



Memorandum

DATE: March 3, 2005

TO: Salem-Plaistow-Windham MPO TAC Committee

FROM: David Walker, Senior Transportation Planner

RE: 8-hour Air Quality Conformity Analysis

ANALYSIS BACKGROUND

The 1990 Clean Air Act Amendments (CAAA) require Air Quality Conformity Determinations for Long Range Transportation Plans and Transportation Improvement Programs (TIP) adopted by Metropolitan Planning Organizations (MPO) in areas which are in non-attainment (not meeting the standards) for regulated pollutants. Conformity determinations are necessary to ensure that changes to the transportation system, as expressed in projects contained in the TIP and Long Range Plan, will not result in the worsening of air quality conditions, and in fact will contribute to reaching attainment of the National Ambient Air Quality Standards (NAAQS) in accordance with the State Implementation Plan (SIP). Analysis of all federally funded and regionally significant transportation projects in the region must be included in the analysis. In addition, Conformity determinations are required to include all transportation projects funded or approved under Title 23 of the Federal Transit Act.

The goal of the Air Quality Conformity Analysis is to project future transportation trends and calculate the resulting emissions in the region. The primary tool for the analysis is the Regional Transportation Model which forecasts emissions changes over time by incorporating transportation projects, such as building additional lanes on roads, signaling intersections, or adding transit service, as well as changes to land use in the region, such as the amount and location of housing and jobs in the area. Base year information is coded into the model and a model run is done for specific analysis years based on specific assumptions for the future. The results are then compared to the SIP emissions budget.

Recent Changes (8-hour ozone standard)

EPA issued the 8-hour ozone standard in July 1997, based on information demonstrating that the 1-hour standard was inadequate for protecting public health. Scientific information shows that ozone can affect human health at lower levels, and over longer exposure times than one hour.

On April 15, 2004 the EPA announced the 8-hour ozone designations, which had an effective date of June 15, 2004. Under the Clean Air Act, conformity determinations for these metropolitan area transportation plans and TIPs must be made by June 15, 2005 or the area will enter a lapse.

For the current conformity analysis the methodology to demonstrate conformity to the new 8-hour ozone standard is virtually unchanged from previous rounds since EPA and NHDES have not established an 8-hour emission

budget for the new 8-hour Non-Attainment Area. Therefore, as described in 40 CFR 93.109(e)(2)(ii) the region must calculate emissions and use budgets established for the 1-hour Standard for the entire 1-hour Non-Attainment area (instead of the smaller 8-hour area). If additional reductions beyond those strategies currently included in the SIP are necessary to meet the emissions budget, those reductions must come from within the 8-hour area.

ANALYSIS METHODOLOGY

1. Compile the list of projects and classify each as either "exempt" or "not-exempt" from the following sources:
 - a. MPO Plans and TIP and State of New Hampshire Ten Year Program
 - b. Regionally significant projects
 - c. NHDOT list of regionally significant projects
 - d. Other necessary transportation projects
2. Determine the year of implementation for each project.
3. Determine whether individual projects can be modeled.
4. Code changes into the model network for each 'model run' year.
5. Run the model for the necessary years, including the base year and the analysis years.
6. Isolate road segments by non-attainment area.
7. Calculate total emissions using road segment characteristics (speed, length) and emission factors as provided by NHDES based on EPA's Mobile 6.2 model.
8. Analyze individual and Statewide off-model projects to calculate emissions changes.
9. Compile results of modeled, off-model and statewide projects into standardized tables of emissions. Show results by analysis year and non-attainment area.

Results Summary

The results of the analysis show that the Seacoast and Southern NH Serious Non-Attainment areas and the Manchester Marginal Non- Attainment area will meet the requirements of the Transportation Conformity sections of the Clean Air Act Amendments and will be in conformity with the State Implementation Plan (SIP).

Manchester Marginal Non-Attainment Area

This Non-Attainment area is comprised of three different MPO's, and a portion of the area is not modeled and is outside of MPO boundaries. As a designated "Marginal" area, the Manchester Non-Attainment Area must meet a slightly different emissions test than the Serious Non-Attainment areas of the Seacoast and Southern New Hampshire. This emissions test states that the emissions in a given analysis year must be less than base year levels. Given that the Non-Attainment area crosses multiple MPO boundaries, it is the responsibility of the State of New Hampshire Department of Transportation to make the determination of conformity for the Manchester Marginal Non-Attainment area as a whole. It is the responsibility of each MPO to determine the modeled results for its portion of the non-attainment area and check their validity. The base year emissions and estimated emissions for the Manchester Marginal Non-Attainment Area (Seacoast MPO Portion) are shown in **Table 1** below.

Table 1: Seacoast MPO Portion of Manchester Marginal Non-Attainment Area

| Analysis Year | VMT (mi/day) | NOx (kg/day) | VOC (kg/day) |
|--|---------------------|---------------------|---------------------|
| 2002 Emissions – Total Area (base year) | | | |
| 2002 Emissions – Seacoast MPO Portion | 774,239 | 1,644 | 852 |
| 2009 | 937,690 | 949 | 505 |
| 2017 | 955,524 | 363 | 269 |
| 2025 | 1,035,722 | 208 | 210 |

Seacoast Serious Non-Attainment Area

Table 2 shows that the emissions budgets have been met for the Seacoast Serious Non-Attainment area in analysis years 2009, 2017, and 2025, meaning that the MPO is in conformity with the SIP for those years.

Table 2: Seacoast Serious Non-Attainment Area

| Analysis Year | VMT (mi/day) | NOx (kg/day) | VOC (kg/day) |
|----------------------|---------------------|---------------------|---------------------|
| Budget | N/A | 12,410 | 6,323 |
| 2009 | 8,910,079 | 9,119 | 4,797 |
| 2017 | 9,795,174 | 3,841 | 2,697 |
| 2025 | 10,172,777 | 2,022 | 2,045 |

Southern NH Serious Non-Attainment Area

Given that the Non-Attainment area crosses multiple MPO boundaries, it is the responsibility of the State of New Hampshire Department of Transportation to make the determination of conformity for the Southern New Hampshire Non-Attainment area as a whole. It is the responsibility of each MPO to determine the modeled results for its portion of the non-attainment area and check their validity. The budget for the Southern NH Non-Attainment Area is shown in Table 3 as well as the estimated emissions for the Rockingham Planning Commission portion of that non-attainment area. The Rockingham Planning Commission portion includes all of the communities of the Salem-Plaistow-Windham MPO as well as a number of the southern communities of the Seacoast MPO.

Table 3: Southern NH Non-Attainment Area

| Analysis Year | VMT (mi/day) | NOx (kg/day) | VOC (kg/day) |
|----------------------|---------------------|---------------------|---------------------|
| 2009 | 4,589,983 | 4,704 | 2,522 |
| 2017 | 4,995,473 | 1,932 | 1,450 |
| 2025 | 5,368,225 | 1,099 | 1,132 |

Please note that the results in the attached results are within the conformity budget established for the one hour standard for ozone. Recently the EPA established an 8-hour ozone standard, which will require a new conformity determination and TIP adoption in April 2005.

Off Model Analysis

In past Conformity rounds, staff has put extensive time and effort into the development of off-model analysis for regional projects that, for a variety of reasons, cannot be effectively represented by the Regional Traffic Model. These generally take the form of pedestrian and bicycle projects, ITS improvements, and the results of marketing and promotional efforts for example. In the Conformity round for the 2003-2005 TIP adoption, the air quality benefits of over 80 of these types of projects were calculated for significant savings in VMT, as well as NOx and VOC emissions.

The savings resulting from those projects were the primary reason that the region was under its emissions budget for each analysis year at that time. This round, given different emissions factors and an updated traffic model, Model estimates show that we will be within our budget for each pollutant under each analysis year without the off-model projects. For this reason, staff is scaling back the number of updates that will be done to the off-model projects and will calculate the benefits on the more significant of these projects while leaving the remaining projects unchanged. All off model projects will remain in our listing of non-exempt projects so that their benefits can be claimed in the future if necessary. The results of the off model analysis are being completed separately and will be presented as soon as they are available. These results are not expected to change the emissions estimates to any significant degree.

RECOMMENDATIONS

Staff recommendation is for the TAC to review the information provided in the Air Quality Conformity Analysis, and recommend approval of the analysis contained within to the MPO Policy Committee.

The approval must be contingent upon receiving no significant public comment by the close the Public Comment period at 5:00 PM on April 7, 2005. While the Seacoast MPO can make a Conformity finding for the Seacoast Serious Non-Attainment Area, the remaining MPO's cannot because they share portions of the Southern NH and Manchester Non-Attainment areas within their boundaries. This action falls on the state, with approved analyses from each of the MPOs involved.