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New Sources, New Requirements, New Challenges – Air Quality & New Waste-to-Energy Capacity

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ABSTRACT

Renewed interest in waste-to-energy (WTE) has spurred a number of plans for facility expansions, retrofits and in several cases, new facilities. Complex federal and state regulations governing stationary air pollution sources challenge projects to develop and implement a compliance strategy that meets current and emerging regulatory requirements and which consists of commercially available and technically feasible control technologies, while managing the financial viability of the project. Past experience in the WTE industry is indicative of current challenges, and the deliberate development of WTE in the United States over the last 15 years now creates challenges when technologies developed and implemented elsewhere must be considered. One example is control of nitrogen oxides. Individual projects are subject to regulatory requirements differently, with net emissions increases, location and other attributes establishing the basis for regulatory compliance. This paper will discuss the complex New Source Review permitting requirements that typically apply to WTE projects, review commercially available air pollution control technologies, and discuss, through the use of a case study, the decision-making process used to develop the air pollution control strategy for the York County Resource Recovery Center expansion, one recent development of new WTE capacity in the United States.

Keywords: Waste-to-energy, air quality, nonattainment, nitrogen oxides

1. INTRODUCTION

Newly proposed WTE facilities and expansions at existing WTE plants are subject to complex permitting requirements applicable to major sources of air pollutant

emissions. These air quality permitting requirements are mandated by the federal New Source Review (NSR) regulations with the responsibility of issuing permits falling on state regulatory agencies that have federally approved programs. A primary objective of NSR is to create a permitting framework supporting compliance with the National Ambient Air Quality Standards (NAAQS) that have been established for six criteria pollutants.¹

2. THE REGULATIONS

The United States Environmental Protection Agency (USEPA) tracks NAAQS compliance for each criteria pollutant by designating air quality management areas within a given state as either “attainment” if the area meets the NAAQS or “nonattainment” if the area’s air quality does not meet the NAAQS. Consequently, a given geographical area may enjoy attainment status for some pollutants and be classified as nonattainment status for others. Such is the case for York County.

To address permitting of facilities in attainment and nonattainment areas, two separate permitting programs exist under NSR. Prevention of Significant Deterioration (PSD) permitting requirements apply with respect to attainment areas, while Nonattainment NSR (NNSR) requirements are applicable in areas with impaired air quality. Both NSR programs impose substantial permitting challenges.

Under PSD, applicants are required to complete air quality analyses using sophisticated atmospheric dispersion

¹ NAAQS criteria pollutants include nitrogen oxides, carbon monoxide, sulfur oxides, particulate matter, ozone and lead.