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Onboard Fuel Efficiency System Receives Positive Grade in Testing

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In BNSF's unrelenting mission to run the railroad as efficiently as possible and reduce emissions, the members of BNSF's Operating Practices, Transportation, Technology Services and Network Control Systems teams are testing computerized fuel optimization systems.

The goal: Determine which system will best assist locomotive engineers in saving fuel, while ensuring BNSF continues to safely deliver freight on time to customers.

"The systems we're testing today are just one more way to become even more fuel efficient on the railroad," said Bob Repola, director, Operating Practices. "These systems work simultaneously with other fuel optimization programs in place today, including the Fuel MVP program and train handling communication programs."

How the fuel optimization system works

The fuel optimization system is software that is integrated into the current in-cab electronic communication system.

Before the locomotive engineer's trip begins, the locomotive's origination and destination, track database, train consist information and temporary speed restrictions are fed by satellite into the cab's computer system.

After the trip is initialized at the origin, the fuel optimization system goes a step further and identifies - in real-time - the most fuel efficient train handling for that particular train. The system prompts the locomotive engineer for throttle changes and required braking to reach optimum fuel efficiency according to the distinct characteristics of the trip.

Preparing to use the system

The Brotherhood of Locomotive Engineers and Trainmen (BLET) partnered with BNSF early in the testing process to identify and train locomotive engineers as "mentors" within each subdivision piloting the system. Today, about 13 mentors assist locomotive engineers with computer-based and hands-on training during the pilot program. The mentor rides side-by-side with the locomotive engineer to provide assistance onboard during each crew's initial trip using the system.

"The system is really simple to use," said Kevin Maloney, locomotive engineer, Shawnee, Kan., who is the mentor on the Kansas City East Subdivision. "Information is sent from satellite to the onboard computer and easy graphics show the engineer what to do -- throttle up when the arrow is pointing up and throttle down when the arrow points down. It's already helping us with fuel efficiency, especially on hills where we can typically burn a lot of fuel."

The systems have been tested at several locations on the:

- Chicago Division
- Kansas Division
- Southwest Division
- California Division
- Powder River Division

What's to come

BNSF is currently testing two systems to determine which will work best across the system.

"We need to ensure that our locomotive engineers have a system that is user friendly and safe, while ensuring our return on investment is the very best we can get," Repola said. "Preliminary tests show consistent, positive fuel savings. We will continue to roll this out across the BNSF system until we get enough feedback from our locomotive engineers and statistically significant results proving it's worth the investment."

Maloney said his crews are providing daily feedback.

"It's ultimately going to be the locomotive engineers' feedback that determines whether BNSF moves forward with the system or not," said Maloney. "They are engaged in the pilot project and seem to be pleased with it."

Preliminary testing began early this year and should be completed by the end of 2009. A final decision is scheduled to come by the second quarter of 2010.

"We're always keeping an eye on the price of fuel and history shows that it will likely get more expensive over time," Repola said. "We are focusing on systems like this today so we are better prepared in the years ahead."

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