New York State Energy Coalition
200 Parkway Drive South, Suite 202
Hauppauge, New York 11788
212-395-1380
631-360-0200

Representing New York's Heating Fuels Industry

January 19, 2023

Testimony before the
Senate Standing Committees on
Finance, Energy & Telecommunications and Energy
On the
Legislative and Budgetary Actions Necessary to Implement the
Climate Action Council Final Scoping Plan

Submitted By:
Rocco J. Lacertosa, CEO
New York State Energy Coalition, Inc.
Hauppauge, NY

The New York State Energy Coalition (NYSEC) *is a trade association representing the independent retail and wholesale heating fuels and energy marketers in New York City and Nassau and Suffolk counties of New York State – comprising 70% of the state's home heating oil market by volume. NYSEC members live and work in the neighborhoods they serve and are committed to improving the fuel products and appliances for their customers and their communities.*

The Home Heating Liquid Fuel Industry Supports the Phase-Out of Heating Oil

NYSEC has embraced the carbon reduction goals implemented by New York State and advocating for the phasing-out petroleum diesel (heating oil) for home heating and replacing it with biodiesel and renewable diesel – together known as bio-mass-based diesel. Based upon U.S. Environmental Protection Agency and U.S. Department of Energy's Argonne National Lab, using biodiesel and renewable diesel in place of petroleum diesel for home heating will save 73% on average carbon reductions, and even up to 80% and beyond as new advances in production technology are employed.

NYSEC supports increasing the current state law that requires the usage of a 20% biodiesel blend in home heating oil to a 50% biomass-based diesel blend by 2035 and a 100% replacement of petroleum diesel with biomass-based diesel by 2050. These actions would ultimately eliminate the use of 1 billion gallons of heating oil and reduce 8.59 million metric tons of carbon emissions, without the need for costly consumer equipment changes.

In September 2019, the National Energy Fuels Institute (NEFI) hosted the Heating Oil Industry Summit in Providence, RI, at which the industry unanimously adopted what has become known as the *Providence Resolution* to move the industry to a clean burning fuel and transition away from conventional heating oil. The *Providence Resolution*[1] resolved to reduce the carbon emissions of home

[1] https://nefi.com/news-publications/recent-news/heating-oil-industry-commits-net-zero-emissions-2050/

heating systems in line with the state's GHG reduction goals of 40% by 2030 and Net-Zero by 2050. Bioheat® is that future renewable liquid low-carbon heating fuel.

Partnering with New York State to Meet its Carbon Reduction Goals

The New York Climate Leadership and Community Protection Act (CLCPA) sets New York State government apart from other states in addressing climate change in a comprehensive manner, providing for a cleaner environment for future generations and transitioning away from fossil fuels.

This testimony will provide information as to the availability, success, affordability, and decarbonization attributes of biomass-based diesel (biodiesel and renewable diesel) as fuels that can assist New York in meeting the deep decarbonization targets of the CLCPA.

Please note the following points relative to the use of biodiesel and renewable diesel, together known as biomass-based diesel, in thermal space heating appliances:

- First, the optics… the name of these fuels includes the word "diesel" as they are diesel replacement fuels; they do not include petroleum or diesel fuel in their makeup.
- As a drop-in replacement fuel for petroleum heating fuel, biomass-based diesel works seamlessly in current home heating appliances, even at high blend volumes or at 100%.
- The two largest home liquid heating appliance equipment manufacturers, Beckett Corporation and Carlin Corporation, will be manufacturing 100% biodiesel UL-rated components in 2023, as Underwriters Laboratories has approved the protocols to allow such manufacturing.
- Biomass-based diesel provides an immediate reduction in greenhouse gas (GHG) emissions of up to 80%, 73% on average depending upon feedstock, from petroleum heating oil.
- Biomass-based diesel production and supply is ample to cover the space heating sector needs in New York State as over 3.2 billion gallons are domestically-produced each year, with an estimated 6 billion gallons to be produced by 2030 and 15 billion gallons by 2050.
- According to New York State Energy Research & Development Authority (NYSERDA) pricing data, the use of biodiesel is at no extra cost to consumers.
- Preliminary results of a health benefits study by Trinity Consulting shows the use of biodiesel in space heating reduced cancer rates by 85%, and reduce asthma attacks as well as a reduction in premature deaths and lost workdays.
- There are 1.4 million homes in New York State that currently use heating oil ; biomass-based diesel is a low carbon, renewable liquid fuel alternative fuel available that provides GHG savings and health benefits to them right now.
- As renewable replacements for diesel fuel, biodiesel and renewable diesel are made from used cooking oil, animal fats, brown grease, and agricultural byproducts and co-products. The feedstocks used to produce U.S. biodiesel have become increasingly diversified with waste products making up an increasing volume of feedstock used to produce fuel. There is no food-for-fuel issue, as waste oils are primary feedstocks and Palm oil is also not eligible for the U.S EPA Renewable Fuel Standard (RFS), and thus deforestation is not an issue for biodiesel fuel used in the United States under the RFS program.
- With the NYISO raising concerns about the ability of the grid to be built-out to handle full electrification of vehicles, homes and businesses, the use of Bioheat by the 1.4 million homes that currently use heating oil can help mitigate stress on the grid while still providing immediate carbon reductions to the home heating sector.

Implementation of the Climate Leadership and Community Protection Act Scoping Plan

The policy statements in the Scoping Plan seem to not recognize the fact that there are multiple pathways to carbon reduction, especially for the current 1.4 million consumers of heating oil…and that is the 100% replacement of petroleum diesel with biodiesel and renewable diesel.

Advancements in fuel emission savings, based upon U.S. Environmental Protection Agency and U.S. Department of Energy's Argonne National Lab, show that using biodiesel and renewable diesel in place of petroleum diesel for home heating will save 73% on average carbon reductions, and even up to 80% and beyond as new advances in production technology are employed.

The technological advances in equipment with 100% biodiesel UL-rated appliances being manufactured beginning in 2023, can and should lead to policies that would enable the current 1.4 million homes that choose their Low Carbon fuel of choice. These appliances would NOT be fossil fuel heating equipment, but renewable fuel appliances.

Current heating oil systems in homes can use biodiesel, renewable diesel, or a blend of the two, thus eliminating heating oil use and allowing the state can achieve at least a 73% carbon savings without transitioning all to electric heat pumps. And, if someone wanted to replace their current heating oil appliance, now or at end-of-useful life, they can install a 100% Biodiesel UL-rated appliance for a fraction of the cost of a heat pump system…estimated at $7,500 versus $20,000 to 40,000. These new appliances would even work for new construction.

Clean Transportation Standard – *NYSEC proposes expanding this market-based mechanism beyond transportation to include thermal heat, like initiatives taking place in Massachusetts and Vermont.*

The Scoping Plan calls for the state to study and consider adopting a Market-Based Fuel Policy for transportation – called a Clean Transportation Standard. NYSEC supports this approach as it will help with carbon reductions and allow the transition to electrification, expanded transit, and clean transportation alternatives, particularly in Disadvantaged Communities.

Both Massachusetts and Vermont are considering adoption of a Clean Heat Standard to achieve similar goals but in the Building Sector to support electrification and clean heat alternatives, with specific references to advanced biofuels such as biodiesel and renewable diesel.

In Massachusetts, the Clean Heat Commission recommended moving towards electrification, but also recommended advanced biofuels be part of a Clean Heat Standard and urged its implementation in 2023. These fuels have been recognized as the most viable short-term fuels for their ability to provide immediate carbon reductions. The Commission went on to require continued studies of home heating equipment technologies to keep the door open to all alternative low carbon emitting fuels.

In Vermont, the Clean Heat Standard provides for credit allowances all low carbon emitting fuels that can be used in thermal heating via the setting of emission standards and allowing for the private industry to trade credits to move the state to lower carbon emissions in the thermal heat sector.

Requiring the Electrification of Buildings via Heat Pumps – *NYSEC would like the state to apply all pathways to decarbonization of the thermal heat sector, by allowing home heating consumers to have their choice of low carbon emitting fuels versus being forced to install an electric heat pump.*

Current NYS state law calls for a 20% blend of biodiesel in heating oil by 2030. NYSEC is asking the Governor and Legislature to (1) include stand-alone renewable diesel and biodiesel-renewable diesel blends in the law, and (2) to increase the blend percentage to 50% by 2035, and then (3) to 100% use of biomass-based diesel by 2050, thus eliminating of use of petroleum diesel for thermal heating. This does not preclude electrification, but rather offers a renewable liquid fuel pathway using current home heating equipment.

This would eliminate the approximate 1 billion gallons of heating oil from use in the state and provide immediate carbon reductions. The 50% blend will provide approximately 37% reduction in carbon and a 100% replacement will provide upwards of 80% (74% on average depending upon feedstock), thus, aligning closely to the CLCPA carbon reduction goals. It should also be noted that as the state moves to a 100% renewable power grid and cleans the heavy-duty emissions in transportation sector, the carbon savings realized by using biomass-based diesel will increase.

Connecticut (CT) and Rhode Island (RI) currently have laws for biomass-based diesel blending. Connecticut has a 50% blend requirement by 2035 and Rhode Island is 50% by 2030. Accordingly, this proposal aligns with and exceeds the existing requirements in other Northeast states.

Phase out of fossil fuel equipment new construction (building code changes) and Prohibiting the replacement of fossil fuel heating equipment at end of life – *NYSEC urges the state to recognize the technological advances in home heating equipment, for there will be 100% biodiesel UL-rated appliances being manufactured beginning in 2023.*

Since 2000, the heating oil industry has been working to find clean alternatives to petroleum diesel for home heating. Through the National Oilheat Research Alliance (NORA), which was authorized by U.S. Congress in 2000, the heating oil industry in partnership with the National Biodiesel Board, now known as the Clean Fuels Alliance America, has been researching and advocating for improvements in the efficiency of equipment and providing a cleaner liquid fuel.

These entities have invested tens of millions of dollars for research, development, and educational outreach that has led to the phasing out of petroleum diesel and the use of biodiesel at levels ranging from B5 to B100 (100% biodiesel), as well as other renewable fuels currently in development.

This same R&D has led to the two largest home liquid heating appliance equipment manufacturers, Beckett Corporation and Carlin Corporation, to begin manufacturing 100% biodiesel Underwriters Laboratories (UL)-rated components in 2023.

So as the state examines the policies of the International Code Council and International Building Codes for updating New York's building codes, NYSEC hopes the state will take into consideration the technological advances in equipment for home heating use. These advances and the use of 100% biodiesel and renewable biodiesel allows for current and new homeowners to have a choice of low carbon fuels for home heating while helping the state achieve its carbon reduction goals.

Conclusion

The heating oil industry has been leading a transition to renewable fuel blends for thermal heat in the Northeast. This includes New York City (the first to transition), and the states of New York, Connecticut, Massachusetts, Rhode Island, and Vermont.

These efforts have resulted in the state and the city of New York enacting liquid renewable fuel requirements for home heating as a method of immediately reducing the carbon emissions of heating appliances with the recent state law (Chapter 750 of L.2021) requiring a 20% blend of Bioheating fuel. The City of New York's law (Local Law 119-2016) also embraced a 20% blend level and have transitioned their fleet to biodiesel and renewable diesel.

As the State Legislature reviews implementation of the Climate Leadership and Community Protection Act Scoping Plan, we strongly encourage the State Legislature to support the use of biodiesel and renewable diesel as a replacement fuel for petroleum diesel used in in thermal space heating applications. These fuels are a pathway to cleaner emissions for 18% of the state's housing stock with little-to-no investment necessary, and will truly help New York achieve its climate change goals.

Background on Biomass-Based Diesel

The space heating sector in New York City began using ultra-low sulfur and biodiesel, a liquid renewable fuel, for home heating oil in 2012. That initiative was spearheaded by the home heating oil industry. Since 2000, the industry has invested over $20 million in research and development to enhance heating appliance efficiency and to develop Bioheat®, the blend of biodiesel with heating oil, to achieve a cleaner burning home heating fuel. These industry initiatives have helped consumers decrease their consumption of heating oil by 40%, reducing average household use from 1,200 to 700 gallons per year.

While requiring biodiesel use in homes since 2012 (NY Local Law 119-2016), the City of New York has fully embraced its use in the City's own municipal buildings and fleets. In fact, NYC has steadily ramped up the blend levels to as much as 20% in the summer and scaled back to 10% in the winter in its vehicles. The agencies include the FDNY, and the Departments of Sanitation, Parks and Recreation, and Education just to name a few. In addition to biodiesel, the City recently began a pilot program using an 80% renewable diesel/20% biodiesel blend in their fleets, fully replacing petroleum diesel use in heavy duty trucks.

In 2017 and 2021, respectively, at the behest of the state's home heating oil industry, New York State adopted a 5% blending requirement for biodiesel/renewable diesel in heating oil for the New York metropolitan area, which includes New York City, Long Island (Nassau and Suffolk Counties) and Westchester County (Chapter 315 of L. 2017) and made the requirement statewide at a blend level of 20% by 2030 (Chapter 750 of L. 2021). The industry is now advocating for 50% biomass-based biodiesel – biodiesel and renewable diesel – by 2035 and 100% by 2050.

It should also be noted that the home heating industry in Connecticut and Rhode Island both successfully advocated for 50% biomass-based diesel blending laws in their states. The Connecticut law (Public Act 21-181) requires a 50% blend by 2035. The Rhode Island laws (Chapters 347 & 348) requires a 50% blend by 2030.

As the state examines the future of heating sources for the state's 1.4 million homes which currently use heating oil, biodiesel and renewable Diesel should be included in the mix. They burn 73% - 80% cleaner across the entire CO2e GHG spectrum than heating oil (diesel) fuel, according to U.S Environmental Protection Agency and U.S Department of Energy's Argonne National Laboratory, the U.S. Department of Agriculture and Purdue University[2], and are a gallon-for-gallon replacement for petroleum diesel fuel and heating oil.

Biodiesel and renewable diesel themselves are 100% cleaner than petroleum diesel, except for the fuel used to power the production faculties and to transport the fuel, thus the 20% loss in scoring. Suffice to say, as the power production and on-road sectors become renewable, the 73% - 80% cleaner GHG savings with these biofuels will continue to climb higher.

In addition to burning cleaner, the next best benefit about using Bioheat® (the registered name for biodiesel blended heating fuel) is that there is no need to change the heating system to use the fuel and according to data from NYSERDA, there is no increase in consumer costs with the use of biodiesel. This provides an affordable option for all fuel users which is especially important during these financially challenging times. Thus, the transition is seamless to the consumer. The state can achieve these GHG savings by requiring that biodiesel/renewable diesel fuel instead of heating oil be delivered to current consumers and as an alternative for new construction.

So, with a simple change in state heating fuel requirements to biodiesel and renewable diesel, the State can experience cleaner burning home heating systems for the 1.4 million homes—18% of the housing stock in New York—that currently consume 1 billion gallons of heating oil annually.

---

[2] CHEN 2018 – Life cycle energy and greenhouse gas emission effects of biodiesel the United States with induced land use change impacts by:

- Systems Assessment Group, Energy Systems Division, Argonne National Laboratory, 9700 S. Cass Avenue, Lemont, IL 60439, United States
- Department of Agricultural Economics, Purdue University, 403 West State Street, West Lafayette, IN 47907, United States
- (S&T)2 Consultants Inc., 11657 Summit Crescent, Delta, BC V4E 2Z2, Canada
- Office of the Chief Economist, United States Department of Agriculture, United States

What is Biodiesel?

As renewable, low carbon replacements for petroleum diesel fuel and heating oil, biodiesel and renewable diesel are made from used cooking oil, animal fats, brown (sewer) grease, and agricultural byproducts or co-products.

These biofuels reduce lifecycle greenhouse gases on average 73% - 80%. In addition to significantly lowering greenhouse gas emissions, biodiesel can also significantly reduce harmful criteria pollutant created from the combustion of petroleum. These are pollutants that have been shown to lead to chronic health effects, especially in urban communities.

Emissions Improvements of Biodiesel versus Low Sulfur (LS) and Ultra Low Sulfur (ULS) Heating Oil[3],[4],[5],[6],[7]

Average 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)	-73%

Note: PAH-Polycyclic Aromatic Hydrocarbons; PM-Particulate Matter; CO-Carbon Monoxide; NOx-Nitrogen Oxides; SO_2-Sulfur Dioxide; CO_2-Carbon Dioxide

Feedstocks used to produce U.S. biodiesel and renewable diesel have become increasingly diversified, with waste products making up an increasing volume of feedstock used to produce fuel. One of the chief reasons is biodiesel offers an especially effective and efficient outlet for recycling fat-based waste streams. While waste fats and oils can be treated in wastewater treatment plants, it is far more expensive and this process yields far fewer GHG savings, if any at all. Furthermore, by processing excess agricultural co-products such as soybean oil into high quality biodiesel, the industry is not only able to provide a lower carbon fuel, but we help facilitate lower protein costs by providing an additional revenue source for the production of soybean meal. Thus, with biodiesel production and use, there is no food-for-fuel issue. Currently federal law, rules, and regulations prohibit the use of palm oil in biodiesel production, helping further reduce deforestation. We are pleased to note that domestically-produced biodiesel meets all federal standards. In fact, US produced soybeans are so sustainable, they are approved under stringent, EU RED II Compliance scheme[8].

As a drop-in fuel, Bioheat® provides immediacy in reducing GHG emissions and has been effective in states that have biodiesel blending requirements for space heating - New York and Rhode Island, as well as in the Massachusetts Thermal Alternative Portfolio Standard. The same translates to those states with low carbon transportation policies.

At present, heating oil is being delivered in New York at blends as high as 35% (B35) and in Massachusetts at blends as high as 50% (B50), with pilot programs at 100% (B100) in both states. These blend levels have not required any change out of heating system and only minor adjustments to oxygen mix and flame sensors (technical adjustments), nor have they resulted in increased costs to the consumer versus traditional heating oil. This field experience shows that biodiesel is a GHG reduction strategy with a seamless transition for liquid heating fuel customers.

The Transition to Renewable Liquid Fuel: Bioheat®

Through the efforts of the National Oilheat Research Alliance (NORA), which was authorized by U.S. Congress in 2000, the heating oil industry, in partnership with the National Biodiesel Board, now known as the Clean Fuels Alliance America, has a laudable track record of accomplishments to improve the efficiency of equipment and provide a cleaner liquid fuel. NORA is funded by a government sanctioned “check-off” program. These entities

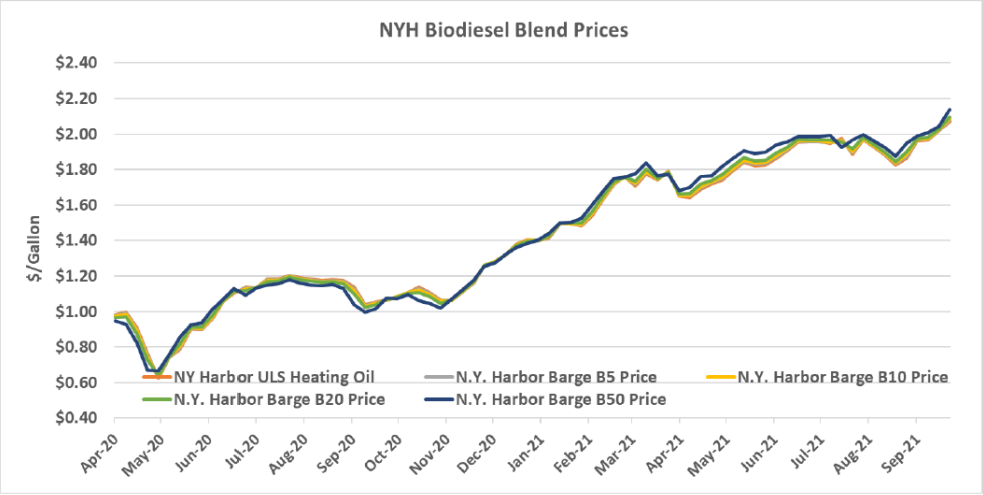
[3] Macor, A., Pavanello, P., Performance and Emissions of Biodiesel in a Boiler for Residential Heating, *Energy*, vol. 34, 2009.C
[4] Krishna, C.R., Biodiesel Blends in Space Heating Equipment, Brookhaven National Laboratory, 2001.
[5] USDA/DOE 1998, Life Cycle Inventory of Biodiesel and Petroleum Diesel for Use in an Urban Bus.
[6] Lee, S. Win, He, I., Heritage, T., Young B., Laboratory Investigations on the Cold Temperature Combustion and Emissions Performance of Biofuels Blends, 2003.
[7] https://www.edf.org/sites/default/files/10071_EDF_BottomBarrel_Ch3.pdf at 5. Studies cited showed PM reduction proportional to biodiesel content (e.g., 20% reduction for B20 blend, 50% reduction for B50 blend). To be conservative, NBB estimates the PM reduction from using B100 would be approximately 86%
[8] https://ussec.org/european-union-recognizes-ssap-red/

have spent more than tens of millions of dollars for research, development, and educational outreach. This partnership resulted in the development of Bioheat® fuel – ultra-low sulfur heating oil blended with renewable biofuel at levels ranging from B5 to B100 (100% biodiesel).

Because of NORA's continued leadership and guidance from the Clean Fuels Alliance America, the heating oil industry has proactively pursued all legislative and regulatory opportunities to transition to 100% renewable fuel usage in the Northeast. The industry has supported the enactment of biofuel mandates for heating oil in New York City (B20 in 2030), Rhode Island (B50 by 2030), Connecticut (B50 by 2035), and for on-road diesel fuel in Pennsylvania (B2), and the 2008 Clean Energy Biofuels Act in Massachusetts.

Biodiesel is a No Cost Increase Alternative for Current Home Heating Oil Consumers

At the New York State Winter Fuels Outlook Meeting on October 28, 2021, NYSERDA showed the chart below (excerpted from the NYSERDA PowerPoint Presentation) which depicts its tracking of biodiesel pricing. The Authority's data shows that biodiesel prices track those of diesel fuel, thus proving biodiesel to be an economic and affordable fuel for current heating oil customers. NYSERDA's Weekly Heating Fuels Report and Dashboard tracks retail pricing and an examination of historical data also shows no discernable price differential in the areas of the state where biodiesel is required versus where it is not. [9]



> After accounting for the value of the associated RIN (D4) and the biodiesel tax credit, biodiesel prices are competitive with ultra-low sulfur heating oil, with just slightly higher prices.
  - B5 +$0.01/gal
  - B20 +$0.03/gal
  - B50 +$0.07/gal
> B100 biodiesel prices are affected by the price of soybeans as the primary feedstock as well as the value of the D4 RIN

10

Health Benefits of Using Biodiesel Confirmed in Trinity Consulting Study

Reducing criteria pollutants is more than just an abstract number or percentage -- substantial reductions in criteria pollutants, especially particulate matter (PM), yields important and quantifiable public health benefits.

The health benefits of using biodiesel in place of petroleum heating oil has been studied by Trinity Consulting. Trinity studied census tract areas and the surrounding 5-mile radius, so these results are granular and neighborhood specific. The Trinity Study shows the use of biodiesel in space heating reduces cancer rates by 85% in surrounding areas, as well as providing dramatic reductions in cases of asthma, premature deaths and lost workdays.

Since biodiesel is a drop-in fuel for home heating, these public health benefits begin accruing immediately upon the use of biodiesel in place of petroleum heating fuel. This means the asthma attacks, premature deaths avoided, and workloss days can be reduced every year starting today and for the next 10, 20, 30 or more years it will take the state to deploy deep electrification in this sector. For poor and disadvantaged communities that are

[9] https://www.nyserda.ny.gov/About/Publications/EA-Reports-and-Studies/Weekly-Heating-Fuels-Report
[10] NYSERDA New York State Winter Fuels Outlook Meeting on October 29, 2020: FINAL-WinterFuels2020-Master Slide Deck.pdf

heavily reliant on petroleum heating fuels, switching to biodiesel can provide substantial improvements in the health of those communities.

Four communities in New York State were studied: The Bronx, Albany and Buffalo for space heating, and the Port of New York / New Jersey for transportation.

The Bronx (New York) Sotomayor housing development

- Reduction in cancer burden by 20 cases (85% less)
- 16 premature deaths avoided
- 10,848 less asthma attacks
- 2,304 less lost workdays
- 11,889 less restricted activity days
- Equates to a valuation of about $137M in avoided costs.

Albany (New York)

- Reduced cancer burden by 2 cases (85% less)
- 2 premature deaths avoided
- 65 asthma attacks avoided
- 15 less lost workdays
- 87 less restricted activity days
- Equates to avoided health care costs of $1.23 million

Buffalo [New York]

- Reduced cancer burden by 29 cases (85% less)
- 8 premature deaths avoided
- 2,901 asthmas attacks avoided
- 1,214 less lost workdays
- 7,206 less restricted activity days
- Equates to avoided health care costs of $67.54 million

Port Elizabeth – Port of New York / New Jersey

- Reduced cancer burden by 2,516 cases (86% less)
- 116 premature deaths avoided
- 74,862 asthmas attacks avoided
- 33,296 less lost workdays
- 193,804 less restricted activity days
- Equates to avoided health care costs of $985.74 million

Note: Trinity Consulting is a multi-national firm with 69 offices across the U.S., Canada, United Kingdom, Ireland, Australia and China, and over 40 years of expertise in air dispersion modeling and health risk assessments. The Trinity Study, commissioned in 2020, completed in 2021 and updated in 2022, quantified the local community health benefits of switching from petroleum diesel or distillate to 100% biodiesel in 28 sites across 21 states in the U.S., with a focus on the transportation sector and space heating sector.
