



WELCOME!

*Delivering
Essential City
Services and
Sustainability
without
Sacrificing
Budget*

League of California Cities
Long Beach, CA
October 17, 2019

Importance of Diesel
Technology to Deliver
City Services &
Sustainability Goals

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of Oakland



The Diesel Technology Forum is supported by leaders in advanced diesel engines, vehicles, equipment, components and fuels.

- AGCO
- Bosch
- Caterpillar Inc.
- CNH Industrial
- Cummins Inc.
- Daimler
- Delphi Automotive
- Deere & Company
- FCA
- General Motors
- Honeywell

- Isuzu Motors
- Johnson Matthey
- Mazda North American Operations
- MTU America
- Neste
- Umicore
- Volvo Group
- Yanmar

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- National Biodiesel Board
- Western States Petroleum Association



Diesel Technology Moves Cities & Provides Essential City Services

DIESEL POWER Delivers Essential City Services

Because of its efficiency, safety, reliability and performance, diesel is the technology of choice for supplying a wide array of city services. Diesel facilitates the efficient delivery of city services, enhancing mobility and sustainability with a new generation of emissions performance and renewable fuel capabilities.

Maintaining, repairing or building roads and other infrastructure requires diesel-powered heavy equipment. The new generation of heavy equipment is greening construction by reducing emissions on jobsites and using less fuel. Hybridization and advanced energy storage systems that boost fuel savings as well as the latest advanced technologies including telematics and autonomy are also built on the foundation of diesel power.

30% of all commercial trucks on the road are powered by the latest generation of advanced diesel technology.

Diesel and diesel-electric hybrids power almost 90% of America's bus fleet.

A hybrid wheel loader can achieve 40% greater efficiency and can move 25% more material on a gallon of fuel.

Diesel is the gold standard for the efficient and reliable delivery of a wide range of city services. Now with near-zero emissions and readiness for low carbon advanced renewable biodiesel fuels, the new generation of diesel power will help cities save money and be more sustainable and resilient.

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Cities Depend on Diesel for Mission Critical Services

MISSION-CRITICAL SERVICES DEPEND ON DIESEL POWER

Diesel is an essential partner powering vital emergency services 24 hours a day, 365 days a year. Count on proven technologies like diesel power to get the job done, no matter the conditions or circumstances.

Diesel engines are the gold standard for backing up grid electrical power due to their reliability, response time and load-carrying capability. Essential city services like drinking water treatment, wastewater systems and telecommunications are key to ensuring public health and safety.

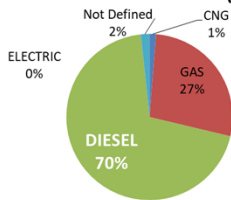
Call 911 and odds are that a piece of diesel-powered equipment will respond. Nowhere is it more critical to have the ultimate performance and reliability than in fire and emergency vehicles, where diesel is the technology of choice.

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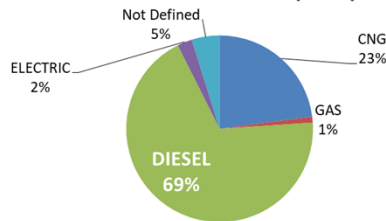


California's Trucks and Buses in California Are Mostly Diesel

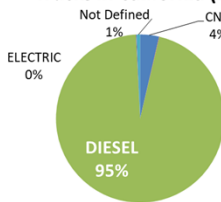
Technology Types Powering Class 3-8 Vehicles in California (2019)



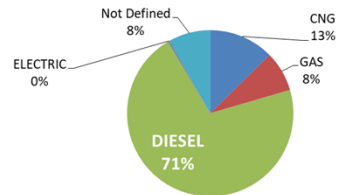
Technology Types Powering Transit Buses in California (2019)



Technology Types Powering Class 8 Trucks in California (2019)



Technology Types Powering School Buses in California (2019)

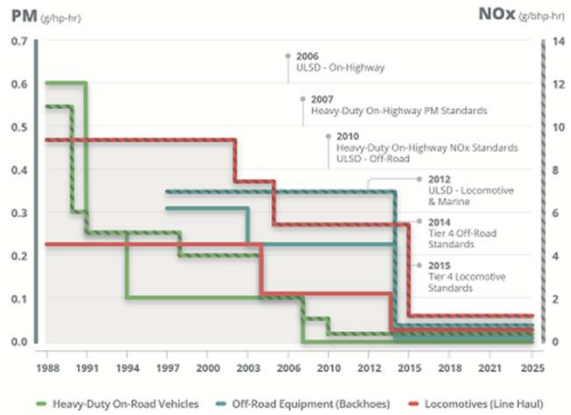


Diesel is a Platform for Continual Improvement

Trucks, Trains, Construction and Agricultural Equipment are on the Near-Zero Emissions Diesel Path



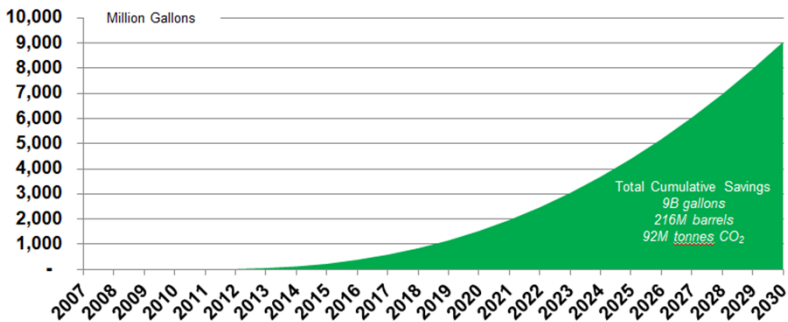
PROGRESS TO NEAR-ZERO PM & NOx EMISSIONS



Source: U.S. EPA Office of Transportation and Air Quality (OTAQ)



Diesel Trucks Are Part of California's Sustainable Future



Between 2010 and 2030, diesel trucks will save California **9 billion gallons of fuel** and eliminate **92 million tons of CO₂**.

What does that work out to?

Eliminating the emissions from **92 million cars**, or making them EVs

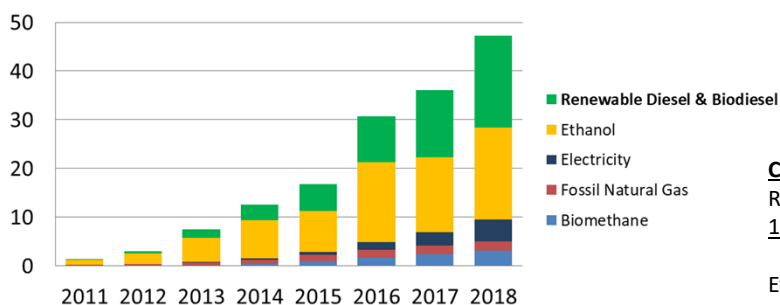
Electricity use from **16 million homes**



But Wait, There's More. Advance Biofuels Add Significant Benefits at Low Cost

Cumulative CO₂ Reductions (million tons)

SOURCE: California Energy Commission, Low Carbon Fuel Standard Dashboard



Of all the fuel types and technologies, biodiesel and renewable diesel are contributing the greatest CO₂ reductions in California...and **it takes a diesel engine to realize the benefits**

CO₂ Reduced (2011-2018)

Renewable Diesel and Biodiesel = **18.9 million tons**

Ethanol = 18.8 million tons

Battery-Electric = 2.5 million tons





Summing it All Up

Diesel is a leading technology choice today for fleets.

Diesel Technology is clean and getting much more efficient.

The latest engine designs coupled with advanced biofuels will deliver substantial sustainability benefits at low cost

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THANK YOU

