



***Significant Impact Determinations and the Ozone Limiting Method or Plume  
Volume Ratio Method***

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Due to its highly reactive nature, 40 CFR Part 51 Appendix W, “The Guideline on Air Quality Models”, suggests that a three tiered screening approach be used to determine compliance with the 1-hour and annual air quality standards for nitrogen dioxide (NO<sub>2</sub>).

The Tier 1 analysis assumes a total conversion of nitric oxide (NO) to NO<sub>2</sub> for both the 1-hour and annual averaging periods. For the Tier 2 analysis, the Tier 1 results are multiplied by a default, NO<sub>2</sub>/NO<sub>x</sub> ambient ratio. It is important to note that differing ratios have been developed based upon existing literature which suggests that the 1-hour ratio is sensitive to hourly meteorological conditions and is not equivalent to an annual ratio where hourly differences in ambient conditions are less critical. Lastly, the Tier 3 analysis relies upon detailed screening methods that can be implemented on a case by case basis with prior approval from the Environmental Protection Agency Region VII. The Environmental Protection Agency offered two differing NO to NO<sub>2</sub> conversion methods: the ozone limiting method (OLM) and the plume volume molar ratio method (PVMRM).

If an applicant is having difficulty demonstrating compliance under the Tier 1 assumptions, a Tier 2 or Tier 3 screening approach can be used in consultation with the permit granting authority. The use of advanced screening methods is not limited to the National Ambient Air Quality or increment standard compliance demonstrations. If prior approval is granted, the screening methods can be applied for the determination of significant impact.