Ozone Early Action Plan
Northern Shenandoah Valley

December 28, 2003

Mr. John M. Daniel, Director
Air Division
Virginia Department of Environmental Quality
629 East Main Street, 8th Floor
Richmond, VA 23219

RE: Ozone Early Action Plan for Northern Shenandoah Valley
December 31th Progress Report Submittal to USEPA

Dear Mr. Daniel:

This submittal is intended to fulfill the December 31, 2003 milestone requirement as outlined in the Early Action Compact for The Northern Shenandoah Valley Region in the Commonwealth of Virginia. Per the April 4, 2003 memorandum by Ms. Lydia N. Wegman, Director of the Air Quality Strategies and Standards Division of USEPA, the following elements are included.

- A list of control measures still under consideration for adoption by the local area as part of the March 2004 submission;
- Likely implementation dates for the local control measures that are under consideration;
- Current assessment of the amount of emissions reductions expected to be achieved through implementation of the local control measures;
- The geographical area in which each control measure is anticipated to apply;
- Updates from the June 16, 2003 Progress Report;
    - Progress in developing the stakeholder process, including the roles and responsibilities of various stakeholder groups, a list of stakeholders, and a brief summary of stakeholder meetings;
    - Progress on evaluating and selecting emission reduction measures for the local control strategy, including stakeholder involvement in the development of the initial list of control measures;
    - Describe public outreach activities;
    - Provide an update on modeling/technical planning activities.

The Winchester-Frederick County Economic Development Commission has taken the lead in organizing EAP efforts, with the assistance of Wilbur Smith Associates, a transportation and air quality planning consulting firm. We have also have continued our conversations with other EAC areas.

If you have any questions regarding our submittal, please contact me at (540) 665-0973.

Sincerely,

Patrick Barker, AICP
Executive Director

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Ozone Early Action Plan
Northern Shenandoah Valley

2nd Semi-Annual Status Report

for

The Northern Shenandoah Valley Ozone Early Action Compact Area

December 31, 2003

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Summary of Progress

Presented here is the 2nd semi-annual status report on the activities and progress involved in the effort to develop an ozone early action plan for the Northern Shenandoah Valley area of Virginia. This project is designed to produce cleaner air in the area in a proactive manner in order to bring the area into compliance with the federal 8-hour ozone standard.

While the first half of 2003 involved numerous Air Quality Improvement Task Force education exercises, the second half of 2003 saw the Task Force focus on the technical and practical feasibility of a broad spectrum of potential local control measures. Task Force members were able to cull the list of potential control strategies to a manageable level and spent substantial time evaluating measures with the most promise for implementation in the Winchester-Frederick County area. In September, the Task Force identified 25 potential emissions control strategies and asked their consultants Wilbur Smith Associates and Environ International Corporation to evaluate these strategies.

The technical evaluation of the proposed emissions control strategies was performed by Environ staff during September and October. The scope of work for this effort included:

- Performing a preliminary screening on all emission control measures identified by the Air Improvement Task Force and ranking these measures based on their approximate contribution levels to the VOC and NO_X emission inventories, as well as past experience in program effectiveness and feasibility;

- Preparing a technical memorandum presenting the ranking of the emissions control strategies, as well as documenting the data, methodology and assumptions used in developing the ranking after completing the initial screening of control measures;

- Recommending the top ten emissions control strategies (with input from the Air Improvement Task Force) and to perform more in depth analyses. This step would include cost-effectiveness analysis, using in-house data and information, as well as relevant data obtained from technical publications related to those selected emissions control strategies. The cost and emission benefits associated with each control strategy used in the cost effectiveness analysis are based on the best available data and engineering estimates. The feasibility assessment is based on past program experience and engineering judgment;

- Preparing a report presenting the results of the cost effectiveness analysis and feasibility assessment of the selected control strategies, as well as documenting the data, methodology, and assumptions used in the cost-effectiveness analysis and feasibility assessment.

The resulting evaluation and information prepared by Environ assisted the Air Improvement Task Force members in focusing their efforts on those strategies that could be effective and also practically implemented in the area. Following is a general discussion of these measures. A summary of the potential local control measures is presented in Appendix C. The full report is available, upon request.

Phase I Measures

The Air Improvement Task Force decided that implementation of emissions reduction measures would be divided into two Phases. The Phase I measures would be implemented in the entire early action area (Winchester City & Frederick County) as quickly as possible, but before the end of 2005. These measures have the greatest public acceptance and will provide important foundation for any future efforts.

1. **Ozone Action Days/Public Awareness**

This measure is actually a combination of several measures that had been evaluated earlier as individual measures including:

- General Public Awareness Program
- School-based Public Awareness Program
- Education and Promotion Campaign
- Employer-based Ozone Action Days
- Area Sources Ozone Action Days
- Dynamic Message Signs
- Video Monitor Deployment
- Lawn and Garden Equipment Usage Restrictions for State/Local Governments

These measures would be implemented in a coordinated response to a forecast of high ozone concentrations from the DEQ. An area specific forecasting tool is currently being developed for this purpose. Task Force members felt that many of these activities should be undertaken in a coordinated effort. In addition, the small emissions reductions associated with the individual components were even more difficult to quantify.

The emissions reduction benefits estimated from the combined Ozone Action Days/Public Awareness program was approximately 0.80 tpd for NOx and 1.14 tpd for VOC. The Task Force members felt that a strong program to raise public understanding and awareness would be a key to successful air quality improvement efforts.

2. VMT Reduction Programs

The Air Improvement Task Force combined a number of individual measures to create a category of strategies designed to reduce vehicle miles of travel (VMT). These include:

- Enhanced/expanded Northern Shenandoah Valley Regional Commission Ridesharing Program
- Bicycle and Pedestrian Accommodation
- Green Space Preservation
- Promotion of Mixed Use Development
- Promotion of Telecommuting

The existing ridesharing program operated by the Northern Shenandoah Valley Regional Commission provides an excellent starting point for encouraging and promoting car and van pooling in the region. A combination of the other sub-measures will be aimed at improving community walkability and bicycle usage, as well as reducing or eliminating those trips, which are unnecessary. The combined impact of these programs is estimated to be approximately 0.28 tpd for NOx and 0.38 tpd for VOC. While the

projected emissions reductions are relatively small, the Task Force felt that the long-term benefits for both air and community quality of life were important.

3. Open Burning Restrictions

Establishing open burning restrictions for land clearing activities has the potential to reduce combustion sources in the emissions inventories. While this type of rule is sometimes difficult to enforce, the reduction of related fire hazards along with the reduction of visible smoke and resulting air quality benefits were deemed important by the Task Force. The emissions impact of proposed open burning restrictions is estimated to be approximately 0.002 tpd NOx and 0.004 tpd VOC.

4. Engine Idling Restrictions

The Air Improvement Task Force focused early on restrictions for engine idling, due in part to the heavily traveled I-88 corridor in Frederick County, which has a high percentage of heavy truck travel. A large amount of idling emissions are generated from heavy-duty diesel vehicles that are parked at truck stops, rest areas and to a lesser extent, distribution centers. While Virginia already has an anti-idling regulation, it is anticipated that the EAC area will consider a more stringent version. The estimated emissions reduction for this measure is 0.15 tpd NOx and 0.005 tpd VOC.

5. School Bus/Heavy Duty Fleets Retrofits

Retrofitting heavy duty diesel engines with emissions control technologies, such as EGR systems, or after treatment devices is an emissions control measure that shows promise for the Winchester-Frederick County area. In fact, the availability of funding to support the retrofit of school buses will give implementation of this measure a positive boost.

While details regarding incentives for fleet conversions have not been worked out, based on the experience in other communities that have implemented such measures, the estimated benefits are approximately 0.08 tpd NOx and 0.04 tpd VOC. The Task Force was also very interested in this strategy because of the additional potential benefits associated with reduction of particulate emissions.

6. Voluntary Industrial Reductions

The emissions reduction benefits are sometimes difficult to quantify for this measure, however, the Task Force felt that an initial voluntary approach seeking industrial reductions is a reasonable and practical way for an Early Action Compact Area to begin. In addition, this strategy would help increase awareness of the pollution problem and establish a relationship between local government and area industry. The estimated emissions reduction potential for these types of measures for the area is 0.04 tpd NOx and 0.34 tpd VOC.

Phase II Measures

Phase II measures represent the contingency portion of the local air quality plan. One or more of these measures could be implemented after 2005, in response to continuing exceedances of the ozone standard or a shortfall in anticipated emission reductions from Phase I of the plan. These measures would require more lead-time for implementation as well as additional work with expanded groups of stakeholders.

7. OTC Portable Container Rule

This measure is part of a suite of measures designed to reduce VOC emissions. The portable container rule would reduce emissions that result from either spillage or permeation. Additional benefits include potential reduction of water contamination and reduction of potential fire hazards. The estimated emissions reduction benefits from this measure are 0.004 tpd VOC.

8. OTC Architectural/Industrial Maintenance Coatings Rule

This rule basically requires reformulated coatings to meet lower VOC content limits than under the current federal rule. Manufacturers would be required to assume the primary responsibility to produce coatings that meet or exceed VOC content limits for sale and use at the retail and wholesale levels. The estimated emissions benefits from this measure are approximately 1.14 tpd VOC.

9. OTC Mobile Equipment Repair and Refinishing Rule

This strategy requires lower VOC content for paints and use of improved transfer efficiency application and cleaning equipment. The rule would apply to primarily small businesses that apply refinishing materials to a variety of mobile equipment repair and refinishing facilities. The approximate emissions reduction for this strategy is estimated to be 0.37 tpd VOC.

10. Solvent Cleaning Operations Rule

This rule establishes hardware and operating requirements for vapor cleaning machines used to clean metal parts; and also includes volatility restrictions for cold cleaning solvents. Degreasing and solvent cleaning operations are performed by many commercial and industrial facilities. The estimated emissions benefit for this rule is 0.37 tpd VOC

11. Truck Stop Electrification

This measure is a companion strategy to the Engine Idling Restrictions discussed earlier as part of Phase I. Promoting the electrification of truck stops, rest areas and distribution centers would help reduce unnecessary engine idling. The availability of electrical hook ups would allow powering of cab/sleeper appliances or auxiliary devices without running the engine. The Task Force believes that this measure shows great promise, but may be costly to implement and therefore is scheduled for post 2005. The estimated emissions reduction for this measure is approximately 0.15 tpd NOx.

State & Federal Control Measures

In addition to the local control measures identified in the preceding discussion, there several state and federal actions that have or will produce substantial ozone precursor emission reductions both inside and outside of the Northern Shenandoah Valley area (Appendix D) These reductions are aimed at reducing local emissions and the movement (transport) of pollution into the area. These measures, when combined with the local control program, are expected to lower area ozone concentrations to the level at or below the ozone standard.

At the state level, three significant actions have been taken. First, in response to EPA's call for the reduction of NO_X emissions from large combustion sources (i.e., the NO_X SIP Call), the state has adopted and will implement a program to significantly reduce emissions on NO_X as part of a regional program to reduce ozone transport. This program alone is predicted to reduce ozone forming NO_X emissions by up to 30,000 tons per ozone season in Virginia. Secondly, the state opted into the National Low Emission Vehicle program that began to require less polluting vehicles in the state, beginning in 1999. To address local emissions, the state has recently adopted Reasonably Available Control Technology (RACT) controls for industries in the area, to further reduce the local contribution to ozone formation. The emission reduction expected from RACT in the area is currently being evaluated on a source-by-source basis. Compliance with the RACT rule will be required by the end of 2005

On the federal level, numerous EPA programs have been or will be implemented to reduce ozone pollution. These programs cover all the major categories of ozone generating pollutants and are designed to assist many areas to come into compliance with the federal ozone standard. A brief description of these measures is provided below:

Stationary & Area Source Controls: In addition NO_X SIP Call program, the EPA has developed a number of control programs to address smaller "area" sources of emissions that are significant contributors to ozone formation. These programs reduce emissions from such sources as industrial/architectural paints, vehicle paints, metal cleaning products, and selected consumer products.

Motor Vehicle Controls: The EPA continues to make significant progress in reducing motor vehicle emissions. Several federal programs have established more stringent engine and associated vehicle standards on cars, sport utility vehicles, and large trucks. These programs combined are expected to produce progressively larger emission reductions over the next twenty years as new vehicles replace older ones.

Non-Road Vehicle & Equipment Standards: The category of "non-road" sources that covers everything from lawn & garden equipment to aircraft, has become a significant source of air pollutant emissions. In response, EPA has adopted a series of control measures to address these sources. These programs include engine emission standards for lawn & garden equipment, construction equipment, boat engines, and locomotives.

All these measure have been developed to address both the creation of ozone producing emissions in the local area, as well as reducing the movement of ozone into the area as a comprehensive approach to reducing ozone levels. A full summary of these state and federal measures is presented in Attachment D.

Air Quality Technical Support Activities

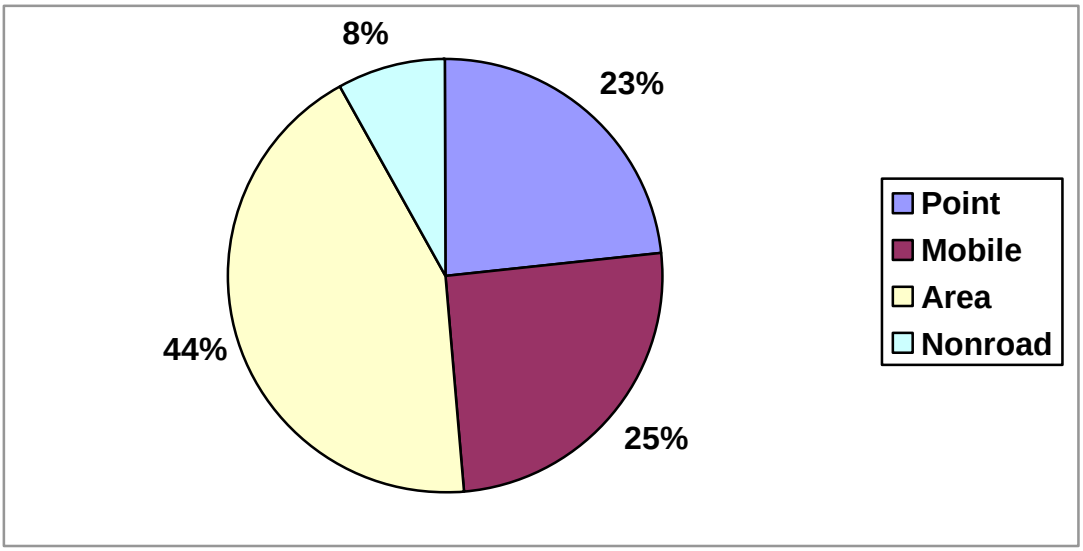
In the first status report, the technical discussion described the process generally used to evaluate air pollution problems and the tools used to do this evaluation. The report then went on to present the base year air pollutant emissions inventory for a typical ozone season day during calendar year 1999. This base year was selected because of the availability of comprehensive emissions inventory through the National Emissions Inventory (NEI) data base maintained by EPA, which has also served as the data source for the photochemical modeling domain that is part of the technical analysis needed to support the EAP process.

For comparison purposes, and to document any trend of emissions in the Northern Shenandoah Valley area, a typical ozone season day emissions inventory for calendar year 2002 is summarized in this status report. As in the previous status report, the major source categories used to present this inventory data are:

- **Stationary Point Sources**
  Large utility and industrial facilities with significant individual emissions.
- **Mobile Sources**
  Motor vehicles operated on public roads such as interstates, freeways, and local roads.
- **Area Sources**
  Small individual sources of emissions such as gasoline distribution and marketing, solvent usage, and others.
- **Nonroad Mobile Sources**
  Motor vehicles and equipment such as lawn and garden tools, construction equipment, locomotives, and aircraft.

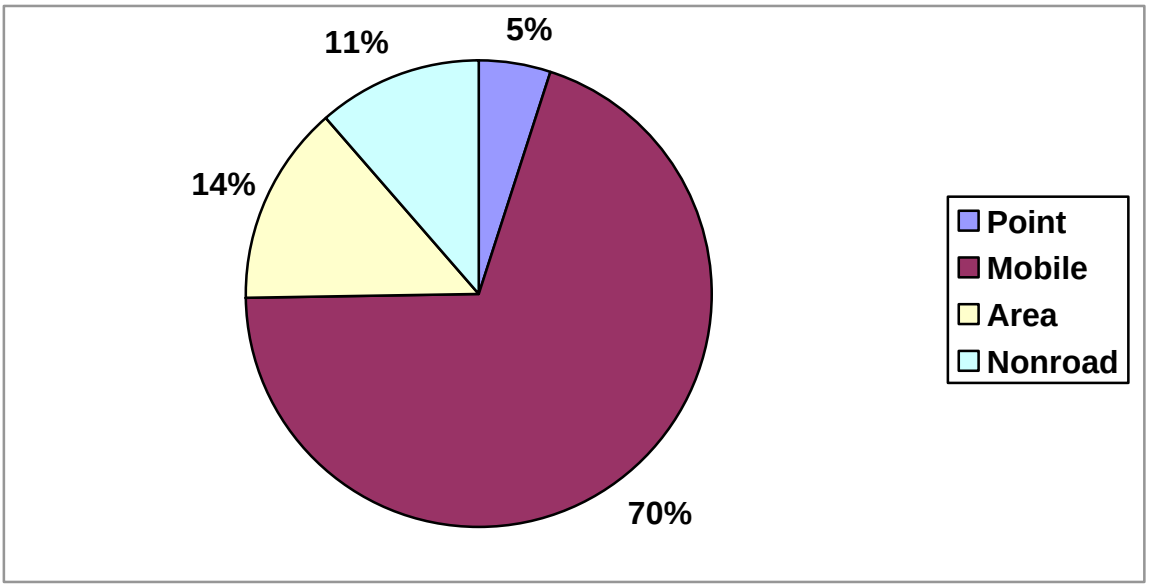
Summaries of the local interim (2002) inventories for the two major ozone precursors, volatile organic compounds (VOC) and oxides of nitrogen (NO_X) are presented below. The emissions from Winchester City and Frederick County are combined to produce a single summary of area emissions. Figure 1 and the associated data table presents the VOC emissions summary and Figure 2 (and table) presents the NO_X emissions summary.

Figure 1: Northern Shenandoah Valley Emissions Inventory – 2002 Ozone Season Daily Emission of Volatile Organic Compounds (VOC)



Summary of the Northern Shenandoah Valley Baseline VOC Emissions Inventory for Calendar Year 2002	
Major Source Categories	Emissions (tons/day)
Major Stationary Point Sources	
25 individual facilities (7 in Winchester, 18 in Frederick) - Description: Includes several printing, plastics, and mineral products industries. No utilities in the project area.	5.70 tpd
On-Road Mobile Sources	
Motor Vehicles on all roads – **Description**: local and through traffic on the I-81 corridor. Large percentage of heavy-duty diesel trucks. Also, vehicle traffic on all other public roads from major arterials to local roads.	6.25 tpd
Area Sources	
Use of solvent-based products – Description: paints, cleaners, consumer products, & others.	8.03 tpd
Gasoline distribution & Marketing – Description: Gasoline storage & transfer operation at terminals and service stations	1.93 tpd
All Others – description: Open burning, landfills, & others	0.65 tpd
Non-Road Mobile Sources	
Non-road equipment – Description: lawn & garden, construction, recreational vehicles and boats.	1.91 tpd
All others – Description: Locomotives & aircraft	0.05 tpd
Total	**24.52 tpd**

Figure 2: Northern Shenandoah Valley Emissions Inventory – 2002 Ozone Season Daily Emission of Oxides of Nitrogen (NO_X)



Summary of the Northern Shenandoah Valley Baseline NO_X Emissions Inventory for Calendar Year 2002	
Major Source Categories	Emissions (tons/day)
Major Stationary Point Sources	
25 individual facilities (7 in Winchester, 18 in Frederick) - Description: Includes several printing, plastics, and mineral products industries. No utilities in the project area.	0.93 tpd
On-Road Mobile Sources	
Motor Vehicles on Interstates - **Description**: local and through traffic on the I-81 corridor. Large percentage of heavy-duty diesel trucks. Also, vehicle traffic on all other public roads from major arterials to local roads.	13.02 tpd
Area Sources	
Fuel Consumption – Description: Fuel consumption for heating, cooling, and other purposes in all sectors.	2.38 tpd
All Others – description: Open burning, landfills, & others	0.22 tpd
Non-Road Mobile Sources	
Non-road equipment – Description: lawn & garden, construction, recreational vehicles and boats.	1.95 tpd
All others – Description: Locomotives & aircraft	0.15 tpd
Total	**18.65 tpd**

In terms of air pollutant emissions trends, the total level of ozone precursor emissions in the early action area have remained relatively constant between 1999 and 2002, with a slight increase in VOC emissions and a slight decrease in NO_X emissions. It is expected that emissions will begin to decrease at a quicker pace in the near future due to the state and federal emission reduction measures described earlier, along with the local control program to be implemented through the early action plan. The 2007 base case and control case emissions inventories are currently under development and will be presented in detail in the next semi-annual status report.

Air Quality Modeling

Air Quality analyses are used to simulate the combination of meteorology, emissions, and atmospheric chemistry that promote ozone formation and higher ambient concentrations in a given area. Once a representative scenario, or episode conducive to ozone formation, based on an actual observed ozone event is selected and validated, various emission reduction strategies can be tested to predict whether they would succeed in reducing ozone and attaining the ozone standard. The major steps involved in photochemical modeling is as follows:

- Selection of type and geographic scale of photochemical model
- Selection of representative ozone episode(s)
- Base case episode modeling and validation
    - Future year projection and attainment demonstration modeling

The specific Virginia early action-modeling plan is discussed below:

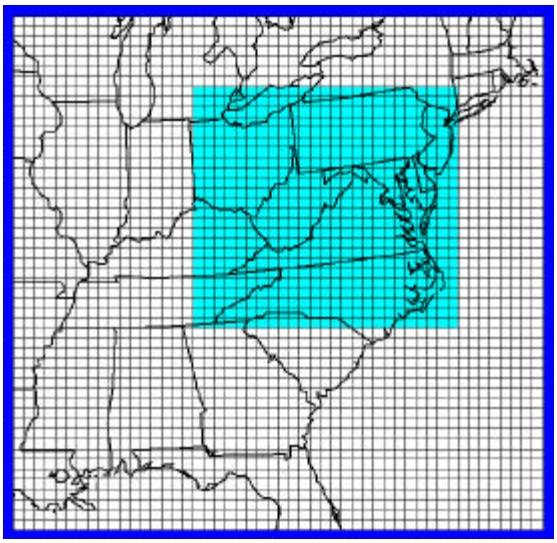
Model and Domain Selection

Due to the regional nature of ground level formation and transport that is prevalent in the Eastern United States, combined with the reasonable assumption the early action area is impacted by ozone transport, a regional photochemical modeling exercise has been selected for this project. This selection will allow for the evaluation of the impact of transport on the study area, as well as the impact of regional and national control strategies in reducing ozone transport into these areas.

The initial photochemical model selected for this purpose in EPA's MODELS3/CMAQ model that is EPA's latest modeling platform for such analyses. The meteorological inputs required to run the model will be developed using the MM5 meteorology model, and the emissions inputs will be developed using the SMOKE emissions preprocessor model. The purpose of these model data input preprocessors is to temporally and spatially allocate these inputs to a grid system used by the photochemical model to recreate the atmospheric interaction of all these factors in promoting ozone formation.

Due the need to model a larger region for ozone transport assessment, a regional domain that covers a large portion of the Mid-Atlantic States has been chosen to support the early action modeling. This domain has been used in previous analyses by the State to assess transport and the regional effect of emission reductions. The domain will consist of a series of descending grid cells from 36 kilometers (km) at the edges of the domain, to 12 km in the Mid-Atlantic area. A local 4 km exercise for the project area may be added later to provide further resolution. In this way the resolution of the model and modeling results will be the highest in and around the early action planning areas. This modeling domain is shown in Figure 4.

Figure 3: Early Action Modeling Domain of 36 km & 12 km Resolution



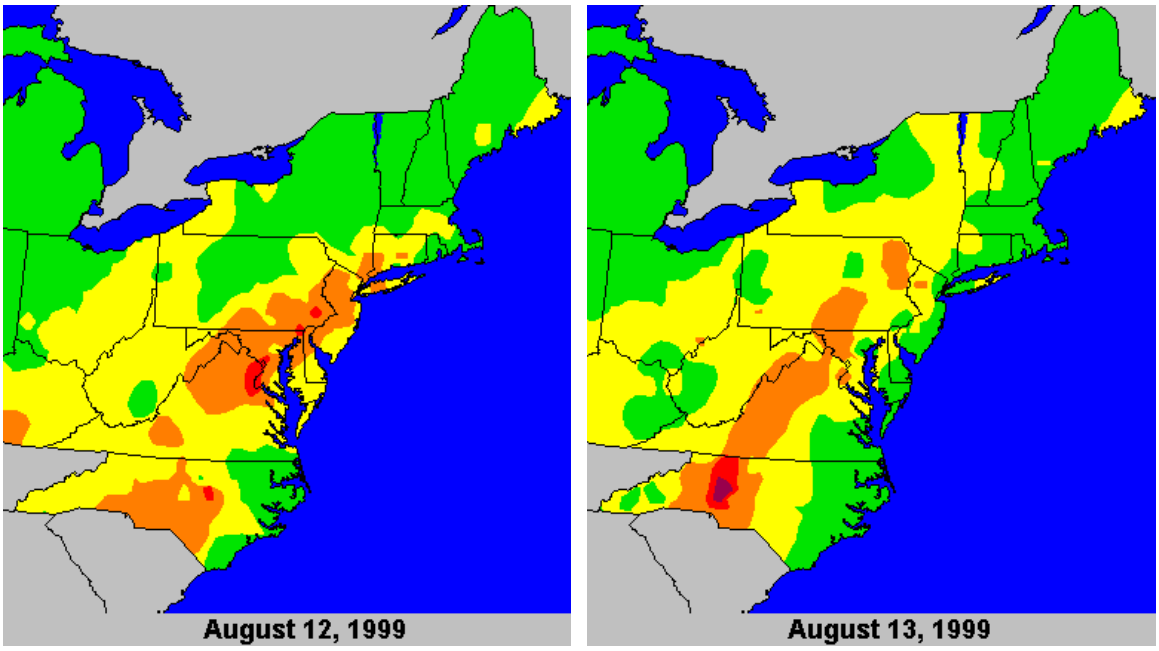
Episode Selection

One of the key aspects of a modeling analysis of a particular area and air pollution problem is to select one or more representative episodes to model. The selection process should reflect one or more of the prevailing meteorological and emissions conditions that produce higher levels of

ozone in the subject area. An additional consideration for this project is that EPA guidance requires that the baseline emission inventory and subsequent episode(s) selected for an early action plan are no older than 1999. Finally, since three states are developing plans in the same general area, an episode common to all three was selected.

The result of this process produced an ozone episode that occurred on August 12th and 13th in 1999. This episode was selected mainly because exceedences of the ozone standard were observed at all the area monitors involved in this effort (including Roanoke), during this period. This episode also involved the transport of ozone into Virginia from both the West and Southwest. To adequately simulate the events leading up and following this episode, a 10 day period from August 8th to the 18th will be modeled. After the completion of this modeling exercise, an additional episode, probably in 2002, will be selected and modeled to retest and confirm the results of the initial modeling and to begin the analysis of other nonattainment areas in Virginia. The EPA ozone maps of the August 12th & 13th, 1999 episode are shown in Figure 5.

Figure 4: The Ozone Episode of August 12th & 13th, 1999



Episode Meteorological Conditions

August 12th – The surface weather map on the morning of August 12th indicated a trough of low pressure extending from coastal New England, through the Delmarva region into central Virginia. South and east of the trough, surface winds were generally from the southeast and higher dew point temperatures, indicative of maritime air. West of the trough, surface winds were calm and variable with lower dew point temperatures, indicative of ozone–conducive continental air. Haze was reported over a large area from Maine into Tennessee and Georgia. Surface winds remained light into the afternoon. Surface and 1500 meter 48-hour back trajectories for Roanoke ending that afternoon indicated that air passed over the Ohio River Valley and West Virginia. The evening surface weather map indicated the trough of low pressure separating maritime from continental air persisted from New England southwestward

through Maryland and Richmond, extending into central North Carolina. Maximum temperatures east of the trough were around 90 degrees. West of the trough, high temperatures reached into the low to mid 90s.

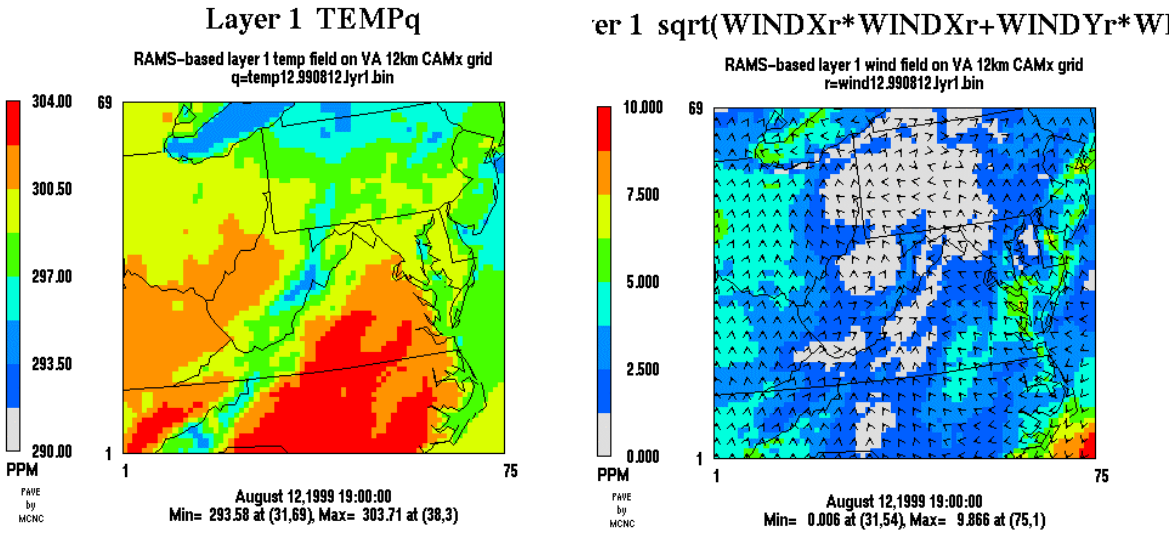
August 13th – The surface weather map on the morning of August 13th indicated the trough extended from Washington, D.C. through central Virginia into central North and South Carolina. Again, higher dew point temperatures and southerly winds east of the trough indicated maritime air. Lower dew points and calm winds west of the trough indicated the presence of a continental air mass. Forty- eight hour surface and 1500 back trajectories for Roanoke ending that afternoon originated from the Great Smokey Mountains region of northeastern Tennessee and north central Tennessee, respectively. The surface trough separating the maritime air from the continental air persisted into the evening. High temperatures reached the mid-to-upper 90s in the region.

Modeling Progress to Date

A 1997 episode was originally selected to support the development of the early action plan since emissions and meteorological data were readily available and quality assured. However, subsequent to this decision, EPA early action plan guidance required that inventories and episodes no older than 1999 had to be used in this effort. As a result, the episode described above as been selected to support the air quality planning effort. However, this change in the modeling plan and episode has resulted in a change to the modeling project schedule as well.

As of the date of this document, the DEQ has obtained the necessary meteorological data for the 1999 episode and has successfully completed the processing of the data through the MM5 meteorological model. Several MM5 runs were required to adequately simulate the relatively complex meteorological conditions that existed during the selected ozone episode as previously described.

Figure 5: Meteorological Modeling – Selected Results for Temperature and Winds

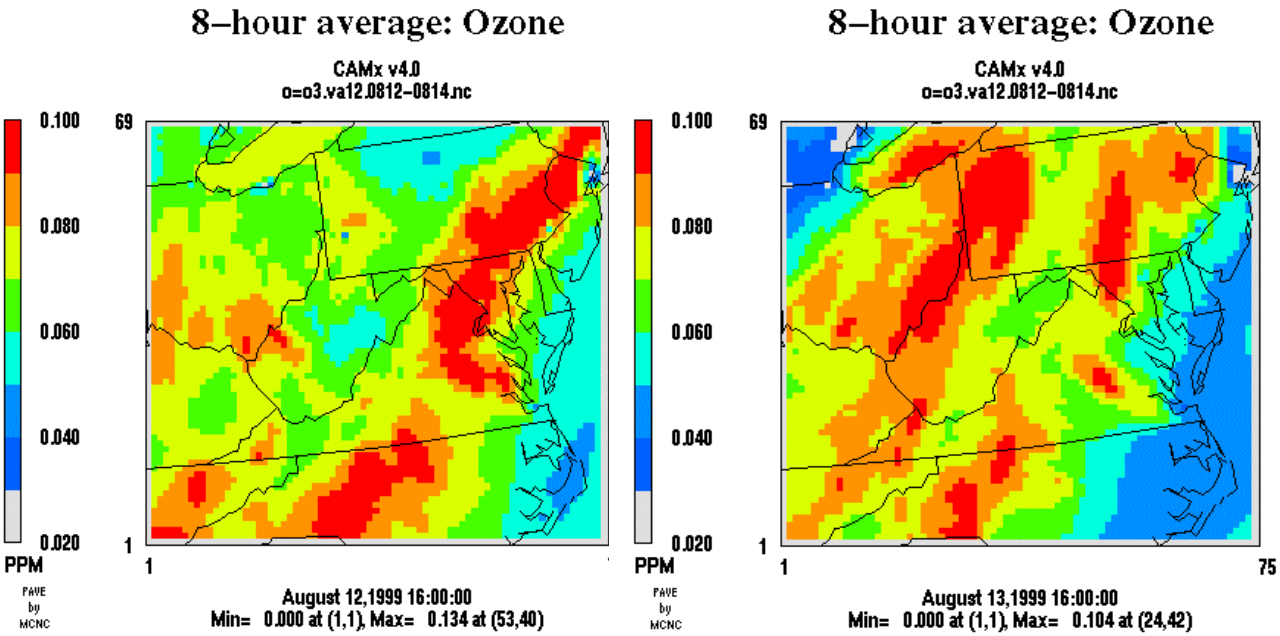


Emissions data for 1999 from all state in the modeling domain has also been obtained from the NEI. This emissions data has been supplemented with state specific data from Virginia and

West Virginia. The conversion of this data to SMOKE input files and the preprocessing of this data through the SMOKE emission model has also been completed. Several problems were encountered during the processing of the emissions data that delayed the commencement of base case modeling efforts. The most difficult problem dealt with the EPA requirement that all EAC modeling efforts used MOBILE6-based emissions for mobile sources. To do this we had to use the latest draft version of the SMOKE emissions preprocessor (Version 1.5). Numerous problems were encountered in attempting to install and run the mobile emissions through this version of the emissions model. Ultimately, the DEQ contracted the developers of SMOKE (Carolina Environmental Program to solve these problems and process the emissions data through this latest version of the emissions preprocessor. With this external assistance, the emissions preprocessing step has also been completed (end of September 2003).

Once all the preprocessing steps were completed, the regional photochemical modeling exercise was begun. After several runs using the CMAQ model were completed, it became obvious that the performance of the model was not up to EPA standards using the selected episode. After internal consultations, it was decided to change photochemical models from CMAQ to the Comprehensive Air Quality Model with Extensions (CAMx). The modeling platform was thus changed to use this alternative air quality model. After several runs using CAMx, base case modeling results were produced that meet or exceed EPA's acceptance criteria for model performance.

Figure 6: CAMx Photochemical Model Results – Base Case Modeling



With the base case modeling step coming to a close, attention has now moved on to the development of the future case (2007) projected emissions inventory. This inventory is currently under development and should be completed by the end of the calendar year. Once this is completed, modeling will begin on the future base case and control scenarios. It is now anticipated that the entire modeling project will be completed on time by the end of March 2004.

APPENDIX A

Northern Shenandoah Valley Air Improvement Task Force
List of Members

American Lung Association of Virginia
Ms. Dona Reynolds

Berkeley County Development Authority
Mr. Bob Crawford

City of Winchester - Planning
Tim Youmans

Clark County
John Sours

County of Frederick - Planning
Eric Lawrence

County of Frederick
Lynda J. Tyler

D.K. Industrial Services Corp.
Dave Kollar

Environmental Protection Agency
Kathleen Anderson
David Arnold
David Cole
Walter Wilkie

Franklin County E.D. Office
Mike Ross

Global Stone – Chemstone Corp.
Spencer C. Stinson

H.N. Funkhouser and Co.
Bob Claytor

Lear Corporation (Winchester)
Chuck Raymont

Lord Fairfax Environmental Health District
Kelly Vanover

National Park Service
Holly Salazar

Northern Shenandoah Valley Regional Commission
Stephen W. Kerr

Piedmont Environmental Council
Dan Holmes

Potomac Conservancy
Jim Lawrence

Shenandoah County
Susie Hill

Shenandoah National Park
Christi Gordon

Shenandoah Valley Manufacturers' Assn.
Jeff Rezin

Sierra Club – Virginia Chapter
Patricia DeZern

Virginia Dept. of Environmental Quality
Tom Ballou
John Daniel
Jim Sydnor

Virginia Dept. of Transportation
Any Costello
Michael Gray

Winchester Common Council
J. Stephen Bauserman

Winchester Industrial Development Authority
Jim Deskins

Winchester – Frederick County Economic Development Commission
Patrick Barker
Ken Jones

Winchester – Frederick County C. of C.
Susan Knowles
Patrick Coughlin

Citizens:
Jim Giraytys
Barbara Van Osten

APPENDIX B

Northern Shenandoah Valley Air Improvement Task Force Meeting Summaries

Northern Shenandoah Valley Air Improvement Task Force Meeting
February 4, 2003
Meeting Summary

The Air Improvement Task Force convened on Tuesday, February 4 to continue discussions on development of an Ozone Early Action Plan. The meeting was facilitated by Patrick Barker, Executive Director of Winchester – Frederick County Economic Development Commission.

The first item of business was distribution of a revised Task Force roster and consideration of a mission statement for the group. Discussions then focused on obtaining professional assistance in developing the EAP.

Status of the Request for Proposals (RFP) was discussed and an RFP Review Committee was selected with representatives from each major group including local government, state government, business, community, public health and environmental interests.

The Virginia DEQ made a presentation entitled “Air Quality Modeling 101” and “Modeling Emissions Inventory 101 to give Task Force members some background and understanding needed for the EAP.

An additional Task Force sub group meeting would be held on February 11 to consider consultant proposals. It was concluded that a professional consultant to assist the group should be brought on board as soon as possible.

The next regularly scheduled Task Force meeting would be on March 4, 2003.

Northern Shenandoah Valley Air Improvement Task Force Meeting
March 4, 2003
Meeting Summary

The primary focus for the March 4th meeting of the Air Improvement Task Force was selection of a consultant to provide professional assistance in development of the ozone EAP. A discussion took place of those consultants which had submitted proposals and those that would be invited to make an oral presentation the following week at the offices of the Winchester – Frederick County Economic Development Commission.

In addition, the Virginia Department of Environmental Quality made another "101" presentation, this time on emissions control strategies. Preliminary discussions of the types and effectiveness of various categories of controls were discussed.

The next meeting was set for April 10, 2003.

Northern Shenandoah Air Improvement Task Force Meeting
April 10, 2003
Meeting Summary

The Air Improvement Task Force members met at 10 a.m. at the Grafton School in Winchester. The 18 attendees met with representatives of Wilbur Smith Associates, a transportation/air quality consulting firm selected to assist them in development of their Ozone Early Action Plan (EAP).

Tom Ballou of the Virginia Department of Environmental Quality (VDEQ) kicked off the meeting with a discussion of new guidance from US EPA which provides more detail into the requirements for June 2003 EAP milestones. Mr. Ballou also discussed progress in developing emissions inventories and state strategies for nonattainment areas, which could be extended to Winchester Frederick County. VDEQ also reported that they are preparing to include the Winchester Frederick County area for ozone forecasts in the future, conceivably as early as next year.

Task Force members discussed pending US EPA deadlines and actions which must take place to meet those deadlines.

Amy Costello of the Virginia Department of Transportation (VDOT) discussed some of the initiatives that her department is now undertaking or planning to undertake which could have an impact on air quality in the region. VDOT will be putting together a list of these initiatives for the Task Force for possible inclusion in the June 16th submittal to US EPA.

Stephen Kerr, of the Northern Shenandoah Valley Regional Commission (NSVRC) discussed a wide variety of travel demand management (TDM) strategies that have been undertaken in the area. Mr. Kerr will be compiling a list of these initiatives for the Task Force.

Each member of the Task Force described their roles in this process and their initial issues of concern and assumptions regarding air quality improvement in the Winchester area. The group then had a general discussion of the nature of the emissions problem in the area and type and scope of emissions reduction strategies that might be appropriate. The discussion focused on voluntary measures, trucks in the I-81 corridor, transit usage, car pooling, land use issues and community education and involvement.

The consultant team provided a draft master list of control strategies that have been considered in other nonattainment areas as well as a summary of local strategies being considered in 4 locations with similar ozone problems.

Prior to the next meeting, the consultant team will evaluate strategies based on their preliminary suitability for implementation in the Winchester-Frederick County area and provide a list of these strategies to the Task Force.

It was determined that a public meeting designed to educate and inform area citizens of the air pollution problem and the need for action should be held as soon as possible. Tentative dates of May 7 for the next Task Force meeting and May 8 for the Public Meeting were set. EDC staff will be securing locations for these upcoming meetings.

Northern Shenandoah Valley Air Improvement Task Force Meeting
May 7, 2003
Meeting Summary

The Winchester - Frederick County Air Quality Task Force met at 10 a.m. at the Grafton School in Winchester to continue discussions regarding the Ozone Early Action Plan (EAP). Fifteen Members were in attendance as well as representatives from the Virginia Department of Transportation and National Park Service via teleconference. The meeting was facilitated by Carla Berroyer of Wilbur Smith Associates.

The Task Force discussions focused on a preliminary draft of potential local emissions control strategies that had been prepared by the Consultant based on input from the last meeting and information available from other areas developing plans. The following potential measures were discussed:

- Ozone Action Days

Several Task Force members expressed support for such a program. Tom Ballou representing the Virginia Department of Environmental Quality (VDEQ) informed the group that his agency may be in a position to provide forecasts of potential violation days within a year or so. Discussions also included the need for a local sponsor and the possible use of surrogate measures if actual forecasts are not available.

- Public Education and Information Program

The discussion centered around the importance of such a program to the EAP efforts and the need to increase public understanding of the air quality problems the area is experiencing. There was support for beginning public education activities at the earliest possible time.

- Ridesharing/Carpooling Programs

The group discussed the existing rideshare program in the area, Valley Commuter Assistance, and the potential for activities designed to enhance or expand on this service to the public.

- Parking Management

Members discussed a variety of parking control or management measures, expressing interest in the provision of preferential parking for alternative fuel vehicles and car pool vehicles. There was little support for reduction or elimination of parking.

- Bicycle/Pedestrian Measures

Discussions focused on a variety of bicycle related activities now being contemplated in the area as well as other bicycle/pedestrian measures that may be considered in the future. It was generally felt that these were positive measures, despite limited air quality benefits

- Employer Based Programs

Task Force Members expressed interest in pursuing a variety of employer-based programs, primarily on a voluntary basis. The discussion included rideshare promotion, telecommuting and other employer incentives and disincentives.

- Other Potential Measures

  A brief discussion was held regarding other potential measures including area source controls, transit promotion, land use measures, traffic flow improvements, intelligent transportation systems (ITS) projects, “Green Building” initiatives and institutional measures. These potential measures would be more specific and refined for the next discussion.

Other items of discussion included the need to get state approval for most actions, other than voluntary actions, that would be contemplated on the local level. The group also expressed an interest in breaking into subcommittees after deciding the preliminary emissions reduction strategies, so that smaller groups could focus on specific strategies and their implementation issues.

Concern was expressed that the required US EPA schedule meant that the initial list of potential local control strategies must be developed by the next meeting of the Task Force. The Consultant will be preparing a refined list of local control strategies for this meeting. VDEQ will be providing information on their key activities supporting the EAP and VDOT will be providing information on projects planned in the area that may have a positive impact on emissions as well as VDOT policies that have been implemented in non-attainment areas.

An opportunity for public and stakeholder involvement was identified as the Local Government Forum, being held by the Northern Shenandoah Valley Regional Commission (NSVRC) on May 22, 2003. A presentation of Ozone Early Action Plan activities was tentatively planned for that forum.

The next meeting of the Task Force will be held on June 4, 2003 at 10 a.m.

Northern Shenandoah Valley Air Improvement Task Force Meeting
June 4, 2003
Meeting Summary

The Air Improvement Task Force met at 10 a.m. at the Grafton School in Winchester to continue discussions regarding the Ozone Early Action Plan for the area. 21 members were in attendance. The meeting was facilitated by Tim White of Wilbur Smith Associates.

The primary topic of discussion at this meeting was continued refinement of the listing of potential control strategies for the June 16th milestone submittal to US EPA. The draft list of strategies was modified to include several additional strategies recommended by Tom Ballou of Virginia DEQ.

The group also discussed a proposed public relations campaign and the possibility of obtaining funding for these efforts from the Virginia Department of Transportation. Patrick Barker presented a draft calendar for the proposed campaign.

Discussions also began on forming subcommittees for further refinement of the emissions control strategies. Under consideration are the formation of a Communications/Public Involvement subcommittee and a technical Review subcommittee. Each subcommittee would have a representative of government, business and the environmental community.

Initial steps are also being taken to establish a website for the Ozone Early Action Plan.

It was decided that the July meeting would be for local government officials and that the regular meeting of the Air Improvement Task Force would postponed until August.

Northern Shenandoah Valley Air Improvement Task Force Meeting
August 6, 2003
Meeting Summary

The Northern Shenandoah Air Improvement Task met at 10 a.m. on August 6 at the Grafton School in Winchester. Fifteen Task Force members were present and two joined by teleconference. The meeting was begun with a brief summary of recent actions, including the June 16th submittal to US EPA and the June 30 Progress Report to US EPA. Carla Berroyer of Wilbur Smith Associates, consultant to the Task Force explained the actions that need to take place within the next few months in order to satisfy the terms of the Early Action Compact (EAC).

Mr. Patrick Barker, Executive Director of the Winchester Economic Development Commission described a public awareness campaign that has already begun for the Ozone Action Days Program and detailed a press event that took place on August 4th. Local media representatives were introduced to the Ozone Action Days procedures and future media involvement and contacts were discussed.

Ms. Kathleen Anderson of US EPA, Region III gave a brief perspective from her agency's standpoint via teleconference. Ms. Anderson stressed that Early Action Plans must show an investment in strategies that will contribute to a reduction in ozone levels, even if the initial regional modeling does not indicate nonattainment of the 8 hour standard. The Early Action Compact process is not part of the Clean Air Act and the environmental community will be looking for serious strategies to address reduction of emissions. She also indicated that many EAC areas were initially focusing on mobile and area source emissions control strategies.

Mr. Tom Ballou of the Virginia Department of Environmental Quality (VDEQ) then brought the Task Force up to date on state and regional measures taking shape in the battle to improve air quality. In particular, he pointed out that the regional NOX control program for large utilities would be starting up next summer requiring between 50% and 70% NOX reductions from these large emitters. He also indicated that some local ordinances that might be considered in the Winchester-Frederick County area would have to be approved by the State Pollution Control Board.

The remainder of the meeting focused on an exercise to prioritize potential control strategies that had been submitted to US EPA on June 16th. Poster size enlargements of the control strategies listing were placed around the meeting room. Each Task Force member was given 10 stickers and asked to place a sticker next to the strategies that they felt best met the following criteria:

- Would contribute to a quantifiable emissions reduction.
- Would be feasible and/or realistic to implement by 2004 – 2007.

The Task Force them broke into two groups and discussed various aspects of the measures, including cost effectiveness, technical feasibility, public acceptance, implementation and whether or not a particular measure should be forwarded for further review.

A new list based on the results of this meeting will be prepared for the next Task Force meeting in September.

Northern Shenandoah Valley Air Improvement Task Force Meeting
September 3, 2003
Meeting Summary

The Northern Shenandoah Air Improvement Task Force met at 10 a.m., 9-3-03 at Grafton School in Winchester. The meeting participants focused on discussing and refining local emissions reduction strategies. The meeting was facilitated by Tim White of Wilbur Smith Associates, who provided each member with a questionnaire designed to initiate discussion of the strategies. Following is a summary of the questions posed to the Task Force and consensus approach, if it was reached.

Ozone Action Days

- Establish a program coordinator?
    - Duties
        - Public relations (tools/resources needed?)
        - Media relations (tools/resources needed?)
        - Coordinated outreach effort – public, industry, etc.
        - Liaison with press
        - Organize various programs
            - Ridefinders
            - Employer programs
            - Local government programs
    - Use VDOT funds?
    - How is the effort funded in the future?
    - Communications Subcommittee will meet about this position and develop a recommendation for the task force to consider at the next meeting.
    - What agency should house the coordinator?
        - Northern Shenandoah Regional Commission – most credible and already has funding sources available such as VDOT CMAQ funds and rural transportation grants
            - Full-time transportation planner will be filled soon
            - New clerical position will also be filled
        - Economic Development Commission
    - Can existing staff handle the program? Depends on the duties, but maybe so
    - Is a funding source(s) needed / available? Yes
        - CMAQ and other MPO grants may be options

* Lung Association supported a statewide event about ozone clean commute day last year – some resources and information from that campaign can be used

- Establish a program for employers? Yes
    - Working with DEQ
    - October 28 at 5:30 PM – Virginia Environmental Excellence Program – presentation on voluntary E2 and E3 programs (companies invited to Chamber of Commerce) – only 5 other states with a program as advanced as in Virginia
    - What industry is willing to do and can afford to do?
        - E2 & E3 programs need to focus on air (long-term program)
    - Will outreach to local employers be a part of this? Yes
    - Will there be any incentives?
        - Just recognition for reaching certain levels of cleanliness

        - VDEQ working to adjust laws that negatively impact the environment (regulatory flexibility)
        - Priority parking at offices
    - What types of actions do you want employers to take?
        - "Share a Ride with a Friend" Program – started by MPO soon
        - # registered ridesharing participants - ~ 800 people
        - # vanpools – Steve to provide
        - % workers commute – 18-20%
        - # manufactures E2 & E3 – Jeff to provide
        - home-based industry work force survey – Patrick will provide a copy
- Establish a program for area sources? Yes
    - Which area sources will be targeted?
        - Construction equipment
        - Other sources may be mobile
        - Will be a combination of voluntary and mandatory measures
        - Look at voluntary versus mandatory measures – what is the difference in the reductions? WSA to provide comparison (develop a range of reductions)
    - Frederick County and Winchester local governments need to lead by example – use VDOT standards as a starting point!
- Should Ozone Action Days measures be
    - All voluntary? Combination
    - Which types of actions could/should be mandatory?
        - Mandatory as much as possible under regulations (Dillon Rule)
        - Use VDOT as example for mandatory measures
        - Open burning mandatory (land clearing for open construction) – backyard not mandatory

Public Information and Education

- Will the same person coordinate Action Days and Public Information?
    - Probably not, but will depend on position
    - Communications Subcommittee will discuss and provide recommendation
- Will school-based programs be geared toward some grades?
    - All grades
    - SOL for air quality already included in Virginia tests
    - Website will have link for teachers
- What organizations might be willing to play a role?
    - Communications Subcommittee will investigate and report back
- What would be a reasonable budget? Don't know
- Would paid efforts be supplemented with volunteer efforts? Yes
    - www.italladdsup.com (Jeff Rezin recommended this site)
    - copying/mailing – industries could share the burden – also help with Powerpoint presentations at schools
    - local access TV programs

Bicycle / Pedestrian Measures

- How much funding do you think will be realistically available for bicycle projects?
    - Not certain – will pursue all available options
    - TEA 21 enhancement grants

    - Regional bicycle/ped. Plan – need connectivity (adopted by local jurisdictions into the Comp. Plan) – when VDOT does projects in the areas impacted by the plan, bicycles and pedestrians have to be considered in the design
- Does Task Force believe that additional bike paths or lanes may be constructed during the next 5 years?
    - Jim Lawrence not present – Check with County Planning and PDC
    - Patrick will provide information on the Winchester Green Circle – design and construction projects identified
    - Also, Redbud Run Greenway may provide information

Ridesharing/Carpooling

- How much funding is expected to be available for these activities on an annual basis?
    - $55,000 per year from VDRPT (can and will ask for more funding based on justification)
- Has NSVRC estimated the number of participants?
    - ~800 participants regionally – not broken out for Frederick County and Winchester
    - 14 vanpools registered at PDC (many, many more that are unregistered)
    - ? private vanpools
    - No other information on how this program has affected commute trips

Heavy Vehicle Measures

- Are engine idling restrictions for school buses and trucks expected to be mandatory?
    - Seek mandatory restrictions – no limits on mandating from a regulatory standpoint
    - 2 truck stops in Frederick County
        - Flying J (does more business in one day than Highpoint does in one month)
        - Highpoint
    - Winchester-Frederick County school buses
- Can Task Force comment on what type of incentives might encourage truck stop electrification?
    - First find out the universe
    - Look into merits
    - VDOT on program? Plans to equip VDOT rest areas?

Area/Stationary Sources

- Will open burning restrictions regulations be phased in by January 2006? Yes
    - Phasing ordinance is all that is needed – does not affect backyards
- Will restrictions be in place countywide? County and city wide

Lawn and Garden Equipment

- Lawn and garden equipment restrictions would be mandatory for state and local government? Definitely! – need to set example
- Voluntary for private businesses and citizens? Yes
- Area incentives envisioned for promoting low emission equipment? No

Other

- Patrick will send out list of State Rules
- Needs to be a two-pronged approach
    - Short term strategies
    - Long term strategies

Northern Shenandoah Valley Air Improvement Task Force Meeting
October 30, 2003
Meeting Summary

The Northern Shenandoah Valley Air Improvement Task Force met at the Grafton School in Winchester, Virginia at 9 a.m. on October 30, 2003. Twenty Task Force Members and media observers were in attendance. The meeting was opened by Patrick Barker, Executive Director of the Winchester-Frederick County Economic Development Commission. He was assisted by Carla Berroyer and Tim White of Wilbur Smith Associates (WSA). Environ Corporation staff, subconsultant to WSA joined the meeting via teleconference.

Mr. David Souten of Environ opened with a discussion of the emissions control strategies evaluation his firm is performing. Preliminary screening was performed on the list of potential control strategies selected by the Task Force. The list included 25 different strategies, including VOC measures based on the Virginia DEQ emissions regulations, seven transportation control measures, three heavy-duty vehicle measures, three area/stationary source measures, two ITS measures, two land use measures and one lawn and garden equipment measure.

Mr. Souten further explained that the screening criteria for control strategies were based on the approximate contribution levels to the VOC and/or NOX inventories and past experiences with program effectiveness and feasibility. Projects were ranked based on criteria that included technical feasibility, potential emissions reductions, timeframe considerations, and EPA acceptance. Mr. Souten then discussed the rankings and rationale for each measure evaluated with the Task Force.

Task Force Members engaged in a lively discussion of the screening results. It was decided that that the group would recommend measures that deserved additional evaluation from Environ. In addition, the Group also divided control measures into Phase 1 and Phase 2 categories. Phase 1 controls would be recommended for implementation by 2005 or sooner as part of the required Early Action Plan. Phase 2 controls would be considered for implementation after 2005.

Phase 1 controls included:

- Ozone Action Days/Public Awareness
- Vehicle Miles of Travel Reduction Programs
- Open Burning Restrictions
- Engine Idling Restrictions
- School Bus Engine Retrofits
- Voluntary Industrial Reduction Program

Phase 2 controls included:

- Ozone Transport Commission (OTC) Portable Fuel Container Rule
- OTC Architectural/Industrial Maintenance Coatings Rule
- OTC Mobile Equipment Repair and Refinishing Rule
- OTC Solvent Cleaning Operations Rule
- Truckstop Electrification

The recommendations of the Air Improvement Task Force will be made to the Winchester Common Council and the Frederick County Board of Supervisors in November.

The group also discussed plans for an open-house style event in December designed to share information with the public and local elected officials.

Northern Shenandoah Valley
Air Improvement Task Force
December 17, 2003
Meeting Summary

The Northern Shenandoah Valley Air Improvement Task Force met at10 a.m. at the Holiday Inn in Winchester Virginia. The focus of the meeting was discussion of the air quality modeling for the region being conducted by the Virginia DEQ as well as a discussion of emissions control strategies still under consideration.

Mr. Tom Ballou, from VDEQ, made a powerpoint presentation describing the status of the air quality modeling effort. Most of the base case modeling has been finished, but future case modeling, and modeling of the local emissions control strategies selected by the Task Force will not be done until January. Mr. Ballou also discussed recent findings from a University of Maryland study which concluded that the Winchester-Frederick County area receives significant ozone transport from other regions. The study also concluded that ozone concentrations were relatively easy to predict in this area and that the Mid-Atlantic weather is conducive to ozone formation. Mr. Ballou indicated that a combination of national, regional and local efforts would be needed to reach attainment.

A number of questions were posed regarding the location of the existing ozone monitor in the area. Task Force members were concerned that the placement of this monitor could be contributing to recorded exceedences. Ms. Ballou presented a brief overview of how monitor sites are evaluated. Mr. Ballou reported that there is actually better monitor coverage in this area than in other parts of the state. VDEQ participates in an annual review of monitors sites with US EPA, where potential site problems can be discussed.

The remainder of the Air Improvement Task Force meeting included a discussion of the pros and cons of the EAC process. The meeting was then adjourned for a Local Government Open House on Air Quality.

Northern Shenandoah Valley Early Action Compact
Local Government Open House
December 17, 2003
Meeting Summary

Local Government Officials from the City of Winchester and Frederick County attended an Open House designed to answer questions regarding the status of the Ozone Early Action Compact. The Open House was held at the Holiday Inn, Winchester and lunch was provided. The meeting was begun by Mr. Patrick Barker, Executive Director of the Winchester – Frederick County Economic Development Commission, who made a brief presentation on the value of the Ozone Early Action Compact to the area. After Mr. Barker's presentation, Ms. Carla Berroyer of Wilbur Smith Associates presented the refined list of emissions reduction strategies recommended by the Air Improvement Task Force. An update on the status of modeling required for the Ozone Early Action Compact was presented by Mr. Tom Ballou. An open discussion on aspects of all three presentations occurred. While local officials expressed a desire for more definitive information on the area's emissions and need for action, most participants voiced general support for the EAC process.

APPENDIX C

List of Emission Reduction Strategies Still Under Consideration
Northern Shenandoah Valley Ozone Early Action Plan
Winchester – Frederick County

Based on stakeholder consultation and taking into consideration available resources and political constraints, the following control measures under consideration can be reasonably implemented. It is anticipated these measures under consideration will assist Winchester – Frederick County in achieving and/or maintaining the 8-hour ozone standard by 2007.

Measure Under Consideration	Description of Measure	Non-Modeled Estimate of Emission Reductions (Year 2007 tpd)	Proposed Date for Implementation	Area of Implementation
Phase I (To be implemented before 2005)				
Ozone Action Days/Public Awareness	Public Awareness Program School-based Public Awareness Program Education and Promotion Campaign Employers-based Ozone Action Days Program Ozone Action Days for Area Sources Dynamic Message Signs Video Monitor System Deployment Lawn and Garden Equipment Usage Restrictions by Local Government	Combined Measures: 0.80 NOx 1.14 VOC	2004 2004 2004 2004 2003 2004 2004	City of Winchester & Frederick County
Vehicle Miles Traveled Reduction Programs	Enhance/Expand existing Northern Shenandoah Valley Reg. Commission Ridesharing Program Bicycle and Pedestrian Accommodation Promote Green space preservation Promote Mixed Use Development Promote Telecommuting	Combined measures: 0.28 NOx 0.38 VOC	2004 2004 2004 2004 2004	City of Winchester & Frederick County
Open Burning Restrictions	Adopt restrictions that prohibit open burning associated with land clearing and construction activities	0.002 NOx 0.004 VOC	2004	City of Winchester & Frederick County
Engine Idling Restrictions	Adopt truck and school bus engine idling restrictions	0.15 NOx 0.005 VOC	2005	City of Winchester & Frederick County

Measure Under Consideration	Description of Measure	Non-Modeled Estimate of Emission Reductions (Year 2007 tpd)	Proposed Date for Implementation	Area of Implementation
School Bus and Heavy Duty Fleets Retrofit	Retrofit school buses and heavy duty diesel engines	0.08 NOx 0.04 VOC	Phase-in 2005	City of Winchester & Frederick County
Voluntary Industrial Reductions	Implement emissions reductions through P2, EMS or EE agreements	0.04 NOx 0.34 VOC	Phase-in 2004	City of Winchester & Frederick County
Phase II (To be Implemented beyond 2005)				
OTC Portable Fuel Container Rule	Specifies performance standards for portable fuel containers and/or spouts, which reduce emissions from storage, transport, and refueling activities	0.004 VOC	post 2005	City of Winchester & Frederick County
OTC Architectural/Industrial Maintenance Coatings Rule	Requires reformulated coatings to meet lower VOC content limits than the current federal rule	1.14 VOC	post 2005	City of Winchester & Frederick County
OTC Mobile Equipment Repair and Refinishing Rule	Requires lower VOC contents for paints and use of improved transfer efficiency application and cleaning equipment	0.37 VOC	post 2005	City of Winchester & Frederick County
Solvent Cleaning Operations Rule	Establishes hardware and operating requirements for vapor cleaning machines used to clean metal parts. Volatility restrictions for cold cleaning solvents.	0.37 VOC	post 2005	City of Winchester & Frederick County
Truck Stop Electrification	Development of incentives to encourage electrification at truck stops to reduce engine idling	0.15 NOx VOC not estimated	post 2005	City of Winchester & Frederick County

APPENDIX D

State & Regional/National Ozone Precursor Control Measures that Support the Northern Shenandoah Valley Ozone Early Acton Plan

Emission Control Measure & Description	**Program Status** Implemented	Start	**Pollutant Controlled**	**Emissions Reductions**
STATIONARY POINT & AREA SOURCE CONTROLS				
Regional NO_X controls to reduce the transport of ozone ("NO_X SIP Call") **Description:** Emission rate & reduction requirements for large utility and industrial boilers. To be regionally implemented in most eastern states.	Federal rule & State regulation	2004	NO_X	Up to 30,000 tons per ozone season in VA (may vary due to trading)
Emission control area regulations for existing sources: Presumptive RACT requirements for existing stationary sources. Controls vary based on industrial activity and emission potential	State regulation	2005	VOC & NO_X	70 to 80% reduction based on industry type
Lower solvent paints for industrial purposes **Description:** National rule that requires lower solvent (VOC) content in architectural & industrial maintenance coatings.	Federal rule	2000	VOC	20% from uncontrolled levels
Lower solvent consumer products **Description:** National rule that requires lower solvent (VOC) content in a number of consumer products.	Federal rule	2000	VOC	10% from uncontrolled levels
Lower solvent industrial cleaning products **Description:** National rule that requires lower solvent (VOC) content in products used for various metal cleaning operations.	Federal rule	2002	VOC	10% from uncontrolled levels
Lower solvent refinishing products for motor vehicles **Description:** National rule that requires lower solvent (VOC) content in vehicle refinishing paints.	Federal rule	2002	VOC	36% from uncontrolled levels

ON-ROAD MOTOR VEHICLE CONTROLS				
National Low Emission Vehicle (NLEV) standards **Description:** National rule that requires more stringent light-duty vehicle tailpipe standards earlier than 2004	Regional agreement & state rule	1999	VOC & NO_X	70% cleaner than Tier 1 vehicles
Tier 2 motor vehicle emission standards **Description:** More stringent vehicle tailpipe standards for light duty cars, trucks, & SUVs along with lower fuel sulfur content requirements.	Federal rule	2004	VOC & NO_X	65% cleaner than NLEV vehicles
Heavy-duty diesel Truck engine standards **Description:** More stringent tailpipe standards for heavy-duty diesel truck engines along with lower fuel sulfur content requirements.	Federal rule	2004 and 2007	VOC & NO_X	40% cleaner engines in 2004 90% cleaner engines in 2007
OFF-ROAD VEHICLE & EQUIPMENT CONTROLS				
Phase 1 & 2 engine standards for small gasoline-powered engines **Description:** Emission standards for various small gasoline-powered off-road equipment engines used in lawn & garden, and light construction equipment.	Federal rule	1997 & 2002	VOC	30% in 2005
Engine standards for diesel-powered engines **Description:** Emission standards for various heavy-duty diesel-powered off-road equipment engines used for a variety of purposes such as construction & agriculture.	Federal rule	2002	NO_X	25% reduction in new engines by 2005
Engine standards for gasoline-powered marine engines **Description:** Emission standards for recreational marine vessel gasoline-powered engines.	Federal rule	1998	VOC	25% reduction in new engines by 2005
Engine standards for large gasoline-powered engines **Description:** Emission standards for various large gasoline-powered off-road equipment engines.	Federal rule	2000	VOC & NO_X	20% reduction of both pollutants by 2005
Engine standards for locomotive engines **Description:** Tiered emission standards for new or remanufactured locomotive engines implemented between 2001 & 2005.	Federal rule	2001 to 2005	VOC & NO_X	30% reduction by 2005