



# The Current State of the Fuel Additives Market and Future Projections of Growth

Yuya Baba<sup>1,2</sup>, Stanley Zhang<sup>1,2</sup>, Raj Shah<sup>1</sup>

1. Koehler Instrument Company, Inc., Holtsville, NY 11724, USA
2. Department of Materials Science and Chemical Engineering, Stony Brook University, Stony Brook, NY 11794, USA

## Types of Fuel Additives

### Performance Additives

Performance additives, as the name suggests, improves the performance of the engine. For example, carburetor icing as seen in Figure 1 is caused by the decrease in temperature from evaporating gasoline. Anti-icing agents are included to prevent icing from occurring and enhance airflow. Performance additives can also improve lubricity, combustion efficiency, and reduce unwanted emissions. Other example of additives in this category are: octane and cetane improvers for gasoline and diesel fuel, fluidizers and combustion modifiers.

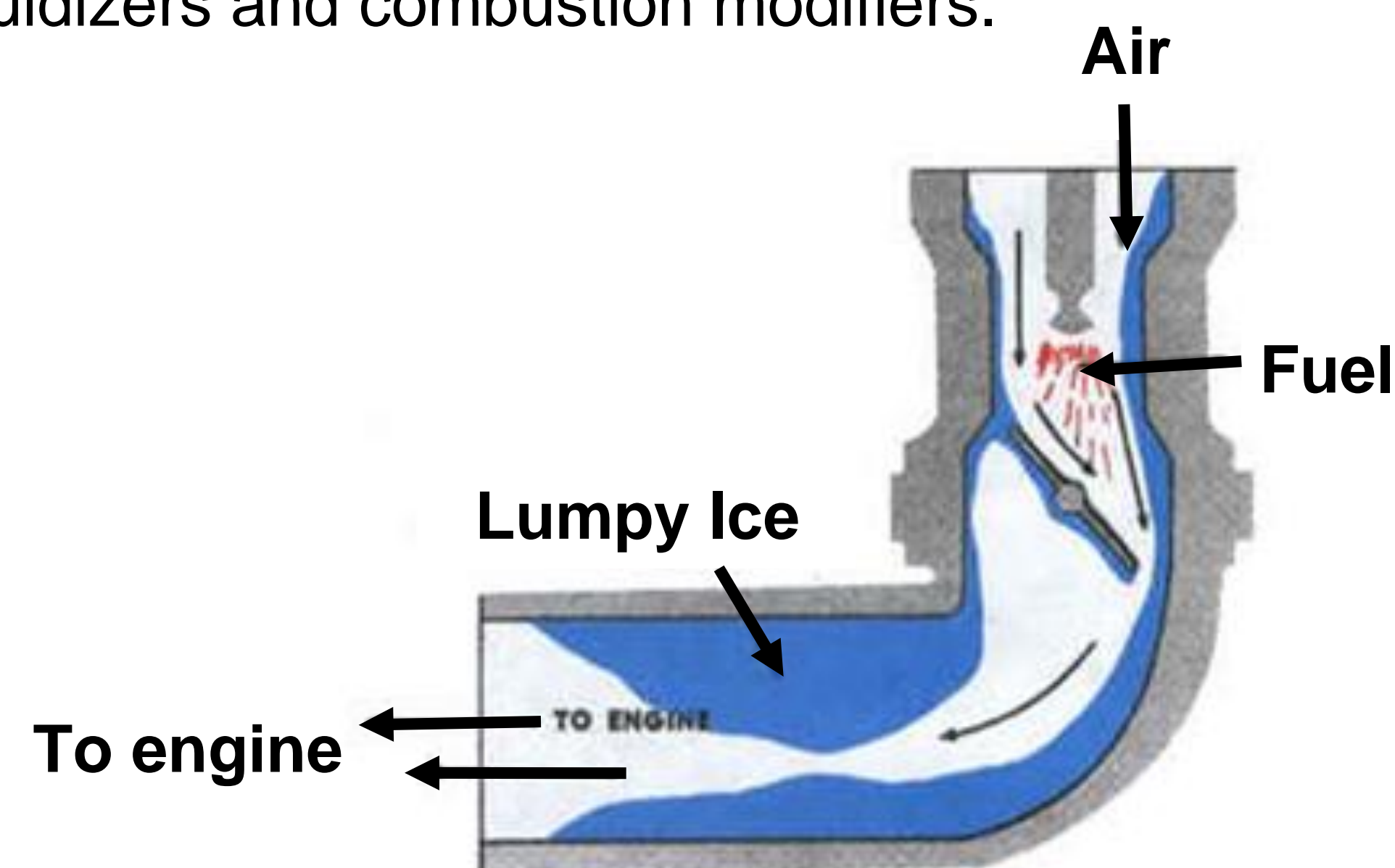


Figure 1. Ice accumulating in a carburetor, restricting airflow into the engine<sup>3</sup>

### Distribution Additives

Distribution additives are more focused on protecting fuels during transportation and distribution. They can be used to improve flow, prevent corrosion, or be as simple as add color to the fuel to differentiate products. For example, flow improvers and wax modifiers are added to diesel fuel to maintain a steady flow and prevent filter plugging at low temperatures. Other examples of distribution additives include corrosion and foam inhibitors, demulsifiers, biocides, antistatic agents, drag reducers, and dyes.

### Fuel Quality Additives

Fuel quality additives focus on maintaining the quality of the fuel during storage and preventing degradation. Oxidation inhibitors, for example, improve the long-term fuel storage stability by preventing the formation of peroxides and gums. Metal deactivators also perform a similar function by chelating with metal ions and turning them into ineffective catalysts.

## SAFE Vehicle Rule

In March 2020, the Environmental Protection Agency (EPA) and the National Highway Traffic Safety Administration (NHTSA) issued the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule. This rule ensures that car model years from 2021 to 2026 will fall under strict standards for fuel economy and carbon emissions. The standards increase 1.5% each year, over the 5 years as seen in the table below. This rule is currently being implemented on passenger vehicles and light trucks, but are expected to incorporate heavy duty vehicles in the near future.

Table 1. Projected 2021-2026 Fleetwide CO<sub>2</sub> and fuel economy standards<sup>1</sup>

Vehicle	Standard	2021	2022	2023	2024	2025	2026
Passenger Cars	CO <sub>2</sub> (g/mi)	178	175	171	168	167	165
	CAFE (mpg)	44.2	44.9	45.6	46.3	47.0	47.7
Light Trucks	CO <sub>2</sub> (g/mi)	257	253	250	248	245	240
	CAFE (mpg)	31.6	32.1	32.6	33.1	33.6	34.1
Combined Cars & Light Trucks	CO <sub>2</sub> (g/mi)	214	211	207	204	202	199
	CAFE (mpg)	37.3	37.9	38.5	39.1	39.8	40.4

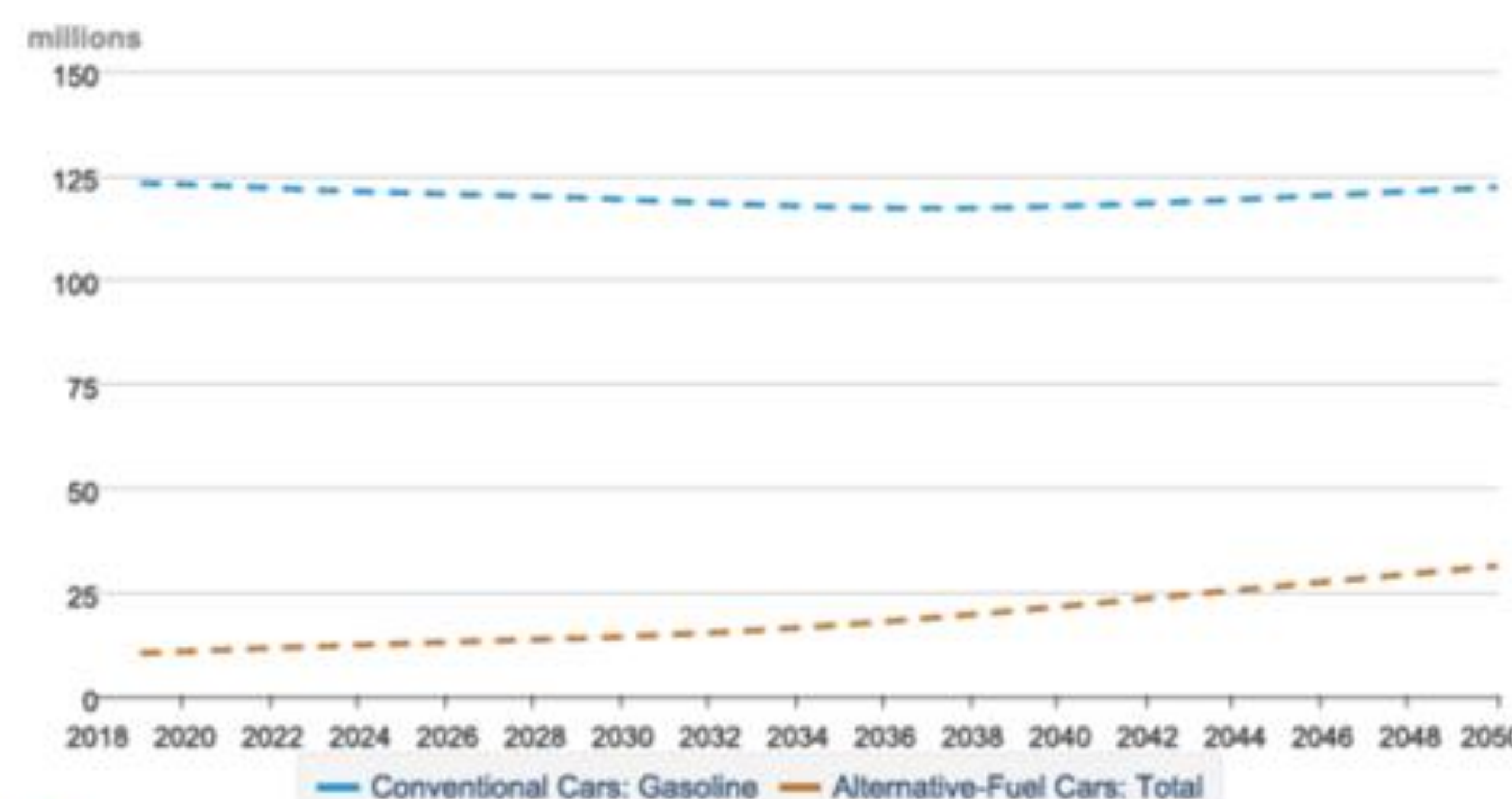


Figure 2. Projected number of conventional gasoline cars (blue) vs. alternative fuel cars (orange) from 2018-2050<sup>1</sup>

## ULSD Fuel

ULSD fuel, or ultra-low sulfur diesel is a diesel fuel with a maximum sulphur content of 15 parts per million that has been required for highway vehicles in the US since 2006. Compared to traditional diesel fuel, water is less soluble in ULSD, which causes greater susceptibility to water separation, accelerated tank corrosion and microbial contamination especially when combined with biodiesel. Performance and distribution fuel additives such as lubricity improvers and corrosion inhibitors are added to improve performance and reduce the downsides of ULSD without sacrificing the emission benefits. Starting January 2021, China has prohibited the sale of diesel fuel that does not follow China VI standards which requires a maximum sulfur limit of 10 ppm.

## Future Projections

The fuel additives market is expected to see a growth in the upcoming years due to the stricter regulation by the SAFE vehicle rule, stricter emission limits, ULSD fuel improvement, and the reopening of the country after the pandemic. Although the electric vehicle industry is a direct competitor to the fuel car industry, as we can see in Figure 2, fuel and oil are projected to dominate the market when it comes to the number of units sold and will remain the primary fuel source for energy in the transportation sector even until 2050.

## References

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