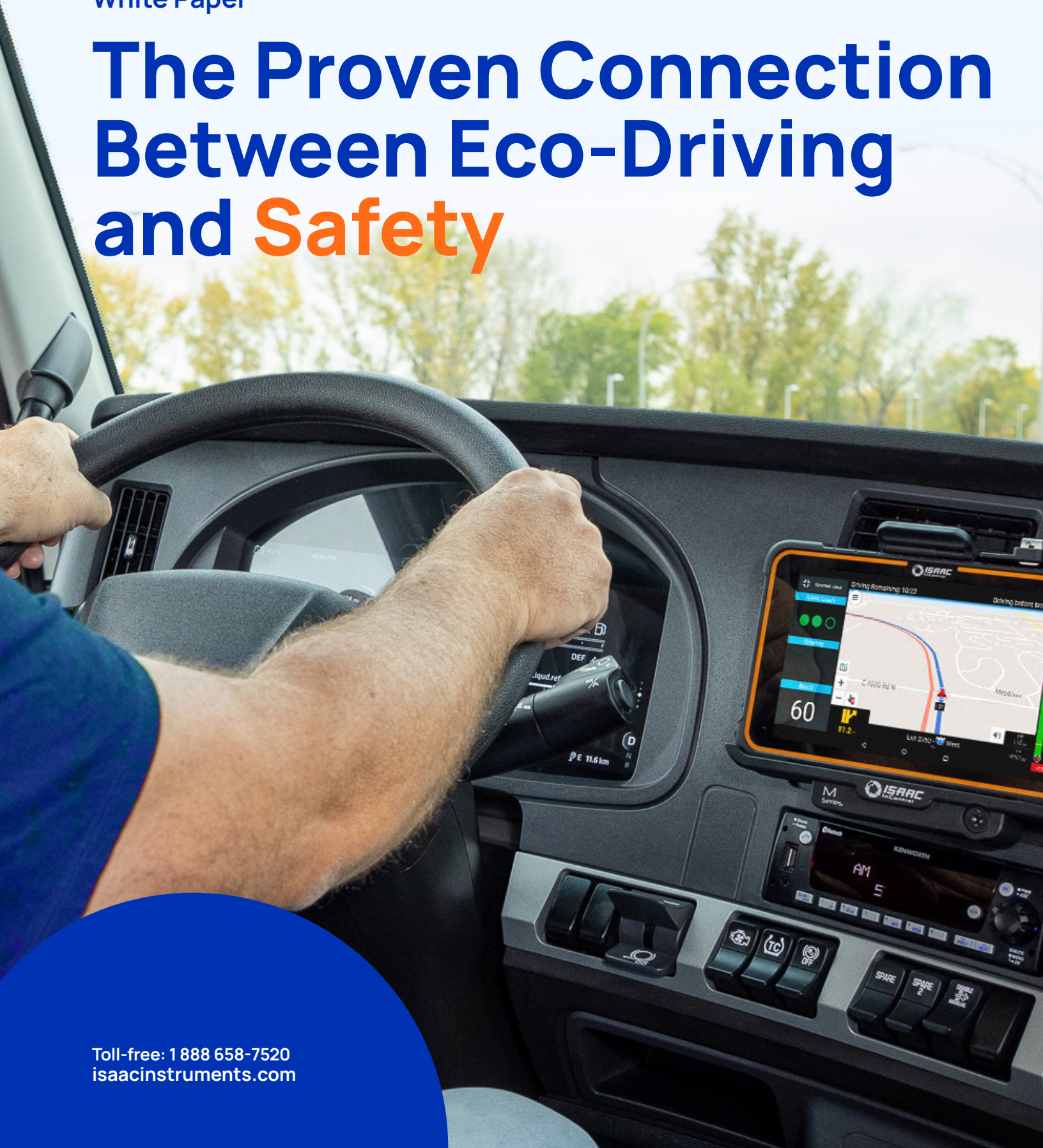




White Paper

The Proven Connection Between Eco-Driving and **Safety**



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Why Eco-Driving Matters

If you're a fleet operator, you know there's an important intersection between safety, fuel economy and overall productivity. In other words, the safest drivers also tend to be the most efficient drivers.

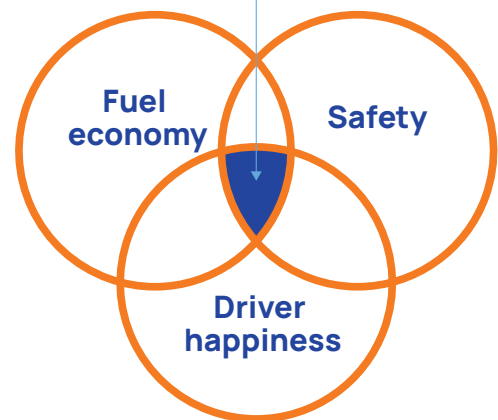
It's not hard to see how these three driver attributes help your fleet's bottom line. Efficient drivers burn less fuel, which helps fleets better control the number one expense. Safe drivers have fewer accidents, which keeps insurance costs lower. These professionals also have better overall productivity, which also translates to happier customers.

There are additional downstream benefits as well. Safe drivers mean you're not replacing or repairing damaged trucks. They put less wear and tear on a vehicle, which means reduced maintenance costs and downtime. All of this makes it easier for fleets to reward their top-performing drivers with safety and fuel economy bonuses.

It's really just common sense. Fleets that have strategies in place to promote safe driving and reduce fuel consumption are more profitable and more competitive. The concept of "eco-driving" has emerged as a strategy for fleets seeking an easy way to be safer, more productive and more profitable. It just might be the best way to train and reward your drivers for being efficient and safe.



Enhanced Fleet Profitability and Productivity





What is Eco-Driving?

In many ways, eco-driving is the exact same set of skills we all learned in driver's ed back in school. For fleets and professional truck drivers, eco-driving is a mindset. It's a way of training drivers to operate vehicles at steady speeds, accelerate smoothly and to always think ahead, especially when turning or merging.

Why race up to a traffic light that's changing, just to come to a complete stop? Instead, slow down gradually while maintaining some forward momentum so you can accelerate smoothly when the light turns green again. This burns far less fuel than getting a big rig moving from a full stop. Many intersections have traffic lights timed to enable vehicles to drive the speed limit from one intersection to the next without stopping.

That translates into even greater fuel economy and overall efficiency.

The same concept holds true on crowded highways. Slowing down and "going with the flow" of traffic minimizes the endless and frustrating cycle of speeding up, slowing down and stopping.

A Scientific Approach to Safety and Fuel Economy

Eco-driving isn't just a theory. It's a scientific approach to driving commercial vehicles, backed up by hard data.

A recent study conducted by the [Traffic Injury Research Foundation \(TIRF\)](#) confirmed that advanced telematics systems like the ISAAC Coach offer tremendous potential for fleets seeking ways to help their drivers by safer and more efficient.

The study titled [The Effects of Eco-driving on Commercial Motor Vehicle Driver Collision Risk](#) aimed to quantify the connection between fuel-efficient driving and safety, as well as the role of technology for assisting and monitoring drivers.

The study included three heavy-duty trucking fleets that use the ISAAC Coach and found that adopting a fuel-efficient driving style clearly translates into fewer highway accidents and near-misses.

The results showed that for every one-point increase on their ISAAC Score (based on a 100-point scale) a driver achieved, they saw:

- 4% reduction in the odds of a collision
- 7% reduction in the odds of a hard-braking event
- 8% reduction in the odds of a hard left-turn event
- 8% reduction in the odds of a hard right-turn event

The study also revealed that driving in top gear with steady speeds close to 63 mph can significantly decrease stability control events by 34%. In addition, a 1% increase in the amount of time spent driving using cruise control reduced the number of hard-braking events by 3%.

↓ 4%

reduction in the odds of a collision

↓ 7%

reduction in the odds of a hard-braking event

↓ 8%

reduction in the odds of a hard left-turn event

↓ 8%

reduction in the odds of a hard right-turn event



The Key Tenets of Eco-Driving

TIRF said these results demonstrate the strong relationship between eco-driving and safety, and that advanced in-cab telematics systems can successfully boost fuel efficiency without compromising safety. The study went on to specifically cite the use of the ISAAC Coach for cutting the risk of traffic collisions, which translates into better safety results and lower insurance costs. That includes significant reductions in the odds of both near-hit events and actual collisions.

TIRF also said the technology provides fleets with a solid way to measure driver behavior and offer real-time feedback. Using the ISAAC Coach to judge a driver's performance, the study noted that a **score of over 80** can result in **fuel cost savings of up to 15%**, compared with lower performing drivers.

Interestingly, the study found that high-performing drivers can get even better with the ISAAC Coach. TIRF said a driver with a high ISAAC score (greater than 87) can still hone their skills to achieve even better cost savings and safety benefits than ever before. Additionally, drivers with lower initial ISAAC scores (in between 70-80) have much greater room for gains in these same areas over the long term.

The TIRF study outlined 10 steps truck drivers can be coached on to quickly master eco-driving techniques. It's important to remind drivers that when trying to get a loaded tractor-trailer up

and moving, diesel fuel burn is higher at lower speeds and lower RPMs. But, once highway speeds are reached, the engine doesn't have to work as hard and does not burn nearly as much fuel while cruising along. If drivers stay in higher gears and lower RPM while cruising, powertrain efficiency is maximized, and fuel consumption is dramatically reduced.

Here are some of the other eco-driving basics:

- When launching your rig, shift to second gear as quickly as possible. Then, maintain one-third to one-half throttle while shifting to higher gears.
- Never exceed 3,000 RPM (or the highest torque level for the engine).
- Stay ahead of the truck: that means watch traffic flow and traffic signals to maintain forward momentum and eliminate unnecessary braking so that you do not come to a complete stop unless absolutely necessary.
- Go with the flow of traffic.
- Use upper gears as much as possible to keep engine speed down.
- Skip gears whenever appropriate.
- Keep engine idling to an absolute minimum.
- Keep engine warm-up times to a minimum.
- Plan routes ahead of time to take full advantage of geography and traffic conditions.



↓ 34%

less **stability control** events can result from driving in top gear with steady speeds close to 63 mph

Safety in Real Time

Educating drivers is a start on the road to eco-driving. But the TIRF study emphasized the importance that driver monitoring technologies play in this overall effort. Advanced systems like the ISAAC Coach have incredible potential for helping both drivers and fleet managers understand the true connection between fuel efficiency and safety.

The reason drivers can make such impressive improvements using the ISAAC Coach is because the system is easy to learn, easy to understand and easy to follow. The ISAAC Coach provides real-time feedback to drivers via the commercial-grade ISAAC tablet mounted in the cab of the truck.

The ISAAC Coach takes into account common variables such as slope, load, type and shape of the trailer and wind factors. It is so sophisticated it can even calculate variables such as the rolling resistance and mechanical resistance as it moves down the highway.

All told, the ISAAC Coach collects dozens of parameters from the truck's data network. This data, in turn, is analyzed and transformed into simple indicators that appear on the in-cab tablet. For drivers, the interface is simple. Three color-coded circles help them make the best decisions. The system provides guidance on the following three items:

- How much pressure to apply to the throttle to maximize fuel efficiency
- When to change gears
- Whether or not to use cruise control

Instantaneous Feedback

During the driver's workday, the ISAAC Coach analyzes overall performance to generate a percentage score based on a 100 scale (with 100% being perfect). More fuel efficient—and safe—driving generates a higher ISAAC score.

If an event occurs that triggers an unsafe driving alert, the ISAAC Coach gives the driver immediate feedback on the occurrence and trainers can follow up with additional information to help them avoid a similar situation in the future.

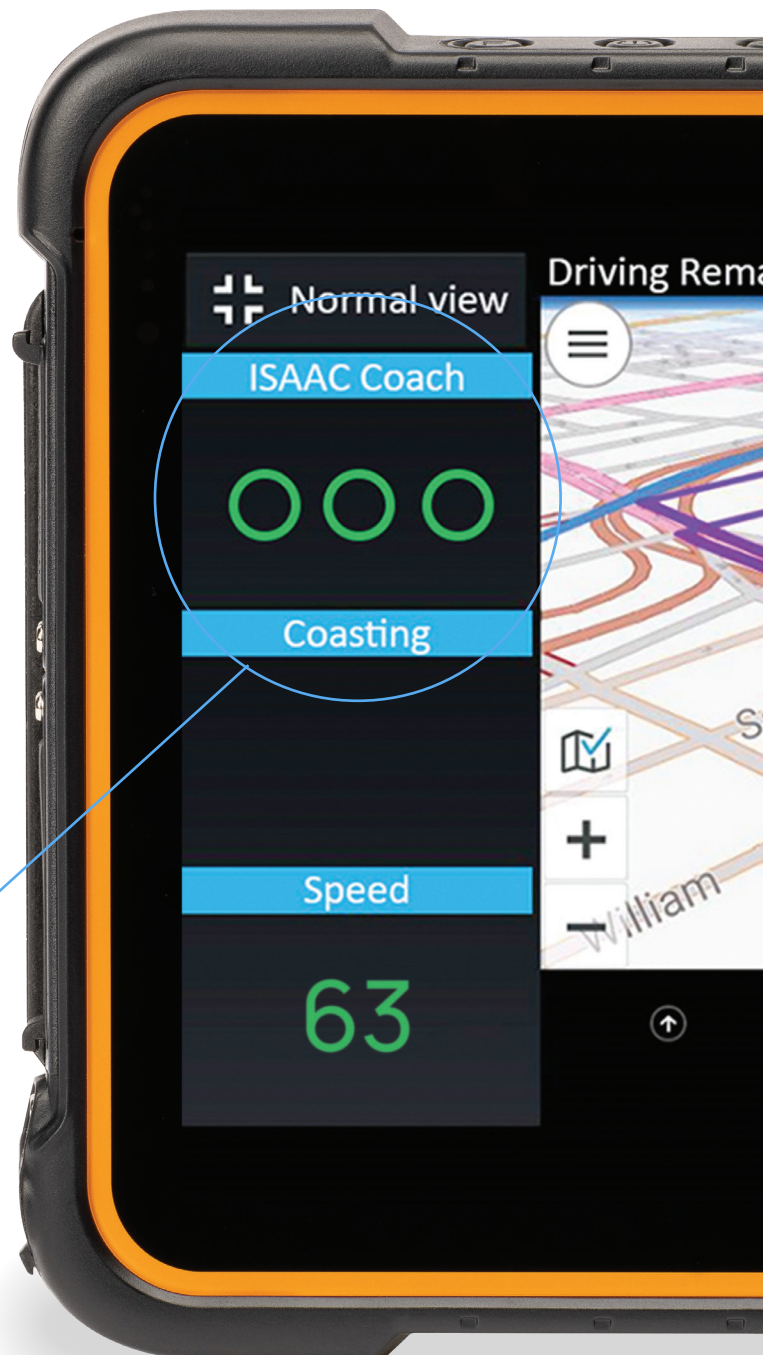
When drivers receive instantaneous feedback, they learn faster and adopt safe driving habits quicker. It is why drivers can go from an initial score of 65% to 95% over a short period of time. That exponentially increases highway safety, when considering a 1% improvement results in a 4% reduction in the likelihood of an accident, according to the TIRF study.

At the same time, companies can see a 5% fuel economy increase across the entire fleet with the assistance of the ISAAC Coach. That allows carriers to more easily implement a fair incentive program that accurately rewards the true top performing drivers.



↑ 5%

fuel economy increase across the entire fleet



The ISAAC Coach: A Win-Win for Everyone



The benefits of eco-driving are undeniable, as the TIRF study clearly shows. For fleets to see the greatest safety and efficiency results, an advanced telematics system like the ISAAC solution is required. It needs to be a critical part of a fleet's comprehensive approach to driver training and assistance.

The ISAAC Coach is a win-win technology for everyone involved. Fleets save fuel. Drivers make more money. And everyone is safer on the road.

The easy-to-use ISAAC Coach is scientifically proven to be a powerful tool in boosting both safe and fuel-efficient driving habits. Talk to ISAAC today and to discover how the ISAAC solution can save you money on fuel, lower maintenance costs, increase driver happiness and improve highway safety.



Together,
we **simplify**
trucking

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the full potential of your team

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