

Testimony of John Petito
Acting Deputy Commissioner, Bureau of Wastewater Treatment
New York City Department of Environmental Protection
before the
New York City Council Committee on Environmental Protection
concerning

Intro. 451 – Relating to the Use of Biodiesel Fuel in Marine Craft Owned or Operated by
the Department of Environmental Protection
250 Broadway
January 13, 2015, 1 pm

Good afternoon, Chairman Richards and Members of the Committee. My name is John Petito, Acting Deputy Commissioner of the Bureau of Wastewater Treatment (BWT) for the New York City Department of Environmental Protection (DEP). I am joined today by Associate Commissioner Eric Landau of the Bureau of Public Affairs, Kevin Byrnes, Chief of BWT's Marine Operations & Maintenance Section, Jim Aird, BWT's Senior Port Engineer, and other DEP Staff. Thank you for the opportunity to testify on Introduction 451.

As you know, DEP has overall responsibility for the City's water supply and sewer system, including providing drinking water to all New Yorkers, maintaining water pressure to fire hydrants, managing storm water, and collecting and treating wastewater. DEP operates 14 wastewater treatment plants located throughout the city that clean and disinfect more than one billion gallons of wastewater to Federal Clean Water Act standards every day. At the plants, the wastewater undergoes five major physical and biological processes that closely duplicate how water is purified in nature. One of the byproducts of these processes is sludge, which is transported by large vessels that many people see traversing the harbor and East River daily to a dewatering facility where it is put through centrifuges, which remove much of the remaining water. Currently the majority of the resulting material is landfilled, though we continue to seek sustainable, cost-effective uses such as land application, ideally as fertilizer.

Sludge vessels have been a part of the City's wastewater treatment system since the late 1930s and the Federal Work Projects Administration funded the first three motorized sludge vessels. Today, DEP operates a fleet of sludge vessels that transports nearly 1.2 billion gallons of sludge each year.

In 2009, DEP was awarded a \$53 million grant through the American Recovery and Reinvestment Act (ARRA) – one of the largest ARRA grants in the country – to finance 50% of the cost for three new sludge vessels – the *Hunt's Point*, the *Port Richmond* and the *Rockaway*, which joined the *North River*, and the *Red Hook*. These vessels operate seven days a week and each has a six-person crew, including a captain, chief engineer, assistant engineer, mate and two mariners. The new ships are 290 feet long, 70 feet wide and have the capacity to transport 140,000 cubic feet of sludge, or roughly one million gallons. They weigh 2,872 tons and are designed to travel at 10 knots, or approximately 11.5 miles per hour. On a typical week, the five sludge vessels make a total of 26 round trips and visit eight wastewater treatment plants. The three new ships are equipped with the latest marine technology, have a greater cargo capacity for redundancy and more versatility than the older models, including a shallower draft, which allows

them to navigate under the Pulaski Bridge and into Whale Creek, where they can dock directly adjacent to the Newtown Creek Wastewater Treatment Plant. This versatility has allowed DEP to dismantle an 800,000 gallon storage tank along the shore of the East River in Greenpoint, Brooklyn, and the land will be used to develop new affordable housing and expand Newtown Barge Park.

In addition to the five sludge vessels, DEP operates four smaller skimmer vessels, four shoreline survey vessels and one harbor survey vessel. All of our vessels use No. 2 ultra-low sulfur diesel fuel (ULSD).

Intro. 451 requires that from July 2015 until January 2018, a ULSD fuel blend with at least five percent biodiesel by volume (B5) be used in diesel fuel-powered marine craft owned or operated by DEP. Intro. 451 further requires that after January 1, 2018, ULSD fuel blend with at least twenty percent biodiesel by volume (B20) be used in diesel fuel-powered marine craft owned or operated by DEP.

DEP is concerned about the significant impacts this legislation will have on the Agency and our vessels. As mentioned, all of our vessels use ultra-low sulfur diesel fuel, meeting stringent EPA Tier II emission standards. As you have heard from the Department of Transportation, the required use of biodiesel, either B5 or B20, presents a host of issues regarding operational impacts, engine modifications, fuel availability, and storage that make the use of biodiesel in marine engines infeasible.

Though DEP has no direct experience with biodiesel in marine vessels, research and consultation with the U.S. Department of Transportation Maritime Administration (MARAD) in preparation for this hearing brought us to the conclusion that the required use of currently available biofuels in our vessels would be premature; and that continuing research by the federal government will result in a standard for renewable fuels that all marine operators will be able to adopt. MARAD research staff expressed interest in working with New York City on piloting the use of these improved renewable fuels.

A 2010 MARAD report echoes the Department of Transportation's experience with B5. MARAD is working in conjunction with the U.S. Navy, the Department of Defense, the National Oceanic and Atmospheric Administration, the Department of Energy, and the Department of Agriculture to develop renewable fuels for marine use. The results of the research reported in 2010 resulted in a complete shift away from biodiesel manufactured from waste vegetable oil to other feedstocks, such as sugar and algae. The 2013 report on the result of trials with a sugar-based renewable fuel was much more promising:

“This study compares the operational and performance differences in a test vessel's use of ULSD versus a 67/33 blend of ULSD and Amyris Renewable Diesel (ARD), which is derived from sugar. No significant differences were found between the test vessel's use of neat [unblended] ULSD and the blend in terms of engine performance, fuel economy, air emissions, engine vibration, underwater radiated noise, and effect on the engine itself. The test also found that after seven

months storage of the blended fuel at the test location there was no appreciable change in fuel composition or biological contamination.[...]The testing successfully demonstrated all facets of drop-in fuel performance, from fuel husbandry (loading, transferring, and supply to the engine), to comparable exhaust emission performance with no adverse equipment vibration or underwater noise impact.”

A key term in this context is “drop-in diesel,” which refers to the ability to use the blended renewable fuel in place of ULSD without the need for engine or equipment modifications or cleaning of barges that normally carry ULSD, which is necessary before on-loading biodiesel.

All federal agencies use American Society for Testing and Materials standards, and the U.S. Environmental Protection Agency (EPA) promulgates fuel standards. EPA has not yet issued a standard for renewable marine fuels, though the federal government is hard at work developing one. Until then, as reported by DOT, engine manufacturers will not warrant damage to their engines caused by biodiesel. Moreover, MARAD’s research shows that these alternative renewables show a 10% reduction in nitrogen oxide (NO_x) emission; as you know, elevated NO_x emission is a continuing concern with biodiesel. In short, the types of fuel MARAD is studying appear to burn cleaner than biodiesel.

It is also worth noting that biodiesel fuel is incompatible with some marine engines, including those of our three new sludge vessels, acquired for \$106 million, making them obsolete.

DEP makes every effort to reduce greenhouse gas (GHG) emissions and is willing to evaluate the feasibility of further reducing emissions by using biodiesel of appropriate blends in all stationary and mobile combustion sources beyond what is already required in local law. Because ULSD as a marine fuel is so clean burning, it represents only about 1% of DEP’s annual carbon emissions, and switching to B20 would only result in a one-thousandth (0.001) percent improvement in DEP’s carbon footprint. We have been working aggressively toward achieving a 30% reduction in NYC government greenhouse gas emissions by 2017 relative to the 2006 baseline inventory; and we are seeking new ways to help put the City on a path to 80 percent greenhouse gas reductions by 2050.

From 2006 to 2014, DEP has reduced its carbon emissions by approximately 11%. Major emissions reductions have been achieved through decreased carbon intensity of the city’s electricity supply; increased capture of methane from landfills and wastewater treatment plants; and reduced use of steam and fuel oil (for both buildings and transportation).

Further, we have allocated \$877 million for energy and GHG-related projects that will help us to reduce our carbon emissions by 33% by 2020 from 2006. Initiatives include upgrading the digester gas systems at our wastewater treatment facilities to capture and beneficially use the anaerobic digester gas (ADG) that is produced during the treatment process. The ADG consists mostly of methane and may be used as a renewable fuel source to generate electricity and/or thermal heat. Currently, wasted ADG emissions account for almost 30% of DEP’s total carbon emissions. DEP is also pursuing opportunities to increase energy efficiency and conservation,

while developing clean energy generation at our water and wastewater facilities (via cogeneration, hydro, and solar power), as well as reducing energy use through water demand management, and green infrastructure.

Expanding on these efforts by including our marine vessels might further enhance our greenhouse gas reduction potential, but we believe this step should be taken at the appropriate time in a cost-effective way that preserves the continuity of our operations. Using biodiesel fuel in our marine fleet now would present all the operational problems cited by DOT without the desired environmental benefit this Committee hopes to achieve.

We look forward to working with the Committee to find workable solutions to further reduce greenhouse gas emissions. Thank you for the opportunity to testify today. I would be happy to address any of your questions.