# PITTSBURGH REGION CLEANGITHES GAZETTE

## DRIVING THE WAY TOWARD ENERGY INDEPENDENCE

### MAY 2023 | VOLUME 5, ISSUE 44



PRCC's Rick Price Moderating a Session on Maintaining an Electric Fleet and Workforce

## OVER 250 GATHERED FOR THE SOUTHWESTERN PENNSYLVANIA ELECTRIC FLEET EXPO

#### **ISSUE CONTRIBUTORS:**

Rick Price, Executive Director Kristen Sabol, Program Assistant Jeff Twardy, Webmaster In an era marked by a growing concern for the environment and a pressing need to reduce carbon emissions, the shift towards electric vehicles (EVs) is becoming increasingly imperative. Southwestern Pennsylvania, an area long associated with its rich coal

mining history and steel industry, might seem an unlikely hub for embracing clean energy and electric transportation. However, the recent Electric Fleet Expo held on May 24th at the UPMC Events Center at Robert Morris University in Moon Township demonstrated the region's strong commitment towards more а sustainable future.

Hosted by Duquesne Light Company in collaboration with Pittsburgh Region Clean Cities (PRCC), Local Government Academy, Southwestern Pennsylvania Commission (SPC) and Sustainable Pittsburgh, the Southwestern Pennsylvania Electric Fleet Expo was conceived as a means to showcase electric vehicle and electric vehicle charging infrastructure solutions while raising greater awareness about the benefits and challenges of adoption and implementation projects for fleets.

#### A Rich & Well-Received Program:

Over 250 industry leaders, fleet policymakers, managers, municipal planners, and other EV enthusiasts jointed in the event. Stacey Vice President Noblet. of Transportation Electrification and the ICF Climate Center, ICF in Washington DC gave a keynote speech. Noblet offered perspectives on the state of the industry based on her more than 15 years of experience in the field working with government and commercial clients.

Throughout the morning, attendees were given the chance to attend a variety of informative panels sessions hosted by experts in the field, where topics such as charging infrastructure, range anxiety, and battery technology were discussed in depth. The first session of panels covered Electric Fleet Planning for Local Governments, for Bus Operators, School and for Commercial Fleets. A second set of panels explored Funding Opportunities, Policy Concerns, Maintenance and Workforce Development Issues, and Advanced Charging Technologies. PRCC Director Rick Executive Price moderated a panel session addressing the growing need for technical training and personnel.

PA State Senator Jay Costa offered some brief remarks over lunch. Participants were then free to explore a Vendor Fair and Vehicle Display with plenty of time to meet with fleet experts and drivers and have questions answered.

A broad range of vehicles were on display outside the Events Center highlighting some of the industry's recent advancements in performance and range. #1 Cochran showcased KIA and Nissan EVs available at the dealership; Tesla also offered test drives to allow attendees to experience the whisper-quiet acceleration and smooth handling of EVs firsthand. But it wasn't just the cars that stole the show. Some of the most interesting vehicles on the lot included electric buses, medium and heavy-duty electric trucks, an electric trash hauler and an electric bucket truck.

A complete list of panel participants, vendors and vehicles is available online on the **Expo's Eventbrite page**.

Southwestern Pennsylvania's commitment to embracing electric transportation extends far beyond the Electric Fleet Expo. It is hoped that the Expo helped to serve as a catalyst for future collaborations between businesses, utilities and public entities, fostering partnerships that will drive the transition to electric transportation in our Region forward.

Despite the undeniable progress made in the electric vehicle space, challenges remain. The need for an expanded charging infrastructure network and affordable electric vehicles accessible to all income brackets are pressing issues. However, the Expo's success demonstrates that Southwestern Pennsylvania is ready to confront these challenges head-on, leveraging its resources and collective will to create more sustainable solutions.

The Southwestern Pennsylvania Electric Fleet Expo not only showcased the Region's commitment to embracing electric transportation but also united stakeholders from various sectors to drive change. From automakers and local businesses to government officials and residents, everyone recognized the urgency of transitioning to a clean energy future. The Expo sparked enthusiasm, knowledge sharing, and collaboration, reinforcing the idea that Southwestern Pennsylvania is primed to lead the way towards a greener, sustainable more transportation landscape. As the event concluded, it left an indelible impression on attendees. reminding them that electrifying change is not just a vision but an actionable goal.





The Southwestern Pennsylvania Electric Fleet Expo included a Vendor Fair and Vehicles Display.

## DOT LAUNCHES NEW TOOLS TO STRENGTHEN COMMUNITIES THROUGH EQUITABLE TRANSPORTATION INVESTMENTS

The US Department of Transportation (USDOT) released the Equitable Transportation Community (ETC) Explorer and accompanying Story Map to support the agency's implementation of the **Justice40** initiative. The Justice40 initiative, created by the Biden-Harris Administration through Executive Order 14008 Tackling the **Climate Crises at Home and Abroad**, is a key component in USDOT's efforts to confront and address decades of underinvestment in transportation.

The ETC Explorer is an interactive web application that uses 2020 Census Tracts and data to explore the cumulative burden communities experience caused by underinvestment in transportation. Its purpose is to provide a deeper understanding into how communities experience transportation disadvantage to help ensure the benefits of investments address the transportation-related causes of disadvantage. The ETC explorer assesses transportation disadvantage in five components: Transportation Insecurity, Climate and Disaster Risk Burden, Environmental Burden, Health Vulnerability, and Social Vulnerability. It is designed to complement Council for Environmental Quality's Climate & Economic Justice Screening Tool (CEIST).



The USDOT Justice40 Story Map introduces DOT's implementation of the Justice40 initiative and presents three case studies to demonstrate how a project's benefits can reverse or mitigate how community is а disadvantage. experiencing The USDOT's Justice40 website includes information on how stakeholders can address the "Three Maior Components of DOT's Justice40 Initiative" and provides links to more sixty Technical Assistance than resources offered by USDOT.

USDOT is committed to addressing gaps in transportation infrastructure and public services. When decision makers at all levels have the tools to understand how a community is experiencing disadvantage and can identify projects that create benefits that will reverse or mitigate those causes, the result is a higher quality of life and economic prosperity in communities across the country.

## ORANGE GROVE SCHOOL BUS GOES GREEN SETTING RECORD

Orange Grove Charter School is going green and setting a new standard by piloting the first school bus in South Carolina to run on renewable natural gas (RNG). The bus, named the Cow Fart Bus to highlight the fact that RNG can come from a variety of natural sources, including cow manure, is made possible through a partnership between Ingevity®, a specialty chemicals and materials manufacturer based in North Charleston. South Carolina. and American CNG<sup>®</sup>, based in Layton, Utah. "Not only is this a much cleaner fuel, but we are also cutting the cost to operate our buses. These are two things we can feel really good about for both our school and our community," said John H. Clendaniel, CEO of Orange Grove.

"Ingevity and American CNG are both passionate about protecting the environment." said Dante Marini. engineer product with Ingevity's NeuFuelTM team. "The Cow Fart Bus partnership advances our shared goal by upfitting existing diesel school buses with technology to help the buses operate more sustainably."

Ingevity and American CNG launched a Cow Fart Bus pilot program with Orange Grove in February, upfitting an existing school bus with Ingevity's <u>NeuFuel</u> technology and American CNG'S **DEMI** Diesel DisplacerTM system to enable it to run on a diesel/RNG blend. The technology allows the bus to run on RNG for about two hours before switching to full diesel once the natural gas tank is depleted.

This provides a stress free sustainable solution for bus drivers like Steve Arato Senior. He inititally was unsure how the converted bus would drive. "As it turns out, it drives better. It is definitely quieter, which helps when you have a bus load of kids, and it's quicker, it's got more pick up," said Senior. The bus refuels on campus and connects into an existing natural gas line.

Vehicles powered by DEMI and NeuFuel technology emit fewer greenhouse gas (GHG) emissions than traditional diesel vehicles, and operate more cost-effectively by reducing the purchase of diesel fuel. "Orange Grove has been using our technology for about two months now, they've put about 1500 miles on the bus and displaced about 100 gallons of diesel fuel. So in GHG emissions savings, they've saved about seven years in cow farts," said Marini.

Watch the Orange Grove video: <u>New</u> <u>Natural Gas Bus Rolls Out At Orange</u> <u>Grove</u>

## QUESTION OF THE MONTH: Is there a resource to

## estimate the lifetime costs of electric school buses compared to diesel school buses?

We recommend using our go-to tool fleets for and Clean Cities stakeholders. Argonne National Laboratory's (ANL) Alternative Fuel Life-Cycle Environmental and **Economic Transportation (AFLEET) Tool**. The tool allows users to compare the environmental and economic costs benefits of alternative and fuel vehicles conventional and fuel vehicles. In particular, the Total Cost of Ownership (TCO) Calculator in AFLEET can be used to compare the lifetime costs of diesel and electric school buses. Please see below for more information, including guidance on using ANL's AFLEET Tool and general information on electric school bus costs.

Below, we provided a summary of the key inputs to enter in the TCO Calculator in ANL's AFLEET Tool using a representative electric and diesel school bus in Allegheny, Pennsylvania. Unless otherwise stated, we used ANL's default inputs. Note that ANL strongly recommends using real-world data for more accurate results.

You can edit the primary vehicle location via the Inputs. Please note that we used AFLEET's default values for the vehicle-specific inputs. We updated the default diesel fuel prices to reflect present-day diesel prices, as AFLEET has default fuel prices that are not representative of the current market. Present day diesel prices were sourced from the U.S. **Energy Information Agency's Weekly** Retail Diesel Prices table (https://www.eia.gov/dnav/pet/pet\_pri gnd\_a\_epm0\_pte\_dpgal\_w.htm) for the Central Atlantic region (i.e., \$4.486). Please update diesel prices based on prices in your geographic region.

#### **AFLEET Inputs:**

- Key Vehicle and Fuel Inputs
- 1. State: Pennsylvania
- 2. County: Allegheny
- Heavy-Duty Vehicle Information
- 1. Vehicle Type: School Bus
- 2. Vocation Type: School Bus
- Fuel Type and Number of School Buses:
- 1. Diesel: 1 Annual Vehicle Mileage: 15,000 Fuel Economy (MPDGE): 8.2

Equipment Price (\$/vehicle):

\$100,000

Maintenance & Repair (\$/mi): \$0.93

Fueling Price (\$/diesel gallon): \$4.486

Diesel Exhaust Fluid (DEF) (\$/DEF gallon): \$2.80

Fuel and DEF Price (row 57)

Fueling Price (\$/diesel gallon): \$4.486

Diesel Exhaust Fluid (DEF) (\$/DEF gallon): \$2.80

2. Electric: 1

Annual Vehicle Mileage: 15,000

Fuel Economy (MPDGE): 24.0

Equipment Price (\$/vehicle): \$300,000

Maintenance & Repair (\$/mi): \$0.56

Fueling Price (\$/kWh): \$.2

After inputting the above numbers, the results of the TCO analysis are summarized in the table. As you can see, the TCO of a diesel school bus is \$617,274 which is more expensive compared to the electric school bus TCO which is \$606,367.

It may be worth noting that grants or incentives may be available to offset the high upfront costs of electric school buses. For example, the **Bipartisan Infrastructure Law** provides \$5 billion over 5 years for clean school buses, including electric school buses. Each year, \$500 million will be provided exclusively for electric buses and \$500 million for electric and other alternative fuel buses. We recommend referring the to Alternative Fuels Data Center (AFDC) Laws and Incentives

	Diesel School Bus	Electric School Bus
Financing	\$0	\$0
Depreciation	\$79,550	\$238,650
Fuel	\$145,356	\$51,662
DEF	\$1,844	\$0
Maintenance Repair	\$316,431	\$195,062
Insurance	\$61,940	\$108,839
License and Registration	\$12,154	\$12,154
Total Cost of Ownership	\$617,274	\$606,367

**Database** to identify other possible incentives for electric school buses.

#### Additional Electric School Bus Resources

You may refer to the <u>AFDC Electric</u> <u>School Bus Education page</u> for more information on electric school bus costs. Specifically, you may refer to the <u>cost factors section</u>, which includes video modules and associated handouts that provide information on bus capital and infrastructure costs, operational and maintenance costs, and incentives and financing options, and how to have financing discussions.

Lastly, you may be interested in a **World Resources Institute report**, which lists commercially available electric school buses and their price range on PDF page 18.

## EPA CLEAN SCHOOL BUS GRANT PROGRAM:

Funds the replacement of existing school buses with clean and zeroemission (ZE) school buses. <u>Apply</u> by **Tuesday, August 22, 2023, 11:59** p.m.

## **PROPANE: A BRIDGE FUEL, OR THE DESTINATION?**

#### By Todd Mouw, ROUSH CleanTech

With rulings the recent by Environmental Protection Agency and California Air Resource Board related to tightening NOx standards. we collectively understand that we must head toward a cleaner destination. These new regulations are driving a significant shift in class 4-7 vehicles from diesel engines to something cleaner and lower cost. But what does that look like in real, day-to-day business operations?

The candid discussions around the challenges that come with battery electric vehicles at this year's ACT Expo really support the message we've been preaching for more than a decade: propane autogas is a viable solution to make the transition to net zero emissions possible, and will help us sidestep some of the challenges with EVs.

Despite its strong record as a sustainable, readily available alternative fuel, propane is often referred to as a "bridge fuel" to a fully electric future. While the team at ROUSH CleanTech agrees that propane could pave the way for other fuel technologies to become mainstream, we must ask the question: How long is that bridge?

We're really bullish on the future of electrification, but we also understand

that the challenges related to upfront costs, supply chain, materials, charging infrastructure and grid resiliency may cause the adoption curve to be slower than experts predict.

Because of these headwinds and the emergence of a significant renewable propane supply, we believe that propane is no longer a "bridge" but rather a destination for transportation energy.

Propane has staying power for so many reasons. With more than 100 years on the market, propane is a widely available and commonly used source: 700 million gallons are used in the transportation industry. In fact, the global propane market is the same size as the aviation fuel market as well as the marine fuel market. Not only is propane inexpensive to manufacture, it's cost-effective to store and economical to transport.

And, as we gaze into the future, let's not forget that renewable propane will soon be crossing that bridge. Once fleets adopt renewable propane — either as a stand-alone fuel or as a drop-in fuel they'll operate with the same power and reliability as conventional propane, but with even lower carbon emissions. Renewable propane has an ultra-low carbon intensity, and at the point of combustion it's actually carbon neutral. There's no silver bullet. We need all available options — battery electric, hydrogen fuel cell, propane, natural gas and renewable diesel — to help fleets make the required transition.

To learn more, visit **ROUSHcleantech.com**.



ROUSH CleanTech at the ACT Expo.



## REPORT HIGHLIGHTS PROPANE FUELING INFRASTRUCTURE TRENDS:

Earlier this year , NREL released a new report that provides information on propane fueling infrastructure and industry trends over the last 10 years. It is informed primarily by propane fueling station location data collected through the Alternative Fuels Data Center's Alternative Fueling Station Locator from 2011 through 2021. Industry stakeholders, including the Propane Education & Research Council (PERC) and other members of the Alternative Fuels Data Center Station Locator Propane Working Group, also provided data and additional context around trends seen in the data.

Access the <u>full report online</u> via the Alternative Fuels Data Center.

### **UPCOMING EVENTS:**

## BOARD OF DIRECTORS MEETING SCHEDULE FOR 2023:

The PRCC Board of Directors meeting schedule is as follows:

July 12, 2023 September 6, 2023 November 1, 2023

10:00 a.m. - 11:30 a.m.

#### **OTHER UPCOMING EVENTS:**

**PRCC Stakeholder Meeting** June 13, 2023 10 a.m. - 12 p.m.

Webinar: Medium & Heavy-Duty Electric Trucks June 20, 2023 11 a.m. - 12 p.m.

Webinar: DEMI-NeuFuel School Buses July 11, 2023 2 p.m. - 3 p.m.

**Drive Electric PA Coalition Meeting** July 20, 2023 10 a.m. - 12 p.m.



## TRAINING COURSES:

PRCC joins the National Alternative Fuels Training Consortium and the Community College of Allegheny County - West Hills Center in offering training classes.

This year, we are expanding our curriculum offerings focused on alternative fuels and alternative fueled vehicles and we'd love to hear from you! We are also searching for alternative fuels related equipment donations to better support our joint workforce training and development initiatives.

Please join us for our upcoming course offerings:

Hands-On Workshop: Hybrid Electric Vehicles June 22, 2023 11 a.m. - 1 p.m. Space is limited!

To register for these classes, contact Bob Koch at 412-788-7378 or rkoch@ccac.edu.

## ACHIEVING DECARBONIZATION FOR FLEETS

#### By Geo Murickan

The transportation sector generates the largest share of greenhouse gas emissions. and the pressure to transition to e-Fleets is coming from all directions — from regulatory bodies to business operations. The transition to electric vehicles (EVs) will play an important role in minimizing the effects of climate change. Operationally, EVs have a lower cost of fuel per mile and significantly lower maintenance fees, while also being cleaner for the environment.

But the transition is not without its challenges. Experts agree that the increased demand in EV adoption will undoubtedly stress the grid. According to the U.S. Energy Information Administration, the average outage time of the grid doubled in the last five years. Adding one EV is the equivalent of adding a house to the electrical grid, while one DC fast charger can draw the equivalent of a whole neighborhood's electricity needs all at once.

These factors will affect utility rates around peak demand, creating excessive demand charges for site hosts. Even in scenarios where renewable energy is more prevalent, because of weather-driven variations in wind and solar generation, the grid still serves as a "backup battery" to these cleaner technologies. But according to the EIA, 61% of electricity generation is from fossil fuels, and many of the generators have 30-40 years of service life remaining.

What is needed is a transitional resource that reduces the stress on the grid created by the projected increase in EV adoption, while decreasing the reliance on fuel sources that produce significant amounts of GHG emissions.

e-Boost mobile DC fast charging enables vehicles to be charged while they are docked, reducing the need for multiple charging stops and maximizing the efficiency of electrified fleets. Battery-electric commercial trucks can be easily charged while loading and unloading at docks and distribution centers.

Less time spent at recharging stations means more time for transporting goods. Remote routes that lack EV charging infrastructure or grid stability will benefit from an instant off-grid EV charging solution. An off-grid EV popup charging station can be placed wherever it's needed as your business dictates.

Businesses and utilities today are

more concerned than ever about the adverse impacts of weather and impact on the grid. During extreme weather, blackouts, or brownouts, e-Boost can provide emergency charging independent of the grid and provide the back-up power that keeps businesses running and deliveries provides e-Boost profitable. the resiliency that businesses and utilities require by delivering the power for continuity in operations, and EV of charging their e-Fleet. More importantly, e-Boost allows utilities to focus on the highest priorities for disaster recovery in the community.

## Avoid Infrastructure Delays with a Green Solution

The typical permitting process for EV infrastructure, when there is adequate power available at a location, is a minimum of six to eight months. If power to a site is inadequate, the addition of utility infrastructure, including a transformer upgrade to deliver the extra power, can take as long as two years.

#### Accelerating Market Deployment for e-Fleet Vehicle Manufacturers and Dealerships

Manufacturers of EVs for commercial and fleets their local distributors/dealerships need to accelerate adoption by demonstrating the capabilities of their battery-electric vans, trucks, and buses at their locations. during roadshows or customer events — locations that are



Pioneer Power Mobility's e-Boost Solution on display during Odyssey Day 2022.

not necessarily outfitted for EV charging. An e-Boost mobile charging unit can not only provide fast charging at their dealerships, but it can also be available at any EV demo location to ensure fast charging anytime and anywhere.

#### **Fast-Tracking e-Fleet Adoption**

e-Boost can fast-track EV adoption for e-Fleets. Fleet owner. fleet EV management companies, manufacturers, EV charging providers, and local utilities need to work together to deploy EVs at a business location. While the first four participants in this process are ready to move ahead, the utility may still require up to 24 months to perform the required site "makeready." With e-Boost, the site does not require any "make-ready" permits, and the needed charging infrastructure can be provided within six to eight weeks. Since e-Boost is a mobile solution, once grid-connected а permanent, infrastructure is installed, the e-Boost

can be re-purposed as a backup, resilient, off-grid asset or easily relocated.

#### **Optimizing Last-Mile Deliveries**

Most last-mile EVs are designed to travel 70-mile delivery routes daily prior to returning to the depot to end the shift for the first-shift driver or to recharge the vehicle. If the business experiences a sudden spike in the delivery business, it is not easy to add a new EV to the fleet. There is always the associated capital cost for adding a new EV, as well as the current supply chain issues that affect EV availability and concerns of whether a business spike is just seasonal.

e-Boost helps address all these apprehensions with a simple solution. When your EV fleet experiences this, the driver for the second shift can be transported from the depot aboard the e-Boost GOAT or Mobile and met at an automatically coordinated, designated, safe location near the last delivery point. At this location, the driver shift change and recharge occurs in order to allow the EV to finish its remaining deliveries for the day with the secondshift driver. While the EV continues its deliveries with the second-shift driver. the e-Boost returns to the depot with the first-shift driver. e-Boost can do this for as many of the EVs in your fleet as needed and reduce the time for shift changes and recharging to less than 30 minutes.

The fleet can effectively extend the range of each EV and address the increased business/deliveries without having to expand the fleet. Additionally, on the days you experience a utility power outage (where the level 2 chargers in the depot are not functional), the e-Boost will provide high-speed charging at the depot to make sure all the EVs are ready for deliveries the next morning. Simultaneously, the e-Boost provides reliable, back-up power for the depot office.

#### **Propane is Green Today**

e-Boost is automatically refueled along any delivery route by local propane suppliers. Today, e- Boost is powered by propane because of its robustness in availability, storability, and transportability. Propane has a wide distribution network, is safe to transport, and does not degrade over time, making it the ideal choice for e-Boost.

Propane is one of the cleanest fuels available, offering the lowest in carbon emissions per million BTUs according the U.S. Energy Information to Administration. lt does not contaminate the soil or groundwater because it's non-toxic and nonpoisonous. Propane's environmentally friendly benefits don't end there.

Propane also offers a pathway to netzero emissions with the commercialscale production of renewable liquid petroleum gas (RLPG) which began in early 2022, lowering its carbon intensity to 19%. Renewable dimethyl ether (RDME) is a fuel additive that further reduces propane's carbon intensity to 0%. RDME is scheduled to go into production in late 2022. Both RLPG and RDME are derived from bio-feedstock that helps to reduce landfill waste, lowers your carbon footprint, and mitigates the negative impact of transportation emissions on the environment. Moreover, the use of RLPG and RDME requires no changes to e-Boost.

#### Why e-Boost, Why Now?

While high-speed EV charging is at the heart of what Pioneer Power Mobility and its e-Boost line of products do, we don't stop there. The Bipartisan Infrastructure Law is accelerating EV adoption, but gaps are anticipated that will result in various inequities. These gaps include regulatory restrictions, geographical limitations, unplanned costs associated with utility upgrades, practical limitations in space availability, and inequities in EV charging distribution.

e-Boost can overcome these gaps through an affordable mobile solution that helps accelerate the broader trends towards a cleaner environment and provide EV charging, power, and connectivity to areas where electrical infrastructure is lacking in urban, suburban, semi-rural, and rural areas.

e-Boost units are serviced by Pioneer's Critical Power Group, which has been servicing power generation assets for three decades with a nationwide network.

e-Boost is a product of Pioneer Power Mobility, a division of Pioneer Power Solutions, experienced providers of offgrid resiliency solutions such as distributed power and back-up power generation assets available throughout the U.S.

For more information, visit pioneeremobility.com.

Follow us on LinkedIn (e-Boost Mobility) and Twitter (@eBoostMobility) or reach out to us at <u>info@pioneer-</u> <u>emobility.com</u>.





## UNDERSTANDING THE SIMILARITIES, DIFFERENCES BETWEEN RENEWABLE DIESEL, BIODIESEL

By Jane Marsh; Edited by Bailey Arnold, Ainsley Kelso

*This article first appeared in Fuels Fix - January 25, 2023* 

Alternative fuels can include fuels such as natural gas, propane autogas, biodiesel, ethanol, electric vehicle, renewable fuel options and more.

There are two main kinds of sustain-

able fuel meant specifically to replace traditional diesel engine technology renewable diesel and biodiesel. While they sound similar, these are distinct categories with some important differences between them. Understanding these differences is the first step to making the most informed decision for gasoline and diesel alternatives.

#### What is Renewable Diesel?

Renewable diesel is identical to petroleum-derived diesel on a chemical level, but it comes from feedstocks like soybean oil, distillers' corn oil or recycled animal fats and waste greases. Because it's so similar, it can generally run in any diesel engine without any blending or modification, and it produces few emissions. Currently, there are <u>eleven refineries producing</u> <u>renewable diesel</u> in the U.S., with 1.75 billion gallons of production capacity.

Most renewable diesel comes from a process called hydrotreating, which uses hydrogen to <u>remove water and</u> <u>oxygen particles</u> from oil. Petroleumbased diesel uses a similar approach, but renewable diesel uses recycled or plant-derived oils instead of crude oil. However, this is not always the case even for renewable diesel. Some companies are co-processing crude petroleum with renewable oils and fats and call it renewable diesel even though the resulting fuel does not qualify as an advanced biofuel.

#### What is Biodiesel?

Biodiesel is similar in that it also comes from non-fossil-fuel feedstocks, mostly the same feedstocks as renewable diesel. However, renewable diesel can be made from feedstocks such as municipal solid waste, while biodiesel cannot.

Biodiesel can run in a traditional diesel engine without modification like renewable diesel, too. However, biodiesel is commonly mixed with petroleum diesel to create blends such as B20 (Biodiesel 20%, Petroleum Diesel 80%). Some fleets can utilize B100 (Biodiesel 100%) without any modifications to the vehicles.

There are two main concerns when it comes to utilizing B100 in fleets. Higher biodiesel blends and B100 can experience gelling in the system when used in colder climates as well as they have a higher flash point and can take a higher temperature to ignite and burn in a diesel particulate filter (DPF). The good news – both of these issues are addressed by a technology called the <u>Vector System developed by</u> <u>Optimus Technologies</u>.

#### Similarities and Differences

Both biodiesel and renewable diesel offer a much more sustainable alternative to fossil fuels. Utilizing either fuel can bring significant economic and environmental benefits to a fleet.

One of the biggest differences between biodiesel and renewable diesel is that biodiesel comes from a different process: transesterification. Unlike hydrotreating, transesterification doesn't remove oxygen. The result still produces fewer greenhouse gases than conventional diesel, but it does not perform as well in colder climates. However, lower blends such as B5 are considered standard diesel fuel and blends all the way up to B20 can be used relatively easily with proper additives. Much of biodiesel use depends on the climate it is being used in.

However, it is important to note that renewable diesel is largely unavailable to most of the U.S. outside of the West Coast. There is a significant cost differential as renewable diesel benefits from state LCFS programs in California, Oregon and Washington. Biodiesel is nationally available at a more affordable price right away for most fleets in the U.S. looking to switch immediately.

Renewable diesel also creates slightly more greenhouse gas emissions than biodiesel to produce, mostly because it takes 8.5 pounds of feedstock per gallon to produce while biodiesel takes 7.5 pounds of feedstock.

Biodiesel is also nontoxic and biodegradable. Renewable diesel is still considered as toxic as petroleum diesel fuel.

Blending biodiesel and renewable diesel together to produce an alternative fuel source can have many benefits itself. Biodiesel is a lower-cost fuel when compared to renewable diesel. Renewable diesel can cost as much as 2x that of diesel fuel. Biodiesel also has superior lubricity which reduces wear on the engine over time. blending biodiesel Finally, and renewable diesel can improve emission reductions over pure renewable diesel or pure biodiesel.

#### Sustainable Fuels Come in Many Forms

Businesses and consumers today have more options than they may realize when it comes to sustainable fuels. Learning more about these power sources and their unique advantages will help make the best, most environmentally friendly choices.

Biodiesel and renewable diesel are similar but different fuels. As the alternative fuel industry grows in the U.S., more fleets will have the opportunity to consider which of these fuels could be the right fit for them.



### RENEWABLE DIESEL STATIONS AND INFORMATION ON THE AFDC

The Alternative Fuels Data Center (AFDC) now includes information about renewable diesel as a commercial fuel. and renewable diesel fueling stations are now included in the Station Locator. Similar to biodiesel fueling stations, the Station Locator only includes renewable diesel stations that sell blends of 20% renewable diesel (R20) and above. Additionally, the whether Station Locator tracks renewable diesel is blended with biodiesel.

To submit new renewable diesel stations to the Station Locator or updates to existing renewable diesel stations, please follow the below steps.

- Submit new stations via the web at <u>https://afdc.energy.gov/stations/</u> <u>#/station/new</u>. Please be sure to check that the station is not already in the Station Locator first.
- Update an existing station via the web by selecting the station record on the Station Locator (<u>https://afdc.energy.gov/stations</u> /) and selecting "Report a change" in the lower left-hand corner.

The AFDC also provides these resources on renewable diesel:

- <u>Renewable Diesel Laws and</u> <u>Incentives by State</u>
- <u>Renewable Diesel Fueling Station</u> <u>Locations by State</u>
- <u>Average Renewable Diesel and</u> <u>Diesel Fuel Prices in California</u>
- Renewable Diesel Net Supply
- U.S. Renewable Diesel Imports

#### Questions about renewable diesel?

The Department of Energy's Clean Cities Network can provide access to Technical Response Services (TRS) for more information.



Aug 22-24, 2023 Tacoma, WA

The Green Transportation Summit & Expo (GTSE) is the West Coast's premier fleet modernization and sustainable transportation event. Get an inside look at the latest in fleet technologies and innovations; informative sessions feature a who's who of national and regional transportation leaders. Learn More

# **SUSTAINING MEMBERS**

## **PLATINUM LEVEL MEMBERS:**





## THANK YOU FOR YOUR SUPPORT!

The Pittsburgh Region Clean Cities Board of Directors would like to thank all our members and stakeholders for supporting our coalition and mission.

PRCC Membership Levels:

Individual -- \$150 Nonprofit -- \$300 Bronze -- \$500 Silver -- \$1000 Gold -- \$2000 Platinum -- \$4000+

## CONTRIBUTE YOUR NEWS:

Help us share success stories about the projects in our region!

Please feel free to contact: **Rick Price**, Executive Director/Coordinator 412-735-4114 <u>coordinator@pgh-cleancities.org</u>

## **LEARN MORE:**

Learn more about Clean Cities at: <u>www.cleancities.energy.gov</u>

Or get involved with the Pittsburgh Region Clean Cities coalition at: <u>www.pgh-cleancities.org</u>

Learn more about membership at: <a href="http://www.pgh-cleancities.org/membership/">www.pgh-cleancities.org/membership/</a>





UNITED WE STAND: REMEMBERING SEPTEMBER 11, 2001