



## Decarbonizing Heavy-Duty Assets with 100% Biodiesel

2023 Sustainable Fleet Technology Conference & Expo

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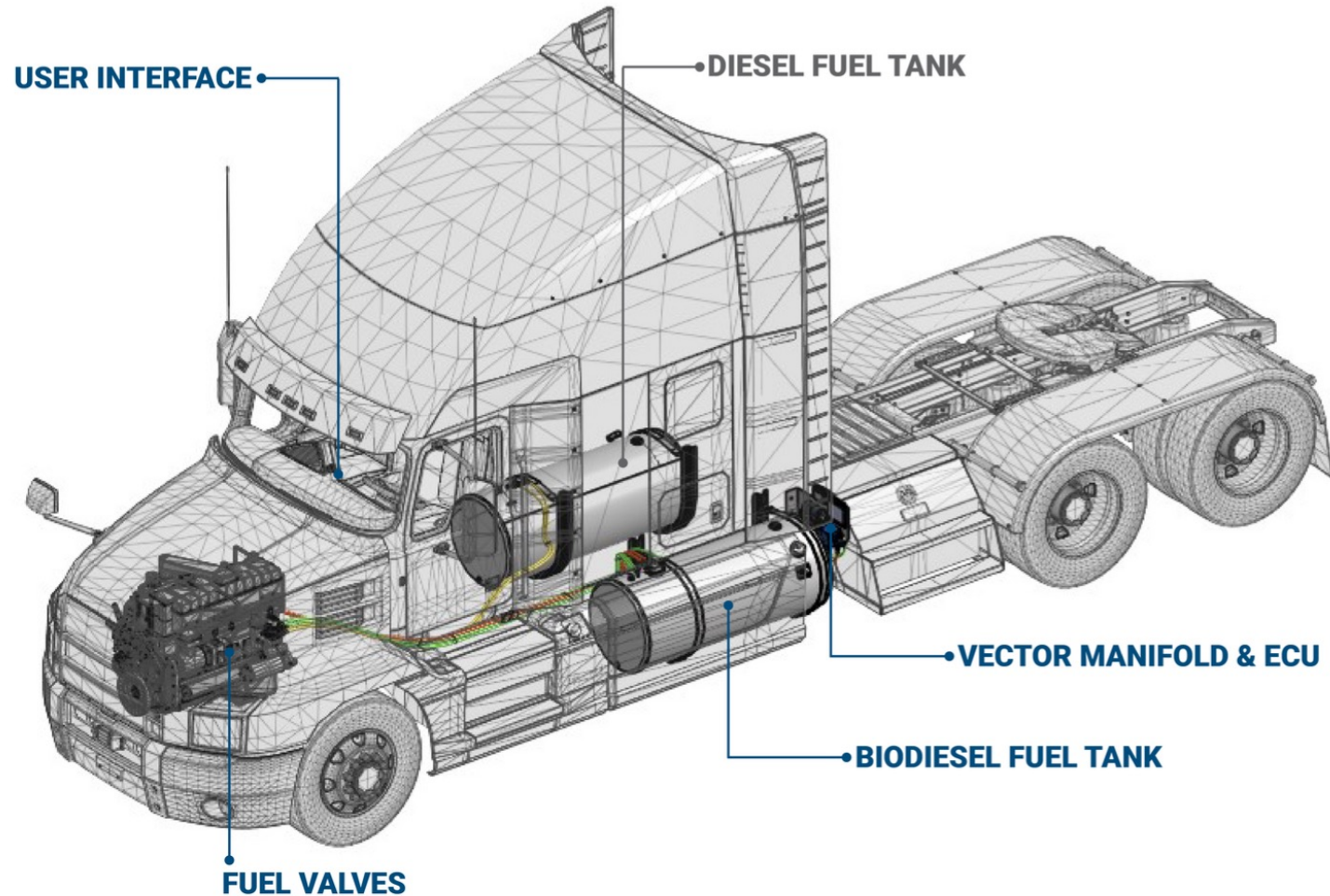
# ***Why Biodiesel?***

- ***100% Biogenic Carbon***
- ***Utilizes Existing Infrastructure***
- ***Renewable, Sustainable, & Scalable***
- ***Low Cost***
- ***Safer & More Efficient than ULSD***

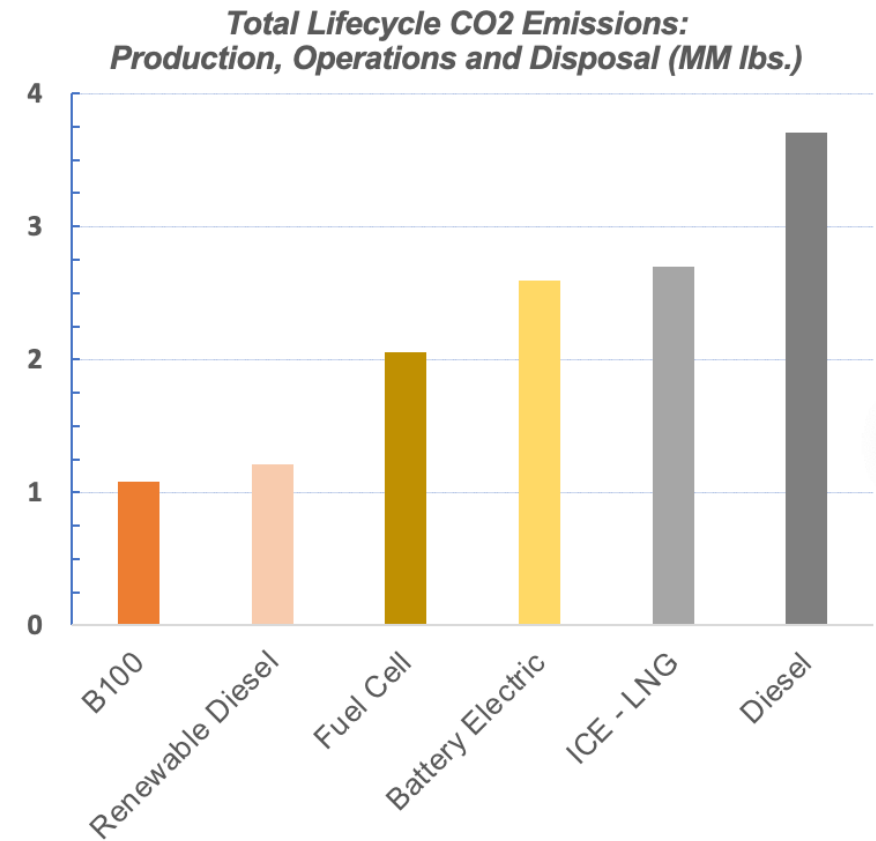


Today's engines only allow use of biodiesel blends up to 20% (B20).

*Optimus' Vector System upgrades engines to use 100% biodiesel (B100).*



***If a class 8 truck powered by 100% biodiesel is replaced with a BEV using the current US electricity generation mix, the net carbon emissions output as a result would be increased by 2.5x.***







**“The Iowa Department of Transportation is becoming a global leader in carbon reductions while taking the next steps forward toward the state’s sustainability goals, this is coming to fruition as a result of Optimus’ advanced technology coupled with fuels produced right here in Iowa.”**

*- Todd Cogdill, Fleet Manager*



**“Biodiesel gives us the ability to immediately reduce the carbon emissions in our fleet... The truth is, for these bigger vehicles that carry huge loads and run long hours, electrification just isn’t ready or widely available yet...**

**The Optimus Vector System offers a path forward that is available today.”**

*- Mahanth Joishy, Superintendent of Fleet Services*







## **“The Preferred Choice”**

**“DC Mayor Muriel Bowser says cutting carbon isn’t an option. It is something we must do... Heavy-duty electric options are extremely expensive and aren’t ready for wide deployment yet. Optimus has given us the ability to cut our carbon beyond our reduction goals.”**

*- Christine Davis, Former Director DC Public Works*





**“This study [*Immediate Decarbonization of Class 8 Trucking*] helped to give us and other fleets the data they need to feel secure in implementing the Vector System with B100 to enhance sustainability efforts without sacrificing efficiencies.”**

*- Steve Finn, ADM Vice President of Transportation*






# 1.3MM Mile Fleet Study – ADM Trucking

**IMMEDIATE  
DECARBONIZATION OF  
CLASS 8 TRUCKING**

A 1.3 Million Mile Evaluation of 100% Biodiesel



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ADM unlocks the power of nature and transform crops into ingredients and solutions for foods, beverages and supplements for people all around the world, and we provide a complete range of solutions and services for livestock, aquaculture and pets.

adm.com



The American Lung Association's mission is to save lives by improving lung health and preventing lung disease. We do this through education, advocacy, and research.

cleanairchoice.org



Clean Fuels serves as the industry's central coordinating entity for technical, environmental, and quality assurance programs and will be the strongest voice for its advocacy, communications, and market development.

cleanfuels.org



Decatur Mack is Mack Truck's multiple award-winning central region dealer of the year, consistently striving for customer service second to none.

decaturmack.com



ESW America is a leading CARB / EPA recognized independent emissions testing facility operating a variety of engine and light & heavy-duty chassis dynamometers. ESWA is focused on diesel OBD validation, manufacturer self-testing, certification and emission control system validation. In addition, ESWA offers accelerated aging of catalysts / DPFs as well as component modification services.

eswgroup.com



The Illinois Soybean Association (ISA) is a statewide organization that strives to enable Illinois soybean producers to be the most knowledgeable and profitable soybean producers in the world. The project is funded by the Illinois Soybean Association Checkoff Program.

ilsoy.org



Mid Continent Testing is built on the commitment to prompt, accurate results by utilizing state-of-the-art equipment in a highly automated lab. MCT provides clients with rapid, reliable data and ensures the integrity of data by actively participating in lab certification programs to keep standards high.

thechemistrylab.com



The Missouri Soybean Merchandising Council is a statewide, farmer-led organization working to improve opportunities for Missouri soybean farmers through a combination of research, outreach, education and market development efforts supported by the soy checkoff.

mosoy.org



Optimus Technologies is a clean energy technology company based in Pittsburgh, Pennsylvania. Optimus manufactures the Vector System, an advanced fuel system technology that enables diesel engines to operate on 100% biodiesel.

optimustec.com



To accomplish its farmer profit mission, the soy checkoff is dedicated to growing the preference for U.S. Soy. Setting market-focused objectives with a clear plan of action is how we get there.

unitedsoybean.org

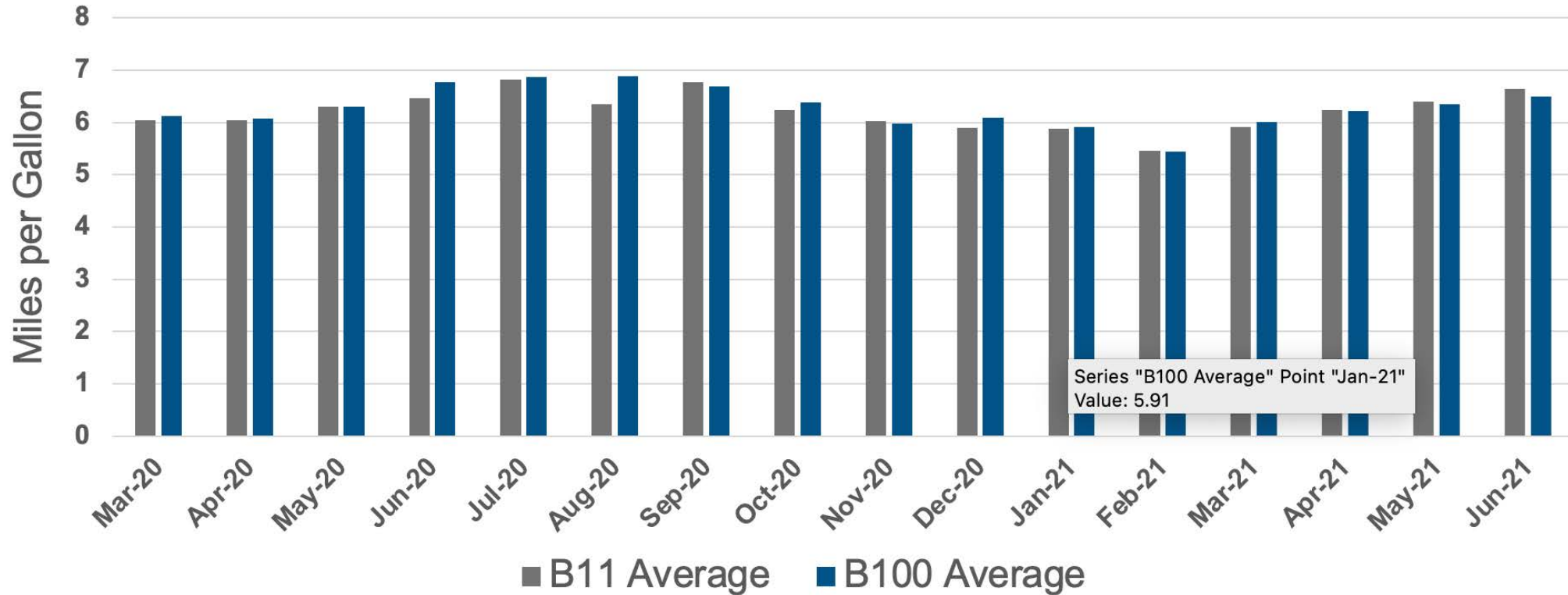
# Fuel COA Key Parameters

Cetane Number (ASTM D613)	Water & Sediment (ASTM D2709)	Water "Karl Fischer" (ASTM D6304)	Sulfur (ASTM D5453)	Acid Number (ASTM D664)	Oxidation Stability @110°C (EN14112)	Calcium & Magnesium (EN14538)	Sodium & Potassium (EN14538)	Phosphorus (ASTM D4951)
<b>48</b>	<b>0.00 % Volume</b>	<b>258 mg/kg</b>	<b>0.3 mg/kg</b>	<b>0.38 mgKOH/g</b>	<b>7.8 Hours</b>	<b>&lt;1 mg/kg</b>	<b>&lt;1.00 mg/kg</b>	<b>0.001 mg/kg</b>

- Weighted Average of 77,424 Gal.
- Commercial fuel from ADM Mexico, MO facility
- Refinery → Distributor → ADM Trucking Bulk Tank



# Fuel Economy Results



Diesel



6.24 MPG avg



651,424 mi



100% Biodiesel

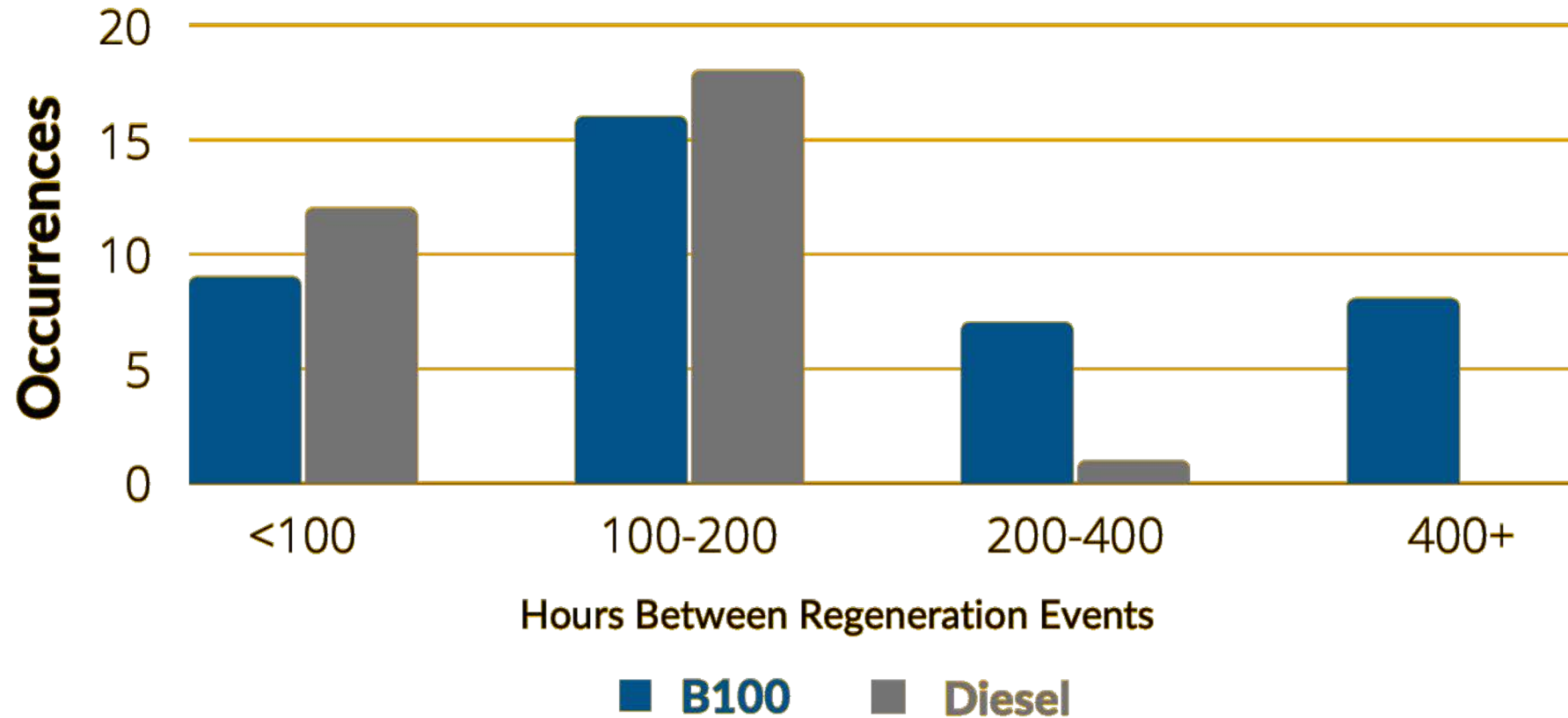


6.32 MPG avg



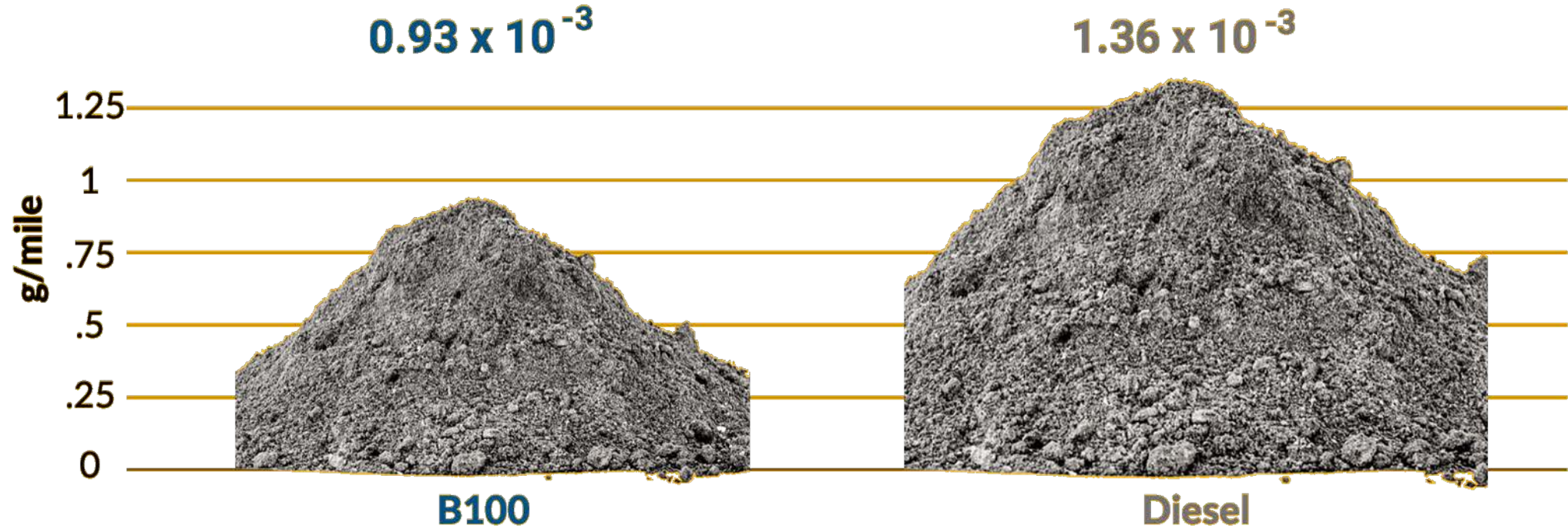
636,034 mi

# *DPF Regeneration Intervals*





# ***DPF Ash Accumulation & Clean Out***



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