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City Council Committee on Sanitation and Solid Waste Management
Hon. Letitia James

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Oversight Hearing: Overview of Waste-to-Energy Technologies

Good afternoon, Chairwoman James and Committee Members. My name is David Bragdon and I am the Director of the Mayor's Office of Long-term Planning and Sustainability. With me today are Harry Szarpanski, Deputy Commissioner for Long Term Export for the Department of Sanitation, and Jim Binder and Sue Higgins from Alternative Resources Inc., the City's technology advisers On behalf of the Administration, I appreciate the opportunity to share our perspective on the new and emerging technologies that have the potential to convert New York City's solid waste into a renewable resource.

In my testimony today, I will outline how New York City's solid waste is currently managed and then explain how these new technologies could fit into the City's comprehensive solid waste management strategy. Jim and Sue will then provide an overview of the development and utilization of these technologies both domestically and internationally, as well as their applicability for New York City.

In 2010, New York City generated more than 14 million tons of waste and recyclables in our homes, businesses, non-profit institutions, streets, and construction sites. As you know, the City spends approximately $1 billion on Department of Sanitation collection and disposal service for one quarter of this waste, the nearly 4 million tons collected from our households, streets, government and non-profit institutions.

This enormous undertaking requires a fleet of more than 2,000 City government and 4,000 private collection trucks, most of which rely on a network of private transfer stations located throughout the city and region, where the waste is then transferred to another fleet of long-haul trucks, barges, or railcars for final disposal.

This complex system has an enormous impact on our environment, communities, and economy. We estimate that the city's entire solid waste system creates 1.66 million metric tons of greenhouse gas (GHG) emissions annually, representing 3% of the city's total GHG emissions. A significant portion of these emissions are attributable to methane from landfills that receive our waste, despite the fact that they all have methane capture systems which capture a majority of the emissions.

New York City's Solid Waste Management Plan (SWMP), which the City Council adopted in 2006 and the State Department of Environmental Conservation approved, was a joint effort of the Administration, the Council, environmental organizations, and community groups. It charts a strategic path towards a more equitable and sustainable waste management system as a result of the closure of the Fresh Kills landfill in 2001. The SWMP reduces traffic congestion, noise, and related air pollution by maximizing the use of rail and barge to transport (or "export") waste outside the city, thereby decreasing impacts to local neighborhoods burdened by concentrations of truck-based waste transfer stations.

Since 2006, we have made significant progress in implementing the SWMP: approximately 30% of City-collected waste now leaves the city by rail, two marine waste transfer stations are under construction and two are in the state permitting process. In addition, the City has partnered with SIMS metal management to construct a new large-scale recycling processing facility, which will also have barge access. This South Brooklyn Marine Terminal facility will open in 2013 and process most of the metal, glass and plastic diverted by New York residents as part of the City's residential recycling program.

Although the SWMP is transitioning the City from a truck-based system to a barge and rail based waste transport system, thereby substantially reducing emissions and congestion on local streets, managing our waste in an equitable, sustainable, and cost-effective manner is increasingly challenging. Despite the improvements of the past several years, the City is still spending more than $300 million per year exporting most of its waste to landfills as far away as Ohio, Virginia and South Carolina, an expensive and carbon-intensive approach. We recognize that waste reduction and improved recycling are part of the solution. We believe that as part of an overarching commitment to reduce overall tonnage sent to landfills, waste conversion to energy can also be part of the solution. As PlaNYC has highlighted, city residents and businesses pay among the highest energy costs in the nation.

In continuing to implement the SWMP, as adopted by the City Council, the Administration is pursuing alternatives to landfilling and conventional waste to energy disposal. The SWMP cited several specific reasons to investigate these alternatives:

- **Diversification.** By diversifying the means of disposal available, the City will be in a stronger position to insulate itself from the effects of an increasingly concentrated national waste management industry.
- **Sustainable resource reuse and recovery.** Alternative technologies have the potential to recover and reuse a greater portion of the solid waste stream than landfilling, and potentially can do so in a more sustainable manner than conventional waste-to-energy technology.
- **Reliability and risk.** If alternative technologies provide disposal options in or near the City, this would decrease our reliance on other states, and reduce the risk of obstacles that could undermine component parts of the City's export plan in the future.

Since 2006, we have conducted several SWMP-mandated studies to identify potential technologies that would be appropriate for NYC. In Phase I, our technology consultant, ARI, representatives of which are with me today to outline their findings, surveyed the new and emerging waste technologies that exist commercially or are developing for potential commercial application. "New and emerging technologies" are defined in the SWMP as technologies (e.g. biological, chemical, mechanical and thermal processes) that are not currently in widespread commercial use in the United States, or that have only recently become commercially operational. ARI found that a number of conversion technologies are used in environmentally progressive European nations and Japan and could be applied in dense urban environments like New York City and the region.

In Phase II, ARI verified and validated information gathered on these technologies and provided comparative analysis to conventional waste-to-energy technology in order to address potential applicability in New York City. Specifically, they found that two technologies, anaerobic digestion and thermal processing, are the most widely used and have the greatest potential for commercial applicability in New York City. They also found that these technologies could offer economic and environmental benefits. As reflected by global and nationwide trends, these

conversion technologies represent the next generation in solid waste management and are a vast improvement over the incinerators used in the mid-twentieth century. These are not the incinerators that New Yorkers remember from the mid- and late- 20th Century, which billowed smoke over neighborhoods across the city.

First, as ARI will explain in greater detail, modern waste conversion technologies have such a substantially different environmental portfolio that they belong in an entirely different category than older techniques. The new and emerging conversion technologies have lower emissions than both incinerators and conventional "mass-burn" waste-to-energy technologies. Combustion of a gas as part of anaerobic digestion or thermal processing emits less air pollution, particularly dioxins and heavy metals, than the incinerators or mass burn facilities. Second, because the endproducts can be beneficially reused and sold, these technologies have the potential to divert approximately 90% of waste they receive, reducing GHG emissions both from transportation and the landfill waste decomposition process. Third, equipped with pre-processing to recover recyclable items from the waste stream, these technologies would complement the City's curbside recycling program—which the City remains strongly committed to—and increase diversion rates. Fourth, these technologies would create new alternative low-carbon energy sources that will help the City reduce its greenhouse gas emissions even further. And fifth, building new conversion technology facilities in the city would provide new jobs.

These technologies are also being heralded by global leaders - President Clinton at the Clinton Global Initiative in NYC, September 21, 2010 remarked, "*If you want to fight climate change, improve health, foster entrepreneurs and create opportunities for the poor, the closest thing to a silver bullet is to close all the landfills in all the cities around the world…Almost every landfill is a goldmine…glass and plastic can be recycled, food can be used as organic fertilizer and almost everything else can be used as a biogas fuel… [landfills] are an enormous source of wealth if they are recycled, converted, or burned for energy. They're an enormous waste but also a staggering opportunity.*"

In Phase III, the City established a task force of eleven members, including representatives of the City Council and the five borough presidents, to develop an implementation plan for a pilot demonstration facility, including a Siting Study to identify potentially viable sites. We will work with our partners in these offices to finalize this study in the coming months.

PlaNYC, the Administration's ambitious environmental agenda to reduce our GHG emissions by 30% by 2030, built on the SWMP and the amendments passed by the Council and signed by Mayor Bloomberg last year to Local Law 19, the City's landmark recycling law. PlaNYC commits the City to pursuing an aggressive set of waste reduction programs while piloting alternative disposal methods that further reduce methane emissions and transportation impacts. In the original PlaNYC, released in 2007, we committed to piloting one or more of these conversion technologies by 2015. In the 2011 PlaNYC Update, we reaffirmed this commitment, saying "We will analyze opportunities to use new conversion technologies as commercially-viable alternatives to landfilling." And PlaNYC seeks to do so while simultaneously strengthening the City's recycling program.

In the coming months, we plan to solicit proposals from private sector firms that must demonstrate a reliable, cost-effective, sustainable and environmentally sound conversion technology that uses post-source separated municipal solid waste as a feedstock for generating a renewable resource. While we know some of these technologies work for Stockholm and Japan, we need to make sure they would work for New York City – on New Yorkers' terms which include our commitments to cleaner air and enhanced recycling. In analyzing these new

and emerging technologies, our inter-agency team—which will include advisors from the Department of Health and Mental Hygiene to assess public health issues—will remain true to the principles of the SWMP and PlaNYC, which both focus on reducing emissions and truck traffic, as well as ensuring that waste handling facilities are equitably distributed across the five boroughs.

As we engage in this process, we will regularly consult with the Council, consistent with the letter and spirit of the City's Solid Waste Management Plan, which provides for Council oversight of alterations to the plan.

Thank you for the time and opportunity to articulate the Bloomberg Administration's efforts to evaluate the potential for new and emerging solid waste technologies to become a part of the City's program to manage municipal solid waste. I will now turn to Jim Binder and Sue Higgins from ARI, who will assess the significant developments that have taken place in the new and emerging conversion technology field and the potential for adopting such technologies in New York City.