



## COMMONWEALTH of VIRGINIA

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December 31, 2005

Mrs. Judith M. Katz  
Director, Air Protection Division  
US EPA Region III  
1650 Arch Street (3AP00)  
Philadelphia, PA 19103-2029

Dear Mrs. Katz:

The purpose of this letter is to formally transmit the December 31, 2005 status reports and supporting documents for the Early Action Compact areas of Roanoke and the Northern Shenandoah Valley to EPA Region III. This submission is in response to the requirements of the EAC program and EPA guidance on this subject.

These status reports clearly document the great amount of effort and progress that has been made at both the local and state levels to meet all the commitments of the ozone early action plans for these areas. As a result of these plans, emissions in both areas have been substantially reduced and ozone air quality has significantly improved.

Please contact me if you have any questions concerning these reports, and thank you again for your support throughout this successful air quality planning effort.

Sincerely,

**/ S / TRB - December 31, 2005**

Thomas R. Ballou, Director  
Office of Air Data Analysis

Enclosures

Mrs. Judith M. Katz  
December 31, 2005  
Page 2 of 2

cc: M. Morris, EPA R3  
E. Wentworth, EPA R3  
D. Cole, EPA OAQPS  
J. Sydnor, VADEQ



# Ozone Early Action Plan

## Northern Shenandoah Valley

December 30, 2005

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

**RE: Ozone Early Action Plan for Northern Shenandoah Valley  
December 30, 2005 Progress Report Submittal to US EPA**

Dear Mr. Daniel:

This submittal includes the 5<sup>th</sup> semi-annual Early Action Compact status report for The Northern Shenandoah Valley Region in the Commonwealth of Virginia. Per the October 17, 2005 memo received from G.T. Helms, the following elements are included:

- Documentation of any progress from the period June 2005-December 2005, including:
- Any stakeholder meetings and other actions or activities that have occurred since June 30, 2005
- Any updates or revisions to modeling, technical analyses, or planning activities
- Progress toward completion of the December 31, 2005 EAC milestones—implementation of all quantifiable emission reduction measures and all “program-based” measures
- Identification of responsible party for implementation of each measure

What follows in this report is this brief introductory memo followed by actions taken to fulfill early action compact milestones by December 30, 2005.

The Winchester-Frederick County Economic Development Commission had previously taken the lead in organizing EAP efforts. After submittal of the Early Action Plan to the EPA & DEQ in March of 2004, a request for proposal was issued early 2005. The SHENAIR Institute at James Madison University competed, was awarded funding, and has taken the lead in implementing the ozone action days/public awareness Phase I strategies and ensuring all other Phase I strategies are implemented by the end of 2005 as the milestones set forth in the Early Action Plan specify. The program conceived to perform the outreach and administration/coordination is titled Valley AIRNow Air Quality Outreach Program, Winchester-Frederick County.

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

Sincerely,

Patrick Barker, AICP  
Executive Director



# **Ozone Early Action Plan** **Northern Shenandoah Valley**

5<sup>th</sup> Semi-Annual Status Report

for

## **The Northern Shenandoah Valley Ozone Early Action Compact Area**

December 30, 2005

## **PROJECT ORGANIZATION AND SUMMARY TO DATE**

This report represents the 5<sup>th</sup> semi-annual status report for the Northern Shenandoah Valley (NSV) Early Action Compact Area in Virginia, which consists of the City of Winchester and Frederick County. As such, this report documents the status and progress made towards the development and implementation of an Early Action Plan (EAP) to address ground level ozone air pollution in the area. Specifically, this report covers developments and activities during the period from January 1, 2005 to June 30, 2005.

The EAC process in the Northern Shenandoah Valley (NSV) area began back in the fall of 2002, with the establishment of the NSV Air Quality Improvement Task Force and the formal development and signing of the Early Action Compact in December 2002. Moving forward, a series of required documents have been produced, culminating in the submission of the official EAP in March 2004. Provided below is listing and timeline of the products and documents provided by the NSV EAC effort:

- **December 31, 2002** – Early Action Compact for the Northern Shenandoah Valley Area.
- **June 16, 2003** – Potential local control list submission.
- **June 30, 2003** – 1<sup>st</sup> annual status report for January to June 2003.
- **December 31, 2003** – 2<sup>nd</sup> annual status report for July to December 2003.
- **March 31, 2004** – Completed local Early Action Plan submitted to DEQ & EPA.
- **December 31, 2004** – State Implementation Plan
- **June 20, 2005** – 4<sup>th</sup> semi-annual status report for January to June 2005.

All these documents, along with other information concerning the EAC program and other EAC areas, can be viewed and retrieved at from the following EPA web site:

<http://www.epa.gov/ttn/naaqs/ozone/eac/index.htm>

Efforts on the local level have now moved towards completing the implementation of the emissions control measures and other actions committed to in the EAP.

The remainder of this status report documents the major actions, milestones, and events that have occurred since the submission of the semi-annual status report on June 30, 2005.

### **EVENTS SUMMARY (June to December 2005)**

Provided below is a listing of major meetings held and public events attended during the period covered by this status report toward the development and implementation of the local ozone air quality improvement plan and associated nonattainment implications:

**June 15, 2005** – Northern Shenandoah Valley Air Improvement Task Force Steering Committee meeting administered by Valley AIRNow.  
Pre-intervention phone survey completion deadline.

**July 6, 2005** – Northern Shenandoah Valley Air Improvement Task Force meeting

**July 20, 2005** – Winchester Red Cross Air Quality Presentation integration into CPR class

**July 26-July 31, 2005** – Frederick County Fair. Valley AIRNow manned a booth at this event that was attended by the general public.

**August 3, 2005** – Northern Shenandoah Valley Air Improvement Task Force meeting

**August 4, 2005** – Winchester Rotary presentation

**August 11, 2005** – Clean Commute Virginia Retreat

**August 24, 2005** – Valley Business Today Radio Show, Valley AIRNow was a guest on this local radio station

**September 7, 2005** – Northern Shenandoah Valley Air Improvement Task Force meeting

**September 10, 2005** – Holistic Health Fair. Valley AIRNow manned a booth at this event that was attended by health conscious citizens.

**September 13, 2005** - Meeting with SHENAIR Institute to discuss how to proceed with SHENAIR education funds. Emphasis: how to bring public education into the picture, specifically Winchester and Frederick County schools

**September 15, 2005** – Winchester Today community television show taping. A Valley AIRNow employee and a City Councilman explained the history behind Valley AIRNow and what the organization is.

**September 17 & 18, 2005** – Winchester Apple Harvest Festival. Valley AIRNow manned a booth at this community festival.

**September 23, 2005** – 2<sup>nd</sup> meeting with SHENAIR Institute on education funds. Decision to develop teacher development workshops (see Appendix A). Ironed out specific details of workshop parameters—content, length, target participants, etc.

**September 29, 2005** – Clean Commute Virginia Retreat

**October 8, 2005** – Green Circle Fall Fitness Fair. Valley AIRNow manned a booth at this event featuring nature walks and races.

**October 15, 2005** – Opportunity Winchester 2<sup>nd</sup> Annual Street Festival. Valley AIRNow manned a booth at this festival featuring many area nonprofits.

**October 20, 2005** – 3<sup>rd</sup> meeting with SHENAIR Institute on education funds. Discussed planning (see Appendix B). Outcome of meeting: Develop executive briefing, executive summary, and a budget for workshops.

**October 25, 2005** –

- Metropolitan Planning Organization Technical Advisory Committee presentation on air quality
- Cable Talk television show taping. Valley AIRNow was the main guest on this local television station

**October 26, 2005** – Frederick County Board of Supervisors presentation (presentation handout included in Appendix C)

**October 31, 2005** – Valley AIRNow presentation to the SHENAIR Institute on ozone season 2005 highlights and Valley AIRNow programming

**November 2, 2005 –**

- Northern Shenandoah Valley Air Improvement Task Force meeting
- Presentation to President of the Northern Shenandoah Petroleum Marketers Association

**November 8, 2005 –** Winchester City Council presentation (presentation handout included in Appendix C)

**November 9, 2005 –** Metropolitan Planning Organization Policy Committee Presentation

**November 15, 2005 –** Chesapeake Climate Action Network Town Hall meeting presentation on Valley AIRNow and health effects of air pollution

**November 17, 2005 –** Clean Commute Virginia Retreat

**December 5, 2005 –** Valley AIRNow submitted an article for the newsletter of the Shenandoah Valley Runner's Association, the largest running group in the Shenandoah Valley

**December 7, 2005 –** Winchester Medical Center's Continuing Medical Education Grand Rounds lecture series. Valley AIRNow will lecture on health effects of air pollution and how medical personnel can use air quality information to prevent sickness.

## **IMPLEMENTATION STATUS OF EARLY ACTION CONTROL MEASURES**

This section describes the status of each emission control measure included in the early action plan. Appendix A includes a tabular summary of each emission control measure, implementation dates, emissions reductions, and necessary resources.

### **Local Phase I Controls**

The Phase I strategies are to be implemented before the end of 2005. The text below, in addition to Appendix A, provides an update on the status of implementation for each emission control measure. The measures described below had the greatest public acceptance during the EAP control measure selection process, and will provide important foundation for any future efforts.

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

The Ozone Action Days/Public Awareness Control Measure was formally launched on April 6, 2005. Valley AIRNow is an education and outreach program supported financially by Winchester, Frederick County and the SHENAIR Institute at James Madison University. The SHENAIR Institute operates Valley AIRNow under the advice and consent of the Task Force. Valley AIRNow staff mainly performs activities falling under this control measure.

Control Strategies:

#### **General Public Awareness Program/Education and Promotion Campaign**

*Air Quality Action Day Program: Begun May 2005*

The Air Quality Action Day Program (AQAD) is a 5-pronged Program created by Valley AIRNow. The five separate groups that are alerted of an AQAD are media, educators, business (AIRCorps), medical staff, and government. The Valley AIRNow team alerts the Network by sending an email or fax press release (Appendix D) the day before ozone levels are predicted to reach Code Orange or higher levels. The community is alerted mainly through the media and business Networks. Local

area newspapers run stories and local radio stations runs PSAs. Businesses share the alert with all employees and if applicable, customers by offering incentives for participation in emissions reduction activities, displaying the AQAD Alert on their message boards, etc.

*Earth Day: April 16, 2005*

Valley AIRNow manned booth and provided information about ozone and health at the Winchester Earth Day event held at the War Memorial Building.

*Valley AIRNow Website deployment: Launched 2004, updated June 2005*

The Valley AIRNow website can be accessed at: [www.valleyairnow.com](http://www.valleyairnow.com). A few items on the website: background and historical information can be accessed via web. All meeting materials are posted on the website under "News and Updates." Also included is a "Kids Ozone No Zone" area featuring fun games kids can play to help teach air quality concepts. AIRCorps information and website sign-up is also available via web.

*Valley AIRNow email system deployment: Launched May 2005*

The community can contact Valley AIRNow via email at: [info@valleyairnow.com](mailto:info@valleyairnow.com).

*Air Quality Hotline: Launched May 2005*

The air quality hotline provides daily air quality forecasts, information about how to contact Valley AIRNow (email, website), and a messaging service. The hotline number is (540) 450-2207.

*Media Kits: Sent May 2005*

Media kits containing information about Valley AIRNow, Air Quality Action Days, what an Air Quality Action Day press release will look like, and general information about the AQI and ozone and your health were sent out in May of 2005 to print, radio, and TV media contacts (media kits available on our website: <http://www.valleyairnow.com/newsandupdates.html>).

*American Lung Association's Clean Commute Day 2005: May 6, 2005*

Winchester and Frederick County participation included coordinating with Virginia's American Lung Association and posting local area information on their website, working with a local newspaper reporter who published an article about the event on May 5, 2005, coordinating with the Valley Commuter Assistance Program to provide the public with ridesharing, park and ride, and guaranteed ride home program information, and coordinating with the NetTech Center of Winchester to provide the public with a free telework day on May 6, 2005.

*Materials development: Begun May 2005*

*Examples of materials (not comprehensive) developed by Valley AIRNow available on website:* <http://www.valleyairnow.com/newsandupdates.html>

For businesses:

Valley AIRNow developed "how-to's" for each Air Quality Action Day Network. These documents explain how the Network works, how to join, and instructs appointment of a Clean Air Coordinator. Brochure with AIRCorps registration forms, and manufacturing and petroleum company specific cover letters and registration forms were developed and deployed in August.

Valley AIRNow has developed 2 posters that AIRCorps members will post at their locations. The first poster lists tips to reduce emissions. The second poster is a personalized Air Quality Action Day poster. Valley AIRNow works with each business that signs up for the AIRCorps to personalize posters with what the particular business is doing to help preserve the air on Air Quality Action Days. These will be displayed only on Air Quality Action Days.

**For Schools:**

Valley AIRNow is currently developing curriculum that matches the Virginia Standards of Learning (SOLs) for use in Winchester and Frederick County Public Schools.

Private schools do not have to follow the Virginia SOLs, allowing Valley AIRNow to present directly to students on air quality. A presentation is currently under development, based on various examples of requested school presentations.

**For Government:**

"How-to's" of the Air Quality Action Day Network was circulated to the City Manager and the County Administrator. Clean Air Coordinators were given information on how to develop AQAD plans. Both the City and the County have developed an Action Day Plan. Both plans were included in a support letter sent to the Director of the Virginia DEQ (Appendix E).

**For Media:**

Media Kits containing: cover letter, Valley AIRNow kick-off letter, AQAD press release, and air quality information pamphlets and brochures. Several PSA's were also developed, but have not yet been implemented. Implementation of PSA use is anticipated for ozone season 2006, pending funding.

**For The General Public:**

An Air Quality Action Day brochure sponsored by Valley AIRNow has been completed and is being widely distributed. See Valley AIRNow website for example:  
<http://www.valleyairnow.com/newsandupdates.html>.

"Win-Fred, the Smog Dog," was purchased by Valley AIRNow. This big, yellow dog attends all functions aimed at students or children, as well as presentations given by the Valley AIRNow team and any other function mascot attendance is appropriate (picture available  
<http://www.valleyairnow.com/schools.html>).

*Coordination with various organizations to make air quality information available to public: May 2005*  
Winchester and Frederick County air quality forecasts are now available through the VA DEQ daily air quality forecast notification system and the American Lung Association's Smog Alert notification system. Real-time data is now available on the DEQ website at:  
<http://www.deq.virginia.gov/airquality/510690010.html>, on the Valley AIRNow website at:  
[www.valleyairnow.com](http://www.valleyairnow.com), on the Air Quality Hotline at: (540) 450-2207, on the EPA AIRNow site at:  
<http://cfpub.epa.gov/airnow/index.cfm?action=airnow.showlocal&cityid=376>, and on Weather Underground at: <http://www.wunderground.com/cgi-bin/findweather/getForecast?query=winchester%2C+va>. The Weather Channel will display "Valley AIRNow Air Quality Outreach Program" on the "Local on the 8's" air quality forecast segment whenever there is an action day forecasted. The local Winchester Newspaper, *The Winchester Star*, publishes air quality forecasts and information in their daily newspaper as well.

Unfortunately, there are no local television stations in Winchester or Frederick County. Therefore, Valley AIRNow is unable to get animated ozone maps for Winchester and Frederick County specific areas up on local news/weather channels. However, stations that cover the Winchester and Frederick County areas are showing ozone forecasts. WAZT has confirmed they are using air quality information in their 5:30 newscast.

*Pre- and post- educational intervention surveys: Pre- completed June 15, 2005. Post- to be implemented December 2005.*

Lord Fairfax Community College was subcontracted by Valley AIRNow to complete and compile data from phone surveys on at least 150 Winchester and Frederick County Residents in order to

measure the success of Valley AIRNow's ozone education and outreach messaging. Pre- and post season surveys available upon request.

#### *Radio Interviews*

WINC FM interviewed Mike Kiss of the Virginia DEQ and aired a story about the moderate air quality that we were experiencing on Monday, June 6, 2005. WINC FM interviewed Dan Salkovitz of the Virginia DEQ on Tuesday, October 4, 2005 and aired a story about the air quality that the area has been experiencing during that time.

Valley AIRNow works closely with WINC FM's promotions and marketing director to find ways to promote Valley AIRNow and it's messages.

#### *Newspaper articles*

The Winchester Star has published 6 articles related to Valley AIRNow and air quality issues in the area.

April 7, 2005: "Task Force's Focus Is Clearing the Air"

May 5, 2005: "Clean Commute Day Encourages Workers to Park Their Cars"

May 31, 2005: "Ozone Forecasters Keep an Eye on the Air"

July 7, 2005: " Study Targets Origin of Pollutants in the Air"

October 17, 2005: "City Celebrates All-America Status: Street Festival and Party Keep Spirit of Opportunity Winchester Alive"

October 26, 2005: "Group Claims Ozone Levels Are Improving"

Newspaper articles available on website: <http://www.valleyairnow.com/schools.html>

#### *Business Showcase 2005: June 8, 2005*

Valley AIRNow manned a booth at Winchester's annual Business Showcase. Air quality and public health information was available to other businesses and the public. The main purpose of Valley AIRNow attendance was networking. Valley AIRNow considers this event as the "kick-off" of the AIRCorps program. Staff visited every booth and explained the EAC, the current air quality concerns of the area, why business involvement is a necessity, and how they can join the program.

#### *Presentations to targeted groups on the local air quality initiative: First appointment August 4, 2005*

Valley AIRNow presented to Winchester's Rotary Club in August. A standard presentation was developed by Valley AIRNow staff outlining the environmental, social, health, and economic consequences of poor air quality. Two other rotary clubs have requested Valley AIRNow to present in January (Stevens City and Woodstock).

#### *Chamber of Commerce, Business Agenda Update publication monthly Valley AIRNow article submission: July 2005-ongoing*

The Winchester Chamber of Commerce publishes a Business Agenda Update monthly, which highlights upcoming and past events, new members, and City business. The Economic Development Commission (EDC) publishes a monthly update, and Valley AIRNow was granted permission to publish short monthly articles under the EDC updates.

#### *Shenandoah Valley Runner's Association Newsletter Submission, December 2005*

Runner's can be considered a "sensitive group" because they often perform strenuous exercise during times of peak ozone concentration. Valley AIRNow collaborated with the Shenandoah Valley Association to publish information on how runner's can reduce their risk to ozone related health effects in their monthly newsletter.

### School-based Public Awareness Program

#### *Educators Air Quality Action Day Program: Launched May 2005*

Media releases were developed and sent to Winchester Public Schools and Frederick County Public Schools the day before ozone levels are predicted to be Code Orange or higher advising the education community to share the alert and enact their individualized AQAD protocols.

Winchester Public Schools and Frederick County Public Schools devised Air Quality Action Day Plans. To view these plans, refer to Appendix F.

#### *Teaching the Teachers Initiative: A Three-Phase Educational-Outreach Plan: Launched September 2005, Fully Implemented February 2006*

SHENAIR Institute's mission has three parts: science, education, and public policy. Through science, SHENAIR seeks to improve the capacity for monitoring the air in the Shenandoah Valley, and hence our understanding of Valley air dynamics. Through education, SHENAIR seeks to increase public awareness of air quality issues in the Shenandoah Valley. Finally, through public policy, SHENAIR seeks to combine science and education efforts to improve air quality in the Shenandoah Valley. The current initiative, dubbed "Teaching the Teachers," uses established, successful JMU programs, and established educational practices (problem-based learning and lesson study evaluation methods) to reach tangible outcomes—real solutions in air quality and educational issues, with strong scientific grounding and sound long-term public policy implications.

See Appendix B (a-c) for a description of the three-phase educational-outreach plan.

### Employer-based Ozone Action Days/Ozone Action Days for Area Sources

#### *Valley AIRCorps: Launched June 2005*

Valley AIRCorps is the Business Outreach and Promotions Program of the Northern Shenandoah Valley Ozone Early Action Plan. Valley AIRCorps is a no-cost program that seeks to create, nurture and promote clean air partnerships with businesses in the Northern Shenandoah Valley. The program spreads the word about our air quality challenges, and provides valuable public health networking.

The center of the AIRCorps program is membership in the Air Quality Action Day Network (AQAD)—a network to inform the community of health risks on Code Orange Action Days or higher ozone level, and to take simple steps to reduce smog-inducing emissions. Businesses appoint a Clean Air Coordinator (CAC) who subscribes to the AQAD email or fax notification system. Valley AIRNow sends out a media release to each CAC the day before ozone levels are predicted to be Code Orange or higher.

The CAC will disseminate the information to all employees. The CAC tailors their businesses membership in the AQAD Network as suits their business. For example, HN Funkhouser is a member of Valley AIRCorps and has committed 16 gas stations and Handy Marts to providing incentives for those who carpool or refuel after dusk on AQAD.

Valley AIRNow highlights AIRCorps members who are doing their share to preserve the air.

#### *Automated Fuels Management Plan (AFMP): Fully implemented by Virginia DOT*

VDOT automated all 3 facilities located in the Northern Shenandoah Valley Early Action Compact Area. VDOT has also implemented a scheduled maintenance program to minimize air emissions from vehicles that refuel at VDOT refueling facilities located in the Northern Shenandoah Valley (Appendix G).

## Dynamic Message Signs

*Episodic Ozone Program in the Northern Shenandoah Valley EAC area: fully implemented by VDOT*  
VDOT will display ozone alerts on all variable message signs throughout the Winchester region to alert the region of potential 8-hour ozone standard exceedances on Air Quality Action Days (Appendix G).

*Local bank branch display of ozone alerts on Air Quality Action Days: Valley AIRNow currently examining feasibility through the Valley AIRCorps program.*

Local banks are receptive to using message signs on Action Days. Plans are currently underway to determine which banks would like to participate in this program for ozone season 2006.

## Video Monitor System Deployment

All Virginia DOT (VDOT) Traffic Cameras are available to the public through the VDOT Statewide Video Distribution Contractor, TrafficLand at [www.trafficland.com](http://www.trafficland.com). Valley AIRNow provided a link on their website ([www.valleyairnow.com](http://www.valleyairnow.com)) where the public can view traffic cameras. VDOT is in the process of completing the installation of 34 additional cameras, mostly along the I-81 corridor (runs directly through Winchester).

## Lawn & Garden Equipment Usage Restrictions

*City and County departments' restrictions on AQAD: Implemented June 2005*

Issuance of Memorandum (June 2005) specifying City and County departments to restrict publicly-owned lawn and garden gasoline powered equipment (Appendix E).

*VDOT implementation of an Episodic Ozone Program in the Northern Shenandoah Valley EAC area: fully implemented by VDOT*

VDOT restricts mowing in the Early Action Compact Area and fueling at VDOT gasoline facilities for non-emergency vehicles, encourages refueling prior to predicted ozone exceedence days, and postpones use of oil based paints and solvents on AQAD (Appendix G).

## **2. VMT Reduction Programs**

This strategy combines a number of individual programs/activities designed to reduce vehicle miles of travel (VMT).

Control Strategies:

### Enhance/Expand existing Northern Shenandoah Valley Regional Commission (NSVRC) Ridesharing Program: Ongoing

Earlier this year, a commuter bus service between Winchester, Front Royal, and Washington, D.C. was added to the NSVRC Ridesharing Program, or the Commuter Assistance Program. There are approximately 15 vanpools with each van having a capacity of 12-13 people.

The Valley Commuter Assistance Program (VCAP, [www.vcapride.virginia.gov](http://www.vcapride.virginia.gov)) is a very active ridesharing program in the Northern Shenandoah Valley. VCAP is currently working with a consultant, Rappahannock-Rapidan Planning District, and the Virginia Department of Rail & Public Transportation to learn more information from commuters traveling from Western Virginia to

Washington. This survey will provide us with the routes that they are taking and why, length of trip in time and miles, why they are choosing the mode that they are using, etc. The results will help plan additional improvements.

The Valley Commuter Assistance Program has plans for additional commuter service and is seeking funding to make it happen. A proposal to VDOT that additional signage be installed on I-66 and I-81 at exits that have park-and-ride lots to give them more visibility is being drafted. In addition, they are also considering to propose that the rideshare program name Valley Commuter Assistance Program be added to all of the blue and white highway information signs so people will know who they are calling if they call the telephone number currently placed on signs (For Rideshare Information). Appendix H includes a letter from the VCAP describing a few initiatives in support of emissions reductions.

All of the official and unofficial park and ride lots located in or around the Frederick County/Winchester areas are full to capacity, with the exception of one (poor location). The Winchester/Frederick County MPO is currently working with VDOT and VDRPT to try and resolve the issue.

The City began a transit expansion demonstration project at the beginning of the year by expanding and operating 2 City routes into the County. If the County feels the presence of public transit has value, the City will continue to expand the project.

#### Bicycle and Pedestrian Accommodation

Many of the current pedestrian and bicycle improvement projects throughout the Commonwealth are in the City of Winchester. In 2006, the City of Winchester will implement five projects that are solely for crosswalk, pedestrian signal, and minor sidewalk improvements. Most are associated with the Green Circle project, which is detailed below under the "green space preservation" sub-measure.

#### *Winchester Frederick Metropolitan Planning Organization Bicycle and Pedestrian Mobility Plan: Currently in Scope Development Phase*

The MPO Bicycle and Pedestrian Mobility Plan will attempt to merge planning facilities for the MPO localities. This plan will not just focus on recreation, rather its purpose is to address "real" transportation trips in the form of trips to school, shopping, work, etc. Therefore, implementation of this plan could have a much greater likelihood of reducing auto trips than a typical recreational bike and pedestrian plan. Funding is coming from VDOT (\$80,000 grant) and \$5,000 has been allocated in local matching funds for a total of \$85,000. Status of the project is scope development stage (see Appendix I).

#### *I-81/US 50 Abrams Creek Interchange Safety Project: Implementation 2006*

The 2006 I-81/US 50 Abrams Creek interchange safety project will include a sidewalk along the south side of Rte 50 over I-81.

#### *The Aylor Road project: Launch 2005, Implementation complete 2006*

In Frederick County, a 10' multi-use path is currently under construction with both phases of the "Aylor Road project."

#### *Walking & Wheeling the Northern Shenandoah Valley: A Planning Guide For Improving Local/Regional Pedestrian & Bicycle Access & Linkages For Recreation & Civil War Heritage Tourism: Adopted November 18, 2004*

A VDOT rural transportation grant was awarded to the Northern Shenandoah Valley Regional Commission and the Shenandoah Valley Battlefields Foundation. The grant endeavored to inventory existing bike routes and trails. Recommendations were also made as how to create a bike and

pedestrian plan for a community. Such a template allows communities to use the plan, tailor for their purposes, and work to establish a bike and pedestrian plan. Recently, Virginia now orders any new roads to take into account and integrate approved bicycle and pedestrian plans before construction.

Walking & Wheeling relates to movement within towns and town-to-town & related historic and recreation destinations. Project goals include: Improved health, welfare, and safety for pedestrians, sidewalk wheeled vehicles, and cyclists using the Virginia public transportation network, roads, sidewalks, and public pathways, in the Northern Shenandoah Valley (Appendix J).

The following planning issues are contained within the Walking and Wheeling initiative:

- “Living Towns” is a concept for creating towns that encourage a people-scaled sense of mobility and access. This concept forces one to question how the communities of the Region can foster vibrant, convenient, and safe pedestrian linkages. The Living Towns program has been in existence for nine years.
- “Town-to-Rural Linkages” is an idea that promotes connectivity between more settled or urban areas, and the surrounding countryside or wilderness. An example would be a trail connecting a downtown area to an outlying park or national forest.
- “Regional Corridors” are existing linear routes that connect various communities or other components throughout the region. Examples are the Appalachian Trail, Route 340, and Route 11.
- “Cultural Resources” is an idea that promotes the incorporation of important regional cultural assets such as the numerous battlefield sites and other historic sites into the development of a regional planning strategy.
- “Recreation” is a concept addressing the physical connections themselves and the places that they connect to as offering the potential for recreational activities in varied forms.

*Winchester Intermodal Transportation Enhancement Project: application submitted to VDOT Transportation Enhancement Program October 31, 2005*

The City of Winchester submitted four initiatives for the Transportation Enhancement Grant funding. Each of the three initiatives is part of a larger project to increase and enhance intermodal transportation with an emphasis on pedestrian and bicycle traffic (see Appendix K).

*Winchester-Frederick County Metropolitan Planning Organization (MPO) for the development of the 2030 Transportation Plan: Approved by Policy Committee on August 18, 2004*

One of the MPO’s main priorities of the long-range transportation plan is to “encourage the use of alternative modes of transportation such as bicycle, pedestrian, carpooling and ridesharing, public transit, air and rail.” This transportation plan goal and objective, along with the others, can be viewed at [http://www.winfredmpo.org/transplan\\_draft.asp](http://www.winfredmpo.org/transplan_draft.asp), under the Chapter 2: Goals & Objective link.

*Virginia Department of Transportation Bicycle and Pedestrian Program: adopted by the Commonwealth Transportation Board on March 18, 2004*

The Virginia Department of Transportation’s State Bicycle and Pedestrian Program promotes bicycling and walking within the state. The Policy for Integrating Bicycle and Pedestrian Accommodations provides the framework through which the Virginia Department of Transportation will accommodate bicyclists and pedestrians, including pedestrians with disabilities, along with motorized transportation modes in the planning, funding, design, construction, operation, and maintenance of Virginia’s transportation network to achieve a safe, effective, and balanced multimodal transportation system. For a detailed description of this innovative and progressive policy, visit <http://www.virginiadot.org/infoservice/resources/Policy%20on%20Integrating%20BP%20Accommodations.pdf>.

### *Virginia Department of Transportation Healthy Communities Initiative*

Winchester and Frederick County are working with VDOT, who participates in the Virginia Department of Health's Division of Chronic Disease's healthy communities project. This project, which is one of 11 projects nationwide being supported by the Center for Disease Control, focuses on making the places where people live, work and go to school healthier by introducing physical activity into the community environment.

Additionally, VDOT and the Department of Conservation and Recreation are working together to encourage non-motorized access as part of park master planning and the use of non-traditional transportation corridors, such as greenways, in our transportation mix. Greenways add to a healthy community by providing the opportunity to use alternate transportation modes and to have a place to exercise

### Promote Green Space Preservation

#### *Conservation Easement Program: Board of Supervisors (BOS) approved in July/August*

The program has recently been approved, but not yet been adopted. Once implemented, the County would set aside tracts of land to prevent their development. The County could potentially purchase easements or accept donated easements (i.e. family farm owners that wish to restrict future development).

#### *The Green Circle Bike and Pedestrian Trail Network: Ongoing*

The Winchester Green Circle project is working to create safe walking and biking routes that will encircle the City. Acres of Winchester's green and pleasant land will be preserved and maintained within the confines of the Green Circle by 2010. The circle is meant to run in tandem with biking and walking trail linking City points of interest. The circle will connect areas of historic, recreational, educational, and natural interest. The first mile of trail has been created along with the 25-acre Abrams Creek Wetlands Preserve. The first mile has also been designated as a permanent natural area. The Green Circle strives to bring safe bicycle and pedestrian facilities to the area, preserve streamside lands, and conserve natural resources.

The other greenway project, currently underway in the County, is called the Red Bud Run Greenway. This project, similar to the Winchester Green Circle project, is a multi-purpose project that will set aside 5-miles of greenway space along Red Bud Run. The Red Bud Run Greenway project is not as far along as the Winchester Green Circle project, but if everything comes together as is planned, the end result will be a large plot of preserved land that benefits the environment, area fisherman, and students at local high schools and Universities.

Winchester recently dedicated public open space for a portion of the trail in the Abrams Creek Wetland Preserve adjacent to the Morlyn Hills Subdivision that also ties into existing open space in the Meadow Branch Planned Development Community along Abrams Creek. Winchester also recently adopted Corridor Enhancement, or CE Overlay zoning standards and guidelines for each of the major tourist entryways (e.g. US Rtes 11, 17, 50, & 522) into the City's historic district. These standards and guidelines encourage walkable community design and encourage either preservation or establishment of larger natural areas along the entry corridors.

### Promote Mixed Use Development

Both comprehensive plans for the City of Winchester and Frederick County include provisions for promoting mixed use development. In light of recent approved development proposals, the BOS and Winchester common Council continue to show testimonials to promoting this activity.

An example in the City of Winchester is "the Smith Estate" proposal. This proposal, approved by Winchester City Council in late May 2005, calls for about 34 acres, which will feature commercial development alongside a mix of medium-density residential and retail development. In Frederick County, the "Crosspointe" proposal was recently approved. This proposal includes approximately 1,500 homes and 960,000 square feet of commercial space for both office buildings and retailers.

The City's density standards were recently relaxed for reuse of existing historic structures in the Central Business, B-1 District to promote upper-story residential use over shops on the ground level. Two projects have used the new provisions and many more are pending consideration.

Winchester recently drafted and secured Council approval of a text amendment allowing mixed use in the Highway Commercial, B-2 districts as a Conditional Use Permit. The amendment provides for high-density, multifamily units above commercial uses. The new provision will be used for two projects along Valor Drive.

Winchester recently amended the Land Use Chapter of the City's Comprehensive Plan and subsequently approved a major rezoning of land in the area of Amherst St & Meadow Branch Avenue. The Residential-Business, RB-1 zoning, permits high-density residential use over commercial use in a neo-traditional village approach on approximately 16 acres along a new roadway that will also include an extension of the 10-foot wide asphalt bike and walking trail known as The Green Circle.

### Promote Telecommuting

#### *Episodic Ozone Programs*

Each Air Quality Action Day Network (Business, Government, Educators, Media, Community) promotes telecommuting, especially on Air Quality Action Days.

#### *NetTech Center of Winchester*

The NetTech Center of Winchester (<http://www.nettechcenter.net/>) is a one-stop-shop for conducting business, complete with service and support. Customers save time and money on expenses such as business equipment, utilities, additional telephone lines, Internet service, office rental and maintenance. NetTech offers customers the option to lease a "ready-to-work" workstation as needed: hourly, daily, weekly, or monthly. Short-term, long-term or custom agreements are also available.

The NetTech Center of Winchester's complete lease package includes:

- Desk, chair and filing drawer space
- Workstation equipped with a personal computer networked to a password-protected NT platform and loaded with Win9x, Office 97, and continually-updated McAfee virus protection. System server is backed up daily.
- Telephone service with unlimited local calls to your workstation complete with passcoded voicemail box
- Full, unlimited, DSL high-speed Internet access
- Individual, suite-numbered mail delivery address
- Access to: laser and color printers, facsimile machine, photocopier, photo scanner, document shredder, on-site technical support, conference room, kitchenette, daily housekeeping, secured building/keycard entry all in a library-like, uninterrupted office environment.

The NetTech Center was a sponsor of Clean Commute Day 2005 and provided a free telework day on May 6, 2005. The Center is currently providing a free trial to all government employees through December 2005.

Valley AIRNow has partnered and often collaborates with the NetTech Center on various events. Many of Valley AIRNow's presentations include references and descriptions of the NetTech Center as an alternative to driving alone. Valley AIRNow also features NetTech on its website. Linda Whitmere, the Director, sits on Valley AIRNow's discussion group which was recently formed, and agreed to appear on a television show featuring Valley AIRNow to help explain and promote telecommuting to the general public.

The Center's funding is congressionally ordered, and is appropriated from their administrating agency, the General Services Administration. The contact provided for budget inquiries is Viki Reath: GSA Public Affairs, 202-501-1499, [viki.reath@gsa.gov](mailto:viki.reath@gsa.gov).

#### Other

Other Winchester initiatives to reduce VMT include: 1) require interparcel connectors in commercial developments to allow for more direct vehicle movement between different developments. This results in less dependency on vehicles idling while waiting to use busy public streets to get from one establishment to another; 2) require interconnected local residential streets in new subdivisions to avoid excessive trip lengths caused by "backtracking" on excessively long dead-ended streets, especially for public vehicles such as school buses, refuse and recycling trucks, mail/newspaper vehicles, etc.; 3) In many new subdivisions, the City also requires pedestrian paths connecting one development to another so that children and adults can walk to neighborhood parks instead of driving out on the major roadways to access the adjacent neighborhood; and 4) EVERY public and private street built in the City is required to have sidewalks (or combined bike/walk trails) along both sides.

### **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. This measure will be implemented by local ordinances.

Control Strategies:

*City and County departments restrictions on AQAD: Implemented June 2005*

Issuance of Memorandum (June 2005) specifying City and County departments to restrict burning associated with any City and County land clearing and construction projects, and fueling of gasoline powered publicly-owned vehicles on AQAD (Appendix E).

### **4. Engine Idling Restrictions**

Restrictions for engine idling was another strategy included, due in part to the heavily traveled I-81 corridor in NSV, 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 has not yet been determined and this measure has not been included in the technical analysis of this plan.

Control Strategies:

*City and County departments' restrictions on AQAD: Implemented June 2005*

The City and the County have taken the lead by issuing a memorandum (June 2005) specifying City and County departments to restrict idling of gasoline powered publicly-owned vehicles on AQAD (Appendix E).

## **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 NSV. In fact, the availability of funding to support the retrofit of school buses will give implementation of this measure a positive boost. DEQ has allocated up to \$475,000 in funding assistance to assist in implementation of this strategy.

Control Strategies:

*City of Winchester Public Schools voluntary diesel retrofit program: completed May 2005*

Winchester Public Schools partnered with the Virginia Department of Environmental Quality, the US EPA, and the Winchester-Frederick County Economic Development Commission in a voluntary program to reduce emissions from diesel powered school buses. Winchester Public Schools completed the retrofit on 18 out of the 31 city school buses with diesel oxidation catalysts. The project also reprogrammed the ECM on all (6 identified) eligible late model school buses to reduce NOx emissions by 25%. Emission benefit estimates: appx. 20% reduction in PM emissions, appx. 50% reduction in hydrocarbon emissions, appx. 40% reduction in CO emissions (Appendix L).

*Frederick County Public Schools voluntary diesel retrofit program: 124 will be installed by end of 2005.*

Frederick County Public Schools partnered with the Winchester/Frederick County Economic Development Commission, the Virginia Department of Environmental Quality, and the US EPA in a voluntary program to reduce emissions from diesel powered school buses. Emission benefits same as Winchester Public Schools (Appendix L).

## **6. Voluntary Industrial Reductions**

The emissions reduction benefits are sometimes difficult to quantify for this strategy, however, an initial voluntary approach seeking industrial reductions is a reasonable and practical way for an EAC 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 strategies for the area will be determined as agreements are reached with local industries.

Control Strategies:

*Valley AIRCorps: Launched June 2005*

Valley AIRNow has solicited Shenandoah Manufacturers Association members for AIRCorps membership. A cover letter and registration form was developed and sent to all Manufacturing Association companies on June 15, 2005. Member companies designate a Clean Air Coordinator, who will receive email or fax notification of an Air Quality Action Day (AQAD). The company can choose to formulate their AQAD program based on their business operations. Companies have the flexibility to implement any creative policy that reduces emissions during ozone season, or if the

company choose to be more proactive, year-round. Additionally, Valley AIRNow has promised AIRCorps members advice/consultation about how to further reduce their emissions. Particularly, Valley AIRNow offers to help members assess their vehicular practices to reduce emissions, and guidance on governmental incentives for implementing smart commute options or policies (e.g., tax breaks). A copy of the AIRCorps brochure is available on the website: <http://www.valleyairnow.com/aircorps.htm>, as well as a list of participating businesses: <http://www.valleyairnow.com/aircorpsmembers.htm>.

## **Appendix A**

Northern Shenandoah Valley Ozone Early Action Compact Area  
*December 30, 2005 Submittal*

The Northern Shenandoah Valley Ozone Early Action Compact Area December 31, 2005 Submittal  
**Summary Table**

Control Measure	Summary description of control measure	Program/ Measure Status	Implementation date	VOC/NOx Reductions	Resources	Additional Information
Ozone Action Days/Public Awareness Campaign	<p>A comprehensive local ozone action days program. This strategy is a combination of a number of measures that had been evaluated earlier as individual strategies and are currently being implemented, including:</p> <ul style="list-style-type: none"> <li>• General Public Awareness Program</li> <li>• School-based Public Awareness Program</li> <li>• Education and Promotion Campaign</li> <li>• Employer-based Ozone Action Days</li> <li>• Area Sources Ozone Action Days</li> <li>• Dynamic Message Signs</li> <li>• Video Monitor Deployment</li> <li>• Lawn and Garden Equipment Usage Restrictions for State/Local Governments</li> <li>• Other State/Local Government Restrictions (Refueling, Pesticides)</li> <li>• Voluntary restrictions by Public (lawn and garden, refueling, others)</li> </ul> <p>Further information can be found in the SIP submitted December 30, 2004 on page 13, and in Appendix B</p>	<p>Valley AIRNow, an education and outreach program, was created in April 2005 to accomplish this milestone. The program's activities can be broken down into two main categories: networks and information dissemination:</p> <p><b>Networks:</b></p> <p><u>Government Air Quality Action Day Network</u></p> <ul style="list-style-type: none"> <li>• Valley AIRNow collaborated with City and County officials to develop Air Quality Action Day (AQAD) Plans that (a) designated a City and County-wide Clean Air Coordinator that will disseminate Alerts before predicted high ozone days specifying what measures employees can take to protect their health and reduce their emissions for that day and (b) restrict City and County department activities, such as, mowing, open-burning, refueling and idling on Action Days.</li> </ul> <p><u>Schools Air Quality Action Day Network</u></p> <ul style="list-style-type: none"> <li>• Valley AIRNow is working with Winchester and Frederick County Public Schools to develop SOL matched air quality curriculum and Teacher Workshop Development Sessions.</li> </ul> <p><u>Media Air Quality Action Day Network</u></p> <ul style="list-style-type: none"> <li>• Valley AIRNow developed and distributed media kits resulting in the growth of a media network that supplements our public awareness campaign. Valley AIRNow was featured in at least 7 newspaper articles, 2 television shows, and multiple radio spots this past summer.</li> </ul> <p><u>Medical Air Quality Action Day Network</u></p> <ul style="list-style-type: none"> <li>• Valley AIRNow partnered with the National Weather Service and the Winchester Red Cross in an effort to incorporate air quality information in CPR class curriculum. We are also participating in the Winchester Medical Center's CME Grand Rounds program in order to provide physicians and support</li> </ul>	<p>Public Education and Outreach launched 2004 with creation of website, PSAs and Air Quality Action Day Alerts</p> <p>Valley AIRNow Air Quality Education and Outreach Program launched April 2005</p> <p>Full implementation completed September 30, 2005</p>	<p>Please refer to associated VDEQ document for all estimates on reductions.</p>	<p>Winchester, Frederick County and the SHENAIR Institute committed \$70,000 annually</p>	<p>Additional information about Valley AIRNow, including outreach materials, can be found at <a href="http://www.valleyairnow.com">www.valleyairnow.com</a></p>

<p>Ozone Action Days/Public Awareness Campaign (cont)</p>		<p>staff with air quality information they can use in a preventative manner.</p> <p><u>Business Air Quality Action Day Network</u> Valley AIRCorps, the business outreach program of Valley AIRNow, was launched this summer. More than 18 businesses throughout the area have joined the program to help get Action Day Alerts out to employees, customers, and families. Many of the businesses have also worked with the Valley AIRNow team to formulate and institute innovative programs that help reduce their emissions.</p> <p><b>Information Dissemination:</b></p> <p><u>Stakeholder Building</u></p> <ul style="list-style-type: none"> <li>• Valley AIRNow developed brochures, AIRCorps recruitment documents, news briefings, presentations, and various other informational materials that can be used for years to come.</li> <li>• Valley AIRNow attended or hosted: Earth Day, American Lung Association’s Clean Commute Day, Chamber Business Showcase, Frederick County Fair, Holistic Health Fair, Winchester Apple Harvest Festival, Green Circle Fall Fitness Fair, Opportunity Winchester Street Festival, etc.</li> <li>• Valley AIRNow gave presentations to civic groups and used it’s mascot the Smog Dog to reach children</li> <li>• Valley AIRNow worked to make local air quality information available to the public by designing and launching a website and air quality hotline, and coordinating with the DEQ Ozone Forecasting Program, the American Lung Association’s Smog Alert Program, EPA AIRNow, Weather Underground, and EPA’s Ozone Action Partnership.</li> </ul> <p><u>Coordination</u></p> <ul style="list-style-type: none"> <li>• Valley AIRNow coordinates and hosts monthly Air Quality Improvement Task Force meetings, leads the ozone action days/public awareness Phase I strategies and ensures all other Phase I strategies are implemented. Valley AIRNow prepared the EPA semiannual report.</li> <li>• Despite this summer being it’s first summer in existence, Valley AIRNow has already formed valuable collaborative partnerships with</li> </ul>				
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		organizations such as the Eastern Panhandle Regional Planning and Development Council, Virginia Clean Cities, the American Lung Association of Virginia, the Red Cross, Regional Libraries, the Winchester Green Circle project, the National Weather Service, etc.				
Vehicle Miles Traveled Reduction Programs	<p>Implementation of a comprehensive local VMT reduction program. This strategy combines a number of individual programs/activities designed to reduce vehicle miles of travel (VMT). These include:</p> <ul style="list-style-type: none"> <li>• Enhanced/expanded Northern Shenandoah Valley Regional Commission Ridesharing Program</li> <li>• Bicycle and Pedestrian Accommodation</li> <li>• Green Space Preservation</li> <li>• Promotion of Mixed Use Development</li> <li>• Promotion of Telecommuting</li> </ul> <p>Further information can be found in the SIP submitted December 30, 2004 on pages 13-14, and in Appendix B</p>	<p>Many programs or policies have recently been implemented, or are in development phases throughout the Winchester or Frederick County areas. With a rapidly expanding population, and past air quality issues, Winchester and Frederick County have make vehicle miles traveled reduction programs a top priority. Among specific recently implemented programs or policies are:</p> <ul style="list-style-type: none"> <li>• Expansion of the Valley Commuter Assistance Program (VCAP, <a href="http://www.vcapride.virginia.gov">www.vcapride.virginia.gov</a>) and new collaborative projects</li> <li>• Expansion of the City’s transit operations into Frederick County to determine if public transit has an added value for Frederick County residents</li> <li>• A Winchester-Frederick County MPO Bicycle and Pedestrian Mobility Plan focused on addressing “real” (versus recreational) transportation trips in the form of trips to school, shopping, work, etc.</li> <li>• An Interchange safety project that will include more sidewalks</li> <li>• An Aylor Road project that will include 10’ multi-use paths</li> <li>• A Walking &amp; Wheeling in the Northern Shenandoah Valley Plan that will allow communities to use the plan, tailor it for their purposes, and work to establish a bike and pedestrian plan that contains planning issues such as “living towns,” “town-to-rural linkages,” “regional corridors,” “cultural resources,” and “recreation.”</li> <li>• A Winchester Intermodal Transportation Enhancement Project to enhance intermodal transportation with an emphasis on pedestrian and bicycle traffic</li> <li>• The MPO 2030 Transportation Plan which focuses on “encourag(ing) the use of alternative modes of transportation such as bicycle, pedestrian, carpooling and ridesharing, public transit, air and rail.”</li> </ul>	Fully implemented September 30, 2005	Please refer to associated VDEQ document for all estimates on reductions.	<p>The Valley Commuter Assistance Program is funded by the state, with 20% local matching funds.</p> <p>Funding has been allocated for all bicycle and pedestrian accommodations, green space preservation initiatives and mixed use development initiatives described.</p> <p>The Net Tech Center of Winchester’s funding is congressional ordered and is administered by the GSA.</p>	Appendix I-K included in the December 2005 NSV Semi-Annual Status report

<p>Vehicle Miles Traveled Reduction Programs (cont)</p>		<ul style="list-style-type: none"> <li>• A VDOT Transportation Bicycle and Pedestrian Program including a Policy for Integrating Bicycle and Pedestrian Accommodations</li> <li>• A VDOT Healthy Communities Initiative focusing on making the places where people live, work and go to school healthy by introducing physical activity into the community environment</li> <li>• A Conservation Easment Program that will set aside tracts of land to prevent development</li> <li>• The Green Circle Initiative, which is working to create safe walking and biking routes encircling the City of Winchester</li> <li>• The Red Bud Run Greenway will set aside 5-miles of greenway space</li> <li>• A government initiative that dedicated public open space for a portion of a trail in a Wetland Preserve</li> <li>• Comprehensive plans for the City and the County that include provisions for promoting mixed use development</li> <li>• A recently approved text amendment allowing mixed use in B-2 districts</li> <li>• An approved Land Use Chapter of the City's Comprehensive Plan rezoning land and permitting high-density residential use over commercial use in a neo-traditional village approach</li> <li>• Valley AIRNow partnership with the NetTech Center of Winchester, a telework facility</li> </ul>				
<p>Open Burning Restrictions</p>	<p>Open burning bans/restrictions during predicted high ozone days and/or the ozone season.</p> <p>Further information can be found in the SIP submitted December 30, 2004 on page 14, and in Appendix B</p>	<p>Both the City and County departments issued a memorandum in June 2005 specifying restrictions on burning association with City and County land clearing and construction projects on Air Quality Action Days.</p> <p>Valley AIRNow hopes to integrate this voluntary restriction into AIRCorps programming in the future.</p>	<p>Fully implemented September 30, 2005</p>	<p>Please refer to associated VDEQ document for all estimates on reductions.</p>	<p>Coordination of plans to restrict open burning on Action Days Incorporated into Valley AIRNow budget</p>	<p>Appendix E included in the December 2005 NSV Semi-Annual Status report</p>
<p>School Bus and Heavy Duty Fleets Retrofits</p>	<p>Restrictions on public and private diesel truck idling. 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. The EAC jurisdictions are committed to limit idling of local government vehicles (including school buses) and to promote</p>	<p>They City of Winchester and Frederick County Public Schools participated in a voluntary diesel retrofit program beginning Summer 2004. A total of 142 diesel oxidation catalyts were retrofitted on City and County school buses. Additionally, reprogramming of all late model school bus ECM devices was completed.</p>	<p>Fully implemented September 30, 2005</p>	<p>Please refer to associated VDEQ document for all estimates on reductions.</p>	<p>The VA DEQ committed 475,000 to complete this project.</p>	<p>Appendix L(a) and L(b) included in the December 2005 NSV Semi-Annual Status report</p>

	<p>voluntary restrictions from privately owned vehicles and fleets.</p> <p>Further information can be found in the SIP submitted December 30, 2004 on page 14, and in Appendix B</p>					
Voluntary Industrial Reductions	<p>Voluntary reductions for local industries. The EAC jurisdictions will seek voluntary commitments from local industries to reduce ozone precursor emissions during the ozone season and/or on predicted high ozone days. This strategy will help increase awareness of the pollution problem and establish a relationship between local government and area industry.</p> <p>Further information can be found in the SIP submitted December 30, 2004 on page 14, and in Appendix B</p>	<p>Valley AIRNow is currently working with local industry through the AIRCorps program to formulate unique programs and policies for members that reduce emissions, especially on Air Quality Action Days. Given that voluntary industrial reductions are built into the Northern Shenandoah Valley's (NSV) Early Action Plan, Valley AIRNow has targeted members of the NSV Petroleum Marketer's Association as well as the NSV Manufacturer's Association for AIRCorps membership. To date, 6 petroleum companies and 1 manufacturing company have joined the AIRCorps program. Valley AIRNow will address the groups as a whole in January, hopefully persuading a higher level of participation.</p>	Fully implemented September 30, 2005	Please refer to associated VDEQ document for all estimates on reductions.	Coordination of AIRCorps member voluntary air quality improvement plans Incorporated into Valley AIRNow budget	Additional information about Valley AIRCorps, including program materials, can be found at <a href="http://www.valleyairnow.com/aircorps.htm">www.valleyairnow.com/aircorps.htm</a>

## **Appendix B**

Northern Shenandoah Valley Ozone Early Action Compact Area  
*December 30, 2005 Submittal*

## SHENAIR Institute

### An Evolving Blueprint for Development of a Series of Teacher Air Quality Workshops

Running Head: *Planning Document #2*

Prepared by Dr. Todd Hedinger and Dr. Cindy Klevickis, under direction of Dr. CJ Brodrick

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#### CONTENT:

Summary

Ideas for Planning Sessions, and

Initial Ideas for Workshop Parameters

Appendix A: Planning Document #1 (informal email)

Appendix B: “Clean Air Walking Museum” Program Ideas from John Skelly (informal email)

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#### Summary

SHENAIR’s mission includes developing reliable data about Shenandoah Valley air quality, educating the public and specific groups about air quality and its effects on people and the environment, and undertaking research and strategies to improve conditions. The current proposal addresses educational efforts only—not data development, nor improvement initiatives.

Education occurs both within formal boundaries (e.g., within educational institutions, with carefully constructed curriculum) as well as within the broader cultural context via outreach programming (e.g., media/press releases, awareness and informational campaigns, network formation, public presentations, etc.). The formal education and outreach efforts require different strategies and expertise, but are nevertheless most effective when they remain linked in time and philosophy.

A pilot set of efforts for SHENAIR educational outreach programming began in spring, 2005, when SHENAIR was awarded a grant contract with Winchester City-Frederick County as part of the Northern Shenandoah Valley Early Action Compact. An educational outreach program called “Valley AIRNow” was launched April 6, 2005. Outreach efforts included approaching the two School Districts (Winchester City Public Schools and Frederick County Public Schools) for their participation in select emissions reduction activities, letters of support of such activities, and a vaguely defined request for cooperation in education efforts. Valley AIRNow’s initial request for cooperative education efforts centered on seeking permission for AIRNow to deliver educational programs to classrooms and/or school-wide assemblies. Additionally, Valley AIRNow asked to provide brief teacher workday presentations, to educate teachers about the science of air quality and the conditions specific to the Winchester-Frederick County area, so that teachers could include such information in their curricular planning.

Both School Districts opted out of allowing Valley AIRNow direct student access, and teacher workday access was also effectively denied due to time and cost constraints. Instead, both Districts invited Valley AIRNow to submit curriculum for review, and possible inclusion within appropriate classrooms at the discretion of individual teachers. This option, however, seems inferior because, in failing to collaboratively include District teachers or administrators in curriculum development, it seems less likely the School Districts will fully understand, embrace, or implement the final curriculum.

In conclusion, the Winchester-Frederick County pilot programming has yielded useful information about the effectiveness of various outreach approaches. SHENAIR is now preparing to use these pilot lessons to develop regional education and outreach plans and strategies, and to address educational needs in Winchester-Frederick County. The current document begins laying out a proposal to hold a Teacher Workshop over one week in summer, 2006. That Workshop, in turn, is to be planned through a series of Planning Sessions in fall 2005-spring 2006.

### Ideas for Planning Sessions

Whether in education, data collection, or emissions reduction strategies, each step taken by SHENAIR should include clear mission statements. This document begins parsing two related initiatives: (1) Planning Sessions, to take place in fall 2005 and perhaps spring, 2006, and intended to plan the (2) Teacher Workshop to be held in summer, 2006. The mission for the Planning Sessions should ultimately be consistent with the mission for the Teacher Workshop. However, because the Workshop mission should be developed as an outcome of the Planning Sessions, no attempt will be made here to outline a proposed Teacher Workshop mission, except that which is needed for laying out planning parameters. The mission statement for the Planning Sessions follows:

#### Planning Sessions Mission

To develop a week-long Teacher Workshop on air quality which:

1. promotes long-term regional outreach, networking, and collaboration between and within SHENAIR and four selected school districts (Frederick County Public Schools, Harrisonburg City Public Schools, Rockingham County Public Schools, and Winchester City Public Schools);
2. provides four participating teachers (one from each District) with sufficient knowledge and understanding to enable them to perform essential liaison functions with their home districts; and
3. results in a Workshop plan sufficient to inspire full, confident and enthusiastic participation from the four Districts.

#### Planners

The Planning Sessions will call on one teacher from each of four selected Districts to construct the Workshop curriculum (total of four consulting teachers). The Districts, including Frederick County Public Schools, Harrisonburg City Public Schools, Rockingham County Public Schools, and Winchester City Public Schools, are selected because SHENAIR has already established some level of communication with them, and has already begun offering some level of services within their geographic boundaries.

### Logistics

The four Planners will be paid to come to JMU/ISAT for one hour, one day per week, for two-to-four consecutive weeks, depending on how quickly we assemble the workshop plans. Besides paying the teachers directly, their supporting schools/Districts will also be provided funds to pay for substitutes, if necessary.

### Materials

Planners, working with SHENAIR personnel (Todd and Cindy) will be supplied with basic content (chemistry and meteorology of air quality), a map of pertinent Virginia Standards of Learning, examples of existing curricula, links to web sites of existing programs, and so on. Some elements of Workshop curriculum (e.g., inclusion of training in GIS databases and GPS techniques and equipment) are already determined to be necessary and desirable.

### Desired Outcomes

Planning Sessions are expected to result in two kinds of outcomes: (1) partnerships and (2) products.

#### Partnerships

In keeping with the mission statement, we expect the Planning Sessions to help establish the foundations for strong, long-term collaborative ties between SHENAIR and the four selected Districts. It is further hoped that the four Districts will develop strong ties between each other, particularly within shared geographic boundaries (Harrisonburg/Rockingham County, Winchester/Frederick County). The SHENAIR/District ties should be evidenced through increasing collaboration in educational efforts, direct delivery of finalized curriculum to students in the targeted Districts, and through other, to-be-determined accountability measures (see Products, below, and Mission, next section).

#### Products

As an outcome of Planning Sessions, we expect to develop a Teacher Workshop curriculum. The workshop should:

- last one week (40 hours, using ISAT as a commuter campus);
- serve 20 teachers (5 from each selected District, tangibly rewarded through honoraria or credit hours for their attendance);
- stay within gross budget parameters (roughly \$30,000-\$50,000);
- result in tangible content, materials, and pedagogical guidance for teaching across grades K-12 (through development of teaching modules);
- inspire interest and enthusiasm;
- create some type or types of accountability measure(s) to demonstrate program efficacy and to stimulate innovation and use of the curriculum (see Mission, below); and
- help establish the relational foundation on which long-term partnerships can flourish, particularly by providing the short-term springboard for launching the curriculum in the targeted Districts beginning academic year 2006-07.

### 3. Initial Ideas for Workshop Parameters

Many initial ideas for workshop parameters are embedded above, such as participants (20 teachers, 5 from each District), budget (roughly \$30,000-\$50,000), and required content (chemistry and meteorology of air quality, use of GIS database, use of GPS equipment). Still, it is best to lay out all such assumptions as clearly as possible.

#### Mission

As stated above, a full mission statement should be developed as a result of the Planning Sessions. Roughly, it is clear the Workshop mission should include statements reflecting desired educational goals, and desired outcome/product goals.

#### Outcome/Product Goals as Mission

Regarding the outcome/product goals, the Workshop should result specifically in some kind of accountability measures to offer SHENAIR and the four Districts some means of determining, at a later date, measures of efficacy of this training initiative.

Standard accountability practices usually require setting goals and objectives, and then criteria for completion. The standard approach has its strengths, such as providing clarity and focus. But it also has its weaknesses, particularly in that many kinds of goals can be fairly intangible and hard to measure (e.g., promoting long-term collaboration; it is hard to concretize the components of collaboration).

SHENAIR wishes to encourage innovation and creative inclusion of air quality into a range of instructional settings. Additionally, SHENAIR wishes to create and nurture long-term, mutually satisfactory relationships with the four targeted Districts. These kinds of vague goals allow for different accountability procedures to be developed. Accordingly, the Planning Session planners will be asked to develop novel accountability measures intended to inspire creativity, collegiality, and long-term collaboration.

#### One Product Idea: “Closing the Loop” Planning

One idea for the outcome/product is to require participating Workshop teachers to “close the loop” in some fashion—that is, to take back to their home Districts and home Schools knowledge of the air quality challenges we face in our area, and some “how-to” plan or plans for implementing changes in their classrooms, Schools, and/or Districts to start acting constructively to address the challenges. These changes would most likely be behavioral, and thus could be easily monitored and recorded. Accountability could require SHENAIR to send representatives to classrooms at some future point, perhaps to witness the “how-to” initiative, observe classroom instruction, or participate in a specific module.

#### Another Product Idea: “Air Quality Walking Museum”

Another kind of accountability measure could be to ask Workshop participants to lend ideas towards a “long-term deliverable”—that is, a tangible, permanent product. One idea for such a SHENAIR long-term deliverable is creation of an outdoor “air quality walking museum” installation at JMU, perhaps with satellite installations within one or more of the four Districts (those satellite installations could be the Districts’ “closing the loop” feature). This project would be long-term, and would seek to incorporate local geography as a window, so to speak, on understanding air quality. For example, a “clean air walk” could be established, leading participants on a walking tour between the I-81 overpass and the Arboretum. At the overpass,

perhaps a traffic count station could be installed, allowing school children, JMU students, and other interested passersby, to stop and reflect on the number and types of vehicles passing underneath the structure. The count taken at that station could then be plugged in at a next kiosk or station, in which emissions guides could allow users to estimate the amounts and types of emissions entering into our air at that site. Further along, an alternative fuels station could be set up, perhaps near the windmill. A station asking “what can you do?” could be located next to a bus stop and/or parking lot, encouraging users to take mass transit, ride their bikes, or walk. A haze, or opacity, station could be included at some point. In short, perhaps Workshop participants could be asked to help develop a Clean Air Museum as a long-term project. Goals, objectives, and criteria could be developed specifically to measure progress on the museum. The ideas given here were all proposed by Cindy; please note that in Appendix B are examples of a similar sort of installation described by Dr. John Skelly.

### Participants

Twenty teachers (five from each of the four Districts). The teachers should represent grades K-12.

### Disbursement/Attendance Incentives

For their participation, teachers are to receive three (3) hours graduate credit, or if they choose, an honorarium of \$500 (slightly more than the equivalent monetary value of three credit hours).

### District Incentives

The incentives listed above are aimed at encouraging teachers to participate in the Planning and Workshop. We believe it might be wise to try and provide some incentive to the Districts to participate as well. Accordingly, assuming our budget can support it, we propose encouraging full participation from the Districts with two additional incentives.

First, we propose to provide up to five (5) GPS units to each District, according to the number of teachers they send to the Workshop. Thus, if a District sends four teachers, they will receive four GPS units, and so on.

Secondly, we propose to supply each participating District with one (1) HACH air quality sampler.

### Content

Content reflects both what is taught, and what is done (time set aside for specific activities resulting in deliverable products). We strongly believe content should at least include elements from the following areas:

- TO BE TAUGHT. Chemistry and meteorology of air quality (the physical, but not biological, science; including use of scientific equipment);
- TO BE TAUGHT. Use of GIS databases (a powerful means of recording and tracking air quality data, which occurs across geographic area in climatologic region across real time);
- TO BE TAUGHT. Use of GPS equipment (geography and meteorology are the foundation of climate and regional air quality);
- TO BE TAUGHT. Community activism/public education and awareness of air quality issues (the politics, economics, public health and public policy of air quality);

- TO BE DONE. Basics in grant writing, with an emphasis on developing at least one grant per District (air quality science is expensive; a desired outcome would be finding funding sources for equipment and materials); and
- TO BE DONE. Module production (identifying and possibly combining content areas for inclusion in K-12 instruction; developing the modules to convey the content).

Additional content could come from a range of sources, such as:

- language arts—the use of air quality as literary device;
- biology—the health effects of air quality on plants and animals;
- physical education—how behavior, such as bike riding, can improve air quality and health.

Planning Session teachers should determine what the most useful content areas and combinations will be. SHENAIR will then engage the qualified personnel to deliver the content. Workshop participants will be responsible for digesting the content into modules appropriate for selected grades, and for developing viable grants to help fund education initiatives in their home Districts.

Finally, Planning Session teachers will also determine how accountability measures will be built into content (e.g., Clean Air Museum, “closing the loop,” standard practices, etc.).

### Logistics

We propose the Workshop be held on JMU’s campus, and that participants commute to campus. The commute from Winchester is 70 miles, so we need to keep the Workshop hours set to allow commuting (e.g., 9:30-4:30, M-F). If our Planners believe the Winchester/Frederick County teachers would prefer to be housed on campus, or in Harrisonburg, we can explore that possibility.

### Instructors

Instruction will vary depending on the guidance offered by the Planners. Still, a few parameters can be assumed. If GIS and GPS is incorporated, we would need instructors with formal experience and training in those systems. Qualified personnel could include Kai Degner, Mark Blanchard, and Chelsea Jenkins.

For those periods in which Workshop participants are working in computer labs, Teaching Assistants should be employed at a ratio of 1-to-10 participants, requiring a total of two Assistants per computer class session.

### Budget

At this point, we understand we have up to \$50,000 to put towards this project. However, the Planning and Workshops should be able to be brought in for under that amount, leaving some amount remaining for further work in the 2006-07 budget year. It seems wisest to safeguard some of that operating budget.

Appendix A: Informal Email (Planning Document #1)

A two part message--Cindy and CJ first, then Chels (calendar). Thanks for wading through all of it, complicated as it is!

---

CJ and Cindy--

First, HI!, and thanks for the lunch yesterday, Cindy, and thanks for the opportunity to meet and start thinking out loud together, CJ. I'm excited at the possibilities. Chels, you met Cindy at room 246 last week, when she got our PowerPoint up and running. Still, I'm glad to cybernetically introduce you again.

Okay ... Chelsea and I are working out a proposed calendar for Valley AIRNow Air Quality Outreach activities between Sept. 30, 2005-May 1, 2006. One element missing on the calendar was any specificity about my curriculum development activities. As I think I said yesterday in our meeting, I've been struggling with the issue because it has not included any teacher or school/District involvement, and for it to work at its optimum, we need their involvement. Yesterday, we came up with a really good solution, I believe--the Teacher Workshop Development sessions. Below, in Chels' calendar message, is a proposed rough outline and timeline for the Teacher Workshop Development sessions (rough because it lacks specificity).

--Cindy, I need to know if the outline fits your understanding of what we talked about, so please weigh in "yay" or "nay." At several points below, I call for your input as to parameters. Also, I have on my calendar that we are meeting Friday, Sept. 23, 1:00, in room 246.

--CJ, does this comport with your understanding, and will this memo serve for you to cut and paste your report to Congressman Wolf? If you need, I can type up a cleaner copy. Let me know.

Now for Chels' "calendar" part...

---

Chels--

Just got off the phone with you. You asked me to look for the fuzzy area on the proposed timeline where curriculum development comes in and try and put some more concrete dates/times next to it. On the proposed outreach calendar you simply say something like "work with area schools on curriculum development; ongoing till April." In the color-coded calendar, you don't say anything at all about it (I assumed it's lumped with the Nov. "begin public awareness campaign planning," but that's probably not right).

I emailed to you, two days ago, my corrections as I saw fit to the two docs, and didn't specify any more directly in them where or how curriculum development takes anymore of a concrete set of parameters (finish dates, presentation venues--to teachers? students? workshops? assemblies? postings on BlackBoard? etc.).

PARAMETERS: CINDY, NEED YOUR INPUT!. At this point, let's insert:

--four sessions, two-three hours each, spring Teacher Workshop Development sessions (Cindy, is that adequate time per session?), within

--a pilot geographic region (one teacher each from R'ham Co., Harrisonburg, Winchester and Frederick Co.--Cindy, do you agree?).

--Let's say those Teacher Workshop Development sessions will take place around:

Last two weeks of Feb.

First two weeks of March.

Strictly speaking, the Teacher Workshop Development times are a SHENAIR gig, but it's all closely related to what Valley AIRNow has been doing, and it all will flow together in summer workshops anyway--workshops that pay for Winchester and Frederick Co. teachers to come to H'burg for some unspecified number of consecutive days of training.

CONTENT PARAMETERS: The Teacher Workshop Development sessions will be an exercise in curriculum assembly.

--We'll bring the teachers together, give them the basic content, then give them the tools (SOL maps, existing curriculum, existing links to programs, etc.), and ask them to put together the ideal "here's how" for their colleagues (including number of days necessary for training). Make sense?

CALENDAR PARAMETERS (Chels only!). So, between now and the four Teacher Workshop Development sessions, I will (a) complete mapping of SOLs (I'm into 5th grade now, with 6-8, then the specializations of HS to go) ... let's say, to be completed end of Oct., (b) assemble existing curriculum and links (November), (c) contact pilot regional representatives (November), and (d) Dec.-Jan., finalize details as to where, who, and what of Teacher Workshop Development sessions.

Does this all make sense? Does it sound right? By far, the biggest advantage to going this route is school buy-in: by including teachers from our targeted Districts in specific development activities (first, the "how-to" sessions, then the workshops to follow in summer), we have ready-made relationships with ambassadors from those specific Districts. They are much more likely to act and move forward with such hands-on (and paid) attention.

Thank you ALL for your patience with this complicated message!

Todd

Appendix B: Informal Email

From: JOHN M SKELLY [mailto:jms34@psu.edu]  
Sent: Wed 10/5/2005 8:26 AM  
To: Jenkins, Chelsea  
Subject: RE: Air Pollution Workshop

Chelsea: Wow! What a spectacular reply....I've quickly reviewed your web-sites and am very impressed with the overall activities of your Outreach Programs! There is a lot we have in common and it would be wonderful to meet sometime for further discussions.

For example, in 2002-2004 we initiated and successfully established an Air Quality Learning Center at Penn State University within the "Arboretum at Penn State" for just such outreach purposes. Each summer season, via a walking path through bio-indicator plant gardens and associated display panels, and a lecture pavilion, the visiting public and school classes become better informed with up-to-date and factual information about the effects of air pollution on plants. Several other amenities include a lighted LED panel of the current air quality and meteorological parameters displaying real-time data from the state-run monitoring station at the site and open-top chambers with charcoal filtered and non-filtered air passing over the plants therein. The Center has continued to be very successful...upon my retirement, it was very tough to leave the Center behind!

So, as time permits perhaps we could meet at Big Meadows or Skyland yet this fall season for a lunch. My wife Linda and I enjoy the travels to the Park and it would be easy to set this up depending upon your schedule. We are off tomorrow to Clemson, SC for a visit with one of our four "southern" families and return next Tuesday. Perhaps soon thereafter we could find a time for a visit within the SHEN.

Best wishes,

John

# SHENAIR Institute

## Executive Overview: A Three-Tiered Approach to Education-Outreach

Prepared by Drs. Todd Hedinger, Cindy Klevickis, and CJ Brodrick

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### **Mission Statement**

SHENAIR Institute's mission has three parts: science, education, and public policy. Through science, SHENAIR seeks to improve the capacity for monitoring the air in the Shenandoah Valley, and hence our understanding of Valley air dynamics. Through education, SHENAIR seeks to increase public awareness of air quality issues in the Shenandoah Valley. Finally, through public policy, SHENAIR seeks to combine science and education efforts to improve air quality in the Shenandoah Valley.

The current overview describes the three-tiered approach SHENAIR proposes to make towards its education mission in the 2005-2006 budget cycle.

### **The Three Tiers**

1. **Information Dissemination.** SHENAIR proposes to spread information and understanding about Valley air through a monthly newsletter and through an interactive website (under development).
2. **Air Window.** The water quality arm of JMU's ISAT program uses a GIS data base called "water window" to facilitate understanding of water quality issues in the Shenandoah River system. SHENAIR proposes to complement that system with a similar data base, dubbed "air window," using air quality data in a GIS application. Together, the data bases will provide a powerful and unique means of understanding water- and air-quality interactions. Furthermore, as the water window has demonstrated, people are interested in, and will use, the data. We anticipate this data base will serve users based in diverse settings, including educational, industrial, advocacy, and government and regulatory.
3. **Teacher Training.** A teacher training initiative, dubbed "Teaching the Teachers," proposes to use existing, successful JMU programs in tandem with established educational approaches to first train teachers in understanding air quality, and then to translate that understanding into tangible outcomes—curriculum aimed to educate children in two Shenandoah Valley Municipal Planning Organizational Districts (Winchester/Frederick County, and Harrisonburg/Rockingham County). This initiative is described in fuller detail in the next enclosure.

## SHENAIR Institute

### Teaching the Teachers: A Problem-Based Initiative Toward Real Air Quality Solutions

#### Executive Summary

Prepared by Drs. Todd Hedinger, Cindy Klevickis, and CJ Brodrick

---

#### **Mission Statement**

SHENAIR Institute's mission has three parts: science, education, and public policy. Through science, SHENAIR seeks to improve the capacity for monitoring the air in the Shenandoah Valley, and hence our understanding of Valley air dynamics. Through education, SHENAIR seeks to increase public awareness of air quality issues in the Shenandoah Valley. Finally, through public policy, SHENAIR seeks to combine science and education efforts to improve air quality in the Shenandoah Valley.

The current initiative, dubbed "Teaching the Teachers," uses established, successful JMU programs, and established educational practices (problem-based learning and lesson study evaluation methods) to reach tangible outcomes—real solutions in air quality and educational issues, with strong scientific grounding and sound long-term public policy implications.

#### **Problem Statement: Air Quality Is a Difficult Concept of Complex Interactions**

Of the three life-supporting media (air, water, and land), health of the air is the most difficult to qualify—that is, to determine and disseminate what makes for healthy air. The single biggest reason is that habitats for living creatures are either aquatic or terrestrial: if the habitat is contaminated, indicator species are adversely affected. In short, because they support varieties of species, we receive a direct biological assessment of the health of the water or land. But with air, there are no purely atmospheric habitats—no indicator species, "canaries in the coalmine," to tell us if the air is unhealthy.

Without direct biological assessment, we must use other means to understand air quality. Accordingly, the science of air quality derives from two root sources: chemistry and meteorology. The chemical qualities of specific contaminants/emissions include, among others:

- compounds which can form between gases and particulates and their requisite formative circumstances (temperature, sunlight, pressure, concentrations, etc.),
- the shelf-life of emissions and compounds,
- the effects of emissions and secondary compounds on plant- and animal-life, and
- the dispersal rates for gases and particulates across a range of physical factors (e.g., presence of other gases and particulates, water vapor, sunlight, etc.; temperature; concentrations; pressure; weight; etc.).

The meteorological conditions which affect air quality include, among others:

- air speed,
- prevailing wind direction,
- stratification and temperature grades,
- precipitation, and
- integrity of atmospheric structures and functions (e.g., thinning of stratospheric ozone and its consequences on filtering ultraviolet light; mixture of gases and their heat-retention characteristics).

Furthermore, meteorological conditions are subject to continuous change, complicating analysis and ultimate prediction. Finally, meteorology must be contextually understood relative to local and regional climate, geography, and resulting native habitat, and from there, extrapolated to global patterns and interactions. The contextual nature of meteorology is another way of acknowledging the complex interactions that arise between natural and built environments. For example, new housing developments require new roads. The developments and roads represent increased impervious surfacing, causing more water runoff/less water infiltration. The roads represent greater vehicle miles traveled, indicating more emissions/greater chemical burden on aquatic and terrestrial habitats, as well as more heat-trapping gases in the atmosphere. The roads represent greater heat-energy dispersal; sunlight on greenspace allows absorption of ultraviolet light, while sunlight on asphalt turns into heat.

To sum up, air quality is difficult to measure, and its complex nature makes it difficult to understand and disseminate. The current project seeks to make air quality information accessible to school children in two Shenandoah Valley Municipal Planning Organizational (MPO) districts (an estimated 40,000 children from Winchester/Frederick County and Harrisonburg/Rockingham County), by tapping school teachers to develop, implement, and evaluate new curriculum.

### **Teaching the Teachers: A Three-Phase Educational-Outreach Plan**

Teaching the Teachers will proceed in three phases. Phase 1, to take place winter, 2005, involves bringing four teachers from the four area MPO school districts to JMU's campus, to help construct a week-long workshop curriculum for Phase 2. Construction will use an educational approach called "problem-based learning," in which the teachers will be given the real problem of the complexity of air quality science, and tasked to iron out a workshop curriculum that can break the problem into digestible units.

Phase 2 involves recruiting 5 teachers from each of the four area MPO school districts, for a total of 20 teachers, to participate in the week-long workshop, to take place over summer, 2006. The workshop will be held under the auspices of JMU's Content Academy, an established, well regarded teacher renewal program. By proceeding through the Content Academy, other collaborations will be made possible with existing, successful teacher development programs and initiatives within JMU's College of Psychology and Education.

Although workshop details are to be developed by the planning teachers in Phase 1, it is tentatively projected that participants will be taught about meteorology and air quality chemistry, shown how to use different scientific equipment and methods to derive data (particularly GIS training so they can use "air window" when it is developed), trained in use of an evaluation approach called "lesson study," coached in grant writing, and instructed in relevant air quality public policy and programming. Among other things, it is projected that participants will be tasked, again in a problem-based learning milieu, to develop (1) air quality curricular modules suitable for dissemination across the K-12 spectrum, (2) tangible outcome indicators sufficient to allow lesson-study evaluation, and (3) educational grants suitable for submission. Additionally, participants will be expected to disseminate their learning to their colleagues back at their home schools and districts, and it will be expected that SHENAIR representatives will visit participating schools/classrooms to witness firsthand the implementation of developed modules.

Phase 3 will consist of the follow-up steps built into Phase 2—dissemination of learning, evaluation via SHENAIR class visits, and evaluation of methods via use of lesson study (and followed up with a report to SHENAIR). Phase 3 will take place in the 2006-'07 academic year. One tangible outcome of Phase 3 will be presentation by SHENAIR of "green school awards" to those schools and districts which satisfy outcome criteria (to be determined).

<b>Component</b>	<b>Description</b>	<b>Budget Item</b>	<b>Amount</b>	<b>Subtotal</b>
<b>Workshop Phase 1</b>	Workshop Planning	\$100 honoraria/teacher X 4 teachers X 3 sessions	\$ 1,200.00	
	subtotal	\$100 substitute teacher fee X 4 teachers X 3 sessions	\$ 1,200.00	\$ 2,400.00
<b>Workshop Phase 2</b>	Workshops	\$400 Content Academy fee (incl. room and board for one week) X 20 teachers	\$ 8,000.00	
	subtotal	\$300 Ccourse Credit or honoraria X 20 teachers	\$ 6,000.00	\$ 14,000.00
<b>Workshop Overhead</b>	Staffing	Workshop development oversight and planning (Todd Hedinger)	\$ 10,000.00	
		Guest Lectures (to be determined)	\$ 600.00	
	Materials	Materials	\$ 5,000.00	
	subtotal		\$ 15,600.00	
<b>Information Dissemination</b>		Interactive website and newsletter development (Kai Degner)	\$ 5,000.00	
	subtotal		\$ 5,000.00	
<b>Air Window Development</b>	GIS data base	GIS data base development (Mark Blanchart)	\$ 18,000.00	
	subtotal		\$ 18,000.00	
<b>TOTAL</b>			\$ 55,000.00	

## **Appendix C**

Northern Shenandoah Valley Ozone Early Action Compact Area

*December 30, 2005 Submittal*



## Winchester-Frederick County Air Quality Outreach Program Ozone Season 2005 Highlights

### Networks:

#### Government Air Quality Action Day Network

- Valley AIRNow collaborated with City and County officials to develop Air Quality Action Day (AQAD) Plans that (a) designated a City and County-wide Clean Air Coordinator that will disseminate Alerts before predicted high ozone days specifying what measures employees can take to protect their health and reduce their emissions for that day and (b) restrict City and County department activities, such as, mowing, open-burning, refueling and idling on Action Days.

#### Schools Air Quality Action Day Network

- Valley AIRNow is working with Winchester and Frederick County Public Schools to develop SOL matched air quality curriculum and Teacher Workshop Development Sessions.

#### Media Air Quality Action Day Network

- Valley AIRNow developed and distributed media kits resulting in the growth of a media network that supplements our public awareness campaign. Valley AIRNow was featured in 5 newspaper articles, 2 television shows, and multiple radio spots this past summer.

#### Medical Air Quality Action Day Network

- Valley AIRNow partnered with the National Weather Service and the Winchester Red Cross in an effort to incorporate air quality information in CPR class curriculum. We are also participating in the Winchester Medical Center's CME Grand Rounds program in order to provide physicians and support staff with air quality information they can use in a preventative manner.

#### Business Air Quality Action Day Network

- Valley AIRCorps, the business outreach program of Valley AIRNow, was launched this summer. More than 15 businesses throughout the area have joined the program to help get Action Day Alerts out to employees, customers, and families. Many of the businesses have also worked with the Valley AIRNow team to formulate and institute innovative programs that help reduce their emissions.

### Information Dissemination:

#### Stakeholder Building

- Valley AIRNow developed brochures, AIRCorps recruitment documents, news briefings, presentations, and various other informational materials that can be used for years to come.
- Valley AIRNow attended or hosted: Earth Day, American Lung Association's Clean Commute Day, Chamber Business Showcase, Frederick County Fair, Holistic Health Fair, Winchester Apple Harvest Festival, Green Circle Fall Fitness Fair, Opportunity Winchester Street Festival, etc.
- Valley AIRNow gave presentations to civic groups and used its mascot the Smog Dog to reach children
- Valley AIRNow worked to make local air quality information available to the public by designing and launching a website and air quality hotline, and coordinating with the DEQ Ozone Forecasting Program, the American Lung Association's Smog Alert Program, EPA AIRNow, Weather Underground, and EPA's Ozone Action Partnership.
- Valley AIRNow keeps up to date on technical information and EPA rulings that may affect the area's designation status in the future.

#### Coordination

- Valley AIRNow coordinates and hosts monthly Air Quality Improvement Task Force meetings, leads the ozone action days/public awareness Phase I strategies and ensures all other Phase I strategies are implemented. Valley AIRNow prepared the EPA semiannual report.
- Despite this summer being its first summer in existence, Valley AIRNow has already formed valuable partnerships with organizations such as the Eastern Panhandle Regional Planning and Development Council, Virginia Clean Cities, the American Lung Association of Virginia, the Red Cross, Regional Libraries, the Winchester Green Circle project, the National Weather Service, etc.

## **Appendix D**

Northern Shenandoah Valley Ozone Early Action Compact Area

*December 30, 2005 Submittal*

## SAMPLE OZONE ALERT || CODE ORANGE!

for  
Thursday, August 5, 2004

This is a notice that weather conditions are favorable for a **Code Orange Air Quality Alert** in the **Winchester/Frederick County** area on **August 5**.

### What does this mean?

The Valley AIRNow Air Quality Outreach Program issues air quality alerts when it is predicted the region's air quality may be harmful to the public in the afternoon and early evening hours. Our primary pollutant is ground-level ozone. An Air Quality Index over 100 indicates pollution in the atmosphere is considered unhealthy for sensitive groups and merits a Code Orange Alert (see below).

### What should EMPLOYERS do?

- First, **share this alert** within your business community immediately!
- For active children and adults, **limit or reduce outdoor activity** during the afternoon and early evening hours. Ozone can irritate your respiratory system, reduce lung function, and aggravate asthma – and ozone damage to your body can occur without obvious symptoms.
- For those with **compromised respiratory systems**, limit outdoor activity.
- As always, encourage such activities as **carpooling** and **bicycling** among staff to reduce ground-level ozone. Allow employees to **telework**.
- **Refuel fleets and other company transportation in the evening** to limit fumes mixing with sunlight to produce harmful ozone.
- **Delay mowing** corporate grounds or using other heavy equipment that may emit pollution.
- **Limit your use of oil-based paints**, which contain significantly higher amounts of ozone-producing solvents than traditional water-based paints.
- **Visit [www.valleyairnow.com](http://www.valleyairnow.com)** for more tips!

### Where we stand

The Air Quality Index offers a spectrum of color-coded conditions to alert us about pollutants in the air.

	<b>GREEN</b> – Good (0-50)
	<b>YELLOW</b> – Moderate (51-100)
	<b>ORANGE</b> – Unhealthy for Sensitive Groups (101-150)
	<b>RED</b> – Unhealthy (151-200)
	<b>PURPLE</b> – Very Unhealthy (201-500)

Questions? Visit [www.valleyairnow.com](http://www.valleyairnow.com) or contact us at 540.450.2207

**1 + 1 + 1 + 1 ... = cleaner air**

It takes only **one** person making **one** change in **one** task **one** day.

## **Appendix E**

Northern Shenandoah Valley Ozone Early Action Compact Area

*December 30, 2005 Submittal*



*Tom Ballou*

COUNTY of FREDERICK

**John R. Riley, Jr.**  
County Administrator

540/665-5666

Fax 540/667-0370

E-mail:

[jriley@co.frederick.va.us](mailto:jriley@co.frederick.va.us)

June 13, 2005

RECEIVED

JUN 20 2005

DEQ-OD

Mr. Robert Burnley, Director  
Virginia Department of Environmental Quality  
629 East Main Street  
Richmond, Virginia 23219

Re: County of Frederick's Commitment to Reducing Ozone Levels within the Northern Shenandoah Valley

Dear Director Burnley:

The County of Frederick understands the complexity of improving the area's air quality. Poor air quality not only affects the region economically, but also threatens the health and well-being of every citizen living and working in the Northern Shenandoah Valley region.

For these reasons, and relative to our commitment to the Ozone Early Action Compact (EAC), the County of Frederick is taking the state of the region's air quality very seriously. Indeed, one demonstration of the seriousness of our response can be seen in Resolution 2004-12, adopted after the submittal of the Ozone Early Action Plan (EAP) for the Northern Shenandoah Valley in 2004. The County of Frederick officially approved and endorsed the regional Ozone Early Action Plan unanimously to show Frederick County's commitment to its implementation and success.

We must lead the way for others to follow. Consistent with this responsibility, the County has planned to initiate several measures within the EAP by early July. These measures will include:

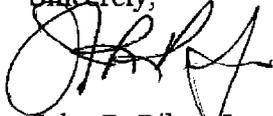
1. Designation of a County-wide Clean Air Coordinator
  - This individual will join the Air Quality Action Day Network (AQAD) of the Valley AIRNow team, the outreach coordinator for the EAP. When an AQAD Alert is issued, which indicates a high possibility of a Code Orange or higher ozone level, the Coordinator will receive an email, fax, and phone call from a member of the Valley AirNow team. The Coordinator will then distribute a notification to all County department heads advising them of this alert and some steps employees can take to reduce emissions. Each department head will be asked to disseminate the alert to its employees.
2. Issuance of Memorandum to applicable County departments on the restrictions of certain activities when an AQAD Alert is issued.

- Restrict use of publicly-owned lawn and garden gasoline powered equipment.
- Permit no burning associated with any County land clearing and construction projects.
- Restrict fueling of gasoline powered publicly-owned vehicles.
- Restrict idling of publicly-owned gasoline powered vehicles.

In addition to the above, the County has shown commitment to reducing ozone levels and complying with the EAC through its funding of an Air Quality Outreach Program to lead the education and outreach efforts. The program is responsible for informing local citizens about ozone and emission reduction strategies, participating in community events and coordinating and facilitating communication between all parties affected. One such example is Valley AIRCorps. The program recognizes efforts by businesses to reduce ozone levels, organizing and administering meetings, and ensuring Early Action Compact milestones are met.

Finally, the participating AQAD Coordinator and my office will be responsible for ensuring that the County's commitment to the control measures specified in the Ozone EAP are fulfilled.

Sincerely,



John R. Riley, Jr.  
County Administrator

JRR/jet

RECEIVED 2006

AUG 01 2005



## CITY OF WINCHESTER, VIRGINIA

June 13, 2005

**DEQ-OD**

Rouss City Hall  
15 North Cameron Street  
Winchester, VA 22601  
540-667-1815  
FAX: 540-722-3618  
TDD: 540-722-0782  
Web Site:  
[www.ci.winchester.va.us](http://www.ci.winchester.va.us)

Mr. Robert Burnley, Director  
Virginia Department of Environmental Quality  
629 East Main Street  
Richmond, Virginia 23219

Re: City of Winchester's Commitment to  
Reducing Ozone Levels within the  
Northern Shenandoah Valley

Dear Director Burnley:

The City of Winchester understands the complexity of improving the area's air quality. Poor air quality not only affects the region economically, but also threatens the health and well-being of every citizen living and working in the Northern Shenandoah Valley region.

For these reasons, and relative to our commitment to the Ozone Early Action Compact (EAC), the City of Winchester is taking the state of the region's air quality very seriously. Indeed, one demonstration of the seriousness of our response can be seen in Resolution 2004-12, adopted after the submittal of the Ozone Early Action Plan (EAP) for the Northern Shenandoah Valley in 2004. The City of Winchester officially approved and endorsed the regional Ozone Early Action Plan unanimously to show Winchester's commitment to its implementation and success.

We must lead the way for others to follow. Consistent with this responsibility, the City has planned to initiate several measures within the EAP by early July. These measures will include:

1. Designation of a City-wide Clean Air Coordinator
  - This individual will join the Air Quality Action Day Network (AQAD) of the Valley AIRNow team, the outreach coordinator for the EAP. When an AQAD Alert is issued, which indicates a high possibility of a Code Orange or higher ozone level, the Coordinator will receive an email, fax, and phone call from a member of the Valley AirNow team. The Coordinator will then distribute a notification to all City department heads advising them of this alert and some steps employees can take to reduce emissions. Each department head will be asked to disseminate the alert to its employees.

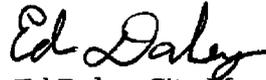
*"Providing quality services to our citizens in a cost-effective, efficient and courteous manner, while anticipating the future needs of our community."*

2. Issuance of Memorandum to applicable City departments on the restrictions of certain activities when an AQAD Alert is issued.
  - Restrict use of publicly-owned lawn and garden gasoline powered equipment.
  - Permit no burning associated with any City land clearing and construction projects.
  - Restrict fueling of gasoline powered publicly-owned vehicles.
  - Restrict idling of publicly-owned gasoline powered vehicles.

In addition to the above, the City has shown commitment to reducing ozone levels and complying with the EAC through its funding of an Air Quality Outreach Program to lead the education and outreach efforts. The program is responsible for informing local citizens about ozone and emission reduction strategies, participating in community events and coordinating and facilitating communication between all parties affected. One such example is Valley AIRCorps. The program recognizes efforts by businesses to reduce ozone levels, organizing and administering meetings, and ensuring Early Action Compact milestones are met.

Finally, the participating AQAD Coordinator and my office will be responsible for ensuring that the City's commitment to the control measures specified in the Ozone EAP are fulfilled.

Sincerely,



Ed Daley, City Manager  
City of Winchester



## THE COMMON COUNCIL

Rouss City Hall  
15 North Cameron Street  
Winchester, VA 22601  
540-667-1815  
TDD 540-722-0782  
[www.ci.winchester.va.us](http://www.ci.winchester.va.us)

September 6, 2005

Chelsea Jenkins  
James Madison University  
Valley AIRNow Program  
MSC 4102  
Harrisonburg, VA 22807

Dear Ms. Jenkins:

As directed by City Manager Edwin Daley, please find the enclosed certified copy of the Resolution which was adopted during the June, 2005 Regular Meeting of the Winchester Common Council endorsing and adopting the Ozone Early Action Plan for the Northern Shenandoah Valley Area.

Sincerely,

A handwritten signature in cursive script that reads "Sandra D. Hughes".

Sandra D. Hughes, CMC  
Clerk of the Common Council

Enclosures: 1



## THE COMMON COUNCIL

Rouss City Hall  
15 North Cameron Street  
Winchester, VA 22601  
540-667-1815  
TDD 540-722-0782  
www.ci.winchester.va.us

*I, Sandra D. Hughes, Clerk of the Common Council, hereby certify on this 14<sup>th</sup> day of June, 2005, that the following Resolution is a true and exact copy of one and the same adopted by the Common Council of the City of Winchester, assembled in regular session on the 14<sup>th</sup> day of June, 2005.*

### RESOLUTION

#### ENDORSEMENT AND ADOPTION OF THE OZONE EARLY ACTION PLAN FOR THE NORTHERN SHENANDOAH VALLEY AREA

*Whereas*, clean air is essential for quality of life, economic development and general public well-being of the Northern Shenandoah Valley, and

*Whereas*, the United States Environmental Protection Agency (EPA) established a revised 8-hour ozone standard in 1997 that was set at 0.085 parts per million (ppm), averaged over a three-year period; and

*Whereas*, the regional ozone monitoring station in the Northern Shenandoah Valley area (in the County of Frederick) currently has a design value of 0.085 ppm that would qualify the area for the designation of nonattainment area for ozone under the Clean Air Act (CAA) of 1990; and

*Whereas*, the EPA has developed and endorsed the air quality planning concept of the Early Action Compact [EAC], where an area that marginally exceeds the ozone standard can enter into a voluntary agreement with state and federal governments to develop and implement an Ozone Early Action Plan [EAP] to proactively reduce ozone levels and come into compliance with the standard; and

*Whereas*, elected officials, representing the County of Frederick and City of Winchester, acting through the Northern Shenandoah Valley Air Improvement Task Force [Task Force] entered into an EAC with the Virginia Department of Environmental Quality (VDEQ) and the EPA in December 2002; and

*Whereas*, the EAC authorized the establishment of the Task Force and the development of an EAP consisting of local, state, and national strategies to bring the Northern Shenandoah Valley Area into attainment with the 8-hour Ozone standard by 2007; and

*Whereas*, in response, the Task Force has developed and submitted an EAP for consideration and adoption by the localities that have entered into the EAC; and

**Whereas**, the EAP contains specific commitments and responsibilities to be undertaken by the localities that have entered into the EAC; and

**Whereas**, computer modeling, conducted by the VDEQ in accordance with EPA standards, demonstrates that the EAP is predicted to return the Northern Shenandoah Valley Area to attainment for the 8-hour Ozone standard by 2007; and

**Whereas**, County of Frederick/City of Winchester have adopted and will enforce these specific commitments and responsibilities under the EAP; and

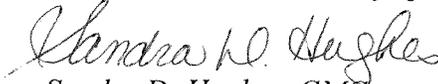
**Whereas**, County of Frederick/City of Winchester is fully committed to the regional cooperation and coordination necessary to bring the area into attainment, as measured by the regional Ozone monitor, for the 8-hour Ozone standard in 2007;

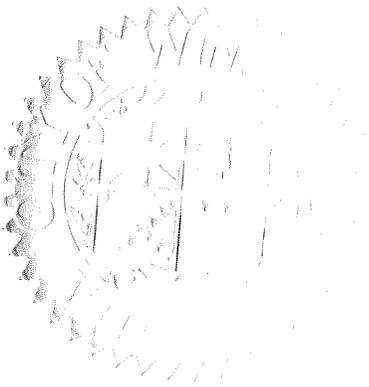
**Therefore, be it resolved**, that on this 14<sup>th</sup> day of June, 2005 the City of Winchester officially approves and endorses the EAP, and is a full party in its implementation and success as described in the EAP.

**Resolution No. 2005-29.**

**ADOPTED by the Common Council of the City of Winchester on the 14<sup>th</sup> day of June, 2005.**

*Witness my hand and the seal of the City of Winchester, Virginia.*

  
Sandra D. Hughes, CMC  
Clerk of the Common Council





WINCHESTER-FREDERICK COUNTY

Chamber of Commerce

*Your Business Partner*

## RESOLUTION

### ENDORSEMENT AND ADOPTION OF THE OZONE EARLY ACTION PLAN FOR THE NORTHERN SHENANDOAH VALLEY AREA

**Whereas**, clear air is essential for quality of life, economic development and general public well-being of the Northern Shenandoah Valley; and,

**Whereas**, the United States Environmental Protection Agency (EPA) established a revised 8-hour ozone standard in 1997 that was set at 0.085 parts per million (ppm), averaged over a three-year period; and,

**Whereas**, the regional ozone monitoring station in the Northern Shenandoah Valley area (in the County of Frederick) currently has a design value of 0.085 ppm that would qualify the area for the designation of nonattainment area for ozone under the Clean Air Act (CAA) of 1990; and,

**Whereas**, the EPA has developed and endorsed the air quality planning concept of Early Action Compacts [EAC], where an area that marginally exceeds the ozone standard can enter into a voluntary agreement with state and federal governments to develop and implement an Ozone Early Action Plan [EAP] to proactively reduce ozone levels and come into compliance with the standard; and,

**Whereas**, elected officials, representing the County of Frederick and City of Winchester, acting through the Northern Shenandoah Valley Air Improvement Task Force [Task Force] entered into an EAC with the Virginia Department of Environmental Quality (VDEQ) and the EPA in December 2002; and,

**Whereas**, the EAC authorized the establishment of the Task Force of which the Winchester-Frederick County Chamber of Commerce is an active participant; and,

**Whereas**, this Task Force is charged with the development of an EAP consisting of local, state and national strategies to bring the Northern Shenandoah Valley Area into attainment with the 8-hour Ozone standard by 2007; and,

**Whereas**, in response, the Task Force has developed and submitted an EAP for consideration and adoption by the localities that have entered into the EAC; and,

**Whereas**, the EAP contains specific commitments and responsibilities to be undertaken by the localities that have entered into the EAC; and,

**Whereas**, computer modeling, conducted by VDEQ in accordance with EPA standards, demonstrates that the EAP is predicted to return the Northern Shenandoah Valley Area to attainment for the 8-hour Ozone standard by 2007; and,

**Whereas**, County of Frederick/City of Winchester have adopted and will enforce these specific commitments and responsibilities under the EAP; and,

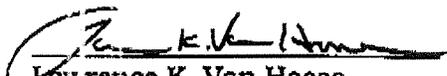
**Whereas**, Winchester-Frederick County Chamber of Commerce is fully committed to assist in fulfilling these specific commitments and responsibilities under the Ozone Early Action Plan; and,

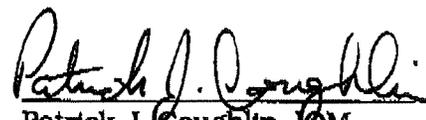
**Whereas**, the Winchester-Frederick County Chamber of Commerce is fully committed to the regional cooperation and coordination necessary to bring the area into attainment, as measured by the regional Ozone monitor, for the 8-hour Ozone standard in 2007;

**Therefore be it resolved**, that on 22nd day of June of 2004 the Winchester-Frederick County Chamber of Commerce officially approves and endorses the EAP, and is a full party in its implementation and success as described in the EAP.

**Be it further resolved**, that a signed copy of this resolution of commitment will be sent to the Director of the Virginia Department of Environmental Quality for processing and inclusion into the official State Implementation Plan, which once approved by EPA will make these commitments and responsibilities federally enforceable.

Signed and Sealed

  
Lawrence K. Van Hoose  
Chairman of the Board

  
Patrick J. Coughlin, COM  
President/CEO



# BOARD OF SUPERVISORS

## RESOLUTION

### ENDORSEMENT AND ADOPTION OF THE OZONE EARLY ACTION PLAN FOR THE NORTHERN SHENANDOAH VALLEY AREA

*Whereas*, clear air is essential for quality of life, economic development and general public well-being of the Northern Shenandoah Valley; and

*Whereas*, the United States Environmental Protection Agency (EPA) established a revised 8-hour ozone standard in 1997 that was set at 0.085 parts per million (ppm), averaged over a three-year period; and

*Whereas*, the regional ozone monitoring station in the Northern Shenandoah Valley area (in the County of Frederick) currently has a design value of 0.085 ppm that would qualify the area for the designation of nonattainment area for ozone under the Clean Air Act (CAA) of 1990; and

*Whereas*, the EPA has developed and endorsed that air quality planning concept of Early Action Compacts [EAC], where an area that marginally exceeds the ozone standard can enter into a voluntary agreement with state and federal governments to develop and implement an Ozone Early Action Plan [EAP] to proactively reduce ozone levels and come into compliance with the standard; and

*Whereas*, elected officials, representing the County of Frederick and City of Winchester, acting through the Northern Shenandoah Valley Air Improvement Task Force [Task Force] entered into an EAC with the Virginia Department of Environmental Quality (VDEQ) and the EPA in December 2002; and

*Whereas*, the EAC authorized the establishment of the Task Force and the development of an EAP consisting of local, state, and national strategies to bring the Northern Shenandoah Valley Area into attainment with the 8-hour Ozone standard by 2007; and

*Whereas*, in response, the Task Force has developed and submitted an EAP for consideration and adoption by the localities that have entered into the EAC; and

*Whereas*, the EAP contains specific commitments and responsibilities to be undertaken by the localities that have entered into the EAC; and

*Whereas*, computer modeling, conducted by the VDEQ in accordance with EPA standards, demonstrates that the EAP is predicted to return the Northern Shenandoah Valley Area to attainment for the 8-hour Ozone standard by 2007; and

**Whereas**, computer modeling, conducted by VDEQ in accordance with EPA standards, demonstrates that the EAP is predicted to return the Northern Shenandoah Valley Area to attainment for the 8-hour Ozone standard by 2007; and,

**Whereas**, the City of Winchester has adopted and will enforce these specific commitments and responsibilities under the EAP; and,

**Whereas**, the City of Winchester is fully committed to the regional cooperation and coordination necessary to bring the area into attainment, as measured by the regional Ozone monitor, for the 8-hour Ozone standard in 2007;

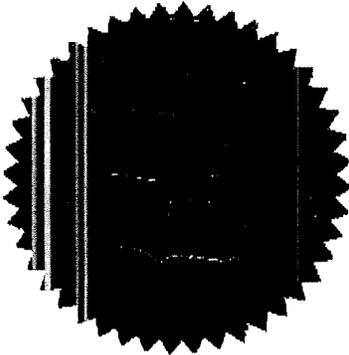
**Therefore, be it resolved**, that on this 13<sup>th</sup> day of April, 2004, the City of Winchester officially approves and endorses the EAP, and is a full party in its implementation and success as described in the EAP.

**Be it further resolved**, that a signed copy of this resolution of commitment will be sent to the Director of the VDEQ for processing and inclusion in the official State Implementation Plan, which once approved by EPA, will make these commitments and responsibilities federally enforceable.

Resolution No. 2004-21.

**ADOPTED** by the Common Council of the City of Winchester on the 13<sup>th</sup> day of April, 2004.

*Witness my hand and the seal of the City of Winchester, Virginia.*



*Sandra D. Hughes*  
Sandra D. Hughes, CMC  
Clerk of the Common Council



**WINCHESTER | FREDERICK COUNTY**  
*Economic Development Commission*

## **RESOLUTION**

### **ENDORSEMENT AND ADOPTION OF THE OZONE EARLY ACTION PLAN FOR THE NORTHERN SHENANDOAH VALLEY AREA**

**Whereas**, clear air is essential for quality of life, economic development and general public well-being of the Northern Shenandoah Valley; and,

**Whereas**, the United States Environmental Protection Agency (EPA) established a revised 8-hour ozone standard in 1997 that was set at 0.085 parts per million (ppm), averaged over a three-year period; and,

**Whereas**, the regional ozone monitoring station in the Northern Shenandoah Valley area (in the County of Frederick) currently has a design value of 0.085 ppm that would qualify the area for the designation of nonattainment area for ozone under the Clean Air Act (CAA) of 1990; and,

**Whereas**, the EPA has developed and endorsed the air quality planning concept of Early Action Compacts [EAC], where an area that marginally exceeds the ozone standard can enter into a voluntary agreement with state and federal governments to develop and implement an Ozone Early Action Plan [EAP] to proactively reduce ozone levels and come into compliance with the standard; and,

**Whereas**, elected officials, representing the County of Frederick and City of Winchester, acting through the Northern Shenandoah Valley Air Improvement Task Force [Task Force] entered into an EAC with the Virginia Department of Environmental Quality (VDEQ) and the EPA in December 2002; and,

**Whereas**, the EAC authorized the establishment of the Task Force and the development of an EAP consisting of local, state and national strategies to bring the Northern Shenandoah Valley Area into attainment with the 8-hour Ozone standard by 2007; and,

**Whereas**, in response, the Task Force has developed and submitted an EAP for consideration and adoption by the localities that have entered into the EAC; and,

**Whereas**, the EAP contains specific commitments and responsibilities to be undertaken by the localities that have entered into the EAC; and,

**Whereas**, computer modeling, conducted by VDEQ in accordance with EPA standards, demonstrates that the EAP is predicted to return the Northern Shenandoah Valley Area to attainment for the 8-hour Ozone standard by 2007; and,

---

45 E. Boscawen Street ■ Winchester, VA 22601  
phone: 540-665-0973 ■ fax 540-722-0604 ■ e-mail [info@wininva.com](mailto:info@wininva.com)  
web: <http://www.wininva.com>

**Whereas**, County of Frederick/City of Winchester have adopted and will enforce these specific commitments and responsibilities under the EAP; and

**Whereas**, County of Frederick/City of Winchester is fully committed to the regional cooperation and coordination necessary to bring the area into attainment, as measured by the regional Ozone monitor, for the 8-hour Ozone standard in 2007;

**Therefore, be it resolved**, that on this 27<sup>th</sup> day of April, 2004 County of Frederick//City of Winchester officially approves and endorses the EAP, and is a full party in its implementation and success as described in the EAP.

**Be it further resolved**, that a signed copy of this resolution of commitment will be sent to the Director of the VDEQ for processing and inclusion in the official State implementation Plan, which once approved by EPA, will make these commitments and responsibilities federally enforceable.

Adopted this 27<sup>th</sup> day of April by the following recorded vote:

Richard C. Shickle	<u>Aye</u>	Gina A. Forrester	<u>Aye</u>
Barbara E. Van Osten	<u>Aye</u>	W. Harrington Smith, Jr.	<u>Aye</u>
Gary W. Dove	<u>Aye</u>	Lynda J. Tyler	<u>Aye</u>
Bill M. Ewing	<u>Aye</u>		

  
\_\_\_\_\_  
John R. Riley, Jr., Clerk to the Board of  
Supervisors of Frederick County, VA

Resolution No. 060-04



WINCHESTER-FREDERICK COUNTY

Chamber of Commerce

*Your Business Partner*

## RESOLUTION

### ENDORSEMENT AND ADOPTION OF THE OZONE EARLY ACTION PLAN FOR THE NORTHERN SHENANDOAH VALLEY AREA

**Whereas**, clear air is essential for quality of life, economic development and general public well-being of the Northern Shenandoah Valley; and,

**Whereas**, the United States Environmental Protection Agency (EPA) established a revised 8-hour ozone standard in 1997 that was set at 0.085 parts per million (ppm), averaged over a three-year period; and,

**Whereas**, the regional ozone monitoring station in the Northern Shenandoah Valley area (in the County of Frederick) currently has a design value of 0.085 ppm that would qualify the area for the designation of nonattainment area for ozone under the Clean Air Act (CAA) of 1990; and,

**Whereas**, the EPA has developed and endorsed the air quality planning concept of Early Action Compacts [EAC], where an area that marginally exceeds the ozone standard can enter into a voluntary agreement with state and federal governments to develop and implement an Ozone Early Action Plan [EAP] to proactively reduce ozone levels and come into compliance with the standard; and,

**Whereas**, elected officials, representing the County of Frederick and City of Winchester, acting through the Northern Shenandoah Valley Air Improvement Task Force [Task Force] entered into an EAC with the Virginia Department of Environmental Quality (VDEQ) and the EPA in December 2002; and,

**Whereas**, the EAC authorized the establishment of the Task Force of which the Winchester-Frederick County Chamber of Commerce is an active participant; and,

**Whereas**, this Task Force is charged with the development of an EAP consisting of local, state and national strategies to bring the Northern Shenandoah Valley Area into attainment with the 8-hour Ozone standard by 2007; and,

**Whereas**, in response, the Task Force has developed and submitted an EAP for consideration and adoption by the localities that have entered into the EAC; and,

**Whereas**, the EAP contains specific commitments and responsibilities to be undertaken by the localities that have entered into the EAC; and,

**Whereas**, County of Frederick/City of Winchester have adopted and will enforce these specific commitments and responsibilities under the EAP; and,

**Whereas**, Winchester-Frederick County Economic Development Commission is fully committed to assist in fulfilling these specific commitments and responsibilities under the Ozone Early Action Plan; and,

**Whereas**, furthermore, the Winchester-Frederick County Economic Development Commission is fully committed to the regional cooperation and coordination necessary to bring the area into attainment, as measured by the regional Ozone monitor, for the 8-hour Ozone standard in 2007;

**Therefore be it resolved**, that on 7<sup>th</sup> day of May of 2004 the Winchester-Frederick County Economic Development Commission officially approves and endorses the EAP, and is a full party in its implementation and success as described in the EAP.

**Be it further resolved**, that a signed copy of this resolution of commitment will be sent to the Director of the Virginia Department of Environmental Quality for processing and inclusion into the official State Implementation Plan, which once approved by EPA will make these commitments and responsibilities federally enforceable.

Signed

  
\_\_\_\_\_  
Jim Golladay  
Chairman

  
\_\_\_\_\_  
Patrick Barker, AICP  
Executive Director

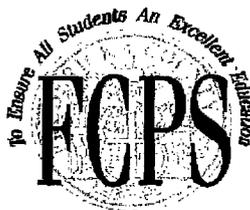
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45 E Boscawen Street ■ Winchester, VA 22601  
phone: 540-665-0973 ■ fax 540-722-0604 ■ e-mail [info@wininva.com](mailto:info@wininva.com)  
web: <http://www.wininva.com>

## **Appendix F**

Northern Shenandoah Valley Ozone Early Action Compact Area

*December 30, 2005 Submittal*



*Frederick County Public Schools*

Superintendent of Schools

Visit us at [www.frederick.k12.va.us](http://www.frederick.k12.va.us)

RECEIVED

AUG 24 2005

DEQ-OD

e-mail:  
[deanw@frederick.k12.va.us](mailto:deanw@frederick.k12.va.us)

August 19, 2005

Mr. Robert Burnley, Director  
 Virginia Department of Environmental Quality  
 629 East Main Street  
 Richmond, VA 23219

Dear Director Burnley:

Re: County of Frederick's Commitment to Reducing Ozone Levels  
 within the Northern Shenandoah Valley

Frederick County Public Schools are committed to working on every front to prevent air quality from deteriorating. We understand the serious health and economic ramifications of unhealthy levels of ozone.

We are showing our commitment to the Ozone Early Action Compact (EAC) by initiating several measures within the EAP. These measures will include:

**1. DESIGNATION OF A FREDERICK COUNTY PUBLIC SCHOOLS CLEAN AIR COORDINATOR**

- ❖ This individual will join the Air Quality Action Day Network (AQAD) of the Valley AIRNow team, the outreach coordinator for the EAP. When an AQAD Alert is issued, which indicates a high possibility of a Code Orange or higher ozone level, the coordinator will receive an e-mail, fax, and phone call from a member of the Valley AIRNow team. The coordinator will then distribute a notification to all school district heads advising them of this alert and offering steps faculty and staff can take to reduce emissions. Each department head will be asked to disseminate the alert to all employees. The clean air coordinator will also collaborate with the Valley AIRNow to determine feasible ways of limiting student exposure on *Air Quality Action Days*.

**2. RETROFIT EXISTING BUSES WITH DIESEL RETROFIT TECHNOLOGY**

- ❖ Frederick County Public Schools in cooperation with the Winchester-Frederick County Economic Development Commission, the Virginia Department of Environmental Quality (DEQ), and the United States Environmental Protection Agency (EPA) participated in a voluntary program to reduce emissions from diesel powered school buses. Through the installation of diesel oxidation catalysts, we hope to reduce emissions of particulate matter by 20 percent, carbon monoxide by 40 percent, and hydrocarbons by 50 percent. We have completed the retrofit installation on 90 percent of the 130 planned retrofits.

Mr. Robert Burnley  
Page 2  
August 19, 2005

### 3. LIMIT IDLING OF SCHOOL BUSES

- ❖ Frederick County Public Schools has implemented a school bus anti-idling policy that currently includes:
  - ◆ Drivers are instructed, when performing pre-trip inspections, to start the bus only at the point determined necessary to evaluate certain operational functions.
  - ◆ Bus routes are scheduled to arrive at school sites and other destinations so as to minimize times prior to student loading and unloading.
  - ◆ Drivers have been instructed to follow manufacturer's recommendations of reducing idling time to five minutes or less, based upon the make, year, and model of school bus, with the exception of medical requirements (air conditioning) of special needs passengers.
  - ◆ In extreme cold weather conditions, a "cold weather starting" procedure is implemented for the purpose of assuring the safety of students and may supercede the anti-idling policy.
  - ◆ Drivers receive additional instruction via scheduled in-services and monthly newsletters.
  - ◆ This policy is reviewed periodically and updated as deemed necessary to ascertain maximum benefits.

### 4. EDUCATE STUDENTS, PARENTS, AND TEACHERS ABOUT THE HEALTH EFFECTS

#### OF AIR POLLUTION

- ❖ Valley AIRNow is currently developing an air quality curriculum that matches the Virginia Standards of Learning. One completed, this material may be posted on the Blackboard® system used by Frederick County Public Schools. Valley AIRNow has also committed to coming in for teacher workshops to train on material. Teachers can then use the material in the classroom after approval by the Frederick County Public Schools' Instructional Division.

### 5. ENCOURAGE SCHOOL CARPOOL PROGRAMS

- ❖ Frederick County Public Schools will encourage carpooling among faculty and staff everyday. Carpooling and other alternate commute options will be especially stressed as an option during *Air Quality Action Days*.

The participating clean air coordinator and my office will be responsible for ensuring that Frederick County Public Schools' commitment to the control measures specified in the Ozone EAP are fulfilled.

Sincerely,



William C. Dean, Ph.D., Superintendent  
Frederick County Public Schools



## WINCHESTER PUBLIC SCHOOLS

12 NORTH WASHINGTON STREET  
WINCHESTER, VA 22601

DENNIS W. KELLISON  
SUPERINTENDENT

RICKY L. LEONARD  
ASSISTANT SUPERINTENDENT

July 27, 2005

Mr. Robert Burnley, Director  
Virginia Department of Environmental Quality  
629 East Main Street  
Richmond, Virginia 23219

Re: City of Winchester's Commitment to Reducing Ozone Levels within the Northern Shenandoah Valley

Dear Director Burnley:

The City of Winchester Public Schools are committed to working on every front to prevent air quality from deteriorating. We understand the serious health and economic ramifications of unhealthy levels of ozone.

We are showing our commitment to the Ozone Early Action Compact (EAC) by initiating several measures within the EAP. These measures will include:

1. Designation of a Winchester Public School Clean Air Coordinator
  - This individual will join the Air Quality Action Day Network (AQAD) of the Valley AIRNow team, the outreach coordinator for the EAP. When an AQAD Alert is issued, which indicates a high possibility of a Code Orange or higher ozone level, the Coordinator will receive an email, fax, and phone call from a member of the Valley AirNow team. The Coordinator will then distribute a notification to all School District heads advising them of this alert and some steps faculty and staff can take to reduce emissions. Each department head will be asked to disseminate the alert to all employees. The Clean Air Coordinator will also collaborate with Valley AIRNow to determine feasible ways of limiting student exposure on Air Quality Action Days.
2. Retrofit existing buses with diesel retrofit technology
  - Winchester Public Schools partnered with the Virginia Department of Environmental Quality (DEQ), the United States Environmental Protection Agency (EPA), and the Winchester-Frederick County Economic Development Commission in a voluntary program to reduce emissions from diesel powered school buses. The program will result in improved air quality and reduced exposure to school bus particulate matter, hydrocarbons, and carbon monoxide emissions by school-age children. All work has recently been completed and 18 of the 31 city school buses have been retrofitted with diesel oxidation catalysts (DOC).

The project also reprogrammed the ECM on all eligible late model school buses (6 identified) to reduce NOx emissions by 25%.

3. Limit idling of school buses
  - A bus idling policy will be implemented. Policy measures under consideration are as follows:
    - As a general rule, buses should be moving whenever the engine is on. The engine should be turned off as soon as possible after arriving at loading or unloading areas. The school bus should not be restarted until it is ready to depart.
    - Limit idling time during early morning warm up to what the manufacturer recommends (generally no more than five minutes).
4. Educate students, parents and teachers about the health effects of air pollution
  - Valley AIRNow is currently developing air quality curricula that matches the Virginia Standards of Learning. Once completed, this material will be posted on the Blackboard® system used by Winchester Public Schools. Valley AIRNow has also committed to coming in for teacher workshops to train on material. Teachers can then use the material in the classroom where students will absorb and carry home to parents.
5. Encourage school carpool programs
  - Winchester Public Schools will encourage carpooling among faculty and staff everyday. Carpooling and other alternate commute options will be especially stressed as an option during Air Quality Action Days.

The participating Clean Air Coordinator and my office will be responsible for ensuring that Winchester Public Schools commitment to the control measures specified in the Ozone EAP are fulfilled.

Sincerely,

WINCHESTER PUBLIC SCHOOLS



Dennis W. Kellison  
Superintendent

DWK:BSO

## **Appendix G**

Northern Shenandoah Valley Ozone Early Action Compact Area

*December 30, 2005 Submittal*



## COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION  
1401 EAST BROAD STREET  
RICHMOND, VIRGINIA 23219-2000

PHILIP A. SHUCET  
COMMISSIONER

JEFFREY C. SOUTHARD  
CHIEF  
TRANSPORTATION PLANNING  
AND ENVIRONMENTAL AFFAIRS

April 22, 2005

**TO:** Agency Transportation Officers

**RE:** Gas Restrictions for  
"Air Quality Action Days"  
Vehicle Fueling Hours at VDOT Facilities

Gasoline pumps operated by Virginia Department of Transportation (VDOT) in air quality non-attainment and early action compact areas that do not have vapor recovery systems will be closed from 8:30 a.m. to 5:00 p.m. on "Air Quality Action Days". The Virginia Department of Environmental Quality (VDEQ) designates an "Air Quality Action Day" when air quality is predicted to be at high and unhealthy levels. This measure that VDOT has implemented since 1996 is intended to reduce the emissions of air pollutants from VDOT facilities and to improve the air quality for the citizen of the Commonwealth.

A list of counties in air quality non-attainment and early action compact areas is attached. Travelers needing to re-fuel gasoline powered state vehicles in these counties on "Air Quality Action Days" must use VDOT fueling facilities before 8:30 a.m., or make other re-fueling arrangements. The Virginia Department of Environmental Quality forecasts "Air Quality Action Days" and alerts the news media and the public. Please encourage state vehicles users to monitor summer weather forecasts and the news, to ensure that they are not inconvenienced by this pollution reduction measure.

The dissemination of this information to your employees will be appreciated.

Sincerely,

A handwritten signature in cursive script that reads "Jeffrey C. Southard".

Jeffrey C. Southard

## Virginia Ozone Nonattainment and Early Action Compact Areas

**Ozone Nonattainment Area:** An area that exceeds the Environmental Protection Agency's National Ambient Air Quality Standards (NAAQS) for ozone.

**Ozone Early Action Compact Area:** An area that exceeds the EPA's NAAQS, but the effective date of its ozone nonattainment area designation has been deferred, because of proactive efforts within the region to reduce emissions.

Table 1. Counties by VDOT Districts that are located either in ozone nonattainment or early action areas.

JURISDICTION	DISTRICT					
	Northern Virginia	Fredericksburg	Staunton	Hampton Roads	Richmond	Salem
	Alexandria Arlington Fairfax (County & City) Falls Church Loudoun Manassas Manassas Park Prince William	Fredericksburg Spotsylvania Stafford	Frederick* Winchester*	Chesapeake Gloucester Hampton Isle of Wight James City Newport News Norfolk Poquoson Portsmouth Suffolk Virginia Beach Williamsburg York	Charles City Chesterfield Colonial Heights Hanover Henrico Hopewell Petersburg Prince George Richmond	Botetourt* Roanoke (County & City)* Salem* Vinton*

\* 8-hour ozone Early Action Compact Area



# COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION  
1401 EAST BROAD STREET  
RICHMOND, VIRGINIA 23219-2000

PHILIP A. SHUCET  
COMMISSIONER

JEFFREY C. SOUTHARD  
CHIEF  
TRANSPORTATION PLANNING  
AND ENVIRONMENTAL AFFAIRS

June 2, 2005

Mr. Patrick Barker, Executive Director  
Winchester Frederick Economic Development  
45 E. Boscawen Street  
Winchester, VA 22601

Re: Winchester, Virginia Early Action Plan

Dear Mr. Barker,

The Virginia Department of Transportation understands that the Northern Shenandoah Valley has had difficulty meeting the eight-hour ozone standard and we applaud the proactive efforts of the Virginia Department of Environmental Quality and the AIRNow Taskforce to improve the region's air quality faster through the Early Action Compact (EAC) process.

As verbally agreed upon at the beginning of the Early Action Compact process for the Northern Shenandoah Valley, VDOT committed to following:

- Fully implementing our Automated Fuels Management Program (AFMP) in the Winchester Region by July 2004. This implementation has been completed and the scheduled maintenance program associated with the AFMP is minimizing air emissions from vehicles that refuel at our refueling facilities located in the Northern Shenandoah Valley. VDOT has automated all of the re-fueling facilities in Virginia including the 3 facilities located in the Northern Shenandoah Valley Early Action Compact Area. A list of these facilities in the Northern Shenandoah Valley is attached.
- Implementing an Episodic Ozone Program in the Northern Shenandoah Valley EAC area. VDOT has implemented this program in the Winchester region and we are committed to continuing this program with each ozone season which includes the following:
  - Encouraging telecommuting and ridesharing
  - Displaying ozone alerts on variable messages signs throughout the Winchester region to alert the region of potential 8-hour ozone standard exceedences
  - Restricting mowing in the Early Action Compact Area
  - Restricting fueling at VDOT gasoline facilities for non-emergency vehicles and encouraging re-fueling prior to predicted ozone exceedence days
  - Postponing use of oil based paints and solvents

Attached is a copy of our 2005 directive memorandum regarding our Episodic Ozone Program.

If you have any questions or require additional information regarding our commitment to improve the air quality in the Northern Shenandoah Valley, please contact Amy Costello at 804-371-6773.

Sincerely,

A handwritten signature in cursive script, reading "Jeffrey C. Southard".

Jeffrey C. Southard

Attachment

Cc: Ms. Amy Costello

Attachment A

**Table 1. Location of Automated Fuels Management Program Sites in the Winchester Region**

<b>Fueling Station Name</b>	<b>Fueling Station Location</b>
Winchester	Frederick County
Stephens City	Frederick County
Cross Junction	Frederick County

**Table 2. Variable Message Signs in the Winchester Early Action Plan Area**

<b>Variable Message Signs in the Winchester Early Action Plan Area</b>				
<b>Site No.</b>	<b>County</b>	<b>Route</b>	<b>VMS Location</b>	<b>Street Name</b>
	Frederick	I-81	Southbound Milepost 323	
	Shenandoah	I-81	Northbound Milepost 287	



# COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION  
1401 EAST BROAD STREET  
RICHMOND, VIRGINIA 23219-2000

Philip A. Shucet  
Commissioner

April 22, 2005

## MEMORANDUM

**TO:** Thomas A. Hawthorne, P.E.  
Mr. David E. Ogle  
Dennis Heuer, P.E.  
Richard L. Caywood, P.E.  
Garrett Moore, P.E.  
Mr. Dennis Morrison

**FROM:** Philip Shucet 

**SUBJECT:** Ozone Alert Procedures

The 2005 ozone season begins **May 1**. As part of either an air quality nonattainment or early action compact area, will you please ensure that your District implements the below measures to reduce the emission of air pollutants. These measures are to be implemented on "Air Quality Action Days". The Virginia Department of Environmental Quality (VDEQ) designates an "Air Quality Action Day" when air quality is predicted to be at high and unhealthy levels.

### VDOT Actions on Air Quality Action Days:

1. *Reduce Travel* – Minimize travel to the extent possible, by using transit, participate in ridesharing and encourage teleconferencing.
2. *Postpone Mowing* – Postpone the use of gasoline and diesel powered mowers, weed eaters and other similar gasoline engines.
3. *Restrict Fueling* – VDOT gasoline facilities will be locked from 8:30 a.m. to 5:00 p.m.
4. *Variable Message Signs* – If variable message signs are not needed for emergency purposes, then they should alert the public of the "Air Quality Action Day". The following verbiage is suggested: "Air Quality Action Day: Reduce travel, carpool, refuel after 5 pm".
5. *Reduce Electricity Usage* – Dim or turn off unnecessary lights, turn off supplemental appliances and maintain air conditioning at reasonable temperatures at VDOT facilities (74° or above).
6. *Postpone Painting* – Postpone use of oil based paints and solvents.
7. *Safety Measures* – Limit prolonged outdoor exertion.

Our Emergency Operations Center will notify you by e-mail of pending "Air Quality Action Day". This notice will be provided the day before the VDEQ predicts an "Air Quality Action Day". Please forward this memorandum to your staff and encourage them to take these precautionary actions. If you or your staff has any question regarding the above measures, please contact Amy Costello at 804-371-6773.

Attachment

cc: Ms. Amy Costello

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## COMMONWEALTH of VIRGINIA

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#### **VDOT Actions on Air Quality Action Days:**

1. *Reduce Travel* – Minimize travel to the extent possible, by using transit, participate in ridesharing and encourage teleconferencing.
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\* 8-hour ozone Early Action Compact Area

## **Appendix H**

Northern Shenandoah Valley Ozone Early Action Compact Area

*December 30, 2005 Submittal*



103 East 6th Street  
 Front Royal, Virginia 22630  
 Phone: 540.636.8800  
 Fax: 540.635.4147  
 E-mail: nsvrc@shentel.net

NORTHERN SHENANDOAH VALLEY  
 REGIONAL COMMISSION

**OFFICERS MEMORANDUM**

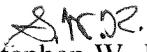
Edwin C. Daley  
 Chairman

Dennis M. Morris  
 Vice Chairman

James C. Massey  
 Treasurer

Charles R. Johnston  
 Secretary

Stephen W. Kerr  
 Executive Director

Date: November 10, 2005  
 To: Chelsea Jenkins, Outreach Coordinator  
 ValleyAir NOW  
 From:  Stephen W. Kerr, Executive Director  
 Subject: EPA Progress Report Information

COMMISSIONERS  
 August, 2004

CLARKE COUNTY  
 Barbara J. Byrd  
 \*Charles R. Johnston  
 John R. Staelin

FREDERICK  
 COUNTY

Richard C. Shickle  
 Kris C. Tierney  
 Eric R. Lawrence  
 \*Lynda J. Tyler

PAGE COUNTY

Charles C. Ballard  
 \*Nora Belle Comer  
 Carol L. Fischer-Strickler

SHENANDOAH  
 COUNTY

\*Beverley H. Fleming  
 Jeff C. Aimonetti  
 \*Dennis M. Morris  
 Jim C. Patrick

WARREN COUNTY

Richard W. Hoover  
 \*John E. Vance

FRONT ROYAL

Mayor James M. Eastham  
 J. Daniel Pond, III  
 \*Carson C. Lauder

LURAY

\*Lowell B. Baughn  
 William P. Menefee

MIDDLETOWN

\*Marshall "Mark" J. Brown

STRASBURG

\*James C. Massey  
 Mayor Timothy S. Crisman

STEPHENS CITY

\*Mayor Ray E. Ewing

WINCHESTER

J. Stephen Bauserman  
 Glen P. Burke  
 \*Edwin C. Daley  
 Timothy A. Youmans

\*Executive Committee

In support of the progress report that must be submitted to EPA in December under the Early Action Compact agreement, I have enclosed the following information that documents efforts to promote ridesharing, pedestrian and bicycle travel, and clean air in the region:

1. Northern Shenandoah Valley Regional Commission – “Walking and Wheeling the Northern Shenandoah Valley” – Regional bike and pedestrian plan
2. Valley Commuter Assistance Program – Website information ([www.vacapride.virginia.org](http://www.vacapride.virginia.org)), copy of text from radio advertisement, and information brochure
3. Winchester-Frederick County (“Win-Fred”) Metropolitan Planning Organization (MPO) – Website information ([www.winfredmpo.org](http://www.winfredmpo.org)) and links to long-range plan which outlines transit, pedestrian, park and ride lots, and other improvements (Chapter 6)

Upon review of this information, if you have any questions or desire additional assistance, please do not hesitate to contact me.

Enclosures

*Valley Commuter Assistance Program 30 Second Commercial*

SFX: TRAFFIC JAM SOUNDS UNDER

ANNOUNCER: LOOKS LIKE BOB IS COMMUTING ALL BY HIMSELF IN HIS CAR AGAIN.

BOB: I LOVE MY CAR

ANNOUNCER: ISN'T THE TRAFFIC STRESSFUL?

BOB: NO (SHOUTING) GET OUTTA THE WAY YOU IDIOT!

ANNOUNCER: WITH RIDESHARING YOU'LL SPEND A LOT LESS ON GAS.

BOB: OOOOOH....SAVING MONEY...

ANNOUNCER: IF you CARPOOLED OR VANPOOLED

SFX: SFX FADE, CHIRPING BIRD EASES IN

ANNOUNCER: YOU WOULD HELP KEEP THE SHENANDOAH VALLEY'S AIR CLEAN.

SFX: TIRES SCREECH, BIRD CEASES, TRAFFIC JAM SOUNDS BEGIN AGAIN.

BOB: YOU ROADHOG!

ANNOUNCER: AND SHOULD YOU NEED TO GET HOME UNEXPECTEDLY, VALLEY COMMUTER ASSISTANCE PROGRAM WILL MAKE SURE YOU HAVE A RIDE THROUGH THE GUARANTEED RIDE-HOME PROGRAM.

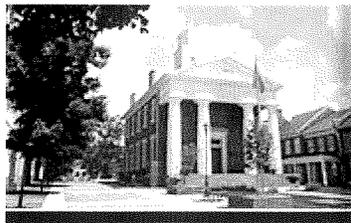
BOB: THEY WILL?

ANNOUNCER: LESS STRESS, NO DISTRESS, GAS FOR LESS-

SFX: HORN HONKING

BOB: LOOK AT THIS MESS!

ANNOUNCER: VISIT V-C-A-P-RIDE.VIRGINIA.GOV OR CALL 1.540.635.4146



# WIN-FRED

## Metropolitan Planning Organization (MPO)

FREDERICK COUNTY / CITY OF WINCHESTER / TOWN OF STEPHENS CITY



[MPO Home](#)

[Win-Fred MPO](#)

[2030 Transportation Program](#)

[Transportation Improvement Program \(TIP\)](#)

[Unified Planning Work Program](#)

[Public Involvement Plan](#)

[Glossary](#)

## Welcome to the Win-Fred MPO Website

The Win-Fred MPO was created as a result of the designation of the Winchester-Frederick County Urbanized Area by the U.S Census on May 1, 2002. Federal regulations require an urbanized area to create and maintain an ongoing transportation planning process that is comprised of representatives of the local jurisdictions as well as state and federal transportation officials. [Read more about the MPO...](#)

### Structure of MPO

Once the MPO was established, a set of By-laws were adopted on March 23, 2003 to create the structure and the representation on the MPO (see link to By-laws). The adopted By-laws of the MPO created three (3) committees as follows:

1. Policy Committee
2. Technical Committee
3. Citizens Advisory Committee

### Ongoing Activities

The MPO committees meet on their designated dates as necessary and conduct the affairs of the MPO. The MPO adopts an annual work program and budget each April and a listing of all the transportation improvements to receive federal funding in the upcoming fiscal year is adopted each August.

### Win-Fred MPO Announcement

**Draft 2030 MPO Transportation Plan documents now online!**

[Click here for more information and access to the PDF file links for download.](#)

### Upcoming Meetings

Public Information Meeting	TBA
Policy Committee	Wednesday, November 9, 2005 @ 10:00 a.m. @ Frederick County Board of Supervisors' Meeting Room <a href="#">Agenda</a>
Technical Advisory Committee:	Tuesday, October 25, 2005 @ 10:00 a.m. @ Frederick County Board of Supervisors' Meeting Room
Citizens Advisory Committee:	TBA

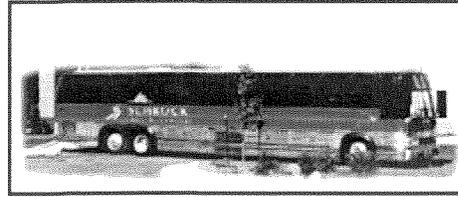
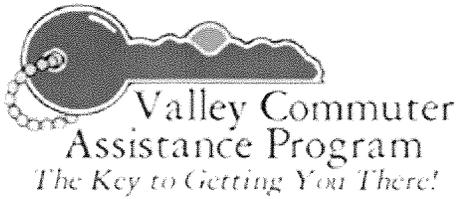
### Recent Meetings

Technical Committee - June 15. [Meeting Minutes](#)  
 Policy Committee - August 22. [Meeting Minutes](#)  
 Citizens Committee - July 12. [Meeting Minutes](#)

### MPO Contacts

Committee rosters: [Policy](#) | [Technical](#) | [Citizens](#)

[Click here to use our question/feedback form.](#)



### Commuter Bus DC Route Map

... vanpools with openings - Linden to Langley and Front Royal to Langley - Please ca

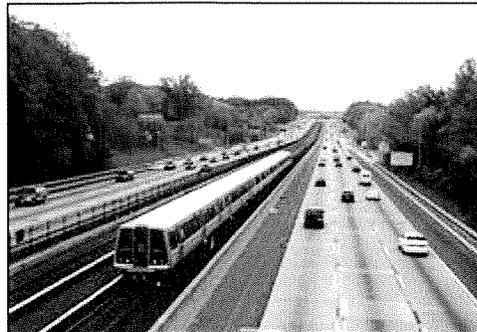
This is the Code Amber **Amber Alert Ticker:** During an active AMBI

- [Home](#)
- [Sign Up](#)
- [Contact Us](#)
- [GRH](#)
- [Vanpools](#)
- [Metrochek](#)
- [Park/Ride](#)
- [Links](#)

Winchester.

**Air Quality Forecast**

Nov 7	N/A
Nov 8	N/A



By: STI

Source: Virginia DEQ

## Welcome to the Valley Commuter Assistance Rideshare Program

### What is RideShare?

A free ride-matching service that provides users the opportunity to connect with individuals who use similar commuting patterns.

### How Do I Sign Up?

Call (540)635-4146, or 1-800-745-RIDE, or complete our **Online Application**.

### What Happens After I Submit My Application?

We enter your application into our commuter database. Within 24 hours, we will match you with potential car and vanpool riders and contact you with a Match List of interested persons.

### What Do I Do After I Receive a Match List?

Contact the people on your list. Like you, they are interested in carpooling.

### Where Can I Find Additional RideShare Resources?

Check our **Links** Page.

Calculate your average annual commuting cost.

Use our **Commuting Calculator** to see how much commuting is costing you.

Rideshare could save you hundreds even thousands of dollars annually.

**Check Out Commuter Connections Bulletin Board**

Check Commuter Connections Bulletin Board to browse the well-organized postings from other commuters, or to post your own message.



NORTHERN SHENANDOAH VALLEY  
REGIONAL COMMISSION



*Keys to Commuting:*

-  *Save Time and Money*
-  *Reduce Stress*
-  *Increases Free Time for Riders*
-  *Travel in the HOV Lane*
-  *Guaranteed Ride Home Program*
-  *Reduce Auto Emissions*

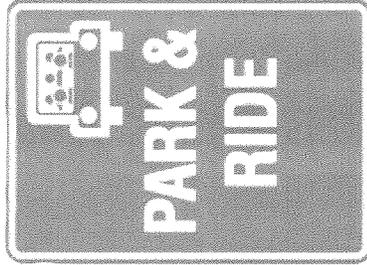
*Valley Commuter Assistance Program:*

*The Key to Getting You There*

*Contact Us:*  
**(540) 635-4146** or  
[rideinfo@shentel.net](mailto:rideinfo@shentel.net)

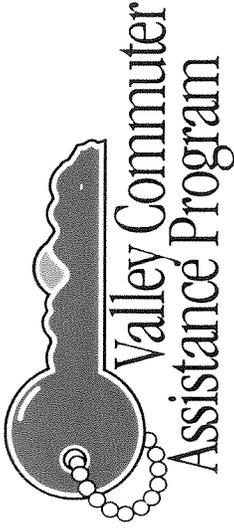


**1-800-745-RIDE (7433)**  
**9 a.m. - 4:30 p.m.**  
**Monday - Friday**



**NORTHERN SHENANDOAH VALLEY  
REGIONAL COMMISSION**

103 East 6th St.  
Front Royal, VA 22630  
Phone: (540) 636-8800  
Fax: (540) 635-4147  
E-mail: [nsvrc@shentel.net](mailto:nsvrc@shentel.net)



*The Key to Getting You There*

**DOES YOUR COMMUTE LOOK  
LIKE THIS?**



*"Serving the Northern  
Shenandoah Valley"*

## **Appendix I**

Northern Shenandoah Valley Ozone Early Action Compact Area

*December 30, 2005 Submittal*

# PROJECT SCOPE

---

Toole Design Group (TDG) has prepared a methodology for the development of the *Winchester Frederick Metropolitan Planning Organization Bicycle and Pedestrian Mobility Plan* based on the information provided in the Request for Proposals and our experience with similar projects. We anticipate refining this scope working closely with the WinFred MPO and Steering Committee to ensure that the plan achieves the team's goals and objectives.

## **TASK 1: PROJECT KICKOFF AND COORDINATION**

Effective coordination and communication between TDG and the WinFred MPO will be important to complete a successful project on time. Toole Design Group's project manager will serve as the primary point of contact. In addition to regular updates with the client's project manager, we envision the following activities in this task:

### **Task 1.1 – Project Start Up**

Upon receipt of the Notice to Proceed, members of the TDG project team will convene to review any feedback received from the MPO during the proposal and contract stages. The TDG team will discuss the methodology, schedule, and staffing, and will prepare for the kick-off meeting. Data needs will be discussed and a request will be made to the client to begin gathering information from prior efforts.

### **Task 1.2 –Steering Committee Formation**

A Steering Committee composed of WinFred MPO staff is an excellent way to encourage understanding, buy-in, and action by various departments, and is essential for the plan's successful implementation. It will be important to include on the committee key players who were involved in the development of other plans in and adjacent to the WinFred MPO. This will insure that all planned routes and corridors are integrated into this more comprehensive plan. The TDG team will provide any needed guidance to the MPO in assembling this committee.

Over the course of the planning process, we propose six meetings – including the kick-off meeting – of the Steering Committee with TDG representatives to review progress, receive feedback on deliverables, and discuss potential strategies. Additional independent meetings of the Steering Committee may be recommended throughout the project if feedback is needed on consultant work.

### **Task 1.3 – Project Kick-Off Meeting**

The client, the TDG team, and the Steering Committee will participate in the project kick-off meeting. The methodology and schedule will be reviewed, including due dates and project deliverables. Participants of the kick-off will be asked to collectively define project objectives and highlight areas of concern. The Steering Committee also will be asked to share information regarding city and county policies, existing plans and maps, previous studies, and other available datasets and resources.

### **Task 1.4 – Formation of Stakeholder's Committee**

TDG will assist the client and the Steering Committee in identifying a group of citizens and stakeholders to be part of a Stakeholder's Committee. Critical participants of this group will include local bike club members who are familiar with biking conditions on roadways throughout the area. Other valuable participants may include representatives from populations with special needs such as elderly, children, and lower income households. The group may also include involved citizens such as those that represent "Class B" bicyclists (i.e. parents with

children), leaders in the business community, and environmental and community preservation advocates.

The Stakeholder's Committee will provide the TDG team with ongoing input from a variety of constituencies and assist with outreach to their respective communities.

**Task 1 TDG Deliverables:**

- Project schedule
- Data needs list
- Agenda for kick-off meeting
- Minutes from kick-off meeting

**Task 1 Client Deliverables:**

- Member selection and formation of Steering Committee
- Member selection and formation of Stakeholder's Committee
- Coordination with committees and logistics of kick-off meeting
- Past planning efforts in the MPO jurisdiction, datasets requested by TDG
- Existing maps of the jurisdiction and facilities from previous plans

**Task 1 Meetings:**

- Kick-off meeting with Steering Committee

## **TASK 2: EXISTING AND PLANNED ROUTE ANALYSIS**

The focus of Task 2 is to identify strengths and weaknesses of the existing and planned system of bikeways and walkways with the goal of creating an interconnected network of bicycle and pedestrian facilities that provides access to key destinations. In essence, this task will be a corridor level analysis of the feasibility and effectiveness of the planned system. A critical aspect of this task is identifying key destinations in the WinFred MPO for a diverse population.

### **Task 2.1 – Examine existing and planned bicycle and pedestrian routes and corridors**

The WinFred MPO will gather all information from previous planning efforts in the area and will provide TDG with GIS maps of existing bicycling and walking facilities and conditions. TDG will review all available plans and maps of both current and future bicycle and pedestrian routes and corridors and will conduct fieldwork to gain an understanding of the quality of the system.

The Client will supply the base GIS map layers in Arc View or Arc Map in a projection established jointly by the consultant and client. The Client will provide a map feature database, which will include the following layers in a uniform format for the City, Town and County in the MPO boundaries (in as much as this information is available in a usable format for this project):

- street centerline
- bicycle counts
- existing and planned bike lane and bike route locations
- sidewalk location
- bus transit stations, bus routes and pertinent railway information
- locations and names of:
  - Universities and colleges
  - elementary, middle and high schools
  - parks
  - trails and greenways

- significant tourism destinations
- significant shopping/employment destinations
- any pertinent neighborhood boundaries (incl. neighborhood names)
- other points of interest
- locations of pedestrian and bike crashes
- ADTs for arterial and collector roadways and percent heavy vehicles
- speed limits

The Client will also provide locations of proposed roadway reconstruction projects (5-year horizon minimum), as well as locations of scheduled roadway resurfacing projects. The Client will be responsible for contacting other sources of GIS data where needed, and obtaining permission for the use of the data for the purposes of this Plan.

**Task 2.2 – Preliminary bicycle analysis map**

TDG will enhance GIS mapping of existing conditions provided by the WinFred MPO to include all planned routes in the MPO area to create a preliminary bicycle analysis map. This will allow for a more thorough analysis of gaps in the system.

**Task 2.3 – Steering Committee Meeting**

The TDG project team will meet with MPO staff and the Steering Committee on conference following the creation of the preliminary bicycle analysis map to discuss the suitability index and next steps. This meeting will also be used to strategize for the first public workshop.

**Task 2.4 – Suitability Analysis**

Different approaches will be used to examine proposed bicycle facility improvements for roadways in urban/suburban areas and in rural areas. Urban/suburban facility recommendations will be based on fieldwork (where possible). Spot measurements will be made to determine the potential for bicycle facility opportunities and general traffic behavior will be observed to identify potential benefits or shortcomings of the proposed bicycle facilities.

Recommendations for rural bicycle improvements will be based on roadway classification, and will also identify potential ways of achieving improvements through road resurfacing projects, restriping, and other types of low-impact projects. Rural bicycle recommendations will rely heavily on input from stakeholders, as well as any existing data that has been generated for county roads in the past.

During this process, TDG will also identify routes in the preliminary analysis network that require a corridor level analysis using a bicycle suitability index. The MPO can conduct a more focused evaluation of several representative corridors that are frequently mentioned as areas of concern during public outreach and through stakeholder input. We anticipate that this would include roadway segments that represent urban, suburban and rural conditions. The Bicycle Level of Service model is the index recommended for this evaluation; TDG has found this model to be effective, and it has been endorsed by the Virginia Department of Transportation.

The Bicycle Level of Service model can be used to evaluate roadway conditions in the study area. This model is based on research documented in *Transportation Research Record 1578* published by the Transportation Research Board of the National Academy of Sciences. The BLOS model uses the same measurable traffic and roadway factors that transportation professionals use for other travel modes, and reflects the “suitability” or “compatibility” of bicycling conditions based on characteristics such as roadway width and striping combinations, traffic volume, pavement surface conditions, motor vehicles speed and type, on-street parking, and other factors. The BLOS model can be used either on a system-wide basis or at a corridor level which is recommended for this plan.

### **Task 2.5 – Identify Key Destinations**

TDG will work with the Steering Committee to identify a preliminary list of key destinations that should be prioritized for bicycle and pedestrian access. These may include schools, churches, libraries, parks, community centers and employment and retail shopping areas. These destinations will be added to the digital map and will be used at the first work session to solicit additional destinations that need bicycle and pedestrian access.

### **Task 2.6 - Identify locations for Pedestrian Retrofit**

TDG will work with the Steering Committee to begin to identify locations needing pedestrian improvements throughout the area, including critical gaps in the sidewalk network and crossing improvements that are needed in key locations that experience frequent pedestrian activity. This list of needed pedestrian improvements will be augmented during the first workshop and through fieldwork.

### **Task 2.7 –Public Workshop #1**

A workshop will be planned once complete maps of existing and planned bicycle routes and key destinations have been produced. Steering and stakeholder committees will be invited as well as the general public. The focus of the first part of the workshop will be examining the system and locating gaps, and proposing linkages to create a more comprehensive bicycle network. The focus of the second part of the workshop will be identifying locations in need of pedestrian improvements. A short presentation will be given and then participants will be divided into groups and provided with large-scale maps for marking needed access routes and connections, key destinations, and difficult crossings.

### **Task 2.8 - VIP Meeting Series**

A series of meetings will be held with targeted agencies and population groups. The WinFred MPO will help identify individuals from key agencies in the region, such as Parks and Recreation Department, and Directors of Planning from various jurisdictions. Underserved population groups should also be identified, such as elderly and minority communities. The consulting team will meet individually with these identified groups to hear about their initiatives, priorities and desires for the plan. (Task to be accomplished by Ursula Lemanski)

#### **Task 2 TDG Deliverables:**

- Bicycle Analysis Map - GIS map of existing and proposed bicycle and pedestrian routes and key destinations
- Preliminary inventory of locations in need of pedestrian improvements
- Summary memorandum of findings from the work session

#### **Task 2 Client Deliverables:**

- GIS maps of existing bicycle and pedestrian facilities
- Data, plans and available maps of planned facilities
- Completion of suitability index on key corridors
- Meeting publicity and logistics

#### **Task 2 Meetings:**

- Steering Committee Meeting #2
- Public workshop #1
- [VIP Meeting series](#)

### **TASK 3: DEVELOPMENT OF ROUTE NETWORK AND PEDESTRIAN PRIORITIES**

Using the data collected in Task 2 and the information gleaned from the various meetings and the workshop, the TDG team will develop recommendations for enhancing bicycle and pedestrian facilities in the WinFred MPO area.

#### **Task 3.1 – Enhance planned bicycle route network and create linkages**

Cities that are friendly to bicyclists and pedestrians have logical route systems that allow travelers to bike and walk between destinations and adjacent jurisdictions easily and safely. Toole Design Group will conduct fieldwork to examine proposed routes and needed connections. The goal will be to develop a prioritized route network that creates vital linkages between key planned routes and creates new routes to key destinations. Special attention will be given to ensure that the bicycle and pedestrian network serves functional transportation purposes. In particular, the network should provide access to key employers, schools and retail centers for low income and minority populations that cannot afford to purchase or maintain motor vehicles.

Upon completion of the fieldwork and other analysis, TDG will present a Draft Route Network Map to the MPO and Steering Committee for review and comment.

#### **Task 3.2 – Enhance pedestrian facilities**

TDG will also provide assistance to the MPO in adding to the inventory of needed pedestrian improvements created in Task 2 by identifying top problem areas for crossings. If available, the WinFred MPO will provide crash data to TDG in a useful form (i.e. maps identifying crash locations and crash typology, and any other roadway characteristic data that would be relevant to studying pedestrian crashes). TDG will review high crash locations and confirm locations that should receive top priority for improvements.

TDG will prepare a pedestrian priorities map and comprehensive inventory of key locations in need of retrofit.

#### **Task 3.3 –Public Workshop #2**

The purpose of this workshop is to present the proposed route network map and the pedestrian priorities map and receive feedback from members of the Steering and Stakeholder’s Committees and the public. The feedback will be geared toward prioritizing the identified routes and projects. We may recommend an open house format where attendees are invited to review maps closely and discuss issues together and with the MPO and TDG staffs.

Gaining input from the general public is important at this stage so they can have a direct effect on the route network and locations in need of pedestrian improvements. TDG will help MPO staff develop creative strategies to publicize the open house to target groups such as the elderly, college students, and lower income households. These may include flyers through channels such as schools and community centers, and PR efforts in local newspapers.

Depending on the level of participation at the first public workshop, an alternative method of gaining public input at this stage may be an online questionnaire. TDG employed this strategy for the Central Shenandoah Valley Bicycle Plan because participation at public meetings in the winter was not anticipated to be high. Over 1,000 responses were received over a six week period providing valuable input into the public’s priorities for bicycling in the region.

#### **Task 3 TDG Deliverables:**

- Draft Route Network Map in GIS
- Map and comprehensive inventory of pedestrian priorities

### **Task 3 Client Deliverable:**

- Publicity and logistics for meeting

### **Task 3 Meetings:**

- Public Workshop #2

## **TASK 4: IMPLEMENTATION PLAN**

### **Task 4.1 – Project prioritization**

Prioritizing proposed bike and pedestrian improvement projects is essential so that resources are used effectively and changes are made that will have the greatest impact and benefit for area residents and visitors. The TDG team will prioritize all network link improvements included in Task 3. Bicycle improvements will be sorted into short, mid, and long term projects. A list of short-term pedestrian priorities will also be development. We will use a combination of criteria to prioritize projects, with heavy emphasis on input received during the public participation process. Criteria may include:

- **Poor conditions/high demand.** Locations with poor conditions that exhibit a high level of demand for bicycling and/or walking.
- **Ease of implementation.** Locations where opportunities exist to develop bicycle and pedestrian facilities at low cost, such as through roadway improvement projects that are already scheduled.
- **Key destinations.** Projects that would create access to key destinations by bike or on foot.
- **Public support.** Projects that have received a high level of public and political support.

A major consideration for these proposed improvements will be if they can be undertaken when another project affecting the street right-of-way occurs. Issues of safety, convenience, and ease of implementation also will affect the priority list.

### **Task 4.2 – Design Recommendations**

By wisely planning street improvements and having adopted standards for bicycle and pedestrian accommodation, streets in Winchester and Frederick County will be able to serve pedestrians and bicyclists as well as motorists.

TDG will recommend facility types for proposed bicycle network links, and will provide a list of design treatments that are needed to improve pedestrian conditions in situations common in the MPO area. If budgetary constraints allow, TDG may provide design solutions for two key locations in need of pedestrian improvement. TDG will not prepare construction documents.

Toole Design Group has recently prepared pedestrian and bicycle facility design guidelines for local and state agencies, therefore this task will benefit from previously prepared drawings and details that can be “tweaked” to meet the needs and standard practices in Virginia. The goal will be to have a set of effective bicycle and pedestrian facility design guidelines that Winchester and Frederick County can use as a standard for all roadway and development projects.

The TDG team will offer general recommendations for a signage system for the Winchester-Frederick County area to make the route network and other bicycle and pedestrian facilities easy to find and use. A well-designed signage system will also increase the safety of riders and other users of the on and off road pathways. Other bicycle facilities may be investigated and recommended as needed to encourage cycling in the area. These may include bicycle parking, a maintenance schedule and a strategy for enhancing the bicycle-transit interface using amenities such as bike-on-bus.

#### **Task 4.3 – Ordinance Review**

For successful plan implementation, it is imperative that local policies and ordinances allow for, encourage, and where appropriate require bicycle and pedestrian facilities. The TDG team will conduct a general review of adopted local policies and codes that either support or hinder bicycling and walking in Winchester and Frederick County.

During this task, TDG will conduct a meeting with key staff from the WinFred MPO and VDOT. The purpose of this meeting will be to discuss current practices and decision-making processes with regards to bicycle and pedestrian facilities, and to discuss the types of changes that may be needed to existing policies. This conversation will also address how to incorporate the recommendations that will emerge at the end of the planning process in future transportation decisions.

#### **Task 4.4 –Steering Committee Meeting #3**

The purpose of this meeting will be to discuss project prioritization and anticipated challenges regarding implementation. The results of this meeting will be integrated into the implementation schedule and action plan of the final draft report. This meeting can also be used to plan for a potential meeting with VDOT as described above.

#### **Task 4.5 Cost Analysis**

Costs for typical network links developed in Task 3 will be estimated. The project cost estimates will be integrated into the prioritization plan.

#### **Task 4 TDG Deliverables:**

- Project prioritization schedule including cost estimate and responsible agencies and stakeholders
- Design recommendations and ordinance review will be incorporated into the draft plan report (see Task 5)

#### **Task 4 Client Deliverable:**

- All WinFred MPO bicycle and pedestrian-related policy, ordinance, code and standard documents

#### **Task 4 Meetings:**

- Steering Committee Meeting #3 (conference)
- TDG and MPO staff meeting with VDOT (tentative)

### **TASK 5: DRAFT REPORT**

The final report for the project will pull together all previous deliverables generated in Parts 1 through 4. This final report should take a different format and will not repeat information and background found in the other bicycle plans completed in the MPO area. This plan will be a handbook, a technical document that outlines critical information from this and previous planning efforts and most importantly sets forth future action. It will be concise, contain maps, tables and lists so that critical information can be gleaned quickly and easily.

The document will include an Action Plan which will outline activities for each year for the first 3 years following the plan's adoption. It will identify, where possible the roles, and responsibilities of agencies and stakeholders in implementing the plan's recommendations. This action plan will provide the WinFred MPO with concrete steps to insure progress is made toward building a connected bicycle and pedestrian network.

#### **Task 5.1 – Draft Plan Development**

The Toole Design Group team will prepare two versions of the final plan: 1) a draft plan for comment and 2) a final plan. The draft plan will be presented to the client, Steering Committee, and Stakeholder's Committee several weeks prior to work session #3.

**Task 5.2 – Steering and Stakeholder's Committees Meeting #4**

The purpose of this last work session will be to receive feedback on the draft plan and discuss any additions or corrections.

**Task 5.3 – Public Meeting**

WinFred MPO staff will hold a public meeting to present the draft plan. Comments received during this meeting will be forwarded to TDG and included in the final plan.

**Task 5 TDG Deliverables:**

- Draft Plan for comment (up to 10 copies, black and white)

**Task 5 Client Deliverables:**

- Comments on draft plan
- Logistics of Steering and Stakeholder's Committee Meeting
- Public Meeting facilitation and summary of comments

**Task 5 Meetings:**

- Steering and Stakeholder's Committee Meeting #4

**TASK 6: FINAL BICYCLE AND PEDESTRIAN MOBILITY PLAN**

**Task 6.1 – Revisions to the Draft Plan**

The draft plan will be revised based on comments by the client, both committees and the public to produce the final Bicycle and Pedestrian Mobility Plan.

**Task 6.2 – Final Plan**

The TDG team will present the final plan for approval to the WinFred MPO. The final report will be in color and bound in 8 ½" by 11" format. Photographs and up to five 11"x 17" maps will be included to illustrate text in the report. Five copies will be provided to the client, along with digital versions as PDF and Microsoft Word files. A large format (34" x 44") of the route network will be provided.

**Task 6 TDG Deliverables:**

- Final plan (3 printed copies in full color and one large format map; original and pdf print-ready digital files on cd)

**TASK 7: CASE STUDIES**

In consultation with the client, Toole Design Group will select a set of case studies in the WinFred MPO study area to conduct additional analysis. The case studies would represent different geographic areas and represent a range of project types and locations. Each case study will include a description of the location and an assessment of bicycle and pedestrian need. Recommendations will be made for design solutions to improve the bicycle and pedestrian facilities and preliminary cost estimates will be prepared.

The form of the case studies will vary as necessary -- some may consist of written memorandums supplemented with photos and cross sections while others may consist of more detailed concept level layout plans. The precise scope, locations, nature, and level of

complexity required are unknown at this time; therefore the budget for this item will be separated into task orders. Each task order will be negotiated separately. It is anticipated that 3-7 case studies may be completed under the budget. Some may begin at the time the project commences while others may begin later during the project.

## **Appendix J**

Northern Shenandoah Valley Ozone Early Action Compact Area

*December 30, 2005 Submittal*

# **Walking & Wheeling the Northern Shenandoah Valley**

A PLANNING GUIDE FOR IMPROVING LOCAL/REGIONAL  
PEDESTRIAN & BICYCLE ACCESS & LINKAGES  
FOR RECREATION & CIVIL WAR HERITAGE TOURISM

Prepared For:  
Northern Shenandoah Valley Regional Commission  
and  
Shenandoah Valley Battlefields Foundation

Adopted, November 18, 2004  
Northern Shenandoah Valley  
Regional Commission

## **Acknowledgments**

The Northern Shenandoah Valley Regional Commission recognizes those who contributed their valuable time and resources for this project. Special thanks goes to the Shenandoah Valley Battlefields Foundation for providing the leadership and matching funds for this Virginia Department of Transportation – Rural Transportation Planning Program Projects. Thanks goes out as well to the staff of Anderson & Associates for their work.

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Robert E. Kinsley, Jr.	Shenandoah County Planning and Zoning Director
Tim Youmans	Winchester City Planning Director
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### **Local Stakeholders**

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Kenneth Beyer	Volunteer Coordinator: Luray-Hawksbill Greenway
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## DISCLAIMER

The contents of this report reflect the views of Anderson and Associates and the Northern Shenandoah Valley Regional Commission. Both Anderson and Associates and the Northern Shenandoah Valley Regional Commission are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the Federal Highway Administration and the Virginia Department of Transportation. This report does not constitute a standard, specification, or regulation.

## **Executive Summary**

The Northern Shenandoah Valley is a region rich in history, recreation, and natural and cultural beauty. These assets combined with its proximity to the Washington Metropolitan Area make it a popular destination for people from all over the world. Its local governments are also faced with increasing developmental pressures that threaten the quality of life and could hinder future chances for preservation and resource management. The purpose of this report is to explore the role of alternative transportation in preserving the historic cultural sites and green spaces that exemplify the character of the Northern Shenandoah Valley. Furthermore, it is purposed to begin to develop a framework with which to address future development in light of this exploration.

Data and input gathered from representatives of the region, balanced with discussion and review has resulted in the formation of specific goals.

Generally, these include:

- Improving overall safety of pedestrians and non-motorized vehicle users
- Increasing the availability and accessibility of alternative transportation
- Conserving the region's resources
- Encouraging economic vitality.

Strategic results of these goals include a regional bicycle plan compiled from existing local routes suggesting future route development, and projects illustrating a design approach at differing scales – local, town-to-town, and regional. Lastly, the report presents various funding sources and methods of implementation useful for the varying projects that should arise out of this planning guide.

## **Introduction**

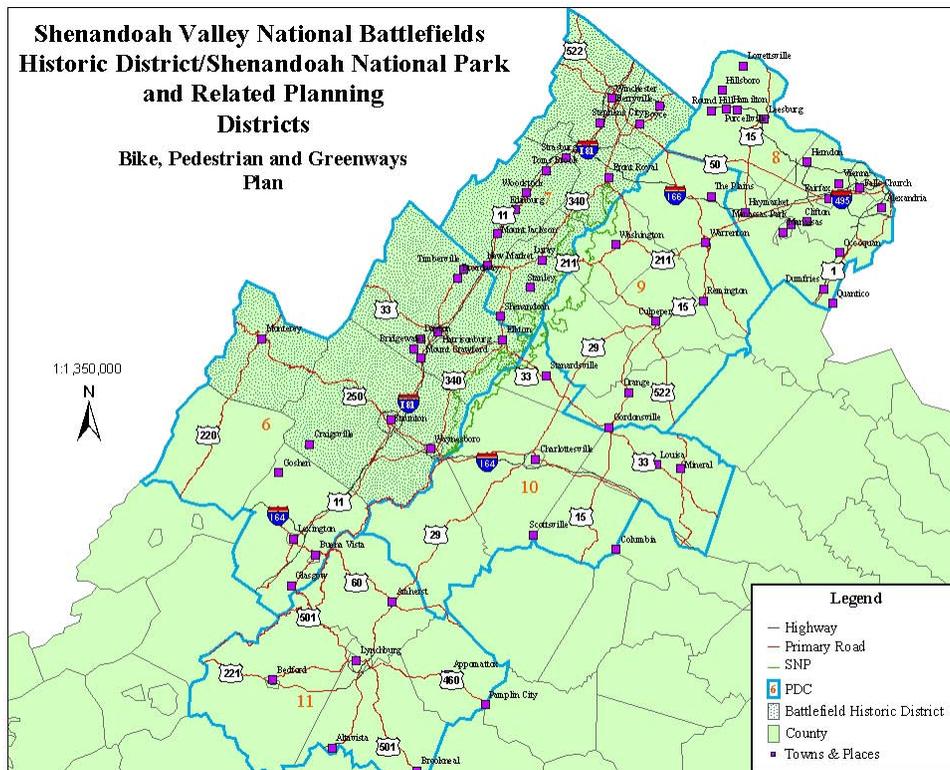
### **Regional Description**

The Northern Shenandoah Valley is composed of five counties including Frederick County, Clarke County, Shenandoah County, Warren County, and Page County, and 15 municipalities including the City of Winchester. It covers approximately 1,650 square miles, and is home to more than 185,282 people (2000 Census) and has a projected growth of 268,000 people by the year 2030. This region consists primarily of rural rolling farmland framed by the Blue Ridge Mountains to the east and the Allegheny Mountains to the west. It possesses numerous Civil War battlefields and other Revolutionary and Civil War historical and cultural resources. Shenandoah National Park and the George Washington and Jefferson National Forest, along with the Shenandoah River and its North and South Forks, provide ample outdoor recreation, sporting, and wilderness opportunities. Because of its rich history and preserved historic places, natural recreational resources, and proximity to the Washington Metropolitan Area, the Northern Shenandoah Valley has become a prominent destination as well as a desirable place to live for people from near and far. This is evidenced by a 16.4 percent growth in population over the last ten years.

This region is also experiencing developmental pressures that must be addressed responsibly in order to preserve the character of the Valley. Growth also presents an opportunity to incorporate alternative non-motorized methods of transit and recreation into the existing

transportation system. This plan intends to guide current and future investment in transportation and recreational infrastructure for pedestrians, their wheeled vehicles, and cyclists.

In addition, the Northern Shenandoah Valley region is part of the Shenandoah Valley Battlefields National Historic District, one of the nation's Congressionally-designated National Heritage Areas. As such, the eight-county National Historic District is enabled to receive federal funds through the Shenandoah Valley Battlefields Foundation to accomplish both the travel and heritage tourism goals set forth in the Management Plan for the Shenandoah Valley Battlefields National Historic District as well as in this plan.



## **Project Goals**

***Improved health, welfare, and safety for pedestrians, sidewalk wheeled vehicles, and cyclists using the Virginia public transportation network, roads, sidewalks, and public pathways, in the Northern Shenandoah Valley.***

Transportation safety in and around the region and from community to community is improved for residents and visitors by designation of routes that make responsible users visible to motorized traffic. Rural and municipal routes are also made safer by roadway improvements and the development of separate pathways.

The region already has hiking trails – unimproved “greenways” through public lands. The Shenandoah National Park, George Washington and Jefferson National Forests, and state and local parks contain the majority of these trails. Multi-state trails like the Appalachian National Scenic Trail and Tuscarora Trail also cross through the region.

Greenways are linear parks that are designed to link people and places together and can provide outdoor recreation, river corridor protection, wildlife habitat and non-motorized access between schools, neighborhoods and parks. By creating a system of local greenways we would provide safe places for outdoor activities such as bike riding, walking, baby strollers, and wheelchairs and bring people together through a common place to commune with nature and learn of history.

These facilities contribute to the “Quality of Life” of the region. They give local citizens safe routes for recreational and health-motivated exercise and are an attraction to tourists. These trails are just another tool in addressing the obesity epidemic our nation is facing during this period in history.

### ***Public Mobility and Accessibility***

The focus of the plan is how to return to historical mobility and accessible options displaced by the automobile. By defining improvements that serve current residents and visitors, the economic feasibility of implementation is increased, and the quality of life improves for all. Regional-local integration of bicycle and pedestrian routes supports the conscious, multi-modal planning values of the individual localities and the whole region.

### ***Conserve Natural Resources and Provide Access***

The region has significant public green spaces – the Shenandoah National Park and George Washington and Jefferson National Forests. These were instituted to restore forest cover in the Shenandoah Valley in order to improve and protect air and water quality for both local use and that of the Washington Metropolitan Area.

On a smaller scale, greenways keep land along a streams, rivers, or ridges from being disturbed or built upon. By keeping disturbances back from the edge of a waterway, storm water runoff is filtered through the standing vegetation, thus removing sediments and pollutants, minimizing soil erosion. The creation of additional green spaces and greenways which incorporate cultural resources such as historic battlefields and Civil War historic sites provides ongoing improvements to its scenic preserved lands.

### ***Economic Vitality***

Historic and cultural resources are included in economic development plans to maximize economic growth while preserving battlefields and other historic landscapes. The backbone for economic revitalization and growth already exist in the historic pattern of regional transportation and settlement. Existing routes and the cultural resources found along them will create a framework on which both land preservation and economic vitality will hang.

### **Stakeholder Planning Process**

The Stakeholder Planning Process for this project used a series of three presentation-discussion forums attended by stakeholders from the Northern Shenandoah Valley Region, a regional planner, and a consultant team. Each session was broken into two general parts. Opening each session was a presentation by the consultants. A discussion of the pertinent issues surrounding the project followed and determined what design concepts would be further developed and presented at the following meeting.

Following is a brief account for each of the meetings, outlining the ideas and concepts identified as relevant to the goals of this project.

*Kick-Off Workshop – 08 April, 2004*

The following planning issues were discussed:

- “Living Towns” is a concept for creating towns that encourage a people-scaled sense of mobility and access. This concept forces one to question how the communities of the Region can foster vibrant, convenient, and safe pedestrian linkages.
- “Town-to-Rural Linkages” Is an idea that promotes connectivity between more settled or urban areas, and the surrounding countryside or wilderness. An example would be a trail connecting a downtown area to an outlying park or national forest.
- “Regional Corridors” are existing linear routes that connect various communities or other components throughout the region. Examples are the Appalachian Trail, Route 340, and Route 11.
- “Cultural Resources” is an idea that promotes the incorporation of important regional cultural assets such as the numerous battlefield sites and other historic sites into the development of a regional planning strategy.
- “Recreation” is a concept addressing the physical connections themselves and the places that they connect to as offering the potential for recreational activities in varied forms.

The discussion of these concepts resulted in selecting four general categories needed to adequately address the goals of the project.

These categories are:

1. *Inventory and Assessment* of existing facilities and/or infrastructure related to the goals of the project
2. *Conceptual Framework* to guide planning and prioritization of potential projects
3. *Design Models* to serve as examples of how various types of projects could be addressed
4. *Implementation* outlining methods of implementing the various projects that may arise out of this study.

*Workshop 2 – 13 May, 2004*

At the second meeting five general topics were covered:

1. The potential use of blueway corridors, specifically the North and South Forks of the Shenandoah River, for tourism and recreation: It was noted that the Rivers are an important geographic and cultural resource in the region, tied both to the Valley’s history and its present daily life. It was determined to be outside the scope of this project to deal specifically with the blueway component of alternative transportation in the region. However, as future projects develop, the concept of integrating greenway and blueway use should not be overlooked. The region’s rivers serve important recreational

opportunities that could become both destinations and routes within the larger multi-modal transportation system.

2. Existing and potential greenway systems: It was established that Winchester's "Green Circle" could serve as a greenway hub for additional trails and greenways to radiate out from into the region. Luray's "Hawksbill Greenway" and the Front Royal Greenway could also become part of a larger network of connections throughout the region. When planning trails, greenways, and bike routes in the region, these and other projects should be considered in the plan as important connections to make where feasible. Also, it is important that the planning and marketing of such greenway/trail systems accommodate both local residents and visitors to the region. By doing so, the region's greenways and trails can become a vital part of the regional quality of life, as well as an economy boosting tourism feature.
3. Rating bike routes: It was previously noted that certain routes in the region were safer than others, and that a few of the less-safe routes would actually be quite desirable for bicycle use due to their logical connections and/or scenic value. For this reason, a county-by-county mapping of bike routes was initiated which used a safety and improvements-priority rating typology. These resulting maps may be viewed under the chapter titled "Inventory & Transportation Assessment" in the Bicycle Master Plan section. Another important topic covered included the need to work closely with VDOT and developers as new roads and roadway improvement are being considered. The region should adopt a system of design templates for cycling features on different types of roadways, which could be implemented by VDOT when re-designing, improving, or creating new roadways.
4. Everyday pedestrian systems: This primarily dealt with downtown connection and accessibility issues. The workshop committee determined there was a need to develop better pedestrian facilities in downtown areas throughout the region. This includes determining where areas are not universally accessible but should be, surface improvements, streetscape improvements, safety enhancements (such as crossings, etc.), and making strategic connections.
5. Marketing these ideas: It was determined that extensive marketing and educating is needed in order to create buy-in and use of the multi-modal transportation projects encouraged in this study. Currently, there is a lack in proper etiquette for shared-use infrastructure. It is important that motorists and non-motorist users both understand their rights and obligations to each other. This should be addressed through multiple venues including the public education system, local television, news and other printed media, and special events. Likewise, the specific benefits of multi-modal transportation systems to the individual and corporate residents of the region must be conveyed through these and other appropriate methods. In order to secure support and funding, it is imperative that residents and business see the value of each project proposed.

Workshop 3 – 10 June, 2004

For the third workshop, the primary objective was to present the findings of the stakeholder group and consultants in the form of a draft copy of the printed planning guide titled "***Walking and Wheeling the Northern Shenandoah Valley***". Chris Schooley of Anderson & Associates

presented the various sections of the document, giving brief explanations of the intent behind incorporating the various topics covered in the planning document.

A time of questions and comments revealed the desire of the stakeholders to be allowed to add additional material to the document before a final document is published. One member suggested incorporating design recommendations for trails that would be compatible with in-line skating and other small-wheeled transportation devices, as these have more stringent requirements than most bicycles. A desire for additional information on existing greenways was expressed. Comments were made regarding graphic usage as well, expressly the need to be equitable in the representation of user types and organizations represented by the planning guide.

Ultimately, it was determined that the Northern Shenandoah Valley Regional Commission would take the lead in making a text version of the draft document available for feedback using an internet forum. The NSVRC would then compile and edit additional texts provided by stakeholders, and incorporate it into a final planning document that could be tailored for various uses.

## Inventory & Transportation Assessment

### Projects Currently Underway

The region is fortunate to have a number of major projects underway that will further begin to engage the principles outlined in this report. Many of these projects are greenway or trail systems since they are often within funding guidelines and can be contained within one municipality.

To take account of the growth in projects and development, this portion of the plan shall be reviewed annually in August by the Commission's Transportation Technical Committee and be updated to include new local projects for approval by the Commission at its November meeting.



#### *Shenandoah Valley Battlefields National Historic District*

In 1996 Congress created the Shenandoah Valley Battlefields National Historic District as a means to identify, protect, interpret, and promote 10 Civil War battlefields and related historic and natural sites in this eight-county National Heritage Area that includes Augusta, Clarke, Frederick, Highland, Page, Rockingham, Shenandoah, and Warren Counties as well as four independent cities. Among the responsibilities given to the district and its management entity, the Shenandoah Valley Battlefields Foundation (SVBF), is the linking of battlefields and sites through a series of historic routes and trails utilizing a variety of travel modes. Congress provides funding to accomplish the purposes of the district and encourages the SVBF to secure public and private grants to implement the purposes of the National Historic District. As such the SVBF works with the National Park Service, the National Forest Service, the Virginia Department of Conservation and Recreation, and the Virginia Tourism Corporation along with regional tourism entities to preserve land and promote heritage tourism in this portion of the Shenandoah Valley.

## **Route 11 Corridor**

### *Winchester Green Circle:*

As the Winchester Star poignantly described "The Green Circle is envisioned as a network of trails, sidewalks, and streets around and through Winchester that would allow walkers and bicyclists to travel to cultural, educational, recreational, and commercial sites around the city in a linear park setting." (Getting to the Center of the Green Circle, March 1, 2004) The Green Circle will connect neighborhoods with the commercial and office destinations of daily life as well as local cultural resources such as Patsy Cline's home and Old Town Winchester. The Green Circle will serve the citizens of the Winchester area and function as a tourist destination for the region.

### *Redbud Run Greenway*

This proposed greenway will link preserved parcels from the Third Winchester battlefield via interpretive walking trails through the Redbud Run riparian corridor. The project will not only be used for historic preservation and interpretation but also for conservation, protection and restoration of this coldwater stream for trout and wildlife habitation.

### *Old Town Winchester Improvements:*

Winchester, the only city in the study area, has enjoyed more than a decade of downtown redevelopment and preservation. The new streetscape improvements to Cameron Street will expand the commercial and residential section of Old Town and provide for improved sidewalks, viewsheds, and lighting.

### *Middletown:*

Their goals include developing a streetscape improvement program to enliven Main Street with decorative sidewalk and crosswalk treatments, landscaping, street furniture, decorative street lighting pedestrian enhancements, and bicycle and walking connections on Main Street and side streets throughout Town. And to develop a "Historic trail" through Middletown, the Cedar Creek and Belle Grove National Historical Park, and a walking/biking trail system throughout that links them together that links them together.

### *Strasburg's Greenway/Blueway:*

The Town of Strasburg envisions a key pedestrian link for the town residents between the existing Town Park and the high school's "River's Edge Environmental Study Area" incorporating the existing and planned residential neighborhoods. As per the town's comprehensive plan and master plan guidelines: multi-modal community connector trails, a "Riverwalk" trail, and public access to the Shenandoah River will create a designated Greenway/Blueway for recreational, educational, and conservation benefits. Future trail extensions might link the core boundary of the Belle Grove and Cedar Creek National Historical Park to this network thus providing a resource for historical interpretation/preservation and heritage tourism. This project will play a key role in linking the natural and historic resources of the community and our region.

*Woodstock: Fairview Park and the Seven Bends State Park*

*Fairview Park* is a 50 acre farm purchased by the town for the purpose of developing recreational opportunities within the Town of Woodstock. As a part of the RFP for the overall development of Fairview Park, the town will also investigate sidewalk and trail linkages from the existing parks to Fairview Park, the school campus and higher density residential areas.

*Seven Bends State Park and Greenway/Blueway*

The Commonwealth of Virginia is currently investigating the possibility of locating a park just east of the Town of Woodstock on property adjoining the George Washington National Park. The park proposal consists of just less than 1,000 acres with over four miles of frontage on the North Fork of the Shenandoah River. The town anticipates including this proposed park within the planning process for Fairview Park to determine possible trail/sidewalk linkage throughout the entire Woodstock area.

*Fort Valley*

In this section of Shenandoah County, which adjoins Warren and Page Counties along the eastern edge of the Massanutten Mountain in the George Washington National forest have horse riding trails cooperatively maintained by users. Riding trails are important in the region for local use, support of this sector of agriculture and for tourism. Connections throughout the region support activities such as the Old Dominion 100 endurance race.

## **Route 340 Corridor**

### *Berryville-Clarke County:*

The Town and County have sought a bicycle-pedestrian path from on West Main Street, Business Route 7, to connect to the county park and recreation facilities, high school, primary school and fairgrounds. Obtaining rights-of-way from landowners has been challenging, though the town continues to work with them and developers. The town is in the process of updating its comprehensive plan and is looking for guidelines that will support safe use of bicycles.

In Clarke County, a horse riding trail connecting the State Arboretum at Blandy Farm to Long Branch is under development. Riding trails are important in the region for local use, support of this sector of agriculture and for tourism. Connections throughout the region support activities such as the Old Dominion 100 endurance race.

### *Front Royal-Warren County Greenway Master Plan:*

This project will eventually improve connections between the Town of Front Royal and the Shenandoah River. Front Royal is known as the “Canoe Capital of Virginia”, but railroads and industrial development have formed a barrier between the citizens and the river. The greenway project will not only create a network of trails through the town, but will connect the 240-acre Conservancy Park (under construction beginning in 2005); a “SuperFund” site that previously housed a rayon manufacturing plant operated by the American Viscose Company and Avtex Fibers, Inc.

### *Page County’s Luray-Hawksbill Greenway and Big Gem Park:*

#### *Luray-Hawksbill Greenway:*

The greenway’s first two phases are complete and provide a walking and wheeling path from U.S. 211 along Hawksbill Creek through Town to U.S. 340 Business Highway. When completed the four mile long greenway will link Luray’s two schools, the library, and visitor’s center (at the restored train station) with the fifty-eight acre Luray Recreation Park. Trail users will have access to these sites without having to cross major roadways.

#### *Town of Shenandoah’s Big Gem Park:*

Big Gem is a 65-acre brownfields site that is currently being transformed into the small town's main park. Eventually, Big Gem will contain a pond, picnic facilities, trails, a baseball field, an amphitheater, a dog park, and trail systems. The town plans to connect Big Gem to the Shenandoah River Park site with a system of trails along the Shenandoah River, through town, and eventually to Shenandoah National Park.

## **Bicycle Master Plan**

### ***Regional Bicycle Plan***

As part of the inventory of existing resources throughout the Northern Shenandoah Valley Region, a comprehensive assessment of bicycle routes was conducted. This assessment investigated the locations of existing routes, and sought to identify historic, cultural, and amenity resources along those routes. The following regional map illustrates these findings, showing bicycle connections between features such as walking tours, Civil War battlefields, greenways, and the Shenandoah River.

This map should serve an important role in the marketing and development of the region as a cycling destination both internally and externally. Valuable information for both regional residents and visitors is contained in this map. Identified features such parking locations, service amenities, bicycle shops, points of interest, and routes for other modes of transportation will prove necessary, especially for international visitors who may not be familiar with the geographic or civil systems of the region. Internally, this plan and the associated county bicycle plans following may be used in website, brochure, and hand-out formats. They may be made available on the web, in bicycle and other related shops, and distributed at various local events in either CD or printed formats. Externally, the internet, visitor's centers, and tourism resources may use the map as a marketing tool for individuals and groups.

A second important role this investigation has is to provide information for the region and Virginia Department of Transportation to cooperatively incorporate in ongoing roadway improvements and additions. The concepts discussed throughout this report such as paved shoulders, separated paved trails, bike route signage, park and ride facilities, and cultural destination identification should be included on the routes shown as roadway improvements are being planned.

Regional Plan – A Multi-Modal plan to enhance the Northern Shenandoah Valley's Historic County-city-Town Road Network and Greenways for Local Recreational Use, Tourism and Civil War Battlefields Interpretation and Preservation. See insert following.

Regional Plan Drawing

## **County Bicycle Plans**

In addition to the regional bicycle plan map, a detailed analysis of the bicycle routes within each county was compiled into five maps (one for each county). In these maps, a ranking system based on the safety and the desirability of the route for use by cyclists forms a trail typology illustrated with different colored lines. Routes outlined in **green** indicate those roadways that are highly scenic and possess very little motorized traffic. Contrarily, routes highlighted in **pink** show unsafe roads with high volumes of motorist traffic, for which there is no alternative route. These would be of the highest priority for multi-modal roadway improvements. Routes outlined in **orange** indicate roadways where, regardless of their positive qualities, high motorist traffic volume at high speeds restricts use by cyclists. These routes may be logical connections between origins and destinations for cyclists, but currently pose a severe safety risk. Orange routes would be second priority for improvements only because potential alternative routes exist. **Yellow** routes indicate roadways with moderate amounts of traffic where bicycle use is acceptable. Improvements may be needed on these routes, but are of a lesser priority than those in pink. **Purple** segments define the routes that have gaps in which there is no alternative route and pose a significant risk to the cyclist due to high rates of speed, lack of road access and high volumes of traffic. These segments have the highest priority for modification because they create a break in a contiguous bicycle route that would link regional destinations.

Insert maps follow in this order:

### Route 11 Corridor

- Frederick County – Winchester City
- Shenandoah County

### Route 340 Corridor

- Clarke County
- Warren County
- Page County

Frederick County – Winchester City Map

Shenandoah County Map

Clarke County Map

## Warren County Map

Page County Map

## Conceptual Framework

### Facility Design Strategies

Throughout the development of this project, three primary forms of infrastructure were identified as necessary for a successful regional multi-modal transportation system. These include roadways, sidewalks, and greenways/trails. Each type of path has different advantages and limitations that encourage specific applications. The goals and objectives of future projects will determine which type of pathway will be most desirable to adapt or create. Following is a detailed discussion of each of the three types of pathways in relation to multi-modal use.

#### *Roadways*

While roadways are typically perceived as the automobile's domain, they may be adapted for effective alternative uses as well. The simplest and most logical multi-modal feature of a roadway is the shoulder. Whether paved or unpaved, a wide shoulder along an existing roadway provides a surfaced path readily accessed by a variety of user types. Generally, it is more desirable to incorporate a paved shoulder. This provides a smoother and safer facility for both wheeled devices – such as bicycles, strollers, in-line skates, or wheelchairs – and pedestrians.

The width of a shoulder may vary, but should be a minimum of four feet when possible. This provides enough room for cyclists to safely ride in-line while auto traffic passes by. Ideally, where multiple user types (such as joggers, cyclists, and in-line skaters) use the shoulder simultaneously, the roadway will have wide shoulders divided into bicycle and pedestrian lanes on both sides of the road. In this situation, pedestrian users such as those walking or in a wheelchair will utilize the outer-most lane of the left shoulder (traveling against all other traffic), while cyclists will use the inner lane (closest to auto traffic) of the right shoulder. Where space allows only a four-foot shoulder on each side, cyclists will travel in the same direction as traffic, while pedestrian users will travel against the flow of traffic in the same shoulder width. Cyclists will yield to pedestrians; autos will yield to cyclists and pedestrians.

Since the roadway shoulder creates a direct interface between motorists and other users, this system is best suited to bicycle use. Cyclists are also more likely to travel the greater distances offered by roadway routes. Generally, this type of infrastructure is best used as a connection between jurisdictions such as town-to-town, county-to-county, and other outlying destinations. Cyclists are more likely to travel at speeds closer to that of auto traffic. For this reason, it is also possible to accommodate bicycles in the regular travel lane on the downhill side of roadways. Going down-hill the bicycles may maintain speeds equal to motorist traffic and are therefore not impeding traffic flow. However, cyclists must slow significantly when going uphill and will require a shoulder or bike lane in order to stay out of the way of motorist traffic. Consequently, where the right-of-way width will not accommodate widened paved shoulders on both sides of the road, it is acceptable to alternate which side the widened paved shoulder is on based on up-hill and down-hill conditions.

A primary barrier to using roadways as part of a multi-modal network path is crossing interstates. Too frequently, connections are dead-ended where a major interstate routes through rural tertiary roadway networks. Efforts should be made to work with VDOT to incorporate over-crossings for scenic multi-use roadways that may not currently have an interstate over-pass.

## *Sidewalks*

Typically, sidewalk pathways are separated from existing roadways in both material and elevation and should be paved with some form of hard even material. Sidewalks should be a minimum of five feet wide wherever possible to allow wheelchair users to pass side by side. They are bi-directional pathways, meaning users may go in either direction along the sidewalk, regardless of which side of an adjacent roadway they may parallel. Users should be limited to pedestrians and their assisting wheeled devices such as wheelchairs or strollers, but may include other wheeled users in certain circumstances.

Generally, sidewalks are safe places for travel, but should be designed with proper amenities and programming to limit conflicts between users. Likewise, pedestrian interaction with motorist traffic needs to be orchestrated with proper crosswalk systems and signage. It is commonplace to find quality sidewalks rendered essentially useless by poorly designed or totally lacking crosswalk connections between sidewalks. The two most significant problems with sidewalk systems are fragmentation – missing segments or separation by heavy traffic with no safe crossing, and accessibility – slope, edge, and surface characteristics that limit the range of users. For sidewalks to play an important and effective role in multi-modal transportation projects, the Region communities must overcome these barriers.

The primary concern or barrier regarding sidewalk facilities is accessibility. For this reason, the rest of this section will focus on essential accessibility structures. Curb ramps have the ability to aid both mobility and visually impaired pedestrians in crossing the street; however, when designed poorly, they create confusion for the visually impaired, and impose hazardous situations on the mobility impaired. Thus, every effort must be made to construct well-designed ramps onto and off sidewalks that are appropriately tailored to the various circumstances at each pedestrian-crossing or access location. It may not be possible to use ideal curb ramp configurations in every circumstance, thus the following paragraphs illustrate appropriate responses to a variety of situations.

The safest and most effective curb ramp configuration is a paired ramp. This is where one ramp enters the street on each side of the sidewalk corner, perpendicular to the direction of travel on the sidewalk. Users prefer paired curb ramps because they permit all pedestrians to enter the crossing at the same point, and they provide more useful information to blind pedestrians regarding the location of the corner and crossings. This type should be used whenever space allows. The total sidewalk width from a building or other defining edge to the outside curb edge of the proposed ramp must be wide enough to accommodate a 48 inch (minimum) top landing, as well as a ramp run with slope no greater than 1:12. The side flare on either side of the ramp must have a slope no greater than 1:10. For instance, on a sidewalk with a typical curb height of 6 inches, the ramp configuration should be as follows: side-flare width of 60 inches (each side), ramp run length of 95 inches, and top landing of 48 inches, making the total sidewalk width required 143 inches. Curb height at intersections may be manipulated to permit shorter ramp runs. See the chart for additional curb heights.

Diagonal curb ramps are sometimes needed in alterations where either existing site development will not accommodate two ramps or large curb radii leave little sidewalk area at crosswalks. In these scenarios, the crosswalk must be widened to include the corner of the intersection; otherwise, pedestrians in wheelchairs will be required to leave the crosswalk in order to use the diagonal curb ramp. Drivers may not anticipate such a maneuver, thus creating a collision hazard. Where curb radii are less than 20 feet, a diagonal ramp should be avoided, as moving traffic can encroach on the landing area. In certain instances, narrow sidewalks with

large radii may not accommodate the top landing required for a diagonal curb ramp. A retrofit, or combined type, curb ramp must be installed when this is the case. Such ramps combine ramp runs that are both parallel and perpendicular to the sidewalk flow of traffic.

Very narrow sidewalks will require the use of parallel curb ramps. Such ramps slope in the direction of sidewalk travel. The landing should be at least 60 inches long to permit a turn into and out of the crosswalk. Requirements for ramp run slope remain 1:12 as a maximum, while landing slope remains 1:48 maximum.

Certain exceptions may be made for all ramp types regarding slope and side flares. In existing developed rights-of-way, it may be necessary to install a steeper ramp to provide access to street crossings. Slopes as steep as 1:10 are permitted for the rise of a 6-inch curb if it is not feasible to provide a ramp at 1:12 in a sidewalk alteration. For a 3-inch rise, the ramp may be as steep as 1:8 where necessary. In historic facilities, a 1:6 ratio incline for a ramp with a maximum run of 24 inches is permitted if a lesser slope is not possible and the historic significance of the facility would be threatened or destroyed by compliance. Furthermore, side flares are not required where the ramp is protected from pedestrian cross-travel by planted areas, sidewalk equipment or site furniture, or by handrails or other barriers.

### *Greenways/Trails*

Greenways and trails provide alternative paths to sidewalks and roadway shoulders. They often meander along streams or through scenic wooded and farmland routes. They may be paved in materials like asphalt or crushed stone, or may be maintained as a natural soil trail surface. A multi-use paved greenway trail should be at least eight feet wide, with a recommended width of 10 feet. An unpaved trail should typically be between four and six feet wide, depending on user types and other local factors. These pathways are bi-directional, and depending on the surface and width, may be open to any variety of user types, including but not limited to cyclists, pedestrians, wheelchair users, in-line skaters, equestrians, and skateboarders. The most common safety concern is coordinating the types of users with each other, the surface material, and the tread width of the greenway/trail. For instance, trail planners advise against allowing both cyclists and equestrians on the same tread-width, as fast moving bicycles may unnerve horses, and each user has a different preferred surface type.

These types of pathways typically connect neighborhood-to-neighborhood, town-to-rural, town-to-town, and school and park locations. Some examples in the region include the Appalachian Trail, National Scenic Trail, Tuscarora (Big Blue) Trail, and Luray's Hawksbill Greenway.

The biggest obstacle in creating greenway and/or trail routes is obtaining easements. This can be a complicated and frustrating process, which becomes easier when effective marketing creates a high level of positive local support beforehand.

The types of pathways addressed in future projects will respond significantly to the scale of the connection being created or enhanced. Following is a discussion of the three levels of connection needed in the Northern Shenandoah Valley Region.

### **Regional Projects (Inter-County Connections)**

Regional Connections are comprised of regional-scale non-motorized-vehicle routes typically along existing roadways. Following is a list of requirements for such connections. These routes should provide a logical connection between clusters of destinations of cultural, historical,

and/or service value within the region; opportunity for connection to routes outside of the region; statistically safe conditions as well as a psychological sense of safety for users; and routings which enhance the experiential qualities of the journey (utilize multiple senses). Examples are as follows:

- ❖ Route 340 Corridor
  - Addition of wide shoulder for cyclists and other safety improvements
  - Identification of historic locations (along and spurring off of Route 340)
- ❖ Route 7 and Senseny Road Inter-County-Connector Corridor
  - Addition of wide shoulder for cyclists and other safety improvements
  - Identification of historic locations (along and spurring off of Route 7)
- ❖ Gateway to Northern Virginia/DC Cyclists

### **Town-to-Town Projects (Inter-Community Connections)**

Town-to-Town Connections are non-motorized-vehicle connections between cities and/or towns in close proximity to each other either along existing roadways or separate trail routes. The potential for mixed pedestrian, bicycle, and other uses is high. A list of requirements for such connections would include logical linkages between adjacent cities or towns containing destinations of historical, cultural, and/or service value; safe conditions for a variety of uses including but not limited to cycling, walking, running, roller-blade use, and horse-back riding; and routings which enhance the experiential qualities of the journey (utilize multiple senses). Indirect contextual connections such as repeated materials and signage will also be encouraged. Examples are as follows:

- ❖ Winchester and Berryville
  - Bicycle connection improvements utilizing the Redbud Run greenway and trail system on the Third Winchester battlefield.
- ❖ Strasburg and Front Royal
  - Bicycle connection improvements
  - Potential Multi-use Greenway/Blueway Connection along North Fork of the Shenandoah River and Cedar Creek on the Belle Grove and Cedar Creek National Historical Park.
- ❖ Route 11 Corridor: Winchester, Stephens City, Middletown, Strasburg, Fishers Hill, Toms Brook, Woodstock, Edinburg, Mt. Jackson, and New Market
  - Battlefield Markers and/or battlefields
  - Interpretive signage highlighting the Valley's settlement patterns.
  - Potential Multi-use Greenway/Blueway Connection along North Fork of the Shenandoah River and/or connecting the Cedar Creek, Fisher's Hill, Toms Brook, and New Market battlefields.

### **Local Projects (Intra-Community Connections)**

Local Connections constitute pedestrian and non-motorized vehicle routes within a particular community. They may be in the form of bike lanes, sidewalks, streetscape improvements, trails or greenways. Successful connections of this type provide safe paths free of obstacles and deteriorated surfaces, limited interaction with vehicular traffic, contextually responsive

infrastructure, aesthetically pleasing surroundings, and logical linkages to historical, cultural, and/or service destinations. Examples are as follows:

- ❖ Winchester: Shenandoah University Area
  - Pedestrian Safety Enhancement
  - Pedestrian Connectivity Improvements
  - Traffic Calming
  
- ❖ New Market Downtown
  - Improved connection between the Battlefield and Downtown
  - Downtown Pedestrian Safety and Aesthetic Improvements
  - Bicycle route improvements
  - Accessibility
  
- ❖ All Towns
  - Pedestrian and Bicycle improvements

## **Design Models**

To further guide the future planning and prioritization of projects in the region, a design model was developed from one of the identified potential projects within each of the three project categories. An analysis of existing problems was conducted, and then responded to with a series of design interventions leading to a successful incorporation of applicable multi-modal transportation systems.

### **Regional Project – Route 340 Corridor (Front Royal to Luray)**

Route 340 from Front Royal to Luray constitutes an ideal roadway improvement project for the purpose connecting communities and other path networks throughout the region. It is a geographically logical connection with exceptional scenic qualities. Furthermore, since it hugs the valley floor, limited changes in grade occur. The existing condition of the roadway is unsafe for cyclists – the most likely user group of the corridor considering its distance between destination amenities. Existing safety issues are due to a combination of high motor traffic and limited room for cyclists to remain outside the travel lanes. The best solution to this scenario is for shoulder improvement projects to be implemented in conjunction with ongoing general roadway improvements. Following is a description of various conditions and solutions along the corridor starting from Front Royal and ending in Luray.

The first half-mile segment of road going south from Front Royal will easily accommodate a paved shoulder. However, the existing curb would need to be relocated farther out. An alternative to relocating the curb is to create a paved path outside the curb, performing much like a sidewalk does in an urban area. The latter method should only be used where the additional path can maintain a width of at least seven feet. After this first section, the roadway

narrows to one lane in each direction and is limited by steep rock cuts on either side. To improve safety for cyclists, these areas may either be further widened, marked with "Shared Bike Route" signs, or the paving may be continued to the widest extent possible and re-stripped to accommodate a minimum 3.5' paved shoulder for cyclists. As mentioned in the *Roadways* section of the discussion on Design Strategies, where the right-of-way width will not accommodate widened paved shoulders on both sides of the road, it is also acceptable to

alternate which side the widened paved shoulder is on based on up-hill and down-hill conditions.

Shown in this photograph to the left is a relatively level right of way without any rock outcroppings -- the ideal situation for widening the shoulder. Fortunately, this condition is actually present along most of the corridor.

Though still possible, it becomes more difficult to widen and pave the shoulder in areas where topography requires guardrails. Some grading of the shoulder and relocation of the guardrails may be required. Alternatively, paving to the existing guardrail and careful re-striping may be adequate for short distances.

A significant draw for the 340 corridor as a bike route is its outstanding scenic views. Additionally, it is a direct route through the valley from Front Royal to Luray and has a gently rolling grade. The downside to its valley placement is the presence of multiple small streams and the bridges that cross them. Bridges pose a problem regarding a widened paved shoulder; however, the bridges along Route 340 are typically very short. A sign giving a simple advanced warning for motorists and cyclists that they are approaching a bridge and must share the road should be adequate. When the potential for bridge reconstruction and replacement arises, designs accommodating extra width for cyclists should be proposed.

The Hawksbill Greenway in Luray is an excellent example of how regional projects can link local projects. Communities should view their local trails, greenways, and other alternative routes as integral components of larger networks. Similarly, when planning for user types and routings of regional scaled networks, existing local systems must be considered. See Insert Map.

### **Town-to-Town Project – Route 11 Corridor**

The Route 11 Corridor provides an ideal Town-to-Town project area. Along this roadway are ten communities – Winchester, Stephens City, Middletown, Strasburg, Toms Brook, Maurertown, Woodstock, Edinburg, Mt. Jackson, and New Market – each with attractive cultural and aesthetic qualities, as well as important services and amenities. Unincorporated communities also provide amenities. No more than seven miles separates the heart of one community from the next, making not only bicycle connections possible, but also other forms of travel such as walking, skating, and jogging. The placement of these communities is a result of the historic settlement pattern where five to seven miles created a reasonable distance for stage-coach travel between towns. Modern society contradicts itself by encouraging increased aerobic exercise, yet failing to provide the facilities to accommodate such a habit in an enjoyable way. These five to seven mile increments translate into ideal routine cycling and jogging distances for regular health-motivated exercise. In addition to the towns themselves, historic sites such as the New Market battlefield and Shenandoah County's Maurertown Park provide mid-way destinations between towns. The outline below describes how multiple user groups may gain improved access between closely situated communities. A design model drawing for the Woodstock to New Market segment follows. See Insert Map.

Regional Project – Route 340 Corridor (Front Royal to Luray) Map

Town-to-Town – Illustrative Portion of Route 11 in Shenandoah County -Map

Where parallel parking and limited lane space prevails, it is difficult to create separated spaces for both cyclists and pedestrians. Fortunately, existing sidewalks may be improved for non-cyclists. Future roadway improvements should be designed to accommodate bike lanes if possible.

The diagram at right shows the dimensions of a bicycle with rider. Bike lanes and alternate bike routes must provide enough horizontal and vertical clearance from trees, parked cars, and traffic in order to be safe.

Bike route signs, accompanied by a directional arrow, should be located at each turn or intersection where a bike route changes. Clarity and consistency are key in a successful bike route program.

In addition to improving sidewalks for non-cyclists, it is often advantageous to create alternate routes for cyclists off main streets and onto side streets through town. This allows the community to highlight its best features by routing visitors through areas they may not normally see, as well as improving safety for the cyclists. Pedestrians may also follow these routes if sidewalks are present.

As shown in the photo to the left, a variety of experiences and additional safety are added to the route by pulling portions of it away from the road as a separate greenway trail where room allows. Preserved architecture and interesting streetscapes encourage visitors to route their trips through certain communities. These and other historic sites provide additional points of interest along the corridor. These physical assets, along with the vitality and economic contributions brought by visitors, add to the quality of life for local residents while simultaneously encouraging them to appreciate and maintain cultural icons.

Park and ride locations should be placed near strategic points of interest in order to accommodate cyclists and pedestrians who wish to drive to a starting point for their journey. This allows more flexibility in distance for the various modes of travel. Points of interest along the main corridor may serve as starting points or as destinations. They also provide ideal resting locations if equipped with amenities such as water or picnic tables. Furthermore, these points of interest combined with park and ride facilities create opportunities for easily accessed historical education, outdoor recreation, and exercise. This is an ideal situation for larger special groups such as school groups, senior groups, or mixed tour groups.

In many areas along Route 11, the gravel shoulder is wide enough to simply be paved with asphalt and striped for use as a bike and pedestrian lane on either side of the road. As a shared path, cyclists would yield to pedestrians while waiting until motor traffic is clear in order to pass in the vehicle lane.

### **Local Project – Winchester (Shenandoah University Area)**

The connection between Shenandoah University and the food-service/commercial mall district of Winchester exemplifies the type of situation where local pedestrian connections need enhancements. Currently, though less than a 10 minute walk from Apple Blossom Mall, pedestrians rarely walk from the University District to the Mall and Eating District. In several places, nicely maintained sidewalks line the blocks, but have dangerous or non-existent crossings at the street intersections. In other locations, the sidewalks simply end and no

accessible route is provided. The diagrammatic drawing to the right illustrates this situation. This section takes a step-by-step look at five strategic points along the route from the University to the Apple Blossom Mall, describing the connectivity problems and their potential solutions. While reading through each point (counting down from 5), the design model drawing in Appendices C (page 40) may be referenced to see how they relate to their surroundings.

*Location 5*

The high-traffic intersection of Jubal Early Drive and Apple Blossom Drive creates a dangerous area for pedestrians to cross, yet remains the most logical routing between the University and Park areas and the Mall and Restaurant areas.

One solution shown to be highly effective is to include Countdown Pedestrian Signals. These signals are coordinated with the traffic lights to inform pedestrians of when they may proceed through a crosswalk, while showing them how many seconds remain before it is no longer safe to cross the intersection.

#### *Location 4*

In this photo to the left, one can see how there is no sidewalk for pedestrians, yet a "cow-path" has developed from people walking through the grass along Apple Blossom Drive. This location will require additional sidewalk in order to complete the connection.

#### *Location 3*

As Apple Blossom Drive approaches the Mall entrance, it is restricted in width by the bridge and leaves no room for pedestrians. The open property north of the Mall entrance at this location provides an opportunity to create a pedestrian bridge and paved trail from a crosswalk at Toy's R Us to a lighted pedestrian crossing at the Mall entrance.

#### *Location 2*

A lighted pedestrian crossing would warn drivers coming near the mall entrance to stop as pedestrians are about to cross the road. A motion sensor will activate the system as the person approaches the crossing.

#### *Location 1 (Apple Blossom Mall Destination)*

Once pedestrians cross the road into the Mall parking lot, they are faced with another dilemma; no sidewalk exists to take from the edge of the parking lot to the mall entrance. As a solution, one of the wide grass islands along the main Mall entranceway could be adapted to include a 5-6' wide walkway. This sidewalk would connect from the lighted pedestrian crossing at the road to a striped crosswalk at the Mall building itself.

#### *Shenandoah University Area Map and Potential Pedestrian Route*

Local Project – Winchester (Shenandoah University Area) Map

## Implementation

The most successful method of implementing bicycle and pedestrian improvements – be they existing roadways, new trails, sidewalks, or greenways – is to combine private sector funds with funds from local, state, and federal sources. Many communities involved with implementing alternative modes of transportation will seek to leverage local money with outside funding sources. This increases resources available for acquisition and development. To implement the various projects that may birth out of this and other studies in the Northern Shenandoah Valley Region, local advocates and government staff should pursue a variety of funding sources applicable to each project. The funding sources listed in this section represent some of the multi-modal route and green space funding opportunities that have typically been pursued by other communities.

## Public Funding Sources

### 1. TEA-21

Several federal programs offer financial aid projects that aim to improve community infrastructure, transportation, housing, and recreation programs. One of the federal programs that can be used to fund trails is the Transportation Equity Act for the 21st Century (TEA-21). The primary source of federal funding for greenways is through the Transportation Equity Act of 1998 (TEA-21), formally the Inter-modal Surface Transportation Efficiency Act (ISTEA). Transportation Enhancement Program. <http://www.virginiadot.org/projects/pr-enhancegrants.asp>

ISTEA provided millions of dollars in funding for bicycle and pedestrian transportation projects across the country and TEA-21 will provide millions more. There are many sections of TEA-21 that support the development of bicycle and pedestrian transportation corridors. The Virginia Department of Transportation (VDOT) can utilize funding from any of these subsets of TEA-21. Those sections that apply to the creation of greenways, sidewalks, and bikeways include:

#### a) Surface Transportation Program (STP) funds

These funds can be used for bicycle and pedestrian facility construction or non-construction projects such as brochures, public service announcements, and route maps. The projects must be related to bicycle and pedestrian transportation and must be part of the long-range transportation plans. These funds are programmed by the Metropolitan Planning Organization (MPO) in the Transportation Improvement Program. Winchester/Frederick Metropolitan Planning Organization: <http://www.winfredmpo.org/>

#### b) Transportation Enhancements Program

Ten percent of Virginia's annual STP funds are available for Transportation Enhancements, which include projects such as trails, greenways, sidewalks, signage, bikeways, safety education, and wildlife undercrossings. There is usually a 20 percent local match required (some states will accept donations of services, materials or land instead of cash). Projects must also comply with various federal laws and regulations in order to receive funds. VDOT administers TEA-21 funding and should be contacted for further details. The fund distributes approximately \$27 million annually among qualifying

projects in Virginia. Therefore, for large projects, it is best to apply for funding in phases to obtain the most funding possible

c) Transit Enhancements Program

The Transit Enhancement Program will generate approximately \$30 million annually for these activities, which will then be divided among the 125 largest urban areas in the U.S. Activities eligible for funding include pedestrian access and walkways, bicycle access, bike storage facilities, bike-on-bus-racks, and transit connections to parks within the transit service system area.

d) National Recreational Trails Fund Act (NRTFA or Symms Act)

A component of TEA-21, the NRTFA is a funding source to assist with the development of non-motorized and motorized trails. The Act uses funds paid into the Highway Trust Fund from fees on non-highway recreation fuel used by off-road vehicles and camping equipment. This money can be spent on the acquisition of easements and fee simple title property, trail development, construction and maintenance. Through state agencies, "Symms Act" grants are available to private and public sector organizations. NRTFA projects are 80 percent federally funded, and grant recipients must provide a 20 percent match. Federal agency project sponsors or other federal programs may provide additional federal share up to 95 percent. Local matches can be in the form of donations of services, materials, or land. Projects funded must be consistent with the Statewide Comprehensive Outdoor Recreation Plan. Recreational Trails Program - FHWA <http://www.fhwa.dot.gov/environment/rectrails/legislation.htm>

## 2. Community Development Block Grant Program

The U.S. Department of Housing and Urban Development (HUD) offers financial grants to communities for neighborhood revitalization, economic development, and improvements to community facilities and services, especially in low and moderate-income areas. Several communities have used HUD funds to develop parks and greenways, including the Boulding Branch Greenway in High Point, North Carolina. Community Development - Programs - CPD - HUD - <http://www.hud.gov/offices/cpd/communitydevelopment/programs/index.cfm>

## 3. Land and Water Conservation Fund (LWCF) Grants

This Environmental Protection Agency (EPA) source was established in 1965 to provide park and recreation opportunities to residents throughout the United States. Money for the fund comes from the sale or lease of nonrenewable resources, primary federal agencies to acquire additions to National Parks, forests, and Wildlife Refuges. In the past, Congress has also appropriated LWCF monies for so-called "state-side" projects. Communities to acquire and build a variety of park and recreation facilities can use these "state-side" LWCF grants. "State-side" LWCF funds are annually distributed by the National Park Service through the Virginia Department of Conservation and Recreation. Communities must match LWCF grants with 50 percent of the local project costs through in-kind services or cash. All projects funded by LWCF grants must be used exclusively for recreation purposes, in perpetuity. This funding source has not awarded any grants for a long time, and is not likely to do so with the recent large cut in its budget. Land & Water Conservation Fund: Grants <http://www.nps.gov/ncrc/programs/lwcf/grants.html>

#### **4. Wetlands Reserve Program**

The Department of Agriculture also provides direct payments to private landowners that agree to place sensitive wetlands under permanent easements. This program can be used to fund the protection of open space and greenways within riparian corridors. It is administered by the NRCS in Virginia. Wetlands Reserve Program |Programs| NRCS - <http://www.nrcs.usda.gov/programs/wrp/>

#### **5. Watershed Protection and Flood Prevention (Small Watersheds) Grants**

The USDA Natural Resource Conservation Service (NRCS) provides funding to state and local agencies or nonprofit organizations authorized to carry out maintain and operate watershed improvements involving less than 250,000 acres. The NRCS provides financial and technical assistance to eligible projects. These would be projects that would improve watershed protection, flood prevention, sedimentation control, public water-based fish and wildlife enhancements, and recreation planning. The NRCS requires a 50 percent local match for public recreation, and fish and wildlife projects. Watershed Protection, Watershed Surveys, and Flood Prevention | NRCS - <http://www.nrcs.usda.gov/programs/watershed/>

#### **6. Non-DOT Federally-Funded Programs for local Match of TEA Trail Projects**

A number of Federal programs can help a trail sponsor finance a TEA-funded trail project. These sources provide non-DOT Federal funds that could qualify for a TEA award's local match under the legislative guidance. The following is a list compiled by the National Park Service, Department of the Interior. It lists Federal assistance programs for trails.

##### a) Americorps

Funds must be used to operate or plan national and community service programs. Programs could include trail building, environmental education, and community restoration work. Contact: Corporation for National and Community Service: eGrants.

<http://www.nationalservice.org/egrants/index.html>

##### b) Community Services Block Grant Discretionary Award

This award funds projects of national or regional significance that alleviate the causes of poverty in distressed communities, and programs designed to provide instructional activities to youth. Rivers, trails, and open space conservation and recreation could be part of such projects, particularly in the area of instruction for low-income youth. Virginia Department of Social Services <http://www.dss.state.va.us/community/csbgr.html>

##### c) Community Tree Planting

This program of the National Tree Trust has provided grants for tree planting in numerous towns and cities throughout Virginia in the past. National Tree Trust - 2005 Roots Grant & Application <http://www.nationaltreetrust.org/index.cfm?cid=43100>

##### d) Cooperative Forestry Assistance

There are provisions for the improvement and maintenance of fish and wildlife habitat

and the planning of urban forestry programs. Restoration projects could apply under the provision for improvement and maintenance of urban forest areas, and could be included in trail project proposals. The US Forest Service and the USDA fund this program.

USDA Forest Service - Cooperative Forestry Program

<http://www.fs.fed.us/spf/coop/programs/>

e) Environmental Educational Grants

Project grants for selected projects to establish education and training programs to include design, demonstration, or dissemination of environmental curricula. This program benefits recreation/conservation through improved field methods and assessments of specific environmental problems. This is an EPA program. Environmental Education Grants <http://www.epa.gov/enviroed/grants.html>

f) Resource Conservation and Development Loans

Through the Department of Agriculture, loan assistance is provided to local agencies for programs of resource conservation, development, and utilization of water and natural resources. Trail projects could fall under the categories of soil development or a shift in land use facilities. River restoration could fall under water-based recreation and water development. United States Department of Agriculture Loans and Grants <http://www.nrcs.usda.gov/>

g) Urban Community Forestry Program

Project funding must be matched on at least a 50-50 basis from non-federal sources and the project must have national scope, application, and distribution of its findings. Projects that will only have a local impact (i.e. local tree planting projects) do not qualify under this program. Each project must fit within one of three designated categories including Research and Technology Development; Education, Communication and Outreach; or Creative and Innovative Projects. Urban Community Forest Program Action Plan [http://www.fs.fed.us/ucf/action\\_plan.htm](http://www.fs.fed.us/ucf/action_plan.htm)

h) Wildlife Conservation and Appreciation

This program allows the public to enjoy recreational activities pertaining to non-game wildlife conservation along trails and waterways. This is an effort on the part of the United States Fish and Wildlife Service as well as designated state agencies. U.S. Fish and Wildlife Service Grants - <http://www.fws.gov/grants/>

i) Heritage Parks and Partnership Program (National Park Service)

Through the Shenandoah Valley Battlefields Foundation, matching funds can be secured to help implement the trails recommendations contained in the Management Plan for the Shenandoah Valley Battlefields National Historic District. National Park Service Heritage Areas Toolkit <http://www.cr.nps.gov/heritageareas/REP/heritage.htm>

## 7. Virginia Department of Transportation

Administers funding for TEA-21 projects. See previous text.

## **8. Local Funding Sources**

Greenways can be funded all or in part through meals, lodging and admission tax revenues. One example of a community that is using sales tax dollars to fund bicycle and pedestrian facilities is Cobb County, Georgia. Citizens there voted to implement a one-percent local sales tax to provide funding for transportation projects. Over four years, Cobb County DOT will receive \$3.8 million of this sales tax revenue for bicycle improvement alone, to be used as a match for federal dollars. Another example is Oklahoma City, where voters approved a temporary \$0.01 sales tax, which generated millions of dollars for greenway acquisition and development.

## **9. State Funding Alternatives**

States may use toll credits to match Federal TEA funds across the entire state TEA program. The Inter-modal Surface Transportation Efficiency Act of 1991 (ISTEA) included a provision that enables states to apply toll credits in lieu of the non-Federal match for projects funded with Federal highway funds. As an example, New Jersey requires no match from TEA project sponsors since New Jersey is able to utilize the toll-credit provision across their entire Surface Transportation Program (STP). By matching their Federal DOT highway funds with 20 percent toll credits, New Jersey DOT is able to fund every STP project, including TEA projects, using 100 percent Federal funds. Additionally, between 1992 and 1997, Pennsylvania accumulated over \$1.2 billion in toll credits from eligible toll projects. TEA program funds may also be advanced by the states to a local government through the Advanced Payment Option of TEA-21. As an example, Colorado progress payments to construction contracts require progress certifications by state engineers. Such certifications placed workload burdens on the state engineering staff and led to a level of oversight inappropriate to a local program such as TEA. To streamline the process, Colorado now sends a check to the local government sponsor in the amount of 70 percent of the Federal share of construction contracts upon the award and execution of the contract. The State pays the sponsor the balance of 30 percent upon final completion and acceptance of the contractor's work.

## **10. Impact Fees and Proffers**

*Impact fees* are monetary one-time charges levied by a local government on new development. Unlike required dedications, impact fees can be applied to finance greenway facilities located outside the boundary of development. The fees can be levied through the subdivision or building permit process to finance a particular project.

*Proffers* are payments or promises made by developers to municipal governments at the zoning level that in exchange for permitting a certain type of development on a parcel of land, a developer will either pay money (called a cash proffer) or agree to construct public and private improvements that benefit the area where the development will take place. This type of "proffered zoning" is very similar to conditional zoning formulas but the key difference between them is that the developer must "voluntarily" agree in writing to make these civic improvements (such as new roads, highway interchanges, parks, greenways, schools, etc.) before any action is taken on the developer's zoning request.

## 11. DCR Grants

### a) Virginia Outdoors Fund

The Department of Conservation and Recreation administers a grant-in-aid program for the acquisition and development for public outdoor recreation areas and facilities. Grants are for public bodies only. Towns, cities, counties, regional park authorities and state agencies may apply for 50 percent matching fund assistance from the Virginia Outdoors Fund (VOF). These funds are provided through state general fund appropriations, when available, and from federal apportionment from the Land and Water Conservation Fund (L&WCF) that are available for the acquisition and/or development of outdoor recreation areas. The Virginia Land Conservation Foundation <http://www.dcr.virginia.gov/vlcf/> Virginia Outdoors Fund (VOF) Grant Program <http://www.dcr.virginia.gov/prr/vof.htm>

### b) The Virginia Recreational Trails Fund Program

This is a grant program established for the purposes of providing and maintaining recreational trails and trails-related facilities. It is funded through the Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21), which establishes a program for allocating funds to the States for recreational trails and trail-related projects. The U.S. Department of Transportation, Federal Highway Administration (FHWA) administers the program in consultation with the Department of the Interior. The state agency responsible for administering the program in Virginia is the Department of Conservation and Recreation (DCR). Grant funding may be provided to private organizations, city governments, county governments, or other government entities, but must consider guidance from the DCR Trails Board. Additionally, federal government entities may be eligible to participate if teamed with private trail groups and organizations. Virginia Recreational Trails Fund Program - <http://www.dcr.virginia.gov/prr/traifnd.htm>

## **Private Funding**

### **1. Bikes Belong Coalition**

This organization is funded by the bicycle industry, whose mission is, "Putting more people on bikes more often through the implementation of TEA-21." "Bikes Belong" awards grants of up to \$10,000 each to projects that seek TEA-21 funding for bicycle facilities. Because each State differs in what it allows qualifying for local match of a project, one must check with the state TEA coordinator before applying. Bikes Belong grants have been used for concept plans, cartography, design, outreach, and preliminary engineering, as well as contributions to the local match. The grant application, guide, and other information can be viewed at Bikes Belong Coalition, Ltd. - Grant Info & Application -

<http://bikesbelong.org/site/page.cfm?PageID=21>

### **2. BikeWalk Virginia: Safe Routes to School Mini-Grants**

BikeWalk Virginia is making available \$1,500 for Walk to School programs this fall.

Any school, school district, public agency, or non-profit is eligible to apply. These grants are intended to supplement primary funding from your local community for new or existing Safe Routes to School programs. The funds may be used for local programs as a part of International Walk to School Day Wednesday October 6. Applicants can request any amount up to \$1,500. BikeWalk Virginia - <http://www.bikewalkvirginia.org/>

### **3. Kodak American Greenways Grant:**

The Kodak American Greenways Awards Program, a partnership project of the Eastman Kodak Company, The Conservation Fund, and the National Geographic Society, provides small grants to stimulate the planning and design of greenways in communities throughout America. Kodak American Greenways Awards Program -

<http://www.conservationfund.org/?article=2106>

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Virginia Outdoor Plan 2002, Commonwealth of Virginia: Department of Conservation and Recreation

The Smart Crosswalk – Countdown crosswalk signals - <http://www.lightguardsystems.com/>

National Sign and Signal: Countdown Signals – Information on countdown crosswalk signals. <http://www.nationalsc.com/>

Crosswalk In-Road Pavement Strobe Lighting – Information on in-road pavement lights. <http://cp.literature.agilent.com/litweb/pdf/5980-1503E.pdf>

StreetPrint - Decorative asphalt solutions – Information on brick imprinting. <http://www.streetprint.com/index.php>

**walkinginfo.org**: Pedestrian and Bicycle Information Center - Internet think tank on a variety of pedestrian and bicycle issues and design elements. <http://www.walkinginfo.org/>

Walking & Wheeling Website Links – [www.lfpdc7.state.va.us](http://www.lfpdc7.state.va.us). Page print outs follow: Links online are live.

## **Appendix K**

Northern Shenandoah Valley Ozone Early Action Compact Area

*December 30, 2005 Submittal*

<b>LOCAL MATCH BREAKOUT</b>		<u>Units</u>	<u>Quantity</u>	<u>Unit Price</u>	<u>Amount</u>
Shenandoah University match	Anticipated				\$150,000
Easement from Shenandoah University	Anticipated				\$10,000
In-house contributions	Confirmed				\$20,000
Melco trail construction	Anticipated	LF	550	\$30	\$16,500
YHB trail construction	Anticipated	LF	200	\$30	\$6,000
Powers trail construction	Anticipated	LF	800	\$30	\$24,000
DBL Holdings trail construction	Anticipated	LF	319	\$30	\$9,570
Pifer trail construction	Anticipated	LF	790	\$30	\$23,700
Bethesda Management trail construction	Anticipated	LF	75	\$30	\$2,250
Impressions Plus trail construction	Anticipated	LF	75	\$30	\$2,250
Apple Blossom Mall trail construction	Anticipated	LF	1,350	\$30	\$40,500
Private Donor trail construction	Anticipated	LF	2,207	\$30	\$66,210
<b>TOTAL LOCAL MATCH</b>			<b>6,366</b>		<b>\$370,980</b>

Total Developer Contributions \$190,980

## **Attachments for Winchester Intermodal Transportation Enhancement Project**

**F. Project Description.** The City of Winchester has four initiatives for this Transportation Enhancement Grant application. Each of the three initiatives is part of a larger project to increase and enhance intermodal transportation with an emphasis on pedestrian and bicycle traffic. This application ties the four initiatives into one project because together, the initiatives address a more comprehensive undertaking versus a piecemeal approach that leaves some areas requiring resources and additional attention. Intermodal transportation cannot be thoroughly addressed without looking at the whole picture as opposed to a single aspect of the issue.

The first of these initiatives is a proposal to install a Wayfinding Signage System that will make it easier for visitors to locate destinations and attractions while attempting to maneuver the City's complex street network. The system will provide a uniform look to signs and will enable the City to clear many of the current signs in use that only add to the visual distractions drivers must navigate through in order to arrive at a point of interest.

The second initiative will focus on enhancing the City's historic downtown crosswalks with either a red brick stamp design or filling the crosswalks with actual red bricks. The enhanced crosswalks will not only add to the look and feel of our downtown, but will also increase driver awareness of the crosswalks. Instead of blending in with the street as many crosswalks do, the enhanced crosswalks will stand out and make it easier for a driver to see them. As a result, drivers will become more aware of the crossings throughout this part of the City and pedestrians will be more likely to use the crosswalks due to this increased safety.

The final initiative in this project is an improvement to the gateway of Jim Barnett Park and Shenandoah University, two of Winchester's destinations for both citizens and visitors. Included with this proposal is the construction of several sections of the Green Circle Trail. Once this construction is complete, the Green Circle will connect to currently existing trails and make a complete circle for citizens and visitors to enjoy. The proposed entrance enhancement includes landscaping and beautification of an important intermodal area for citizens and visitors. People will be able to access several employment, education and recreation destinations, and will have access to many of Winchester's cultural and historic attractions and sites via the Green Circle Trail Network. The City is also proposing to construct a section of the Green Circle trail to connect to the Abram's Creek Preserve trail with existing sidewalk on Jubal Early Drive. This will allow for a continuous series of trail for pedestrians to use for recreation and exercise.

The City is also proposing to purchase and install signage along the Green Circle for two purposes. First, the signage would mark the path of the Green Circle for citizens and visitors using this outdoor walking and biking trail. These signs would visually and distinctly label the route of the trail. The second sign purpose relates to safety. Since bicyclists and pedestrians will be crossing public streets along the trail at various intersections, it is imperative that drivers understand that they need to be on the lookout for trail users. "Share the road" signs will also be installed to communicate to drivers the need to share the road with their fellow bicyclists who use the trail for recreation and transportation use since the sidewalk would be reserved for pedestrian trail users only.

The City is planning to construct 600 feet of the Green Circle Trail to connect to Abram's Creek Wetlands Preserve trail with existing sidewalk on Jubal Early Drive from Harvest Drive to South Loudon Street. Developers along this route have committed or are interested in constructing another 2,600 feet of the trail. Once section of trail is complete, it will allow for a continuous trail for pedestrians to use for recreation and exercise from Abram's Creek Preserve to South Loudon Street.

**M. Relationship to Previously Funded Enhancement Project.** This project, while not completely related to a previously funded Enhancement project, does have some interconnectivity with several previously awarded grants. The Green Circle Project has received funding from the Enhancement Program in years past. In fact, the Green Circle has received funding in 2002 (\$200,000), 2003 (\$117,000) and 2004 (\$100,000). This application is a continuation of that original plan. The current proposal would continue the trail as indicated in the previous section. The City is using the \$417,000 of Enhancement funding to design and construct the Town Run Linear Park.

**C1. Relationship to Transportation.** The four initiatives that the City is proposing for this application address several transportation issues. The Wayfinding Signage System helps provide a seamless trip for visitors and will help clean up the visual clutter that comes from unneeded signs. It can promote the image of the community, position our downtown as a destination and market multiple attractions. As an active community located on Interstate 81, the City of Winchester recognizes the need for a coordinated, comprehensive sign system to facilitate visitors to self-navigate while visiting our City. The goals of this aspect of our project are: create a consistent look, reduce sign clutter, reflect the historic character of downtown, provide directions to better navigate the one-way streets surrounding the Old Town Pedestrian Mall, help visitors trail blaze through the City to various attractions and destinations, direct visitors to downtown from gateway entrances, and identify parking areas. The sign system will allow for a safe experience and help create a sense of place and community pride.

The downtown crosswalk initiative will focus on the pedestrian aspect of downtown. Many pedestrians use the crosswalks as they walk between shops, restaurants and other attractions while visiting the core of our city. As such, we proposed this initiative to help create more awareness with drivers for the need to watch out for pedestrians. By providing a more visual crosswalk, drivers will have an increased tendency to use more caution when driving in these areas where pedestrian traffic is higher than in most areas of the community. As Winchester continues to promote active living, especially through the Green Circle Trail, it becomes apparent that raising drivers' awareness of the need to share the road is essential to a successful program to take shape. Without the perception of safety, citizens will not be as likely to use the Green Circle or downtown for exercise or other active lifestyles as often as they may want.

The Green Circle Trail provides many relationships to the transportation network. Citizens and visitors will have access to many destinations and points of interest around the City of Winchester without having to own or rent a vehicle or use public transportation. Instead, they will be able to walk or bike to: The Winchester-Frederick County Convention and Visitors Bureau, Shenandoah University, Winchester Medical Center, Abram's Creek Preserve, Jim Barnett Park, Shawnee Springs Historical and Interpretive Park, John Handley High School, Daniel Morgan Middle School, Old Town Historic District which includes the Old Courthouse Civil War Museum, Stonewall Jackson's Headquarters, George Washington's Office and the Shenandoah University History and Tourism Center (HTC). The HTC serves as a temporary interpretive center for numerous historic sites throughout the Winchester-Frederick County region until a permanent facility is completed on Pleasant Valley Road adjacent to the Green Circle Trail.

Another destination that the Green Circle will give citizens and visitors access to is the Glen Burnie Historic Home and Gardens, home of Winchester's founder Colonel James Wood. Glen Burnie is a working farm that tells an interesting story of the city and the Shenandoah Valley. The trail will present visitors and citizens an opportunity to see these exciting sites. Glen Burnie and the city have also discussed the possibility of a public access perimeter trail and an extensive network of trails within the property for visitors to view the large expanse of green space within the property.

At the present time, the City has developed a sidewalk infrastructure comprising most of the entire loop of the Green Circle. There are, however, a few areas where sidewalk is needed to connect currently existing sidewalk with the Trail. This Enhancement application, together with

pending private developer projects along Meadow Branch Avenue and Jubal Early Drive will address these areas of concern, creating a contiguous trail for citizens to use.

The University Drive and Green Circle initiative will separate vehicular traffic from pedestrians and bicyclists. Presently, pedestrians and bicyclists must share the road with vehicles in an area that enunciates the danger of this arrangement. This proposal will address this by creating a multi-modal transfer facility that will create a buffer between the vehicular traffic and those wishing to walk or ride. The improvements will also include an innovative way to control stormwater. This area will also be enhanced with the construction of trail to connect to the Green Circle, making it easier for students from Shenandoah University to access the park, their apartments and the school with ease.

**C2. Demonstrated Need.** Although the city is small, with a densely populated urban core, Winchester and its surrounding area are deficient in safe, accessible pedestrian and bicycle facilities. As a result, citizens and visitors cannot enjoy Winchester without using a motorized vehicle. This leads to an increase in traffic and congestion, an increase in air pollution, and a decrease in active lifestyles. People choose not to walk or bike to get to destinations because it is not feasible for them to do so. The infrastructure for the safest travel in these forms does not exist and the Green Circle and downtown crosswalks will provide a means for this activity. Very few students walk or bike to school, even though their educational destinations are within close proximity. Even students of Shenandoah University use vehicles instead of other alternative modes of transportation to get around the city. Winchester continues to grow and a consequence of this is further congestion on the roads. The proposed infrastructure improvements, allowing for both pedestrians and bicycle use, will hopefully help the City reduce vehicle usage and congestion.

The Green Circle and downtown crosswalks will help the City reach out to the needs of our expanding disadvantaged and Hispanic populations that rely on modes of transportation other than the personal vehicle. The trail and crosswalks will provide a safe route for these segments of our community to access employment, services and shopping needs.

The Wayfinding Signage System is also an important item in this proposal because of the current situation with Winchester's signage. The city has six different gateways, three from the north, and one from the south, east and west. The historic district is centrally located to all. The southern entrance is a rather long corridor populated with businesses, shopping plazas and residential areas. While there are several entries into the city, finding your way around is difficult. There are many areas of confusion. Some of the confusion is the result of inconsistent use of logos and existing directional signs. By installing the Wayfinding Signage System, the City will correct the cluttered sign issue.

**C3. Project Usefulness and/or Benefit.** There is strong community support for the Green Circle project. It will provide visitors and residents, including children and students, increased safe access to all areas of the City. The Green Circle will connect neighborhoods and commercial, recreational and cultural facilities. It will physically link major economic activity generators, such as Valley Health System (Winchester Medical Center) and Shenandoah University to historic downtown. The Green Circle will encourage physical activity and promote an active, healthier lifestyle. The trail will be of particular interest for those individuals of low-income families that cannot afford a vehicle to access work, school and other needs throughout the community. These people will be able to use the trail as an alternative mode of transportation to get where they need without needing to rely on public transportation or other vehicular transportation such as taxis.

It will also serve to protect and enhance the community's natural resources through enhanced environmental awareness and stewardship while allowing for an educational experience. As an example, the Environmental Studies program at Shenandoah University already uses a portion of the trail as an outdoor classroom. Another benefit is the opportunity for citizens and visitors to

experience the vast array of architectural, cultural and historical resources in the City. The trail has been configured to maximize access to these locations. The trail will also benefit the City in its responsibility to conform to the ShenAir Initiative that seeks early action to reduce ozone levels before they become dangerous to citizens and others. The trail will aid this effort by prompting people to use the trail rather than their vehicles to move throughout the City not only for the benefits of exercise and convenience, but also to help reduce emissions caused by traffic congestion.

Another environmental effort that is proposed along sections of the Green Circle Trail is the use of rain gardens to filter precipitation before it reaches the water table or enters the City's stormwater system. The rain gardens work as a bioretention area that filters water through a natural system of plants and soils. This system decreases the impact of pollution that might arise from rainwater before it reenters the water cycle. This functions as an innovative approach to natural stormwater run-off and pollution mitigation. Three of these rain gardens will be located in close proximity to South Pleasant Valley Road and Millwood Avenue.

The Wayfinding Signage System will benefit the City, but will mostly help visitors navigate the streets of Winchester without the confusion and frustration that is prompted by the current arrangement of non-uniform signs throughout the City. Visitors will have an easier time finding the signs, and will consequently have an easier time maneuvering to Winchester's many destinations.

The downtown crosswalks will also benefit the City by making the downtown more presentable to the public. It will also make it easier for drivers to see the crosswalks, leading to an increase in driver awareness and pedestrian safety.

**C4. Amenities/Support Facilities.** There are a myriad of support facilities that will compliment these initiatives. The Wayfinding Signage System will help direct visitors to the following sites and destinations within Winchester: Abram's Delight Museum, Civil War Museum, George Washington's Office Museum, Glen Burnie, Museum of the Shenandoah Valley, Handley Library, Jim Barnett Park, Old Town Pedestrian Mall, Old Town Winchester (Historic District), Stonewall Jackson's Headquarters, and the Winchester-Frederick County Convention and Visitors Center and Winchester's several parking garages. Many of these sites will also be able to be accessed by the Green Circle Trail.

The downtown crosswalk initiative will support a variety of destinations within the historical downtown district, as well as compliment other destinations outside of the district. People will have the ability to safely walk or bike into the downtown district to patronize the many shops, restaurants, and museums. They will also have the ability to use downtown as a gateway to other sections of Winchester. The downtown district already has a sidewalk infrastructure in place, and the crosswalks will add to this infrastructure. The enhanced crosswalks will compliment the existing historical look and feel of the downtown district, building on a complimentary system to encourage pedestrian and bike traffic.

The Green Circle will also support a variety of the destinations and facilities that the other two initiatives have addressed. The trail will offer pedestrians and bicyclists a route that will connect them to various destinations and points of interest. Many of these sites are located downtown, such as shops, restaurants and museums, but some of the sites are also located outside of the downtown business district. Such sites include the Winchester Medical Center, Abram's Creek Preserve, Shawnee Springs Historical Park, Shenandoah University, Jim Barnett Park, Apple Blossom Mall and Glen Burnie and Museum of the Shenandoah Valley.

Currently, the signage that directs visitors around the city is inadequate and creates more problems and confusion rather than direct people to the destinations that they are seeking when they visit Winchester. Our plan is to remove these signs that clutter the downtown and surrounding areas and install the Wayfinding Signage System. The downtown crosswalks are

also in place, but the crosswalk initiative will make them more visible, and thus, safer for pedestrians and bicyclists. In the downtown district, the City has 166 crosswalks that pedestrians and bicyclists may use. With this proposal, all of the crosswalks will remain, but 82 will be enhanced to provide a safer environment for pedestrians and bicyclists. The 82 crosswalks that are proposed for this enhancement are in closer proximity to the downtown district than others and are thus, used more by pedestrians in this district.

The Green Circle Trail has been a major project of the city for the last few years. We have continued to develop the trail throughout the city, building an initial phase of sidewalk that citizens can use. The trail is nearly 8.5 miles long, but this length is achieved primarily through public sidewalks. Eventually, designated bike lanes will be constructed in certain areas of the trail so that bikers will have their own lane separate from vehicular traffic. The Green Circle Trail is also marked in a few locations with signage, although the city would like to install more signs in order to better label the trail so people that use it will know where to access it as well as where it leads. Another major undertaking of the trail will be to eventually create a system of trails that branch off of the main trail head to allow for easier access to specific points of interest. For example, the trail will have a set of "trail blazer" trails that will lead pedestrians and bicyclists into the downtown district. Once there, signs will also point them to where they will be able to reconnect with the Green Circle Trail.

Existing facilities associated with the Green Circle include the Winchester-Frederick County Visitors Bureau, Jim Barnett Park and Shenandoah University's Main Campus, including the Bryant-Ohrstrom Theater, the recently completed sports stadium and the future site of the Byrd School of Business. Old Town Winchester contains the historic business district and pedestrian mall, which offers shops, restaurants, professional services and museums. Glen Burnie Home and Gardens and the Museum of the Shenandoah Valley provide a cultural amenity too. The facility is currently open to the public and is also available for private events. Valley Health System (Winchester Medical Center) is the western terminus of the Town Run Linear Park. Its extensive open space connects to neighborhoods, a public school and the Shenandoah University Pharmacy School.

The location of University Drive is the southern edge of Jim Barnett Park, and serves citizens and visitors by providing tennis courts, basketball courts, a duck pond and access to the Green Circle Trail. Shenandoah University is also located near the site. This proposal would increase the safety of students walking back and forth from the school and their homes. Currently, citizens and students must compete with vehicular traffic in order to move around this area very efficiently. By constructing some trail in the area, it will make it easier for them to maneuver without excessive caution due to traffic from the park and university.

**C5. Educational/Historical.** These initiatives are designed to promote historical preservation and appreciation as well as enhance several scenic routes of Winchester. The Wayfinding Signage System will promote many historical sites throughout Winchester by providing visitors directions that are easier to locate and follow than the current signage system. Such sites as Abram's Delight Museum, the Civil War Museum, George Washington's Office Museum, Glen Burnie Historical House and Gardens, Old Town Winchester Historic District and Stonewall Jackson's Headquarters provide a look into Winchester's acclaimed past, with links from the Colonial period through the Civil War. The signs will draw people into the heart of Winchester, where they will be able to learn about the exciting and diverse story of its past. The proposed signage system will also decrease the amount of visual clutter from the many signs that mark the routes to these many historical destinations. By reducing these signs, the City hopes to improve the look of the City. The signs have also been designed to promote the historical significance of Winchester.

The downtown crosswalks will provide a friendlier access point for citizens and visitors looking for opportunities to learn about Winchester's past. With crosswalks already in place, the initiative is more about making the route safer for people wanting to explore the historic district. The enhanced crosswalks will improve the historical look and feel of the downtown by creating

crosswalks that have the appearance of historical crossings. By improving and increasing the visibility of these crosswalks, and thus making them safer, pedestrians and bicyclists may be more likely to use them to access these major historical points of interest to learn more about their community's heritage.

The Green Circle/University Drive initiative offers many educational and historical opportunities. First, the project will preserve the green space throughout this linear park, providing an opportunity for pedestrians and bicyclists to escape the stress and anxiety of the City by using the trail for exercise or to access other sections of the City that will provide them opportunities to develop themselves as an individual. They might also use the trail to access several of the historic destinations throughout the City.

Shawnee Springs Interpretive Historical Park is an example of the many possibilities that citizens will have access to once the trail is fully functional. Shawnee Springs has been the scene of numerous occupations by Native Americans. It also provided some of the earliest European homesteads in the area. The water resource became a center point for the development of Winchester. After its founding in 1744, the City continued to grow and flourish around the springs because of its ample water supply. As Winchester grew, it became a focal point as a marketplace for farmers to sell their products. Union General Sheridan used the springs for a field hospital during the Civil War fighting in the Shenandoah Valley. This section of the Green Circle Trail is being developed so citizens will be able to more easily access the site.

The Abram's Creek Wetland Preserve offers an excellent opportunity for people to study nature in its own environment instead of visiting a museum. People can walk or bike the preserve and enjoy its many opportunities of study and observation. The habitat supports many forms of wildlife, including over a dozen state-listed rare plants, two of which are located nowhere else in the state. The preserve has been studied and inventoried by the Virginia Department of Natural Heritage. The Shenandoah University Environmental Studies Program and the local high schools have conducted numerous studies at the site.

**C6. Project Resources.** An anonymous donation of \$25,000 was pledged to Shenandoah University for the development of the Green Circle. A planning team representing the City, Shenandoah University and other community organizations developed a plan for the trail to connect to the main campus with Jim Barnett Park, Shenandoah University and the Winchester-Frederick County Visitors Center. The trail would also service the planned Historical Interpretive Center and proposed Discovery Museum site. The plan includes a pedestrian traffic signal to cross Pleasant Valley Road and Hollingsworth Drive that will be paid for with local funds. Shenandoah University and the Parks and Recreation Board have endorsed this plan.

This project has received outside funding sources that will help make this a successful addition to the Green Circle. The City has been awarded a grant of approximately \$800,000 to install pedestrian signals and crosswalks at critical intersections along the Green Circle route. The grant includes five projects at the following intersections: Jubal Early Drive/Valley Avenue, Jubal Early Drive/Loudon Street, Loudon Street/Featherbed Lane, Featherbed Lane/Pleasant Valley Road and several other important intersections on the trail. Opportunities from developers and property owners exist that would allow the City to complete a future connection of this section of the trail with the section of trail proposed for construction and enhancement between Loudon Street and Harvest Drive. Federal authorization to begin these projects could come as early as January 2006.

The City is dedicated to completing a section of the Green Circle trail between Pleasant Valley and Shawnee Springs Historical Site. Previously awarded Transportation Enhancement grant funds will be used for the design and construction of the Green Circle trail in this area. The project will take approximately eight to twelve weeks to design and approximately three to six months to construct with the designing phase beginning in October 2005. A traffic and pedestrian signal is proposed at Pleasant Valley and Hollingsworth Drive for safe crossing of the street for

pedestrians and bicyclists. Shenandoah University and the City of Winchester are committed to funding this signal in order to make the crossing at Pleasant Valley safer for pedestrians and bicyclists.

A \$7,500 grant from the Shenandoah Valley Battlefield Foundation has provided access and interpretation for Sheridan's Field Hospital, located in Shawnee Springs Historical and Interpretive Park. Through volunteer labor and local material donations, bridges have been constructed and a living history site was developed. Shawnee Springs was again a feature for Civil War Weekend this year. Another grant of \$10,000 has been awarded to construct a replica of a typical hospital cookhouse for the living history area. The structure will also serve as a multi-purpose shelter for the community.

The Metropolitan Planning Organization was awarded an \$80,000 State Transportation Planning Grant from VDOT to create a bike and pedestrian plan for the Winchester-Frederick County MPO and make recommendations for ordinances to create new facilities and enhance existing networks. It will focus on specific design elements and serve to connect the Green Circle to areas in the Frederick County. A comparison grant proposal has been submitted to the National Park Service – Rivers, Trails and Community Assistance Program to help organize and facilitate public meetings and advisory committees associated with the study. This would allow the VDOT grant to be spent primarily on design solutions for actual projects. The Park Service has worked with the Green Circle Advisory Committee previously and we are positive about our ability to obtain further assistance.

On October 15<sup>th</sup>, an event to raise awareness about the Green Circle project and promote healthy lifestyles through walking, running and biking was held. Organized by the Winchester Department of Parks and Recreation and the Green Circle Advisory Committee, other partners include the Winchester Medical Center, the Shenandoah Valley Runners and the Winchester Wheelmen. This year's event was held entirely in the vicinity of the Abrams Creek Wetlands Preserve and featured a 5-K run, a kid's fun run, interpretive walks, organized bike rides and a bike safety rodeo.

IDENTIFICATION OF SIGN TYPES



Figure 1. Proposed Winchester Wayfinding Signage System

6. THE WAYFINDING SIGN SYSTEM

2. WAYFINDING SIGN SYSTEM MAP



Figure 2. Locations of Winchester Wayfinding Signage System

## **Appendix L**

Northern Shenandoah Valley Ozone Early Action Compact Area

*December 30, 2005 Submittal*



**Winchester Public Schools**  
12 N. Washington Street  
Winchester, VA 22601

**Phone: 540 667-4253**  
**Fax: 540-722-6198**

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*“Learning for all, Whatever it Takes”*

## **CITY OF WINCHESTER PUBLIC SCHOOLS VOLUNTARY DIESEL RETROFIT PROGRAM**

### **Overview:**

Winchester Public Schools proposes to partner with the Virginia Department of Environmental Quality (DEQ), the United States Environmental Protection Agency (EPA), and the Winchester-Frederick County Economic Development Commission in a voluntary program to reduce emissions from diesel powered school buses. The anticipated program outcomes are improved air quality and reduced exposure to school bus particulate matter, hydrocarbons, and carbon monoxide emissions by school-age children. This project proposal is to retrofit each of 18 buses of the 31 city school bus fleet with a diesel oxidation catalysts (DOC).

### **Objectives:**

This project aims to improve air quality by using EPA-verified technologies -- diesel oxidation catalysts -- to reduce pollutants emitted by diesel engine school buses.

### **Fleet Assessment:**

The Winchester Public Schools fleet list, and the list of proposed buses for retrofit are included as attachments. Attachment (1) lists the entire fleet of Winchester school buses. Attachment (2) lists the buses proposed for retrofit, including the yearly mileage, yearly gallons used, and remaining service life.

### **Proposed Retrofit Project:**

There is currently no readily available and dependable source of ultra-low sulfur fuel in the City of Winchester – Frederick County area, therefore the only viable option is to install diesel oxidation catalysts on selected school buses. The implementation plan will identify the oldest eligible buses for retrofit first, followed by newer model years until the identified fleet is retrofitted.

**Projected Project Cost:**

\$475,000 is the identified funding to be shared between Frederick County Schools and Winchester Public Schools. Based on fleet size, the funding share to Winchester Schools is fifteen percent (15%) or \$71,250. Anticipated expenditures to execute the retrofit program are as follows:

DOC Retrofits for 18 buses:	18@ \$3000	=	\$54,000
ECM Reprogramming for 6 buses	6@ \$1000	=	\$6,000
In-house shop labor/transport:			
4hrs/bus x \$40/hr x 18 buses		=	\$2,880
<u>follow-up inspections/reporting</u>		=	<u>\$8,370 min.</u>
<b>TOTAL</b>		=	<b>\$71,250</b>

All expenditures, including in-house labor for shop personnel and administrative support will be documented in accordance with the requirements set by the funding entity.

**Emission Benefit Estimates\*:**

Particulate Matter – approximately 20%  
Hydrocarbons -- approximately 50%  
Carbon Monoxide – approximately 40%

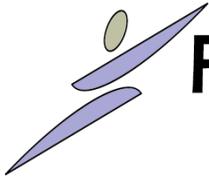
\* per retrofit equipment manufacturer

**Implementation and Reporting:**

Installations will begin as soon as the funding becomes available, pending parts availability, scheduling of down time, and scheduling with installation vendors. Winchester Public Schools does not maintain a large enough spare fleet to take more than one bus out of operation at any given time. It is expected that the majority of retrofits will be done during the summer months (summer of 2004 and 2005). Winchester Public Schools will maintain and record the required information (buses retrofitted, accumulated mileage, and fuel usage) for a 3 year term.

**Contact Person:**

Kevin J. McKew, Director of Operations  
Winchester Public Schools  
12 North Washington Street  
Winchester, Va. 22601  
[mckewk@wps.k12.va.us](mailto:mckewk@wps.k12.va.us)  
phone: 540-667-4253 fax: 540-722-6198



# Frederick County Public Schools

... to ensure all students an excellent education

## Frederick County Public Schools Voluntary Diesel Retrofit Program

### 1. Overview:

Frederick County Public Schools in cooperation with the Winchester/Frederick County Economic Development Commission, the Virginia Department of Environmental Quality, and the United States Environmental Protection Agency have decided to join forces in an Early Ozone Action Plan. Frederick County's involvement would include the installation of diesel oxidation catalyst and purchasing replacement busses equipped with the low emission option installed when feasible.

### 2. Objectives:

To reduce the exposure of harmful pollutants to school bus occupants, to improve air quality, and to reduce the over all emissions by using EPA-verified technologies on our existing school bus fleet that operates with in the Winchester/Frederick County community. On a typical day the Frederick County Public School busses travel in excess of 10,000 miles, completing over 470 routes, with an annual total of over 2 million miles.

### 3. Fleet Assessment:

See attached list. \*Note: All busses with at least a three-year service life remaining are candidates. Emission family data information was not available for entire fleet at the time of proposal.

### 4. Proposed Retrofit Project:

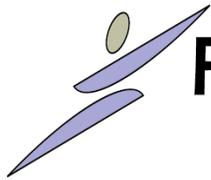
Due to the lack of suppliers of ultra-low sulfur fuels in our area, our only option is to install a diesel oxidation catalyst. Our intentions are to start with the oldest, therefore the dirtiest, engines that are not slated for replacement within the next three years, working forward until all have been retrofitted.

### 5. Quantification:

Cost estimates for the cost of retrofit equipment is estimated at \$3,000 per vehicle, but actual cost including, but not limited to, administrative, incremental fuel cost, and long term maintenance, will need to be calculated after the awarding of the grant.

### 6. Benefits:

With the installation of Diesel Oxidation Catalyst our goal is a reduction of particulate matter by 20%, carbon monoxide by 40%, and hydrocarbons by 50%, as per equipment manufactures estimates.



# Frederick County Public Schools

... to ensure all students an excellent education

7. Implementation:

Installations are to begin as soon as the funding becomes available pending parts availability, scheduling of down time, and scheduling with installing vendors. Frederick County Public Schools sole responsibility will be to maintain and record required information for the required three year term, but will continue our present policy of purchasing and maintaining only emission friendly vehicles and components.

8. Financial:

Account information to be supplied upon awarding of the grant. This program is strictly voluntary and is not required by any known laws requiring such actions.

9. Reporting:

Frederick County Schools agrees to complete the requested follow-up reports including number of busses retrofitted, accumulated mileage, and fuel usage, for the required three year period. A final report upon completion of the project will be issued not more than thirty days after completion of the plan.

Primary contact person:

John R. Curtin, Fleet Manager  
Frederick County Public Schools  
Transportation Department  
178 Indian Hollow Rd.  
Winchester, VA 22603  
(540) 667-2770

See Attachments:



**Ozone Early Action Plan**  
**Northern Shenandoah Valley**

***Northern Shenandoah Valley  
Ozone Early Action Area***

***State Air Quality & Program  
Update***

**December 31, 2005**



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3.	EMISSIONS INVENTORY UPDATE	7
4.	REGIONAL/STATE PROGRAMS UPDATE	10
5.	CONTROL PROGRAM & MEASURES SUMMARY	15

## LIST OF APPENDICES

APPENDIX A – Local Utility Emissions Reduction Analysis

# ***Northern Shenandoah Valley Ozone Early Action Plan State Air Quality & Program Update – December 31, 2005***

## **Introduction**

Provided in this report is a status of the state efforts to assist the Northern Shenandoah Valley (Winchester) Ozone Early Action Compact (EAC) Area in implementing the commitments contained in the Early Action Plan for the area. This plan was submitted as a State Implementation Plan (SIP) by the Virginia Department of Environmental Quality (VADEQ) on December 20, 2004 on behalf of the Commonwealth and the localities participating in the EAC process.

Since the formal submission of this plan, great strides have been made at the local, state, and regional levels to both implement control measures and produce emission reductions in ozone precursor pollutants. In turn, these controls and emission reductions have continued to translate into cleaner air for the Winchester area.

To demonstrate this progress in term of improved air quality, reduced emissions and pollutant transport, and the implementation of controls, the following discussed in the remainder of this report:

- Recent air quality improvement trends and observed reductions in regional ozone transport
- Updated 2005 emissions inventory demonstrating progress towards 2007 attainment goals.
- Implementation of regional and state programs contributing to the EAP process.
- Summary and status of control measures implemented as part of the Winchester EAP.

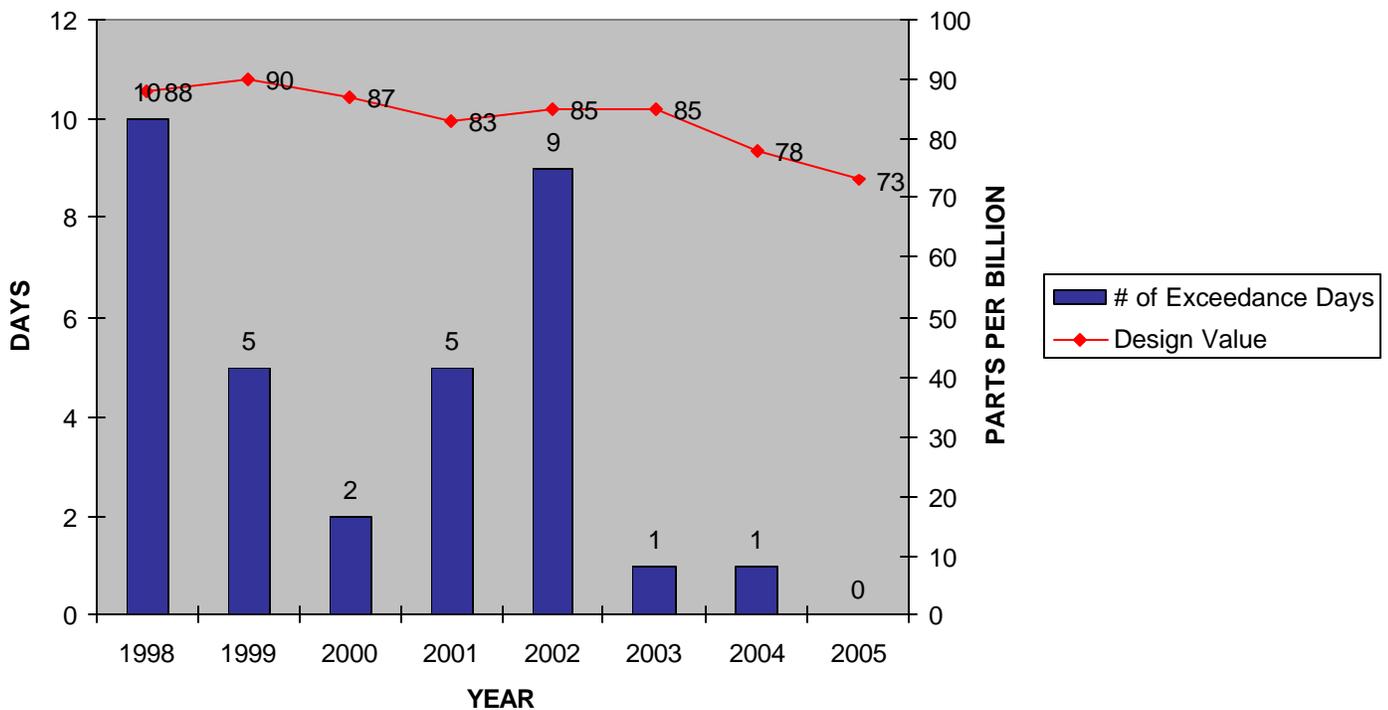
## **Air Quality Update**

As 2005 comes to a close, ozone air quality continues to improve in the area. This is demonstrated by the fact that the area recorded no exceedances of the 8-hour ozone standard during 2005 and represents the second consecutive year of clean ozone data. The improvement of air quality continued in 2005 despite weather more conducive to ozone formation than in previous years. This trend in air quality improvement is documented below from highs recorded in the late 1990s. As a result, the Winchester area is now in compliance with the 8-hour ozone standard.

### **Table 1 – Winchester Area Ozone Trends**

<b>YEAR</b>	<b># OF EXCEEDANCE</b>	<b>3-YEAR DESIGN VALUE</b>
1998	10	<b>88 Parts Per Billion (PPB)</b>
1999	5	<b>90 PPB</b>
2000	2	<b>87 PPB</b>
2001	5	<b>83 PPB</b>
2002	9	<b>85 PPB</b>
2003	1	<b>85 PPB</b>
2004	1	<b>78 PPB</b>
2005	0	<b>73 PPB</b>

**Figure 1 – Winchester Area Ozone Trends**

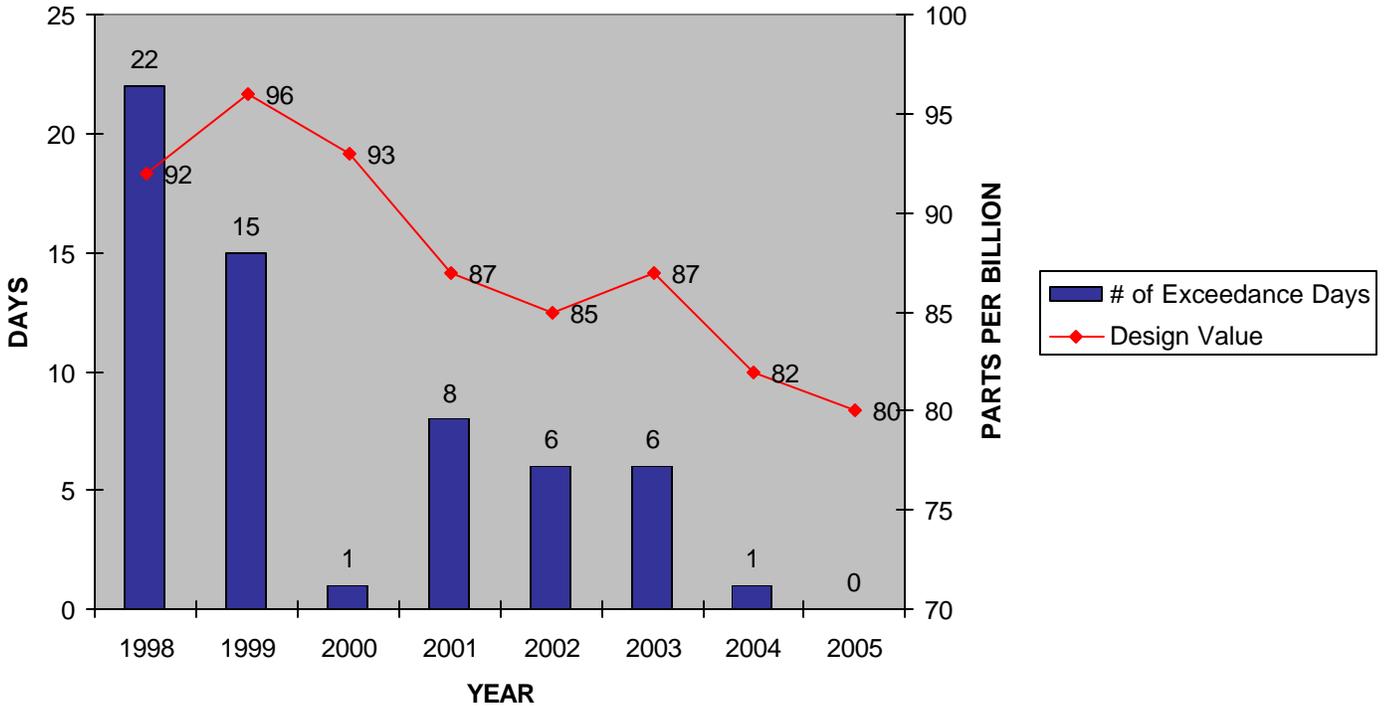


Of equal or even more importance than the local ozone air quality improvement in the Winchester is the trends being observed in the reduction of ozone being transported in to Virginia and the EAC areas. Small areas like Roanoke and Winchester, with relatively small local ozone precursor pollutant emissions are significantly impacted by the regional pollutant load of ozone that is generated in upwind areas and transported into these areas by typical summer weather patterns.

To track and analyze the influence of transported ozone, Virginia has a long standing high-altitude monitor in the Shenandoah National Park (SNP) at Big Meadows. It is well accepted that high ozone values observed at this monitor is reflective of pollution being transported into

Virginia from areas west of this monitoring station. As shown in the graph below, ozone air quality has also improved significantly at the SNP monitor.

**Figure 2 – Big Meadow (SNP) Ozone Exceedance & Design Value Trends**



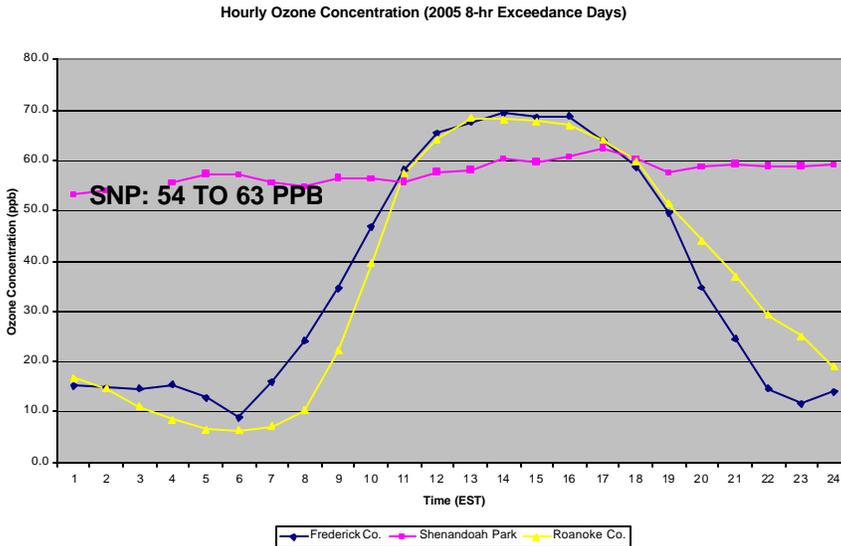
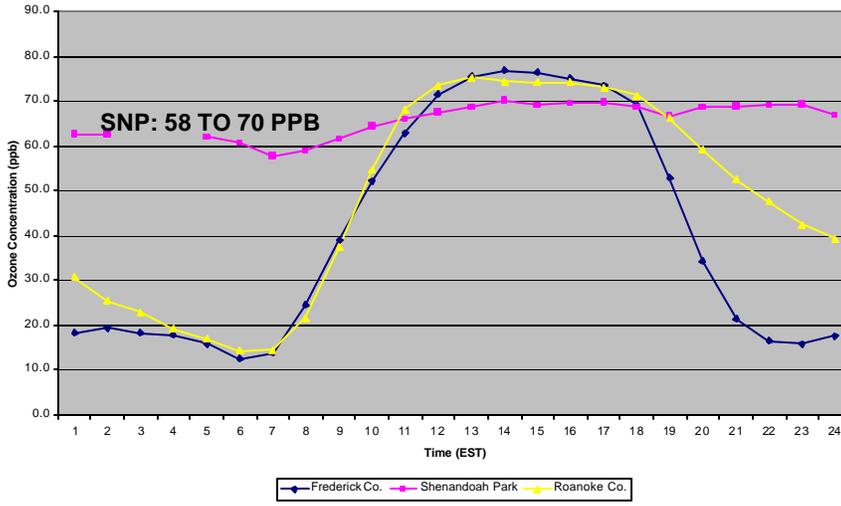
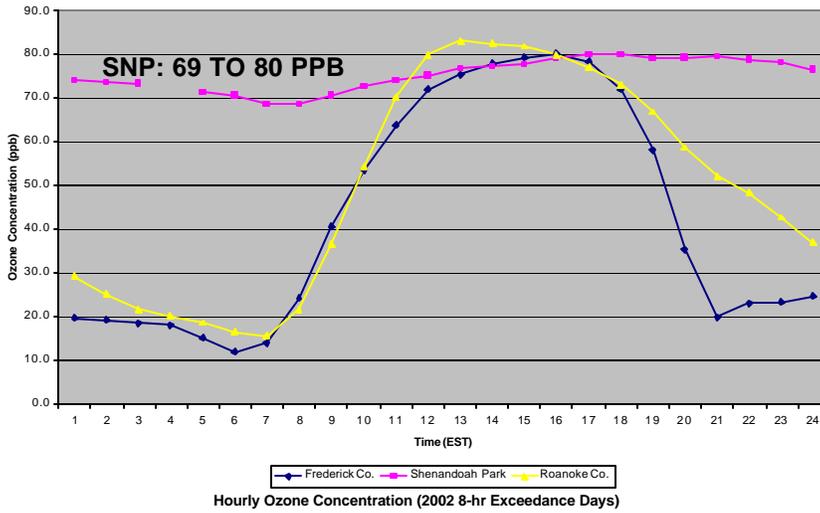
To investigate this reduction in transported pollution, the following analysis was performed. The table and charts presented below and on the next page show that the average ozone levels measured at Big Meadows during ozone exceedance days has dropped from 1998 to 2005 by approximately 15 ppb.

**Table 2 – Range of Big Meadows Hourly Average Concentrations**

YEAR	AVERAGE CONCENTRATION RANGES
1998	69 TO 80 PPB
1999	65 TO 76 PPB
2000	67 TO 74 PPB
2001	68 TO 75 PPB
2002	58 TO 70 PPB
2003	70 TO 77 PPB
2004	56 TO 69 PPB
2005	54 TO 63 PPB

**Figure 3-5: Reduction in Ozone Transport (1998, 2002, & 2005)**

Hourly Ozone Concentration (1998 8-hr Exceedance Days)



This reduction in the regional ozone load is most likely due to the numerous control programs implemented to reduce ozone precursor emissions on the state and national levels. Most significant of these, the regional reduction of Oxides of Nitrogen (NO<sub>x</sub>) emissions from power plants that was specifically designed to reduce the transport of ozone from one area to another. Information on the reductions achieved by this program is presented in Section 3 of this report.

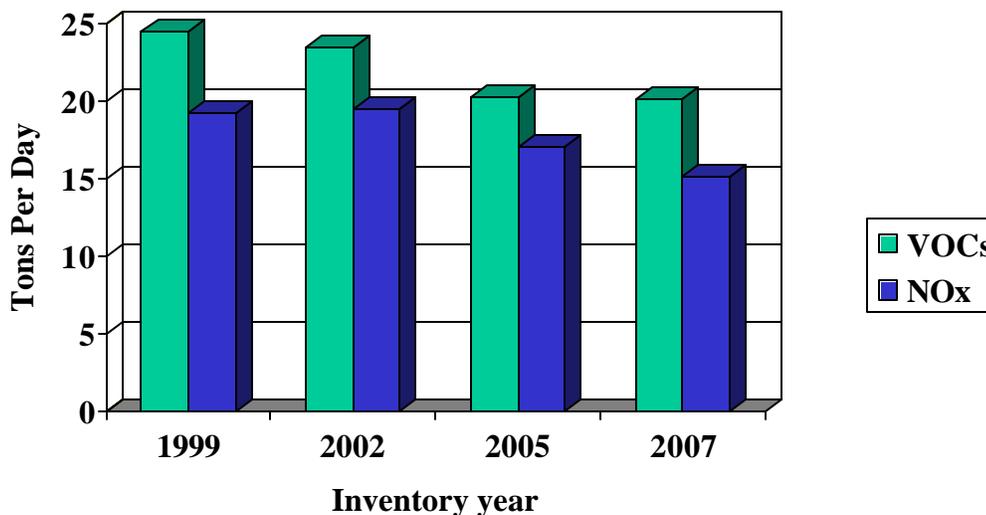
### **Emissions Inventory Update**

To demonstrate that the Winchester area is making good progress towards the emissions reductions committed to in the EAP, an updated 2005 emissions inventory for the area has been developed and is presented below along with a comparison to the 1999, 2002, and 2007 emissions inventories previously developed for the planning process.

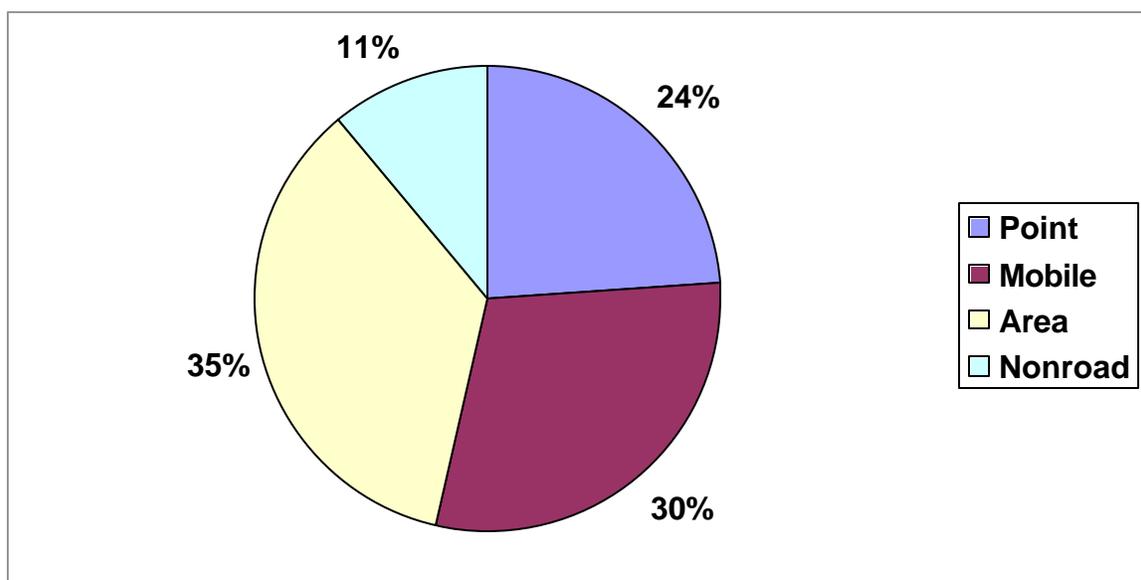
**Table 3 – Winchester Area Emissions Inventories and Trends**

Source Category	1999 (Baseline)	2002 (Interim)	2005 (Current Year)	2007 (Control Case)
<b><i>Volatile Organic Compound (VOC) Emissions in tons/day</i></b>				
Point Sources	6.019	5.638	4.860	6.068
Area Sources	7.806	7.982	7.137	7.081
Non-road Sources	2.650	2.672	2.270	2.051
Mobile Sources	8.047	7.164	6.000	4.934
<b>Totals:</b>	<b>24.522</b>	<b>23.456</b>	<b>20.267</b>	<b>20.134</b>
<b><i>Oxides of Nitrogen (NO<sub>x</sub>) Emissions in tons/day</i></b>				
Point Sources	0.745	0.934	0.990	1.075
Area Sources	2.526	2.603	1.412	2.612
Non-road Sources	1.910	1.942	1.770	1.647
Mobile Sources	15.090	14.029	12.950	9.952
<b>Totals:</b>	<b>19.271</b>	<b>19.508</b>	<b>17.122</b>	<b>15.186</b>

**Figure 4 – Winchester Area Emissions Inventory Trends**

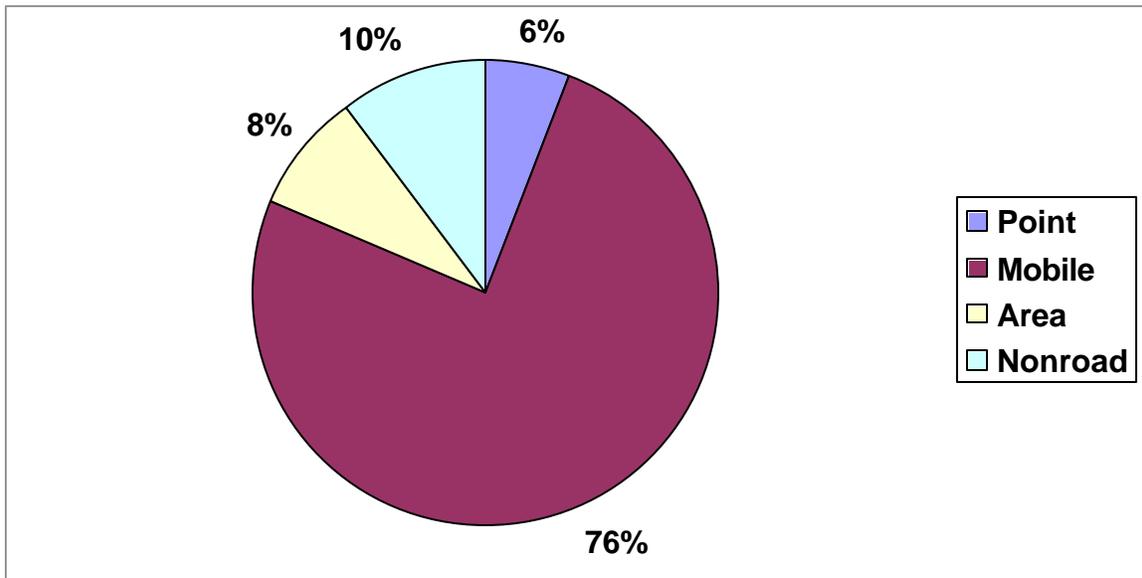


**Figure 5 - 2005 Baseline Ozone Season Daily Emissions of Volatile Organic Compounds (VOC)**



<b>Summary of the Winchester Area Current VOC Emissions Inventory for Calendar Year 2005</b>	
Major Source Categories	Emissions (tons/day)
<b>Major Stationary Point Sources</b>	
25 individual facilities (7 in Winchester, 18 in Frederick) - Description: Includes several printing, plastics, and mineral products industries. No utilities in the project area.	4.860 tpd
<b>On-Road Mobile Sources</b>	
Motor Vehicles on Public Roads - <b>Description:</b> 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.	6.000 tpd
<b>Area Sources</b>	
Use of Solvent-based Products - Description: paints, cleaners, consumer products, & others. Gasoline Distribution & Marketing - Description: Gasoline storage & transfer operation at terminals and service stations Others - description: Open burning, landfills, & others	7.137 tpd
<b>Non-Road Mobile Sources</b>	
Non-road Equipment - Description: lawn & garden, construction, recreational vehicles. Others - Description: Locomotives, aircraft, boats	2.270 tpd
<b>Total</b>	<b>20.267 tpd</b>

**Figure 6 - 2005 Baseline Ozone Season Daily Emissions of Oxides of Nitrogen (NO<sub>x</sub>)**



<b>Summary of the Winchester Area Current NO<sub>x</sub> Emissions Inventory for Calendar Year 2005</b>	
Major Source Categories	Emissions (tons/day)
<b>Major Stationary Point Sources</b>	
25 individual facilities (7 in Winchester, 18 in Frederick) - Description: Includes several printing, plastics, and mineral products industries. No utilities in the project area.	0.990 tpd
<b>On-Road Mobile Sources</b>	
Motor Vehicles on Public Roads - <b>Description:</b> 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.	12.950 tpd
<b>Area Sources</b>	
Use of Solvent-based Products - Description: paints, cleaners, consumer products, & others. Gasoline Distribution & Marketing - Description: Gasoline storage & transfer operation at terminals and service stations Others - description: Open burning, landfills, & others	1.412 tpd
<b>Non-Road Mobile Sources</b>	
Non-road Equipment - Description: lawn & garden, construction, recreational vehicles. Others - Description: Locomotives, aircraft, boats	1.770 tpd
<b>Total</b>	<b>17.122 tpd</b>

The Winchester area is well on its way to achieving the emissions reductions needed to meet the attainment year (2007) goals. In fact, 2005 emissions levels are within 0.13 tons per day of VOC and 1.94 tons per day of NO<sub>x</sub> of the 2007 attainment emissions level goals.

## **Regional/State Programs Update**

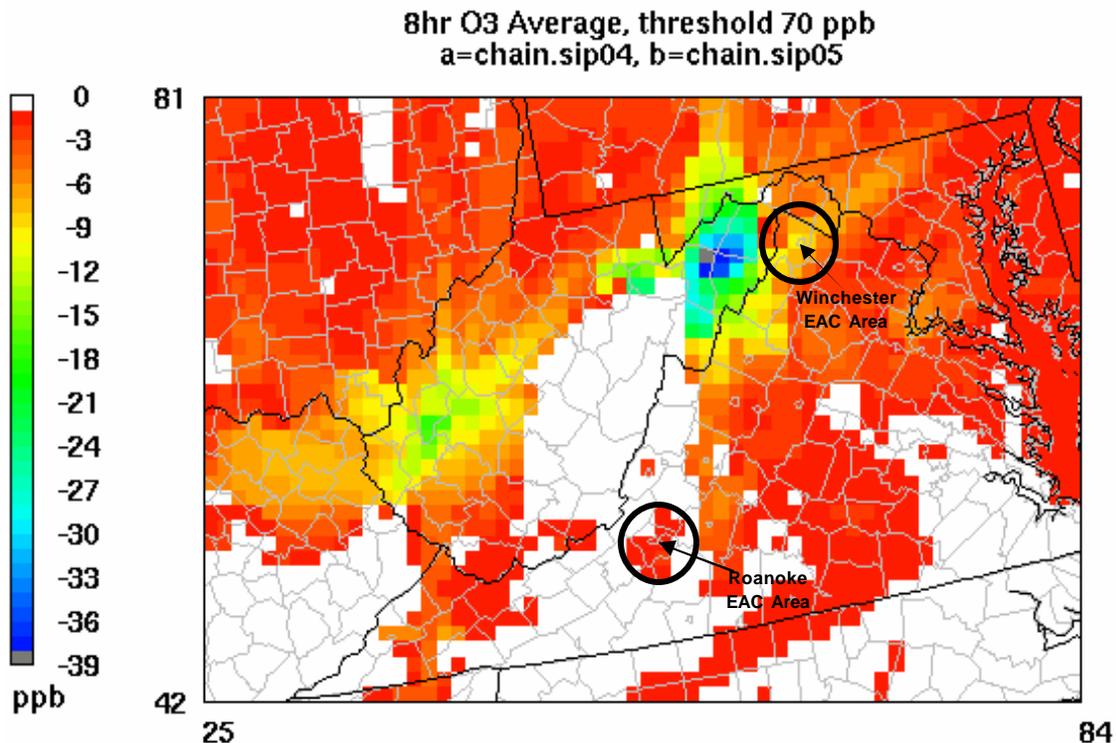
The Virginia Department of Environmental Quality (VADEQ) has implemented several control measures to assist the Winchester area in achieving its air quality goals.

### ***1. Regional Reduction of NO<sub>x</sub> Emissions (SIP Call)***

The most significant of these programs has been the regional program to reduce NO<sub>x</sub> emissions from power plants and large industrial boilers. This regional program, commonly known as the “NO<sub>x</sub> SIP Call”, was established by the EPA to address the transport of ozone and precursor emissions in the eastern United States. Virginia, along with 22 other states became subject to this rule which now covers over 2,500 combustion units in the control area.

To assess the impact of this program on the Winchester area, a limited modeling analysis was performed by the VADEQ to determine the benefits of emissions reductions from selected power plants within close proximity of the EAC area. The results of this analysis shows that the reductions achieved at the four selected power plants alone have a significant impact on predicted ozone values in the Winchester area as shown in concentration difference map below:

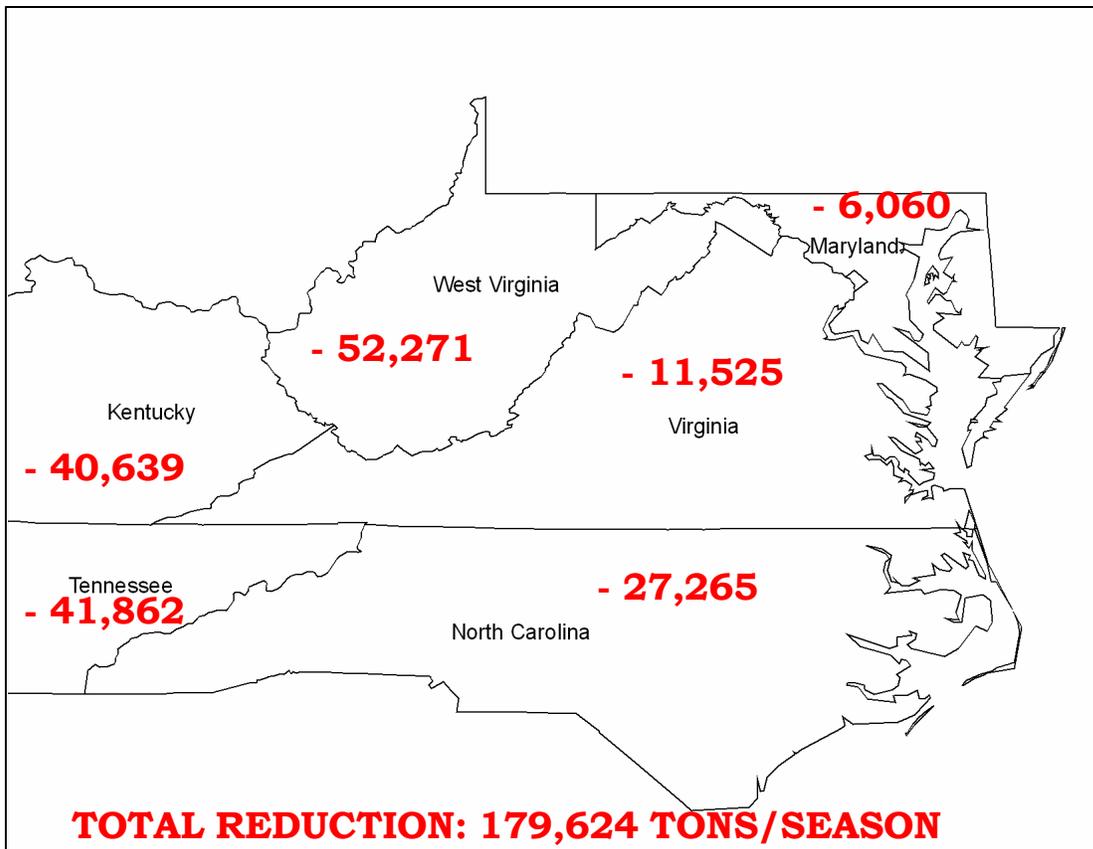
**Figure 7 – Ozone Reductions from Local Power Plant Controls**



Reduction in emissions from the four selected power plants alone since 2002 have produced ozone concentration reduction of up to 10 parts per billion in the Winchester area (see Appendix A for a detailed modeling report.. Time and resource constraints did not allow for a more comprehensive modeling analysis of the SIP Call impacts on the EAC areas and Virginia in general. However, the EPA report “Evaluating Ozone Control Programs in the Eastern United States – 2004” estimates much larger reductions in average ozone concentrations in Virginia of 7 to 23% from 1997 to 2004 with much of this reduction coming since 2002 and the implementation of the SIP Call requirements. These estimates are consistent with the analysis of the reduction of the regional ozone load present in Section 1 of this document that shows a 10 to 15 ppb reduction in transported ozone in Virginia from 1998 to 2005.

As can be predicted, these reductions in ozone are being driven by the significant reduction of NO<sub>x</sub> emissions in the SIP Call control area. To document these reductions, an assessment of NO<sub>x</sub> emissions and emissions reductions has also been performed for Virginia and surrounding states using data from the EPA Clean Air Markets Division. The results of this analysis are presented below:

**Figure 8 – NO<sub>x</sub> Emissions Reductions from 2002 to 2005**



As can be seen by this analysis, significant NO<sub>x</sub> emissions reductions are being achieved through the SIP Call program that is certainly contributing to the improvement in air quality being observed throughout the region and specifically in the EAC areas.

## ***2. National Low Emissions Vehicle Program***

The National Low Emissions Vehicle (NLEV) program is a voluntary clean vehicle program established by the EPA through national regulation on December 16, 1997. Due to the voluntary nature of the program, it was contingent upon agreement by a number of Northeast states and the major automobile manufacturers. Virginia opted into this program for lower vehicle emissions standards, beginning with model year 1999 vehicles and subsequently adopted a state NLEV regulation, 9 VAC 5 Chapter 200, which became effective on April 14, 1999. This program along with the federal motor vehicle control programs, have and continue to provide substantial emissions reductions in Virginia that will assist areas like Winchester in meeting air quality standards and goals.

## ***3. Existing Source Controls and NO<sub>x</sub> RACT***

To address local point source emissions, the state extended certain existing source and Reasonably Available Control Technology (RACT) regulations to the Winchester area to reduce the local contribution to ozone formation. These regulations were adopted by the Air Pollution Control Board in October 2003 and became effective on March 23, 2004. Compliance with these regulations was then required by November 15, 2005. These regulations mainly apply to two categories of sources which are described below.

A number of state regulations (Chapter 40) regarding existing sources of the Volatile Organic Compound (VOC) have been extended to the Winchester area. These regulations are as follows:

- Article 5 - Synthesized Pharmaceutical Products Manufacturing Operations
- Article 6 - Rubber Tire Manufacturing Operations
- Article 11 - Petroleum Refinery Operations
- Article 24 - Solvent Metal Cleaning Operations Using Non-Halogenated Solvents
- Article 25 - Volatile Organic Compound Storage and transfer Operations
- Article 26 - Large Appliance Coating Application Systems
- Article 27 - Magnet Wire Coating Application Systems
- Article 28 - Automobile and light Duty Truck Coating Application Systems
- Article 29 - Can Coating Application Systems
- Article 30 - Metal Coil Coating Application Systems
- Article 31 - Paper and Fabric Coating Application Systems
- Article 32 - Vinyl Coating Application Systems
- Article 33 - Metal Furniture Coating Application Systems
- Article 34 - Miscellaneous Metal Parts and Products Coating Application Systems
- Article 35 - Flatwood Paneling Coating Application Systems
- Article 37 - Petroleum Liquid Storage and Transfer Operations
- Article 39 - Asphalt Paving Operations

Once these regulations became effective, the VADEQ regional office identified approximately 46 point sources in the Winchester area that were potentially subject to one or more these regulations (not including repair shops). These sources were subsequently notified of the potential applicability of these regulations by letter dated February 26, 2004.

As a result of this notification process, most of these sources were determined to be exempt from these rules. The remaining sources have been determined to be in compliance or in one case, on a compliance schedule for the applicable rule(s) and/or have permits which include VOC control requirements equal to or more stringent than the Chapter 40 requirements. Compliance with these regulations is specific to the individual process and regulation and mainly relies on VOC content limitations and/or emission reduction requirements. The estimate of about 0.8 tons per day of cumulative reductions from these requirements remains valid.

The second part of the control requirements involved case by case RACT determinations for major sources of NO<sub>x</sub>. One point source in the Winchester area was identified as being subject to this requirement which resulted in source specific RACT determination and permit that were submitted to the EPA and approved as separate SIP revisions as part of the overall EAP SIP. This RACT determination for the Global Chemstone Company did not require any additional controls and no reductions were included in the EAP.

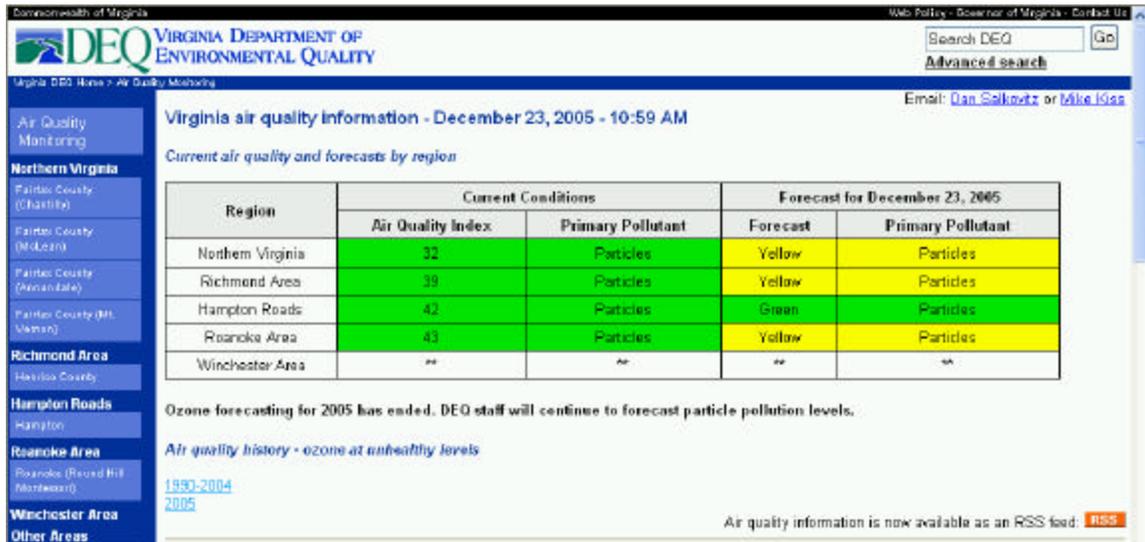
#### ***4. Enhanced Ozone Forecasting tool for the Winchester Area***

One of the main components of the local early action program is the establishment of an ozone action days program. This program requires a combination of mandatory and voluntary action by local governments and residents to reduce ozone precursor producing activities and emissions. In order to implement such a program, daily air quality forecasts are needed. To support this program, the VADEQ has completed the following actions to enhance the ozone forecast and health advisory program for the Winchester area:

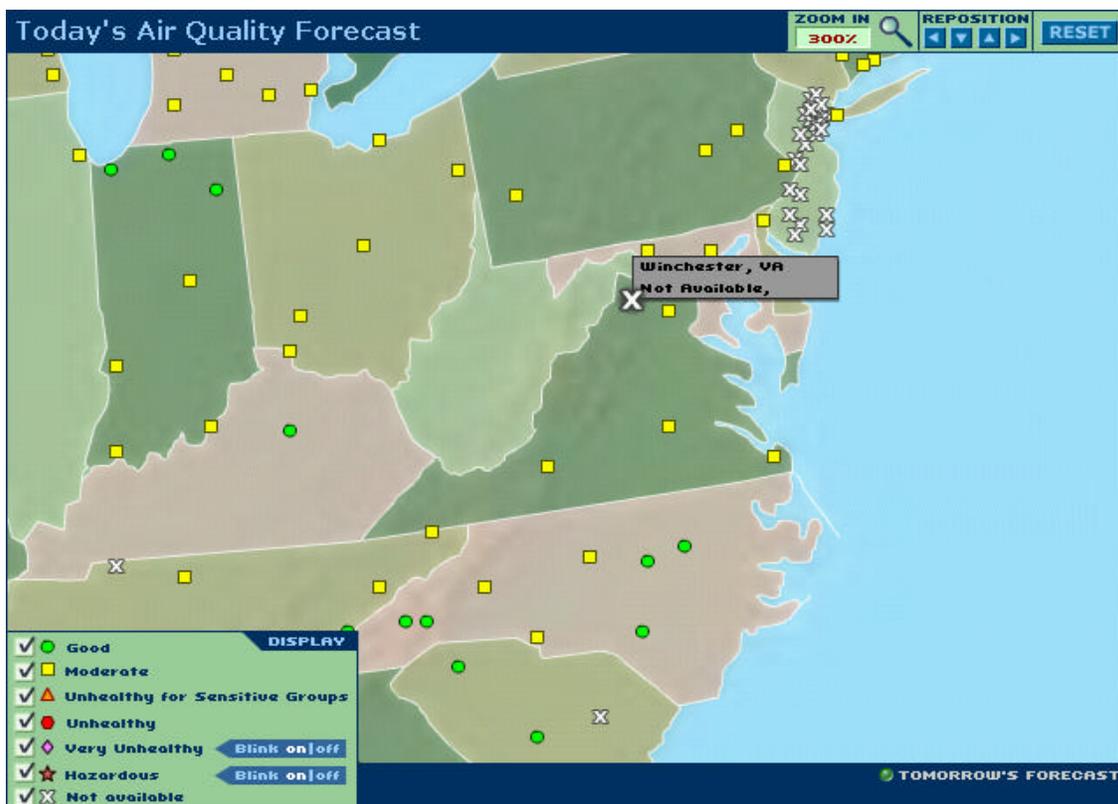
- The VADEQ contracted with Sonoma Technologies Inc. to develop an enhanced ozone forecasting tool for various areas in Virginia, including the Winchester area. This work has been completed.
- An additional meteorologist has been hired to support the VADEQ air quality forecast and advisory program.
- A consultation process has been established with other local EAC areas in Maryland and West Virginia to discuss and issue cooperative daily forecasts.

- The Winchester area has been updated on the VADEQ air quality forecast webpage, and on the EPA's AIRNOW national forecast webpage to reflect these changes. These sites are shown in the figures below:

**Figure 8 – VADEQ Air Quality Forecast Page**



**Figure 9 – EPA AIRNOW Air Quality Forecast Page**



## 5. School Bus Emissions Control Retrofit Program

As part of an EPA/VADEQ funded and administered program, Frederick County and the City of Winchester have completed projects to retrofit a significant number of school buses with emission control technologies. The results of these projects are as follows:

Frederick County: 127 school buses retrofitted with diesel oxidation catalysts (DOC) at a total cost of \$163,000.

Winchester City: 8 buses retrofitted with DOC at a total cost of the project was \$8,800.

### **Control Program and Measures Summary**

In general, the Winchester area and its state and federal partners have been very successful in implementing the commitments contained in the air quality plan. A summary of the control measures and estimated reductions in 2007 is presented below. No changes have occurred in the emission reduction estimates from the 2004 SIP. Appendix B of the 2004 SIP submission provides detailed descriptions of these measures and the methods used to calculate the predicted emission reductions.

#### ***Control Measures & Estimated Emissions Reductions (2007)***

<b>Emissions Control Measures</b>	<b>VOC (tpd)</b>	<b>NO<sub>x</sub> (tpd)</b>	<b>Modeled</b>
<b><i>State/Federal Area Source Controls</i></b>			
Architectural & Industrial Paints – Federal Rule (Federally Enforceable)	0.134	0.000	YES
Consumer Products – Federal Rule (Federally Enforceable)	0.056	0.000	YES
Metal Cleaning Solvents – Federal Rule (Federally Enforceable)	0.056	0.000	YES
Motor Vehicle Refinishing – Federal Rule (Federally Enforceable)	0.003	0.000	YES
Cutback Asphalt – State Rule (Federally Enforceable)	0.001	0.000	YES
<b>Subtotals:</b>	<b>0.250</b>	<b>0.000</b>	
<b><i>Federal Non-Road Source Controls</i></b>			
Small Gasoline Engine Standards – Federal Rule (Federally Enforceable)	0.812	0.027	YES
Diesel Engine Standards – Federal Rule (Federally Enforceable)	0.047	0.276	YES
Locomotive Engine Standards – Federal Rule (Federally Enforceable)	0.000	0.020	YES
Large Gasoline Engine Standards – Federal Rule (Federally Enforceable)	0.068	0.248	YES
Recreational Engine Standards – Federal Rule (Federally Enforceable)	0.004	0.000	YES

<b>Emissions Control Measures</b>	<b>VOC (tpd)</b>	<b>NO<sub>x</sub> (tpd)</b>	<b>Modeled</b>
<b>Subtotals:</b>	<b>0.931</b>	<b>0.571</b>	
<b><i>Federal Mobile Source Controls</i></b>			
Previous Motor Vehicle Standards – Federal Rule (Federally Enforceable)	2.675	3.202	YES
Tier 2 Vehicle Standards – Federal Rule (Federally Enforceable)	0.438	1.825	YES
Heavy Duty Diesel Standards – Federal Rule (Federally Enforceable)	0.001	0.111	YES
<b>Subtotals:</b>	<b>3.114</b>	<b>5.138</b>	
<b><i>State/Local Early Action Plan Controls</i></b>			
Existing Source RACT Controls – State Rule (Federally Enforceable)	0.792	0.000	YES
Ozone Action Days Program – State/Local (Mandatory/Voluntary)	0.302	0.015	YES
VMT Reduction – Local (Voluntary)	0.148	0.299	NO
Open Burning Restrictions (Mandatory/Voluntary)	0.122	0.280	NO
School Bus Retrofit Program (Mandatory)	0.002	0.001	NO
Engine Idling Restrictions (Mandatory/Voluntary)	0.000	0.102	NO
<b>Subtotals:</b>	<b>1.366</b>	<b>1.291</b>	
<b>TOTALS:</b>	<b>5.661</b>	<b>7.000</b>	

The remainder of this report contains a detailed description of the local measures implemented in the Winchester area that was obtained from the local area status report for December 2005. More details on local implementation efforts can be found in this the local status report.

Control Measure	Summary description of control measure	Program/ Measure Status	Implementation date	VOC/NOx Reductions	Resources	Additional Information
<p>Ozone Action Days/Public Awareness Campaign</p>	<p>A comprehensive local ozone action days program. This strategy is a combination of a number of measures that had been evaluated earlier as individual strategies and are currently being implemented, including:</p> <ul style="list-style-type: none"> <li>• General Public Awareness Program</li> <li>• School-based Public Awareness Program</li> <li>• Education and Promotion Campaign</li> <li>• Employer-based Ozone Action Days</li> <li>• Area Sources Ozone Action Days</li> <li>• Dynamic Message Signs</li> <li>• Video Monitor Deployment</li> <li>• Lawn and Garden Equipment Usage Restrictions for State/Local Governments</li> <li>• Other State/Local Government Restrictions (Refueling, Pesticides)</li> <li>• Voluntary restrictions by Public (lawn and garden, refueling, others)</li> </ul> <p>Further information can be found in the SIP submitted December 30, 2004 on page 13, and in Appendix B</p>	<p>Valley AIRNow, an education and outreach program, was created in April 2005 to accomplish this milestone. The program's activities can be broken down into two main categories: networks and information dissemination:</p> <p><b>Networks:</b></p> <p><u>Government Air Quality Action Day Network</u></p> <ul style="list-style-type: none"> <li>• Valley AIRNow collaborated with City and County officials to develop Air Quality Action Day (AQAD) Plans that (a) designated a City and County-wide Clean Air Coordinator that will disseminate Alerts before predicted high ozone days specifying what measures employees can take to protect their health and reduce their emissions for that day and (b) restrict City and County department activities, such as, mowing, open-burning, refueling and idling on Action Days.</li> </ul> <p><u>Schools Air Quality Action Day Network</u></p> <ul style="list-style-type: none"> <li>• Valley AIRNow is working with Winchester and Frederick County Public Schools to develop SOL matched air quality curriculum and Teacher Workshop Development Sessions.</li> </ul> <p><u>Media Air Quality Action Day Network</u></p> <ul style="list-style-type: none"> <li>• Valley AIRNow developed and distributed media kits resulting in the growth of a media network that supplements our public awareness campaign. Valley AIRNow was featured in at least 7 newspaper articles, 2 television shows, and multiple radio spots this past summer.</li> </ul> <p><u>Medical Air Quality Action Day Network</u></p> <ul style="list-style-type: none"> <li>• Valley AIRNow partnered with the National Weather Service and the Winchester Red Cross in an effort to incorporate air quality information in CPR class curriculum. We are also participating in the Winchester Medical Center's CME Grand</li> </ul>	<p>Public Education and Outreach launched 2004 with creation of website, PSAs and Air Quality Action Day Alerts</p> <p>Valley AIRNow Air Quality Education and Outreach Program launched April 2005</p> <p>Full implementation completed September 30, 2005</p>	<p>0.015 NOx 0.302 VOC</p> <p>Modeling described in December 20, 2004 SIP, Appendix B</p>	<p>Winchester, Frederick County and the SHENAIR Institute committed \$70,000 annually</p>	<p>Additional information about Valley AIRNow, including outreach materials, can be found at <a href="http://www.valleyairnow.com">www.valleyairnow.com</a></p>

		<p>Rounds program in order to provide physicians and support staff with air quality information they can use in a preventative manner.</p> <p><u>Business Air Quality Action Day Network</u> Valley AIRCorps, the business outreach program of Valley AIRNow, was launched this summer. More than 18 businesses throughout the area have joined the program to help get Action Day Alerts out to employees, customers, and families. Many of the businesses have also worked with the Valley AIRNow team to formulate and institute innovative programs that help reduce their emissions.</p> <p><b>Information Dissemination:</b></p> <p><u>Stakeholder Building</u></p> <ul style="list-style-type: none"> <li>• Valley AIRNow developed brochures, AIRCorps recruitment documents, news briefings, presentations, and various other informational materials that can be used for years to come.</li> <li>• Valley AIRNow attended or hosted: Earth Day, American Lung Association’s Clean Commute Day, Chamber Business Showcase, Frederick County Fair, Holistic Health Fair, Winchester Apple Harvest Festival, Green Circle Fall Fitness Fair, Opportunity Winchester Street Festival, etc.</li> <li>• Valley AIRNow gave presentations to civic groups and used it’s mascot the Smog Dog to reach children</li> <li>• Valley AIRNow worked to make local air quality information available to the public by designing and launching a website and air quality hotline, and coordinating with the DEQ Ozone Forecasting Program, the American Lung Association’s Smog Alert Program, EPA AIRNow, Weather Underground, and EPA’s Ozone Action Partnership.</li> </ul> <p><u>Coordination</u></p> <ul style="list-style-type: none"> <li>• Valley AIRNow coordinates and hosts monthly Air Quality Improvement Task Force meetings,</li> </ul>				
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		<p>leads the ozone action days/public awareness Phase I strategies and ensures all other Phase I strategies are implemented. Valley AIRNow prepared the EPA semiannual report.</p> <ul style="list-style-type: none"> <li>Despite this summer being it's first summer in existence, Valley AIRNow has already formed valuable collaborative partnerships with organizations such as the Eastern Panhandle Regional Planning and Development Council, Virginia Clean Cities, the American Lung Association of Virginia, the Red Cross, Regional Libraries, the Winchester Green Circle project, the National Weather Service, etc.</li> </ul>				
Vehicle Miles Traveled Reduction Programs	<p>Implementation of a comprehensive local VMT reduction program. This strategy combines a number of individual programs/activities designed to reduce vehicle miles of travel (VMT). These include:</p> <ul style="list-style-type: none"> <li>Enhanced/expanded Northern Shenandoah Valley Regional Commission Ridesharing Program</li> <li>Bicycle and Pedestrian Accommodation</li> <li>Green Space Preservation</li> <li>Promotion of Mixed Use Development</li> <li>Promotion of Telecommuting</li> </ul> <p>Further information can be found in the SIP submitted December 30, 2004 on pages 13-14, and in Appendix B</p>	<p>Many programs or policies have recently been implemented, or are in development phases throughout the Winchester or Frederick County areas. With a rapidly expanding population, and past air quality issues, Winchester and Frederick County have make vehicle miles traveled reduction programs a top priority. Among specific recently implemented programs or policies are:</p> <ul style="list-style-type: none"> <li>Expansion of the Valley Commuter Assistance Program (VCAP, <a href="http://www.vcapride.virginia.gov">www.vcapride.virginia.gov</a>) and new collaborative projects</li> <li>Expansion of the City's transit operations into Frederick County to determine if public transit has an added value for Frederick County residents</li> <li>A Winchester-Frederick County MPO Bicycle and Pedestrian Mobility Plan focused on addressing "real" (versus recreational) transportation trips in the form of trips to school, shopping, work, etc.</li> <li>An Interchange safety project that will include more sidewalks</li> <li>An Aylor Road project that will include 10' multi-use paths</li> <li>A Walking &amp; Wheeling in the Northern Shenandoah Valley Plan that will allow communities to use the plan, tailor it for their purposes, and work to establish a bike and</li> </ul>	Fully implemented September 30, 2005	0.299 NOx 0.148 VOC  Modeling described in December 20, 2004 SIP, Appendix B	<p>The Valley Commuter Assistance Program is funded by the state, with 20% local matching funds.</p> <p>Funding has been allocated for all bicycle and pedestrian accommodations, green space preservation initiatives and mixed use development initiatives described.</p>	Appendix I-K included in the December 2005 NSV Semi-Annual Status report

		<p>pedestrian plan that contains planning issues such as “living towns,” “town-to-rural linkages,” “regional corridors,” “cultural resources,” and “recreation.”</p> <ul style="list-style-type: none"> <li>• A Winchester Intermodal Transportation Enhancement Project to enhance intermodal transportation with an emphasis on pedestrian and bicycle traffic</li> <li>• The MPO 2030 Transportation Plan which focuses on “encourag(ing) the use of alternative modes of transportation such as bicycle, pedestrian, carpooling and ridesharing, public transit, air and rail.”</li> <li>• A VDOT Transportation Bicycle and Pedestrian Program including a Policy for Integrating Bicycle and Pedestrian Accommodations</li> <li>• A VDOT Healthy Communities Initiative focusing on making the places where people live, work and go to school healthy by introducing physical activity into the community environment</li> <li>• A Conservation Easement Program that will set aside tracts of land to prevent development</li> <li>• The Green Circle Initiative, which is working to create safe walking and biking routes encircling the City of Winchester</li> <li>• The Red Bud Run Greenway will set aside 5-miles of greenway space</li> <li>• A government initiative that dedicated public open space for a portion of a trail in a Wetland Preserve</li> <li>• Comprehensive plans for the City and the County that include provisions for promoting mixed use development</li> <li>• A recently approved text amendment allowing mixed use in B-2 districts</li> <li>• An approved Land Use Chapter of the City’s Comprehensive Plan rezoning land and permitting high-density residential use over commercial use in a neo-traditional village approach</li> <li>• Valley AIRNow partnership with the NetTech</li> </ul>			<p>The Net Tech Center of Winchester’s funding is congressional ordered and is administered by the GSA.</p>	
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		Center of Winchester, a telework facility in Winchester				
Open Burning Restrictions	<p>Open burning bans/restrictions during predicted high ozone days and/or the ozone season.</p> <p>Further information can be found in the SIP submitted December 30, 2004 on page 14, and in Appendix B</p>	<p>Both the City and County departments issued a memorandum in June 2005 specifying restrictions on burning association with City and County land clearing and construction projects on Air Quality Action Days.</p> <p>Valley AIRNow hopes to integrate this voluntary restriction into AIRCorps programming in the future.</p>	Fully implemented September 30, 2005	0.280 NOx 0.122 VOC	<p>Modeling described in December 20, 2004 SIP, Appendix B</p> <p>Coordination of plans to restrict open burning on Action Days Incorporated into Valley AIRNow budget</p>	Appendix E included in the December 2005 NSV Semi-Annual Status report
School Bus and Heavy Duty Fleets Retrofits	<p>Restrictions on public and private diesel truck idling. 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. The EAC jurisdictions are committed to limit idling of local government vehicles (including school buses) and to promote voluntary restrictions from privately owned vehicles and fleets.</p> <p>Further information can be found in the SIP submitted December 30, 2004 on page 14, and in Appendix B</p>	They City of Winchester and Frederick County Public Schools participated in a voluntary diesel retrofit program beginning Summer 2004. A total of 142 diesel oxidation catalysts were retrofitted on City and County school buses. Additionally, reprogramming of all late model school bus ECM devices was completed.	Fully implemented September 30, 2005	0.001 NOx 0.002 VOC	<p>Modeling described in December 20, 2004 SIP, Appendix B</p> <p>The VA DEQ committed 475,000 to complete this project.</p>	Appendix L(a) and L(b) included in the December 2005 NSV Semi-Annual Status report
Voluntary Industrial Reductions	Voluntary reductions for local industries. The EAC jurisdictions will seek voluntary commitments from local industries to reduce ozone precursor emissions during the ozone season and/or on predicted high ozone days. This strategy will help increase awareness of the pollution problem and establish a relationship between local government and area	Valley AIRNow is currently working with local industry through the AIRCorps program to formulate unique programs and policies for members that reduce emissions, especially on Air Quality Action Days. Given that voluntary industrial reductions are built into the Northern Shenandoah Valley's (NSV) Early Action Plan, Valley AIRNow has targeted members of the NSV Petroleum Marketer's Association as well as the NSV Manufacturer's Association for AIRCorps membership. To date, 6 petroleum companies and 1	Fully implemented September 30, 2005	No credit taken	<p>Coordination of AIRCorps member voluntary air quality improvement plans Incorporated into Valley</p>	Additional information about Valley AIRCorps, including program materials, can be found at <a href="http://www.valleyairnow.com/aircorps.htm">www.valleyairnow.com/aircorps.htm</a>

	industry.  Further information can be found in the SIP submitted December 30, 2004 on page 14, and in Appendix B	manufacturing company have joined the AIRCorps program. Valley AIRNow will address the groups as a whole in January, hopefully persuading a higher level of participation.			AIRNow budget	
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Early Action Compacts December Progress Summary Table

A. Control Measure	B. Summary Description of Measure	C. Program/Measure Status	D. Specific Implementation Date	E. VOC Reduction	F. NOx Reduction	G. Resources (FTE's, \$\$)	H. Additional Information
<b>27 Northern Shenandoah Valley, VA (Effective date of nonattainment designation deferred)</b>							
Ozone action days/public awareness -multiple activities	Comprehensive local ozone action days program - Program strategy includes a combination of individual measures	Program and individual measures have been fully implemented under the Valley AIRNOW program (see local report for much more details)	Apr-05	0.3 TPD	0.02 TPD	70,000/year	Additional information on Valley AIRNOW can be found at <a href="http://www.valleyairnow.com">www.valleyairnow.com</a>
VMT Reduction programs - multiple activities	Implementation of a comprehensive local VMT reduction program	Program and individual measures have been fully implemented	Sep-05	0.15 TPD	0.3 TPD		See Appendix I-K in NSV Dec 2005 status report
Open burning restrictions	Open buring bans/restrictions during predicted high ozone days and /or during the ozone season	Both jurisdictions issued memorandums in June 2005 on restrictions on open burning during air quality action	Sep-05	0.28 TPD	0.12 TPD		See Appendix E in NSV Dec 2005 status report
Engine idling restrictions -truck;school bus	Restrictions on diesel idling of government vehicles	Both jurisdictions adopted policies regarding idling restrictions of government vehicles during action days	Sep-05	0	0.1 TPD		See Appendix L in NSV Dec 2005 status report
School bus/heavy duty diesel retrofit	Voluntary diesel retrofit program for school buses	A total of 142 school buses have been retrofitted with oxidation catalysts	Sep-05	0.002 TPD	0.001 TPD	475,000-DEQ	See Appendix L in NSV Dec 2005 status report
Voluntary industrial reductions	Voluntary reductions from local industries	Established the AIRCorps program to establish voluntary programs - to date 6 petroleum companies and 1 manufacturing company has joined this program	Spring 2005	NQ	NQ		See the Valley AIRNOW site for more information
Regional Reduction of NOx Emissions	Regional program to reduce ozone transport by reducing NOX emissions from power plants.	Implemented by state regulation during 2004 ozone season	May 31, 2004	NQ	NQ		11,000 tons/per season reduced in VA between 2002 and 2005. Over 150,000 tps in VA and adjacent states
National Low Emission Vehicle Program	Requirement for the sale of low emissions vehicles	Program fully implemented by state regulation	1999	NQ	NQ		
RACT Controls -- VOC only, no NOx reductions	Expansion of existing source VOC control regulations and non-CTG RACT for major NOX sources	Implemented region-wide by state regulation	Nov-05	0.792 TPD	0		
Enhanced Ozone Forecasting tool	Preparing daily ozone forecasts during the ozone	Program fully implemented	May-05	NQ	NQ	70,000 & 1 FTE	
State Cutback Asphalt Regulation	Restriction on the use of cutback asphalt	Implemented region-wide by state regulation	Nov-05	0.001 TPD	0		
<b>Comments:</b>							