

Stricter diesel emission rules affect truck replacements

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LOCAL HIGHWAY and public works departments preparing to replace diesel trucks in their fleets must take the next generation of clean diesel engines into consideration. The 2010 model year trucks must improve on the engines introduced in 2007 to comply with stricter clean diesel standards set by the Environmental Protection Agency (EPA) eight years ago.

Trucks sold since 2007 feature catalytic exhaust emission control devices that substantially reduce the emission of nitrogen oxide (NOx), particulate matter and other toxic gases. The EPA requires additional reductions in diesel emissions in 2010 models and on-board diagnostics to monitor

the effectiveness of the controls. EPA projects a reduction of NOx emissions of 2.6 million tons by 2030 when existing fleets are completely replaced.

Exhaust system options

All manufacturers are introducing systems that meet the 2010 requirements. Some are improving on current technology with an Advanced EGR (exhaust gas recirculation) system. Others are adopting SCR (selective catalytic reduction) in their diesel trucks, a newer technology currently used in vehicle fleets in Europe.

Advanced EGR circulates a higher percentage of exhaust gases back to the engine cylinders

where it mixes with incoming air, a process that lowers the combustion temperature and limits the production of polluting emissions.

SCR incorporates an after-treatment system that reduces NOx levels by injecting diesel exhaust fluid (DEF) into the exhaust. DEF is a blend of urea and deionized water that combines with the engine exhaust to form nitrogen gas and water. DEF is nontoxic but it is corrosive to unpainted aluminum.

Additional maintenance on SCR-equipped trucks involves managing a DEF supply and training drivers to keep the fluid at adequate levels so the engine does not power down unexpectedly. ▶

Regular training programs sustain good performance, productivity and safety on the job.

Fee increase

TIC will charge \$60 for its regularly scheduled workshops beginning January 1, 2010. The fee increase helps maintain the quality and reach of the workshops, presented in multiple locations around the state on topics of current interest. This is the first increase since 2002.

TIC resources stretch training budgets

REGULAR TRAINING sustains good performance, productivity and safety on the job. Even when budgets are tight, local highway and street departments find a way. The Transportation Information Center (TIC) on-site workshops and lending library are two low-cost, flexible resources available to local governments who want to stretch their training dollars.

On-site workshops

TIC's flexible on-site programming lets departments schedule workshops for their own workers or as joint programs with other agencies for only \$800. Local agencies can work with TIC instructors to tailor a basic course to address specific issues in a format that benefits the most people at one time.

The program Forest County Highway Commissioner John Rogers put together last May is a good example. Rogers organized a customized TIC *Work Zone and Flagger Safety* on-site workshop to provide part of an annual "Day of Safety" his department regularly co-hosts with three other counties

and three local communities. The seven agencies split costs to create a strong educational program for about 80 people.

"We wanted to address safe flagging operations for the road crews and TIC was the only place with a program that fit our needs," recalls Rogers.

The Oneida County Highway Department booked a *Basic Surveying* workshop with TIC last year. The department had little previous training setting elevations for culverts and ditches, says Patrol Superintendent Freeman Bennett. "It helps to have the whole crew on the same wavelength and that's what the workshop accomplished."

Lending library

TIC provides another training resource in its lending library—free to local governments and highway agencies in Wisconsin and others who provide them with contract and professional services. The library features DVDs, CDs and videotapes on road construction, maintenance, safety issues

and a range of other topics produced by transportation technology centers, highway agencies, equipment companies and other sources.

Bev Hanefeld, Program Assistant in the Fond du Lac County Highway Department says her agency uses tapes from TIC for safety training days held in fall and spring. The programs combine the taped presentations on topics like winter maintenance and snow plowing, work zone operations and vegetation in the right-of-way with a question/answer period. Hanefeld calls the programs an affordable resource that helps drivers and mechanics keep their skills sharp.

The City of Antigo Public Works Department does a big push in spring and fall to train new people and give others a refresher course. Safety and Program Coordinator Julie Zack says the training tapes from the TIC library stretch the budget and give the department flexibility to schedule group sessions when they anticipate down time. "Glad it's out there," Zack says. "We take advantage of every resource that's low cost or free to keep people trained and ready."

Advanced EGR should take less training to operate and does not require DEF.

Performance remains great unknown

It is too soon to tell how the upgraded systems will perform in public works and highway maintenance trucks. Industry reports generally indicate SCR will have the advantage over EGR in fuel economy but the additional cost for DEF may reduce or cancel out the operational savings.

T. J. Sorensen, Equipment Superintendent for the Green Bay Department of Public Works, notes that manufacturers talk about fuel economy in miles per gallon. This statistic is irrelevant for agencies that measure truck use by engine hours not miles, he says. The

Wisconsin Chapter of APWA (American Public Works Association) and others have asked truck and engine manufacturers to come up with more useful fuel-saving information.



Sorensen is requesting bids now on trucks equipped with Advanced EGR, SCR and the current technology so he can do a side-by-side comparison for his 2010 truck replacements. (Local agencies can contact him for his specifications.)

While Sorensen knows the older technology is cheaper, he wants to see the cost differential for himself to determine if EGR or SCR offer advantages that make them worth paying more. "I'd also like to study what other agencies learn from running these systems."

Recent price information from truck and engine manufacturers indicates the 2010 requirements may add from \$6000 to \$8000 more per truck.

With two trucks in operation that meet 2007 emission standards, Sorensen knows educating drivers is essential to avoid costly repairs and downtime on the newer systems. Diesel particulate filters require regeneration, for example, to run efficiently.

Less leeway for new vehicle set ups

A critical issue for fleets is upfitting new trucks for public works or highway department use. Upfitters need to coordinate the location of the new emissions equipment and exhaust on the chassis cab and frame rails to mount dump bodies, underbody plows, front discharge spreaders with cross conveyors anti-icing tanks or other maintenance equipment.

Tom Schuh is Shop Superintendent for the Truck Equipment

Division of Monroe Truck Equipment based in Monroe, Wisconsin. The company handles upfitting for many state and local departments. Schuh says although every new model year poses a challenge, designs for the latest compliant exhaust systems provide less leeway for modification. In spite of this, he is confident about meeting all upfitting requests, in part because each manufacturer offers more than one configuration of the emissions equipment and exhaust system. Customers choose the configuration that accommodates the equipment they will add.

"It calls for more planning ahead than usual," Schuh says. "We encourage people to anticipate future needs so when they have the budget to add equipment two or three years from now, the vehicle they own is easy to modify a second time."

Schuh reports most of his big customers, states and large counties, are following the changes and have more examples of the new technology in their fleets. He agrees fuel economy remains a concern for everyone.

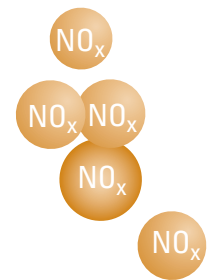
Smaller local governments who use Monroe Truck for upfitting have less experience with the new equipment. Schuh says they generally get educated when they start the bid process or contact him about modifications.

Early adopters a resource

Equipment managers need to consider their options when it comes to current vehicle replacement strategies. They can work with suppliers to locate trucks with 2007 engines, delay purchase to learn from the experience of early adopters or evaluate the cost of rebuilding existing equipment. In each case, their goal is to have trucks that do the job and are easy to maintain at a reasonable cost.

Crossroads will continue to follow this topic. We invite local road officials in Wisconsin who have the newest clean diesel technology in use to contact us and share their experiences. ■

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Worthwhile investment

Agency commitment to training is important, says Dave Wepking, Safety and Training Coordinator for the City of West Allis. "When top management promotes the concept as a worthwhile investment, there's more of an expectation among employees that training will happen."

Besides educating employees on equipment maintenance and operation, scheduled training helps the city decrease liability for equipment or property damage—important during a budget crunch.

The West Allis Department of Public Works uses vendor training, TIC library resources and other approaches, like having experienced operators train new recruits. Quality training is the goal, Wepking says, to establish the basics and make safe operation second nature to people.

Contact TIC at 800-442-4615 or tic@epd.engr.wisc.edu to learn more about on-site workshops. Find the video catalog online at <http://tic.engr.wisc.edu/>. ■

Contacts

T.J. Sorensen
Green Bay Department
of Public Works
920-492-3751
tjso@ci.green-bay.wi.us

Tom Schuh
Monroe Truck Equipment
608-329-8158
tschuh@monroetruck.com

Resource

<http://www.epa.gov/otaq/diesel/index.htm>

Environmental Protection Agency site with information about the clean diesel campaign, and links to updates on the new rules and related financing programs.