arctic National Wildlife Refuge (ANWR) be

- opened for oil drilling?
- will America attempt to reduce greenhouse gas emissions?
- how best restructure electricity markets?
- should MTBE and/or ethanol be the oxygenate of the future in gasoline?
- is it time to recalculate CAFE (corporate average fuel economy) standards? and finally, the dicey question,
- can we afford to hand out \$34 billion in a wide variety of oil, gas and electricity tax breaks?

Inhofe a Plus for NGV Lobby

Another big plus for natural gas interests is the new Senate Environment Committee chairman, James Inhofe of Oklahoma. He's a booster for MTBE (methyl tertiary butyl ether) prospects as a gasoline component and will likely resist attempts by ethanol producers to corner the oxygenate market.

Inhofe's new role also bodes well for natural gas prospects. His state is a gas producer and has invested heavily in promoting CNG as a motor fuel and in natural gas as a feedstock to meet MTBE demand.

Countering these Senators is a long-time ethanol champion, Chuck Grassley the Senator from Iowa. Grassley is now chairman of the Senate Finance Committee.

'It's All Still Very Much Alive'

The Natural Gas Vehicle Coalition will again help lead the charge to win Congressional support for tax incentives for alternative fuels. Last year the Democratic Senate accepted the 50-cent per gallon tax credit plan as well as a wide mix of purchase incentives for all AFVs, including hybrid vehicles, and financial assistance to build refueling infrastructure for the various alternative fuels.

NGVC also helped win House support for tax breaks to cover the incremental costs of buying AFVS. The House did not adopt the 50-cent-per-gallon AFV sales tax break for fuel sellers, but that decision had been made well before the September 11 terrorist attacks refocused America's attention on its dependence on foreign oil.

"It's all still very much alive and we're already lining up new support" for the AFV tax incentive component in the energy bill, says one alt fuel man.

And finally, the man in the lead role to rewrite a House energy bill is again the Louisiana representative, Billy Tauzin, who still is Chairman of the House Committee on Energy and Commerce. AFV proponents are optimistic that, this time around, they can win Tauzin's support.



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Government

Impending Encore?

Is CARB Setting Up for a Major Fuel Cell Fizzle With OEMs Failing to Offer 'New Breed' ZEVs? It's 2012. "We have found fuel cell technology to be too expensive and not acceptable to consumers," a representative of a major Detroit-Tokyo automaker tells California regulators, effectively advising them that under the terms of the 2006 voluntary zero emissions initiative, carmakers will soon end trial production of fuel cell vehicles.

Does that bit of fiction have the ring of truth? Perhaps because it's all too much like the battery EV history of recent years, and is a scenario electric vehicle advocates fear may come to pass with fuel cells too as today's California Air Resources Board considers more changes to the zero-emission vehicle mandate.

The agency, in a proposal to be made formal this Friday, January 10, is expected to allow automakers, who have stubbornly maintained that battery electrics have no market, to concentrate instead on fuel cell vehicles — with no guarantee they won't become another red herring.

"Technology that's not commercially viable should not be forced to a market that cannot support it," says Honda's Ben Knight, sounding what seems to be advance

warning of a fuel cell fizzle. The fastest and most effective way to improve air quality, Knight said at a CARB workshop in Sacramento last month, is through hybrids and very clean gasoline cars such as the "near-zero" technology, natural gas-fueled Honda Civic GX.

The current ZEV rule in theory affects 10 percent of the six major automakers' California sales in 2003. It's theoretical because a successful OEM legal action shunted the regulation into limbo in mid-2002. OEMs argued successfully that the CARB rule encroached on fuel economy authority that's the sole province of the federal EPA.

Compromise and Be Punished

Ironically, it was *compromise provisions easing an earlier, stricter version of the ZEV mandate* that contained language making the overall program vulnerable to the automakers' legal assault.

Earlier, the original 1998 implementation of the ZEV rule was delayed in exchange for allowing automakers to produce small demonstration fleets with an emphasis on advanced batteries.

Then, in what seemed a victory for EV advocates and a chastising of automakers that raised "environmental justice" arguments at the last hour, the CARB Board voted unanimously in January 2001 to preserve the ZEV regulation, which was to take full effect in 2003.

OEMs including General Motors and DaimlerChrysler sued. This past June a U.S. District Court judge agreed that the regulation, as amended in early 2001, interferes with fuel economy standards, which only the federal government can issue. CARB has appealed, but to avoid further delay and a protracted legal battle, agency staff has decided to remove all references to fuel economy in a new regulation.

Fuel Cell Future or Further Folderol?

Under the terms of the nominal 10 percent ZEV mandate that's now been quashed, 2 percent of the major automakers' vehicles sold in California must be zero-emission vehicles. The agency staff's so-called straw man proposal cuts the pure zero-emission requirement in half until 2009. Carmakers can also meet the top 1 percent by building hydrogen infrastructure. The formal proposal due late this week may be even more lenient.

CARB staff says the agency's bending in part because there have been no significant reductions in battery cost in the last two years. EV advocates are frustrated. "We don't believe the situation today with battery EVs is as dire or as desperate as the staff straw man proposal would lead one to believe," says the California Electric Transportation Coalition's Dave Modisette.

The staff's newest "regulatory flip-flop," he says, creates uncertainty and pulls the rug out from under ongoing EV investment. Automakers have met the EV challenge, Modisette insists, and, as a result of early introduction credits and neighborhood electric vehicle giveaways, have "banked" enough advance ZEV credits to support their compliance for several years. The fear now is that the OEM excuses that worked for battery EVs will ultimately work all too well for fuel cells too.



photo shows CARB chairman Alan Lloyd endorsing fuel cells

Too Harsh a Headline?

Some California Air Resources Board staffers felt that the headline above, which appeared in *Fleets & Fuels* affiliate *ShowTimes* at last month's ETIC 2002 meeting in Florida, was unfair, as it was the automakers who delayed and fought the agency and ultimately failed to commercialize battery electric vehicles in California.

The California zero emission vehicle sales mandate was initiated in 1990. Instead of a move toward zero emissions, the state and nation saw the emergence over the decade of a whole new class of gas guzzlers, the sport utility vehicle. On the positive side, longer-term, the mandate is responsible for the new class of hybrid electric vehicles, and developmental fuel cell vehicles.

Ironically, and rarely if ever mentioned by the OEMs as they railed against the original ZEV sales requirement, was the fact that SUVs and other light trucks would not have been affected by the mandate anyway, as it applied only to passenger cars. The latest, and court-quashed set of revisions, closed that loophole effective 2007.

Electric Vehicles

Escape This Year

Fleets to Get New Ford Hybrid First: Late This Year & Consumers in 2004

Ford has released further plans for the hybrid electric version of its Escape SUV, denying reports that it is shelving the program.

On the contrary, the vehicle is to be available to select fleet customers late this year and to consumers, beginning in Los Angeles and Sacramento, in 2004.

The vehicle is to be built at Ford's Kansas City assembly plant.



"The Ford Escape Hybrid remains on track and on target to be the industry's no-compromise SUV hybrid when low-volume production begins late in 2003," the company says.

The vehicle's electrically boosted four cylinder engine will yield performance similar to a V-6, with a 55 to 60 percent improvement in fuel economy.

"With vehicles set to begin arriving in showrooms in the summer of 2004, the Ford Escape Hybrid will be both fuel efficient and practical, delivering between 35 and 40 miles per gallon in city driving.

"It also will be certified to California's partial zero emission vehicle (PZEV) standards," Ford says,

meaning it will likely be able to help meet EV sales requirements in the state. By 2005, Ford promises, the vehicle will be available in all states and provinces of the U.S. and Canada.

The vehicle will have a 2.3-liter engine tuned to the Atkinson cycle, said to be up to 10 percent more efficient than a conventional four-stroke Otto cycle engine. "With regenerative braking and nearly instantaneous start-stop capability, the Escape HEV will be especially fuel efficient in the city, delivering nearly 40 miles per gallon in urban driving," Ford says. Range will exceed 500 miles on a single tank of gasoline.

NiMH Batteries from Sanyo

The Escape SUV drive system includes a 65-kilowatt permanent magnetic electric motor and 28-kilowatt generator.

The vehicle's controller, Ford says, was developed through the automaker's participation in the Partnership for a New Generation of Vehicles program. Its regenerative braking system is the subject of no fewer than 51 patent disclosures.

The Escape HEV will have a 300-volt, 45-kilowatt nickel-metal hydride traction battery pack and controller, from Japan's Sanyo Electric. The air-cooled NiMH battery unit will be located in the rear of the vehicle as part of the cargo area load floor.

Ford, Tom Watson, 313-845-0071; fax 313-322-1315; twatson1@ford.com; www.hybridford.com

Off-Road EVs from Toyota

Battery Electric Forklifts and Airport GSE Vehicles Said to Perform Better with New AC Drivetrains

Toyota took the occasion of last month's ETIC 2002 national electric vehicles show in Florida to promote industrial EVs as well as its fuel cell and hybrid electric road vehicles, with standout new products including AC-powered airport tow tractors.

United Airlines has purchased 100 of the AC tractors, Toyota said at ETIC.

The AC tow tractors can reduce an operator's overall maintenance costs by as much as 75 percent, the automaker says, stating that "AC-powered tractors offer even more benefits to ground support equipment operations."

Travel speeds in AC electric tow tractors, for example, are said to be some 36 percent faster than tractors with DC systems. "Operators accustomed to DC-powered tractors with lag time, which occurs when shifting from forward to reverse, will find there is no lag time with the AC electric tow tractors," the manufacturer adds.

Toyota's AC system also recovers battery energy using three forms of regenerative braking: plug braking, coast control, and foot braking.

The Japanese automaker also reports that its Toyota Material Handling unit now offers the first electric pneumatic counterbalanced forklift, the 7FB, with AC power.

The 7FB offers a capacity range of 3,000 to 5,000 pounds, and has a new stability systems, dubbed SAS, said the first in the world to actively monitor and control the movements of a lift truck to help prevent tipping.

The new forklift also features three forms of regenerative braking.

Toyota Material Handling, Brett Wood, 949-223-7790; fax 949-223-8005;

brett.wood@tmhu.toyota-industries.com; www.global-toyotaforklifts.com



Toyota says it's sold 100 of its new AC-powered baggage tow tractors to United Airlines.



new Toyota lift trucks boast three types of regenerative braking

Electric Vehicles

2008 in China

EV Veteran Ray Geddes Is Poised to Sell Hybrid Buses for Olympics and Beyond

When the 2008 Olympics come to Beijing in 2008, visitors likely will be riding in electric and hybrid buses and taxis — and longtime industry leader Ray Geddes (he founded Unique Mobility, now UQM Technologies, for example) expects several of his General Energy Technologies, Inc. joint ventures to be major players in the electric-drive revolution there.

Geddes' company has a 35 percent stake in a venture that's making diesel hybrid buses using Capstone turbines. The company, Chargebroad Electric Vehicles (the translation from Chinese) moved into a new factory outside of Beijing this past November.



Ray Geddes at ETIC

Taxis Too, and Batteries

Production gets underway in this first quarter of 2003, Geddes says, and the company plans to produce 2,000 to 3,000 buses a year. That's only a fraction of China's annual new bus market of 45,000 — but Geddes pointed out at last month's ETIC 2002 meeting in Florida out that it's very close to the entire annual new bus market in the U.S.

Geddes also hopes to launch a venture to support Beijing's goal of replacing 50,000 polluting taxis before the Olympics. The bus and taxi initiatives are spurred by a government initiative to get electric and hybrid

vehicles into production, and fuel cells into demonstration, by 2005.

General Energy Technologies is also a minority partner, with ECD-Ovonics and Rare Earth High Tech, in a nickel-metal hydride battery venture in Inner Mongolia. The company will begin production in 2003 on small batteries for power tools, and move into prismatic batteries for hybrid vehicles in two to three years.

General Energy Technologies, president Ray Geddes, 720-932-6661; fax 303-730-7490; RayGeddes@usa.net

Zinc Air

Electric Fuel Remains Active in Transportation, Says Its System Is Only Zero-Emission Option

"Zinc-air is the only viable solution for zero-emission public transportation, for both the short run and the long run. Diesel hybrids do not offer zero emissions and hydrogen fuel poses significant hurdles that may not be solved in the foreseeable future." So states Robert Ehrlich, chairman and CEO of New York City- and Jerusalem-based Electric Fuel (**NASDAQ:EFCX**), in the wake of new reports and tests in support of his firm's electric-electric hybrid technology.

Electric Fuel has long promoted zinc-air batteries with a very high energy capacity but the drawback that they can not be recharged, their spent zinc plates are instead replaced.

Studies in Germany and by Tiax

The system has high efficiencies but has been stymied by the economics of scale necessary to make recycling of the spent plates cost-competitive. Electric Fuel is active in batteries for non-transportation applications, and has branched into such business as vehicle armor and security services. It continues to work the vehicles market too, however, and of late has described its system as a zinc-air fuel cell.

Electric Fuel reported last month that an \$11.8 million program in Germany, with zinc-air batteries powering a Sprinter passenger van, has been successfully concluded. The vehicle had a DaimlerChrysler traction system and Varta nickel-metal-hydride batteries and Epcos ultracapacitors in addition to its primary zinc-air battery array.

Electric Fuel also recently reported that a study by Tiax (formerly Arthur D. Little) has found five- to ten-year life cycle costs of zinc air systems to be better than those of hydrogen fuel cells. The Tiax study focused on a 40-foot NovaBus vehicle being tested in Las Vegas (*F&F*, August 20, 2001).

Electric Fuel, Mr. Yoel Gilon or VP Jonathan Whartman, +972-2-990-6671; fax +972-2-999-1013; eflyg@electric-fuel.com; www.electric-fuel.com

Zap at CES

Californian Promises New EV Line

Northern California's Zap promises to unveil an entire new line of electric vehicles at the Consumer Electronics Show in Las Vegas later this week. Zap says it's working



with a consortium of European firms, including Studio Linia 2 of Torino, Italy, to bring the full-featured vehicles to North America.

Zap plans to start with a neighborhood EV, to soon add a freeway-capable commuter, to move too to such light utility vehicles as pickup trucks, and even include an electric backhoe.

A new battery and/or battery management technology is to be unveiled at CES this week too.

Zap info, Alex Campbell, 707-824-4150, ext 241; alex@zapworld.com; www.zapworld.com

Hydrogen

Belgian Buy

Stuart Agrees to Acquire Vandenberg Hydrogen To Increase Its Advanced Electrolysis Capabilities

Stuart Energy (**Toronto:HHO**) has a deal to acquire Belgium's Vandenberg Hydrogen for approximately \$28 million (Canadian, or about \$17.9 million U.S.) in cash and shares.

Vandenberg is described as the industry's leader in the design, manufacture and sale of pressurized hydrogen generation systems based on advanced alkaline water electrolysis.

'Infrastructure Solutions'

The consolidated company, says Stuart, is expected to be "the undisputed world leader in the provision of onsite, electrolysis-based hydrogen infrastructure solutions for power generation, vehicle fueling and industrial markets."

"Both companies have developed strong brand recognition in the industry, and are delivering commercial products and revenues today," Stuart president Jon Slingerup says in a release.

"By integrating our teams, products, technical

expertise and partnerships, our combined company will be focused on delivering extraordinary shareholder value through increased revenues, reduced costs and accelerated profitability."

"We are very impressed with the cultural fit and complementary strengths between our two organizations," said Vandenberg chairman and CEO Hugo Vandenberg.

"The combined company will have unparalleled technical depth and expertise in water electrolysis technology and hydrogen infrastructure solutions."

Stuart info, Wanda Cutler, 905-282-7769;

wcutler@stuartenergy.com; www.stuartenergy.com

Fly Ash Storage

San Francisco's FST Promotes a New Process For Hydrogen Storage Media from Coal Waste

FST, Inc., which is promoting new solid storage technologies for hydrogen (*F&E*, November 18), has unveiled a new process for making storage compounds from fly ash, the waste or by-product of coal power plants.

"This allows a very inexpensive material to become environmentally positive and be re-tasked for next-generation energy needs," the company says (original emphasis).

The San Francisco company claims that its techniques for transforming hydrogen into an easily transportable (and even mailable) solid state "can support all known or projected hydrogen based systems as well as help convert existing systems to hydrogen."

FST, Scott Redmond, 415-248-9442; fax 415-276-4165;

scott@fuelselltechnologies.com; www.fstenergy.com



A Shakeout Looms

There Is Tremendous Opportunity in Fuel Cells And Would-Be Winners Face Crucial Decisions

Fuel cells are "amongst the most compelling of the emerging energy conversion technologies," says the UK consultancy EscoVale, but with upwards of 2,000 organizations vying for a piece of what may prove to be an overestimated pie... not all are going to make it.

"Forecasts from within the sector are often dangerously optimistic, creating a dilemma for planners, potential investors and others," EscoVale says. "This is compounded by the pace of development, [as] many winners and losers will be determined by decisions made over the next year or so."

A Sourcebook, Too

To help, EscoVale is offering *Fuel Cells: Applications and Opportunities* as an independent and impartial study, with global coverage of the emerging industry for managers, analysts and policy developers concerned with the energy, power plant, automotive and electronic equipment sectors.

The 350-page study is priced at **\$5,800.00**.

A companion *Fuel Cells: Technologies and Competitors* is in development. EscoVale also offers the reference work, *Fuel Cells: The Sourcebook*.

EscoVale, +44-1293-862086; fax +44-1293-863002; info@escovale.com; www.escovale.com

Natural Gas Vehicles

Cummins Westport

First Canadian Order for C Gas Plus Engines

The City of Hamilton, Ontario has placed the first order in Canada for the C Gas Plus natural gas engine, says Cummins Westport, Inc.

The order came from the Hamilton Street Railway Company, which is buying 20 New Flyer buses powered by the 280-horsepower engine. The 40-foot buses will be delivered by May 2003, Cummins Westport says, at which time 60 percent of Hamilton's fleet of 200 transit buses will operate on natural gas.

The engine firm says it's logged more 1,200 C Gas Plus orders for major U.S. transit fleets since June 2001.

Cummins Westport info, Moira Chicilo, 604-718-8371,

mchicilo@westport.com; www.westport.com

Hamilton Street Railway Company,

Roy Duncan, 905-540-5965, rduncan@hamilton.ca

Events

Tempe Next Month

WestStart Clean Heavy-Duty Vehicle Conference To Include Off-Road Vehicles and Issues of Idling
WestStart-Calstart is hosting the third annual Clean Heavy-Duty Vehicle Conference at the Tempe Mission Palms Hotel in Tempe, Ariz. **February 19-21.**

The meeting is to include discussions on off-road heavy duty vehicles and strategies for reducing emissions from idling trucks. It will also cover new and innovative technologies for heavy duty vehicles, a users panel discussion, and updates on clean diesel and alternative fuels and regulations.

Federal Transportation Administration administrator Jennifer Dorn is slated to speak on Thursday morning; and U.S. Army Brigadier General Roger Nadeau will discuss energy efficiency as a national security priority. Senator John McCain is an invited keynote speaker. *Creating the Road Map for Advanced Technologies and Fuels* is the theme.

Sponsors include the U.S. Army National Automotive Center and Department of Transportation. *WestStart-Calstart, Susan Romeo, 626-744-5686; fax 626/744-5610; sromeo@calstart.org; www.calstart.org*

Detroit This Month

U.S. Army Showcases Innovative Technologies
TACOM, the U.S. Army's Tank Automotive and Armaments Command is talking up its participation in the North American International Auto Show at Detroit's Cobo Center **January 5-21.**

TACOM, which is helping spearhead the military's push toward cleaner, stealthier vehicles through the use of advanced drivetrain technologies, is showcasing the wares of firms including Ballard Power Systems, Ball Aerospace, Delphi, Hydrogenics Corp, ECD-Ovonic and Quantum Technologies.

TACOM, *Harold Sanborn, 586-574-8936; fax 586-574-6996; sanborn@tacom.army.mil; www.tacom.army.mil or www.techmarketing.brtrc.com*

Biodiesel Brainstorm

January 29-30, Biodiesel Brainstorming Workshop at the Royal Sonesta Hotel on Bourbon Street in New Orleans. Technical conference to showcase the latest biodiesel industry R&D. Sponsors include the National Biodiesel Board, the U.S. Department of Energy, and the U.S. Department of Agriculture. *NBB (Jefferson City, Mo.), Jenna Higgins, 573-635-3893 or toll-free 800-841-5849; fax 573-635-7913; jhiggins@biodiesel.org; www.biodiesel.org*

2003's GSE Shows

Two Airport GSE Shows, in Europe and U.S., To Be Tied to Events Including Paris Air Show
Airport ground support equipment represents a major market for electric vehicles, including pure battery electrics, and this year's major GSE shows are both to be tied to larger aviation trade events including, this coming June, the venerated Paris Air Show.

This year's U.S. show, GSE International Expo, will be held **May 13-15** at the Las Vegas Convention Center in Las Vegas, Nev. It's co-located with AS3, the Aviation Services and Suppliers "Supershow."

More than 6,000 are expected to attend the two events, effectively doubling the size of the GSE part. The GSE exposition is expected to draw some 300 exhibitors. GSE International Expo in Las Vegas is organized by the Cygnus Business Media Aviation & Transportation Group. Abstracts for technical papers are being accepted until **January 13.**

There's Nothing Like Paris

In Paris the following month, GSE Exhibition 2003 is expected to take advantage of a major aerospace event, in fact the world's largest, that draws upwards of 120,000 people, including "30,000 airline company buyers, airport managers and other decision-makers from the GSE sector."



GSE Exhibition 2003 takes place **June 16-20** at Le Bourget, the storied airfield (Lindbergh landed there) northeast of Paris.

Paris GSE show partners include Air France and ADP – Aéroports de Paris.

Cygnus, Jill Hilgenberg, 952-894-8007 or U.S. toll-free 800-827-8009, ext 3349; fax 952.894.8252;

jill.hilgenberg@cygnusexpos.com; www.gseexpo.com

Paris Air Show/Hannover Fairs USA, Pat Zagnit, 609-987-9050; fax 609-987-0277; pzagnit@parisairshowusa.com; www.parisairshow.com

Fuel Cells In Canada

The Canadian Hydrogen Association, Fuel Cells Canada and the National Research Council of Canada are promoting Hydrogen and Fuel Cells 2003, a conference and trade show to be held **June 8-11** at the Westin Bayshore Resort & Marina in Vancouver.

Advance Group Conference Management (Vancouver), 604-688-9655 (toll-free North America) 800-555-1099; fax 604-685-3521; hfc2003@advance-group.com; www.hydrogenfuelcells2003.com



More Meetings Action!! Click here for instant access to a complete calendar on the *Fleets & Fuels* website.

Strategies

Feel Good Cars

Canadian's Plans for the 'Zenn' Battery EV Include Increased Production and a City Car
Canada's Feel Good Cars is challenging Daimler's Global Electric Motorcars in the neighborhood electric vehicle sector with an all-weather alternative to the popular GEM line, and plans too to branch into freeway-capable city cars.

"The Zenn is the most car-like vehicle in its class," Feel Good president Ian Clifford said at the ETIC 2002 national electric vehicles show in Florida last month. "It is fully enclosed and heated and air conditioned. It has all lights and signals, secure doors, power windows, disc brakes, automotive steering and suspension – even a stereo system and keyless entry. Other LSVs offer very few, if any, of these features.

'Dealers Are Thrilled'

"The Zenn is what neighborhood electric vehicles were always meant to be."

Feel Good brought three Zenn cars to Florida.

"The launch at ETIC," Clifford told *F&F*, was "a tremendous success."

"Dealers are thrilled," he says, "and a number of very interesting fleet opportunities are beginning to materialize. Amongst them, a large Air Force base is interested in replacing its GEM vehicles with Zenn because of the vehicle's all-weather capabilities."

The Zenn can also be outfitted with quick-charge capability and numerous battery options, Clifford says.

Zenn chassis are built by France's Microcar, and outfitted with electric drive hardware by Feel Good outside Montreal. Feel Good is planning to have an electric drive line in operation at the Microcar facility (located in Montaigu, south of Nantes) by spring.

The firm has opted for tried-and-true drivetrain hardware from General Electric, the same as is used in GEM vehicles and Ford Neighbor, Clifford says.

The Zenn, however, boasts an advanced, high effi-

ciency heater that was developed in Quebec using special phase-shift material. For that reason, completions of the vehicle will likely be done in Canada even if Microcar undertakes to install the electric drivetrain in France.

Microcar is an experienced manufacture of gasoline cars, which is why Feel Good can feel so confident about its basic platform. The Microcar facility is highly automated, Clifford says, and within six months could be



ramped up to capacity of 10,000 vehicles per year.

Feel Good's goal is to sell 1,000 cars this first year of commercial operation, and 5,000 in year three. Prices range from \$11,000 to \$13,000 (U.S.) for the Zenn NEV.

Feel Good also let it be known at ETIC that it's planning a freeway-capable city EV to supplement the existing line of Zenn NEVs. A test program is to get underway next month, Clifford says, with an eye to a formal product launch at the EVS-20 world meeting in Long Beach, Calif. in November. Body types are to include two- and four-passenger vehicles, a mini-pickup and a two-passenger cabriolet.

'Dedicating Our Careers'

Can Feel Good do what others, including Ford, have been unable to do, i.e. commercialize a battery electric vehicle? "We're very well funded," Clifford insists, "and don't foresee any problems in the short or medium terms."

"Unlike other LSV manufacturers that produce their vehicles as a mere sideline to their more traditional automotive businesses, we're dedicating our careers to the advancement of neighborhood electric vehicles," Clifford said at ETIC.

Zenn, by the way, stands for zero emission, no noise.

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Feel Good Cars at a glance

Headquarters: Toronto, Ontario

Employees: 22

Product: Fully furnished battery electric vehicles

Key Suppliers: Microcar (France), General Electric

Sales & Earnings: Not disclosed.

Feel Good Cars is privately owned and financed.