



**Session #3: EPA SmartWay Technologies
& Success Stories**

May 19, 2022





**SUSTAINABLE
FLEET
TECHNOLOGY**
WEBINAR SERIES 2022

Sessions through December 01, 2022



**SUSTAINABLE
FLEET
TECHNOLOGY**
CONFERENCE & EXPO 2022

Live in Durham NC: August 30 – September 01, 2022

<https://www.sustainablefleetexpo.com/>



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Format

- Q&A at the end
- Submit questions and comments to “Panelists”
- Scheduled for 2:00p-3:00p
- Handout
- Recording



EPA SmartWay Technologies & Success Stories May 19, 2022

2:00-2:10 **Rick Sapienza, NCCETC**--Introduction and Welcome

2:10-2:25 **William Carnright, EPA Region 4**—Overview of EPA SmartWay Program

2:25-2:35 **Steve Saltzgeber, RTA**—SmartWay Verification Specifications

2:35-2:50 **Michael Calhoun, CH Robinson**—Achieve Your Sustainability Goals, Emissions IQ Tool

2:50-3:00 **Q&A**





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SmartWay[®] Program Overview

Sustainable Fleet Technology Webinar Series
EPA SmartWay Technologies and Success Stories

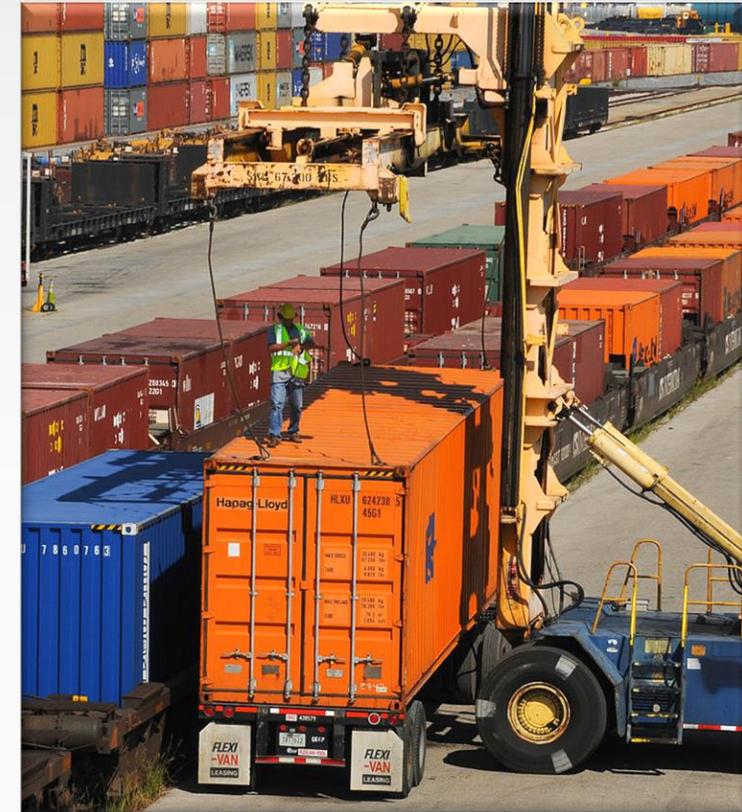
May 19, 2022

William Carnright
U.S. EPA Region 4

The Importance of Freight Movement



- Freight Movement is vital to global trade and the world economy. Yet it also creates adverse impacts on the environment and public health.
- The U.S. transportation system moves a daily average of over 51 million tons of freight
- E-Commerce sales increased 20-fold between 2000 and 2019
- Experts project that by 2050, global freight transport emissions will surpass those from passenger vehicles.
- To address these trends and challenges, EPA developed the SmartWay program.





SmartWay® Program Origins



- Launched in 2004, this voluntary public-private program:
 - provides a comprehensive and well-recognized system for tracking, documenting and sharing information about fuel use and freight emissions across supply chains
 - helps companies identify and select more efficient freight carriers, transport modes, equipment, and operational strategies to improve supply chain sustainability and lower costs from goods movement
 - supports global energy security and offsets environmental risk for companies and countries
 - reduces freight transportation-related emissions by accelerating the use of advanced fuel-saving technologies
 - is supported by major transportation industry associations, environmental groups, state and local governments, international agencies, and the corporate community



- **The SmartWay Transport Partnership**
 - Freight shippers, carriers, logistics companies and other stakeholders partner with EPA to measure, benchmark and improve logistics operations so they can reduce their environmental footprint.
- **The SmartWay Brand**
 - Through SmartWay technology verification and branding, EPA has accelerated availability, adoption and market penetration of fuel-saving technologies and operational practices while helping companies save fuel, lower costs and reduce adverse environmental impacts.
- **SmartWay Global Collaboration**
 - EPA works with a broad range of national and global organizations to harmonize sustainability accounting methods in the freight sector. SmartWay also provides support to global policy makers that wish to model transportation sustainability programs after the SmartWay program.



- The SmartWay technology verification program has test protocols for certain fuel saving technologies. The test protocols are typically based on industry procedures with additional constraints to improve confidence in performance.
- Some verification protocols directly measure fuel savings such as by track testing trucks, while other test methods such as for tire rolling resistance measure a related performance metric.



Installing EPA-verified aerodynamic devices on your trailer can save fuel by minimizing aerodynamic drag and maintaining smoother air flow. By using combinations of devices, you can save 9% or more on fuel usage.

- **Front fairing**
 - A device attached to the front of the trailer, such as a gap reducer, to minimize turbulence between the tractor and trailer.
- **Rear fairing**
 - A device mounted around or on the back of the trailer such as a tail that reduces the drag from the low-pressure wake behind the trailer.
- **Under fairing**
 - A device installed on the underside of a trailer, such as a skirt, to manage air flow along the side of the trailer and reduce turbulence in front of the rear wheels.



- Track Testing
 - This method measures fuel usage and savings with full-scale vehicles and technologies on an outdoor test track. This method is most similar to highway driving.



- Wind Tunnel Test
 - This test uses a test chamber to evaluate air flow around an object and is often used for measuring the aerodynamic efficiency of vehicles and airplanes. Testing tends to be smaller than full-scale, as tunnels operate at 1/3 or 1/8 scale. Fuel savings are calculated from the measured drag reductions.



- **Coastdown Testing**
 - Traditionally used for light-duty, coast-down testing accelerates a full-scale tractor-trailer to a certain speed before disengaging the engine and drive train. The time it takes the truck to “coast down” to a lower speed is measured and used to calculate aerodynamic drag and potential fuel savings with changes in drag.
- **Computational Fluid Dynamics (CFD) (Supplemental only)**
 - CFD is a computer simulation tool that models a vehicle’s movement on the road or in a virtual tunnel. CFD analyses are performed with computer software to estimate a vehicle’s aerodynamic drag based on the vehicle’s geometry, speed, and ambient air conditions. At this time, CFD is a supplemental test method only, meaning that it must be used with another method for verification purposes.
- **Benefits of Multiple Test Methods**
 - EPA encourages technology manufacturers to use multiple test methods. Diversified device testing with a consistent outcome gives customers confidence in product reliability. Results from secondary test methods can support the original verification outcome even though there may be some differences between test methods for the same device.



SmartWay®
**Low-Rolling
Resistance Tires**

- The SmartWay Technology Program verifies low rolling resistance (LRR) performance for both new and retread tire products.
- On long-haul class 8 tractor-trailers, LRR tires and retreads can save fuel by 3% or more compared to common higher rolling resistance (RR) tires. EPA testing has shown that LRR tires can save fuel by 7% to 10% when compared to high RR tires.



- Retread technologies are verified for drive and trailer axle positions.
- Fleet operators should check with the tire manufacturer of multi-position tires to confirm that the tire is suitable for the intended application.
- Where a tire casing is in good condition and suitable, verified retreads can be applied to most SmartWay verified tires and achieve comparable fuel savings.



- Maximum Efficiency
 - To achieve fuel savings of three percent or more, the following requirements must be met:
- LRR Tires
 - Tires are used on the axle positions for which verification is specified.
 - Verified low rolling resistance tires are installed on all axle positions of the tractor and trailer. (Note: EPA has also demonstrated incremental fuel savings when low rolling resistance tires are used just on the tractor and/or just on the trailer.)
 - All tires are properly inflated according to the manufacturer's specifications.
- Retreads
 - Verified retread technologies are used on both the drive and trailer axles. (Note: EPA has also demonstrated incremental fuel savings when low rolling resistance tires are used just on the tractor and/or just on the trailer.)
 - The retread technologies are used on the axle positions for which verification is specified.
 - Verified low rolling resistance steer tires are used.
 - All tires are properly inflated according to the manufacturer's specifications.



- Driver comfort is essential to the job of long-haul trucking, and sometimes truck drivers must run their engines to stay warm or cool in their trucks while resting. But long-duration idling is also costly to the driver, to the fleet owner, and to the environment.
- Benefits from reducing long-duration idling include:
 - Decreasing fuel costs,
 - Decreasing engine maintenance costs;
 - Extending engine life;
 - Improving operator well-being by decreasing noise levels; and
 - Decreasing emissions that are harmful to the environment.
- There are two ways of reducing idling:
 - Behavioral strategies; and
 - Idling Reduction Technologies, which are assessed and verified by EPA.
- Each year, long-duration truck idling results in the following estimated or approximated figures:
 - 1 billion gallons of fuel consumption
 - 11 million tons of carbon dioxide (CO₂)
 - 180,000 tons of nitrogen oxides (NO_x)
 - 5,000 tons of particulate matter (PM)



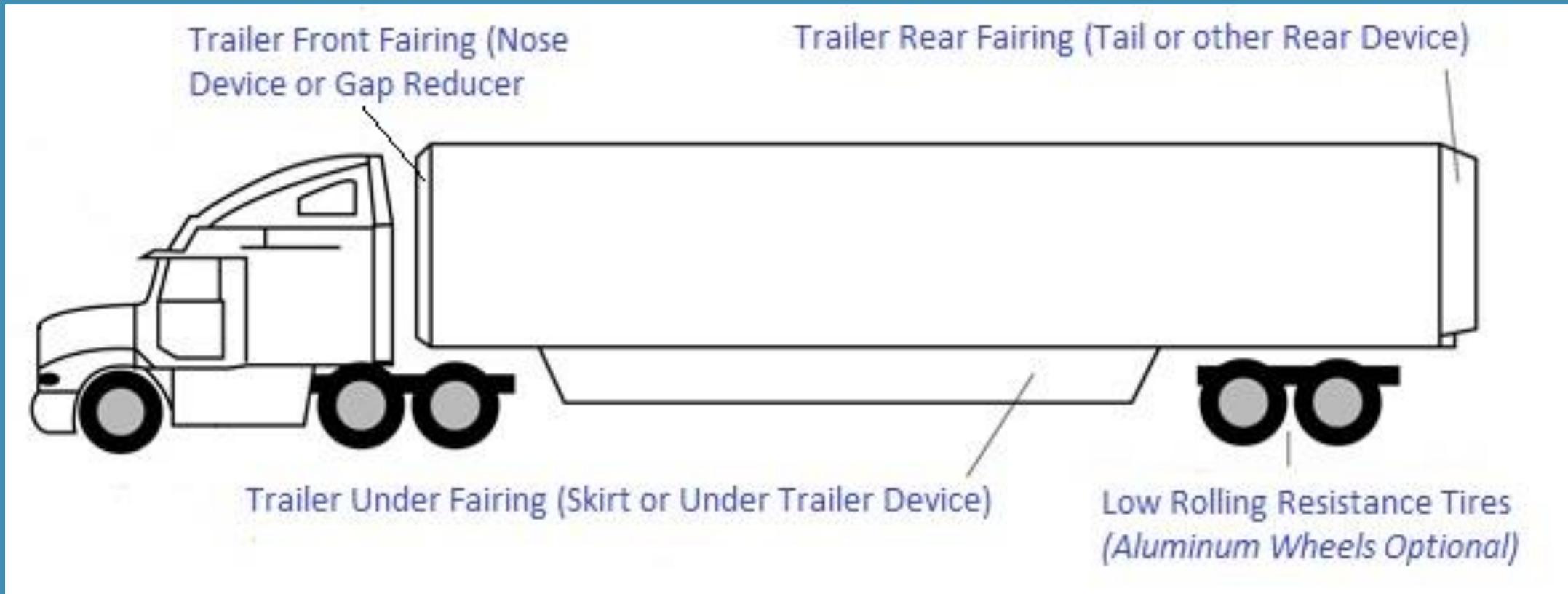
- **Behavioral Strategies for Reducing Idling**
 - Both driver training and financial incentives are effective strategies to reduce idling.
- **Driver/Operator Training**
 - Educating drivers and operators about the impacts and adverse effects of long-duration idling can help change their behavior.
- **Financial Incentives**
 - Fleet owners can offer financial incentives to drivers to reduce idling. Many large trucking companies already offer these incentives and have reported success in reducing idling times below national averages.



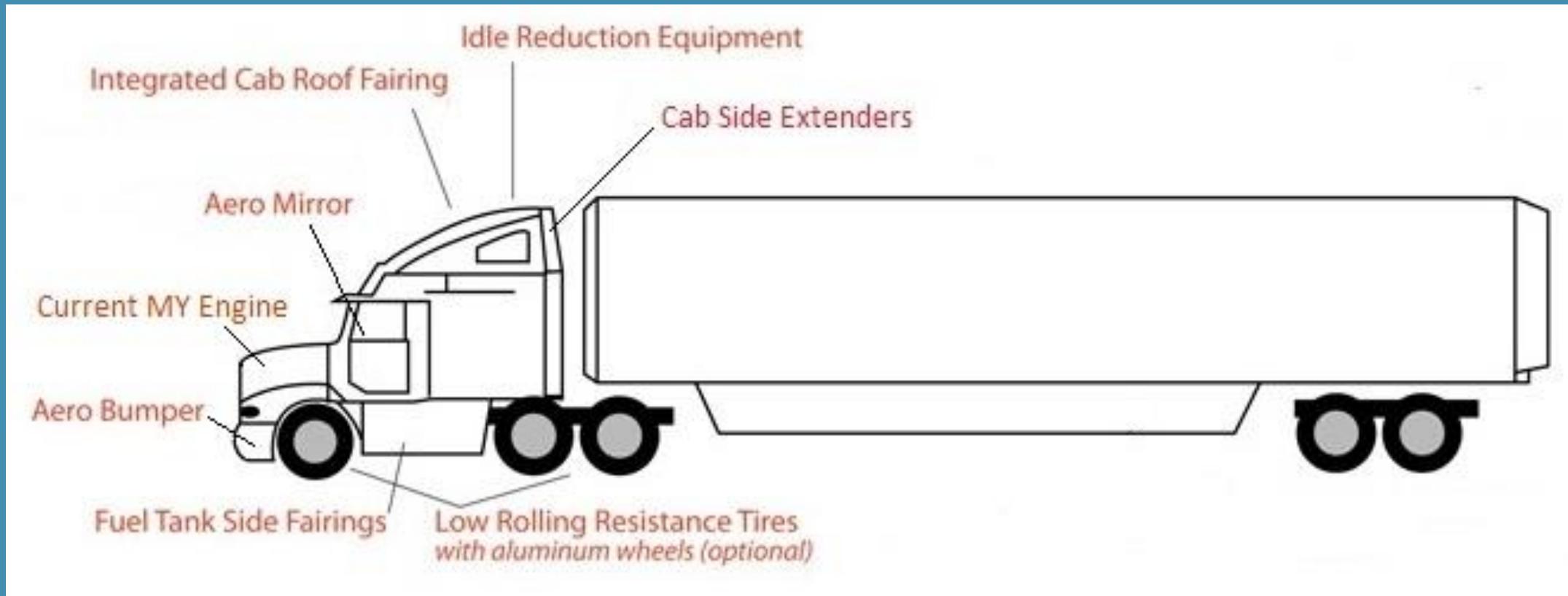
- **Idling Reduction Technologies (IRTs)**
 - There are IRT devices that allow operators to shut down the main propulsion engine. IRT devices allow engine operators to reduce long-duration idling of the main propulsion engine by using an alternative technology.
- An IRT device generally has the following three main characteristics:
 - Is installed on a vehicle (e.g., bus, truck, locomotive, automobile, marine vessel, equipment, etc.) or at a location
 - Reduces unnecessary main engine idling of the vehicle or equipment
 - Provides services (e.g., heat, air conditioning, and/or electricity) to the vehicle or equipment that would otherwise require the operation of the main drive engine while the vehicle or equipment is temporarily parked or remains stationary.



- **Examples of Idle Reduction Technologies Include:**
 - **Auxiliary Power Units and Generator Sets (APU/GS)**
 - An APU/GS device contains an EPA emission-certified engine (certified under 40 CFR Part 89). APU/GS devices supply cooling, heating, and electrical power.
 - **Fuel Operated Heaters (FOH) aka Direct Fired Heaters (DFH)**
 - FOHs are small, lightweight heaters that burn fuel (typically diesel) from the main engine fuel supply or a separate fuel reserve. They provide cabin and driver heating, and some models provide coolant heating to pre-heat and facilitate starting and operation of a typical internal combustion engine (ICE). FOHs can be used in conjunction with the cooling system for driver and cabin seasonal comfort needs.
 - **Battery Air Conditioning Systems (BAC) (Battery-electric heating and/or cooling system)**
 - A BAC system uses batteries to power an independent electric cooling system. These systems may integrate a FOH, heat pump, or coolant heaters to supply heating.



- There are two levels of SmartWay designation for trailers. Both levels require SmartWay verified LRR or retread tires and some aerodynamic device use.
- To achieve the SmartWay Elite level, trailers may achieve a total fuel savings of 10% or more.



- In order to be designated by SmartWay, tractors must be equipped with aerodynamic features, LRR tires (or retreads for the drive tires), and idle reduction.
- Electric tractors may also qualify as Designated Tractors when properly equipped with aerodynamics and tires.



- **Benefits of Registering as a SmartWay Partner**
 - Whether you are a Shipper, Carrier or Logistics Operation there are a number of benefits to joining SmartWay including:
 - **Credible efficiency tracking and sustainability accounting**
 - EPA's emissions calculating tools are the "gold standard" of fuel efficiency and sustainability accounting in the freight transportation sector, ensuring that your tracking efforts are consistent with industry best practices.
 - **Identifying Operational efficiencies:**
 - You can't fix what you don't measure. SmartWay helps you identify inefficiency and waste that costs you money, allowing you to make strategic improvements year after year.
 - **Demonstrated commitment**
 - Clients and customers are making more decisions based on companies' performance on environmental metrics that matter to them. Your participation in SmartWay quickly signals that you prioritize sustainability and efficiency and your performance data let them know what you've accomplished.



- While organizations that ship, carry or manage freight can become SmartWay Partners, organizations that do not control freight can still participate in SmartWay as SmartWay Affiliates. SmartWay Affiliates are organizations that agree to educate and support their members' efforts to improve freight sustainability.
- There are a number of benefits to joining SmartWay as an Affiliate including:
 - Bringing value to your stakeholders via education, webinars, best practices, and technical support.
 - Helping members make a difference and address climate impacts from goods movement.
 - Providing free value-added resources for your members and stakeholders.
 - Getting recognized by EPA for your commitment to raising awareness and transforming the freight sector.
 - Learning from other organizations about how to advance sustainable freight efficiency.

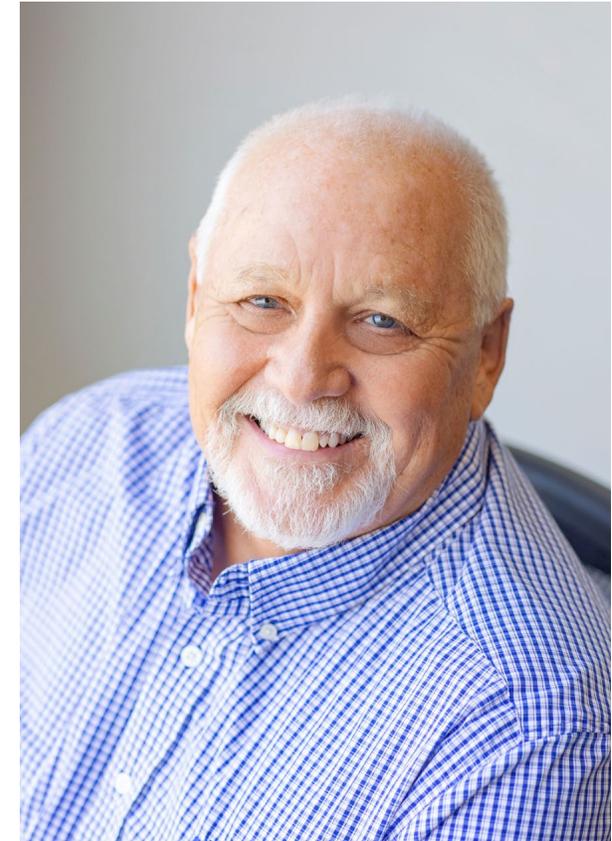


Questions?



SPEAKER BIO

- 40+ Years' Experience in the Fleet Industry
- Director of Strategic Innovation, Strategy, Client Consultation, Product Management, Training at RTA Fleet Management Systems
- Transportation Industry Consultant With Mercury Associates Over 10 Years
- Local and State Government (City of West Jordan, Stamford, CT, Utah and Georgia) Fleet Administrator
- Successfully Transitioned from Wrench Tuner to Fleet Executive over a \$1.5 Billion (Annual Capital And Operating Budget), 50,000+ unit Fleet with Corporate (Coca-Cola and Republic Services), Fleet VP
- 15 years as a Public Transit and School bus leader at Utah Transit Authority and Salt Lake City School District
- Directed, Managed or Participated in Over 100 Fleet Studies Across North America
- Government Fleet Hall Of Fame Inductee
- Recipient Of Government Fleet's Legendary Achievement Award



Steve Saltzgiver, Director

SmartWay Verification

Specifications



Personal Experience

- 40+ years Fleet Management
 - *Coca-Cola Refreshments, 2012*
 - *Republic Services, 2014*
 - *Sumitomo Rubber, 2019*



Why SmartWay?

Advantages:

- SmartWay Carrier Partners measure, benchmark, and track efforts to increase efficiency and fuel economy and have the documentation to prove it, giving them an advantage with prospective and current clients.
- Helps companies demonstrate their efficiency achievements, show continuous improvement, and learn best practices to become even better.

Benefits of Becoming a SmartWay Carrier Partner:

- Reducing fuel use and increasing efficiency, is a win-win—businesses saves money, and the environment suffers fewer harmful emissions.

Becoming a SmartWay Carrier Partner helps you achieve:

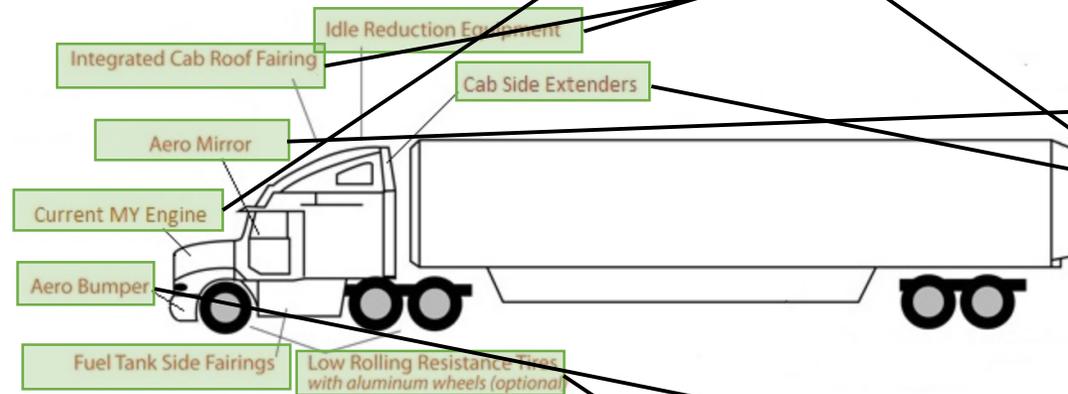
- **Credible efficiency tracking and emissions accounting:** EPA's tools are "gold standard" of fuel efficiency and emissions accounting in transportation, ensuring tracking efforts are consistent with industry best practices.
- **Demonstrated commitment:** *Customers look to SmartWay as a preferred way of identifying more efficient carriers. Participation quickly signals that efficiency is a priority for your company.*
- **Measurable results:** *Track metrics that matter most to your bottom line. By benchmarking and monitoring your performance, you see how you compare to your peers, as well as how your efforts affect results on a year-to-year basis. SmartWay provides reports that make it easy to show improvements.*
- **Operational efficiencies:** *You can't manage what you don't measure. SmartWay helps you identify inefficiency and waste that costs money and allows companies to make strategic improvements year after year.*
- **Sustainability innovations:** *Tap into industry expertise and best practices through expert webinars, meetings, and case studies.*
- **Continuous improvement:** *Annual participation in SmartWay provides business intelligence that helps pinpoint real achievements and uncover opportunities to improve.*
- **Industry recognition:** *EPA showcases companies who demonstrate green freight best practices via case studies, profiles, panel discussions, webinars, and awards. Enhances awareness and marketing for your company.*

Source: <https://www.epa.gov/smartway/become-smartway-carrier-partner>

SmartWay Starts w/Tractor Specifications

SmartWay Tractors – in Both Sleeper and Day Cab Configurations

SmartWay tractors have been demonstrated to be the most fuel-efficient Class 8 models for long-haul and regional goods movement. SmartWay Tractors can be sleeper or day cab configurations. See below for the required components of the SmartWay Designated Tractor:



AXLES, WHEELS, TIRES AND SUSPENSION	
AXLE, FRONT NON-DRIVING	13,200-lb Capacity
AXLE, REAR, TANDEM	Meritor MT-40-14X-3CFR Single Reduction, 0.374", 40,000-lb Capacity, Rear-Rear Axle Gear Ratio: 3.25 NO EXCEPTIONS
AXLE, REAR LUBE TYPE	EmGard FE-75W-90) Synthetic Oil; OR EQUIVALENT
WHEELS, FRONT DISC	22.5x8.25 Rims, Polished Aluminum, 10-Stud, 285.75mm BC, Hub-Piloted, Flanged Nut, with Aluminum Hubs
WHEELS, REAR DUAL DISC	22.5x8.25 Rims, Polished Aluminum, 10-Stud, 285.75mm BC, Hub-Piloted, Flanged Nut, with Aluminum Hubs
TIRES, FRONT	(2)RI 150/75R22.5 (FALKEN TBR), Rated 75 MPH, All-Position NO EXCEPTIONS
TIRES, REAR	(8) RI 150/75R22.5 (FALKEN TBR), Rated 75 MPH, Drive NO EXCEPTIONS
SUSPENSION, FRONT	SPRING Monoleaf; 13,200-lb Capacity; with Shock Absorbers
SUSPENSION AIR CONTROL VALVE	Pressure Release Control In Cab
SUSPENSION, REAR, AIR, TANDEM	Ride Optimized Suspension (IROS); 55" Axle Spacing; 40,000-lb Capacity, 9.25" Ride Height, with Shock Absorbers OR EQUIVALENT

ENGINE SYSTEM AND COMPONENTS	
ENGINE, DIESEL	Type: Cummins X15 450 ST) Efficiency Series, EPA 2017, 450 HP @ 1800 RPM, 1450/1650 lb-ft Torque @ 1000 RPM, 1800 RPM Governed Speed, 461 Peak HP (Max) NO EXCEPTIONS
EMISSION COMPLIANCE	Low NOx Idle Engine, Complies with California Clean Air Regulations; Includes "Certified Clean Idle" Decal on Hood
FEDERAL EMISSIONS	Cummins X15 - EPA, OBD and GHG Certified for Calendar Year 2017 or 2018
ANTIFREEZE TYPE	Extended Life Coolant; To -40 Degrees F / -40 Degrees C, Freeze Protection
COLD STARTING EQUIPMENT	Automatic Ether; With Engine ECM Control
A/C COMPRESSOR	Heavy Duty Air Conditioner Compressor
FAN DRIVE	Direct Drive Type, Two Speed With Residual Torque Device for Disengaged Fan Speed (Horton Drivemaster or equal)
AIR CLEANER	Single Element, Engine Mounted
ENGINE AND COMPONENT DRAIN PLUGS	Magnetic plugs - engine drain, transmission fill and drain axle(s) fill and drain
GAUGE, AIR CLEANER RESTRICTION	Air Cleaner Mounted
HOSE CLAMPS, RADIATOR HOSES	Gates Shrink Band Type OR EQUIVALENT
RADIATOR	Aluminum; Welded, Down Flow System, Front to Back, 1325 SqIn, 806 SqIn CAC
IDLE CONTROLS	Auto Shut Off set at 5 Minutes
NO IDLE SYSTEM	Battery Powered HVAC 17,000 BTU Heat and 6,000 BTU Air Conditioning Capacity to maintain temperatures in the Sleeper Compartment between Ambient Temperatures of 0 deg. F and 100 deg. F, for use with 12 Volt Power

CHASSIS SKIRTS	Cab Length for 56" Sleeper Cab, Molded Dark Gray Color, for use with DEF Tank
SUNSHADE, EXTERIOR	Aerodynamic, Painted Roof Color, with Integral LED Clearance/Marker Lights

EXTERIOR AND CHASSIS COMPONENTS	
GRILLE	Chrome covered
FRONT END	Tilting Fiberglass, with Three Piece Construction or SPECIFY
BUG SCREEN	Front End; Mounted Behind Grille
HOOD TILT ASSIST	Torsion Bar Spring System OR EQUIVALENT
EXTERIOR PAINT SCHEME	Single Color -Classic White
PAINT TYPE	Base Coat/Clear Coat, 1-2 Tone
EXTERIOR MIRRORS	Convex, hood mounted Right Side, Bright, (2) Aero; Pedestal, Power Adjust, Heated Heads, Bright Finish Heads, Black Arms, 6.3" x 13.82" Flat Glass, 6.38" x 6.18" Convex Glass Both Sides
TOW HOOKS	Removable Front Tow Hooks stored on the Chassis Frame
AIR DEFLECTOR MODIFICATIONS	With Integrally Molded Shelf to Mount Qualcomm or Rockwell Antenna. Shelf in Center Section of Air Deflector
AERODYNAMIC PACKAGE	Includes Roof Air Deflector, With Extension and 18" Wide Cab Side Extenders; for 56" Hi-Rise Sleeper Cab, Paint and Install at the Plant
ACCESS, CAB AND FRAME	Bright Aluminum; Includes Driver & Passenger Side Cab Access, Two Steps per Door and Left Side Frame Access Step with One Bright Flush Mounted Deck Plate and Black Grab Handle; With Sleeper Cabs
FIFTH WHEEL LOCATION	Mounted on Rear Axle Centerline, dash mounted control valve and plumbing for fifth wheel. LH fifth wheel release. Braided fifth wheel ground strap mounted right side OR EQUIVALENT
IDLE REDUCTION LABEL	Idle Reduction System Weight Exemption, (Vehicle Equipped with Idle Reduction System that Qualifies for the Weight Limit Increase Per U.S. CFR)
SMART WAY LABEL	US EPA Qualified, Meets Smart Way Specifications
FIFTH WHEEL, AIR SLIDE	Fontaine SL6LWB725024) 24" Slide, 7.25" Above Top of Frame, Left Hand Release OR EQUIVALENT
MUD FLAP HOLDER	Spring Loaded, Painted Black; With Red and White Reflective Tape; Less Flaps
MUD FLAPS, REAR	Black Rubber, Anti-Sail Less Logo; Less Holders
QUARTER FENDERS REAR WHEELS	Black Plastic; Frame Mounted
FRAME RAILS	Tapered Rear - Heat Treated Alloy Steel (120,000 PSI Yield); 10.125" x 3.580" x 0.312" (257.2mm x 90.9mm x 8.0mm); 367.4" (9333mm) Maximum OAL
FRONT BUMPER	3-Piece, Plastic, Aero, Molded Dark Gray Color OR EQUIVALENT

ELECTRICAL SYSTEM AND ACCESSORIES	
SYSTEM VOLTAGE	12-Volt, Standard Equipment and configuration
DATA LINK CONNECTOR	Compatible with Cummins engine
FUSES	Electrical SAE, Blade-Type
HAZARD SWITCH	Push On/Push Off, Located on Instrument Panel to Right of
STEERING WHEEL CONTROLS	Headlight Dimmer Switch Integral with Turn Signal Lever
HORN	Electric, Single
AIR HORN	Black, Single Trumpet, with Lanyard Pull Chain
PARKING LIGHT:	Integral with Front Turn Signal and Rear Tail Light
POWER SOURCE:	Cigar Type Receptacle with Cap and USB Port, Located in Dash
AUXILIARY POWER UNIT (APU)	Factory installed Thermo King Tripac evolution auxiliary power unit HVAC with DPF RH rail; meets carb 2014 requirements. standard auxiliary power unit plumbing with shutoff valves OR EQUIVALENT

Benefits & Successes

- Improved Brand recognition and marketing for the company
- Achieved compliance with Sustainable fleet initiatives
- Reduced fuel gallons and expenses
- Reduced vehicle idling and improved CO² footprint
 - *Coca-Cola Refreshments reduced costs by \$2M annually*
 - *Coca-Cola refreshments reduced idling from 40 to 8%*
- Optimized annual truck specification process
- Allowed us to Benchmarking our SmartWay success with peer fleets





C.H. ROBINSON



Michael Calhoun

- Product Manager for Robinson Labs, C.H. Robinson's innovation incubator
- Responsible for leading the execution of digital freight transportation solutions from concept to full scale production
- Forefront of technology advancement in the industry



C.H. ROBINSON

Achieve your supply chain sustainability goals

NC Cleantech Center

May 19, 2022

Our information is compiled from a number of sources that to the best of our knowledge are accurate and correct. It is always the intent of our company to present accurate information. C.H. Robinson accepts no liability or responsibility for the information published herein. www.chrobinson.com © 2020 C.H. Robinson Worldwide Inc. All Rights Reserved.



→ Who is C.H. Robinson?

As the world's most connected logistics platform, we solve problems for companies across the globe and across industries, from the simple to the most complex – driving increased savings, reliability and visibility for your business.



\$28B
in freight under
management,
20M shipments
annually



Most connected
platform with nearly
200K customers and
contract carriers



Move the most
truckload freight
of any company
in the world



Largest LTL network in
North America



Leading forwarder of
ocean freight from
China to the U.S.



A global managed
TMS provider
powering the
most complex supply
chains
in the world



→ Global Suite of Services™

Delivering an average of over 3 services per top 500 customer



Truckload



Last Mile



Customs & Compliance



Managed Services



LTL



Ocean



Consolidation



Sourcing



Intermodal



Air



Consulting



Move the
most truckload freight
of any company
in the world



Leading
forwarder of
ocean freight
from China to U.S.



Largest LTL
network
in North America



A global managed
TMS provider
powering the
most complex supply chains
in the world



→ Sustainability challenges



External pressures

- Consumer behavior, government regulations and investor demands have heightened the expectation to measure and reduce greenhouse gas (GHG) emissions.
-



Measuring, benchmarking and tracking

- It may be difficult for shippers to understand what their carbon output is or benchmark year-over-year performance—leading to difficulty tracking and achieving carbon reduction goals.
-



Optimization strategy and execution

- Once carbon output is tracked, shippers want to know how they can implement a strategy and execution plan to help optimize their supply chains and reduce carbon emissions. This often requires deeper analysis and consulting.
-

→ We're committed to sustainability

As one of the world's largest logistics platforms with the most freight under management in North America, we help increase transportation efficiency for our customers and carriers, lowering greenhouse gas (GHG) emissions.



At C.H. Robinson

- Will reduce carbon intensity 40% by 2025
- Prioritize environment and climate change from enterprise-wide materiality assessment
- Conduct emissions inventory and annually respond to Carbon Disclosure Project (CDP)



Industry efforts

- Pioneering new LTL methodology for carbon emissions reporting
- Long-time partner of the U.S. Environmental Protection Agency's SmartWay
- Contributing data and information to MIT for academic research and reduction opportunities



Customer improvements

- Our business model enables improvements everyday (e.g. reducing empty miles, consolidating freight)
- Emissions IQ: Carbon emissions measurement and analysis technology
- Consulting and optimization

→ Simplify carbon emissions measurement and reduction across your global supply chain

Get started: Emissions IQ™

A free, easy-to-use technology tool, built by and for supply chain experts, from Robinson Labs that will measure and help you reduce carbon emissions.

It automatically pulls your emissions data so you can:

- **Get visibility** to your carbon impact, by mode, location and retailer
- **Benchmark your performance** against yourself, your industry and all shippers
- **Make quick decisions and take action** whether in early or advanced stages of your carbon reduction journey

Go further: Consulting and Optimization

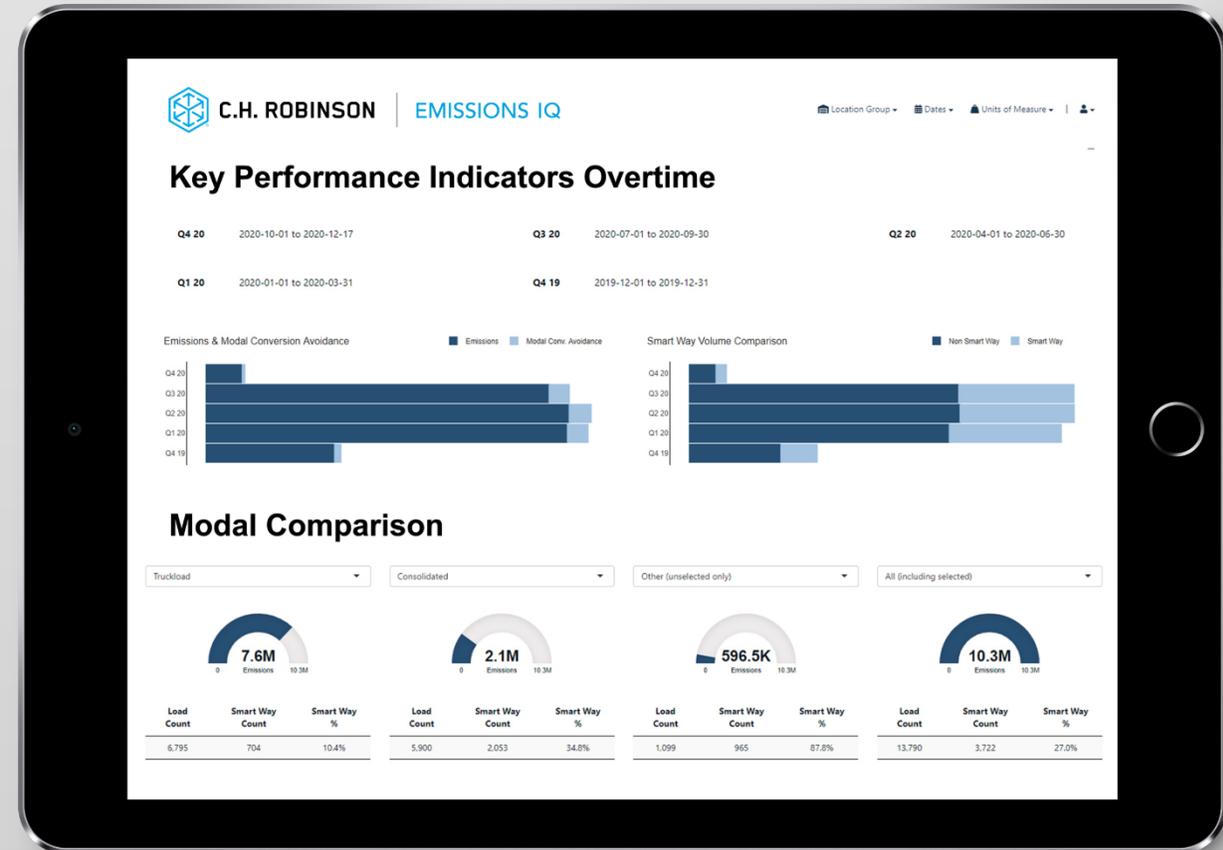
Improve your supply chain by increasing savings and efficiency while reducing emissions.

Our experts will help you:

- **Understand emissions** across all modes and all geographic locations
- **Analyze all data** beyond freight tendered to C.H. Robinson
- Get a **customized supply chain assessment** that reveals opportunities to reduce empty miles and carbon emissions through consolidation, modal conversion, network design, and inventory reduction.
- Create an optimization strategy and execution model to **achieve your goals**

→ Emissions IQ: Data at your fingertips

- **GLEC Accredited Emissions Summary**
An overview of your scope 3 emissions, broken down by tonne-mile or tonne-kilometer, intensity, and mode.
- **Emissions analysis**
Your emissions data by mode, region, date, location, and retailer, as well as quantity of shipments booked with SmartWay certified carriers.
- **Key Performance Indicators**
Your emissions output vs. emissions avoided through modal conversion, as well as percentage shipped with SmartWay certified carriers.
- **Year-over-year benchmark**
Benchmark your performance against yourself, your industry, and all shippers through our information advantage.



Featured Partner: C.H. Robinson



C.H. ROBINSON

ABOUT C.H. ROBINSON

C.H. Robinson solves logistics problems for companies across the globe and across industries. With \$21 billion in freight under management and 19 million shipments annually, it is one of the world's largest logistics platforms. With the combination of its multimodal transportation management system and expertise, C.H. Robinson provides logistics services to 105,000 customers and 73,000 carriers.

C.H. Robinson

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Eden Prairie, MN 55347-5076
1-855-229-6128

“ Measuring and reducing freight emissions to achieve sustainability goals is a top pain point in our industry. We are committed to collaborating with our customers, carriers and other stakeholders to discover efficiency opportunities and create a roadmap for change. ”

— Angie Freeman, Chief Human Resources & ESG Officer,
C.H. Robinson

SMART CHOICES, BIG SAVINGS

C.H. Robinson has long recognized that **sustainability is smart business**. It joined SmartWay in 2005 when the partnership was first forming. The partnership with EPA SmartWay supports the company's commitment to advance sustainability in transportation and logistics.

For decades C.H. Robinson has assisted clients with network rationalization, load, and mode optimization and more. More recently, as public concern over climate issues has grown, the company has developed reporting and analytical tools that can provide its customers with clear visibility into their supply chain's carbon footprint and year-over-year capabilities. **SmartWay's benchmarking tools and carrier ranking system** reinforces and aligns nicely with this work. The partnership also offers opportunities to share insights on the benefits of sustainability through case studies, webinars, and industry events.

TECHNOLOGY-BASED TRANSPORTATION SOLUTIONS

As a logistics platform company, C.H. Robinson doesn't own truck assets. The value it brings to customers is in the development and application of technology-based transportation management solutions (TMS). C.H. Robinson logistics and supply chain professionals are experienced, highly skilled and trained. They collaborate with shippers, carriers, and other logistics providers to program and refine its TMS, and find ways to **reduce a customer's emissions footprint**, through the deployment of load and mode optimization strategies, enhanced utilization of transportation equipment, and reduced empty miles, among others.

To deliver on these services, C.H. Robinson invests in talent and technology. For example, Navisphere—its global TMS—**matches freight with carriers that receive the greatest yield value to create more fully-utilized trailers**. And with nearly 200,000 customers and carriers, the data that is available to C.H. Robinson offers an information advantage that can help drive smarter solutions for more efficient supply chains.



Featured Partner: C.H. Robinson *(continued)*

Another example is Emissions IQ—a new tool and data model developed in C.H. Robinson’s innovation incubator—that shows customers their **carbon emissions specific to mode, location, and retailer, as well as how many shipments were booked with SmartWay-registered carriers**. During the pilot phase, C.H. Robinson reports that its Emission IQ program helped 125 companies reduce carbon emissions by 350,000 metric tons of CO₂ equivalents, about as much carbon as would be released by 39 million gallons of gasoline.



WORKFORCE DEVELOPMENT AND PARTNERSHIPS

As it invests in big data and digital technologies, like artificial intelligence, machine learning and predictive analytics, C.H. Robinson strives to create technology that is built by and for its supply chain professionals and experts. The company currently manages an international team of more than 1,000 data scientists, engineers, and developers.

C.H. Robinson continually seeks to expand and strengthen its workforce. It engages with universities, community colleges and tech centers throughout the world on numerous partnerships and projects that help inform its technology investment and recruitment focus.

The company’s new Emissions IQ product offering demonstrates the benefits of this focus. The program was born out of C.H. Robinson’s goal to **advance sustainability within the transportation industry**.

The company also invested time and resources to standardize a new less-than-truckload (LTL) methodology for measuring carbon emissions. C.H. Robinson initially funded a project with MIT’s Center for Transportation & Logistics to address emissions of LTL shipments. The white paper for this original research can be found here [link - ctl.mit.edu/sites/ctl.mit.edu/files/library/public/2014ExecSummary-AguiarWoolard.pdf]. This research led to a unique collaboration with SmartWay, where EPA validated the approach developed at MIT for modeling LTL emissions. Subsequent to this collaboration, EPA SmartWay developed a simple calculator tool that can be used to **estimate carbon emissions from individual LTL shipments** (link to tool - www.epa.gov/sites/default/files/2021-04/documents/420f21031.pdf).

WHAT’S NEXT?

As a company, C.H. Robinson leads by example, and plans **to continue its partnership with EPA SmartWay**. It will use SmartWay’s partner list to share information with shipper clients about carriers that are measuring, benchmarking, and working to improve their environmental performance. It also looks forward to future opportunities to engage with SmartWay on case studies, webinars, and industry events.

The company has a public goal to reduce its carbon intensity 40% by 2025, compared to its 2019 baseline. In coming years, C.H. Robinson will continue to conduct energy audits and identify opportunities for energy conservation at its largest owned and operated facilities, assess the feasibility of onsite renewable energy use and continue to responsibly leverage renewable energy credits and engage with offset projects.



Please visit the SmartWay website at www.epa.gov/smartway for more information about our Partners.





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