BIODIESEL INDUSTRY OVERVIEW & TECHNICAL UPDATE

SEPTEMBER 2020
ROADMAP FOR THIS PRESENTATION:

- Biodiesel & Diesel Vehicle Industry Overview
- Federal & State Policy on Biodiesel
- Benefits of Biodiesel
- ASTM Specifications & Biodiesel Fuel Quality
- OEM & Fleet Support for Biodiesel
- Biodiesel Resources
DIESEL VEHICLES & BIODIESEL MARKET FORECASTS
In North America, Diesel and Gasoline powertrains are expected to continue dominating the commercial vehicle segment in forecasts through 2025 and beyond.
### Figure 21c  U.S. Market Share of Commercial Vehicle Registrations (Base Scenario)

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<tbody>
<tr>
<td>Gasoline</td>
<td>35.10%</td>
<td>35.19%</td>
<td>35.29%</td>
<td>35.36%</td>
<td>35.41%</td>
<td>35.45%</td>
<td>35.46%</td>
<td>35.45%</td>
<td>35.45%</td>
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<tr>
<td>Diesel</td>
<td>63.61%</td>
<td>63.34%</td>
<td>63.06%</td>
<td>62.78%</td>
<td>62.50%</td>
<td>62.21%</td>
<td>61.93%</td>
<td>61.64%</td>
<td>61.35%</td>
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<td>HEV Gasoline</td>
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<td>0.06%</td>
<td>0.07%</td>
<td>0.08%</td>
<td>0.10%</td>
<td>0.11%</td>
<td>0.13%</td>
<td>0.15%</td>
<td>0.17%</td>
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<tr>
<td>HEV Diesel</td>
<td>0.13%</td>
<td>0.15%</td>
<td>0.18%</td>
<td>0.22%</td>
<td>0.27%</td>
<td>0.33%</td>
<td>0.39%</td>
<td>0.46%</td>
<td>0.53%</td>
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<tr>
<td>PHEV Gasoline</td>
<td>0.01%</td>
<td>0.01%</td>
<td>0.01%</td>
<td>0.02%</td>
<td>0.03%</td>
<td>0.03%</td>
<td>0.04%</td>
<td>0.06%</td>
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<tr>
<td>PHEV Diesel</td>
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<td>0.01%</td>
<td>0.02%</td>
<td>0.03%</td>
<td>0.05%</td>
<td>0.07%</td>
<td>0.09%</td>
<td>0.12%</td>
<td>0.15%</td>
<td>0.18%</td>
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<td>BEV</td>
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<td>0.03%</td>
<td>0.05%</td>
<td>0.07%</td>
<td>0.09%</td>
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<td>FCV</td>
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<td>0.00%</td>
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<td>0.00%</td>
<td>0.01%</td>
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<tr>
<td>CNG</td>
<td>0.56%</td>
<td>0.64%</td>
<td>0.73%</td>
<td>0.81%</td>
<td>0.90%</td>
<td>0.98%</td>
<td>1.07%</td>
<td>1.15%</td>
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<td>1.32%</td>
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<td>LNG</td>
<td>0.20%</td>
<td>0.21%</td>
<td>0.22%</td>
<td>0.22%</td>
<td>0.23%</td>
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<td>0.24%</td>
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<tr>
<td>PAGV</td>
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<td>0.34%</td>
<td>0.37%</td>
<td>0.40%</td>
<td>0.44%</td>
<td>0.47%</td>
<td>0.51%</td>
<td>0.56%</td>
<td>0.60%</td>
<td>0.65%</td>
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*(Sources: Navigant; Fuels Institute)*
HEAVY DUTY DOMINATES DIESEL CONSUMPTION

Definitions: Heavy: Class 7 & 8; Medium: Class 3 – 6; Light Medium: Class 2b (¾ ton pickups, i.e. 250s & 2500s)

Energy Consumed as Diesel by Freight Transport

Fuels Institute

Source: U.S. Energy Information Administration
DIESEL VEHICLE STOCKS TO INCREASE 14% BY 2035

Light-Medium strongest growth with 2 million more vehicles; Med and Heavy combine for 575,000

Source: U.S. Energy Information Administration
Diesel Vehicle Miles Traveled Up 23% by 2035

Heavy Duty dominates VMT, increasing from 184 – 221 billion miles

Source: U.S. Energy Information Administration

Fuels Institute
DIESEL FLEET TO BE ABOUT 30% MORE EFFICIENT

Average Diesel Fuel Efficiency for New and Stock Vehicles

Source: U.S. Energy Information Administration
Q: What if…

…there was a way to operate all of those diesel vehicles in a cleaner, more sustainable way without sacrificing the performance that fleets demand?

A: Good News!

- Biodiesel blends can be used in existing and new technology diesel engines without modification, and are readily available nationwide.
ADVANCED BIOFUEL. BETTER. CLEANER. NOW!

REDUCES CARBON, RECYCLES BYPRODUCTS FROM PROTEIN DEMAND AND SAVES LIVES

Biodiesel, a renewable, clean-burning diesel replacement reduces U.S. dependence on imported petroleum, creates green jobs and improves our environment. Made from an increasingly diverse mix of resources including vegetable oils, recycled cooking oil and animal fats, US biodiesel puts excess oils and fats to good use.
WHAT IS BIODIESEL?

- A clean, domestic, sustainable, renewable fuel for diesel engines made from fats and oils, such as soybean oil and used cooking oil
- A high-quality Advanced Biofuel
- Made through a chemical reaction called transesterification, meeting ASTM D6751 standards
- B20 and lower blends – and even blends up to B100 – have been used successfully in existing older diesel engines as well as new models coming off the production line
Biodiesel, n. -- a fuel comprised of mono-alkyl esters of long chain fatty acids derived from vegetable oils or animal fats, meeting ASTM D 6751, designated B100.

Biodiesel Blend, n. -- a blend of biodiesel fuel with petroleum-based diesel fuel designated BXX, where XX is the volume percent of biodiesel.

This tightly specified definition was instrumental in achieving OEM support.
**BIODIESEL REACTION**

**Reacting:**
- 100 Lbs. Vegetable Oil
- or
- Animal Fat
- +
- 10 Lbs. Alcohol
- Methanol
- or Ethanol

**In the Presence of a Catalyst**
- Sodium Hydroxide or Potassium Hydroxide

**Yields:**
- 100 Lbs. Biodiesel
- +
- 10 Lbs. Glycerin

**Transesterification** process produces mono-alkyl esters – chemically similar to diesel fuel.
Biomass-based diesel review

Renewable Hydrocarbon Diesel and Biodiesel

**Feedstock**
- Both processes can utilize any fat or oil.
  - Animal fat
  - Vegetable Oil

**Process**
- **Renewable Hydrocarbon Diesel**
  - React with hydrogen (hydrotreat & isomerize)
  - Convert 3-carbon backbone to renewable propane
  - Convert oxygen to H₂O

- **Biodiesel**
  - React with methanol (transesterification)
  - Convert 3-carbon backbone to glycerol
  - Oxygen remains in fuel molecule

**Product**
- Paraffin
- FAME

**Specification**
- Meets the diesel spec, ASTM D975
- Molecules are familiar constituents of ULSD (petroleum diesel)
- Paraffinic fuel
- Meets the biodiesel spec, ASTM D6751
- Different molecules than those in petroleum diesel
- Oxygenated fuel
2019 BIOMASS-BASED DIESEL FUEL FEEDSTOCK USE

- Feedstock utilized by US biodiesel and renewable diesel producers
- Biodiesel feedstock use data generated by EIA 22M monthly survey
- Renewable diesel feedstock use data estimated from industry sources
FEEDSTOCK OPTIONS - EPA APPROVED PATHWAYS

- Distillers Corn Oil
- Yellow Grease
- Soybean Oil
- Camelina
- Animal Fats
- Canola Oil
FUTURE FEEDSTOCK OPTIONS

Pathways with Petition or Statutory Consideration

- Algae
- Brassica carinata
- Field Pennycress
- Corn Oil—Wet Milling
- Cottonseed Oil
BIODIESEL INFRASTRUCTURE

- Biodiesel and biodiesel blends available nationwide at more than 2,000 public locations
- Existing trucks, tanks, dispenser pumps and blending facilities can be used for B20 and lower
HIGHER BLENDS AVAILABLE NATIONWIDE, OFTEN BLENDED BY MAJOR RETAILERS

- Retailers nationwide sell B10 - B20 blends, especially on main truck routes.
- Large retailers often have store-level blending, by-passing terminals.
NBB VISION 2020
Biodiesel, renewable diesel, and renewable jet fuel will be recognized as mainstream low-carbon fuel options with superior performance and emission characteristics. In on road, off road, air transportation, electricity generation, and home heating applications, use will exceed six billion gallons by 2030, eliminating over 35 million metric tons of CO2 equivalent greenhouse gas emissions annually. With advancements in feedstock, use will reach 15 billion gallons by 2050.
U.S. Biodiesel & Renewable Diesel Market

(millions of gallons)

Source: EPA EMTS*

*Biodiesel and Renewable Diesel Volumes reported under the RFS in the D4, D5, and D6 categories.
Source: National Biodiesel Board
BIODIESEL AND RENEWABLE DIESEL TODAY

Production
Today's market has reached 2.8 billion gallons with more than 3 billion gallons of domestic production capacity online today.
Capacity of planned US expansions will grow to 5.5 billion gallons by 2023.

Feedstocks
Soybean oil makes up the largest supply of biodiesel/renewable diesel today at 46%. The rest make up the balance almost equally.

Markets
Today's markets are made of fleets, on-road and off-road diesel, as well as the expanding heating oil market.
Renewable jet fuel is also an emerging market.

Policy
Combination of legislation that drives biodiesel success:
- Renewable Fuel Standard
- Federal Tax Incentive
- Carbon Policies
- State Mandates and Incentives
FEDERAL & STATE POLICIES IMPACTING BIODIESEL DEMAND
FEDERAL POLICY:
2020 RENEWABLE FUEL STANDARD (RFS)

Federal program that requires transportation fuel sold in the United States to contain a minimum volume of renewable fuels

- Biodiesel qualifies for RFS under Biomass Based Diesel (BBD) and Advanced Biofuel categories

<table>
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<tr>
<th>(billions)</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
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<tr>
<td>Cellulosic</td>
<td>0.311</td>
<td>0.288</td>
<td>0.42</td>
<td>0.59</td>
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<tr>
<td>BBD</td>
<td>2.0</td>
<td>2.1</td>
<td>2.1</td>
<td>2.43</td>
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<tr>
<td>Advanced</td>
<td>4.28</td>
<td>4.29</td>
<td>4.92</td>
<td>5.09</td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td>19.28</td>
<td>19.29</td>
<td>19.92</td>
<td>20.09</td>
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Advanced Biofuel - means renewable fuel, other than ethanol derived from cornstarch, that has lifecycle greenhouse gas emissions that are at least 50 percent less than baseline lifecycle greenhouse gas emissions.
FEDERAL BIODIESEL TAX INCENTIVE:

- Extended at full level – $1 per gallon – through 2022
- Retroactive for 2018-2019
- Certainty for 2020, 2021, 2022
- Biodiesel has support among Republicans and Democrats
STATE POLICY

STATE POLICY TRENDS:

- Proliferation of carbon reduction programs
- More mid-level blends (B6-B20) in marketplace

STATE VOLUME DRIVERS:

- Requirements
- Financial Incentives
- Carbon Reduction Policies
STATES WITH NOTABLE BIODIESEL POLICIES

LEGEND
- Mandate - Fuel Use or Bioheat
- Tax Incentive – Sales/Income
- Tax Incentive - Production
- Fleet Requirement
- Bioheat Mandate passed – Awaiting Surrounding States
- Policy not enforced
- No major policy

Data from DOE Alternative Fuels Data Center and Individual State Statutes

Current as of 01/08/2016

New York City and surrounding counties
TOP REASONS WHY FLEETS ARE USING BIODIESEL
BIODIESEL IMPROVES DIESEL PROPERTIES

- Blends with petrodiesel in any percentage
- Higher Cetane
  - Over 50 vs. average petrodiesel around 44
- Higher Lubricity
- Virtually Zero Sulfur
- Zero Aromatics Reduces Toxicity and Burns Cleaner
- 11% Oxygen Provides Superior Lubricity and Reduces Black Smoke (Particulates)
- High Flash Point Makes it Safer
- The particulates created by biodiesel burn off faster and at a lower temperature in a particulate trap
  - Less PM trap regenerations and lower long-term maintenance costs
MORE BENEFITS OF BIODIESEL:

- Provides high quality fuel from domestic, sustainable resources
- Reduces imports and power of oil cartels
- Supports 64,000 U.S. Jobs
- Generates $11.42 Billion total Economic Impact
- Reduces Particulates, Carbon Monoxide, and Unburned Hydrocarbons from Older Engines
- Reduces Green House Gas Emissions
- Best Carbon Footprint of any U.S. Produced Fuel
EMISSIONS REDUCTIONS IN DIESEL ENGINES WITHOUT AFTERTREATMENT:

<table>
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<tr>
<th>Emissions Reduced</th>
<th>B100</th>
<th>B20</th>
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<tbody>
<tr>
<td>Total Unburned Hydrocarbons</td>
<td>-67%</td>
<td>-20%</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>-48%</td>
<td>-12%</td>
</tr>
<tr>
<td>Particulate Matter</td>
<td>-47%</td>
<td>-12%</td>
</tr>
<tr>
<td>Polycyclic Aromatic Hydrocarbons</td>
<td>-80%</td>
<td>-13%</td>
</tr>
<tr>
<td>Ozone Potential</td>
<td>-50%</td>
<td>-10%</td>
</tr>
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</table>

A Comprehensive Analysis of Biodiesel Impacts on Exhaust Emissions
http://www.epa.gov/otaq/models/analysis/biodsl/p02001.pdf
BIODIESEL’S ON ROAD HEAVY DUTY EMISSION BENEFITS

Criteria Pollutants

Sources: sciencedirect.com/science/article/pii/S0960852417321648?via%3Dihub
*https://www.dieselnet.com/standards/us/hd.php#tdsl
ULSD vs B20 IN SCR SYSTEMS

- No statistical difference in NOx Conversion with B20 across the entire engine map
GREEN HOUSE GAS BENEFITS: BIODIESEL REDUCES CARBON FOOTPRINT

- U.S. biodiesel on average provides an 80% Reduction in Carbon Emissions compared to petroleum diesel
  - Full life cycle from soil to tailpipe
  - Includes latest indirect land use impacts for biodiesel used in the United States
CARBON INTENSITY OF FUELS
grams CO2e/MJ

Electricity from a Coal Fired Power Plant

https://www.arb.ca.gov/fuels/lcfs/lcfs_meetings/040115_pathway_ci_comparison.pdf
GHG Reduction Potential of EPA’s Heavy-Duty Truck Rule
Plus Biodiesel - Million Tons CO2e cumulative
3.0 Billion Gallons of Biodiesel Used in the U.S.:

- Would Reduce Carbon Emissions by more than 25 Million Metric Tons

Which is Equivalent to:

- Removing 5.4 Million Cars from America’s Roadways
- Planting 648 Million Trees
- Preserving 29.4 Million Acres of Mature Forests
SUSTAINABILITY

• Biodiesel is produced from a variety of renewable resources, such as plant oils, animal fats, recycled grease, and even algae, making it one of the most sustainable fuels on the planet.

• With biodiesel, **food isn’t sacrificed for fuel**. Oils and fats for biodiesel are a minor by-product of producing food for humans and animals.
  – Soybeans are 80% protein, 20% oil
  – No one grows livestock for its fat content
  – No one cooks more fried food to get used oil for biodiesel
WHEN WE GROW PROTEIN TO FEED THE WORLD, WE GET MORE FAT THAN WE CAN EAT.

THOSE BY-PRODUCTS CAN BE USED TO MAKE HIGH QUALITY BIODIESEL.
ASTM SPECIFICATIONS AND BIODIESEL FUEL QUALITY
**BIODIESEL ASTM STANDARDS**

**ASTM D6751** is the approved standard for B100 for blending up to B20, in effect since 2001

- **Performance-based standard:** feedstock and process neutral

**D975** – Covers petrodiesel and blends up to five percent biodiesel maximum for on/off road engines; in effect since 2008

**D7467** – Covers blends containing six to twenty percent biodiesel (B6-B20) for on/off road engines, in effect since 2008

- Designed so that if B100 meets D6751 and petrodiesel meets D975, then B6 to B20 blends will meet their specifications

- Important quality control is at B100 level
49 States have adopted ASTM D6751 as part of state law and can now legally enforce the ASTM D6751 Biodiesel Standard

- No efforts are planned for Alaska

- NBB works actively with State Departments of Weights & Measures and other regulating entities (EPA, IRS) to help monitor and enforce biodiesel fuel quality
Biodiesel Industry’s equivalent to an ISO 9000 program for biodiesel production & distribution companies as well as testing labs and retailers

NBB implemented BQ-9000 as a means to help instill confidence in biodiesel with users and equipment companies

There are now four BQ-9000 designations:
- Producer (make it to spec)
- Marketer (buy spec, keep it in spec, blend it right)
- Certified Laboratories (test the fuel accurately)
- Retailer (fuel quality management practices)

Over 92% of U.S. production is by a BQ-9000 Producer

Many OEMs are now either requiring or strongly encouraging BQ-9000

Organizations have seen economic advantages as more bids are requiring the certification
Biodiesel produced in the U.S. consistently meets or exceeds ASTM fuel quality standards.

OEMs and Fleets can be confident in today’s biodiesel.
BQ-9000 DATA ANALYSIS: 2017 AND 2018

TERESA ALLEMAN, NATIONAL RENEWABLE ENERGY LABORATORY
OBJECTIVES

Survey U.S. and Canada-based BQ-9000 member companies to determine the quality of their production lots versus the ASTM D6751 specification in calendar years 2017 and 2018

Specifically:
- Survey current BQ-9000 members for their monthly data on 14 critical parameters
- Determine average, minimum, and maximum values for each parameter
REFERENCES:

- Assessment of BQ-9000 Biodiesel Properties for 2018
  - Teresa L. Alleman
  - National Renewable Energy Laboratory

- Assessment of BQ-9000 Biodiesel Properties for 2017
  - Teresa L. Alleman
  - National Renewable Energy Laboratory
METALS: Sodium + Potassium (Na+K)

ASTM Spec for Na+K is currently 5.0 ppm maximum. Average a bit over 0.5 ppm, almost 10 times less than the spec.
ASTM Spec for Ca+Mg is currently 5.0 ppm maximum.  
Average is under 0.5 ppm, over 10 times less than the spec.
CSFT spec for #2 biodiesel is 320 seconds maximum, for #1 biodiesel is 200 seconds maximum. Average is 100, about ½ of the #1 spec.
ACID NUMBER: A MEASURE OF FUEL STABILITY

ASTM Acid number spec is 0.5 maximum, average is about $\frac{1}{2}$ of the spec.
OXIDATION RESERVE: STABILITY

Oxidation Reserve ASTM spec is 3 minimum. Average over 9, or over 3 times the specification.
NREL: ACCELERATED STORAGE EVALUATION

- Commercially available B20 samples from across the US:
  - North to South, East to West, humid to dry
  - Good representation of B20 in the US market today
- Used ‘Gold Standard’ accelerated long term stability test: ASTM D4625
  - 1 week accelerated = 1 month in normal storage
- All B20 samples over 6 hour oxidative reserve still had oxidative reserve of 3 hours and low acid numbers after 12 months of simulated aging
  - Almost half with oxidative reserve of over 3 hours at 36 months simulated aging
NEW STORAGE DATA:
NREL B20 STUDY FINDINGS

With B20 meeting ASTM Specifications in the U.S. Market today:

- Minimum simulated shelf life of 1 year
- Many samples over 3 years
- Simple monitoring and re-additization can extend shelf life to over 4 years
OEM & FLEET SUPPORT FOR BIODIESEL
OEM & FLEET SUPPORT GROWING DUE TO:

- Growing volumes & availability
- Favorable policies – RFS, EPACT, Tax Credits, etc.
- GHG emissions benefits
- Vehicle performance benefits
- ASTM specifications
- BQ-9000 biodiesel quality
- Consumers and fleets want the option
- “Green” competitive advantage - easy way to green your fleet!
In the GVW Class 5-8 vehicles that account for 92% of on-road diesel fuel use, the vast majority of new diesel engines now have full OEM support for B20 and lower blends meeting ASTM standards with no vehicle modifications required.

Biodiesel offers fleets an easy and cost-effective way to significantly lower carbon and reduce GHG emissions in both legacy and new vehicles and equipment.
OEMS SUPPORTING B20
*Models equipped with Cummins engines are B20 approved. See biodiesel.org for details.
Ford supports B20 in all its 2011 and forward model Class 2-5 Super Duty & Class 6,7 Medium Duty Trucks

As well as the Ford F-150 3.0L Diesel

And in the Ford Transit Van
General Motors has 23 different diesel vehicle model options available in the U.S. market in 2020-2021 — all support use of B20.
FIAT CHRYSLER: B20 SUPPORT

• Fiat Chrysler supports the use of B20 in the 6.7L Turbo Diesel Ram 2500/3500/4500 5500 HD pickups and in the 3.0L Ram 1500 light duty diesel pickup

• Jeep Wrangler Supports B20
PACCAR: B20 SUPPORT

- **Full B20 support in new and legacy model** PACCAR MX-11 and MX-13 engines for Heavy Duty trucks, as well as in PX-7 and PX-9 Engines for Medium Duty trucks.

- The entire diesel fleet of Peterbilt and Kenworth Medium and Heavy-Duty trucks supports the use of B20 Biodiesel Blends.
A SAMPLING OF BIODIESEL FLEET USERS
In the ever-increasing drive to cut carbon and lower CO$_2$ emissions, forward-looking fleets and users are investigating higher biodiesel blends to maximize the reduction in their carbon footprint.
NTEA's annual Fleet Purchasing Outlook explores the commercial vehicle landscape and measures common acquisition incentives. Report findings reveal significant insights from commercial fleet managers. Directional patterns presented in this research initiative can help companies effectively respond to market swings and vocational fleet activity. Content is based on survey results, with data from previous years serving as a benchmark to establish trends and allow year-to-year comparisons.

The Association captures responses from a variety of fleet professionals in mid- to high-level management, with authority to make truck acquisition and vehicle specification decisions. Participants represent a wide range of fleet sizes, vehicle weight classes and vocational truck applications across the U.S. and Canada. Primary sectors include government/municipal, construction, delivery and utility/telecom application markets.

ntea.com/fpo
Diesel and alternative fuels usage

Reviewing data from the last five years, most respondents plan to maintain their current mix of diesel-powered vehicles. Research indicates the percentage of alternative fuel trucks (including hybrids) for responding fleets will likely increase for 35% in 2020, while gasoline- and diesel-fueled options will grow for 20% and 10%, respectively. Across the board, a strong majority of respondents anticipate their fuel types remaining status quo in 2020 — due to an expectation that U.S. oil prices will remain relatively stable going forward.
More than 20% of fleets currently incorporate alternative fuel options in at least 10% of their trucks. Eleven percent of fleets are operating at least half of their vehicles via alternative fuel methods. Of those using alternative fuels, 61% say their deployment of alternative fuel and green technologies will increase in the year ahead.
Biodiesel (all blend percentages), electric hybrid trucks (including plug-in hybrids) and CNG are the most widely accepted alternative fuel options reported by 2020 survey participants. Levels of all three have become more popular as compared to 2019. Figure 33 reveals preferences relative to results from previous years.
Evaluating alternative fuel options planned for procurement in the year ahead, electric hybrid took the lead, with a 5-percentage point jump from 2019 levels. Biodiesel is the next most anticipated fuel type for 2020, followed by E85 (which increased from 2019 by 3 percentage points). Interestingly, for 98% of survey respondents, loss of E85 offerings has not altered compliance strategies at all.
BIODIESEL BLEND PERCENTAGES

Blend percentage if fueling with biodiesel or renewable diesel

- **5%**
- **11%**
- **20%**
- Other

Percentage of respondents

Source: NTEA 2019–2020 Fleet Purchasing Outlook Surveys

Figur 35
Vehicle Summary

While broader industry trends are indicating a slight softening in vehicle acquisition activity, the buying groups that make up vocational trucks are not as likely to see significant retrenchment in any of the near-term cycles.

Vehicles are growing slightly older in service, but this can be both a reflection of improved product manufacturing quality and more effective maintenance trends.

There is no evidence of significant vehicle downsizing which reflects the “mission dictated” nature of products in the vocational work truck sector.

Fuel Choice and Deployment Summary

Diesel fuel continues to be the fuel of choice for this vehicle segment. As fleet sizes are not shrinking, expected volume of gross fuel sales is likely to remain stable.

Biodiesel is also the predominate solution for fleets seeking an improvement over conventional diesel even over renewable diesel as an alternative.

As there is increasing focus from both government entities and the public in reducing emissions, Fleets will be placing an increasing emphasis on improved fleet operating emission profiles. Consequently, as Biodiesel is one of a very few options for inexpensive and manageable strategies for improving legacy fleet performance, demand for Biodiesel should increase in this forecast term.
2020 VISION: ON THE ROAD TO GROWTH

- **Building on Success**: The Biodiesel industry continued on a strong path in 2019, with nearly 2.8 Billion gallons of biomass-based diesel in U.S.
- Biodiesel Tax Credit reinstated retroactively for 2018 – 2022, creating stability for future growth
- RFS Volumes for 2020 are in place
- Growing number of diesel vehicle options for 2020-2021
- OEM & Fleet support continues to grow
- This will provide economic opportunities for marketers, blenders and users of biodiesel, as well as for diesel vehicle/equipment OEMs, Dealers and Fleets
QUESTIONS? PLEASE VISIT US AT:

www.nbb.org
www.biodiesel.org
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