15th North American Waste to Energy Conference
May May 21–23, 2007, Miami, Florida USA
NAWTEC15-3215

Low-Carbon Solid Waste Systems

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As awareness regarding the potential threat of climate change has grown in the US, many local governments and businesses are being asked to consider the climate implications of their actions. In addition, many leaders, including solid waste managers, who are not yet pressured from the outside, consider it prudent to account for their greenhouse gas (GHG) emissions and consider it a proactive measure to assess climate risks and opportunities and to show commitment to progress. Sources of GHG emissions in the solid waste management process include: waste transport vehicles, composting facilities, processing equipment, landfills, and waste-to-energy facilities. Over the past 25 years, the levels of GHG emissions have been reduced through technological advancements in waste-to-energy, environmental regulations such as the Clean Air Act, landfill gas capture and control, and the promotion of recycling and reuse. There are many opportunities for solid waste managers to further reduce their GHG emissions levels, including promotion of waste-to-energy facilities as part of a low-carbon solid waste management plan. Waste-to-energy may also, in the future, offer potential revenue from the sale of renewable energy credits and carbon credits in emerging emissions trading programs.

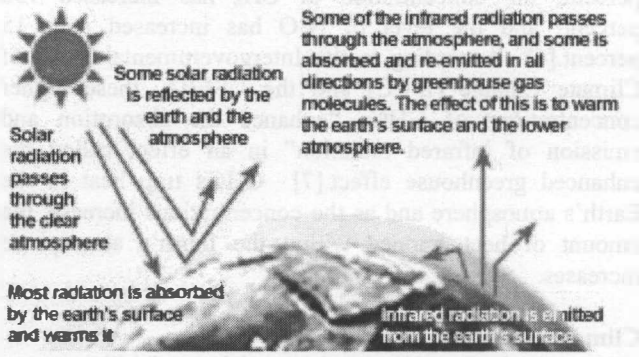
INTRODUCTION

Today, increasing public concern and enhanced scientific analysis on the potential impacts of global climate change have led to pressure on lawmakers, regulators, public agencies, and private firms. The result thus far is a changing and uneven policy environment, with ambiguity about the nature and timing of future developments sparking concern among both public agencies and private firms, as they struggle to plan effectively with this regulatory uncertainty. Many local governments and businesses are being asked to consider the climate implications of their actions. In addition, many leaders, including solid waste managers, who are not yet pressured from the outside, consider it prudent to account for their greenhouse gas (GHG) emissions and consider it a proactive measure to assess climate risks and opportunities and to show commitment to progress. There are many opportunities for solid waste managers to further reduce their GHG emissions levels, including promotion of waste-to-energy facilities as part of a low-carbon solid waste management plan. Waste-to-energy may also, in the future, offer potential revenue from the sale of renewable energy credits and carbon credits in emerging emissions trading programs. The following sections briefly describe the scientific and policy background, the regulatory initiatives that are moving forward, the relevance of climate change to the solid waste field, and a carbon accounting approach for a solid waste manager interested in proactively and strategically engaging with the climate change issue.

CLIMATE CHANGE

The Earth's weather and climate are driven by radiant energy from the sun. Certain naturally occurring gases trap some of that heat while the balance escapes into space. This effect of trapping the sun's heat, called the "greenhouse effect", maintains the Earth's average annual temperature of approximately 60 degrees Fahrenheit (F).[1] Figure 1 below graphically depicts the reflection and absorption of solar radiation.

Figure 1: The Greenhouse Effect[2]



Those gases which contribute to the greenhouse effect are called greenhouse gases (GHGs). These GHGs are emitted naturally through interactions between the components of the climate system, such as air, water, plants and land; and have kept the average temperature in a range that allows life to flourish (see Fig. 2).[3]