



BIODIESEL CAN HELP NEW YORK ACHIEVE ITS CLEAN ENERGY GOALS

Environmental Solutions

B20 20% blend produces a **14.6% reduction in CO₂ emissions and better GHG performance** than natural gas (NESCAUM).

EMISSIONS IMPROVEMENTS: BIODIESEL VS LOW SULFUR (LS) AND ULTRA LOW SULFUR (ULS) HEATING OIL

AVG. CHANGE	PAH	PM	CO	NO _x	SO ₂	CO ₂
Percent	-90 to -95%	-86%	Similar to -15%	Similar to -25%	-98% (LS) Similar (ULS)	-74%

Note: PAH-Polycyclic Aromatic Hydrocarbons; PM-Particulate Matter; CO-Carbon Monoxide; NO_x-Nitrogen Oxides; SO₂-Sulfur Dioxide; CO₂-Carbon Dioxide



5M B20

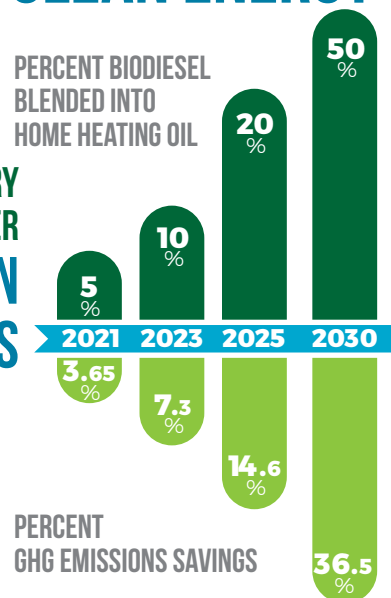
- From 2013-2021, NYC fleets used 130 million gallons of biodiesel blends.
- More than 90% of the 14 million diesel gallons used by NYC vehicles in 2021 contained biodiesel blends.
- 100% of NYC sanitation vehicles run on biodiesel blends, using 4.6 million gallons of B20 per year.
- 77% of NYC fire vehicles run on biodiesel, using 2.1 million gallons of B5 in 2021.



17.8M B5-B10

- From 2013-2021, NYC municipal buildings used 246 million gallons of Bioheat® fuel.
- In 2020, NYC schools used 17.8 million gallons of Bioheat® fuel.
- More than 75% of all no.2 heating oil used by NYC municipal buildings is blended with B10 Bioheat® fuel.

HEATING INDUSTRY PROPOSAL TO LOWER CARBON EMISSIONS



CURRENT LAWS

New York State law requires increasing biodiesel blends in home heating oil:

- 5% by July 1, 2022*
- 10% by July 1, 2025
- 20% by July 1, 2030



New York State offers a tax credit of \$0.06-\$0.20 per gallon for biodiesel blends between B6 and B20. The credit expires in 2025.

*The New York State Department of Environmental Conservation used enforcement discretion to allow heating oil dealers outside New York City, Nassau, Suffolk, and Westchester counties to delay compliance until July 1, 2023.

Economic Solutions

\$4B Home heating oil is a \$4 billion industry

753 NYS home heating oil retail businesses

1.4M 18.7% of NYS households rely on oil heat, using more than 570 million gallons of heating oil annually.

Sources: U.S. Census Bureau, 2021 American Community Survey 5-Year Estimates; U.S. Energy Information Administration, State Profile and Energy Estimates, Feb. 2023; "Leading the Way Toward a Zero-Carbon Future," NEFI, 2019; K. Kerman, New York City Department of Citywide Administrative Services, Update on Biofuels Adoption: NYC Fleet, June 2022; New York State Department of Environmental Conservation, June 30, 2022 -- https://www.dec.ny.gov/docs/air_pdf/enfdisbiofuel.pdf; Macor, A. Pavanello, P., Performance and Emissions of Biodiesel in a Boiler for Residential Heating, Energy, vol. 34, 2009; Krishna, C.R., Biodiesel Blends in Space Heating Equipment, Brookhaven National Laboratory, 2001; Lee, S. Win, He, I., Heritage, T., Young B., Laboratory Investigations on the Cold Temperature Combustion and Emissions Performance of Biofuels Blends, 2003; Alternative Fuels Data Center, Biodiesel Vehicle Emissions, https://afdc.energy.gov/vehicles/diesels_emissions.html. Studies cited showed PM reduction proportional to biodiesel content (e.g., 20% reduction for B20 blend, 50% reduction for B50 blend). To be conservative, Clean Fuels estimates the PM reduction from using B100 would be approximately 86%.