SDC SUPPLY & DEMAND CHAIN EXECUTIVE

FAQ:

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EROAD's Guide to Running a Sustainable Trucking Business

Unlock the value of data with partners like EROAD to improve your emissions profile and work toward a greener – and more profitable – future

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Introduction

Powering America's truck fleets is a matter of economic and national security. At the same time, commercial trucking is a major source of greenhouse gas emissions. Moving about 72% of the nation's freight (nearly 12 billion tons annually), America's trucking fleets travel some 300 billion miles each year, making the trucking industry a linchpin for reducing vehicle emissions in pursuit of environmental sustainability goals. Over the last three decades, emissions from new trucks have been reduced by more than 98 percent. In fact, it would take 60 of today's trucks to generate that same level of emissions from a single truck in 1988. Despite the impressive improvements, trucking businesses can achieve their continued sustainability goals in a more viable, measurable way.

Key Terms To Know

ECM = *Engine Control Module* - is a device that controls fuel injection, idling and ignition in an internal combustion engine, which is gas/diesel-powered

EMS = *Engine Management System* - includes the ECM and all the hardware (sensors, actuators) and software (computing tech, algorithms) that come together to optimize engine operation

TMS = *Transportation Management System* – the software system used to manage some or all of the logistics processes for both a shipper and carrier

BEV = *Battery Electric Vehicle* – is what most people picture when they think of electric vehicles in that they need to be plugged in and require time to charge the battery

FCEV = *Fuel Cell Electric Vehicle* – produces power in a vehicle from a hydrogen tank, which can be filled more like an internal combustion engine

What is sustainability, and why is it important to everyone?

Sustainability in the trucking industry encompasses the practices and strategies aimed at reducing the environmental impact of freight transportation while ensuring economic viability and social responsibility. It comes down to five key aspects beyond carbon footprint. For a trucking company to be a sustainable operation, first it must be:

1. **Profitable**. The business must be on solid financial footing to invest the time and money necessary to succeed.
2. **People-focused.** Social sustainability encompasses fair labor practices, safe working conditions and equitable practices.
3. **Active in the community.** Supporting local communities has been a bedrock of the trucking industry since its inception with small operators.
4. **Resilient.** Your business must maintain the pursuit of its goals, even with disruption. In the extremes seen during the COVID-19 pandemic, trucking companies proved how robust they were.
5. **Adaptable.** If your operation has standard operating procedures that allow leaders at all levels of the organization to be flexible and nimble, they can be proactive in their sustainability initiatives.

Step 1: Establish Your Current Emissions Profile

Q How do you track your emissions profile? Is that the same as establishing your carbon footprint?

They're related but different. Measuring your carbon footprint is part of tracking your emissions profile. Your optimal emissions profile depends on the type of fuel, the vehicle type, the type of load, the business structure you have and your operational practices. There is no universal profile, and it varies by industry, but everyone should be moving toward net zero. Benchmarking is key, and there are good programs, such as the **U.S. EPA's SmartWay Transport Partnership,** that allows fleets to access benchmark data based on their organizational setup. This data enables them to implement practical steps to run a viable, sustainable business. You must have those two things in equilibrium.

58% of emissions in 2021 came from light duty vehicles, like those used in last mile delivery, which are prime candidates for alternative fuel conversion.

Q How can you establish a viable emissions profile?

One size won't fit all fleet owners and managers. The only thing they have in common is they have trucks that transport goods and services. How many pounds of CO_2 should be emitted each year per vehicle, per fleet? EROAD provides insights to a fleet's operations team based on telematics reports. We factor make, age, model and the routing configuration of that vehicle and compare it to other vehicles inside and outside of the fleet. Then you ask yourself: What decisions should I be making about how I could improve our carbon footprint? And that flows into driver behavior and aerodynamic factors and more (see sidebars).

Q What should a fleet manager consider in investing in alternative fuels?

It depends on the type of routes you are running. If you're doing local deliveries in light duty trucks and range is not such a factor, you could be a good candidate for EVs. On the other hand, range is a key consideration for Class 8 over-the-road operations. We've seen different technology applicable to longer routes evolve quickly, especially hydrogen. There are OEMs, getting up to 500 miles in range on a 20-minute fill. That's evolved in just three to five years. If you're using step vans locally or regionally or drayage hostlers in the yard, those models are good candidates for conversion (to electric, hydrogen or hybrid). You need to do the analysis and simulate what that would look like.

HOW TRAILER AERODYNAMICS CAN MAKE AN IMMEDIATE IMPACT ON EMISSIONS

A lot of the aftermarket retros are worth considering, although it comes down to your delivery profile and routes. Introducing factors around aerodynamics like side skirts, fairings and wheel covers can be huge. Start there and you could be looking at 25-30% savings in operational cost and more in maintenance.

Step 2: Set Goals for Your Emissions Profile

Q **Why is it important to plan and set expectations around your emissions profile?**

You need a solid starting point to make expensive decisions. To convert to a battery electric vehicle or fuel cell EV like hydrogen is not cheap. There are planning permits that need to be pulled. But if you don't understand where you are today, it's hard to forecast what you need for the future. If you're not looking at your carbon footprint profile, you can bet your competitors are. Once you establish your baseline, there are many things you can do today within your operations without investing in EVs, hydrogen or other alternative renewable fuels.

Q **What role does government regulation play in fleet managers' decisions?**

We're in a transition period where there are new regulations coming out of California and other markets motivated by a desire to offset global warming. Businesses need to understand how to adapt to new regulations. A lot of fleets today are starting with driver behavior. The next steps are to implement machine learning and predictive analytics for tasks like route planning. If you haven't already, now is the time to select and implement a TMS tailored tightly to your operations. Review your ops plans and where you're spending capital and forecast the next five to 10 years. Regulation is going to be driving these actions, but the reality is they will result in positive commercial outcomes. Change takes time. Just getting the permits for vehicle conversion can take a long time. Who in the organization is talking to the right authority to understand and ease that transition?

HOW TO TEACH DRIVERS NEW TECHNIQUES

EROAD is looking at this through the lens of safety, but also around reducing emissions. It helps to start with the numbers: By saving 10.5% on miles per gallon, medium-to-large fleets can save over $8 million annually. Driver behavior carries implications beyond just safety, hence the need for third party services that offer customizable driver training. Additionally, tools like dashcams with forward and driver-facing cameras using machine vision provide instant feedback to help drivers become more aware of their actions. When fleets combine that with engine data, they can improve MPGs and pedal position to help reduce speeding, acceleration rate, and other poor habitual driving behaviors. If using scorecards with drivers that incorporate these metrics, it must be a positive experience if you want to influence change.

Step 3: Execute a Plan for Continuous Improvement

Q **How do you use all this data to be successful and not suffer from analysis paralysis?**

There's a lot of data not being used despite being readily available. That is what we call dark data. EROAD created a Decarbonization Tool that uses AI to set specific benchmarks that helps fleets get actionable insights to compare against other fleets anonymously. The Decarb Tool has five parts:

1. *Executive overview* – helps companies report their footprint to meet regulatory rules
2. *Emissions overview* – displays the CO_2 emissions intensity and benchmarks vs. similar fleets
3. *Performance* – tracks unproductive idling
4. *Fuel and energy economy* – shows consumption, distance, travel and trending information
5. *Replacement suitability* – uses vehicle profiles to identify good candidates for EV, hydrogen or other alternative CNG/LNG mixed solutions

Q **How have customers optimized their EROAD data to achieve maximum potential?**

Customers use EROAD to improve fuel economy, safety and driver behaviors. But it's most important to take today's data to make operational decisions that will improve cash flow and growth for tomorrow. We have a proving ground in New Zealand, where 80% of power generation is already renewable. We get quick feedback, iterate, then deploy in other markets like North America. New Zealand's vehicle profiles are much the same, just on a smaller scale. We've recognized that the key lies in establishing a comprehensive ecosystem both upstream and downstream. This necessitates close collaboration with utilities responsible for power generation, transmission, and distribution, as well as with infrastructure developers. It's essential to gather information from these entities and integrate it to extract valuable insights. Like our customers, we're also embarking on this journey.

In New Zealand, 80% of power generation is renewable. That makes the country, which is about the size of Colorado, a great place to test new sustainable trucking techniques and technologies.

Q **What can fleet managers do with the vehicles that they have now? Are there any roadblocks to innovating with existing fleet vehicles?**

You want to optimize the lifespan of your assets to get the most use out of them over time. With the right data, you'll know when they are nearing the end of their lifecycle, so you can start executing a transition to alternate fuel. One of the roadblocks that technology will solve is getting early and accurate warning signs when an asset will be suitable for replacement. By developing a digital twin — a virtual representation of your tractors and trailers - and running simulations seeded with your vehicle types and their routes lets you monitor manufacturing components, systems, and processes to gauge their current and future state of efficiency.

The other roadblock is infrastructure. One small example is integrating battery charging networks with telematics systems like ours so we can give customers the information they need to maintain uptime and successfully run their operations 24/7. In addition to infrastructure, government and OEMs are still examining the chemistry of the batteries, the accessibility of hydrogen, and getting fuels from green sources versus brown or gray sources that aren't renewable. The good news is, there's so much R&D being spent on this, engineers and scientists around the world are persistently working on it.

RECOMMENDED PLACES TO LEARN MORE

Industry trade shows offer a chance to attend educational sessions and meet with exhibiting companies to get more information on these questions and more, over several immersive days.

ATA's Technology & Maintenance Council Annual Meeting

ATA's Management Council & Exhibition

Advanced Clean Transportation (ACT) Expo