EnergyAnswers Corporation
The Resource Recovery Company

June 23, 2004

The Honorable Jaclyn A. Brilling
Secretary, New York State Department of Public Service
Three Empire State Plaza
Albany, New York 12223

Re: Case 03-E-0188 – Retail Renewable Portfolio Standard

Dear Secretary Brilling:

Energy Answers Corporation ("EAC") welcomes this opportunity to comment on the development and implementation of a Renewable Energy Portfolio Standard (RPS) in New York State. EAC is a solid waste management firm with its home office located in Albany, NY. We own and operate a composting facility/ waste transfer station in Menands and a waste transfer station in Canaan NY. EAC also owns and operates waste-to-energy facilities in Pittsfield and Agawam, Massachusetts.

Our comments reflect the particular provision in the Administrative Law Judge Recommended Decision that would exclude waste-to-energy from its rightful and fair place as an essential source of renewable energy for New York State. There are a variety of reasons given by opponents of waste-to-energy for this exclusion as a renewable source. These arguments are addressed below in hope that the PSC will base its decision on factual information.

Critics charge that waste reduction and recycling will leave waste-to-energy facilities without MSW fuel. The fact is that less than one third of society's waste is recycled or composted. The remainder is disposed in landfills or combusted in waste-to-

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energy plants. Even with greatest efforts to reduce the generation of waste, there will always be enough trash for energy recovery.

There is no credible method of waste reduction and recycling that leads to "zero waste." For example, intense efforts by the New York City Department of Sanitation in the 1990s to increase recycling led to a maximum annual rate of 700,000 short tons of collected paper, metal glass, and plastic, which accounts for 16% of the 4.5 million tons of total municipal solid waste collected by NYC-DOS. However, a study showed that of the amount recyclables, only 550,000 tons were actually recycled and the non-marketable residues (mostly glass and plastics) were disposed in landfills (Themelis 2004a.)

New York City is not unique in this regard: the U.S. Environmental Protection Agency reported that in the year 2001, of the 25.4 million tons of plastics discarded in trash, only 1.4 million tons were recycled. Also, of the 159 million tons of combined renewable materials (paper, yard trimming, food scraps, textiles and wood) only 56 million tons, i.e. 35% of the total, were recycled (U.S. EPA 2003.) Millions of tons of combustible materials end up in landfills each year, instead of being used to reduce the mining of coal or the importation of fuel oil.

Critics similarly charge that waste-to-energy and recycling are competing waste management strategies. The fact is that the recycling rate in communities with waste-to-energy facilities is higher than the U.S. average (Kiser 2003.) States that maintain high waste-to-energy rates attain high rates of recycling (Themelis 2004a.) Waste-to-energy does not compete with recycling; it competes with landfilling of trash. In fact, the recycling rate for communities with waste-to-energy facilities was reported to be 33% (Kiser 2003), substantially higher than the average U.S. rate of 26.7% (Kaufman 2004.) Most waste-to-energy facilities process co-mingled trash as delivered to the facilities: plastics, paper, textiles, wood, food wastes, disposable diapers, and various other waste materials. The 29 million tons of municipal solid waste that are combusted annually in the U.S., as well as the hundreds of millions of tons landfilled, cannot be recycled, either for practical reasons or the high economic and environmental cost of the required materials separation and recycling operations. In addition, most waste-to-energy plants recover materials such as ferrous metals from the waste stream either before or after

combustion, thus diverting these materials from landfills. Recycling and waste-to-energy are not competing, but are complementary and essential means of waste management.

Critics assert that waste-to-energy should not be credited with the avoided environmental impacts of landfilling. But, by definition, waste-to-energy combines two purposes inseparably: the recovery of energy from municipal solid waste and waste management. The only other applicable management strategy for the combusted waste would be disposal in landfills.

The generation of electricity by means of waste-to-energy provides greater environmental benefits than any other source of renewable energy for the simple reason that, in addition to the benefit of reducing the use of fossil fuels (as is the case with all other renewable energy sources), it also avoids the environmental impacts of landfilling. Waste-to-energy is unique among power production facilities in that it provides for a sustainable waste management strategy in addition to generating energy. There are nearly one hundred waste-to-energy plants in the U.S. and more than 1600 incinerators. Incinerators were developed to control the spreading of diseases and limit the number of vectors that are attracted by waste, as is the case in non-sanitary landfills. Waste-to-energy facilities are the result of the technological evolution of incinerators over several decades. Trash volume is reduced by about 90%, with a corresponding decrease in the amount of land needed for landfilling. The significantly smaller ash landfills are simpler to operate and maintain than MSW landfills.

Decomposition of organic compounds in landfills leads to the emission of methane, a potent greenhouse gas, the generation of which is avoided when trash is processed in a waste-to-energy facility. Greenhouse gas emissions from waste-to-energy processes are much lower than from landfills (Schmidt 2001, Batchelor 2002.) It has been estimated that the combustion of trash in the existing waste-to-energy facilities reduces the annual release of carbon dioxide, a greenhouse gas, by 33 million tons. (Thorneloe 2002.)

Critics falsely claim that municipal solid waste, in and of itself, is not renewable. About four-fifths of MSW comprises renewable materials. In addition, energy is recovered from fossil fuel derived materials in the remaining fraction, which avoids the

mining of fossil resources for power production. Again, it is important to remember that these materials are what remain in the trash after separation of materials for recycling.

The International Energy Association differentiates between the renewable and non-renewable fractions of municipal solid waste, but indicates that this division is problematic due to the nature of the waste (IEA 2002.) This is more of a technical issue than a matter of definition. Municipal solid waste consists to a large extent of renewable material, yet the physical separation of renewable and synthetic materials is extremely difficult (if not impossible.) In addition, not counting the synthetic materials would leave out the energy recovery from these materials in a waste-to-energy facility and the materials' energy values would be lost forever in a landfill.

In the United States, about 82% of the municipal solid waste left after material recovery for recycling and composting are renewable fuels[1] (see Table 1.) This fraction of our trash could be used as clean, sustainable and renewable fuel for the production of electricity and steam. The remaining combustible portion derived from fossil fuels, however, has to be either separated – at least on a theoretical basis, if not practically – or accepted as part of the waste fuel. There are three possible scenarios to consider: 1) excluding waste-to-energy from the renewable portfolio because municipal solid waste contains a fraction of synthetic materials; 2) taking the majority of municipal solid waste as a measure of "renewability" and include it in such portfolio; 3) defining municipal solid waste as renewable because it is indigenous, sustainable, and not derived by mining fossil fuels, but rather by accepting society's discards.

[1] *The percentage of renewable fuels is defined as the fraction of renewable materials relative to the total "fuel" components of MSW. Using the data of Table 1, there are 108.5 million tons renewable materials and 24 million tons of other fuel components (plastics), which are the total fuel components of MSW after material recovery (132.5 million tons). The renewables represent 82% thereof (108.5million tons divided by 132.5 million tons.) The remainder is inert material and should not count for or against the renewability of MSW.*

Table 1: Reported Composition of U.S. MSW in 2001, before and after recycling and composting (Millrath 2003 / U.S. EPA 2003)

Material	Total MSW (million tons)	Recovered (million tons)	Not recovered (million tons)	% of MSW after recovery
Paper and board	81.9	36.7	45.2	28.0%
Yard trimmings	28.0	15.8	12.2	7.6%
Food scraps	26.2	0.7	25.5	15.8%
Wood	13.2	1.3	11.9	7.4%
Textiles	9.8	1.4	8.4	5.2%
Rubber and leather	6.5	1.1	5.4	3.3%
Renewable materials	*165.5*	*57.0*	*108.5*	*67.2%*
Plastics	25.4	1.4	24.0	14.9%
Glass	12.6	2.4	10.2	6.3%
Metals	18.1	6.3	11.8	7.3%
Other	7.7	0.9	6.8	4.2%
Total	229.2	68.0	161.2	100.0%

Note: All tonnages in short tons (1.1 short tons=1 metric ton), waste generation and composition used in Table 1 are based on EPA data and not on the previously cited BioCycle survey

With the retrofit of existing facilities with the most sophisticated pollution control equipment money can buy, critics still claim that waste-to-energy is more polluting than power generation in coal-fired power plants, and justify their claim on an energy output, or kWh basis. The fact is that municipal solid waste is a very non-homogeneous fuel and its heating value is far below that of fossil resources. Waste-to-energy goes beyond power production and also provides a sustainable waste management tool. Equipped with modern air pollution control systems, waste-to-energy facilities are a minor contributor to anthropogenic sources of most contaminants. The combustion of MSW for power production results in lower emissions than that of other combustion-based renewable resources.

The search for renewable energy sources is motivated by the desire to reduce use of fossil fuels. Waste-to-energy facilities in the U.S. produce about 550 kilowatt hour per

ton of municipal solid waste, thus obviating the use of either 0.3 tons of coal or 1 barrel of fuel oil per ton of municipal solid waste combusted. U.S. waste-to-energy facilities are

equipped with emission control systems that are superior to those in use at any other type of incineration facility and at most coal-fired power plants. The waste-to-energy air pollution control equipment includes dry scrubbers to control acid gas, carbon injection to control mercury and organic emissions, selective non-catalytic reduction (SNCR) systems to control NO_x, and fabric filters to control particulate matter.

In addition, waste-to-energy processes, in contrast to coal-fired power plants, serve two purposes: conserving non-renewable fossil fuels and also land to be used in landfilling. The "fuel" for generating power from waste-to-energy plants does not create its own environmental problems as does the mining of coal. The "fuel" for waste-to-energy plants is municipal solid waste that has already been produced and would have gone to a landfill and decomposed as methane gas.

The desirability of fossil fuels is based on their heating value, hydrogen content, emissions characteristics, homogeneity, and energy generated. For these reasons, natural gas is preferable to fuel oil, and fuel oil to coal. From an energy standpoint, it is obvious that municipal solid waste is at the very bottom of the list of desirable fuels since it is a very non-homogeneous material consisting of all the solid products that citizens use, cannot or do not recycle, and discard. The heating value of trash is less than one half that of coal. Also, the heat-to-electricity conversion efficiency of waste-to-energy facilities is two thirds that of coal-fired power plants. Therefore, a comparison of emissions from waste-to-energy and fossil-fuel power plants, on the basis of kilowatt-hour of electricity generated, serves no purpose but to show the known fact that municipal solid waste is not as efficient a fuel as coal or oil.

As I noted earlier, after the U.S. EPA promulgated the MACT regulations in 1995, the U.S. waste-to-energy industry decreased its mercury and cadmium emissions in the gas emitted by a factor of nearly one hundred. Emissions of polychlorinated dibenzodioxins and dibenzofurans (also referred to as dioxins/furans) were reduced by a factor of nearly one thousand. Currently, the main source of dioxins/furans emissions in

the U.S. is “backyard barrel burning” of trash with about 628grams on a toxic equivalent basis of dioxins emitted out of an estimated total of 1,106grams TEQ from all sources combined (U.S. EPA 2000.) In contrast to waste-to-energy facilities, which operate under

highly controlled conditions designed to reduce formation and emission of air pollutants, backyard trash burning is not controlled. The low temperature burning and smoldering conditions typical of backyard trash fires promote the formation of dioxins/furans, particulate matter and polycyclic aromatic hydrocarbons (PAHs.) These pollutants form during backyard trash burning regardless of the composition of the material being burned (Chlorine Chemistry Council 2002.)

According to U.S. EPA data, wood-fired biomass plants – even those using sustainable biomass fuels – and landfill gas power plants emit dioxins at higher concentrations than waste-to-energy plants, and yet, biomass and landfill gas technology is recommended by the Administrative Law Judge for inclusion in New York State’s Renewable Portfolio.

Table 2: Renewable energy sources: emissions per Megawatt-hour generated (in lbs per megawatt hour) [i]

Pollutant	Waste-to-Energy	Wood Waste	Landfill Gas To Energy
Particulate	0.085	0.62	0.8
NO_x	5.6	4.4	4.2
SO_2	0.49	0.50	0.00036
HCl	0.32	0.38	0.00034
CO	1.0	12	7.8
Dioxins/Furans	0.009×10^{-5}	3.34×10^{-5}	2.07×10^{-5}
Total Hazardous Air Pollutants [ii]	Nondetect	0.68	0.45
Non-Methane Organic Compounds	0.01 [iii]	Incl. In HAPs	2.12
Benzene	Nondetect	0.084	0.01
Toluene	Nondetect	0.018	0.15
Lead	0.00058	0.0010	Nondetect
Mercury	0.00027	0.000070	0.0000046
Cadmium	0.000040	0.000082	Nondetect
CO_2	3635	3900	4449

i) *Emissions listed on this table are derived from EPA emissions databases, EPA AP-42 factors or Dioxin Reassessment, depending on best available agency data. Emissions reflect energy generation only, and do not include fugitive emissions from landfills. Waste-to-energy and biomass are not considered sources of fugitive emissions.*

ii) *The scope of hazardous air pollutants (HAPs) reported for each source is based on EPA AP-42. HCl is not included in this column, but is reported separately on this table.*

iii) *Waste-to-energy typically tests at non-detect levels for NMOC, but an assumed value of 1 ppmdv at 7% O_2 was used in this table as the worst case.*

Finally, critics claim that granting renewable energy status to waste-to-energy will lead to environmental injustice. The fact is that the construction of waste-to-energy facilities can lead to an improvement of the environment, as some past examples have shown. The key to avoiding injustice during the siting of new waste-to-energy plants is good communication with all parties involved. Waste-to-energy facilities, as well as any

other industrial or infrastructure installations, should be built at locations where they will improve, rather than deteriorate, the quality of life of the surrounding community, in terms of esthetics, provision of jobs and services, and environmental quality.

New waste-to-energy facilities can be used to physically, aesthetically, and environmentally improve existing brownfield areas. Throughout the nation and the world, there are hundreds of waste-to-energy plants that have not been accused of creating environmental injustice and in fact are welcome by the host communities. It is true that in the past, authorities have not been "just" in locating some industrial and waste facilities in low-income neighborhoods. However, the mistakes of the past need not to be repeated in the future. For instance, a properly designed waste-to-energy plant could be accompanied by refurbishing of nearby rundown facilities or by the reclamation of industrial brownfields, creating an industrial "ecopark" where the electricity and waste heat of the waste-to-energy plant is used for heating and cooling adjacent industries. Such a municipal project would result in closing a number of nearby transfer stations, some of which resemble temporary landfills, stopping the transport of millions of tons of municipal solid waste across state borders, and converting greenfields into landfills.

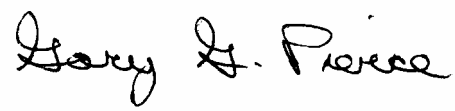
In New York State as well as the rest of the United States, government bodies are promoting renewable energy. The federal government has defined waste-to-energy as a source of renewable energy, as well as fifteen states that have renewable energy statutes or renewable purchasing mandates. One of the main drivers is the desire to reduce dependency on fossil fuels. Waste-to-energy facilities in the U.S. produce about 550 kWh per ton of municipal solid waste, thus obviating the use of either 0.3 tons of coal or 1 barrel of fuel oil per ton of trash combusted.

The avoided use of fossil fuels and diversion of solid wastes from land disposal, coupled with avoidance of significant amounts of greenhouse gas emissions, are environmental benefits of waste-to-energy. The documented reduction of air emissions after compliance with Clean Air Act MACT standards has resulted in the U.S. EPA's recognition of waste-to-energy as one of the nation's cleanest sources of energy and an important renewable resource.

If New York State is to have a credible renewable portfolio standard, it must be based on facts. The facts speak loudly in favor of acknowledging waste-to-energy as a renewable source of power.

Thank you again for this opportunity to provide comments to the New York Public Service Commission on this important issue.

Sincerely,



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