

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION II

DATE:

SUBJECT: Green Island Resource Recovery Facility - Modeling Emission
InventoryFROM: ^{for} Kenneth Eng, Chief *M. Marshall*
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Source Receptor Analysis Branch, OAQPSBackground

At the 1992 EPA Regional/State Modeler's Workshop, the New York State Department of Environmental Conservation (NYSDEC) submitted an issue paper which proposed a methodology to objectively select background sources to be included in a NAAQS modeling analysis. The issue paper was proposed to the Background Source and Complex Terrain Workgroup for resolution. The Workgroup concluded that the objective technique could be considered, however, it should be done on a case-by-case basis.

The purpose of the method is to determine an objective criteria which meets the EPA Guideline On Air Quality Models. This Guideline states that background sources which are expected to cause a "significant concentration gradient" in the "vicinity" of the source(s) under consideration for emission limit(s) should be explicitly modeled. The Guideline also recognizes that this is usually done with the professional judgement of the modeler at the reviewing agency.

NYSDEC Proposal

NYSDEC would like to apply the attached methodology to the PSD permit application for the proposed Green Island Resource Recovery Project. This facility would be located in Albany County. In summary, NYSDEC proposal, as delineated below, found that the objective "GRAD/D²" method produced the emission inventory which was most similar to those inventories which were subjectively produced in some past PSD permit projects. In addition, the GRAD/D² method identified similar background sources which refined modeling from the past PSD permit projects identified as important background sources for compliance demonstrations.

The methodology first produces an initial list of potential sources with 100 ton/yr or greater emissions of SO₂, NO_x, or particulates, fossil fuel sources with a heat inputs of at least 14 MMBtu/hr, or refuse combustion sources with throughput capacities greater than 3 ton/hr (see Table 1 of attachment). The GRAD/D² term was calculated for each of these background sources using the SCREEN model under rural conditions. The GRAD term is the difference in the modeled maximum impact from the individual background source and its impact 1000 meters downwind. This term is divided by 1000 meters to determine the gradient.

In order to introduce the importance of the distance (or "vicinity") of a background source from the proposed facility, the D^2 term is incorporated.

Once these calculations are made for all the background sources, they are ranked as can be seen in Table 2 of the attachment. The Green Island representatives proposed in the attached letter that sources above the average $GRAD/D^2$ value would be included in the modeled emission inventory. However, this has since been revised. Rather, NYSDEC examined the selected inventory and in their professional judgement concluded that the most critical sources for assessing compliance with the standards were the top 1% of the maximum $GRAD/D^2$ value. In addition, it was felt that all PSD increment consuming sources and some other critical sources should be added to the list of modeled background sources.

NYSDEC also proposed a separate method for screening background sources which are located beyond the Significant Impact Area (SIA) out to 50 km. These sources are listed in Table 3 of the attachment. This method basically determines the gradient produced by the background sources at the boundary of the proposed source's SIA. The background sources with the largest percent change in concentration at the boundary would also be included in the final emission inventory.

Region II Position

We would like to support the NYSDEC proposal for the Green Island PSD permit with some minor adjustments. Although the technique is a objective technique, it serves only as an initial determination. After it was applied, NYSDEC still examined the inventory for its reasonableness. The inventories which the methodology was tested against are in the same general geographic area as the Green Island facility (including the inventories prepared for the PSD permits for the Inter-Power Halfmoon Cogeneration project, Selkirk Cogeneration, and Hadson Power Cogeneration).

There is also a representative ambient monitoring network whose measurements would be incorporated to include emissions from minor and other distant sources. According to NYSDEC, an emission point which qualifies for inclusion would require the other emission points at the same facility to be included in the inventory as well. In addition, any PSD increment consuming source would be included in the final inventory. NYSDEC also looked at some of the existing sources which are undergoing modifications to reduce impacts and are making the appropriate judgement for their inclusion.

A minor adjustment that we will recommend to the NYSDEC includes revising the initial list to include refuse combustion sources with throughput capacities greater than 2 ton/hr rather than 3

ton/hr since a major source in this category has been revised to 50 tons/day.

We also plan to recommend to NYSDEC to examine whether the maximum impact from the background source outside the SIA plus 50 km range does not occur inside the SIA. The methodology determines the percent concentration change at the boundary, however, we would like assurance that the boundary is not located prior to the ground level impacts.

We request your comment and concurrence on the above methodology. If you have any questions, please contact Annamaria Colecchia of my staff at (212) 264-4939. We look forward to your response.

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