emissions.14 These studies, discussed in more detail in the response-tocomments documents, included the development and application of a statistical procedure for normalizing apparent ozone air quality trends to account for confounding meteorological factors. The studies concluded that after meteorology is normalized, there has been a downward trend in ozone concentrations of 1-2% per year, from 1981 through 1993 (the end date of the studies). EPA then conducted a ROM test that examined the impact on ozone levels of the reduction in VOC and NO_X emissions between 1988 and 1991. ROM predicted a decrease in ozone levels that matched the decrease observed in the meteorological studies. EPA views these studies as confirmation of the validity of the ROM model's estimates.

For its conclusions, EPA relies on (1) the initial ROM studies showing that 50-75% NO_X reductions (from 1990 levels) from the OTR as a whole are needed to bring the serious and severe nonattainment areas into attainment by 2005; (2) the wind trajectory analysis supporting the conclusion that locations lying anywhere from the south through northwest of each of those nonattainment areas must contribute that level of NO_X reductions in order for each of those nonattainment areas, respectively, to attain; and (3) the subsequent ROM, NY UAM and meteorological studies confirming the results of the initial ROM and windtrajectory analysis. Based on these, EPA concludes that 50-75% NO_X reductions from the 1990 levels in each state (or, in the case of Virginia, the portion of the state) in the OTR will be needed in order for each of the serious and severe areas from Baltimore northeast through Portsmouth, New Hampshire to attain the standard. In addition, based on the same analyses, EPA concludes that 50-75% VOC reductions from the 1990 levels are needed in and near and (upwind of) those nonattainment areas in order for each of those areasincluding the portions of the Washington, Philadelphia, New York, Providence and Portsmouth areas just downwind and across state lines from those nearby upwind VOC sources-to attain the standard by their respective attainment dates.15 The need for this

large level of reductions, coupled with the wind trajectory data, form the basis for EPA's conclusions that virtually every area within the OTR contributes directly to a nonattainment or maintenance problem in a downwind state in the OTR.

(c) Analysis of Inventory and Options for Control Measures

The next step in EPA's analysis is to assess the options available for achieving the necessary reductions in NO_X across the OTR and in VOCs in and near the Northeast Corridor of the OTR, which is discussed in more detail in the SNPRM. See 59 FR at 48677-48684. For this step, EPA first assessed the best available information about the inventory of emissions across the OTR and then considered various potential control measures to reduce emissions by the necessary amount. In its analysis, EPA considered options that are at least potentially reasonable and practicable across the entire OTR (referred to herein as "potentially broadly practicable" measures). In other words, EPA has not considered options that, while perhaps potentially practicable to some extent in some locations, would be impracticable if applied to their full extent throughout the OTR.16

i. Inventory Analysis

EPA relied on the 1990 interim regional inventory used for ROM and UAM analyses and projected emissions growth to estimate NO_X and VOC emissions in 2005 (the attainment deadline for severe areas, except for the New York-New Jersey-Connecticut area with the slightly later deadline of 2007). EPA projected that highway vehicles will account for approximately 38% of the total NO_X inventory and 22% of the total VOC inventory in 2005, indicating that substantial motor vehicle controls would have to be an important part of a workable compliance plan for the OTR. EPA projected the gasolinepowered light-duty vehicle component of the inventory (the vehicle types that

would be subject to the OTC LEV program) to constitute 28% of total NO_X emissions and 19% of total VOC emissions in the 2005 inventory.

ii. Analysis of Options for Control Measures Without More Stringent New Motor Vehicle Standards

To identify and evaluate the full range of potentially broadly practicable control options, EPA first analyzed the impact of measures explicitly required by the Act, using the same ROM modeling tools used to assess the overall magnitude of reductions needed in the OTR. The Agency then analyzed other options to fill the shortfall in emissions reductions, including a stringent limit on NO_x emissions, measures EPA included in proposed Federal Implementation Plans (FIPs) for three areas in California, and measures listed in compilations of NO_X and VOC control measures prepared by EPA and the State and Territorial Air Pollution Program Administrators/Association of Local Air Pollution Control Officials (STAPPA/ALAPCO). Recognizing uncertainties in various aspects of its analysis and EPA's authority to resolve those uncertainties in favor of health and environmental protection, EPA concludes that no combination of such measures would be sufficient to achieve the necessary amount of reductions without more stringent standards applicable to new motor vehicles.

ÈPA identified in the SNPRM the array of measures applicable to stationary and mobile sources under the Act, and described its modeling of the impacts of these measures on ambient ozone levels in the OTR. EPA calculated that application of these controls would achieve reductions by 2005 in the OTR of 20% for NO_X and 37% for VOCs from the 1990 baseline inventory, and concluded from ROM studies modeling the impacts of these measures that this level of reductions would be insufficient.

As explained in the SNPRM, EPA must account for problems in calculating the impact of control measures, including imperfect enforcement, control equipment malfunctions, and operating and maintenance problems. Accounting for such problems through a "Rule Effectiveness" factor diminishes the emissions reductions that one could expect if all sources could fully comply with rules at all times. See 59 FR at 48682. EPA noted that it had applied Rule Effectiveness considerations in calculating the overall impact of the Act-mandated controls for the ROM studies and for mobile sources within the MOBILE emissions model. See 59

¹⁴ See Briefing, "Urban Ozone Trends Adjusted for Meteorology"; See also Cox, William M. and Chu, Shao-Hung, "Meteorologically Adjusted Ozone Trends in Urban Areas: A Probabilistic Approach", Atmospheric Environment, Vol. 27B, No. 4, pp. 425–434, 1993.

¹⁵ For example, VOC sources in the northern Virginia portion of the Washington nonattainment area contribute to nonattainment in the Maryland portion of that area, and VOC sources in the New

Hampshire portions of the Boston nonattainment area contribute to nonattainment in the Massachusetts portion of that area.

¹⁶ EPA believes that whether such measures particularly those involving local land-use, highway, or mass transit infrastructure changes are practicable to some extent in individual areas depends on a consideration of local factors that can be conducted only by state and local citizens and governments. For that reason, EPA cannot itself either determine or assume that those measures are practicable to some extent in any particular area. As described elsewhere in this notice, however, EPA has left states the flexibility to demonstrate that such measures are indeed practicable and hence might close any emissions reductions shortfall so as to render emission reductions from new motor vehicles unnecessary.