

US EPA ARCHIVE DOCUMENT

March 9, 1994

MEMORANDUM

SUBJECT: Nitrogen Oxides (NOx) Reasonably Available Control  
Technology (RACT) for the Repowering of Utility Boilers

FROM: John S. Seitz, Director  
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TO: Director, Air, Pesticides and Toxics  
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This memorandum provides guidance on the determination of NOx RACT in cases where a utility commits to repower<sup>1</sup> its boiler in the near future. The guidance is intended primarily for use by State and local air pollution control agencies as they develop and adopt NOx RACT rules for incorporation into their State implementation plans (SIP's) as required under section 182 of the Clean Air Act as amended in 1990 (Act).

Several States have included specific provisions in their proposed NOx RACT rules for utilities which intend to repower their boilers in the near future and that will meet emissions limitations based on advanced control technologies. The following specific issues are addressed in this memorandum:

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<sup>1</sup> "Repowering" is defined in section 402 of the Act and generally means the replacement of an existing boiler with a technology capable of controlling multiple combustion emissions simultaneously with improved boiler or generation efficiency and with significantly greater waste reduction relative to the performance of technology in widespread commercial use as of November 15, 1990.

1. Must sources which intend to repower meet the May 31, 1995 RACT compliance date?
2. How will the RACT requirements be met for the interim period between 1995 and 1999?
3. Are repowering provisions applicable to other source categories?

Must sources which intend to repower meet the May 31, 1995 RACT compliance date?

The Act requires RACT to be implemented at major NO<sub>x</sub> sources by May 31, 1995 [see section 182(b)(2)(C) and 182(f)]. Utility boilers that are intended to be repowered are subject to the same requirement to implement RACT by May 31, 1995. However, the State's determination of what constitutes RACT could include consideration of a utility's commitment to repower. In that case, the State's RACT analysis would focus on the technical and economic feasibility of controls available over the interim period between May 31, 1995 and the repowering date. If a State wants to incorporate into its NO<sub>x</sub> RACT rules a procedure for utilities that intend to repower, the rules must meet the requirements described below.

1. The SIP revision must require the utility to submit to the State an enforceable commitment to repower and an analysis that defines RACT for the unit for the interim period of time between May 31, 1995 and the date the unit will be repowered ("interim RACT").

2. The commitment must include the date by which the utility will repower, as well as compliance dates for the following repowering milestones: (a) the date by which contracts for the repowering project will be awarded, or by which orders will be issued for the purchase of component parts to accomplish the repowering project; (b) the date of initiation of on-site construction or installation for the repowering project; and (c) the date by which on-site construction of the repowered unit is completed.

3. The State must adopt and submit the commitment to repower and the interim RACT requirements to the Environmental Protection Agency (EPA) by November 15, 1994 as a source-specific SIP revision. A SIP revision is needed to make the commitment and interim RACT requirements federally enforceable. As an alternative to a source-specific SIP revision, States may make the repowering and the interim RACT requirements enforceable by

including them directly in the NO<sub>x</sub> RACT rule for a boiler type. In this case, the State must justify, when the rule is formally submitted to EPA, that the interim requirements constitute RACT for the given boiler type.

4. The SIP revision must require that the utility boiler complies with the interim RACT requirements by May 31, 1995.

5. The SIP revision must require that the utility boiler be repowered no later than May 31, 1999 and must meet all applicable SIP and Federal requirements. For example, if a State adopts NO<sub>x</sub> emissions limits for utility boilers for purposes of attaining the ozone standard, the repowering source must meet those emissions limits consistent with the SIP timeframes. Further, the repowering source must meet any applicable Federal new source requirements consistent with EPA guidance and regulations.

How will the RACT requirements be met for the interim period between 1995 and 1999?

In the interim RACT analysis, the utility should document the cost, cost effectiveness, and emissions reductions of all technologically feasible controls. In the determination of cost effectiveness, however, the utility may annualize controls over the period of time between May 31, 1995 and the date the unit will be repowered, to the extent it is shown that the controls installed to meet the May 31, 1995 deadline have no usefulness once the unit is repowered.

For example, if a wall-fired coal boiler is going to be repowered to a combined-cycle turbine, then low-NO<sub>x</sub> burners may be assumed to have no useful life beyond the date that the facility is committing to repower. Thus, in the determination of the cost effectiveness of the low-NO<sub>x</sub> burners, costs could be annualized over a shorter period of time than their normal useful life. In some cases, the shorter period could result in cost effectiveness for the low-NO<sub>x</sub> burners that is so high it would be considered economically infeasible.

On the other hand, if certain controls will be useful once the unit is repowered, the cost of these controls cannot be annualized over a shortened period of time. For example, reburn at a cyclone boiler might be considered for purposes of determining the interim RACT requirement. In this case, the cost of installing a natural gas pipeline for the cyclone boiler could not be annualized over a shortened period of time if the boiler is going to be repowered to a combined-cycle turbine that will utilize natural gas. That is, only the cost of installing the pipeline early can be attributed to the cost to meet RACT by

May 31, 1995. Therefore, it is important that the State require that the facility's analysis describe the repowering project in detail so the effects on the useful life of RACT controls can be correctly evaluated.

In some cases, all combustion modifications and add-on controls might be shown to be technically or economically infeasible for the interim RACT requirement. In such cases, other techniques should be considered, such as derating or boiler tune-ups, to achieve NOx emissions reductions in the interim period.

As described above, the State must adopt and submit by November 15, 1994 a commitment to repower a utility boiler as well as interim RACT requirements for that boiler as a SIP revision. Thus, the commitment and interim RACT requirements would be enforceable by the State and, upon approval, by EPA. If the commitment were not enforceable, then the NOx RACT determination would not be valid since it relies on the repowering commitment.

Are repowering provisions applicable to other source categories?

States may extend the guidance contained above to other source categories, including stationary internal combustion engines, gas turbines, and process heaters.

In summary, this guidance provides that, under certain circumstances, States may meet the amended Act's NOx RACT requirements by adopting rules which establish "interim RACT" requirements for sources that must be implemented by May 31, 1995, and establish a near term date by which the source will meet emissions limitations based on advanced control technologies, such as in the case of utility repowering. If you have questions on this memorandum, please contact Doug Grano of my staff at (919) 541-3292.

cc: Kent Berry  
NOx Work Group

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This response was coordinated with MARAMA, NESCAUM,  
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