

Inclusion of Municipal Solid Waste as a Renewable Energy Source

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- 1. 0 Should the definition of renewable energy be based on technology/process or source of energy?

Recommendation

- Municipal solid waste should be classified as a renewable energy source
 - The energy potential of MSW's that are currently disposed in landfills is substantial
 - NYS landfills approximately 48% of its municipal waste
 - The represents an electricity generating potential of 4.5 million Mwh per year

- In other populous States, such as California and New Jersey, the energy potential of disposed wastes has been recognized in independent studies

- The California Biomass Collaborative ("CBC") estimates that the electrical energy potential of landfilled biomass is about 8% of the State consumption
- The NJ Agricultural Experiment Station, determined that the biomass disposed has the potential to meet approximately 9% of the State's energy demand; and 75% of this biomass is in the form of MSW

- The energy potential of MSW is contained in materials that are of biogenic origin and anthropogenic origin. The biogenic sources include materials, such as paper, food, and yard wastes, and are considered renewable. The anthropogenic sources include materials such as, plastics derived from fossil fuels, which are non-renewable

- Reliable analytical methods exist for determining the biogenic and anthropogenic fractions of the energy generating components of municipal waste

- Unlike some other renewable energy sources, MSW is available to produce energy 24 hours a day, 7 days a week
 - Existing Waste-to-Energy (“WTE”) plants operate a greater than 90% availability
 - They can be relied upon to operate during severe weather
 - Waste-to-Energy plants supply reliable baseload power to local utilities

Definition of Renewable Energy by Technology

- Recommendation;

- MSW should be classified as a renewable energy source, without regard to the technology utilized to extract the energy value from the waste. The existing local, State and Federal decision-making & regulatory structures can be relied upon to ensure that the technologies deployed will be safe and environmentally sound. ASTM-6866 or other appropriate methodology should be utilized to classify the percentage of a waste-to-energy plant's energy that will be classified as renewable

- Technologies that may be utilized to produce energy from waste are anaerobic digestion, combustion, gasification, and landfill gas to energy
- Technologies currently under development may arise as practical alternatives
- The California Biomass Collaborative cites progressive energy and solid waste policies in Europe as having advanced the state of technology for waste management and conversion to energy

- How should important concepts, such as “Clean Energy” be weighed when developing a definition?
 - Recommendation; NYS should recognize municipal solid waste as a source of clean energy

- Several respected national international entities have recognized MWS as a source of clean energy
 - These entities include the US EPA, US Conference of Mayors, the IPCC and the World Economic Forum
 - These organizations have reached their conclusions using Life Cycle Assessment (“LCA”) methodologies

- According to the CBC, “waste management LCA studies from Europe and South Korea consistently rank landfills as having the worst environmental impact, followed by open-air composting. Anaerobic digestion with energy recovery and solid combustion with energy recovery consistently rank having the least environmental impacts of waste management options”

- The USEPA concluded that the integrated waste management system that included waste-to-energy along with extensive recycling was the only alternative that was a net greenhouse gas reducer in comparison with alternatives that included recycling and landfill gas to energy

- The IPCC has recognized the benefit of waste-to-energy in greenhouse gas mitigation
- The Kyoto Protocol has established a methodology for trading credits for greenhouse gas reduction that specifically recognizes “avoided emissions from organic waste through alternative waste treatment processes... incineration of fresh waste for energy generation ... where the waste would have otherwise been disposed of in a landfill”

- The World Economic Forum in its report, *Green Investing-Toward a Clean Energy Infrastructure*, states the following:
 - The four-year surge in investment activity in clean energy has spanned all sectors, all geographies, and all asset classes. What has begun to emerge as a result is the overall shape of the new lower-carbon energy infrastructure. No one can describe with certainty what the world's energy system will look in 2050. A substantial proportion of our energy will undoubtedly still be supplied by fossil fuels, but we can now be fairly certain that a future low-carbon energy system will include a meaningful contribution from the following eight renewable energy sources:

- Onshore Wind
- Offshore Wind
- Solar Photovoltaic
- Solar Thermal Electricity Generation
- Municipal Solid Waste-to-Energy
- Sugar-based Ethanol
- Cellulosic & Next Generation Biofuels
- Geothermal Power

- Would enacting a statutory definition further economic development in renewable energy research, development and utilization of new technologies and processes to create and store energy?

- Recommendation:

- A statutory definition of renewable energy that includes municipal solid waste will assist in advancing the development of emerging technologies and improvement of existing technologies for conversion of waste to energy

- The has been proven in Europe, where energy and solid waste policy has evolved from the Kyoto Protocol greenhouse gas reduction goals, to include increased renewable energy and decreased methane emissions from landfills
 - This has advanced the state of technology for waste management and conversion to energy such that it is an integral component of solid waste management in Europe

- Approx. 55 million tons of municipal waste is thermally treated in Europe and there is some 10 million tons of additional capacity under construction

- The renewable energy aspects of solid waste management policies in Europe work hand-in-hand with waste reduction policies
 - For example, in Germany, under the Packaging Ordinance, the use of packaging, declined from 95 to 82 kilograms per person per year

- 90% of remaining packaging material is recovered and 80% of that amount is recycled or converted to energy

- Would the public education programs benefit from a unified statutory law defining renewable energy?
- Would the general public be more encouraged to choice “green power” programs?

■ Recommendations:

- NYS should develop a unified and consistent set of laws, regulations, and incentives that recognize maximum efforts in recycling and extraction of energy from the remaining waste as the preferred solid waste management strategy

- LCA's conducted in the US, Europe and Asia have demonstrated that the maximum environmental benefit is gained from the integrated system combining recycling and waste-to-energy in order to minimize landfilling
 - Leaving waste-to-energy out of the picture severely diminishes the environmental and greenhouse gas reduction benefits of waste management programs

- Municipal and solid waste management agency officials will take more decisive action toward the improvement of their waste management systems if they receive unambiguous policy direction from the State