## Figure 6-1.—Multi-Tiered Screening Approach for Estimating Annual NO<sub>2</sub> Concentrations From Point Sources

Tier 1:

Assume Total Conversion of NO to NO<sub>2</sub>

Tier 2:

Multiply Annual NO<sub>x</sub> Estimate by Empirically Derived NO<sub>2</sub> / NO<sub>x</sub> Ratio

b. For Tier 1 (the initial screen), use an appropriate Gaussian model from appendix A to estimate the maximum annual average concentration and assume a total conversion of NO to NO<sub>2</sub>. If the concentration exceeds the NAAQS and/or PSD increments for NO<sub>2</sub>, proceed to the 2nd level screen.

c. For Tier 2 (2nd level) screening analysis, multiply the Tier 1 estimate(s) by an empirically derived NO<sub>2</sub>/NO<sub>X</sub> value of 0.75 (annual national default).36 An annual NO2/NOX ratio differing from 0.75 may be used if it can be shown that such a ratio is based on data likely to be representative of the location(s) where maximum annual impact from the individual source under review occurs. In the case where several sources contribute to consumption of a PSD increment, a locally derived annual NO<sub>2</sub>/NO<sub>X</sub> ratio should also be shown to be representative of the location where the maximum collective impact from the new plus existing sources occurs.

d. În urban areas, a proportional model may be used as a preliminary assessment to evaluate control strategies to meet the NAAQS for multiple minor sources, i.e. minor point, area and mobile sources of NO<sub>x</sub>; concentrations resulting from major point sources should be estimated separately as discussed above, then added to the impact of the minor sources. An acceptable screening technique for urban complexes is to assume that all NO<sub>X</sub> is emitted in the form of NO<sub>2</sub> and to use a model from appendix A for nonreactive pollutants to estimate NO<sub>2</sub> concentrations. A more accurate estimate can be obtained by: (1) calculating the annual average concentrations of NO<sub>X</sub> with an urban model, and (2) converting these estimates to NO<sub>2</sub> concentrations using an empirically derived annual NO<sub>2</sub>/  $NO_X$  ratio. A value of 0.75 is recommended for this ratio. However, a spatially averaged annual NO<sub>2</sub>/NO<sub>X</sub> ratio may be determined from an existing air quality monitoring network and used in lieu of the 0.75 value if it is determined to be representative of prevailing ratios in the urban area by the reviewing agency. To ensure use of

appropriate locally derived annual  $NO_2/NO_X$  ratios, monitoring data under consideration should be limited to those collected at monitors meeting siting criteria defined in 40 CFR part 58, appendix D as representative of "neighborhood", "urban", or "regional" scales.

Furthermore, the highest annual spatially averaged  $NO_2 / NO_x$  ratio from the most recent 3 years of complete data should be used to foster conservatism in estimated impacts.

e. To demonstrate compliance with NO<sub>2</sub> PSD increments in urban areas, emissions from major and minor sources should be included in the modeling analysis. Point and area source emissions should be modeled as discussed above. If mobile source emissions do not contribute to localized areas of high ambient NO<sub>2</sub> concentrations, they should be modeled as area sources. When modeled as area sources, mobile source emissions should be assumed uniform over the entire highway link and allocated to each area source grid square based on the portion of highway link within each grid square. If localized areas of high concentrations are likely, then mobile sources should be modeled as line sources with the preferred model ISCLT2.

f. More refined techniques to handle special circumstances may be considered on a case-by-case basis and agreement with the reviewing authority should be obtained. Such techniques should consider individual quantities of NO and NO<sub>2</sub> emissions, atmospheric transport and dispersion, and atmospheric transformation of NO to NO<sub>2</sub>. Where they are available, sitespecific data on the conversion of NO to NO<sub>2</sub> may be used. Photochemical dispersion models, if used for other pollutants in the area, may also be applied to the NO<sub>x</sub> problem.

9. Appendix W to part 51, section 7.1 is amended by removing "ISC2" in the fourth paragraph and by adding "ISC".

10. Appendix W to part 51, section 7.2.2 is amended by removing "ISC2" in the third paragraph and by adding "ISC".

11. Appendix W to part 51, section 7.2.5 is amended by removing "ISC2" in the second paragraph and by adding "ISC".

12. Appendix W to part 51, section 7.2.8 is amended by removing "ISC2" in the second paragraph and by adding "ISC".

13. Appendix W to part 51, section 8.2.5 is amended by removing "ISC2" in the second paragraph and by adding "ISC". 14. Appendix W to part 51, section 8.2.7 is amended by removing "total suspended particulate" in the first paragraph and by adding "particle". 15. Appendix W to part 51, section

15. Appendix W to part 51, section 8.2.7 is amended by removing "At least one" in the second paragraph and by adding "One".

16. Appendix W to part 51, section 9.3.3.2, is revised to read as follows: \* \* \* \* \* \*

9.3.3.2 Recommendations. a. Site-specific Data Collection. The document "On-Site Meteorological Program Guidance for Regulatory Modeling Applications' 66 provides recommendations on the collection and use of on-site meteorological data. Recommendations on characteristics, siting, and exposure of meteorological instruments and on data recording, processing, completeness requirements, reporting, and archiving are also included. This publication should be used as a supplement to the limited guidance on these subjects now found in the "Ambient Monitoring Guidelines for Prevention of Significant Deterioration''.<sup>63</sup> Detailed information on quality assurance is provided in the ''Quality Assurance Handbook for Air Pollution Measurement Systems: Volume IV".67 As a minimum, sitespecific measurements of ambient air temperature, transport wind speed and direction, and the parameters to determine Pasquill-Gifford (P-G) stability categories should be available in meteorological data sets to be used in modeling. Care should be taken to ensure that meteorological instruments are located to provide representative characterization of pollutant transport between sources and receptors of interest. The Regional Office will determine the appropriateness of the measurement locations.

b. All site-specific data should be reduced to hourly averages. Table 9–3 lists the wind related parameters and the averaging time requirements.

c. Solar Radiation Measurements. Total solar radiation should be measured with a reliable pyranometer, sited and operated in accordance with established on-site meteorological guidance.<sup>66</sup>

d. *Temperature Measurements.* Temperature measurements should be made at standard shelter height (2m) in accordance with established on-site meteorological guidance.<sup>66</sup>

e. *Temperature Difference Measurements.* Temperature difference ( $\Delta$ T) measurements for use in estimating P–G stability categories using the SRDT methodology (see Stability Categories) should be obtained using two matched