# Tech Center News...

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**Covers the Tech Center and the Immediate Area** 

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# GM's Employee 'Chair' Helps in Building Cars, Making Customers Comfy

time in their cars, so it only makes sense that comfort plays a big role in what makes a vehicle

But what about the workers who actually make the car? How does their comfort translate into better vehicles for drivers?

In the case of the Chevrolet Traverse, "Our goal was to get the operator (worker) in and out of the vehicle in the safest and most ergonomic fashion to allow them to do the high amount of overhead and rear work required," said Ergo Chair design team lead Dave Bentoski, a GM manufacturing systems engineer.

Traverse customers list its "family-friendly" third-row seat as one of their favorite features and it's a reason the midsize SUV was named by Kelley Blue Book as one of KBB.com's 12 Best Fam-Cars of 2014, said GM spokesperson Otie McKinlev.

The third row can comfortably accommodate three adult passengers with their own safety systems, infotainment, lights, climate control and even coat hooks, McKinley said.

But it required special equipment to make it possible for the worker to do the best job.

"Making it so required some unique manufacturing innovation - a new assembly technology to deliver workers, tools and parts

A lot of people spend a lot of to the rear of the vehicle to install wiring harnesses, air bag connectors and brackets, McKinley said.

'Working with a custom equipment supplier, manufacturing engineers developed the 'Ergo Chair,' a groundbreaking ergonomic device built to GM's specifications that carries a team member to each operation necessary for their vehicle assembly responsibilities in the rear of the vehicle.

Moving with the precision of a ballet dancer, Bentoski said, the chair sweeps the assembly worker into the vehicle on a high-tech pivoting seat driven by a robotic arm and controlled by their body motions. The worker is placed at just the right height for the job to be performed.

The Ergo Chair carries the correct parts and tools with the team member to each operation, Bentoski said, entering through the side door and extending down the length of the vehicle. Gone are the days of workers crawling through the vehicle or reaching in through window or liftgate openings to install critical components.

"To build a vehicle successfully, you need a great product and a great process, but at the heart of that process are the people, and the care they put into each and every vehicle," said Tony



GM Lansing Delta Township Assembly Plant team member Jim Clarke uses "Ergo Chair."

Francavilla, Lansing Regional plant manager.

"Having the Ergo Chair put our employee with the parts and tools at the optimal position for each operation improves both vehicle quality and worker health and safety."

ticed, McKinley said, by Traverse owners like Ande Noktes, a mother of three and an educator in Atlanta, who values the third row of seats and, alternatively, the 24.4 cubic feet of cargo room.

"I realized just how much I love

That attention to detail is no- the third row one day when I chaperoned a field trip at school one morning, transporting six students and a teacher, then, just hours later, quickly and easily flipped the seats down to pack in

**CONTINUED ON PAGE 3** 



Grabowski, left, accepts award from SMDI's Lawrence Cavanagh.

#### Silverado, Sierra Design Team Earn Award for Use of High-Strength Steel

been awarde the 2014 Automotive Excellence Award for its use of advanced high-strength steel.

The Steel Market Development Institute (SMDI), a business unit of the American Iron and Steel Institute (AISI) initiated the award.

The team, which successfully incorporated advanced steels to enhance safety and performance, and offer significant low-cost lightweighting benefits, was recognized last week during the 13th annual Great Designs in Steel (GDIS) seminar in Livonia.

Thomas Grabowski, GM design release engineer, accepted the award on behalf of the GM design team. During last year's seminar, Grabowski delivered the awardwinning presentation, titled. "Advanced High-Strength Steel Technologies in the 2014 Chevrolet Silverado.'

The 2014 Chevrolet Silverado and GMC Sierra 1500 feature ad-

GM's Chevy Silverado and vanced high-strength steel stamp-GMC Sierra 1500 design team has ings, which enable significant increases in safety performance, said SMDI spokesperson Deanna Lorincz.

According to Grabowski, the vehicles' designs also feature enhanced mass efficiency, reduced tooling investment and an average weight reduction of 110 pounds compared with their major com-

"The GM design team has done an outstanding job redesigning the Chevrolet Silverado and GMC Sierra 1500 models with consumer-focused improvements in safety, performance and fuel efficiency," said Ron Krupitzer, vice president, automotive market,

"Their use of advanced highstrength steel stampings contribute to the vehicles' mass efficiency, fuel economy and safety performance ratings, all essential

CONTINUED ON PAGE 5

# U-M Recommendation: Eliminate Gas Tax, Add Road Repair Fee Based on Mileage Use

Under a recent proposal, drivers would pay for road repairs on the basis of a vehicle mileage fee sys-

The system would replace the current gas tax system.

The University of Michigan's Sustainable Mobility & Accessibility Research & Transformation (SMART) department for the Michigan Environmental Council made the recommendation.

The report urged the state to adopt a vehicle mileage fee system because vehicles are getting better mileage and some don't even need gasoline, resuting in gas taxes being down while the amount of miles being driven stays the same or even increas-

The report's authors stated, in other words, they (mileage fees) are a simple market-based fee for service. Mileage fees can also include time, geography or congestion levels.

"Instead of continuing to raise fuel taxes to pay for transportation infrastructure, a mileage fee could more fairly allocate costs based on the number of miles driven, the time of day, the route taken, and the weight of the vehi-

The report went on to state that a mileage fee has a number of other advantages. It can:

- Improve transportation efficiency and access;
- Reconcile transportation funding shortages:
- Increase public and institutional cost effectiveness and accountability;
- Address institutional waste: • Support environmental sus-

The report stated that Michi- wide movement toward a hub of transportation technology and ingenuity, and the state now has the opportunity to play a leading role in a growing nation-

gan is recognized worldwide as a mileage fee and other innovative market-based financing mechanisms.

**CONTINUED ON PAGE 5** 

### GM's New Workplace Charge Stations Raise Awareness for Plug-in EVs

Based on growing employee demand, General Motors has installed 401 electric vehicle charging stations at its U.S. production and business facilities, said GM spokesperson Kevin Kelly.

More than 20 percent of the stations use electricity generated from solar canopies to help charge employee vehicles.

The majority of the stations are located at GM's large engineering and corporate facilities in Michigan, where employee EV ownership is growing steadily, Kelly said. All charge stations are available free of charge to GM employees and visitors.

"GM's commitment to installing a workplace charging infrastructure is among the most

Owning an EV is getting a little expansive of any corporation in the U.S.," said Britta Gross, director of GM advanced vehicle commercialization policy.

the most important things a com-

"Workplace charging is one of

pany can do to raise plug-in electric vehicle awareness and energize employees. "Once employees see how easy it is to plug in at home and work, and they realize the fuel savings, plug-in electric vehicles

themselves.' In addition to the workplace charging, GM has another 400 charge spots dedicated exclusively to vehicle development and testing.

like the Chevy Volt begin to sell

Chevrolet and Cadillac dealers

**CONTINUED ON PAGE 8** 



One of GM's 401 charging stations at its U.S. sites.

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#### **Auto Industry Is** On Track to Set Recall Record

By TOM KRISHER AP Auto Writer

DETROIT (AP) - General Motors' efforts to root out lingering safety problems across its wide range of cars and trucks has produced another big recall - and highlights a sudden shift at GM and throughout the industry toward issuing recalls instead of avoiding them.

The nation's largest automaker announced a total of five recalls covering 2.7 million vehicles on May 15. The biggest involves 2.4 million midsize cars from model years 2004 to 2012 with brake lights that can fail.

In announcing the recall, GM said the brake light problem has been tied to 13 accidents and 2 injuries.

GM launched a top-to-bottom safety review after recalling 2.6 million small cars earlier this year for faulty ignition switches. GM knew about that problem for at least a decade.

The recalls could also add to scrutiny of federal safety regulators, who were criticized for their handling of the ignition switch problem.

Documents filed with the National Highway Traffic Safety Administration show that neither the company nor the government sought a recall to fix the brake light issue despite 1,300 consumer complaints and more than 14,000 warranty claims as of February of last year.

The agency said in a statement last week that an investigation it opened into the problem last year influenced GM's decision to recall the cars.

Jeff Boyer, GM's newly appointed safety chief, said GM now will recall cars as soon as it sees a safety problem.

'We're not waiting for warranty trends to develop over time," he said. "It's not only about frequency, it has to be about seriousness of the potential defect as well.'

GM has now recalled more than 11 million cars and trucks in the U.S. so far this year, close to its annual recall record of 11.8 million set in 2004.

The auto industry also is on track to set a single-year record for U.S. recalls.

Companies have recalled 15.4 million vehicles in a little more than four months, according to government records.

The old single-year record for recalls is 30.8 million vehicles in 2004. Toyota, Ford, and Chrysler also have announced sizeable recalls this year.

Industrywide, automakers are moving faster to fix problems than they have in the past in a bid to avoid bad publicity and record fines from government agencies.

'All manufacturers are recalibrating their recall programs to go from 'if in doubt, don't recall' to 'if in doubt, recall,'" said Clarence Ditlow, executive director of the nonprofit Center for Auto Safety.

# **GM Recalls Another 2.42 Million Vehicles in Four Actions**

In a continuing effort to quickly address emerging safety issues, GM spokesperson Alan Adler, General Motors announced May 20 it is recalling about 2.42 million vehicles in four separate U.S. recalls.

The recalls are for:

- 1,339,355 Buick Enclave, Chevrolet Traverse, GMC Acadia medium crossovers from the 2009-14 model years and Saturn Outlooks from 2009-10 because front safety lap belt cables can fatigue and separate over time;
- 1,074,932 of the previous-generation 4-speed automatic transmission Chevrolet Malibus from the 2004-2008 model years and Pontiac G6 from the 2005-08 model years because of a shift cable that could wear out over time, resulting in mismatches of the gear position indicated by the shift lever;
- 1,402 Cadillac Escalades and Escalade ESVs from the 2015 model year because an insufficiently heated plastic weld that attaches the passenger side air bag to the instrument panel assembly could result in a partial deployment of the air bag in the event of a crash;

• 58 Chevrolet Silverado HD and GMC Sierra HD full-size pickups from the 2015 model year because retention clips attaching the generator fuse block to the vehicle body can become loose and lead to a potential fire.

There have been no fatalities associated with these recalls, said Adler. GM has added 35 product investigators since the beginning of 2014, and, including those announced last week, has initiated 29 safety and non-compliance recalls in the U.S. so far this year. Two of the recalls involve fewer than 100 vehicles.

In the full-size crossover recall, Adler said, GM has told dealers they cannot sell new or used models of the vehicles until repairs are made.

The previous-generation Malibu, Malibu Maxx and Pontiac G6 were added to an April 29 recall for certain four-speed transmission Aura models from the 2007-08 model year, Adler said.

The Malibu and G6 vehicles equipped with a 4-speed automatic transmission have a condition in which the transmission shift cable may fracture. When the fracture occurs, the driver may

not be able to select a different gear, remove the key from the ignition or place the transmission in park.

GM is aware of 18 crashes and one injury among the four-speed Malibu and G6 population. Dealers will replace the shift cable

and attachment bracket at no charge to the customer.

GM stopped sale of the 2015 Escalade and Escalade ESV and sent overnight letters, called and emailed the 224 customers who had taken delivery of the vehi-



#### Chrysler Issues Recalls on Fiat 500e, Grand Caravan and Town & Country

Chrysler has issued two re- avan and Chrysler Town & Councalls – one to replace the power inverter module (PIM) and the second to replace window switches

The PIM is being recalled in an estimated 4,141 electric cars to prevent coolant seepage that may cause power loss while driving.

A PIM alters electric current to accommodate battery-powered propulsion, said company spokesman Eric Mayne.

A routine warranty data review prompted an investigation, during which Chrysler Group engineers discovered a PIM defect that may, over time, seep coolant onto electrical components, causing a short-circuit leading to power loss.

Chrysler is aware of five such incidents, Mayne said, adding that the company is unaware of any related injuries or accidents.

Chrysler is replacing the PIMs in model-year 2013-14 Fiat 500e vehicles assembled between Sept. 24, 2012, and April 4, 2014, Mayne said.

Affected customers, all of whom are in the U.S., will be contacted directly and advised when they may schedule service, he

Chrysler is also replacing window switches in an estimated 780,000 minivans equipped with third-row power window vents following incidents of overheating, Mayne said.

Chrysler is unaware of any related injuries or accidents, he added, saving that affected customers will be contacted directly and advised when the best time would be for them to schedule

In the interim, customers may visit their dealers to have the switches disconnected, Mayne said, eliminating any risks associated with the issue and affects only third-row window-vent operation

The switch is located on the driver's door.

Alerted by warranty data, Chrysler engineers launched an investigation and found a link between short circuits and beverage spills on the vent switch, as well as direct exposure to moisture from rain, snow or car washes, Mayne said.

Short circuits may cause overheating. However, known incidents total 36 - less than 0.005 percent of the vehicles subject to this campaign.

Affected are certain modelyear 2010-2014 Dodge Grand Cartry minivans, assembled between Aug. 25, 2010, and Oct. 31, 2013, Mayne said.

An estimated 644.850 of the recalled vehicles are in the U.S.; 106,980 in Canada; 8,009 in Mexico and the rest of the vehicles -20,638 in number – are outside the NAFTA region.

Associated costs for both repairs will be borne by the company, Mayne said.

Customers who are concerned may call 1-800-853-1403.

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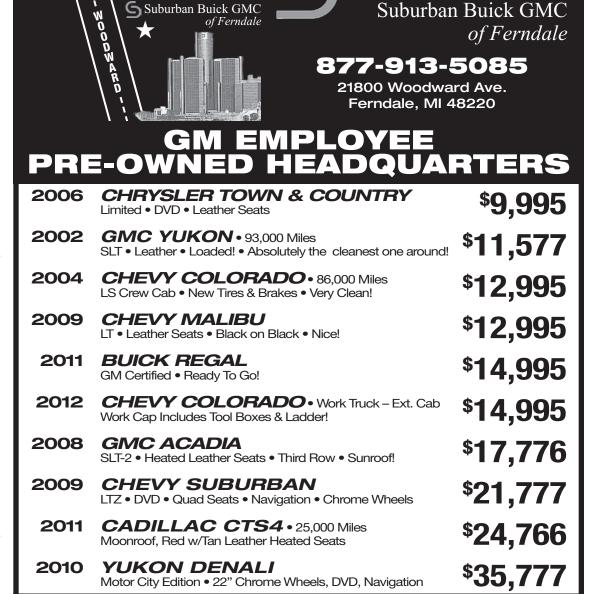
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The 2015 Cadillac ATS Coupe has refined lines for better performance.

# Aerodynamics Were Driving Force Behind New ATS Coupe

Sometimes the more things change, the more things change.

For the 2015 ATS Coupe, Cadillac engineers and designers made a number of changes from the award-winning ATS Sedan to "deliver the performance and styling traits luxury coupe buyers expect," said Cadillac spokesperson Brian Corbett.

To create a more personal expression of the brand's compact luxury car, the 2015 ATS Coupe rides on the same 109.3-inch wheelbase as the sedan, Corbett said, but features its own bodywork, longer vehicle length, lower height and wider front/rear tracks.

The roof, doors, rear fenders and trunk lid are unique to the coupe, along with a specific front fascia and front fenders to accommodate the wider track. And, 18-inch wheels are standard on the Coupe.

"All of the surface development unique to the ATS Coupe was done with aerodynamics in mind," said David Masch, ATS chief engineer.

"We are able to achieve lift and downforce requirements to ensure, at top speed, we retain handling without having to add a rear spoiler."

The coupe has an "aggressive stance," he said. At 60.3 inches front and 61.7 inches rear, the two-door has a 0.8-inch wider track. Overall vehicle height is 1.1 inches lower than the sedan. The wider stance and lower roofline provide the proportions coupe customers want.

"The wider track also helps improve steering precision and direct response," said Cadillac Executive Chief Engineer David Leone. "The lower roof contributes to a lower center of gravity height, which also reduces roll and improves steering response."

The 2015 ATS Coupe is also 0.8 inches longer than the sedan; although it rides on an identical wheelbase, Masch said. The extra overall length helps to further enhance the ATS Coupe's dynamic appearance, resulting in a swept-back look to the front and rear end appearances, he said.

The Cadillac ATS Coupe is intended to be a more personal ad-



dition to the award-winning ATS product line, Corbett said. Designed to be lighter, more agile and more engaging than its competitors, he added, it extends Cadillac's product-driven growth and the brand's tradition of dynamic luxury Coupes.

The 2015 ATS Coupe goes on sale this summer, Corbett said. Drivers will have the choice of rear-wheel drive or all-wheel drive, and a 2.0L turbocharged four-cylinder or a 3.6L six-cylinder.

The Coupe will start at \$38,990, including a \$995 destination charge.

# Employee 'Chair' Helps GM Build Comfort in Cars

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10 suitcases and five people for a drive to the airport," Notkes said.

"On my way home, I picked up 40 bags of mulch for a garden project, and then flipped the seats back up minutes later to pick up the kids and a couple of friends from school. The third row is an indispensable part of my life."

GM, McKinley said, is believed to be the first automaker to use ergonomic robotic chairs to help its workers safely and reliably assemble today's increasingly complex vehicle interiors.

GM installed three Ergo Chairs at Lansing Delta Township and added some to the Spring Hill Assembly line in Tennessee. It's being evaluated for applications in other manufacturing and assembly environments.



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# Kids Now Can Pedal Around, Thanks to GM's Warren Transmission Employees

More than 200 children waiting to be adopted in Wayne County have never had the opportunity to experience the joy of owning new bicycles.

That changed, said Judson Center spokesperson Peggy Kerr, thanks to the generosity of GM Warren Transmission Operations and UAW Local 909 employees who have raised money that went to the purchase of new bicycles for the children, who received the bikes May 17.

"We would like to thank the men and women of Warren Transmission Operations for once again donating their time, effort and money to support such a worthwhile organization in our local community," said Mike Dulaney, plant manager, Warren Transmission Operations.

"In addition to the foster kids program, the Judson Center provides services for autism and vocational skills training.

"We are so excited and proud to know the bikes we donate will bring smiles and happiness to so many children in our community.

"Today, a bike – tomorrow, they may become customers of GM's great cars and trucks."

In addition, Channel 955/WKQI and Time Team Detroit, a volunteer program created by morning radio program, "Mojo in the Morning," donated new bike helmets that were delivered to Judson Center's Royal Oak campus.

"We're so looking forward to our first event with The Judson Center," said Shannon Murphy, co-host of the "Mojo in the Morning Show" on Channel 955.

"Mojo, Spike and myself, along with our amazing Time Team Detroit volunteers, are constantly looking for opportunities in and around the city to impact by volunteering our time.

"We are thrilled to be able to be on hand that day to donate bike helmets and beautify the grounds of Judson Center with the help of Chad's Landscaping in Waterford.

"We are wowed by The Judson Center and how it helps foster children and the families who love them, and we're beyond proud to be a part of that."



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### Ford Invests \$1.1 Billion for Transit Van

Supported by 2,000 new employees and a \$1.1 billion investment, the new Ford Transit van recently rolled off the line at the Kansas City Assembly plant, as Ford aims to strengthen its leadership in the commercial vehicle segment.

On sale this summer, Ford's next-generation full-size van family will provide tradespeople and businesses with increased capability and innovative new configurations in the growing commercial vehicle market, said spokesman Mike Levine.

"It's another example of the Dearborn automaker's One Ford strategy to serve customers with world-class vehicles leveraging global assets, including common platforms," Levine said.

The facility expansion brings

new jobs to the greater Kansas City area.

"Producing our Built Ford Tough Transit lineup in Kansas City is a big deal for the local community," said Joe Hinrichs, Ford president of The Americas.

"Our investment in Kansas City Assembly Plant for Transit production is about delivering worldclass commercial vans for a new generation of commercial customers - while building on our decades of leadership in the market and supporting new jobs throughout the region and across America.'

The 2,000 new Ford employees at Kansas City Assembly Plant puts the company more than 75 percent toward its goal of creating 12,000 hourly jobs in the United States by 2015, Hinrichs said. In 2014 alone, Ford will hire nearly 5,000 new hourly and salaried employees in the U.S. to support overall growth.

As the first vehicle rolled off the line, Missouri Gov. Jay Nixon said, 'Today represents much more than a next-generation vehicle rolling off an American assembly line for the first time. It represents another huge milestone for Missouri as we continue to lead the rebirth of the American auto industry.

"With the all-new Transit, Ford's historic investment in Missouri has brought another outstanding vehicle to consumers and thousands of good manufacturing jobs to our state. Today, the 'Made in Missouri' brand is back and stronger than ever."

Transit is born from nearly a century of experience, Hinrichs said, delivering two distinct fullsize vans to customers in America, Europe and other global mar-

In the U.S., Transit eventually will replace America's best-selling van for 35 years, the E-Series van.

E-Series vans and wagons still



Jarvis Ford, left, and Joe Creason work together on a Transit body.

will be available and sold side-byside with Transit into the 2014 calendar year, providing a seamless transition for Ford customers. Additionally, the E-Series cutaway and stripped chassis will continue to be built and sold through most of the rest of the decade.

Transit was introduced in Europe in 1965 and has been the best-selling commercial van in the UK for 49 years. Transit is currently sold in 118 markets on six continents, Levine said.

Transit will be available in three body lengths, two wheelbases on van and wagon and three roof

heights; in van, wagon, chassis cab and cutaway body styles; and in XL and XLT trim levels, offering more choices than ever from a Ford commercial van vehicle, Levine said.

In addition to Transit, Kansas City Assembly Plant produces Regular, Super and Crew Cab versions of Ford F-150. The plant employs 4,878 hourly workers on three crews. The third crew was added in 2013.

Ford has retooled and expanded the facility for Transit production and to support surging customer demand for the F-150.

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# Chrysler's Trenton Engine Earns WCM Bronze Award

Chrvsler's Trenton Engine ners, Chrysler Group is demon-Complex has been awarded Bronze status for its results in implementing World Class Manufacturing (WCM).

Trenton becomes the fifth North American facility to achieve the first WCM award milestone, said Chrysler spokesperson Jodi Tin-

The plant received the Bronze designation four years after adopting the operating system.

Chrysler awards the Bronze status after a facility earns at least 50 points in 10 technical and 10 managerial pillars. Points are awarded by demonstrating clear WCM know-how and competence through employee-conducted pillar presentations and a review of projects that have been expanded across the shop floor.

Trenton earned a score of 52.

"We are very proud of the dedication our Trenton employees have shown in accelerating the rate of improvement in their plant in order to achieve Bronze," said Mauro Pino, vice president and head of Chrysler's Manufacturing/WCM.

"Together with our UAW part-

strating its commitment to making our manufacturing facilities among the best in the world."

Tinson said Chrysler does WCM audits at least once a year at its facilities around the world.

"These audits are to determine how these facilities are adhering to the WCM standards," Tinson said. "All the facilities know what the WCM standards are and some of them have different rates of implementation.'

World Class Manufacturing is a methodology that focuses on reducing waste, increasing productivity, and improving quality and safety in a systematic and organized way, Tinson said.

WCM engages the workforce to provide and implement suggestions on how to improve their jobs and their plants.

WCM was first implemented by Fiat in 2006 and introduced to Chrysler Group as part of the alliance between the two companies in June 2009. Since that time, the automaker has saved more than \$1 billion in controlable manufacturing costs as a result of the implementation of WCM. Tinson said.

During an audit, zero to five points are awarded for each of the 10 technical pillars, which include safety, workplace organization, logistics and the environment. Tinson said, and for each of the 10 managerial pillars such as management commitment, clarity of objectives, allocation of people, motivation of operators and commitment of the organization. A score of 100 would indicate World Class.

Getting this hypothetical perfect score isn't easy, Tinson said.

"WCM requires that you follow, for every pillar, seven extremely well-detailed steps," Tinson said.

"Throughout the process of these steps, we recognize an evolution in how we approach problems. Initially, it's reactive. After an event has taken place, countermeasures are taken.'

Then, Tinson said, the next step is preventive. That's learning from the past, and implementing countermeasures to avoid a repeat. Finally, the last step is active. Countermeasures are taken on theoretical risk analysis. That's basically doing something to avoid a potential future problem that might not have yet come up.

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# **U-M Report: Eliminate Gas** Tax, Add Road Repair Fee

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Such a system, the report continued, could improve economic stability of state transportation systems, facilitate fairer and more responsive fee structures, reduce the need for tax increases, and promote more efficient travel behavior.

Michigan's transportation system mirrors a widespread phenomenon of under-invested systems at the state and federal levels, the report stated. Rising fuel economy reduces fuel consumption and, accordingly, per-gallon taxes collected.

The authors of the report stated that combined with resistance to tax increases, the effectiveness of the fuel excise tax as a transportation funding mechanism has declined.

According to the report, the Michigan Department of Transportation (MDOT) estimated that in 2010 an additional 12.1 billion dollars was needed to establish a transportation system that could support a competitive economy and improved quality of life. Since then, that dollar figure has only increased.

The report's authors wrote, "A mileage fee can encourage a greater balance between personal automobile travel and other modes of transportation. When users better understand their cost impacts on their own wallet, they become better equipped to understand the benefits and savings associated with other modes of transportation such as public transit, walking, biking, carpooling or telecommuting.

"Michigan, which widely lacks reliable and convenient public transit options, would benefit from allocating some of the increased revenue to improving the quality, accessibility and reliability of alternative travel options.

The authors acknowledged that all successful congestion pricing policies have been linked to a robust transit component. Drivers are much more likely to switch modes if significant improvements to alternative modes have been made.

"For example, when Singapore introduced a congestion pricing system, it also invested in bus and rail transport and saw a 27 percent increase in public transit use over the 30-year period. Understanding and reacting to the cost of one's driving could influence travel time, route, and frequency - but not mode if there is no reliable and efficient alterna-

Having said all of this, the authors freely acknowledged that there would be problems with instituting a new road taxation sys-

For example, it would require the addition of technology to vehicles that could track mileage. Adopting such a system would create challenges, which include privacy.

How would the state develop a system that could track mileage without infringing on the right to privacy. People might object to a tax system that could not only count the miles a vehicle traveled, but where the vehicle went as well.

"Public outreach and education efforts will be important to address these concerns," the report stated. "Privacy concerns will vary based on technology options and policy design. There are many opportunities to mitigate privacy concerns. They include providing multiple data and fee collection options and engineering privacy protections into the system."

Then there are administrative costs. The authors freely admitted that implementing an entirely

new system will require significant investment, especially at its inception.

Enforcement of such a tax is also a concern. The report stated that a simple solution would be to tie vehicle registration to mileage fee bill payments.

"For example, an individual would be unable to renew his or her vehicle registration with the state if their mileage fee bill is not current. Further research and pilot projects would likely reveal other opportunities and challenges to program enforcement."

There are two options, the report stated, for gas pump reporting and collection. One option requires vehicles to be equipped with an automatic vehicle identification (AVI) device that transmits vehicle fuel economy rating to the fuel pump.

The fuel economy rating is then multiplied by gallons purchased to estimate mileage, and the resulting fee is added to the price of the gas.

A second option uses an onboard computer (OBC) to collect mileage data. Whenever the driver pumps gas, a shortwave radio would transmit mileage data to the fuel pump service system where both the cost of gas and the mileage fee were included distinctly in one bill.

Systems could be set up that would use smartphone applications for vehicle GPS and telematics technology.

The paper's authors wrote that the study was designed to provide a foundational understanding of how a mileage fee might work in Michigan as well as start a conversation at the state level about the opportunity to provide a long-term, efficient, fair, and sustainable funding mechanism for Michigan's transportation system, and to move away from a less and less sustainable fuel excise tax system.

"The longer any state waits to reform its transportation funding system, the more expensive the fix will be," the authors wrote. "As a leader in transportation technology and innovation, Michigan has an opportunity to lead the nation in transforming the currently outdated transportation funding mechanisms to one that is more fair, sustainable, and self-sufficient.

#### High-Strength Steel Earns GM SMDI Award

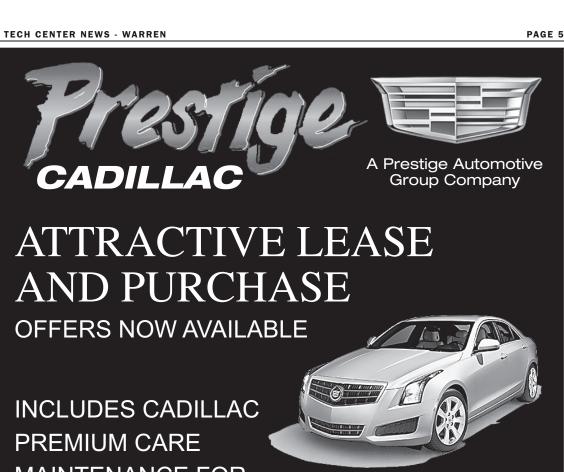
**CONTINUED FROM PAGE 1** 

criteria for consumers in today's market."

The SMDI Automotive Excellence Award recognizes individuals or teams from automakers, suppliers or the academic community who embrace innovation and make significant contributions to the advancement of steel in the automotive marketplace.

Award winners are chosen from presenters at the previous year's GDIS seminar. Candidates are rated in several categories, including: implementation in production; overall contribution to the advancement of steel; challenges and benefits associated with cost, mass reduction and performance; replacement of competitive materials; and structural performance and efficiency.

GDIS debuted in 2002 and has grown in attendance and scope. In 2013, more than 1,300 North American vehicle manufacturers, Tier I suppliers, equipment suppliers, university representatives, steel company personnel and technical reporters attended the seminar.



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36 monthly payments total \$10,764. Option to purchase at lease end for an amount to be determined at lease signing. GM Financial must approve lease. Take delivery by 6/2/14. Mileage charge of \$.25/mile over 30,000 miles. Lessee pays for excess wear and tear charges. Payments may be higher in some states. Not available with some other offers. Residency restrictions apply. 3. Must show proof of current lease of a 2004 or newer Cadillac vehicle and lease eligible new 2014 Cadillac. Payments are for a 2014 XTS Standard Collection with an MSRP of \$45,525. 36 monthly payments total \$13,284. Payments are for a 2014 Escalade AWD with an MSRP of \$67,290. 36 monthly payments total \$24,084. Option to purchase at lease end for an amount to be determined at lease signing plus \$350. Lessor must approve lease. Take delivery by 6/2/14. Mileage charge of \$.25/mile over 30,000 miles. Lessee pays for excess wear and tear charges. Payment may be higher in some states. Not available with some other offers. Residency restrictions apply.



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**GM's New Lightweight EV Battery System** To be Built at Brownstown Assembly Plant

General Motors will bring all its electric vehicle battery building capabilities in-house with production of battery systems for the 2015 Chevrolet Spark EV at its battery assembly plant in Brownstown.

"Using our in-house engineering and manufacturing expertise enabled us to deliver a battery system that is more efficient and lighter than the current Spark EV system without sacrificing range," said Larry Nitz, executive director of GM Global Transmission and Electrification Engineering.

"Our successful working relationship with LG Chem has allowed us to deliver a new battery system for the Spark EV that helps us to better leverage our economies of scale."

The newly designed battery system features an overall storage capacity of 19 kWh and uses 192 lithium ion cells, Nitz said. The cells are produced at LG Chem's plant in Holland, Mich. The battery system weight of 474 pounds is 86 pounds lighter than the system in the 2014 Spark EV.

The Spark EV battery is built on a dedicated production line at Brownstown, which also manufactures complete battery packs for the Chevrolet Volt, Opel Ampera and Cadillac ELR.

Changes in battery design will not affect the Spark's MPGe – or gasoline equivalent - performance compared with the 2014 model, Nitz said. Range will remain at an EPA-rated 82 miles and MPGe will remain at 119.

Priced at \$19,995 with full federal incentives, the Spark EV is one of the most efficient - and affordable - all-electric vehicles available, said GM spokesperson David Darovitz.

Currently on sale in California



Brownstown's Tina Oaks puts wiring harnesses on a Spark EV battery.

and Oregon, the 2015 Spark EV features segment-leading technology, including Siri Eyes Free, 4G LTE and DC Fast Charging.

Brownstown Battery Assembly's 479.000-square-foot, landfillfree facility south of Detroit produces the lithium-ion battery packs for GM's extended-range electric vehicles.

The facility started mass pro-

duction in October 2010 and is the first high-volume manufacturing site in the U.S. operated by a major automaker for automotive lithium-ion battery production. Darovitz said.

The site was made possible, Darovitz said, with the help of American Recovery and Reinvestment Act funding through the U.S. Department of Energy.

#### **Brembo Brakes Expands in Michigan**

HOMER, Mich. (AP) – The highend auto parts manufacturer Brembo S.p.A is marking the grand opening of expanded North American operations at its plant in southern Michigan.

Brembo's \$115 million investment enlarged the factory in Homer where brakes, discs, calipers and corner modules are produced.

During a ceremony May 21, the company based in Stezzano, Italy, said North America will become its top market this year. Chairman Alberto Bombassei says the expanded and upgraded plant will let Brembo boost its U.S. presence and offer better service to clients. Brembo began making disc brakes in the U.S. in



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One of GM's fleet of hydrogen-powered Chevy Equinox Fuel Cell vehicles

## 5,000 Drivers Pass 3 Million Miles in Fuel Cell Vehicles

General Motors' fleet of fuel ditions, proving that fuel cells cell vehicles recently passed 3 million miles of hydrogen-powered, real-world driving.

Some individual vehicles have accumulated more than 120,000 miles, said GM spokesperson Dan Flores. By GM's estimate, using hydrogen to power these vehicles, the fleet has avoided 157,894 gallons of gasoline consumption.

This specially equipped fleet of Chevrolet Equinox Fuel Cell vehicles are part of GM's 119-vehicle Project Driveway program, which launched in 2007, Flores said. Since then, more than 5,000 drivers have provided feedback on the functionality and drivability of fuel cell technology.

"Hydrogen fuel cell technology is an important part of GM's advanced propulsion portfolio and we continue to make substantial progress in furthering this technology," said Charlie Freese, executive director of GM's global fuel cell engineering activities.

These vehicles have operated through seven full winters and a wide range of environmental con-

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can meet the demands of realworld drivers.'

Last year, GM announced two fuel cell-related collaborations. In July, 2013, GM and Honda announced a long-term collaboration to co-develop next-generation fuel cell and hydrogen storage systems, aiming for potential commercialization in the 2020 time frame, Flores said.

In addition, GM and Honda are working together with stakeholders to further advance refueling infrastructure, which is critical for the long-term viability and consumer acceptance of fuel cell vehicles.

Also last year, GM opened a new state-of-the-art Fuel Cell Development Laboratory at GM Powertrain World Headquarters in Pontiac, Flores said.

In September 2013, GM and the U.S. Army Tank Automotive Research, Development Engineering Center (TARDEC) jointly announced an expansion of their relationship for testing automotive fuel cell technolo-



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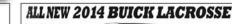


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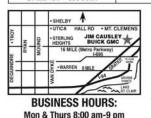












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# **Corvette Fest Expects 170 Cars for Show**

The 10th Annual "Corvette sponsored by the GMC Corvette Set car club, will be held at Olde World Canterbury Village, Lake Orion, on Saturday, June 14.

The show is open to Corvettes of all years, stock, modified or custom, said festival public relations chairman Roger Nelson.

The Corvette Fest is also one of the qualifying shows for the Motor City Corvette Concours (MCCC) show to be held on Sept.

"Outstanding Corvettes from our show, and seven other participating area Corvette club shows, will be nominated for selection to the 'invitation only' Concours Class, at the MCCC. We are expecting up to 120 Corvettes to be entered and judged at the Corvette Fest," Nel-

#### Charging Stations Raise Awareness For Plug-in EVs

CONTINUED FROM PAGE 1

have installed approximately 5,900 charge stations at their locations for owner use - 17 of these dealerships use solar charging canopies.

Workplace charging is now part of GM's corporate sustainability plan and our employees want to be part of this positive change," Gross said. "The key for any company is to take the first step and make it simple for employees to engage, in our case, outlets and free charging."

GM's charging count follows the Department of Energy's announcement that 75 businesses have committed to participate in its Workplace Charging Challenge to install charging stations for their employees, Kelly said.

Reuben Sarkar, deputy assistant secretary for transportation, U.S. Department of Energy, praised GM for its efforts.

#### **Charity Golf Event** Set for June 13

The 21st annual Myasthenia Gravis Association Golf Classic is set for Friday, June 13, at the Cherry Creek Golf Club in Shelby Township.

The event raises money for the Myasthenia Gravis Association (MGA), a nonprofit organization dedicated to serving the needs of people with MG, a neuromuscular disease, said MGA spokesperson Mark Hosking.

The group assists patients and their families in coping with this disease through education, diagnosis, treatment and support.

Myasthenia Gravis affects all races, genders and at any age, Hosking said.

Most cases of MG are diagnosed in young women, usually under the age of 30, and older men, usually over the age of 55. MG is not contagious.

The major symptoms of Myasthenia Gravis, said Hosking, are blurred and/or double vision, involuntary drooping of the eyelids, slurred speech, weakness in facial muscles, difficulty in chewing and swallowing and sometimes breathing, difficulty in walking and talking, and unusual tiredness in the arms and legs.

'Gravis is not a well-known condition," Hosking said, "but there are 36,000 Americans that have this disease right now."

Tickets for the event are \$125 per golfer, which buys 18 holes of golf, lunch at the turn and dinner. A foursome may get the same deal for \$500 (\$450 if registered by June 6).

For more information on the event, contact the Myasthenia Gravis Association at 248-591-

An additional 50 or more club member cars will be on display, although not in competition with show entrants, Nelson said. Vehicle registration begins at 8 a.m. with an awards ceremony at 3

Trophies will be awarded for first place and "Outstanding" qualifications in 15 classes. General admission to Canterbury Village is free.

Participant registration is \$25 a car in advance or \$30 a car the day of the show. Participants pre-register online www.gmccorvetteset.com.

A silent auction will be featured with a wide selection of items for everyone.

Profits from the show and the silent auction will benefit Leader Dogs for the Blind, Leader Dogs has been the designated charity of the club for many years, with more than \$142,000 donated to Leader Dogs over that time.

This year, the show again will feature live music for a free concert 11 a.m. to 2 p.m.

"The GMC Corvette Set has actively sponsored car shows for more than 20 years," Nelson said. "Our motto is, 'We joined because of the car. We stay because of the people."

Membership in the club is open to all persons with an interest in Corvettes and monthly member meetings are held the first Tuesday of each month at the Leader Dogs for the Blind facility in Rochester. More information on this show and the club can be found at www.gmccorvetteset.com.

For directions and information on Olde World Canterbury Village, visit www.canterburyvillage.com.

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