



**OZONE  
TRANSPORT  
COMMISSION**

June 17, 2011

Chet Wayland, Director  
Air Quality Assessment Division  
Office of Air Quality Planning and Standards  
109 T.W. Alexander Drive, Mail Code: C304-02  
Research Triangle Park, NC 27709

Connecticut

Scott Mathias, Director  
Air Quality Policy Division  
Office of Air Quality Planning and Standards  
109 T.W. Alexander Drive, Mail Code: C304-02  
Research Triangle Park, NC 27709

Delaware

District of Columbia

Dear Mr. Wayland and Mr. Mathias:

Maine

In January 2010, EPA proposed an 8-hour ozone standard of 60-70 ppb. To meet the new standard, states in the Ozone Transport Region are considering a range of policy approaches, including some that will not be traditional command-and-control programs. For many of these nontraditional policies, emissions reductions cannot be projected with a high level of accuracy. Nonetheless, the Ozone Transport Commission (OTC) maintains that nontraditional policies may achieve genuine emissions reductions, and that EPA should enable states to include nontraditional policies, and to use sophisticated modeling and statistical analyses, in their attainment demonstrations. We refer to our recommendation as an “expanded” weight-of-evidence approach.

Maryland

Massachusetts

New Hampshire

New Jersey

New York

Pennsylvania

Rhode Island

Vermont

Virginia

The expanded weight-of-evidence analysis we propose would give states the flexibility to account for nontraditional policies in their attainment demonstrations, by using reasonable, appropriate and scientifically rigorous approaches to modeling and analyzing emissions. These approaches would include: 1) using screening modeling to demonstrate the benefits of nontraditional policies; 2) conducting monitor-specific data analysis to examine air quality anomalies; 3) using a range of reasonable growth scenarios; and 4) demonstrating a reasonable probability of attaining the “bright line” standard. A probabilistic approach is important since the use of a “bright line” test does not account for the variability inherent in emissions projections and air quality modeling.

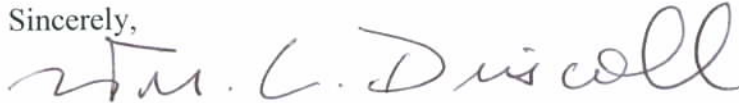
William L. Driscoll  
Executive Director

Our recommendation includes an option for a mid-course review process to ensure that states are implementing the measures which will result in emissions reductions contained within the expanded weight-of-evidence analysis.

444 N. Capitol St. NW  
Suite 638  
Washington, DC 20001  
(202) 508-3840  
FAX (202) 508-3841  
e-mail: ozone@otcair.org

Our full recommendation is provided in the attachment. We request that EPA update its guidance document to incorporate our recommended expanded weight-of-evidence program when the Agency releases its ozone modeling guidance for a new 8-hour ozone standard.

Sincerely,

A handwritten signature in cursive script that reads "William L. Driscoll".

William L. Driscoll  
Executive Director

Attachment

cc: Kimber Scavo, EPA OAQPS  
Tyler Fox, EPA OAQPS  
H. Curtis "Curt" Spalding, EPA Region 1 Administrator  
Judith A. Enck, EPA Region 2 Administrator  
Shawn M. Garvin, EPA Region 3 Administrator  
Jeff Underhill, OTC Modeling Committee Chair  
OTC State Air Directors

## OTC Recommendations

### Expanded Weight-of-Evidence (WOE) for Attainment Demonstrations

#### Table of Contents:

- I. Introduction
- II. Creation of a two-step WOE process
- III. Feasible control measures
- IV. Modeling and data analysis
- V. Non-traditional programs
- VI. Mid-course review

- I. *OTC commends EPA for continuing to encourage states to perform both modeling and data analysis as part of the Weight-of-Evidence (WOE) provisions of the attainment demonstration process. Over time, it is our hope that the entire attainment demonstration be a WOE-based demonstration (not modeling supported by WOE) where the modeling, the data analysis and other scientific information are blended together to generate the most scientifically credible analysis to show whether or not an area is likely to meet air quality standards.*
- II. *OTC supports the creation of a two-step WOE process.*
  - A. The draft EPA guidance should be amended by adding a paragraph similar to the one below after the second paragraph in Section 7.0, page 98:

“This guidance includes a two-step process for using WOE. The first step, or basic WOE, is available to all nonattainment areas submitting an attainment demonstration and primarily allows for all areas to use other supplemental technical analysis and evidence to, within certain bounds, address the overall uncertainty associated with the photochemical modeling. Basic WOE is restricted to certain bounds that must be met because EPA believes that if there are additional, reasonable, and or feasible traditional control programs that can be implemented in the nonattainment area, then these measures should be pursued before the use of expanded WOE (Step 2). In Step 2, where state or local agencies are implementing all feasible traditional control programs in the nonattainment area (this determination will be based on discussions between the Regional EPA Office and the state), a broader, expanded use of WOE would provide an optional approach during the development of attainment demonstrations. Sections 7.1 through 7.3 provide additional guidance on basic WOE. Sections 7.4 through [to be completed by EPA] provide additional guidance on the expanded WOE process.”

III. *OTC supports a requirement that all feasible traditional controls be implemented prior to using the expanded WOE provisions (discussed below) of the guidance.*

- A. The use of expanded WOE will be contingent upon the state being able to demonstrate to its EPA Regional Office that all feasible traditional control programs have been implemented. If feasible control programs have not been implemented then the area would need to implement additional control programs in order to qualify to use expanded WOE.
- B. Definition of “all feasible traditional controls”:
  - i. A feasible traditional control program is any regulatory program that will provide meaningful emission reductions and modeled concentration reductions. For example all RACT rules are considered to be feasible traditional controls. Moreover, all measures that are RACM (Reasonably Available Control Measures) are considered to be feasible traditional control programs. Some measures that do not meet the criteria to be considered RACM may be feasible traditional control programs.<sup>1</sup>
  - ii. Any additional control measures that are recommended to the state by EPA or stakeholders that include a credible technical analysis that shows that the measure will achieve a meaningful reduction in emissions and modeled ambient concentrations of the pollutant of concern will need to be included as a feasible traditional control program.
  - iii. Considerable flexibility would be provided to the state and the EPA Regional Office to determine which control programs are feasible traditional controls. There would be recognition of the difference between upwind and downwind areas and, when deciding what constitutes all feasible traditional controls, consideration would be

---

<sup>1</sup> One example of a feasible traditional control measure would be NO<sub>x</sub> control measures that New Jersey referred to as “RACT Plus” (e.g., more stringent NO<sub>x</sub> emission limits applied to existing small boilers located in an ozone non-attainment area that are more expensive than NO<sub>x</sub> RACT and RACM). Another example of a feasible traditional control measure is one that applies more stringent NO<sub>x</sub> emission limits than RACT or RACM to a subset of existing combustion equipment, like High Electricity Demand Day turbines, located in an ozone non-attainment area which would require the use of available NO<sub>x</sub> controls on existing devices that are more expensive than RACT or RACM.

given to how overwhelming transport is, versus intrastate pollution, to the state's air quality.<sup>2</sup>

- C. A state must submit the following to demonstrate that all feasible controls are being implemented:
  - i. A description of the process that has been used to involve its EPA regional office, other EPA offices and stakeholders in the selection and analysis of traditional control programs for the SIP. This process must start at least a year before a SIP is due. OTC states already involve EPA in all OTC Committees. Many OTC states already work in partnership with their EPA Regional Offices.
  - ii. The demonstration must show that EPA and stakeholders have been asked to identify and provide technical analysis for any new potential, traditional control programs that they believe the state should include in the SIP.
- D. Potential control measures that are recommended to the state by EPA and stakeholders that include a credible technical analysis that shows that the emission reductions are meaningful will need to be included as a feasible traditional control program. Recommended measures that do not include a credible technical analysis do not necessarily meet the criteria to be considered a feasible traditional control program.
- E. Expanded WOE would allow states to demonstrate how additional regional controls (outside of the state's control) to reduce transport could help with attainment.
  - i. Inherent in the use of expanded WOE is the concept that the state is implementing all feasible controls within its borders. To the extent that additional super-regional or national controls are essential to demonstrate attainment, a state can include an analysis of how new (not currently adopted by EPA) super-regional or national controls – in combination with the state controls - could provide for attainment.
  - ii. The analysis could include assumptions about national or super-regional controls that EPA could implement through Section 110, Title 2 or other sections of the Clean Air Act to reduce regional transport. To the extent that these regional controls would make the difference between attainment and nonattainment, the state can request that EPA make a commitment or accept a “federal assignment” to work

---

<sup>2</sup> In working with the states on implementing all feasible traditional control programs, EPA should recognize that “downwind” nonattainment areas, that have relatively low emissions and are nonattainment primarily because of transport, need to be treated differently than high emission or “upwind” areas.

toward implementing those regional controls to reduce emissions in upwind states through an updated federal Transport Rule.

*IV. OTC supports allowing states to show ranges of potential future design values that are consistent with the uncertainty in the modeling and data analysis process and to use the probability of attainment, not a bright-line approach for demonstrating attainment under the expanded WOE provisions of this guidance.*

A. Modeling Analysis

- i. To the extent that a state has access to several SIP-quality modeling platforms (e.g., CMAQ, CAMx, OTC platform, SESARM platform), the results from multiple models could be allowed to be included in the expanded WOE demonstration.
- ii. Use of photochemical modeling (e.g., CMAQ, CAMx, CALGRID) to quickly analyze the relative effectiveness of a control strategy (screening) or to perform screening analyses of control strategies over a shorter time period (an episode instead of a season) (local vs. transport driven) could be allowed to be included in the expanded WOE demonstration.
- iii. States that are using the expanded WOE could include several likely future modeling cases (where key areas of uncertainty like economic activity, energy consumption and transportation are used to bound the analysis) to demonstrate that there is a reasonable probability that an area will attain the standard by the attainment date.
  - a. An expanded WOE demonstration could include modeling based upon an optimistic and pessimistic estimate of pollutant emissions growth, so that both best case and worst case scenarios are analyzed.
- iv. Expanded WOE would allow for areas - where a single monitor or a small number of monitors continue to drive nonattainment – to include sensitivity analysis of individual grid-cells surrounding out of-attainment monitors to further refine, or at least better understand, the relative reduction factor or responsiveness to controls for that monitoring location.
- v. Comprehensive data analysis and photochemical modeling could be employed to support an expanded WOE demonstration. Data analysis can be used to adjust the results of the photochemical modeling. For example, if data analysis indicates that the photochemical modeling is under-predicting by 5% the potential benefits from NO<sub>x</sub> controls on regional power plants - that reduce long-range transport - then the future ambient levels predicted by the photochemical model could be adjusted to

show the projected concentration based upon the combined results of the photochemical model and the data analysis.

- vi. Under expanded WOE, the guidance should allow for the use of ranges of potential future modeled pollutant levels. In many cases the range may be large and the bottom end of the range may show attainment while the top end of the range may not.

## B. Statistical Analysis

- i. Expanded WOE would continue to encourage the use of meteorologically adjusted ozone and PM<sub>2.5</sub> concentrations to establish air quality trends. There are several techniques that have been used to examine the influence of meteorology on air quality. Among them are (a) statistical modeling (U.S. EPA, 2005c ); (b) filtering techniques (Rao and Zurbenko, 1995, Flaum, et al., 1996, Milanichus, et al., 1998, Hogrefe, et al., 2000); (c) using a probability distribution of meteorological severity based on climatological data (Cox and Chu, 1993, 1996); and (d) using CART analysis to identify meteorological classes and selecting days from each year so that the underlying frequency of the identified meteorological classes remains the same (Stoeckenius, 1990, Deuel and Douglas, 1996). Most of this work has examined the relationship between ozone and meteorology. Only recently have analyses examined the relationship between meteorology and PM<sub>2.5</sub>. Additionally, compared to PM<sub>2.5</sub>, the established relationship between ozone and meteorological variables is stronger (i.e., showing higher r-square values). In the case of PM<sub>2.5</sub>, the relationship between concentration and meteorology is complicated by the fact that PM<sub>2.5</sub> components experience high concentrations at different times of the year and for different reasons. This makes it more difficult to meteorologically adjust PM<sub>2.5</sub> concentrations.
- ii. Expanded WOE would also allow for the use of conventional forecasting statistics and techniques to enhance the expanded WOE demonstration by further analyzing the “reasonable probability” of a state’s plan to attain.

## C. Other Analysis

- i. Expanded WOE would continue to allow for areas - where a single monitor or a small number of monitors continue to drive nonattainment – to include comprehensive inventory analysis related to those problem monitors. Emission data near the non-attainment monitor should be scrutinized as to source size, type and even presence in the inventory. Emissions density, prevailing wind direction and NO<sub>x</sub>/VOC sensitivity could also be included in this kind of an analysis.

- ii. Analysis of Photochemical Assessment Monitoring Stations (PAMS) data would be encouraged in order to:
  - a. Determine evidence of transport,
  - b. Establish VOC/NO<sub>x</sub> ratios for ozone production efficiency,
  - c. Quality assure the emission inventory, and
  - d. Provide information on target sources and species to aid in the development of the most efficient control strategies (for example, high concentration, high maximum incremental reactivity (MIR) toluene emissions in mobile and industrial sources).

D. Judging Success - Reasonable Probability of Attainment

- i. For states using expanded weight of evidence, if a state presents a range of potential future design values reflecting the uncertainty in the modeling and data analysis and the bright line standard is bound by the range, the state's demonstration of attainment should be approvable.

V. *OTC supports the use of non-traditional programs as part of the expanded WOE provisions of the guidance.*

- A. One of the key benefits of using expanded WOE is that it allows the state and local agencies to incorporate potential reductions from non-regulatory programs that are less easily quantified. Because of the implementation approach used in SIPs, these measures are often considered to not be “enforceable” according to EPA’s historic interpretation. Also, it is often difficult to quantify the full future benefits of these types of programs because of the non-regulatory implementation approach. Several examples of non-traditional programs are discussed in Section C below.
- B. Inclusion of both optimistic and pessimistic assumptions about the benefits of non-traditional programs to be used in an expanded WOE demonstration.
  - i. Many of the non-traditional programs may fit much better into the SIP process as measures that will affect how emissions grow over time. Programs designed to change per capita energy consumption and efforts to reduce regional growth in vehicle miles traveled (VMT) are two examples of initiatives that are specifically geared towards changing the business-as-usual assumptions historically used to project emissions into the future.



C. Examples of non-traditional programs include:

i. Smart Growth Initiatives

- a. These are described in EPA's Smart Growth publications, which address transportation and air quality:  
<http://www.epa.gov/smartgrowth/publications.htm#air>
- b. Types of programs:
  - a. Bicycle/pedestrian enhancements.
  - b. Land use activities.
  - c. Transportation planning.
- c. Smart Growth programs could be included in an analysis of varied growth factors.

ii. Energy Efficiency

- a. Many of these programs are not traditional, command-and-control regulatory programs and depend on economic incentives and behavior change to achieve their goals.
- b. It is difficult to predict utilization in newer programs, in part due to misaligned incentives or lack of information to potential incentive recipients.
- c. Energy Efficiency programs could be included in an analysis of varied growth factors where an upper bound and lower bound for estimated growth in energy consumption may be used.
- d. Energy Efficiency should not be included in WOE if it was previously included as an enforceable control measure in a SIP based upon expected EPA guidance on including energy efficiency in SIPs.

iii. Renewable Energy/Renewable Portfolio Standards

- a. Renewable Energy programs, designed to encourage clean, renewable energy sources as a means of reducing dependence on fossil fuel power generation, could also be included in an expanded WOE demonstration. This is another example of an initiative that may change assumptions about business-as-usual growth in the power sector.
- b. Limitation: The potential for power facilities that produce emissions to transmit electricity out of state resulting in an RPS being met, but no emission reductions needs to be considered.

- c. Renewable Energy should not be included in WOE if it was previously included as an enforceable control measure in a SIP, based upon expected EPA guidance on including renewable energy in SIPs.

iv. Transportation Measures

- a. Types of programs:
  - a. Clean and Efficient Strategies – State and local governments introduce new technologies designed to reduce emissions of their vehicle fleet.
  - b. Traffic Flow Improvement – Action response team would focus on congestion such as backups caused by accidents.
  - c. Truck Stop Electrification – Would allow truckers to shut down engines and still have power while parked at certain rest stops.
  - d. Non-regulatory idling reduction initiatives.
  - e. A program that incorporates transportation control measures should not be included in WOE if it was previously included as an enforceable control measure in a SIP, based upon expected EPA/Department of Transportation guidance on including transportation control measures in SIPs.

v. Voluntary Programs

- a. Types of programs:
  - a. Regional Forest or Urban Tree Canopy Programs – These programs would consist of forest conservation, restoration, and expansion to improve the air quality of a particular area.
  - b. Clean Air Teleworking Initiative – This initiative would encourage employees to telework on days when air quality is forecasted to be at its worst.

vi. Marketing Campaigns

- a. Types of programs:
  - a. Telecommute on code Orange days.
  - b. How to make your home and business more energy efficient.
  - c. Programs that encourage – and provide incentives for – mass transit use.

vii. Episodic Controls

- a. Often are voluntary programs that are ready to be implemented upon notification of a forecasted pollution event/bad air day.
- b. Types of programs:

- a. Free mass transit on forecasted bad air days
- b. Numerous other incentives to reduce driving on forecasted bad air days
- c. Numerous company specific action plans to reduce emissions on forecasted bad air days
- d. Temporary fuel switching to fuels that decrease emissions of priority pollutants.
- e. Changes in fuels used for electricity generation
- f. Changes in production scheduling.

*VI. OTC supports the inclusion of an option for a mid-course review and consultation for SIPs based upon an expanded WOE demonstration. The EPA would work with the affected state or states to conduct an assessment to determine whether or not a mid-course review and consultation will be required under the expanded WOE provisions of this guidance*

- A. Prior to the state submitting an attainment demonstration and SIP that includes an expanded WOE demonstration, the state and EPA Regional office must discuss whether the state will need to engage in a mid-course review, the level of effort required to prepare an acceptable, midcourse review, and if necessary, the level of effort required to prepare an acceptable mid-course correction plan.
- B. Acknowledges that there is considerable uncertainty associated with the use of non-traditional control programs and provides a mechanism to make corrections if needed.
- C. Allows for potential corrections, including implementation of additional programs, if emission benefits, if extrapolated to the future, would not meet projected levels.
- D. The need for a mid-course consultation will be based on the severity of projected nonattainment and the degree to which non-traditional programs are used to demonstrate attainment.
- E. If implemented, the mid-course consultation will ensure that an area is progressing towards attainment and will include an analysis of design values to demonstrate this.