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## SCR BATTLE MOSTLY UPHILL FOR NAVISTAR'S EGR ENGINE

(CMI, ETR:DAI, NAV, PCAR, TYO:7203/TM)

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### BACKGROUND/DESCRIPTION

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- ▶ The Environmental Protection Agency released new [diesel emission requirements](#) for 2010. Navistar International Corp. (NAV), which manufactured [exhaust gas recirculation](#) (EGR) engines in 2007, now produces the [MaxxForce Advanced EGR](#) engine in response to these latest EPA requirements. Navistar's competitors make [selective catalytic reduction](#) (SCR) engines, which use [urea](#) as the reductant to enable engines to run more efficiently at higher temperatures and generate a relatively lower amount of particulate matter. Navistar counters that SCR engines produce more [nitrogen oxide](#) (NOx), which is difficult to eliminate once formed. In our April report, which was done prior to Navistar's release of the MaxxForce Advanced EGR, found obstacles for EGR because of SCR's fuel economy and past EGR reputation issues. Also worth noting is Navistar's partnership with Cummins Inc. (CMI) ended when Cummins decided to use SCR engines in its 2010 models.

### RESEARCH QUESTION

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- ▶ Is the MaxxForce Advanced EGR engines helping Navistar to gain on its SCR engine competitors?

### FINDINGS

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- ▶ Navistar sources and their competitors alike reported attracting new customers because of Navistar's MaxxForce Advanced EGR engine. Navistar dealers said customers prefer EGR's lack of a non-urea solution, but competitors reported a shift in [Class 8](#) customers to non-EGR solutions because of EGR engines' wear and tear from heat.
- ▶ Customers voiced concerns with EGR engines because of past problems of excess heat resulting in a shorter engine life. Both commercial customer sources plan to buy SCR engines in 2011 because of EGR's tarnished reputation.
- ▶ Sources said Navistar's MaxxForce EGR engines are not EPA-compliant and that Navistar is using its federal emission credits earned in prior years to meet the EPA's 2010 requirements. The credits should last a few years. Also, several sources expect Navistar to implement an SCR or ammonia-involved solution with help from its investment in [Amminex A/S](#).
- ▶ A competitor's dealer said Navistar is waiving fees while a Navistar dealer said the company is offering dealers, but not customers, incentives to increase their stock.
- ▶ Dealers cited greater demand for medium-duty trucks than for Class 8, which may benefit Navistar and its hold on the midsize truck market.
- ▶ New-truck sales for 2011 are expected to improve industrywide year to year because those preferring to avoid the latest EPA standards are buying up used inventory. Also, engine prices are expected to increase. One commercial customer reported greater sales for trailer suppliers.
- ▶ Seven of 11 dealers said financing had improved or at least stabilized compared to six months ago. Two sources had no comment, and only two said financing had tightened.

## DATA

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**Silos:** Navistar dealers/salespeople (5), Navistar competitors (6), commercial customers (2), truck mechanics (2), trucker driver (1), and industry experts (4)

**Additional Sources:** Industry publications (4) and blog (1)

## SILOS

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### Navistar Dealers

#### ► **Dealership owner, Northeast**

This source said Navistar's MaxxFORCE Advanced EGR engines are luring old and new customers who do not want to deal with the hassle and added cost of urea, which he believes also will hurt SCR engines' resale values. Navistar is offering dealers incentives to build stock.

- "There is no question that across North America, [Navistar's] International has acquired, or in some cases reacquired, a number of customers they had not sold to for some period of time—if ever—due to their advanced EGR solution."
- "EGR speaks for itself, and Navistar isn't offering any particular special incentives for customers to order them. We as dealers have stocking programs to incent us to order these units for stock, which offer a combination of upfront allowances, interest-free terms and extended warranties."
- "A vehicle with SCR will typically see 2% to 3% better fuel economy than one with advanced EGR. But you must factor in the cost and weight of urea and whether or not payload must be reduced as a result of the added weight, which means less revenue. Initially, the vehicles with advanced EGR should cost less at transaction time. All of these things must be factored in."
- "The reason is not wanting to deal with urea and the issues surrounding the use of it: added weight, loss of clear space behind the cab, [lack of] availability of urea in all areas."
- "Once a truck is equipped with SCR, it will need urea forever. That could very easily affect the value of these units as used trucks."
- "[OnCommand](#) has helped with larger, more sophisticated fleets and many municipalities. The average buyer we deal with on the local level has not experienced the value of this offering."
- "Financing seems to have tightened up in terms of getting customers approved and down payment amounts."
- "We are seeing a trend toward the 13-liter as a result of higher horsepower and torque offerings. The 15-liter weighs more, costs more to buy and generally offers less fuel economy than a 13-liter."

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*Dealership Owner, Northeast*

#### ► **General manager, East Coast**

This source said being the only truck maker with an EGR solution has been a challenge, but that some customers prefer the convenience of a non-urea solution. New-truck demand remains low, demand is greater for medium-duty than Class 8, and financing is tight. Used inventory is very low. He expects 2011 to be 10% to 15% better than 2010 and said next year could be stimulated further by an excise tax repeal.

- "Would I like to have something else to offer my customers who feel urea is a good product? Yes. It's been very tough. You have to understand, we're all by ourselves here. You tell the customer one thing, and six other [truck companies] tell them the exact opposite. It's a challenge."
- "Would I like to still have [Cummins](#) engines in our product? Yes. But I think International has a better solution, and if I were buying a truck I would buy the International motor. Have I had some lost sales from guys going with brand X or sticking with Cummins? Yes."
- "It's been tough. But a lot of people have said they're going to stick with International because of the quality of the product, the quality of the service."
- "We have prospective customers. You'd see these guys in the past and they'd say, 'We're always going to buy something else. Nothing against Navistar, but we're very happy with our [AB Volvo] [Mack](#) or

[Paccar Inc.'s/PCAR] [Peterbilt](#), or whatever they were running. Well, some of those people ... have reached out to us because of the EGR-only solution."

- "It's not a fuel economy issue. It's a simplicity issue. They don't want their drivers to have to deal with the hassles of SCR and worry about putting urea in the fuel tank and damaging the motor."
- "Our competition is out there telling everybody they have better fuel economy by 5%. Yes, they're burning 5% less fuel, but they're burning 4% or 3% of urea so their net gain on fluid is 1% to 2%. The [ProStar](#), being the most aerodynamic vehicle on the road, has seen fuel economy gains with our solution, so we're right in there."
- "I don't know that SCR is going away, but I'm still convinced that liquid SCR is a temporary solution. You've got companies working on some kind of solid catalyst, carbon-based—like a brick, more of an air-filter type of device. I'm convinced that's the future. Urea, liquid SCR, is a temporary solution, especially now that there are new [fuel economy standards](#) on the horizon in 2014."
- "Ryder [System Inc./R] and Penske [Automotive Group Inc./PAG] have bought into the SCR program."
- "I don't think demand is much more than it was six months ago. Maybe on the medium-duty side, but on a Class 8 basis it's been pretty steady and slow."
- "There's no used inventory out there at all. Rather than dealing with the 2010 emission standards and those costs, everybody's trying to gather up every single '07 ... tractor they can find."
- "I would expect 10% to 15% growth [in 2011]. Sooner or later, the trucks are going to go back on the road. Whether they repeal the excise tax or not, sooner or later as consumer confidence comes back, the freight will be on the road. Next year will be a better year."
- "Financing is about the same [as six months ago]. ... They're looking for huge down payments, personal guarantees and all kinds of things that weren't required before."
- "The ATD [[American Truck Dealers Association](#)] is trying to get some kind of Cash for Clunkers program, and there's been talk of getting the federal excise tax to go away and increasing the fuel tax. ... We all have our fingers crossed that the federal excise tax will go away on Class 7 and Class 8 trucks."
- "The price of trucks is going to continue to skyrocket. Pretty soon they've got to put the brakes on this. A loaded-up Class 8 tractor, bells and whistles, [LoneStar](#) edition, we're already at \$150,000."

*“Would I like to have something else to offer my customers who feel urea is a good product? Yes. It's been very tough. You have to understand, we're all by ourselves here.”*

*General Manager, East Coast*

#### ▶ **Truck salesman, Southwest**

This source believes Navistar's new engines will be an advantage because no new equipment is involved. Quotes for new equipment are up because of low used inventory, but interest has not yet translated into sales.

- "I think [Navistar's EGR-only engine] has been a large advantage. No new equipment to learn and maintain. Better technology to meet the new standards. Less equipment equals less weight. No new equipment for body up-fitters to find ways of getting around. None of the disadvantages of urea."
- "The International engine is using better and easier-to-use technology than the competition, so there is little room to debate that it will have a higher resale value. International is the better choice."
- "We are starting to quote new equipment much more than we did six months ago. This is largely due to dealerships' used inventory shrinking, so customers are left with little choice but to consider new. Unfortunately, there have only been a pick-up in quotes and not sales."
- "It looks like things are slowly turning around. We are fairly optimistic that sales will increase in 2011."
- "[Financing has been] the same, which is not ideal."

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*Truck Salesman, Southwest*

**► Sales manager, South**

This sales manager backs Navistar's claims that SCR engines do not comply with the EPA's 2010 emissions standards and thinks the long-term solution to emission compliance is yet to be developed. He said new-truck sales should improve in 2011 because of glimmers of hope in the economy and low used inventory.

- "We are hearing from customers who have bought Fords [Ford Motor Co./F], Freightliners [Daimler AG/ETR:DAI] and [Hinos](#) [Toyota Motor Corp./TYO:7203/TM] because of price and now are asking how much more is our truck."
- "Why buy a system that is not legal and there is no determination as to who is responsible for compliance and possible fines when somebody finally figures out how to build a monitoring system that was mandated by the law and ignored by the engine manufacturers?"
- "If SCR is allowed to continue in its current state, operators will be ripping EGR systems and DPFs [[diesel particulate filters](#)] off trucks built since 2004 and the EPA will have no power to enforce any penalties."
- "The other engine manufacturers have shown their true colors in this one. Greed has never been such a factor in a decision to create and market engines that they claim are legal, only to later admit that the monitoring system that is a required element of certification doesn't exist."
- "We have been lied to, and the posture of the SCR engine makers is beyond comprehension. When I confronted two engine reps, I received the same response: a shrug of the shoulders and them turning and walking away. They don't even want to talk about the charade they are acting out."
- "I have not heard anyone from the engine companies say anything like, 'This is the long-term solution.' The solution is not yet commercially available. This controversy between EGR and SCR will be quickly forgotten in a short time. We will get over this bump in the road. The fraud perpetrated by the SCR boys, however, cannot be overlooked."
- "We had a bad year for new and a very good year for used; 2011 will not follow the same path. We cannot rely on used trucks because of lack of supply and rapidly escalating prices although demand is still out there and will continue through the next year. Users have not purchased trucks for five years and will be in need of replacing vehicles. As our local economy improves, new truck sales will follow pretty quickly as trucks will be needed to get goods delivered."
- "Medium [duty truck] demand is up. Severe service is beginning to get some traction. Class 8 is still dead in our market."
- "For medium and severe service, the no-SCR approach is a big plus. Nobody wants to add complexity to emergency vehicles or any government application."
- "Financing is spotty. Banks are looking at their existing customer bases and are willing to finance acquisitions for those buyers who have established a solid performance background over the past few years. These banks are offering rates and terms that eliminate the dealer from the F&I [finance and insurance] side of the deal."

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*Sales Manager, South*

**► Sales manager, South**

This source said customers are nervous about Navistar's EGR-only solution because it is untested. He would prefer the company to have an SCR option, specifically from Cummins. He reported higher demand but from nontraditional customers.

- "Customers would like to be able to use our EGR solution, but they are scared right now that it won't work. Part of this, I think, is because we are the only ones using it. They want to see what it will do over a period of time before they jump onto Navistar's engine."
- "I try to sell them on the idea that they all they will have to do with our engine is add fuel and oil and nothing will change from what they are used to doing. With our competitors, they are going to have to do extra maintenance and also tie up space as well as extra weight when they go with the SCR solution."
- "If Navistar's engine performs and holds up for the length of time it is advertised, then it should be the engine of choice, but all that depends on what the engine does. If it falters, Navistar is in trouble."



- “If I were Navistar, I would have went to Cummins and made a deal to be able to put their engine in our truck just to have an option. Navistar has put all their eggs in one basket, and that troubles me.”
- “Our demand is actually higher now than three to six months ago, but that comes from some government buying and electric co-ops buying, not from our main customer base.”
- “I think truck sales will be better in 2011 than 2010, but I don’t see it being a big increase.”
- “Financing has been tougher, but so has the credit of customers.”

## Competitors

### ▶ **Vice president of sales for a Freightliner dealership, East**

This source said he has competed against Navistar five times in the last month and won four of the deals. SCR engines reportedly have a significant fuel economy advantage, and Class 8 truck buyers are worried about the extra heat in EGR engines.

- “We’ve quoted directly against [Navistar] five times in the last month. They’ve only recently started quoting EPA 2010s. They had built a pretty big backlog of EPA 2007 engines, but that’s finally starting to run out. We’re going to win four out of the five. The one we lost was a medium-duty truck buyer that has always been an International customer. Three of the other four were Class 8s.”
- “We’re gaining more than we’re losing. With the Class 8 buyers, that’s where we’re seeing the most benefits. The extreme EGR, with the extra heat in the engine—that’s what’s spooking them.”
- “[The lack of OEM incentives has] been the big challenge. Prices have gone up, but there haven’t been any rebates to offset it. That’s made it tough.”
- “One thing we say to customers is that every engine maker is doing SCR except for International. Why is that? Their current engines are going to have to change in a couple of years, regardless, because their current engine does not meet the 0.2 NOx requirement. They’ve got EPA certification because they’ve got [federal emission] credits banked up. When their credits run out in two years, they have to meet 0.2 NOx. Currently, they’re at 0.5 NOx.”
- “The fuel economy is going to be a big difference [between SCR and EGR], and that’s important to someone in the Class 8 market putting a lot of miles on their truck. The SCR is going to provide a 5% to 10% fuel economy advantage over the extreme EGR. Even when you factor in the fluid economy, which is fuel plus urea, they’re still significantly further behind.”
- “The [added] weight [of the urea tank] is a nonissue for us because we already have a pretty big weight advantage [over Navistar]. We have an aluminum cab and they have a steel cab. Plus, their engine weight is a lot more because of the extra equipment they put on the engine.”
- “There have been a ton of issues with [2007] Caterpillar [Inc./CAT] engines. They were considered top of the line engines until EPA 2007 [regulations], and then they had tons of problems. They sold 50 trucks to a customer near us and they just had rashes of problems, and Caterpillar wouldn’t really do anything. Other than that, I haven’t heard of any major issues [with 2007 vintage engines].”
- “I would say [financing availability] has improved [since the spring] but very slightly. Some of the financing companies that bailed out for a while are sticking their feet back in the water. Credit approval is still tight. You’ve got be pretty darn good to get credit approval.”

### ▶ **General manager for Freightliner dealership, Midwest**

This source said SCR engines provide more than a 3% gain in fluid economy over EGR technology. He reported a demand uptick and expects as much as a 50% surge in truck demand next year.

- “When evaluating the fluid cost [gas plus urea], that’s easy to run the engines head to head in a test. So far we have experienced a net 3.4% to 3.6% fluid economy gain.”
- “SCR is a proven technology. It offers improved fuel economy resulting in cost savings over the life of the truck. SCR already meets the 2010 EPA emissions standard, and we have customers running them in their fleets today with success. It offers a lower cost of operation, reduced down time and is a cleaner engine because we do not use credits.”
- “Some customers are sticking to their loyalty with [Navistar’s] International. However, the door has been opened to present the Freightliner product powered with [Daimler’s] Detroit Diesel and Cummins power. I believe we will win over some International customers.”

- “There’s uncertainty over how the EGR engines will perform due to a lack of current availability and lack of customer testing. How can every engine manufacturer be wrong and one be right?”
- “The difficult part is the cost of operation over the life of the engine. Higher heat rejection of the EGR engine will most likely compromise the life of components, resulting in higher maintenance costs and increased down time. That’s the uncertainty and the gamble a customer will have to take.”
- “We are experiencing a slight uptick in demand. I sense we will see demand really start to pick up by the third quarter of 2011 if not sooner. It all depends on freight volume.”
- “I anticipate an increase [in demand] of both heavy-duty and medium-duty trucks in 2011. I estimate between a 30% to 50% increase over 2010.”
- “[Financing availability] has stayed about the same.”

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*General Manager, Midwest*

► **Freightliner dealership owner, Midwest**

This source expects Navistar to go to SCR as it cannot meet the EPA’s 2010 levels with its current engine. He would buy an SCR engine from Cummins, Detroit Diesel or Volvo. He said the EPA’s 2004, 2007 and 2010 requirements have created many engine problems, including heat issues, shorter belt/hose life and hood debonding.

- “Navistar does not meet EPA ’10 levels, and Navistar does not make an EPA ’10-compliant engine. When Navistar’s credits run out, they will go to SCR and blame the whole fiasco on [Senior Vice President] Jim Hebe, who will be gone by that time.”
- “Navistar cannot meet the EPA ’10 levels with this engine in its current form, and [with] the EPA credits Navistar has I expect them to go to SCR. MAN [SE/ETR:MAN], the engine that Navistar bases their MaxxForce engine on, has elected to go with SCR in Europe because they could not meet the European standards with massive EGR.”
- “[Urea] is readily available at most truck stops, and every single non-International dealer as well as all Cummins and Detroit Diesel distributors and many oil distributors—probably over 7,500 places to purchase [urea].”
- “I would only buy a SCR engine and am open to Cummins, Detroit Diesel, and Volvo engines. I am probably prejudiced by the fact that Cummins originally planned to go massive EGR instead of SCR, and then changed because their engineering determined that the massive EGR would perform poorly on fuel economy and power. Cummins is the only independent engine maker left in the U.S. for trucks, and they determined EGR was not a viable strategy for EPA 10. That decision cost them International’s business.”
- “EPA ’04, EPA ’07, and EPA ’10 have all created many problems with engines that we did not see before. Some of the high failure items are turbochargers, EGR valves and coolers, fuel injectors and injector wells, and fuel pumps.”
- “The EPA ’10, MaxxForce EGR engines from International are now just becoming available to truckers. Basically, the MaxxForce EGR engines will run hotter and get lower fuel mileage, while the SCR engines run less hot and run dirtier, which provide better mileage. The SCR and after-treatment then clean up the exhaust to meet EPA ’10 levels. I think the mileage will be comparable once the SCR is factored in, but the MaxxForce EGR will have more reliability issues due to the much higher heat they will generate.”
- “The EPA 2007 engines will just keep running. There is no catch-up or other provisions in the law that require all engines to meet EPA ’10 except those built after Jan. 1, 2010.”

► **New-truck Kenworth (Paccar) sales manager, Northwest**

This source said International customers now are looking at Kenworth’s products because they do not believe EGR is a viable solution. SCR engines provide better fuel economy, lower maintenance costs and better resale value. Sales have improved compared with six months ago and should be better in 2011 year to year.

- “SCR will have the higher resale value as the engines will have a longer life. There will be less soot introduced to the engine and less heat rejection as SCR treats the NOx downstream as opposed to

- inside the cylinders.”
- “Probably the best sales tool is to let the customer look at the International engine, if they can find one. ...The pictures we have seen of the International products look like a mechanic’s nightmare with three EGR coolers, two water pumps and all the other paraphernalia.”
  - “We don’t have any hard numbers [on total cost of operation], but we know the fuel mileage will be worse on the EGR versus SCR engines. Maintenance costs will surely be higher on the MaxxForce EGR.”
  - “Demand is slightly better today than six months ago. We had a few customers who needed to spend money before the year-end for tax purposes.”
  - “My expectations for 2011 are slightly better than 2010.”
  - “Financing rates are better today, but good credit is required.”

► **New-truck Kenworth sales manager, Southeast**

This manager believes Navistar’s EGR engines eventually will prove to be less reliable than SCR because of the extra heat and dirt introduced. However, Navistar dealers are boosting short-term sales by waiving certain fees and are benefiting from the lack of available urea in some areas. His sales are down compared to six months ago but financing has improved. He is optimistic for 2011.

- “Navistar is a mixed bag. I don’t believe that they are attracting customers because of any support for their approach to EPA standards. ... They are mostly selling on price. [Navistar] will waive their \$8,000 EPA charge in a heartbeat to be lower than the competition.”
- “They are getting some traction with the fact that urea distribution and availability are not as widespread as is advertised. ...Truck stops are rolling it out very slowly in this area, and fleets are reluctant to spend scarce capital and deal with all the bureaucratic hoops needed to install their own pumps.”
- “I believe the enhanced EGR will suffer the same fate as Caterpillar’s twin turbos; their reliability reputation will do them in.”
- “Compared to six months ago, demand is a little soft. People seemed more optimistic, and we were doing more quotes and proposals [earlier in the year]. Since about Labor Day it has been quieter—fewer quotes and even fewer decisions. Some blamed a wait-and-see on the election, but I think budgets have been spent for the year. Everyone is trying to make do with used trucks, which are hard to find, until they are more comfortable with the cost and commitment of new.”
- “2010 was better than 2009, and 2011 has got to be better than 2010. Thanks to the economy and EPA regulations, trucks are getting old and high in miles. Somewhere along the line, the economics of buying new with warranties and tax and financial incentives has got to outweigh the costs of repair and downtime.”
- “Financing has definitely improved. For the credit-challenged, it is a lengthy and time-consuming process, but it can get done if you are patient. For the credit-worthy, you may be able to offer choices and negotiate rates.”

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*Sales Manager, New-truck Kenworth  
Southeast*

► **Director of marketing and business development for an engine-making company**

This source said determining whether Navistar has gained or lost share would be difficult because the company just introduced its MaxxForce Advanced EGR engine. EGR engines have had some issues, namely with valves and coolers, while SCR engine drivers have faced difficulty in finding urea because of the U.S. infrastructure. He would choose EGR *with* SCR for the 2010 solution.

- “Cost of operation has improved with the SCR introduction. In those engines that offer both EGR/SCR as a solution, the amount of EGR being reintroduced into the engine has been decreased.”
- “I would [choose] EGR *with* SCR for the 2010 solution. There is currently only one engine manufacturer that offers EGR only. All other major suppliers to the heavy-duty trucking industry offer EGR/SCR systems. They work in tandem to lower the emission of the vehicle.”
- “The major issue with SCR has not been about the technology but rather the infrastructure of the U.S.

- to be able to supply the urea necessary for the system operation. SCR has been used abroad for many years.”
- “I have not heard of any consistent issues with 2007-vintage EGR engines on performance.”
  - “Orders for new trucks have been sluggish through the first three quarters of 2010. It makes sense that [Navistar] will sell product and have an impact on the market to some degree. Being that they typically sell to 15% to 20% of the total truck market, there is a customer base to convince that their solution is the best, and they have an inside track to communicate that solution.”
  - “Each engine model platform stands on its own based on when it was produced. The EPA mandates compliance by the years in which engines are produced. They are then allowed to continue to work even after more stringent mandates are adopted. In other words, there is no ‘retrofit’ devices necessary on older equipment. The 2010 EPA emission standards affect only those products being produced as of Jan. 1, 2010.”
  - “Resale prices have increased in recent years as new truck demand has diminished. The diminished demand in new trucks is in part due to the emission standards that have changed in 2002, 2007 and 2010.”

*I would [choose] EGR with SCR for the 2010 solution. There is currently only one engine manufacturer that offers EGR only. All other major suppliers to the heavy-duty trucking industry offer EGR/SCR systems. They work in tandem to lower the emission of the vehicle.*

*Dir. of Marketing & Business Development,  
Engine-making Company*

### Commercial Customers

#### ▶ **Trucking company president, Midwest**

The president of a trucking company with 650 tractors in its fleet said he has chosen to go with SCR because he believes such engines will run cooler, have better fuel economy, last longer and have better resale value. He reported experiencing significant mechanical problems with the current crop of EGR engines. He did not buy any new trucks this year but expects to buy 60 to 75 next spring.

- “We have chosen to stick with Cummins and the SCR technology. One factor is the cooler temperature that the SCR engine operates at. We are looking for longevity in the engine and fuel economy.”
- “We have determined that we will get better MPG and a lower operating cost with the SCR. We also believe we will have a longer engine life and better resale. The cost difference on the operating side is probably minimal—in the 5% to 10% range.”
- “We have experienced a high level of EGR failures that are not covered under warranty, which becomes very expensive not only on the repair side but the down time as well. We have had the actual EGR valves fail and are replacing them for about \$1,000 each. DPF sensors have been an issue as well, but not nearly as costly.”
- “Our fuel partners—Love’s [Travel Stops & Country Stores Inc.] and Pilot [Flying J]—seem to have an established network [of liquid urea]. We also will have urea at our facilities.”
- “We prefer Volvo trucks with Cummins engines. The 15-liter is our engine of choice.”
- “It looks like we will be void on buying any new 2010 trucks this year. We purchased about 50 used trucks in 2010. We are looking at a truck order of 60 to 75 new trucks to be delivered in the spring of 2011. If things pick up, we will add to our order and have requested pricing based on 100 trucks.”
- “Our replacement cycle has changed due to the economy, but I would say our average is about 75 [new truck purchases] a year at this point.”
- “Financing rates have stayed attractive. However, it is taking longer to get approved from conventional banks. OEMs seem to have stepped up and, I believe, are financing more deals.”

#### ▶ **Fleet manager, Northeast**

The fleet manager for a trucking company that handles security-sensitive cargo and hazardous materials is concerned with the use of urea, but plans to buy SCR engines next year because of better fuel economy and past problems with EGR engines. He said trailer suppliers have experienced increased sales.

- “There are 80 tractors in our fleet. Our fleet is Freightliner.”



- “Back in 2004 with the advent of EGR, a lot of problems were experienced by everybody, including high under-hood temps, and fuel economy dropped. Clean air is important, but fuel economy is paramount. Our experience with EGR is the engine doesn’t run in the most fuel-efficient range.”
- “I wish [Navistar] luck. They’re out on a limb. I think they thought in the lower-class chassis, where International has a tremendous hold on the market, that maybe EGR does make things a little simpler to run the truck. For us in the Class 8 over-the-road market, I’d opt to stay away from EGR no matter who the manufacturer was.”
- “Some fleets have only dedicated engines with SCR to certain major highway routes and check out the supply source [of urea] along the way. I think it’s a little naïve to think you’d be able to get it everywhere at this point.”
- “The speculation is good that all the major truck stops will have [urea]. A road truck would have a 30-gallon tank; that can get you across the country and back. You should be able to find [urea].”
- “[Drivers improperly filling urea tanks] is a valid concern, and you must train your drivers. ... You do have to take the time to explain to them what’s required. All the manufacturers have a dual-function gauge that tells you when you’re getting low on DEF [diesel exhaust fluid, or urea], but you have to explain what that light means and what he needs to do.”
- “We’re concerned about the added weight [of the urea tank]. We’re going to have to try to offset that with other weight-saving specs that we haven’t previously employed. And I have high hopes that the [SCR] engine will run more efficiently and that we’ll get cleaner exhaust.”
- “The DEF will freeze. It gets to a slurry at 12 to 15 degrees Fahrenheit. That’s an issue if you’re running your truck up north. Some drivers have said if you start your truck up when the DEF is frozen, it won’t run properly, but the manufacturers all say the DEF wouldn’t be required for the first 45 minutes and by that time the tank is thawed enough. I do have some concerns there.”
- “We have not purchased an EPA 10 engine at this point. We are currently using Detroit Diesel, Series 60, EPA 07 engines. Our next specification will include Detroit Diesel DD-15, EPA 10 with SCR technology.”
- “In 2011, we expect to purchase trucks with the EPA 10 engines. Twenty to 25 [new trucks per year] is our normal purchasing plan.”
- “Maybe we’ve hit bottom and have no place to go but up. When I speak to trailer suppliers, they’re starting to see some increase in sales. Tire suppliers are going through tremendous inventory problems because manufacturers have cut back, so there are some indicators like that that production of equipment for our industry is starting to pick up.”

*They’re out on a limb. I think they thought in the lower-class chassis, where International has a tremendous hold on the market, that maybe EGR does make things a little simpler to run the truck. For us in the Class 8 over-the-road market, I’d opt to stay away from EGR no matter who the manufacturer was.*

*Fleet Manager, Northeast*

## Mechanics

### ▶ **Service manager and mechanic at a freight dealership, Ohio**

This service manager and long-time mechanic said customers are frustrated with EGR engines, which have turbo, valve, failure, wiring, belt-tension and over-heating issues. SCR engines do not have as many problems, so many trucking companies are running their older trucks as much as they can. He personally would choose an SCR engine.

- “Customers are frustrated with the EGR engines, whether it be a Mercedes [Daimler] or a Caterpillar. They switch engines or trucks because they are not pleased. But still we will have the growing pains and breakdowns of the SCRs, and components are still expensive.”
- “The EGR engines have quite a few problems ... turbos, EGR valves, repetitive failures. ... [The EGR engines] do run warmer.”
- “We have had some issues with the [2007 EGR engines] and the engine wiring harnesses. The wires are breaking inside of

*A lot of people are running their older trucks as much as they can.*

*Service Manager & Mechanic,  
Ohio*

- the insulation.”
- “There are belt-tension issues [with the EGR engines].”
  - “SCR [engines don’t have] so many problems. We’ve had basically some fuel pressure issues, some sensor issues.”
  - “A lot of people are running their older trucks as much as they can.”
  - “[Liquid urea] is readily available. All dealerships have it and a lot of the truck stops are now stocking it and a couple of local [companies], like Ryder and Penske, are ordering drums of it for their rental trucks.”

► **Diesel mechanics instructor for a community college, California**

This source said earlier EGR trucks had a lot of problems but today’s EGR trucks have fewer issues. SCR engines are still in their infancy but could benefit from changing regulations in 2011. Navistar needs to invest in training mechanics.

- “The president of Navistar made a comment in 2004 in a speech to stockholders, and said that the future of diesel is diesel. ... I read the speech and thought it was insightful. I believe he’s right. People have this idea that diesel is this dirty, polluting thing—and in reality it’s not. [The diesel trucks] are getting [good] fuel mileage.”
- “The No. 1 one thing [trucking companies] are concerned with is cost of ownership, and that includes fuel mileage. The major improvement from nonelectronic to electronic. If you take the national fleet average, diesel trucks are getting 7.5 miles per gallon for fuel. ... It used to be 5. There are some alternative technologies right now that are coming out that could improve their mileage even more.”
- “In the first generation of EGR we had a lot of problems with the EGR burning out.”
- “The biggest improvement in engines over the years is going from nonelectronic to full electronic controls, and that’s improved power, reliability. It proved to be a very good thing for the trucking industry. Everything is lasting longer now. At first EGR was a big problem, and I expect the SCR to be a big problem as well. Usually first-generation technology is problematic.”
- “2007 is the third generation, and so far they are pretty reliable from what I’ve been told.”
- “An EGR engine doesn’t have replaceable product like the SCR does. With the SCR you have the liquid component that you have to service [after] so many miles. ... There’s a higher cost of ownership for the SCR.”
- “SCR—there’s not that many of them out there right now, so there hasn’t been a widespread introduction of them yet. But there are California rules that they have to start coming on the market.”
- “[There’s not much of urea] around yet, but whoever sells it will have to provide it in their dealerships.”
- “I would probably go with SCR. I would want to do a little bit of research and find out which is the better and most reliable [engine] because I haven’t seen any reports. [The SCR is] actually supposed to provide a cleaner tail pipe, and from that virtue alone I’d like to go with the SCR.”
- “One of the main things Navistar needs to do is participate more in training future mechanics. A lot of these corporations want trained mechanics. They’re not willing to pay for them, but they need to step up to the plate and provide training.”

## Truck Driver

► **Truck driver and former mechanic**

This long-time truck driver said EGR problems seem a thing of the past as manufacturers have worked out the bugs over the past eight years. His Navistar truck has a Cummins EGR engine, and he appreciates its gas mileage and power.

- “I’ve been driving the EGR now for about six years. The first ones, the post-October 2002 engines, had a lot of problems. The regulations came up so quickly, and manufacturers didn’t have time to do research and everybody had problems. ... I know when they came out with the 2007 engines they seemed to be doing a lot better. Cummins has done the research, and [we have] had hardly any problems with the newer [engines].”
- “I haven’t heard much about the SCR engines because most every engine I’ve seen—the Cummins and Detroit Diesel engines—were using the EGR valves.”
- “[There are] not really [problems finding urea]. They were pretty proactive about getting that out

- there pretty quickly. It is available at the truck stop pumps, and you can buy it in jugs at truck stops.”
- “I would buy whichever [engine] would give me the best fuel mileage, and right now the [Cummins ISX](#) has done very well on fuel and has a lot of power, too.”
  - “Quite a few of the Navistar trucks have the Cummins ISX engine. I’m not sure how reliable the MaxxForce engines are going to be. They don’t really compete with each other.”
  - “There are a lot of brand-specific engines on the market now—Volvo, Mercedes, Detroit engines. Cummins engines are selling so well because the parts and services are widely available. With Cummins, you can take it anywhere without a problem. Nowadays, the Cummins engine has the most support out there.”
  - “Navistar is brand-specific. If your truck broke down and the nearest Navistar dealer was 300 miles away, a Mack or Volvo dealer wouldn’t be able to touch it.”
  - “[But] I’ve been working in this industry now for the last 22 years and Navistar has a better dealer network than anybody.”

### Industry Experts

#### ▶ **Vice president, trucking industry trade group**

This source said the debate over engine technology has not resulted in any significant share shifts, but a survey of trucking companies refutes Navistar’s claims of SCR issues. Heavy-duty truck sales remain sluggish with no real signs for optimism. New purchases are mostly for replacement of aging vehicles.

- “The [engine] wars are continuing. The litigation is continuing. Words are still being thrown back and forth.”
- “We have done subsequent surveys, just to share information with the EPA. We went to the fleets and asked them. What we found out is our folks haven’t had any problems with bad-quality urea. They haven’t had any instances where a truck ran out of urea. For the most part, everyone is trained that when you fuel up, you also top off your urea tank. So all of these issues Navistar brought up, saying the sky is falling, none of the members we surveyed—representing a whole bunch of trucks—have ever had any failures or encountered any of those things.”
- “None of the fleets voiced to us that they’re losing drivers because they have to fill up urea tanks or that drivers are complaining.”
- “We still don’t have enough trucks out there to do a survey [on cost issues]. Lots of folks were still selling 2009 engines the first half of this year. We’re far from having anything close to a representative sample. We’re still in relatively new territory with these 2010 engines, especially with respect to Navistar’s engines.”
- “Navistar has an application into the EPA for an engine to be certified to meet the 2010 standards without using these credits that they’ve banked up, which would be very interesting because everyone was wondering what’s going to happen when they run out of these credits.”
- “The EPA is between a rock and a hard place, because they’re the ones who approved both technology paths. The bulk of the manufacturers are saying, ‘You approved this and now you’re going to disapprove it?’ Then you have Navistar saying they have data showing [SCR engines] are noncompliant engines. They had a video at the [California Air Resources Board](#) [CARB] ... showing that you could run an SCR engine on water [rather than urea] and another they ran empty. It was kind of like a scare tactic.”
- “The EPA is the unknown factor here. Engine applications have been submitted [by the manufacturers] to the EPA for approval for 2011 trucks. I know that Navistar wants them not to approve the other technologies and say there are too many questions about it. Whether the EPA is intentionally taking their time or they’re just bogged down with other things, it seems like the approval process has been a little slower than usual.”
- “The EPA has said there’s a 3% to 5% fuel efficiency improvement using SCR, so they actually put that in writing. That’s the just fuel economy. It doesn’t get into issues with the filters and system

*All of these issues Navistar brought up, saying the sky is falling, none of the members we surveyed—representing a whole bunch of trucks—have ever had any failures or encountered any of those things.*

*Vice President, Trucking Industry Trade Group*

- performance and sensors.”
- “There are long-standing relationships between certain manufacturers and certain fleets. People will still order Navistar trucks. I haven’t heard of anyone that in the past bought Navistar and now they’re deciding not to.”
  - “There were some problems with cracking of filters with pre-2010 EGR engines that we’ve heard about.”
  - “It’s still slow going [in truck sales]. The big driver is that the equipment’s getting older and needs to be replaced. That’s the big driving force: age. It’s not the economy rebounding. Yes, there’s slightly more stuff being hauled, but we weren’t operating at capacity. Instead of filling up a truck three-quarters, maybe they’re getting it to 90%... We’re not seeing an uptick.”
  - “Most trucking companies try to stay as close as they can to their normal trade-in cycles if they can afford it. They want to phase out a certain percentage every year so they don’t get hit all at once if they’ve put off their buying pattern for three or four years.”
  - “All the manufacturers are having a tough go of it. They make money when we buy their trucks, and we’re not buying their trucks.”
  - “I know it’s going to be another dreary holiday season. People aren’t going to be buying as much stuff, so they’re not going to be asking us to transport as much stuff.”
  - “Financing is still really tight. Nothing’s really changed.”
  - “Driver retention and recruiting drivers are going to be a big issue once the economy improves. A lot of drivers have been let go and then retired or left the industry. There’s going to be a driver shortage. They’re going to want to make sure the drivers like the trucks, especially newer equipment.”

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*Vice President, Trucking Industry Trade Group*

► **Executive editor, magazine covering the Class 8 trucking industry**

The source said Navistar’s EGR-only solution is an interim technology and not a long-term answer. If Navistar’s engines work properly, the company will be OK until its federal emissions credits run out. However, this source questioned whether Navistar’s MaxxForce Advanced EGR will work. This source sees demand and backlogs improving and freight rates firming.

- “I do think [Navistar being the sole EGR-only manufacturer] is an issue and, to be honest, I can’t quite see how they’re going to get around it.”
- “Everything we’ve ever discovered talking to fleet people is that loyalty to the engine seems to be more important than loyalty to the [truck manufacturer]. Basically, [Navistar is] asking trucking people who are used to running 15-liter engines to trust a 13-liter engine that they don’t know with a technology they don’t know. I think that’s a tough sell.”
- “The big question is whether the MaxxForce is going to work or not. Informed opinion around the industry says that while they can get the initial certification at higher NOx offset by credits, the general feeling is they will need an additional technology by the time those credits run out. There’s no knowing when those credits will run out or when the additional technology will come along to save them.”
- “They have somewhat shot themselves in the foot by getting rid of Cummins. Relying on their own power unit means shifting the market from a 15-liter engine to a 13-liter engine if they can make the technology work. If they can’t make the technology work and they have to go to whatever version of SCR they embrace—it depends how quickly they get to that point. If they can make a case for these engines running at 0.5 grams of NOx with credits and the engines run, then they’re OK until the credits run out. If the engines don’t run, then they’re in a desperate world of hurt.”
- “They may have some success in getting EPA and CARB to rewrite some of the rules that make sure drivers actually put urea into the DEF tank. That’s a spoiling move to make the SCR guys go back to the drawing board and rewrite some of the software. But I don’t think they’ll get anywhere with trying to get SCR thrown out on environmental concerns.”
- “There’s no question demand is picking up. The order backlogs are starting to look good. The numbers for Class 8 for 2011 have moved from around 200,000 earlier in the year to more recently



225,000.”

- “There is freight being hauled. There’s a hardening of freight rates, which makes it easier for trucking companies to make the decision to buy new trucks, and there’s also an improvement in used truck values which helps their balance sheets.”

▶ **President of a trucking organization, Midwest**

This source said Navistar’s EGR engine will gain share as drivers want to avoid the expense and hassle of urea. She said 2007 EPA-compliant trucks are greatly desired by drivers who do not want to deal with 2010 EPA standards and loss of miles per gallon.

- “Navistar will gain share with drivers who do not wish to deal with the liquid urea requirement.”
- “The liquid urea situation is just another issue drivers will need to deal with during their daily duties. [Finding] it on the road is only the first challenge. Understanding the need for it and how it impacts performance is also an issue. Keeping the supply full and not allowing it to run out is important. As more of the newer engines make their way into the market, the liquid urea will become more readily available.”
- “I would choose EGR so I wouldn’t have to deal with the added hassle and expense of the liquid urea. I would choose Navistar because they are the leader in this engine.”
- “Drivers are not happy with the legislation forced onto them, and [it is] affecting their business. The EPA has forced engine manufacturers to create engines that ultimately leave the air cleaner after it has passed through the engine than it was before the truck arrived. Now the government wants to defeat that purpose by proposing legislation such as ethanol, which will put more particulate matter back into the atmosphere. It doesn’t make sense!”

▶ **College diesel instructor, Michigan**

This source would choose an EGR engine over an SCR engine and would choose Navistar, which he believes is not losing market value. Still, EGR engines have had problems, including low power conditions, burnt valve problems and coolers cracked from heat. He said finding urea in Michigan is difficult.

- “At this time I would go with an EGR because SCR is new and really has no track record. And I would go with Navistar.”
- “Cost is a factor. SCR adds a large cost to the bottom dollar, so I don’t think Navistar is losing market value.”
- “I have heard complaints of EGR systems plugging up and not working properly, causing low power conditions. [I have heard] none with SCR other than driver complaints of low power during [regeneration].”
- “[We] have had a couple Detroits in with burnt valve problems and EGR coolers cracked from heat.”

## ADDITIONAL SOURCES

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### Industry Publications

- ▶ A Nov. 12 *Heavy Duty Trucking* article discussed [ACT Research Co.](http://www.actresearch.com)’s findings that production of Class 8 trucks could reach 150,000 for 2010, up 27% from 2009 but still below normal replacement demand. ACT projected a ramp-up in Class 8 production to 300,000 trucks in 2012 but “more muted” production for medium-duty trucks. ACT sees prices firming.

[http://www.truckinginfo.com/news/news-detail.asp?news\\_id=72194](http://www.truckinginfo.com/news/news-detail.asp?news_id=72194)

- “ACT says third quarter earnings show fleet profitability is improving. ... That combined with firmed used truck prices and growing concern over the average age of the national fleet, suggests a growing number of freight haulers will have both the need and ability to reinvest in equipment.”
- “ACT projects full-year 2010 production of Class 8 vehicles approximately 151,000, up 27% from a weak 2009, but still well below normal replacement demand.”
- “ACT forecasts that demand will continue to ramp up for the next two years, with production in 2012 exceeding 300,000 units.”
- “The forecast for medium-duty (Class 5–7) production is more muted, growing 15% in 2010 and 14% in 2011.”

- A Nov. 9 article from *Heavy Duty Trucking* covered Navistar's announcement of the 0.2g NOx engine, which may have fuel economy issues. The new engine's release will be delayed, giving Navistar time to work out both a low engine-out NOx and fuel economy. Speculation is that in order to reach 0.2 g NOx the engine will need an add-on technology, possibly ammonia, from Navistar's recent investment in Amminex.

[http://www.truckinginfo.com/engine-smarts/news-detail.asp?news\\_id=72158&news\\_category\\_id=102](http://www.truckinginfo.com/engine-smarts/news-detail.asp?news_id=72158&news_category_id=102)

- "Tier 4 Final, which is due in 2015, by which time most off-highway engines will run similar combinations of EGR and selective catalytic reduction (SCR) as the on-highway counterparts and any issues with either technology or their combination will have been ironed out."
- "Interestingly, John Deere Power is looking at a different approach altogether, perhaps even using an electric drive and a diesel engine running at a constant speed generating the electrical power. That's an interesting approach, allowing for a single speed optimization of the engine and none of the transients to deal with that give the on-highway guys such heartburn."
- "Navistar's latest announcement that it will certify the MaxxForce at 0.2 g NOx (currently it is at the 0.5 g level, with emissions credits closing the gap). But the plan is to not sell that engine immediately, but soldier on with the current 0.5 g calibrations."
- "As Navistar has claimed all along, 0.2 g is doable [with] all-EGR, but it may bring some fuel economy compromises that the market cannot live with. By delaying the commercial launch of the cleaner engine, Navistar engineers have more time to work out the technological solutions to deliver low engine-out NOx and fuel economy at the same time."
- "Speculation has it that to get down to 0.2 g, there will have to be some sort of add-on technology, similar to the concept proposed by Deere. But that may be a little too radical for truckers at the moment."
- "Far more likely will be an SCR solution that is not urea in solution, if you'll pardon the pun. No messing with a new fluid on the truck, but using ammonia nevertheless."
- "Navistar has the technology in the Danish company Amminex, which it invested in at the end of last year. This contains the ammonia in a solid salt matrix and gives it up when the cartridge is heated. The big question here is whether the technology, which works on smaller diesel engines, is scalable to the big-bore truck engine and the duty cycles it sees."

*Navistar has the technology in the Danish company Amminex. This contains the ammonia in a solid salt matrix and gives it up when the cartridge is heated. The big question here is whether the technology, which works on smaller diesel engines, is scalable to the big-bore truck engine and the duty cycles it sees.*

*Heavy Duty Trucking Article*

- A Nov. 3 article by *Heavy Duty Trucking's* executive editor shared input from fleets regarding new EPA-compliant engines. Although fleets are still reluctant to take up EPA 2010-compliant trucks, those that have reported few issues and said manufacturers have been "stellar" in solving early issues.

[http://www.truckinginfo.com/clean-green/news-detail.asp?news\\_id=72106&news\\_category\\_id=61](http://www.truckinginfo.com/clean-green/news-detail.asp?news_id=72106&news_category_id=61)

- "For most fleets, the 2010 engines are still a mystery. Many don't want the expenses or the potential problems of the new technologies developed to meet the Environmental Protection Agency's latest emissions standards any time soon. And nobody really wants to spend the additional up front that the 2010 technologies cost. But some brave folks got in early, though even then somewhat cautiously. 'We wanted to dip our toes into the water, not get in up to our necks,' explained Kirk Altrichter, vice president of maintenance at Gordon Trucking, a regional truckload carrier based in Washington state, which has four 2010-powered trucks. Two are Cummins ISX 15s and two are Detroit Diesel DD15s."
- "Gordon's Altrichter may have been reluctant to get in up to the neck, but the experience with his early production 2010 Cummins and Detroit's has not been at all bad, he said. The cooperation of the manufacturers in solving the early issues has been 'stellar'—not a comment I would have made about the last couple of times the technology changed."
- "We got similar stories from most of the fleets we talked to. Most have reported few real issues, and much on-going interaction with the engine OEMs as they tweak the engines for improved fuel consumption or refined dosing of the DEF to minimize its use."

- ▶ A Nov. 4 article in the *Commercial Carrier Journal* highlighted the reporter's tour of Navistar's Alabama engine plant. Navistar executives said response to EGR engines has been as expected and noted they soon will submit technical data for a new engine meeting the 0.2 grams of NOx EPA criteria but will postpone that engine as long as possible as they still have "a couple of years" left of energy credits.
- <http://www.cjdigital.com/NAVISTAR-ANNOUNCES-17000-TRUCKS-SHIPPED-OFFERS-EMISSIONS-UPDATE>
- "To date, we have built and shipped more than 15,000 EPA-compliant 2010 vehicles and we continue to build more than 100 EPA2010 MaxxForce 13 engines every day,' says Daniel Ustian, chairman, president and chief executive officer at Navistar."
  - "The response has been about what we expected,' he says. 'We don't see our SCR competitors going at each other. They're all coming after us. Because they're worried. We have something they can't have—not something they don't have: Something they can't have for a long time. So we take all of this as a compliment.'"
  - "Expanding on that theme, Ramin Younessi, Navistar group vice president, product development and strategy, noted that Navistar will soon submit technical data for the company's next generation of low-emissions diesel engines to the EPA for certification. 'We'll be able to show better fuel economy with this technology at .2 grams of NOx,' he notes. 'Naturally, we won't put that engine into production until we have to. That will be as far out as we can make it: We don't want to make changes until we have to. So we will wait until our credits expire: and we've got at least a couple of years left there. But we're going to get everything certified soon so that everyone understands we have a solution that works and will be available when the time comes.'"
  - "We take heat for using credits,' Ustian adds. 'But the rest of the story that gets overlooked is that Navistar has been beating EPA standards for years. We earned those credits. And, of course, everyone is using credits. But our competitors use them to try and convince people we're not kosher now. That's why we sued EPA and CARB: because credits are being used as a marketing tool. And we've shown that you can bypass SCR technology either by ignoring the DEF light on the dash, or get rid of it by pouring water in DEF tank—with no degradation of performance. And our position is very simple: When an SCR truck is not in compliance with emissions regulations, something should happen as a result.'"

## Blog

- ▶ A Nov. 4 *The World Truck Blog* posting discussed Navistar's plans to submit for EPA certification of its MaxxForce 0.2g NOx engine in the next few months. This blogger speculated that in order to meet the 0.2-gram NOx emissions levels, Navistar will incorporate SCR technology.
- <http://www.roadtransport.com/blogs/world-trucks-blog/2010/11/navistars-spiral-of-despair-th-2.html>
- "Navistar's previous, well-documented stance has been that its EGR plus credits strategy was a holding position, and that its existing 2010 strategy would be a precursor to a new, fully 0.2 NOx-compliant technology that did not require urea-based SCR."
  - "Navistar also advised that it has submitted certification to the EPA for its MaxxForce 15 and plans to submit for EPA certification of its MaxxForce 13 at 0.2g NOx in the next few months, far ahead of when high volume production of the 0.2g NOx-certified MaxxForce 13 would be required."
  - "Either Navistar is proposing to offer its EGR engine at 0.2 NOx, or it has developed this new technology. Conversations both with Cummins and Kenworth suggest a fuel penalty of between five and ten percent using EGR at 0.2 NOx when compared with existing SCR-based 2010 engines."
  - "But there is no mention of EGR as the sole route to emissions compliance here, leaving us to wonder quite what technological marvel might be lurking in the wings. Of course, it could be—er—SCR."

## NEXT STEPS

Since Navistar's MaxxForce Advanced EGR was just released, Blueshift will monitor the engine's sales and possible shifts in the company's market share. We also will access Navistar's incentives to its dealers and customers. We will monitor the EPA's response to Navistar's allegations against SCR. Finally, we will investigate demand for medium-duty trucks and EGR technology's place among this class of trucks.

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