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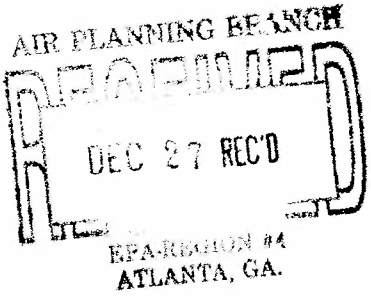
Planning Today for Clean Air Tomorrow

AIR QUALITY STAKEHOLDERS OF CUMBERLAND COUNTY

Ms. Kay Prince
US Environmental Protection Agency
Region 4
61 Forsyth St. S.W.
Atlanta, Georgia 30303-8960



December 20, 2007

Dear Ms. Prince,

On behalf of the Air Quality Stakeholders of Cumberland County, I am submitting the Fayetteville Metropolitan Statistical Area Bi-Annual Progress Report December 2007. The first portion of the report describes the activities and implementation of local State Implementation Plan strategies. The second portion of this report contains the NC DENR Early Action Compact Area 8-Hour Ozone Maintenance Plan Tracking Report and Ozone Data Certification Letter

All of the strategies selected by the Air Quality Stakeholders of Cumberland County have been implemented throughout Cumberland County. Cumberland County is continuing the air quality improvement process through the Combined Air Team; working with Sustainable Sandhills, Sustainable Fort Bragg and NC Department of Environment and Natural Resources.

If you have any questions or need additional information please contact Emilie E. Helms at (910) 678-7614 or via e-mail at ehelms@co.cumberland.nc.us.

Sincerely,

Thomas J. Lloyd, Director
Cumberland County Planning & Inspections Department

CC: Richard Schutt, USEPA w/enclosure
Sheila Holman, NC DENR DAQ w/enclosure
Laura Boothe, NC DENR DAQ w/enclosure

Bi-Annual Progress Report of the Early Action Compact

Fayetteville, North Carolina Metropolitan Statistical Area

A joint effort by US EPA Region 4
The North Carolina Department of Environment and Natural Resources

Cumberland County Board of Commissioners
Town of Eastover
Town of Falcon
City of Fayetteville
Fort Bragg Military Reservation
Town of Godwin
Town of Hope Mills
Town of Linden
Pope Air Force Base
Town of Spring Lake
Town of Stedman
Town of Wade

and the Fayetteville Area Metropolitan Planning Organization

December 19, 2007

Introduction

> "The Early Action Compact is a Memorandum of Agreement between the local government representing the County of Cumberland, the North Carolina Department of Environment and Natural Resources and the United States Environmental Protection Agency. It is for the express purpose of developing and implementing an Early Action Plan that will reduce ground-level ozone concentrations in the Fayetteville Metropolitan Statistical Area to comply with the 8-hour ozone standard by December 31, 2007, and maintain the standard beyond that date. Failure to meet these obligations results in immediate reversion to the traditional nonattainment process."
> December 2002, Application of the Early Action Compact

The Fayetteville Metropolitan Statistical Area (MSA) has been part of an Early Action Compact (EAC) since December 2002. The Fayetteville MSA includes all of Cumberland County and the Fort Bragg Military Reservation and has a 2006 U.S. Census estimated population of 341,363. The local EAC remains in effect until December 31, 2007.

One requirement of the EAC is that a semiannual report of activities undertaken by state and local partners be submitted to the EPA as part of milestones determination. This report covers the local activities and accomplishments during the period of July 1 to December 31, 2007. The report includes two appendices from the North Carolina Department of Environment and Natural Resources (NC DENR).

1. Letter certifying the 2005-2007 Ozone Data
2. North Carolina Early Action Compact Area 8-Hour Ozone Maintenance Plan Tracking Report

This is the last required semiannual report of the EAC. However, the EPA is currently looking at changing the Ozone Standard. A lowering of the standard could again put Cumberland County in a non-attainment status; creating a similar situation to the one in 2002 that created the Early Action Compact.

The Air Quality Stakeholders have decided to continue working for better air quality, beyond the December 2007 Early Action Compact completion date. The Stakeholders are striving to have Cumberland County Air Quality better than the new EPA limit prior to its implementation. This is a very possible goal, which the Stakeholders are excited as a group to pursue.

The Cumberland County air quality readings for ozone have been well within the EPA limits for the last three years. Once the ozone data collected from the period 2004 - 2007 is verified for accuracy and meets the 1997 8-hour National Ambient Air Quality Standards for ozone attainment, the EPA will move expeditiously to designate the area as attainment and impose no additional requirements. The attainment designation is projected for mid April 2008.

Air Quality Stakeholders

The following is the December 2007 Air Quality Stakeholders of Cumberland County membership roster as designated by stakeholder agencies and appointed by the Cumberland County Board of Commissioners for three year term.

- George Breece, Chairman
  Citizen Representative
- Commissioner Eleanor Ayers,
  Town of Stedman
- Col. Gregory Bean (Ret.),
  Fort Bragg Military Reservation
- Commissioner Jeannette Council,
  Cumberland County
- Dr. Joseph Follett,
  Medical Representative
- Henry Holt,
  Petroleum Distributors Representative
- Commissioner Jerry Legge,
  Town of Hope Mills
- Dr. Harold Maxwell,
  Cumberland County Board of Health
- Alderman James O'Garra,
  Town of Spring Lake
- Scott Reynolds,
  Major Industry Representative
- Stephen C. Waters, Sr.
  Road Construction Industry
  Representative
- Steven Blanchard, Vice-Chairman
  Public Works Commission of Fayetteville
- Councilman Keith Bates,
  City of Fayetteville
- Mr. Gary Cooper,
  Cumberland County Business Council
- Edwin S. Deaver,
  Citizen Representative
- Michael Green,
  Salvage and Recycling Industry
  Representative
- Mr. Karl Legatski,
  Citizen Representative
- Joseph W. Levister, Jr.
  Fayetteville Technical Community College
- Donovan McLaurin,
  Homebuilders Association
- Scott Peters,
  Major Industry Representative
- Ms. Denise Sykes,
  Towns of Wade, Falcon, Godwin and Linden

The Air Quality Stakeholders have decided to work beyond the December 2007 timeline of the Early Action Compact because past, present and **continued** cooperative actions are instrumental in Cumberland County achieving and maintaining attainment status.

Official Meetings

- Cumberland County Air Quality Stakeholders
  July 12, 2007
  October 11, 2007
  (Minutes available upon request)

- Cumberland County Air Quality Technical Committee
  September 27, 2007
  (Minutes available upon request)

Staff led, attended or participated in the following meetings

- North Carolina Air Awareness Team
  July 9
  July 16
  July 23
  July 30
  August 6
  September 14
  September 24
  October 8
  November 19
  November 26
  December 6
  December 12

- Asthma Action Group
  August 1
  September 5
  October 10
  November 14
  December 5

- Safe Routes to School
  July 27
  August 13
  August 16
  August 23
  August 30
  October 15
  December 3

- Southeast Diesel Collaborative
  September 13
  October 2
  November 8

- State Interagency Consultation Meeting
  July 19
  August 16
  September 20
  October 18
  December 6

- Combined Air Team
  (Fort Bragg, Sustainable Sandhills and Cumberland County)
  October 9
  November 13

- Sustainable Fort Bragg
  July 10
  November 7
  November 28

- Sustainable Sandhills
  September 14

- Transportation Advisory Committee
  July 25
  October 24

- Transportation Coordinating Committee
  July 11
  October 10

Air Quality Stakeholders of Cumberland County
Selected Ozone Control Strategies

UPDATE
DECEMBER 2007

Quantifiable State Implementation Plan (SIP) Strategies

MOBILE SOURCES

SIP Strategy and Definition
Inspection and Maintenance Program

"The 1999 Clean Air Bill expanded the vehicle emissions inspection and maintenance program from 9 counties to 48, and improved the testing method. Vehicles are being tested using the onboard diagnostic system, which indicates NO_x emissions, among other pollutants. The previously used tailpipe test did not measure NO_x."

The North Carolina Department of Environment and Natural Resources Division of Air Quality modeled these emission reductions for Cumberland County:

VOC: 0.6 Tons Per Day
NO_x: 0.7 Tons Per Day

- The adopting jurisdiction is all of Cumberland County.
- This strategy was implemented on July 1, 2003.
- **December 2007: 154,408 Cumberland County vehicles were inspected using the On-Board Diagnostic program in 2006. The 2007 inspection numbers are not yet available.**

SIP Strategy and Definition
Retrofitting Diesel School Buses

"A $50,000 grant has been received to fund retrofitting of 50 school buses serving the Fort Bragg Schools. It is expected that this project will decrease VOC emissions as well as other pollutants. The plan is to put Diesel Oxidation Catalysts on 50 school buses and crankcase spiracles on 13 of the 50."

The Environmental Protection Agency shows these approximate decreases for Diesel Oxidation Catalysts under their *Verified Retrofit Technologies*:

PM: At least 20%
CO: At least 13%
VOC: At least 42%

- The adopting jurisdiction is Fort Bragg.
- This Strategy has been fully implemented.
- Previous updates**:** The grant was officially signed and processed on September 20, 2004. Eight (8) of the fifty school buses were removed from the fleet due to vehicle age. Diesel

oxidation catalysts were installed on 42 of the buses. Crankcases spiracles were installed on 24 of the 42 buses. The remaining five (5) DOC Mufflers and four (4) Spiracle Crankcase filter installations were completed in August 2006.

- **December 2007: The Department of Defense Schools at Fort Bragg completed conversion of all 42 fleet buses.**

NOTE: In addition to the Fort Bragg strategy included in the SIP, the Cumberland County School System applied for and was awarded an NC DENR Mobile Source Emissions Reduction grant in the amount of $99,000 (March 15, 2006) and an EPA Clean School Bus USA grant in the amount of $121,000.00 (September 28, 2006).

- Previous updates: In June 2006, contracting was completed to retrofit school buses with Diesel Oxidation Catalysts (DOC) and Closed Crankcase Ventilation Systems (CCVS). DOCs and CCVSs were installed on seventy-three (73) buses, completing the NC Mobile Source Emissions grant. One-half of the EPA Clean School Bus USA grant was spent retrofitting 44 buses. Cumberland County Schools plan to retrofit an additional 38 buses to complete the EPA grant spending.

- **December 2007: Cumberland County Schools has a fleet with 497 buses.**
  201 CCS Buses have DOC and CCVS, comprising 40% of the fleet.
  221 CCS Buses have DOC only, comprising 45% of the fleet.
  Please see the following spreadsheet for details on the conversions:

Number of Buses	DOC	CCVS	How Supplied
74	Yes	Yes	DENR Grant
80	Yes	Yes	EPA Grant
20	Yes	No	Purchased 2004-2006
47	Yes	Yes	Purchased 2007

On November 20, the EPA came to Glendale Acres Elementary School for a formal presentation of the EPA Clean School Bus USA grant check and a reading of the Scholastic title "The Magic School Bus Gets Cleaned Up."

CONSERVATION

SIP Strategy and Definition

Outdoor Burning Ban

"The North Carolina Environmental Management Commission approved a new rule that bans open burning on forecasted "air quality action days", Code Orange or above days. The ban applies to 39 counties in or around metropolitan areas of the state, including Cumberland County. The Division of Air Quality (DAQ) formed an Open Burning Outreach Team (OBOT). The team is responsible for helping to disseminate information to the public regarding open burning."

The Division of Air Quality modeled these reductions for Cumberland County prohibiting open burning on code orange days (assuming a 50% compliance rate).

VOC: 0.2 Tons Per Day
NO_x: 0.2 Tons Per Day
CO: 1.8 Tons Per Day

- The adopting jurisdiction is all of Cumberland County

- This strategy was fully implemented on June 1, 2004.

- Previous Updates: In 2005, a member of the Open Burning Outreach Team (OBOT) gave presentations on open burning throughout the community. DAQ arranged to have billboards across the State, one of which was located in Cumberland County for 30 days. DAQ also provided the local fire departments with literature concerning open burning for distribution to citizens. The state implemented an open burning information line 1-877-OPEN-BURN (1-877-673-6287).
  A School Instruction Kit is in the process of being developed in coordination with the NC Department of Public Instruction. The plan is to test the kits during summer programs to get input from teachers and children. Once tested, the kits will be sent to target middle schools.
  DAQ also mailed NC Open Burning regulations and alternative waste disposal literature to golf courses. The area-wide open burning education continues through the Outreach Team. The School Kit was developed and tested during the summer and the final product was presented at two (2) teachers workshops in November 2006.

- **December 2007: DENR DAQ continues to educate groups on open burning regulations including local governments, fire departments and the Department of Transportation. The DAQ Open Burning School Kits have been put on hold due to funding issues.**
  HB-1646: "Increasing civil penalties for violations of laws to protect air quality" was signed by Governor Easley on July 28. This bill increased the open burning fine maximum from $10,000.00 to $25,000.00 beginning October 1, 2007.

SIP Strategy and Definition

Use renewable energy sources when available (i.e. solar and methane)

"Cumberland County Landfill harvests methane and through a contract with Biomass Energy, then sells the energy to Cargill Inc., a local industry. Cargill Inc. was using 1000 cubic feet/minute of landfill gas. As of June 2004, usage has been increasing steadily and forecasted to reach to 1600 cubic feet/minute by 2009. The first year Cargill reported use of landfill gas was in 1999 in the amount of 369,110,000 cubic feet."

- The adopting jurisdiction is Cumberland County.

- This strategy has been fully implemented.

- Previous Updates: Cargill Incorporated was issued a permit to install and operate an additional boiler, capable of burning landfill gas. The heat output of this boiler is 53 million Btu per hour on landfill gas and 99 million Btu per hour on natural gas. Cargill purchased the new natural gas-fired boiler which can burn additional landfill gases. Cargill anticipates commissioning the new boiler by the end of March 2006. The new boiler will make it possible to burn an estimated 20%-25% additional landfill gases. As of May 2006, Cargill has burned 109,992,000 cubic feet of landfill gas. The additional boiler was installed and in operation beginning September 20, 2006.
  June 2007: Making use of the second boiler, Cargill estimates burning 213 million cubic feet of landfill gases in the first six months of 2007.

- **December 2007: Cargill Incorporated estimates burning 357,085,000 million cubic feet of landfill gases throughout 2007.**

Non-Quantifiable Voluntary Strategies

LAND USE

SIP Strategy and Definition
Landscape Ordinance

"Require landscaping of major nonresidential developments within the MSA. It is believed that this strategy will lower NO_x emissions. The emission reductions are not currently quantifiable, but this strategy is directionally correct."

- The adopting jurisdictions are Cumberland County, City of Fayetteville, Falcon, Godwin, Hope Mills, Stedman, Wade, and Fort Bragg.

- This strategy has been fully implemented and is being locally enforced.

- Previous Updates:
  Fort Bragg continues to enforce compliance with the Installation Design Guide on all new construction/renovation projects as it pertains to landscape requirements.
  City of Fayetteville continues to enforce the June 2004 ordinance requirements.
  Town of Hope Mills has not revised the ordinance to include residential development; however the Tree Preservation and the Landscape Ordinances, as pertaining to nonresidential development, are being enforced as currently written.
  Cumberland County unanimously adopted the Landscape Ordinance on November 21, 2005 and is enforcing it.
  The Towns of Falcon, Wade and Godwin are currently governed by the Cumberland County Ordinance.
  Town of Stedman unanimously adopted the ordinance on December 1, 2005 and is currently enforcing it.
  Town of Spring Lake adopted a landscape ordinance with an effective date of November 14, 2005.

- **December 2007: The language of the Cumberland County Landscape Ordinance was updated to make the ordinance applicable to any non-residential development.**

SIP Strategy and Definition
Transit/Pedestrian/Mixed Use Oriented Development

"Add a mixed-use alternative to zoning ordinance along transit lines and include sidewalks, shade trees, benches, and landscaping as well as bike paths/lanes, which will increase the desirability of walking and biking and promote the use of transit. Work with schools and parks to facilitate pedestrian crossing from subdivisions to schools. Fort Bragg is building upon existing mixed-use development by adding pedestrian trails and sidewalks. There is no way to quantify these emission reductions without an extensive base-line study and follow-up studies. However, NO_x reductions are supported by the Portland, Oregon study cited on Page 26 of "Improving Air Quality Through Land Use Activities". The Portland, Oregon study supports 8% decrease in VMT and NO_x emissions decrease of 6%."

- The adopting jurisdiction is Cumberland County for all participating agencies.

- This strategy has been fully implemented and locally enforced.

- Previous Updates: On June 20, 2005 the Cumberland County Board of Commissioners unanimously approved ordinance amendments to include Mixed Use Oriented Development and has been enforcing these new development standards. Eight Walkable Communities workshops were held during the week of May 2-6 2005.
  Fort Bragg requires all projects to include sidewalks and bicycle racks. Many major building projects on post include bus stops. In order to minimize footprint and increase density, the majority of new facilities on Fort Bragg are now multi-story.
  A committee was formed and ten Cumberland County Schools were selected to apply for federal "Safe Routes to Schools" grant money.
  Over $2.3 million in funding from the NC DOT and NC Clean Water Management Trust was approved to complete the second phase of the Cape Fear River Trail. The new phase of the trail will run between Clark Park and the Cape Fear Botanical Garden.

- **December 2007: The Safe Routes to School Committee hosted a statewide workshop on October 15. The committee is applying for the Safe Routes to School Action Service Plan Award. The award application is due on January 14, 2008.**

NOTE: In addition to the strategy addressed in the SIP, the Town of Stedman developed a Greenways Ordinance. This ordinance includes inter-development connectivity through trails, and open space requirements and was adopted after hosting a Walkable Communities workshop. The ordinance was adopted on August 3, 2006.

SIP Strategy and Definition

Infill Development

"Promote infill and brownfield development in urban areas, to utilize existing infrastructure and to decrease and/or maintain VMTs. Strengthening the downtown area through economic incentives, available for businesses in the downtown area through the Downtown Loan Program and Historic Properties, a public/private partnership. It is believed that this strategy will lower NO_x emissions by decreasing VMT (promotes Pedestrian Transit and Mass Transit Use). The emission reductions are not currently quantifiable, but this strategy is directionally correct. Currently, the City of Fayetteville, Cumberland County and the Town of Stedman have ordinances that govern Zero Lot Line Developments, which foster land preservation and infill, while increasing density."

- <u>The adopting jurisdictions are Fort Bragg and the Town of Wade</u>.

- This strategy has been fully implemented and is being locally enforced.

- Previous Updates:
  Fort Bragg will continue to redevelop existing urban land use. The majority of new projects are built on previously developed sites as part of the Sustainable Installation Design Guide. This guide was implemented in December 2003.
  The Town of Wade has adopted and implemented the Zero Lot Line Ordinance to its subdivision ordinance as of 2005.

- **December 2007: Fort Bragg has contracted with the Onyx Group to complete an Area Development Guide, to plan for the redevelopment of Historic Fort Bragg. Several of the projects are to encourage alternative transportation and walking throughout the historic post**
  The Towns of Falcon and Linden both adopted a zero lot line ordinance. This ordinance allows more compact infill development and encourages transit and pedestrian oriented mixed-use development.

SIP Strategy and Definition
Shared Parking Facilities and Connectivity

"This will reduce the amount of impervious surface, which contributes to the heat island effect and reduces the amount of stop and go traffic. It is believed that this strategy will lower NO_x emissions by decreasing VMT. Although the emission reductions are not currently quantifiable, this strategy is directionally correct. The City of Fayetteville and the Town of Hope Mills have ordinances to allow shared parking. They include provisions for lateral access and connectivity. "

- <u>The adopting jurisdictions are Cumberland County, Falcon, Godwin, Linden, and Wade.</u>

- Previous Updates:
  On June 20, 2005 the Cumberland County Board of Commissioners unanimously approved Zoning Ordinance amendments that included lateral access, connectivity requirements, and shared parking facilities.
  Cumberland County continues to regulate shared parking and connectivity requirements for the county and on behalf of the Towns of Godwin and Wade.
  The Town of Falcon approved its Zoning Ordinance Amendments, modeled after the county's, on January 10, 2006.
  The Town of Linden is working on a Zoning Ordinance.

- **December 2007: The Town of Linden continues to evaluate a comprehensive Zoning Ordinance.**

SIP Strategy and Definition
Urban Reforestation/ Green Space

"The Public Works Commission has policies to maintain tree coverage in watershed areas and seek to expand land acquisition for preservation of the watershed. NC Forest Services is seeking grant funding to plant at least 100 trees. Cumberland County completed a public green space inventory of the entire county in March 2004 and a conservation subdivision option will be investigated. It is believed that this strategy will lower NO_x emissions by reducing the heat island affect. Although, the emission reductions are not currently quantifiable, this strategy is directionally correct."

- <u>The adopting jurisdictions are the City of Fayetteville and Fort Bragg.</u>

- This strategy has been fully implemented.

- Previous Updates: In April 2005, there were 100 Dogwood trees planted around the City of Fayetteville in celebration of The Public Works Commission (PWC) 100th Anniversary. PWC continues to plant trees as part of its Line Clearance Replacement Program, through June 2006, more than 400 trees have been planted as part of a power line maintenance project.
  To date nearly 1,100 trees have been planted on Fort Bragg. As part of Arbor Day 2005 events at Pope AFB, the NC Forest Service planted 250 longleaf pine trees. The NC Forest Service and Pope Air Force Base have made the planting of 250 trees an annual event as part of Arbor Day. Fort Bragg planted more than eighty-two thousand (82,000) trees on the military reservation from January through June 2007. Fort Bragg is currently conducting a street tree survey in order to identify missing or diseased street trees and expects completion by mid-fall.

- **December 2007: PWC continues to replace trees under its line clearance program and plans to develop an official tree program that will qualify for the American Public Power Association's Tree Power Program.**
  The PWC Watershed Program planted 230 trees and 206 native herbaceous plants in watershed areas in 2007.
  Fort Bragg has completed Phase I of the Street Tree Project: a survey of all street trees in the Old Post Historic District to establish priorities for continued urban reforestation and pruning. Fort Bragg has secured $38,000.00 for Phases II and III. Phase II began in December 2007, and involves pruning and removal of dead trees. Phase III plans for 2008 are to replace missing street trees.

NOTE: In addition to the strategy addressed in the SIP, the Cumberland County Board of Commissioners approved a Density Development Conditional Use Standard on June 20, 2005. Using these standards, developers can increase the density of sites if they agree to maintain 40% of the land as mandatory preservation and meet additional vegetative buffer requirements. As of December 2006, four sites have been developed using this standard and a fifth is pending.

- Previous Updates: Cumberland County approved 6 Density Conditional Use Developments (CUD) and 3 Mixed Use Conditional Use Developments.

- **December 2007: Within the last six months Cumberland County has approved one additional Density Conditional Use Development and one Mixed-use Conditional Use Development.**
  Spring Lake approved CUD developments in November 2007.
  The Towns of Falcon and Hope Mills established Conservancy Districts to protect environmentally sensitive areas.

MOBILE SOURCES

The Fayetteville MSA reviewed many Alternative Fuels (AF) and Alternative Fueled Vehicle (AFV) possibilities. Because the infrastructure is not in place at this time, development is cost prohibitive, and implementation is impossible by December 2005; no other governments agreed to participate. Mobile source strategies will be reviewed and evaluated for long range planning in this area.

SIP Strategy and Definition

Alternative Fuels and AF Vehicles

"Fort Bragg has developed a plant to convert its fleet to Biodiesel-20 and Ethanol-85. This project includes an AF fueling station. 185 vehicles will be converted to B-20 (100,000 gallons of diesel fuel). 158 Flexible Fuel vehicles will use approximately 55,000 gallons of E-85 per year. This strategy is expected to reduce VOC and in turn hazardous air pollutants (HAPs), NO_x and particulate matter. The Biodiesel strategy shows a slight increase in NO_x emissions, however with the other pollutant reductions, this strategy is believed to be of value."

- The adopting jurisdiction is Fort Bragg.
- Implementation of this strategy is ongoing.
- Previous Updates: Due to the increased cost of Biodiesel-20 in 2005, Fort Bragg discontinued purchase. The Transportation Motor Pool fleet conversion to E-85 flex fuel has been completed. Currently at Fort Bragg the number of Flex Fuel Vehicles is in excess of 500.
  An Ethanol-85 (E-85) station location has been selected within the current Corps Support Command (COSCOM) Army and Air Force Exchange Service (AAFES) fueling station. Negotiations are in progress to identify a reliable ethanol supplier. Upon completion, the E-85 fueling station will be accessible to the Fort Bragg fleet, any flex-fuel private vehicle driven by Military Identification Card holders (active-duty and retired military and their respective family members) and by Department of Defense employees. The number of potential vehicles far exceeds the original estimate. The AAFES Fuels office, rather than Fort Bragg, is now soliciting for the E85 storage tank, dispenser, and fuel contract. By having AAFES Fuels negotiating directly, the process should be expedited. Fort Bragg has finished converting the entire fleet to flex-fuel vehicles. AAFES Fuels is continuing to accept bids for the E-85 fuel pump contract.
  Fort Bragg and Pope Air Force base have opened 2 fuel points for shuttle vehicles; saving mileage and emissions by eliminating vehicle trips off-base for refueling.
- **December 2007: The Army Petroleum Center and Defense Energy Supply Center made visits to Fort Bragg to develop a business plan for providing E-85, Ultra Low Sulfur Diesel (ULSD), and Biodiesel-20 (B-20) on-post to government vehicles. These visits were to facilitate alternative fuels coordination after AAFES Fuels determined they would not provide E-85 on-post.**

NOTE: In addition to the SIP Strategy and Definition outlined above, the Public Works Commission and City of Fayetteville have been working to update their fleet using Alternative Fuels and Alternative Fuel Vehicles.

- Previous Updates: The Public Works Commission has purchased a Hybrid Ford Escape for employee use. The Public Works Commission began pursuing conversion of its diesel fleet to run on B-20 in Spring 2007.
  FAST tested two buses running on B-20. Testing proved successful and the entire FAST fleet of sixteen (16) buses is running on B-20 fuel as of May 2007.

- **December 2007: PWC plans to begin using a B-20 blend for its fleet in early January 2008.**

SIP Strategy and Definition
Idling Restrictions

"Festival Park will include electrical outlets to be used by vendors/exhibitors to reduce truck idling during festivals and events. It is expected that this strategy will decrease NO_x emissions. Festival Park construction is scheduled to begin on March 1, 2005 and to be completed by September 20, 2005."

- The adopting jurisdiction is the City of Fayetteville.

- This strategy has been fully implemented.

- Previous Updates: Construction of Festival Park had a new scheduled completion of late December 2006 due to a small delay in funding. In addition to Festival Park, the City of Fayetteville Public Works Commission is including power outlet "kiosks" and electrical outlets on lamp posts in the Historic District to reduce idling. The Festival Park Grand Opening took place on April 27, 2007 as part of the 25th Anniversary of the Dogwood Festival.

- **December 2007: The use of the outlets kiosks and idling monitoring is on going as events occur in Festival park.**

TRANSPORTATION

SIP Strategy and Definition

Using Intelligent Transportation Systems (ITS) and Dynamic Message Signs (DMS) for Congestion Management and Ozone Alerts

"Project U-3635, Closed Loop Signal System, will provide a new area-wide closed loop signal system. Dynamic Message Signs will be installed at congested intersections/corridors. There will be an expansion of existing continuous flow right turn lanes in the urbanized area. It is expected that this project will decrease NO_x emissions by decreasing traffic congestion. It is currently difficult to quantify this effort, however other examples of this system have shown anywhere from 0-20% reductions in traffic congestion resulting in less idling, travel time, and, as a result NO_x emission reductions."

- The adopting jurisdictions are Cumberland County, City of Fayetteville, and Hope Mills.

- This strategy has been implemented.

- Previous Updates: The Intelligent Transportation Systems (ITS) program includes 220 traffic signals. All of the cameras are in place and functioning.
  Four dynamic message signs are operational; two along I-95 and two along the 401 bypass. Automatic Vehicle Locators were implemented in City of Fayetteville FAST buses in 2007. Funding was provided through a Federal Transit Administration grant and NC DOT grant local match.

- **December 2007: The NC Board of Transportation approved Grant 90X-425, a capital match for FAST buses in October 2007.**

NOTE: In addition to the strategies included in the SIP, Fort Bragg has been investigating installation of a Dynamic Message Sign.

- June 2007: Funding has been requested for the installation of a two-way Dynamic Message Sign along All-American Freeway north of Reilly Road on Fort Bragg. The sign is being installed to increase community sustainability and will announce the daily Air Quality Index, Force Protection Levels and emergency issues. The project has an estimated completion of 2008.

- **December 2007: The Dynamic Message Sign on Fort Bragg was not funded as anticipated. The project will be resubmitted in September 2008.**

SIP Strategy and Definition

Enhance Mass Transit System

"The Fayetteville Area System of Transit is redesigning routes to be more convenient to riders and plans to increase frequency of transit services to 15 minutes. The plan is a hybrid deviated fixed route demand response system. It allows for riders to be picked up from their home by a van and transported anywhere in that zone by the van. Riders also can be picked up and taken to a large super stop, where they can catch the bus and be transported all across the service area. Increase transit service is expected to reduce VOC and NO_x emissions by reducing Vehicle Miles Traveled (VMT)."

- The adopting jurisdictions are City of Fayetteville and Fort Bragg.

- Implementation of this strategy is ongoing.

- Previous Updates:
  An amendment to the Federal Fiscal Year 2006-2012 Metropolitan Transportation Improvement Program has been approved to fund 16 vans for service expansion. The director of the Fayetteville Area System of Transit purchased two additional buses and one van in Fiscal Year 2006-2007.
  On January 25, 2005, the transit director presented a countywide transit service proposal to the City-County Liaison Committee. In April 2006, the Cumberland County Board of Commissioners and the Fayetteville City Council formed the Joint City of Fayetteville / Cumberland County Transit Study Committee to expedite the planned regional transit system. The committee designated a sub-committee to prepare a Request For Proposal (RFP) for a "Consolidated Transportation Development Plan." The North Carolina Department of Transportation and the Transit Study Committee received Consolidation Study Development requests for proposal in spring 2007, the bid was reopened in May. The Fort Bragg shuttle service continues to provide transportation around the installation and connection with the municipal transit system. Average weekly ridership for the Fort Bragg shuttle is 500-600 riders. The Central Issue Facility Shuttle service provides approximately 200 soldiers per month with park and ride transportation to and from work. Fort Bragg plans to increase ridership and visibility of the shuttle service by installing vehicle wraps and offering an online easy-to-use desktop Trip Planner. The Trip Planner will automatically route people on Fort Bragg to arrive at their destination at a specified time. The Trip Planner is tentatively scheduled to be operational in July 2007.

- **December 2007: The City of Fayetteville and the North Carolina DOT have completed contract negotiations with Garrity & Associates for the Consolidation Study to begin in January 2008.**
  The Fort Bragg Shuttle Express moved over 12,000 people from July to September 2007. Shuttle Express has a unique webpage within the Installation Travel Office website. The webpage is linked from the Fort Bragg Home Page, Newcomers information, and the shuttle schedule. The Shuttle Express website also includes the FAST Route 40 Map and schedule, emphasizing the linkage between the two systems. Fort Bragg launched an intra-post web based trip planner. The website is also available to the public.
  Shuttle Express is planning to add a stop at Womack Army Hospital for a total of twelve stops. The shuttle currently serves over 400 buildings on post.
  Fort Bragg is currently pursuing a shuttle link from the Heritage Village Army Housing in rural Hoke County to the Shuttle Express and FAST Route 40.

SIP Strategy and Definition

Formulate Car and Van Pooling

"The Fayetteville Area System of Transit changed a staff position from Special Projects Coordinator to Ridesharing and Community Outreach Coordinator. This is an effort to expand public outreach for FAST and encourage more ridesharing and vanpooling. Work is being done to develop a database to connect riders. The transit provider is advertising vanpooling and carpooling programs. FAST has received a license from NC DOT for database matching software. The software is regionally based to where coordination can be made across county lines. This strategy is believed to decrease NO_x emissions based upon an increase in public transit usage and car and vanpooling, and a decrease in Vehicle Miles Traveled (VMT)."

- The adopting jurisdiction is the City of Fayetteville.

- This strategy was implemented in June of 2004 and is ongoing.

- Previous Updates:
  The Ridesharing and Community Outreach Coordinator attended several workshops on Commuter Choice Transportation and developed a Ridesharing Manual and Emergency Ride Home elements for the plan.
  In 2005, the proposal was revised to reflect changes in insurance, training, and to implement the rate per mile established by finance based on revenue and expenditure projections from the previous year.
  In April 2005, an application was submitted initiating administrative assistance for the Vanpool/Carpool Program. The proposal was resubmitted in April 2006.
  NC DOT contracted with a private firm to develop strategies and plan implementation.
  The North Carolina Department of Transportation contracted Parson Brinkenoff to work with the Fayetteville Area System of Transit (FAST) to develop Transportation Demand Management (TDM) programs, to include carpooling and vanpooling. Sharetheride.com is available on the FAST web site and helps citizens coordinate participation in the Vanpool/Carpool program.
  The Transit Director presented the vanpool concept to the Plant Managers Association on September 27, 2006. The managers showed interest in the program and discussion continued in early 2007.
  Coordination continues between FAST and Fayetteville State University to provide a campus shuttle and increase student ridership on the urban system.
  FAST surveyed the city staff to determine the interest in "Share the Ride." The current plan is to revisit vanpools and carpools with the assistance of Public Transportation Consultant.

- **December 2007: FAST Staff attended a vanpool and carpool Commute Workshop in December and continues with the planning for car and vanpool projects.**

SIP Strategy and Definition

Increase Rural Transportation Paratransit

"Rural transportation is currently being expanded to connect outlying areas of the county and smaller municipalities. Quantification will be provided when implemented."

- The adopting jurisdiction is the City of Fayetteville.

- This strategy has been fully implemented.

- Previous Update: During Fiscal Year 2003 the North Carolina Department of Transportation Public Transportation Division (NC DOT-PTD) allocated funds for public transportation to rural areas to be achieved through a combination of fixed route/route deviation and paratransit demand response services. The program is called Rural General Public (RGP) and is part of the Rural Operating Assistance Program (ROAP), which includes services to transportation deficient population: elderly, disabled, economically disadvantaged, work-first eligible citizens, and rural customers. Cumberland County provides an annual report to NC DOT-PTD, which outlines all activities within the ROAP grant, to include number of trips provided by type of funding, number of bus passes sold, and vehicle mileage reimbursement for van drivers of specific agencies. The RGP program continues to expand and as of FY 2006 (July 2005 to June 2006), the report to NC DOT, ridership has increased to 35,741 trips.
  The following is a table depicting the number of trips reported to NC DOT-PTD for Fiscal Years 2002 though 2006 for the RGP program only:

RURAL GENERAL PUBLIC	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
Trips provided	0	1,091	30,174	31,637	35,741

  The RGP program reports 20,980 trips from July 2006 through March 2007. The program also received a non-profit donation of $15,000.00 for the purchase of a new 15 passenger van.

- **December 2007: From July 2006 through February 2007, 19,670 Rural Paratransit trips were provided. The complete 2007 paratransit operations report has not been compiled.**

SIP Strategy and Definition

Encourage Park and Ride for Large Events

"FAST and Private Transportation providers are providing shuttle services at nominal cost to the public. Fort Bragg provides internal transportation services for large on-post events at no cost to the rider. Updates will be given for the events and included in semi-annual updates."

- The adopting jurisdictions are City of Fayetteville and Fort Bragg.

- This strategy has been fully implemented.

- Previous Updates: Fort Bragg internal transportation services were supplied for the following events: Pope Open House and All American Week. Bus transportation is also implemented in support of deployment and redeployment of units, including Rapid Field Issue (RFI). Fort Bragg has continued to use this strategy as an option for large on post events.
  FAST and Private Transportation providers continue to provide shuttle services on request for special events.

- **December 2007: Fort Bragg offered a Park and Ride Shuttle for two large events in the last six months. On the July Fourth, 176 passengers were brought from outlying lots to the Independence Day Celebration on Historic Fort Bragg**
  October 6-7, 2007 was the final Pope Air Force Base Air Show. More than 200,000 people were expected to attend this weekend long show. The Air Show utilized Fort Bragg Transportation Motor Pool Vehicles and private drivers to shuttle guests from four remote lots to the events on Pope Air Force Base.
  The City of Fayetteville Transit and Parks & Recreation Departments provided transit shuttle service to Festival Park for the Fayetteville Symphony Orchestra. This was a public/private venture paid by local business owner Reed Lallier.

CONSERVATION

SIP Strategy and Definition

Use renewable energy sources when available (i.e. solar and methane)

"Encourage residents and businesses to support NC Green Power, a nonprofit program working to encourage development of renewable energy sources. A $4.00 contribution purchases one block of green power (equivalent to 100 kilowatt-hours). We are working with NC Green Power to obtain the number of blocks of green power purchased by Cumberland County Residents."

- The adopting Jurisdiction is Countywide.

- This strategy has been fully implemented.

- Previous Updates: A contribution of $4 per month adds one block of 100 kilowatt-hours of green energy to North Carolina's power supply. In 2005, Cumberland County residents purchased a total of 257 blocks.
  In 2006, Cumberland County residents purchased 517 blocks of Green Power and a gift card link from FAMPO homepage was created for the 2006 Holiday Season.
  Cumberland County residents purchased 379 blocks of Green Power in the first six months of 2007. A permanent gift card link is available on the FAMPO website.

- **December 2007: during the time July 2006 through June 2007, PWC customers purchased 1,162 blocks of Green Power. Between July and October 2007, 358 blocks of Green Power were purchased.**

NOTE: In addition to the strategy included in the SIP, the Sustainable Sandhills Energy Team was recently awarded a $5,000 Community Partner Small Grant from the NC Million Solar Roofs 2005. Sustainable Sandhills is an innovative partnership made up of participants from Fort Bragg, the surrounding community governments, nonprofits, citizens and universities from Cumberland, Harnett, Hoke, Moore, Richmond and Scotland Counties. One of the objectives of the Sustainable Sandhills Energy Team includes a commitment to promote the use of renewable energy within the region. This effort is on-going and region wide.

- Previous Updates: NC Millions Solar Roofs 2006 granted a second $5,000.00 to the Sustainable Sandhills Energy Team. At a public hearing on June 7, 2007, the Fayetteville City Council agreed to implement a citywide fee-supported residential curbside recycling program by July 2008. The program will result in the recovery of approximately 7,000 annual tons of recyclable material.
  The compact fluorescent light campaign distributed more than 800 free bulbs from January through June 2007.

- **December 2007: The 2007 Moore County Green Building and Solar Tour was held on October 13 and was attended by 150 people from across the region. Four homes and one business were included on the tour, which included examples of solar photovoltaic panels, solar hot water systems, energy efficient lighting, on-demand water heating, and the high R-value insulation of a straw bale home.**

SIP Strategy and Definition

Retrofitting of public buildings. Encourage construction of energy efficient buildings.

"Through the "Guaranteed Energy Savings Contract", the County will engage a company to evaluate and upgrade buildings, equipment and material to increase energy efficiency. PWC is a member of the "Good Cents" Housing Program. Participating builders receive heat pump rebates and free listing of energy efficient homes for sale in the local newspaper and on the PWC website. Smaller municipalities are also promoting the "Good Cents" Housing Program.

Fort Bragg is currently implementing energy reduction per Executive Order 13123 and as part of its Sustainability Plan by partnering with Honeywell Corporation to retrofit buildings on Fort Bragg (replacing inefficient interior/ exterior lighting, installing new HVAC systems with energy controls for optimum building performance. Fort Bragg also constructs new homes and retrofits older homes to meet "ENERGY STAR" standards. It is believed that this strategy will lower NO_x emissions by reducing the output needed from fossil fuel plants to heat and cool homes and public building.

The local EAC is still trying to quantify emission reductions, but feel this strategy is directionally correct."

- <u>The adopting jurisdiction is Cumberland County for all participating agencies.</u>

- This strategy has been fully implemented.

- Previous Updates: Cumberland County selected a company to retrofit 12 public buildings to comply with the "Guaranteed Energy Savings Contract". Construction began in January 2005 and the r lighting and HVAC controls retrofit is complete. On September 9, 2004 Cumberland County completed a contract to replace 144,000 square feet of black roofing with light colored roofing. To date, over 200,000 square feet of highly reflective material have been installed on County buildings.

  In 2006, Cumberland County documented savings of $665,494.00 on utility billing through newly installed HVAC equipment, energy efficient lighting and water saving systems. This is equal to 8,164 tons of CO^2 Greenhouse Gas emissions.

  The Public Works Commission is waiting on budget approval to construct a 10,000 square foot customer services center. The building will incorporate (Leadership in Energy and Environmental Design (LEED) standards and features such as solar panels, fuel cell, and green roof.

  Fort Bragg continues to encourage the use of light colored, highly reflective or pervious materials for pavement and roofs for new and retrofitted buildings. The "Guaranteed Energy Savings Contract" has been completed. On October 4, 2006 Sustainable Fort Bragg hosted the "Change a light; Change the world" initiative as the kick-off for Energy Awareness Month, where approximately 5,000 free compact fluorescent light bulbs were distributed in and around Fort Bragg.

  Fort Bragg continues to use LEED standards for all new construction and renovation. Fort Bragg is currently seeking LEED Existing Building certification for a 43 building portfolio.

- **December 2007: Cumberland County continues to expand the Metasys energy savings contract with Johnson Controls. In the last month, four additional buildings have been added to the automated HVAC controls program: Department of Social Services, Mental Health, Spring Lake Family Resource Center, and Detention Center. The automated HVAC program allows for the temperature to be**

precisely controlled and synchronized with individual building use.
PWC has received approval to build the new LEEDS standards customer service center.
Fort Bragg has successfully registered 43 existing building for LEED certification. These buildings total more than three million square feet. Any retrofit within these buildings will be completed to LEED standards and placed onto a registry. Within 20 years, as part of the natural maintenance cycle, all of the buildings will be LEED certified. Fort Bragg is the single largest portfolio participant in this LEED program.

NOTE: In addition to the strategy included in the SIP, Sustainable Sandhills materials team has been working on this conservation strategy.

- Previous Updates: The High Performance Schools Symposium was hosted by Sustainable Sandhills to address the one billion dollar schools construction that will occur in the next five (5) years throughout the eleven county Sandhills region. The event was attended by more than 100 superintendents, elected officials, construction professionals and interested citizens. Three schools systems in the region, Cumberland, Harnett and Moore Counties, are planning to incorporate "High Performance" school design features in the future.

- **December 2007: The Sustainable Sandhills Energy Team is partnering with the Fayetteville Area Habitat for Humanity to build homes to the Advanced Energy SystemVision standard, which exceeds the Energy Star certification for energy efficiency. The SystemVision program, based in Raleigh, North Carolina, will result in at least a thirty to forty percent savings on energy and water bills for Habitat families. The construction of the first SystemVision Habitat Home began in November.**

SIP Strategy and Definition

Encourage Construction and Use of Energy Efficient Equipment and Promote Purchase of "Green"/less polluting products.

"Fort Bragg is implementing energy reduction strategies including low NO_x burners in new major emission sources, is increasing the use of water-based paints to reduce VOC emissions and has installed a paint booth which uses only water-based paint, and is researching alternatives to replace two incinerators. These strategies will lower NO_x and VOC emissions. Research efforts will include emission reductions."

- The adopting jurisdiction is Fort Bragg.

- Implementation of this strategy is ongoing.

- Previous Updates: In 2004, Fort Bragg shipped 8,915 pounds of Class I Ozone Depleting Substances (ODS) off the installation and replaced them with environmentally safe alternatives. Fort Bragg continues to encourage the use of energy-efficient and low-flow appliances (showers, toilets, etc.) in all renovations and new construction projects, limited or no irrigation, and non-VOC containing paints, sealants, or adhesives. A water-based paint booth was available for use beginning November 2005.
  Fort Bragg developed a LEED product database for contractors working on Fort Bragg to facilitate the use and purchase of energy efficient products.

- **December 2007: Fort Bragg is using the LEED product database for on-post construction.**

AWARENESS

The Air Quality Stakeholders responded to the EPA proposed changes to the ozone standard with a memorandum and resolution. The memorandum outlined the work of the current EAC, and the success of the multi-jurisdictional Cumberland County committee. The resolution supported the memorandum and asked the EPA to consider allowing new Early Action Compacts should the need arise. A proclamation was signed by the following.

August 27	**City of Fayetteville**	**September 10**	**Town of Falcon**
August 27	**Town of Godwin**	**September 11**	**Town of Wade**
August 27	**Town of Spring Lake**	**September 17**	**Cumberland County**
September 4	**Town of Hope Mills**	**September 18**	**Town of Linden**
September 6	**Town of Stedman**	**December 4**	****Town of Eastover**

**** The Town of Eastover incorporated into Cumberland County in September 2007.**

A packet containing the original proclamations and memoranda was submitted to the EPA on October 5, 2007.

In September, talks began between three local groups who were each working toward air quality improvement. Sustainable Sandhills, Sustainable Fort Bragg and Cumberland County decided that one way to work smarter would be to combine all of the efforts into a single Combined Air Team.

The three team leaders met several times and the complete team has had two meetings. During these meetings, objective brainstorming and selection were accomplished. The brainstorming was to create a list of achievable one-year goals to help improve local air quality. The goals of the Combined Air Team are:

Awareness and Education
Create and Implement an Air Quality Action Day Plan
Encourage local media to establish a weekly "Green Tip" story

Mobile Source Emission Reduction
Enact a Parent No-Idling Zone in front of schools
Provide a retail alternative fueling station within Cumberland County
Encourage local fleet conversion to alternative fuels

Multi-Modal & Public Transit
Update the FAST Bus Stop Schedules
Work on enacting a regional Park-n-Ride Program
Establish a Fort Bragg to Heritage Village Shuttle service.
Promote the FAST Bus Route - Fort Bragg Shuttle connectivity

These objectives are in addition to the current projects that each organization is working on. The key to accomplishing these goals is through the continued cooperation and communication of the local air quality groups through bi-monthly meetings of the Combined Air Team.

The Air Quality Stakeholders have agreed to help with the implementation of these objectives.

SIP Strategy and Definition
FAMPO Air Quality Staff Position

"The Fayetteville Area Metropolitan Planning Organization created a fully funded Air Quality Coordinator staff position. The staff person is responsible for coordinating air quality outreach efforts in Cumberland County as well as preparing and maintaining Early Action Compact information. It is believed that this strategy will reduce NO_x and VOC emissions based upon this person working with different organizations to get the word out and get the community involved in improving the Air Quality."

- The adopting jurisdiction is Cumberland County for all participating agencies or local government.

- This strategy was implemented in March of 2003 and is ongoing.

- Previous Updates: The Air Quality Staff person has attended numerous training sessions on air quality and initiated many outreach programs. The staff person developed a partnership with Division of Air Quality Fayetteville Regional Office and the local clean air campaign and outreach program. This program includes an air quality curriculum added to all Cumberland County Driver education classes, and advertisement sponsorship with the local sports teams to promote air awareness.

- **December 2007: The FAMPO Air Quality Staff person continues Air Quality outreach, communication and cooperation with regional agencies.**
  During July to December 2007, staff participated in the following Air Quality training programs: Diesel Technology Forum (4 hours), Safe Routes to School Training (12 hours), Advanced Air Quality Ozone Workshop (10 hours), NC Association of Metropolitan Planning Organizations Conference (2 hours), NC Particulate Matter Forecasting Session (2 hours).

SIP Strategy and Definition
Student Outreach through Education Systems

"Ongoing effort using the "GLOBE" program, a worldwide hands-on, primary and secondary school-based educational science program. This is a cooperative effort, led in the US by a federal interagency program supported by NASA (National Aeronautics & Space Administration), NSF (National Science Foundation), EPA (Environmental Protection Agency) and the U.S. State Department. There are currently 65 teachers in Cumberland County who are trained and present the program that promotes environmental stewardship and research. Staff, Air Quality Stakeholders, and Technical Committee members are also providing classroom presentations upon request. It is believed that this strategy will lower NO_x emissions. Although the emission reductions are not currently quantifiable, this strategy is directionally correct."

- The adopting jurisdiction is Cumberland County.

- This strategy has been fully implemented and education efforts continue throughout the school system.

- Previous Updates: The Watershed Action Team has completed part two of the GLOBE Atmosphere training. Cumberland County has twenty-one (21) schools with weather stations and eleven (11) schools ready to collect surface ozone readings. The Watershed Action Team is in the process of organizing teacher workshops to take place in March of 2007, readying partner schools for the upcoming ozone season.
  County funding for teaching workshops was not available for the 2006 – 2007 school year.

- **December 2007: The GLOBE workshops are scheduled to take place in 2008.**

NOTE: In addition to the strategy outlined in the SIP, Cumberland County established a student educational outreach programs in 2005 as follows:

- **Kidsville News!**
  A free monthly educational publication distributed to all Kindergarten through 5th grade students in Cumberland County, Fort Bragg, Town of Raeford, and Hoke County schools, public libraries and other independent locations. The current circulation exceeds 34,000. FAMPO and NC DENR jointly sponsor the back cover of this publication. Every month, a full color page is created to teach children about air quality. The first air quality page was published in August 2005 and is contracted through July 2008.

  December 2007: The Kidsville Air Quality pages for the 2007-08 school year have been designed to teach children how their actions can improve Air Quality. The Poster and Essay contest for 2008 is based on the same theme, "How I Can Improve Air Quality." Children will be told to reference the Kidsville pages for ideas to help create their contest entries. These same ideas will also be part of the 5th Annual Diary Contest.

Kidsville Topic	Date Published
Summer Sun Safety	**July 2007**
Back to School with Alternative Transportation	**September 2007**
Breathe…Don't Burn	**October 2007**
Reduce, Reuse and Recycle: Reduce and Reuse	**November 2007**
Reduce, Reuse and Recycle: Recycle	**December 2007**
Poster and Essay Contest "How I Can Improve Air Quality" (Kidsville pages available upon request)	**January 2008**

- **Cumberland County Driver Education**
  The Driving for Clean Air program is an addition to the Cumberland County Driver Education curriculum taught at local high schools. There are six sessions of Driver Education instruction per academic year. Two hours of each session have been set aside to teach about air quality.
  The curriculum includes the "Easy Breathers" video (EasyBreathers.org) and the "Cleaner Cars Student Manual" developed by the National Safety Council. In addition, every student is given a magnet printed with the Air Quality Index and several informational pamphlets: Ozone and Your Health (DAQ 06-13-06), 10 Simple Steps for Clean Air (It All Adds Up), Smokestacks on Wheels (DAQ 04-07-03), Breathe Don't Burn (DAQ 10-11-04), alternative fuel fact sheets (Triangle Clean Cities Coalition), and Do You Drive a 1996 or Newer Car? (EPA 420-F-02-16).

This joint effort between Cumberland County and the state Division of Air Quality is considered a pilot program to be evaluated and possibly expanded throughout the state. The program began during the 2005-06 school year and has been extended through August 2008.

December 2007: Enrollment in the Summer and Fall Drivers Education sessions was as follows:

2007 Driver Education Enrollment Figures		
Class Title	**Class Dates**	**Enrollment**
Summer Session I	**Jun 14 - Jul 10**	**618**
Summer Session II	**Jul 17 - Aug 6**	**577**
Fall Session I	**Sep 25 - Nov 1**	**889**
Fall Session II	**Nov 6 - Dec 17**	**924**

- **Cumberland County Asthma Action Group**
  December 2007: FAMPO has been an active member of the Asthma Action Group fro two years. This group is a diverse group of professionals from the community working together to improve the quality of life for people with asthma by increasing awareness, access to care, and education. Currently there are 42 members including pediatricians, allergists, pharmacists, respiratory therapists, nurses, teachers, school administrators, marketing representatives, pharmaceutical representatives, environmental specialists, and medical equipment specialists. The Asthma Group meets monthly.

- **Air Quality Flag Program**
  December 2007: The Cumberland County Children's Asthma Action Group, FAMPO and the Cumberland County Board of Health cooperated to complete the North Carolina Division of Public Health grant request to Enhance Local Asthma Awareness Efforts. The Cumberland County grant request will be used to begin an Air Quality Flag Program. The Air Quality Flag Program will provide a set of Air Quality Flags and education seminars to all Cumberland County elementary schools.
  The Cumberland County Asthma Action Group is also working on establishing an Air Quality Flag Program without grant assistance. The group believes that this program is a good way to increase local awareness of both air quality and asthma issues.

SIP Strategy and Definition

Public Education/Outreach at Community Events & Churches

"This is an ongoing effort through the Speakers Bureau. Staff and volunteers participate in festivals, fairs, community meetings, etc to provide information on air quality and the individual measures that can be taken to improve the air we breathe. It is believed that this strategy will lower NO_x emissions. Although the emission reductions are not currently quantifiable, this strategy is directionally correct."

- The adopting jurisdictions are Cumberland County, City of Fayetteville, Falcon, Godwin, Linden, Spring Lake, Stedman, and Wade.

- The implementation of this strategy began with the Spring Nature Fair, at Clark Park on April 5, 2003 and is ongoing.

- Previous Updates: We are continuing every effort to attend public events were we can educate the public about air quality. On April 16, 2005 we were able to implement this strategy at Spring Lake's Spring Fling. On April 23-24, 2005, staff participated in the annual Fayetteville Dogwood Festival. The Fayetteville Area Metropolitan Planning Organization has continued an Air Quality Sponsorship program with two local sports teams, the Fayetteville FireAntz (ice hockey) and the Fayetteville Swampdogs (baseball). Both sponsorships include an advertisement developed by the Air Quality Coordinator in the team souvenir program. A second advertisement is displayed on the field and shows the Air Quality Index and the FAMPO Air Quality website address.

- **December 2007: Air Quality staff conducted public education and outreach at the following events:**

Cedar Creek Learning Center	**July 3, 2007**
Air Awareness Education, Age 5 - 13	**Attendance 50**
Sustainability Fair	**August 18, 2007**
Hope Mills Wal-Mart	**Attendance 150**
Cumberland County Fair	**September 13 - 23, 2007**
Crown Exposition Center	**Fair Attendance 60,000**
Bethel Adult Day Care	**October 19. 2007**
Air Awareness Education, Ages 50 and older	**Attendance 25**
Public Works Commission Employee Health Fair	**October 30, 2007**
Air Awareness Education	**Attendance 250**
Public Works Commission of Fayetteville	**December 11, 2007**
Alternative Fuels Presentation to Maintenance Team	**Attendance 25**

Fayetteville Swampdogs

FAMPO is under contract to repeat outfield signage and one-page program advertisements for next year. FAMPO is currently working on hosting the first annual SwampDogs "Green Night;" a night of community wide environmental awareness at the ballpark next summer.

SIP Strategy and Definition

Speakers Bureau

"Participation in radio/television programs to reach the general public with air quality information and tips, advertise meetings and involve the local newspapers and churches in disseminating information to increase public awareness and participation in implementing voluntary reduction strategies. It is believed that this strategy will lower NO_x emissions. Although the emission reductions are not currently quantifiable, this strategy is directionally correct."

- The adopting jurisdictions are Cumberland County, City of Fayetteville, Falcon, Godwin, Linden, Spring Lake, Stedman, and Wade.

- This strategy has been fully implemented. Implementation began with the first regular Cumberland County Air Quality Stakeholders meeting on May 15, 2003 and is ongoing.

- Previous Updates: On March 24, 2005, the Planning Director gave an air quality presentation to the Cumberland County Business Council. We continue to have speakers available for events/programs. The Air Quality staff continued to reach out to the public to increase public awareness of current issues.
  The Fayetteville Area System of Transit (FAST) purchased a "Be Aware of Our Air Week" advertisement in the Fayetteville Observer, published April 29, 2007. FAST wrapped three buses and two vans with full size Air Quality signs, which will remain on the transit vehicles throughout Ozone season. The total cost to FAST for the wrapping efforts was $1,462.37.

- **December 2007: Here is a partial listing of Air Quality Staff speaking engagements. Copies of the agenda and outlines available on request:**

Fayetteville City Council Meeting	**August 6, 2007**
Spring Lake Town Council Meeting	**August 27, 2007**
Cumberland County Commissioners Meeting	**September 17, 2007**
Fayetteville Rotary Club	**September 24, 2007**
Eastover Town Council Meeting	**November 6, 2007**
Southeast Diesel Collaborative **Magic School Bus reading and Grant**	**November 20, 2007**

SIP Strategy and Definition
Air Quality Web Page

"Maintained and updated by FAMPO (Fayetteville Area Metropolitan Planning Organization). The site provides information on upcoming meetings, seasonal air quality tips, the Early Action Compact program and other relevant topics. It is believed that this strategy will lower NO_x emissions. Although the emission reductions are not currently quantifiable, this strategy is directionally correct."

- The adopting jurisdiction is Cumberland County for all participating agencies.

- This strategy was fully implemented in March of 2003 and is ongoing.

- Previous Update: The air quality web page is updated on a regular basis to maintain accurate information and links while becoming more user friendly. The website now includes the AQI forecast information during ozone season. The page also includes links to other air quality websites, local air quality outreach materials and current and previous winners of air quality contests.
  The Air Quality webpage was regularly updated throughout 2007. The page features the daily Air Quality Index, an upcoming events calendar, Frequently Asked Questions, "Kids Corner" with activities for children, all previous poster and essay contest winners, and links to the "It All Adds Up" national website. Several partner organizations have included links directly to our site from their webpage: NC Department of Environment and Natural Resources, Cumberland County, The City of Fayetteville, Sustainable Sandhills, Sustainable Fort Bragg, and The Fayetteville Swampdogs.

- **December 2007: The FAMPO webpage remains an integral part of the Air Quality outreach program. Plans are to revamp the main Air Quality page, moving away from the Early Action Compact to an emphasis on community collaboration and cooperation to improve Cumberland County air quality. Additional information about ozone and particulate matter, along with health questions and outreach events will be added in early 2008.**

SIP Strategy and Definition
Promote Bus Ridership for Youth

"Fayetteville Area System of Transit (FAST) is promoting bus tours for children of all ages, educating them on how to use the transit system and the benefits of using transit (including air quality and health issues). Various organizations have tours for groups (i.e. Boys and Girls Club) that include giving them free bus passes. It is believed that this strategy will lower NO_x emissions by increasing future mass transit use and decreasing VMT. Although the emission reductions are not currently quantifiable, this strategy is directionally correct."

- The adopting jurisdiction is the City of Fayetteville.

- The implementation of this strategy is ongoing.

- Previous Updates: To continue encouraging youth ridership, the Transit Department takes youths on tours of the facilities and a bus ride through the city. To expand this effort to high schools, transit staff meets students at bus stops near the schools where they connect

with public routes. A major marketing campaign to encourage student ridership during the summer is also being developed. Discussion for a shuttle service within Fayetteville State University is on-going.
Beginning July 2007, a plan to encourage greater youth ridership was developed by FAST in coordination with the Fayetteville City Council and a Citizens Advisory Committee.

- **December 2007: From June to October the staff conducted surveys to identify transit interest among local youth. The Transit Director formed a Citizens Advisory Committee, and the first meeting was in November 2007.**

SIP Strategy and Definition
Air Quality Educational System at the local libraries.

"Air Quality handouts and flyers are made available at all branches. Make available for children's summer program. It is believed that this strategy will lower NO_x emissions by raising awareness. Although, the emission reductions are not likely quantifiable, this strategy is directionally correct."

- The adopting jurisdiction is Cumberland County for all participating agencies.

- The implementation of this strategy is ongoing.

- Previous Updates: Plans were made to implement children's air quality awareness programs at every branch library in Cumberland County. Programs began in July 2005 with an informational booth at the summer reading program celebration and regular programs were scheduled starting in August 2005. The Air Quality Coordinator along with a NC DENR partner organized and presented the "Fresh Air" program to all seven (7) Cumberland County Libraries. The programs were repeated in 2006 and space reserved for 2007.

- **December 2007: The August 2007 Headquarters Library display contained information for adults in Spanish and English on the linkage between vehicles and air quality. A second display, titled "8 Things Kids Can Do," based on a new NC DENR publication, was a multi-media depiction of simple things children can do to help air quality. This display was made possible through the collaboration of our partners: DENR, Sustainable Sandhills, PWC, Cumberland County Schools, Fayetteville SwampDogs and FAST.**

SIP Strategy and Definition

Air Quality poster/essay contest for schools.

"Air Quality related contest to raise air awareness. It is believed that this strategy will lower NO_x emissions. Although the emission reductions are not likely quantifiable, this strategy is directionally correct."

- The adopting jurisdiction is Cumberland County for all participating agencies.

- The implementation of this strategy is ongoing.

- Previous Updates: The first annual Air Quality Poster and Essay Contest was held in Fall 2003. The contest was open to all Cumberland County, Fort Bragg, and Pope Air Force Base students in grades K-7 and students were asked to think about how air quality affects their daily life. The contest was advertised in Kidsville News, at local events, and letters to all Cumberland County school principals. Submissions and winning entries from the first contest were used to create a 2005-06 academic calendar highlighting ozone season and Air Quality Week. 520 calendars were distributed to participants and used as educational material for other programs and displays.
  The second annual Air Quality Poster and Essay Contest was completed during the 2004-2005 school year.
  The third annual Air Quality Poster and Essay Contest took place during 2005-06. Submissions from the 2nd and 3rd Annual contests along with additional air quality information will be combined into an Air Awareness coffee table book. The book will be distributed in the local community and state offices. The air quality book has been fully funded and is currently under construction.
  November 29, 2006 was the submission deadline for the fourth annual Air Quality Poster and Essay Contest. Local schools participated in the contest and Air Quality Stakeholders selected the prize winners in early 2007.
  The final draft of the coffee table Air Awareness book is complete and printing of 500 high quality books is planned before January 31, 2007. The Fayetteville Area MPO and NC DENR will share the cost of printing.
  In June 2007, Sustainable Sandhills, NC DENR and FAMPO shared a one-hour children's stage show during the 25th Annual Dogwood Festival. The highlight of the show was the presentation of the Poster and Essay Contest Winners on stage by the Air Quality Stakeholders Chairman George Breece, City of Fayetteville Mayor Tony Chavonne, Cumberland County Commissioner Jeanette Council, and Fayetteville City Councilman Keith Bates.
  The coffee table book is holding on final edits and approval from the North Carolina Department of the Environment and Natural Resources. Printing quotes from local printing agencies have been received and are within budget.

- **December 2007: Planning and publicity for the fifth annual Poster Contest is ongoing. Packets are being assembled to mail to local school principals and an accompanying webpage prepared to solicit additional contest entries**
  The coffee table book was printed by William George Printing in Fayetteville. A distribution plan is being compiled, and the book will be released to the public in January 2008.

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Air Quality

Michael F. Easley, Governor

William G. Ross, Jr., Secretary
B. Keith Overcash, P.E., Director

December 19, 2007

James Palmer, Regional Administrator
USEPA Region 4
Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, GA 30303-8960

Dear Mr. Palmer:

In accordance with the Early Action Compact (EAC) protocols, this letter is to fulfill the final EAC milestone. This letter certifies that the 2005 through 2007 ozone ambient monitoring data have been quality assured for those North Carolina areas whose designation status was deferred as part of the EAC process. Additionally, this letter certifies that all of North Carolina's EAC areas are meeting the 1997 8-hour ozone National Ambient Air Quality Standard.

In the demonstration submitted in December 2004 to support the EAC modeled attainment and maintenance of the 8-hour ozone standard, the following State control measures were modeled:

- The 1999 Clean Air Bill, which expanded the North Carolina's vehicle inspection and maintenance program from nine to 48 counties;
- The NOx SIP Call rule, which reduced summertime nitrogen oxide emissions from power plants and large industrial boilers;
- The North Carolina open burning rule, which bans open burning on air quality action days; and
- The first phase of the North Carolina Clean Smokestacks Act, which capped coal-fired utility emissions of both nitrogen oxides and sulfur dioxide. This includes implementing the controls at Marshall unit 4 before the 2007 ozone season, one year earlier than originally committed to.

All of these measures have been fully implemented in North Carolina. In addition to the modeled control measures, the local EAC areas committed to programs that will reduce emissions and which were directionally correct. These areas have worked hard in bringing air quality issues to the forefront. The implementation of these programs will be discussed in the EAC areas' respective annual reports, due by December 31, 2007.

The North Carolina Division of Air Quality believes that it has met all of the requirements of the EAC process and respectfully requests that you commence the federal process to designate the North Carolina EAC areas as attainment for the 8-hour ozone standard.

1641 Mail Service Center, Raleigh, North Carolina 27699-1641
2728 Capital Blvd., Raleigh, North Carolina 27604
Phone: 919-715-6232 / FAX 919-715-7175 / Internet: www.ncair.org

If you should have any questions or require additional information, please contact Laura Boothe of my staff at (919) 733-1488.

Sincerely,

B. Keith Overcash, P.E.

BKO:lab

cc: Laura Boothe, NCDAQ
Dick Schutt, USEPA
Jane Spann, USEPA
Nacosta Ward, USEPA

North Carolina
Early Action Compact Area
8-Hour Ozone Maintenance Plan
Tracking Report

December 19, 2007

Preface

This document contains the 8-hour ozone maintenance plan tracking report for Early Action Compact Areas in North Carolina.

Executive Summary

The Early Action Compact Agreement

Early Action Compact (EAC) areas were given the opportunity to develop local control strategies to meet the 8-hour ozone National Ambient Air Quality Standard (NAAQS) earlier than required by the Clean Air Act. In turn, the United States Environmental Protection Agency (USEPA) agreed to defer the effective date of the nonattainment designation for these areas. If an EAC area attains the 8-hour ozone NAAQS by December 31, 2007 and meets all of its EAC milestones, the USEPA will designate the area as attainment. The EAC areas in North Carolina include the Cumberland County EAC area; the Mountain EAC area (Buncombe, Haywood, and Madison Counties); the Triad EAC area (Alamance, Caswell, Davidson, Davie, Forsyth, Guilford, Randolph, Rockingham, Stokes, Surry, and Yadkin Counties); and the Unifour EAC area (Alexander, Burke, Caldwell, and Catawba Counties).

Annual Review of Growth

The annual review of stationary point source emissions shows the Mountain, Triad and Unifour EAC areas experienced decreases in nitrogen oxides (NOx) emissions for the period evaluated. Two individual counties within EAC areas, Madison County (Mountain EAC) and Yadkin County (Triad EAC), reported NOx emissions from stationary point sources at levels high enough to meet one of two action triggers. Increases for both counties can be attributed to the fact that there were no NOx sources in those counties in the 2000 base year. Additionally, these sources are insignificant compared to the total NOx emissions emitted in their respective EAC areas.

The annual review of the average annual vehicle miles traveled (VMT) growth rate comparison between the VMT used in the EAC State Implementation Plan (SIP) and the latest data from the North Carolina Department of Transportation (NCDOT) shows that the average annual growth rate for the EAC areas have decreased.

Impact on Ozone Formation

Weather conditions during the 2007 ozone season were very favorable for ozone formation. All of the EAC areas experienced slight increases in the 8-hour ozone design values from 2004-2006 to 2005-2007. The EAC areas observed relatively few exceedances of the 8-hour ozone standard during 2007, despite the weather conditions that were historically conducive to ozone production. All areas observed far fewer exceedances than in 2002 (which was another warm and dry ozone season) and were generally below the average number of exceedance days for 1994-2003.

Conclusion

Neither the stationary point source nor mobile source action triggers detailed in the maintenance plan section of the SIP were met. The report demonstrates that the EAC areas continue to attain the 8-hour ozone standard and that no further action is required.

Table of Contents

I. Background

On December 17, 2004, the North Carolina Department of Environment and Natural Resources (NCDENR), Division of Air Quality (NCDAQ), submitted to the United States Environmental Protection Agency (USEPA) North Carolina's 8-hour ozone National Ambient Air Quality Standard (NAAQS) attainment demonstration for regions designated as Early Action Compact (EAC) areas. The EAC areas in North Carolina include the Cumberland County EAC area; the Mountain EAC area (Buncombe, Haywood, and Madison Counties); the Triad EAC area (Alamance, Caswell, Davidson, Davie, Forsyth, Guilford, Randolph, Rockingham, Stokes, Surry, and Yadkin Counties); and the Unifour EAC area (Alexander, Burke, Caldwell, and Catawba Counties).

Early Action Compact areas were given the opportunity to develop local control strategies to meet the 8-hour ozone NAAQS earlier than required by the Clean Air Act. In turn, the USEPA agreed to defer the effective date of the nonattainment designation for these areas. If an EAC area attains the 8-hour ozone NAAQS by December 31, 2007 and meets all of their EAC milestones, the USEPA will designate the area as attainment. The Mountain EAC area in North Carolina was designated as attainment in April 2004; however, the three counties listed above decided to continue their EAC agreement because of the public health benefits of the program. The December 2004 attainment demonstration predicts all of North Carolina's EAC areas meeting the 8-hour ozone NAAQS by December 31, 2007 and maintaining that standard through 2017. The air quality in the EAC areas has improved considerably since the designations. The Unifour and Cumberland EAC areas attained the 8-hour ozone NAAQS with the 2002-2004 design value period, three years earlier than required. Whereas, the Triad EAC area attained the 8-hour ozone NAAQS with the 2003-2005 design value period, two years earlier than required.

The NCDAQ committed to annual tracking of stationary point and highway mobile sources emission inventories data to assess progress in meeting these attainment goals. This is the third annual tracking report submitted to meet that commitment.

II. Annual Tracking for Growth

Stationary Point Source Emission Inventory Data Review

In the December 2004 attainment demonstration submittal, the NCDAQ committed to conduct an annual review of growth of stationary point sources by comparing the latest available annual stationary point source NOx emissions inventory to the 2000 base year NOx inventory used in the attainment demonstration air quality modeling analyses. For this report, the latest stationary point source inventory available is for 2005. The NCDAQ committed to both a county-by-county comparison and a composite for the entire EAC area.

Tables 1 - 4 below show the total NOx emissions from all permitted stationary point sources (in tons per year) for 2000 and 2005. Only larger facilities with Title V permits are required to report emissions annually. Therefore, the NCDAQ had to estimate emissions for facilities that were not required to report emissions in 2005. Since these sources tend to be small and do not generally have significant emissions changes from year to year, the estimated emissions for these sources were based on data from the last year they were required to report. Facility-specific NOx emissions

inventory data used to generate the following tables can be found in Appendix A (for calendar year 2000) and Appendix B (for calendar year 2005) of this report.

Table 1: NOx Emissions from Permitted Stationary Sources
Cumberland County EAC Area (tons/year)

	2000	2005	Percent Change
Cumberland County	831.7	669.3	(-)19.5%

Table 2: NOx Emissions from Permitted Stationary Sources
Mountain EAC Area (tons/year)

	2000	2005	Percent Change
Buncombe County	6,931.4	5168.5	(-)25.4%
Haywood County	4,742.1	3861.0	(-)18.6%
Madison County	0	9.1	Greater than 100%
Total for Area	**11,673.5**	**9,038.6**	**(-)22.6%**

Table 3: NOx Emissions from Permitted Stationary Sources
Triad EAC Area (tons/year)

	2000	2005	Percent Change
Alamance County	418.3	302.7	(-)27.6%
Caswell County	8.3	3.1	(-)62.7%
Davidson County	4,454.4	1094.9	(-)75.4%
Davie County	68.9	36.2	(-)47.5%
Forsyth County	2,493.7	1050.6	(-)57.9%
Guilford County	657.5	630.1	(-)4.2%
Randolph County	362	162.5	(-)55.1%
Rockingham County	9,214.5	3992.3	(-)56.7%
Stokes County	32,513.1	20158.2	(-)38.0%
Surry County	475.5	298.9	(-)37.1%
Yadkin County	0	2.5	Greater than 100%
Total for Area	**50,666.2**	**2,7732.0**	**(-)45.3%**

Table 4: NOx Emissions from Permitted Stationary Sources
Unifour EAC Area (tons/year)

	2000	2005	Percent Change
Alexander County	19.0	11.0	(-)42.1%
Burke County	344.5	261.6	(-)24.1%
Caldwell County	473.3	424.4	(-)10.3%
Catawba County	27,075	17453.9	(-)35.5%
Total for Area	**27,911.8**	**18,150.9**	**(-) 35.0%**

North Carolina agreed to identify and implement additional controls on stationary sources sufficient to offset the growth in the stationary source NOx emissions if:

- actual stationary source NOx emissions are greater than 10 percent higher than those emissions used in the EAC State Implementation Plan (SIP) modeling analysis either for an individual county or for the entire EAC area, **and**

- there has also been a corresponding increase in ozone levels in the area such that the latest 3 year design value is greater than 0.080 ppm.

When looking at the EAC areas as a whole, most counties show decreases in NOx emissions.

Madison County reported NOx emissions in 2005 that were greater than 10 percent higher than those emissions used in the 2000 EAC SIP modeling analysis. Madison County is in the Mountain EAC area. The increase in NOx emissions in Madison County can be attributed to the fact that there were no NOx sources in Madison County in the 2000 base year. The 9.1 tons/year of NOx emissions reported in Madison County in 2004 (and estimated for 2005) represent only a very small portion of the total point source NOx emissions reported in the Mountain EAC area, about 0.1%, and the entire Mountain EAC area as a whole saw approximately a 23% decrease in NOx emissions. Therefore, the NCDAQ does not believe further action is warranted to address this small emissions increase in one county since the entire area saw a significant decrease in point source NOx emissions.

Yadkin County reported NOx emissions in 2005 that were greater than 10 percent higher than those emissions used in the 2000 EAC SIP modeling analysis. Yadkin County is in the Triad EAC area. The increase in NOx emissions in Yadkin County can be attributed to the fact that there were no NOx sources in Yadkin County in the 2000 base year. The 2.5 tons/year of NOx emissions reported in Yadkin County in 2004 (and estimated for 2005) represent only a very small portion of the total point source NOx emissions reported in the Triad EAC area, less than 0.01%, and the entire Triad EAC area as a whole saw approximately a 45% decrease in NOx emissions. Therefore, the NCDAQ does not believe further action is warranted to address this small emissions increase in one county since the entire area saw a significant decrease in point source NOx emissions.

The air quality analysis in Section III of this report shows the following counties in the Triad have a design value based on the last 3 years of data that rose above 0.080 ppm: Davie County (Cooleemee monitor) with 0.083 ppm, Forsyth County (Union Cross monitor) with 0.082 ppm, and Guilford County (Mendenhall monitor) with 0.082 ppm. However, NOx emissions decreased in all three counties with a 47.5% decrease in Davie County, a 57.9% decrease in Forsyth County, and a 4.2% decrease in Guilford County. Additionally, Cumberland County in the Cumberland County EAC area has a monitor with a 3-year design value currently at 0.082 (Golfview-Hope Mills). However, NOx emissions for Cumberland County have fallen approximately 20% under those emissions used in the EAC SIP modeling analysis. Since only one and not both of the triggers mentioned in the above criteria occurred, the NCDAQ does not believe further action is appropriate or required at this time.

Mobile Source Emission Inventory Data Review

The NCDAQ also committed to conducting an annual review of growth in highway mobile sources. If the two criteria below are met, the NCDAQ committed to estimate highway mobile source

emissions to see if there was a greater than 10% increase in emissions compared to what was used in the EAC SIP. These criteria are:

- 2000-2006 annual Vehicle Miles Traveled (VMT) growth rate cannot exceed the 2000-2007 annual VMT growth rate by 10% for an individual county or the entire EAC area, **and**

- there cannot be a corresponding increase in ozone levels in the area such that the latest 3 year design value is greater than 0.080 ppm.

Table 5 below shows the comparison between the VMT from the EAC SIP and the VMT from the latest North Carolina Department of Transportation (NCDOT) data. Data used to generate Table 5, as well as further information on where this data was derived, can be found in Appendix C of this report.

Table 5: Comparison Between the EAC SIP VMT and the latest NCDOT VMT Data

	Annual VMT Growth Rate from EAC SIP	Annual VMT Growth Rate from Latest NCDOT Data	% Change
Cumberland Co. EAC Area			
Cumberland	1.66	0.78	-52.74
Unifour EAC Area			
Alexander	3.88	1.17	-69.74
Burke	2.01	0.66	-67.21
Caldwell	3.10	1.37	-55.95
Catawba	2.73	2.00	-26.91
Total Area	**2.67**	**1.46**	**-45.45**
Mountain EAC Area			
Buncombe	2.16	2.08	-3.69
Haywood	2.42	1.24	-48.81
Madison	2.29	1.97	-14.05
Total Area	**2.24**	**1.85**	**-17.37**
Triad EAC Area			
Alamance	2.29	0.53	-76.97
Caswell	2.40	0.48	-80.07
Davidson	2.82	0.37	-87.06
Davie	2.51	1.55	-38.18
Forsyth	2.32	1.38	-40.53
Guilford	2.17	1.32	-39.15
Randolph	2.87	0.71	-75.12
Rockingham	2.34	-0.61	-126.26
Stokes	2.20	1.14	-48.10
Surry	2.60	0.05	-97.91
Yadkin	2.29	1.20	-47.44
Total Area	**2.38**	**0.88**	**-62.82**

All of the EAC areas as a whole showed lower VMT growth during the period analyzed compared to the VMT growth assumed in the EAC SIP. Possible reasons for the decrease may be the higher price of gasoline and economy in the EAC areas.

As mentioned earlier, some monitors saw an increase in the 8-hour design value. However, the average annual VMT growth rates were all well below the 10% action trigger. Since only one and not both of the triggers mentioned in the above criteria occurred, the NCDAQ does not believe further action is appropriate or required at this time.

III. Air Quality Analysis

The NCDAQ is required to evaluate design value (DV) trends and ozone exceedance trends from 1994 to 2007 to determine if any of the EAC areas show increases in ozone formation. It should be noted, the 2007 ambient ozone data has been quality assured by the NCDAQ and will be officially submitted to the USEPA on or before December 31, 2007 as one of the milestones that must be met for the EAC areas.

Specifically, the NCDAQ evaluated the following data as part of the air quality analyses:

- 1-Hour Ozone Design Value Trends – Most recent 1-hour ozone design values compared to the trend in 1-hour ozone design values from the 1994-1996 timeframe to present.
- 8-hour Ozone Design Value Trends – Most recent design values (3 year average of the 4th highest 8-hour ozone average), compared to the trend in design values from the 1994-1996 timeframe to present.
- 1-Hour Ozone Exceedances – Number of exceedances of the 1-hour ozone standard at each monitor in the EAC areas for the most recent ozone season, compared to the number of exceedances at each monitor from 1994 to present.
- 8-Hour Ozone Exceedances – Number of exceedances of the 8-hour ozone standard at each monitor in the EAC areas for the most recent ozone season, compared to the number of exceedances at each monitor from 1994 to present.
- 4th Highest Value Trends – 4th highest 1-hour ozone value compared to the 4th highest 1-hour ozone value from 1994 to present.

The last bullet above, evaluating the 4^{th} highest 1-hour ozone value trend, is believed to be an error in the original SIP. Since the current ozone NAAQS is an 8-hour standard and the 4^{th} highest value is used in the design value calculation, it would make more sense to evaluate the 4^{th} highest 8-hour ozone value trend. Therefore, only the 4^{th} highest 8-hour ozone value comparison will be presented in this report.

A summary of the analysis is provided below. A description of weather patterns and climatology for the 2007 ozone season is also included.

1-hour Ozone Design Value Trends

Across all EAC areas, 1-hour ozone design values peaked during the 1997-1999 and 1998-2000 periods (see Table 6 below). Since this period, design values have steadily declined and have remained below the 0.12 ppm 1-hour ozone NAAQS. In the table below, the design values are presented in parts per million (ppm), with design values exceeding the standard highlighted in orange. Light shading indicates that no data was available; while an underlined value indicates fewer than three years or previous site data was used in the DV calculation.

Table 6: 1-hour ozone design values for each monitor in the EAC areas in North Carolina.

Region	Monitoring Sites	AIRS ID	1-Hour Design Value Summary (ppm)											
			94-96	95-97	96-98	97-99	98-00	99-01	00-02	01-03	02-04	03-05	04-06	05-07
Mountains	Bent Creek	37-021-0030	0.085	0.086	0.108	0.111	0.111	0.106	0.106	0.103	0.103	0.092	0.092	0.092
	Frying Pan	37-087-0035	0.095	0.095	0.106	0.107	0.107	0.104	0.098	0.098	0.098	0.091	0.091	0.092
	Purchase Knob	37-087-0036	0.094	0.106	0.103	0.105	0.103	0.102	0.104	0.104	0.104	0.091	0.091	0.092
	Waynesville	37-087-0004				0.090	0.094	0.094	0.095	0.091	0.091	0.084	0.082	0.084
Unifour (Hickory)	Waggin Trail (Taylorsville)	37-003-0004	0.094	0.094	0.110	0.110	0.111	0.106	0.110	0.106	0.104	0.095	0.090	0.094
	Lenoir / Caldwell Co.	37-027-0003	0.095	0.097	0.111	0.114	0.114	0.107	0.099	0.105	0.098	0.094	0.088	0.090
Triad	Cooleemee	37-059-0002	0.103	0.105	0.113	**0.123**	**0.123**	**0.122**	0.118	0.119	0.116	0.105	0.099	0.103
	Hattie Ave.	37-067-0022	0.108	0.115	0.115	0.117	0.113	0.112	0.116	0.116	0.116	0.102	0.096	0.098
	Union Cross	37-067-1008	0.109	0.115	0.120	0.119	0.118	0.110	0.110	0.109	0.108	0.097	0.098	0.100
	Shiloh Church	37-067-0028	0.118	0.110	0.112	0.112	0.112	0.113	0.115	0.115	0.113	0.088	0.084	0.089
	Cherry Grove	37-033-0001	0.109	0.111	0.118	0.118	0.119	0.112	0.119	0.114	0.112	0.099	0.089	0.094
	Mendenhall (McLeansville)	37-081-0013	0.111	0.109	0.112	0.112	0.115	0.112	**0.121**	**0.121**	**0.121**	0.103	0.101	0.107
	Bethany	37-157-0099	0.111	0.113	**0.123**	0.112	0.112	0.105	0.109	0.109	0.109	0.092	0.088	0.097
	Sophia	37-151-0004						0.102	0.104	0.104	0.104	0.095	0.084	
	Pollirosa	37-067-0027	0.096	0.096	0.107	0.111	0.111	0.107	0.107	0.107	0.103	0.086	0.073	
	Clemmons	37-067-0030										0.085	0.089	0.094
Fayetteville	Wade	37-051-0008	0.100	0.100	0.108	0.117	0.117	0.115	0.108	0.108	0.105	0.096	0.095	0.096
	Golfview (Hope Mills)	37-051-1003	0.106	0.105	0.108	0.109	0.109	0.106	0.106	0.105	0.105	0.102	0.096	0.096

Light Shading = No Data Available Underline = Fewer Than Three Years Or Previous Site Data In DV Calculation

Figure 1 below shows the trend in 1-hour ozone DVs for the different EAC areas. The graph shows the peak in the 1997-1999 and 1998-2000 design values in the Mountain, Unifour, and Fayetteville (Cumberland County) areas. After this period in the late 1990s, the design values for the areas decrease consistently with the Mountain and Fayetteville areas leveling off in recent years. After the 1996-1998 DV period, values in all areas roughly plateau until a significant drop is seen in the 2003-2005 DV period. The Unifour, Triad, and Cumberland County EAC areas saw continued decreases (but to a lesser extent) in the 2004-2006 DV period, with the Mountain EAC area leveling off. The latest DV period, 2005-2007 shows the Mountain and Fayetteville EAC areas continuing to level off, while the Triad and Unifour areas follows a slightly different trend with an upward trend in the last few years, although all areas fall well below the 1-hour ozone standard.

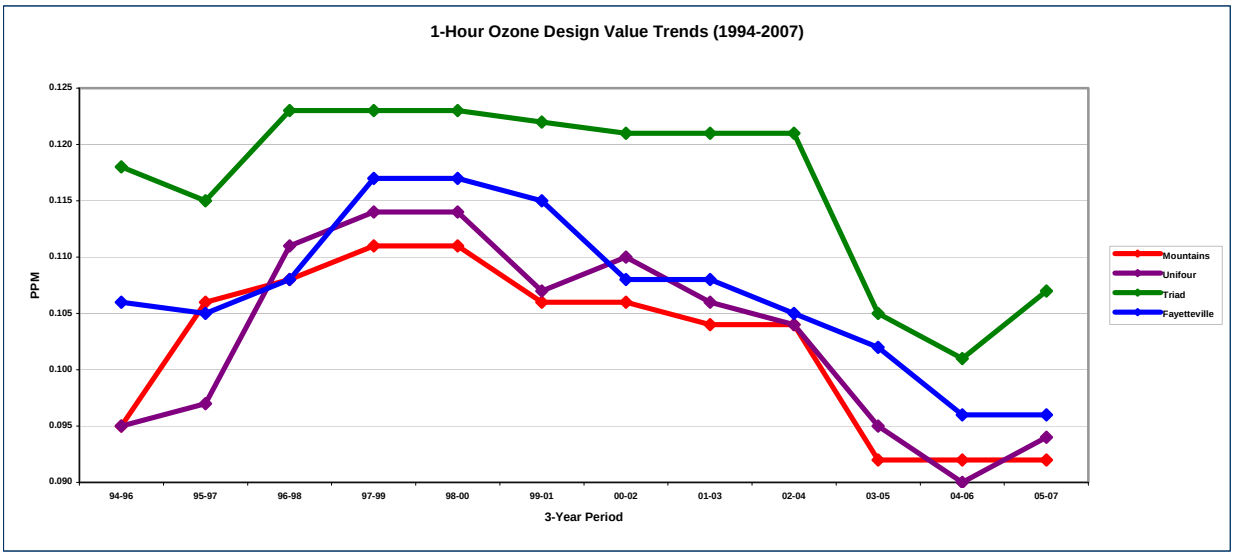


Figure 1: The graph displays the trend in the area-wide 1-hour ozone design values (in parts per million) for each EAC area from 1994-2007.

8-hour Ozone Design Value Trends

Much like the 1-hour ozone values, 8-hour ozone design values peaked in 1997-1999 and 1998-2000, with a steady decline in DVs in following years (see Figure 2 below). For the 2002-2004 DVs, only the Triad EAC area had a DV in excess of 0.085 ppm. With the 2003-2005 and 2004-2006 DVs, all EAC areas had DVs of 0.082 ppm or less and 0.080 ppm or less, respectively. The 2005-2007 DVs show the Triad and Fayetteville EAC areas with 0.083 ppm and 0.082 ppm, respectively, while the Mountains and Unifour EAC areas come in under 0.080 ppm with 0.079 ppm and 0.078 ppm, respectively.

Figure 2 below shows the trend in 8-hour ozone DVs for the different EAC areas. The graph shows the peak in the 1997-1999 and 1998-2000 design values, as seen in Table 7 below. There is a general decrease in the design values following the 1998-2000 period, with the exception of the Unifour area. This area showed a slight increase in the design value for the 2000-2002 period with a steady decrease in design values following this period. All areas are below the 8-hour ozone standard by the 2003-2005 period. The Unifour, Triad, and Fayetteville EAC areas saw continued decreases in the 2004-2006 DV period as well, with the Mountain EAC area showing a leveling off. The 2005-2007 DV period observed a small increase in all EAC areas. As discussed further in the 2007 ozone season weather patterns section, the 2007 season was very conducive to ozone development, with warm temperatures and relatively little precipitation.

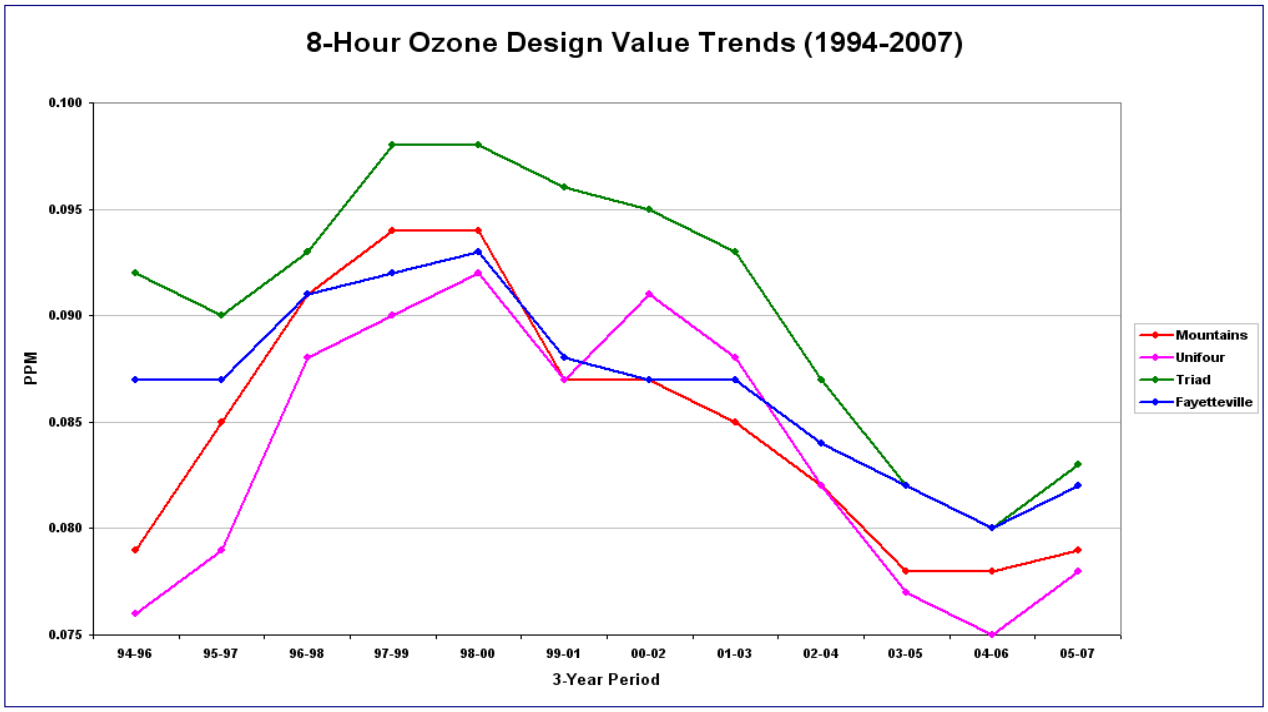


Figure 2: The graph displays the trend in the area-wide 8-hour ozone design values (in parts per million) for each EAC area from 1994 to 2007.

The 8-hour ozone design values for the monitors in the EAC areas are listed in Table 7. The design values are presented in ppm, with design values exceeding the standard highlighted in orange. Light

shading indicates that no data was available while an underlined value indicates fewer than three years or previous site data was used in the DV calculation.

Table 7: 8-hour ozone design values for each monitor in the EAC areas in North Carolina.

Region	Monitoring Sites	AIRS ID	8-Hour Design Value Summary (ppm)											
			94-96	95-97	96-98	97-99	98-00	99-01	00-02	01-03	02-04	03-05	04-06	05-07
Mountains	Bent Creek	37-021-0030	0.073	0.075	0.079	0.083	**0.088**	0.083	**0.085**	0.078	0.077	0.074	0.074	0.074
	Frying Pan	37-087-0035	0.079	**0.085**	**0.091**	**0.094**	**0.094**	**0.087**	**0.085**	0.082	0.080	0.075	0.078	0.079
	Purchase Knob	37-087-0036		0.083	**0.085**	**0.090**	**0.090**	**0.087**	**0.087**	**0.085**	0.082	0.078	0.076	0.078
	Waynesville	37-087-0004						0.080	0.080	0.079	0.076	0.073	0.069	0.072
Unifour (Hickory)	Waggin Trail (Taylorsville)	37-003-0004	0.076	0.079	0.084	**0.086**	**0.089**	**0.087**	**0.091**	**0.088**	0.082	0.077	0.075	0.078
	Lenoir / Caldwell Co.	37-027-0003		0.079	**0.088**	**0.090**	**0.092**	**0.087**	**0.086**	0.084	0.080	0.074	0.073	0.076
Triad	Cooleemee	37-059-0002			**0.092**	**0.098**	**0.098**	**0.096**	**0.095**	**0.093**	**0.086**	0.082	0.079	0.083
	Hattie Ave.	37-067-0022	0.083	**0.087**	**0.091**	**0.097**	**0.096**	**0.094**	**0.094**	**0.093**	**0.087**	0.079	0.077	0.079
	Union Cross	37-067-1008	**0.088**	**0.089**	**0.092**	**0.094**	**0.093**	**0.093**	**0.092**	**0.089**	0.084	0.079	0.080	0.082
	Shiloh Church	37-067-0028			**0.087**	**0.086**	**0.088**	**0.089**	**0.092**	**0.088**	0.079	0.074	0.072	0.073
	Cherry Grove	37-033-0001	**0.085**	**0.089**	**0.093**	**0.094**	**0.093**	**0.090**	**0.091**	**0.088**	0.084	0.077	0.075	0.077
	Mendenhall (McLeansville)	37-081-0013	**0.086**	**0.085**	**0.088**	**0.092**	**0.094**	**0.090**	**0.093**	**0.089**	0.084	0.077	0.077	0.082
	Bethany	37-157-0099	**0.092**	**0.090**	**0.089**	**0.085**	0.083	**0.085**	**0.090**	**0.091**	0.084	0.078	0.075	0.078
	Sophia	37-151-0004								0.085	0.082			
	Pollirosa	37-067-0027	0.078	0.081	0.084	0.084	0.083	0.082	0.084	0.082	0.079			
	Clemmons	37-067-0030											0.076	0.076
Fayetteville	Wade	37-051-0008	0.083	0.084	**0.088**	**0.092**	**0.093**	**0.088**	**0.086**	**0.086**	0.084	0.080	0.076	0.078
	Golfview (Hope Mills)	37-051-1003	**0.087**	**0.087**	**0.091**	**0.092**	**0.091**	**0.086**	**0.087**	**0.087**	0.084	0.082	0.080	0.082

Light Shading = No Data Available Underline = Fewer Than Three Years Or Previous Site Data In DV Calculation

1-Hour & 8-Hour Ozone Exceedance Trends

The number of 1-hour ozone exceedances peaked during the 1998 season, in which nine exceedances were observed in the EAC areas. Since 1998, exceedances of the 1-hour standard have decreased dramatically. There have been no exceedances of the 1-hour ozone NAAQS in the last five years (2003-2007) in any EAC area (see Table 8 below).

Table 8: Number of 1-hour ozone exceedances at each monitoring site within an EAC area.

Region	Monitoring Sites	AIRS ID	Number Of 1-Hour Exceedances Per Year													
			1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Mountains	Bent Creek	37-021-0030	0	0	0	0	**1**	0	0	0	0	0	0	0	0	0
	Frying Pan	37-087-0035	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Purchase Knob	37-087-0036		0	0	0	0	0	0	0	0	0	0	0	0	0
	Waynesville	37-087-0004						0	0	0	0	0	0	0	0	0
Unifour (Hickory)	Waggin Trail (Taylorsville)	37-003-0004	0		0	0	**2**	0	0	0	0	0	0	0	0	0
	Lenoir / Caldwell Co.	37-027-0003		0		0	0	0	0	0	0	0	0	0	0	0
Triad	Cooleemee	37-059-0002			0	0	**1**	**2**	0	**1**	0	0	0	0	0	0
	Hattie Ave.	37-067-0022	0	**1**	0	0	**1**	**1**	0	0	0	0	0	0	0	0
	Union Cross	37-067-1008	0	0	0	0	**1**	0	0	0	**1**	0	0	0	0	0
	Shiloh Church	37-067-0028			**1**	0	**1**	**1**	0	0	0	0	0	0	0	0
	Cherry Grove	37-033-0001	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Mendenhall (McLeansville)	37-081-0013	0	0	**1**	0	0	0	0	0	**2**	0	0	0	0	0
	Bethany	37-157-0099	0	0	0	0	**1**	0	0	0	**2**	0	0	0	0	0
	Sophia	37-151-0004								0	0	0	0			
	Pollirosa	37-067-0027	0	0	0	0	**1**	0	0	0	0	0	0			
	Clemmons	37-067-0030												0	0	0
Fayetteville	Wade	37-051-0008	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Golfview (Hope Mills)	37-051-1003	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Light Shading = No Data Available

Note: Light shading indicates that no data was available for the period.

The number of 8-hour ozone exceedances has shown a downward trend since peaking in 1998 and 1999 for all EAC areas (see Table 9 below). In the Mountain EAC area, there have been only three exceedances since 2003, one in 2005, one in 2006, and one in 2007. In the Unifour region, there have been no exceedances in the past 4 years, and in 2003, the maximum number of exceedances at any monitor was three. In the Triad area, in 2003, the Hattie Avenue monitor had five exceedances, and the Cooleemee monitor had four exceedances, with less than four exceedances elsewhere in the Triad. In 2004, 2005, and 2006 no monitor has had more than three exceedances. In 2007, the Cooleemee and Mendenhall monitors each experienced four exceedances, with two or less exceedances at the other monitors in the Triad. In the Fayetteville region, the maximum number of exceedances at a monitor in 2003 was four. In 2004, no exceedances were recorded. In 2005, the maximum number of ozone exceedances at any monitor rose to eight. There were no exceedances in 2006. There were two exceedances in 2007 at the Wade monitor. All in all, there has not been another year like 2002 with widespread exceedances.

Table 9: Number of 8-hour ozone exceedances at each monitoring site for each EAC area.

Region	Monitoring Sites	AIRS ID	Number Of 8-Hour Exceedances Per Year													
			1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Mountains	Bent Creek	37-021-0030	0	0	0	0	5	2	7	1	7	0	0	1	0	0
	Frying Pan	37-087-0035	0	5	5	4	23	24	4	1	13	0	0	0	1	1
	Purchase Knob	37-087-0036		4	1	7	12	19	5	0	18	0	0	0	0	0
	Waynesville	37-087-0004						1	3	0	2	0	0	0	0	0
Unifour (Hickory)	Waggin Trail (Taylorsville)	37-003-0004	1		0	3	15	2	7	5	17	1	0	0	0	0
	Lenoir / Caldwell Co.	37-027-0003		1		1	10	18	4	2	10	3	0	0	0	0
Triad	Cooleemee	37-059-0002			3	11	18	24	17	11	22	4	0	3	1	4
	Hattie Ave.	37-067-0022	2	8	3	9	15	16	6	10	15	5	0	0	2	2
	Union Cross	37-067-1008	4	4	5	12	18	11	9	8	15	3	0	0	3	2
	Shiloh Church	37-067-0028			4	1	9	6	5	10	8	0	0	0	0	0
	Cherry Grove	37-033-0001	3	4	7	17	19	7	9	6	15	3	0	0	0	1
	Mendenhall (McLeansville)	37-081-0013	5	5	3	3	18	18	8	4	20	2	0	3	2	4
	Bethany	37-157-0099	8	0	6	11	5	2	3	9	15	3	0	0	0	1
	Sophia	37-151-0004								7	10	2	1			
	Pollirosa	37-067-0027	1	1	3	1	6	3	1	2	6	0	0			
	Clemmons	37-067-0030												0	0	1
Fayetteville	Wade	37-051-0008	3	3	4	5	13	17	4	2	17	4	0	3	0	2
	Golfview (Hope Mills)	37-051-1003	4	4	9	4	24	14	3	3	14	3	0	8	0	0

Light Shading = No Data Available Orange - 4 Or More Exceedances

Note: Light shading indicates that no data was available for the period. Orange highlighting indicates a monitor with four or more exceedances for that year.

4th Highest Value Trends

The design value is calculated by averaging the 4th highest 8-hour ozone value for each of three years. Since the design value is an average of three years, a decrease may be the result of one really good air quality year; or conversely, a in crease may be the result of one bad air quality year. Therefore, looking at the trends of the 4th highest value can give insight as to how the air quality in an area is improving. Table 10 shows the 4th highest 8-hour ozone values for each monitoring site within each EAC area. As can be seen from the data, 2002 was a year in which high ozone was observed throughout the EAC areas where all but one monitor had a 4th highest value greater than the standard. Since 2002, there have been very few monitors where the 4th highest value was above the 8-hour ozone standard. During the 2006 ozone season, all of the monitors in EAC areas had 4th

highest values below the 8-hour ozone standard. Two monitors in the Triad, Cooleemee and Mendenhall, had 4th highest values above the 8-hour ozone standard in 2007.

Table 10: 4th Highest 8-hour ozone value at each monitoring site within an EAC area

Region	Monitoring Sites	4th Highest 8-Hour Ozone Values (ppm)													
		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Triad	Cooleemee			0.084	0.092	0.102	0.100	0.094	0.094	0.098	0.089	0.073	0.084	0.080	0.085
	Hattie Ave.	0.081	0.090	0.080	0.093	0.100	0.099	0.090	0.094	0.099	0.087	0.075	0.074	0.082	0.082
	Union Cross	0.088	0.086	0.091	0.092	0.095	0.096	0.089	0.094	0.093	0.081	0.078	0.080	0.083	0.083
	Shiloh Church			0.088	0.079	0.094	0.086	0.086	0.096	0.094	0.074	0.071	0.078	0.067	0.076
	Cherry Grove	0.083	0.086	0.088	0.095	0.096	0.091	0.092	0.087	0.095	0.083	0.074	0.076	0.075	0.082
	McLeansville	0.086	0.089	0.084	0.084	0.097	0.096	0.089	0.086	0.104	0.079	0.071	0.081		
	Mendenhall												0.082	0.080	0.086
	Bethany	0.093	0.073	0.092	0.089	0.087	0.081	0.082	0.094	0.096	0.083	0.074	0.078	0.075	0.082
	Sophia								0.085	0.092	0.078	0.076			
	Pollirosa	0.072	0.080	0.082	0.083	0.087	0.082	0.082	0.082	0.088	0.078	0.072			
	Clemmons												0.075	0.077	0.078
Mountain	Bent Creek	0.069	0.076	0.074	0.075	0.090	0.084	0.090	0.076	0.090	0.070	0.073	0.079	0.071	0.073
	Frying Pan	0.066	0.085	0.086	0.085	0.102	0.096	0.085	0.081	0.090	0.077	0.073	0.082	0.079	0.077
	Purchase Knob		0.085	0.078	0.087	0.092	0.093	0.087	0.082	0.094	0.081	0.071	0.084	0.073	0.077
	Waynesville						0.082	0.083	0.075	0.084	0.079	0.066	0.074	0.069	0.074
Cumberland	Wade	0.084	0.081	0.086	0.085	0.093	0.100	0.086	0.080	0.094	0.086	0.072	0.084	0.072	0.080
	Golfview (Hope Mills)	0.085	0.087	0.091	0.085	0.098	0.093	0.083	0.084	0.095	0.082	0.077	0.091	0.074	0.082
Unifour	Waggin Trail	0.075		0.078	0.080	0.096	0.082	0.091	0.088	0.095	0.081	0.071	0.080	0.076	0.080
	Lenoir / Caldwell Co.		0.079		0.079	0.098	0.094	0.085	0.082	0.092	0.079	0.070	0.075	0.076	0.077

Light Shading = No Data Available Orange - Exceedance of the standard

Figure 3 displays the maximum 4th highest 8-hour ozone values for each EAC area. Although there can be a great deal of fluctuation in the 4th highest value, the general trend since 2002 has been downward. There was an increase in these values from 2004 to 2005, however the 2005 levels were still significantly lower than the 2002 values. This downward trend continued with the 2006 data. In 2007, the Mountain area continued the downward trend, whereas the other three areas show a slight increase, but slightly below 2005 levels and well below 2002 levels.

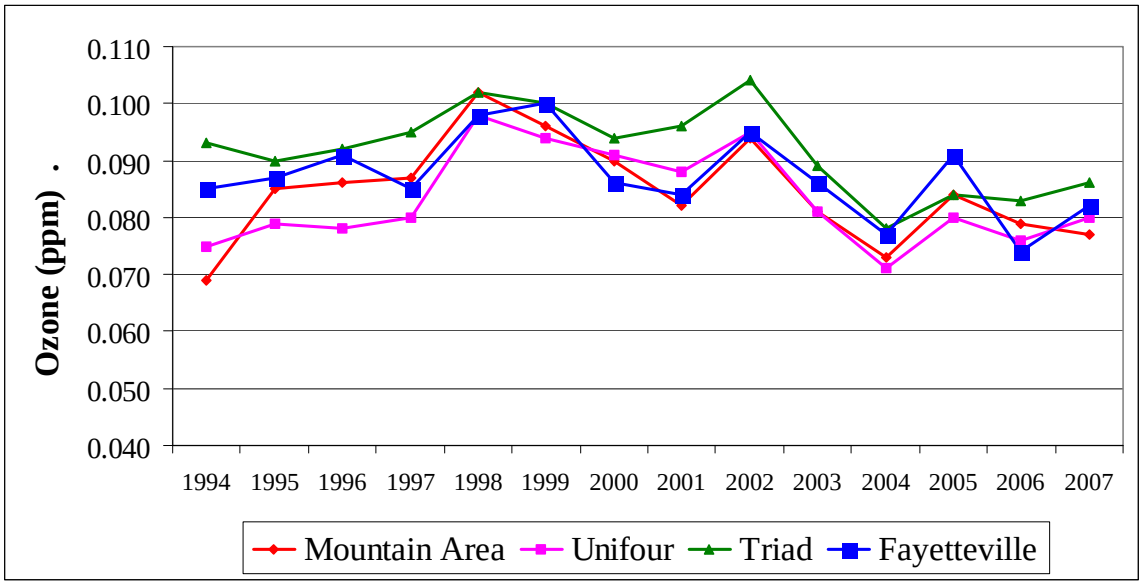


Figure 3. The graph displays the trend in the area-wide maximum 4th highest 8-hour ozone value in parts per million for each EAC area from 1994-2006.

2007 Ozone Season Weather Patterns

Weather conditions during the 2007 ozone season were very conducive to ozone formation. Temperatures were above normal, with August being the hottest month on record. Precipitation was well below normal, with the May-September period being one of the driest on record. Drought conditions developed by early July, and by the end of the summer much of the State was deemed to be in an 'exceptional' drought, the most severe category. The entire summer could be characterized as favorable for ozone formation, and many major metropolitan areas throughout the southeast experienced the highest number of days with ozone above the 8-hour ozone NAAQS since 2002. Only two EAC areas had exceedances of the standard, the Triad EAC had a total of seven days above the NAAQS, while the Fayetteville EAC had two days above the NAAQS.

Much of the State entered the ozone season with dry conditions, which in the past has been favorable for having multiple days with ozone above the NAAQS. Both May and June had near to slightly above normal temperatures (Figs 4a and 5a). More noteworthy were the dry conditions experienced during both months (Figs 4b and 5b). The lack of rain (and associated lack of clouds) led to a relatively active photochemical period. Many major metropolitan areas throughout the southeast experienced multiple days with ozone above the 8-hour ozone NAAQS. The North Carolina EAC areas faired well, with two 8-hour ozone exceedances in the Triad EAC area and only one in the Fayetteville EAC.

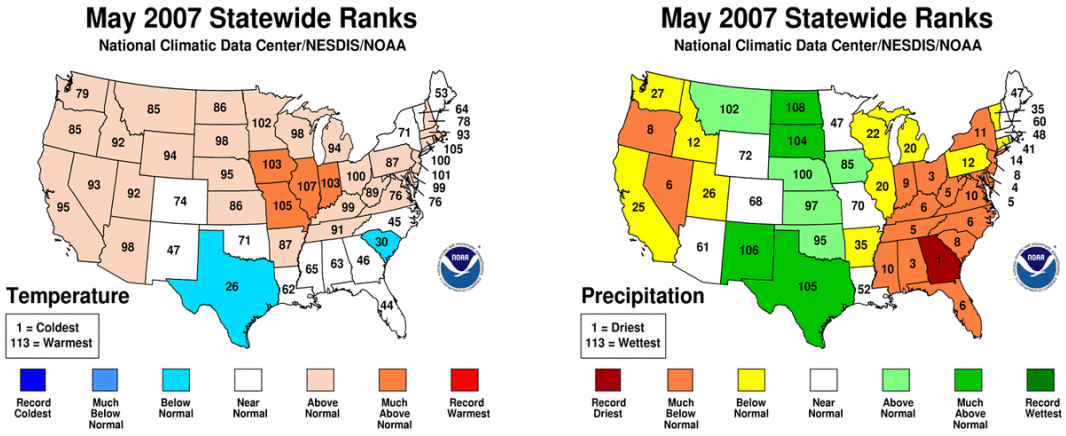


Figure 4a-b. Statewide annual climate rankings for 2007 for temperature (left, a) and precipitation (right, b) for May. (Source: NCDC/NESDIS/NOAA)

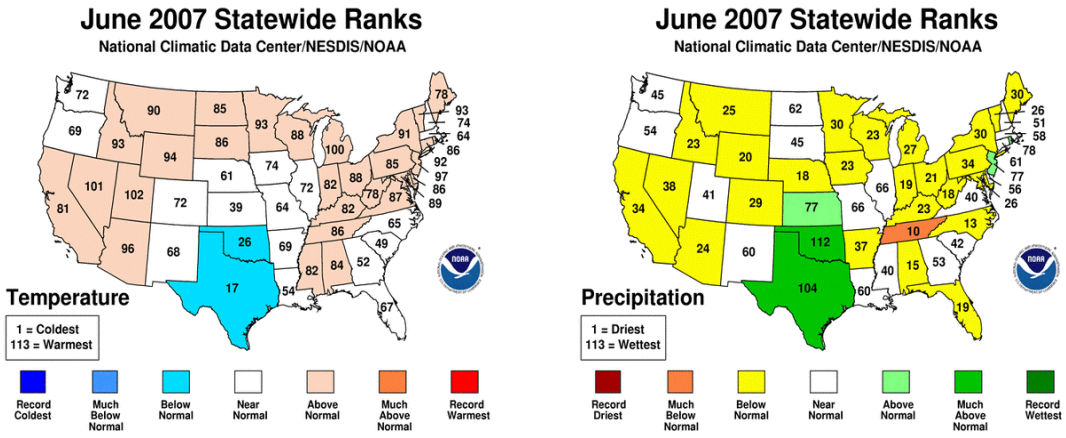


Figure 5a-b. Statewide annual climate rankings for 2007 for temperature (left, a) and precipitation (right, b) for June. (Source: NCDC/NESDIS/NOAA)

During the month of July, a trough set up over the eastern United States. Temperatures were cooler and though rainfall remained low, there was a bit more cloud cover (Figs 6a-b). No exceedances were recorded in July anywhere in North Carolina. The pattern shifted during August into early September with a stacked ridge of high pressure locked over the eastern United States. August was the warmest and second driest month ever recorded in North Carolina and much the southeastern United States (Figs 7a and 8a). During this period, most major metropolitan areas in the southeastern United States experienced numerous days with 8-hour ozone exceeding the NAAQS, with a couple of days well above the NAAQS. The Triad EAC had five days above the 8-hour ozone NAAQS. Remarkably, the Fayetteville EAC had only one day with ozone above the 8-hour ozone NAAQS.

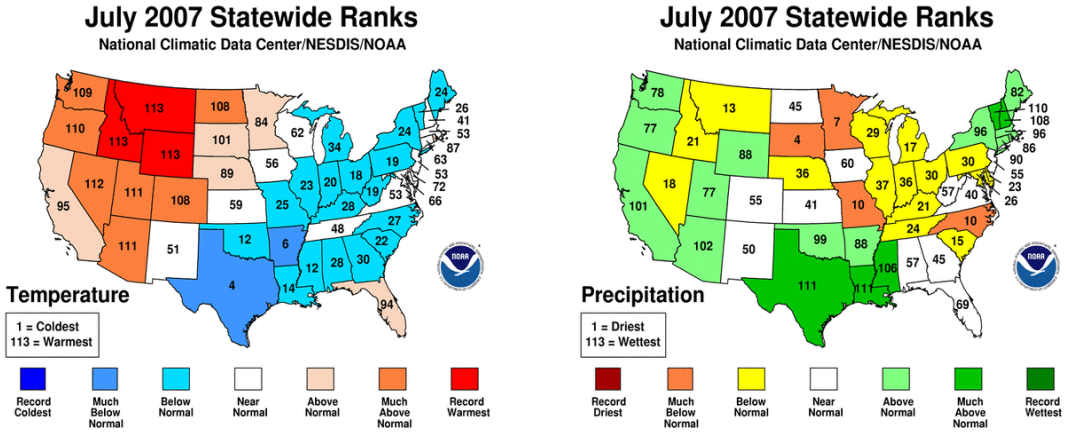


Figure 6a-b. Statewide annual climate rankings for 2007 for temperature (left, a) and precipitation (right, b) for July. (Source: NCDC/NESDIS/NOAA)

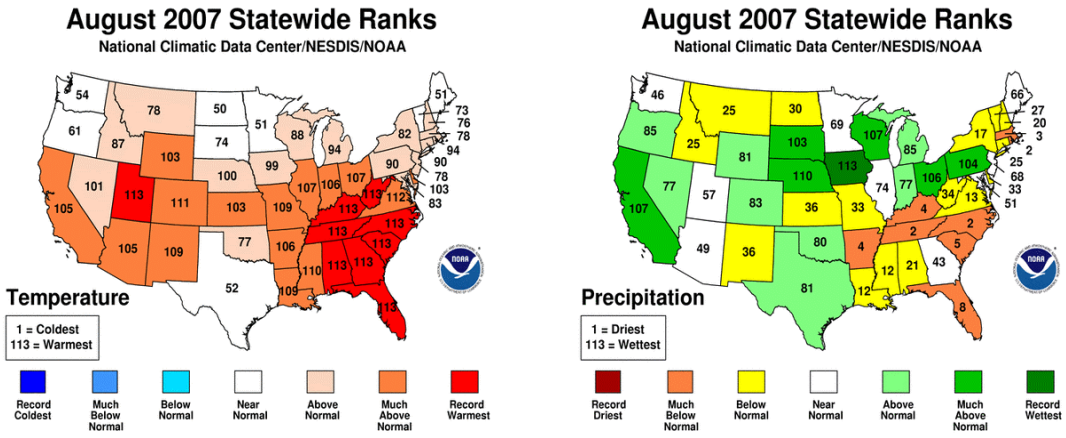


Figure 7a-b. Statewide annual climate rankings for 2007 for temperature (left, a) and precipitation (right, b) for August. (Source: NCDC/NESDIS/NOAA)

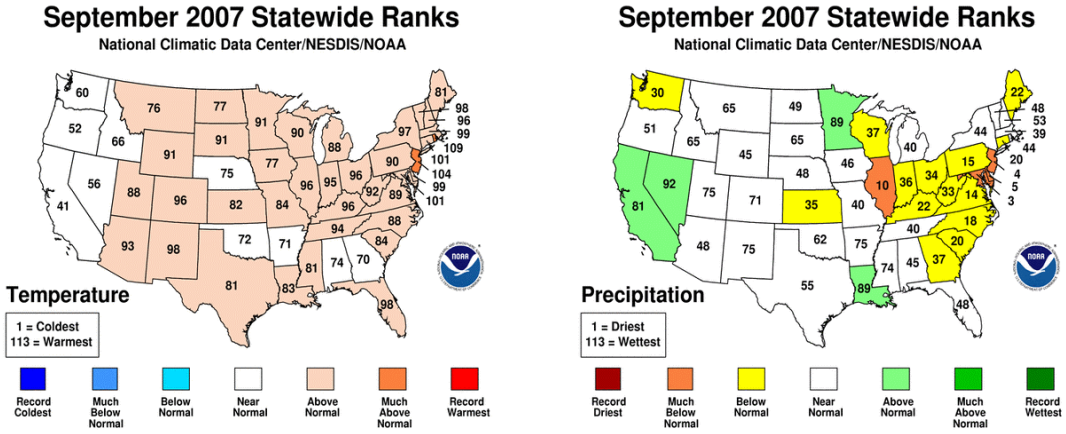


Figure 8a-b. Statewide annual climate rankings for 2007 for temperature (left, a) and precipitation (right, b) for September. (Source: NCDC/NESDIS/NOAA)

IV. Overall Summary and Conclusions

The annual review of stationary point source emissions shows North Carolina EAC areas experienced fairly significant NOx decreases for the period evaluated. However, this period was perhaps the most favorable period for ozone formation in the last several years. Two individual counties within EAC areas, Madison County, in the Mountain EAC area, and Yadkin County, in the Triad EAC area, reported NOx emissions from stationary point sources at levels high enough to meet one of the two action triggers. However, the additional amount of NOx added to each of the EAC areas as a whole was very small and the overall EAC areas saw a significant decrease in NOx emissions. The 3-year 8-hour ozone design values for four EAC counties increased slightly. However, NOx emissions decreased in those counties from that used in the EAC SIP modeling analysis for the individual counties, as well as, for the EAC area as a whole. Therefore, the NCDAQ does not believe further action is needed at this time.

The annual review of the average annual VMT growth rate comparison between the VMT used in the EAC SIP and the latest data from the NCDOT shows that the average annual growth rates for the EAC areas have decreased.

The 3-year 8-hour ozone design values increased slightly since the NCDAQ submitted the EAC Tracking Report in December 2006. However, this period was perhaps the most favorable period for ozone formation in the last several years. The air quality in the EAC areas have improved considerably since the designations and all of North Carolina's EAC areas met the 8-hour ozone NAAQS with the 2003-2005 design value period, two years earlier than they were required. Additionally, the stationary point source and highway mobile source growth in all EAC areas were below the action triggers detailed in the EAC SIP. Therefore, the NCDAQ does not believe that additional action is necessary.

Appendix A

Facility-Specific NOx Emissions Inventory Data
Calendar Year 2000

Note 1: The tables that follow are in **alphabetical order by county name**

Note 2: The following data are emissions from permitted point sources only, as reported by the facility to the North Carolina Department of Environment and Natural Resources, Division of Air Quality (NCDAQ) and reviewed by the NCDAQ staff during the calendar year following the year emitted. With the exception of 1999, when all permitted facilities were required to report their NOx emissions, only larger facilities with Title V permits are required to report emissions annually. Therefore, the tables that follow show actual reported emissions for the selected year as well as estimated emissions for facilities that were not required to report in that year. The estimated emissions were taken from the latest year the source was required to report NOx emissions (year reported is in parentheses).

Table A7: Facilities in Catawba County Reporting NOx Emissions for Calendar Year 2000		
Facility Name	**Reported Amount (2000)**	**Additional Estimated Amount (year)**
Carolina Paving of Hickory Inc		2 Tons (1999)
Thomasville Furniture Industries, Inc., Upholstery Plant 9		2 Tons (1999)
Conover Lumber Co Inc		2 Tons (1999)
Midstate Mills Inc		2 Tons (1999)
Carolina Container Corporation		2.1 Tons (1999)
Frye Regional Medical Center		2.5 Tons (2003)
Tradewinds International, Inc.		2.7 Tons (2002)
Classic Leather Inc		2.9 Tons (1999)
Technibilt Ltd **Inactive**		3 Tons (1999)
City of Newton - Sarstedt Site		3.1 Tons (2003)
Bassett Upholstery Division		3.3 Tons (1999)
Southern Furniture Company of Conover, Inc., Plant No. 2		3.3 Tons (1999)
City of Newton Inno - Therm Products Site		3.4 Tons (2003)
City of Newton - Polymask Corp Site		3.5 Tons (2003)
City of Newton - Moretz Inc. Site		3.6 Tons (2003)
Inno-Therm Products LLC		3.6 Tons (2003)
Terra-Mulch Products, LLC		4.8 Tons (1999)
City of Newton, Clark Creek Wastewater Treatment Plant		6 Tons (1999)
C Nelson Sigmon Paving Inc		6 Tons (1999)
Southern Furn Co of Conover #1		10.1 Tons (1999)
APAC-Atlantic, Inc. - Hickory Plant		10.8 Tons (2002)
Delta Apparel, Inc.		17 Tons (1999)
Total Reported Emissions	**26,959.5**	
Total Estimated Emissions		**115.49**
Grand Total	**27,075.0**	

Table A8: Facilities in Cumberland County Reporting NOx for Calendar Year 2000		
Facility Name	**Reported Amount (2000)**	**Additional Estimated Amount (year)**
Black & Decker (US) Inc.	0.9 Tons	
Purolator Products Inc	7.2 Tons	
Dupont Teijin Films	10.1 Tons	
DAK Resins Cedar Creek Site	10.6 Tons	
Carolina By-Products Fayetteville Division	71.8 Tons	
The Goodyear Tire & Rubber Company	81 Tons	
HQ XVIII ABN Corps & Fort Bragg	89 Tons	
DAK Resins, LLC	101 Tons	
Public Works Commission Butler-Warner Generation Plant	148.5 Tons	
Cargill Inc - Fayetteville	208 Tons	
Cumberland Co - Ann Street Landfill		1 Ton (2003)
Rankin Brothers Company		2 Tons (1999)
National Linen Service		2 Tons (1999)

Table A8: Facilities in Cumberland County Reporting NOx for Calendar Year 2000		
Facility Name	**Reported Amount (2000)**	**Additional Estimated Amount (year)**
Fayetteville Gas Producers Inc ** INACTIVE **		2 Tons (1999)
Veterans Affairs Medical Center - Fayetteville		3 Tons (1999)
Highland Paving Company, LLC		3.6 Tons (2004)
M J Soffe Co		6 Tons (1999)
Pope Air Force Base		7.5 Tons (2003)
Cape Fear Valley Med Center		8.4 Tons (2003)
Barnhill Contracting - Fayetteville Plant		8.9 Tons (2002)
Texfi Blends Inc**Inactive**		15.6 Tons (1999)
APAC Atlantic, Inc - Shaw Plant		17.8 Tons (2003)
Hexion Specialty Chemicals, Inc.		25.8 Tons (2003)
Total Reported Emissions	**728.1**	
Total Estimated Emissions		**103.6**
Grand Total	**831.7**	

Table A9: Facilities in Davidson County Reporting NOx for Calendar Year 2000		
Facility Name	**Reported Amount (2000)**	**Additional Estimated Amount (year)**
Vitafoam Incorporated	0.1 Tons	
Exopack - Thomasville, LLC	0.1 Tons	
Councill Company, LLC - Plant #1	3.1 Tons	
T I Industries	3.3 Tons	
Kurz Transfer Products, LLC	3.4 Tons	
StrideMark, LLC	8.7 Tons	
Thomasville Furniture Plant D	9.4 Tons	
Lexington Furniture Plant 12 ** INACTIVE **	11.3 Tons	
Thomasville Furniture Plant B ** INACTIVE **	11.3 Tons	
NC Municipal Power Agency No. 1 Lexington, Plant No. 1	11.4 Tons	
Lexington Furniture Industries Plant 2	12.3 Tons	
NC Municipal Power Agency No. 1- Lexington Plant No. 2	13.5 Tons	
Lexington Furniture Inc., Plant 5	17.8 Tons	
Cunningham Brick Company Inc	19.6 Tons	
Thomasville Furniture Plant C/M/W/SB	21.4 Tons	
Stanley Furniture Company - Lexington Mfg	24 Tons	
Thomasville Furniture Plant A/X/V Face	26.3 Tons	
Lexington Furniture Plants 7 8 9 ** INACTIVE **	31.3 Tons	
Thomasville Furniture Industries, Inc. - Plant SFD/SFLP	37.2 Tons	
Thomasville Furniture Plant E/CDF/CDK/NV	42.5 Tons	
Lexington Furniture Plant 1	47 Tons	
PPG Industries Fiber Glass Products, Inc.	227 Tons	
Owens-Brockway Glass Container Plt 6	578.8 Tons	
Transcontinental Gas Pipeline Corp	3,222.2 Tons	
Superior Wood Products, Inc.		0 Tons (2002)
Dell Inc		0.1 Tons (2003)

Appendix B

Facility-Specific NOx Emissions Inventory Data
Calendar Year 2005

Note 1: The tables that follow are in **alphabetical order by county name**

Note 2: The following data are emissions from permitted point sources only, as reported by the facility to the North Carolina Department of Environment and Natural Resources, Division of Air Quality (NCDAQ) and reviewed by the NCDAQ staff during the calendar year following the year emitted. With the exception of 1999, when all permitted facilities were required to report their NOx emissions, only larger facilities with Title V permits are required to report emissions annually. Therefore, the tables that follow show actual reported emissions for the selected year as well as estimated emissions for facilities that were not required to report in that year. The estimated emissions were taken from the latest year the source was required to report NOx emissions (year reported is in parentheses).

Table B7: Facilities in Catawba county reporting NOx(CAS: NOx) for Calendar Year 2005		
Facility Name	**Reported Amount (2005)**	**Additional Assumed Amount (year)**
Hickory Springs Manufacturing Company		5.6 Tons (2003)
Terra-Mulch Products, LLC		7.0 Tons (2006)
Maymead Materials, Inc. - Hickory Plant		10.8 Tons (2002)
Delta Apparel, Inc.		16.5 Tons (2004)
Total Reported Emissions	**17363.1**	
Total Assumed Emissions		**90.8**
Grand Total	**17453.9**	

Table B8: Facilities in Cumberland County Reporting NOx for Calendar Year 2005		
Facility Name	**Reported Amount (2005)**	**Additional Assumed Amount (year)**
Cumberland Co - Ann Street Landfill	1 Tons	
Adams Products Company - Fayetteville	1.7 Tons	
Concrete Service Company - Pope AFB Plant	1.7 Tons	
Purolator Filters NA, LLC	6 Tons	
Veterans Affairs Medical Center - Fayetteville	7.5 Tons	
Hexion Specialty Chemicals, Inc.	20.8 Tons	
HQ XVIII ABN Corps & Fort Bragg	56.8 Tons	
DAK Resins, LLC	60.3 Tons	
Public Works Commission Butler-Warner Generation Plant	71.9 Tons	
Carolina By-Products Fayetteville Division	89 Tons	
The Goodyear Tire & Rubber Company	97.2 Tons	
Cargill Inc - Fayetteville	181.2 Tons	
N C Products Corporation		0.3 Tons (2004)
M J Soffe Co		0.4 Tons (2004)
Black & Decker (US) Inc. ** INACTIVE **		0.8 Tons (2003)
Fay Block Company		2.0 Tons (2004)
Rankin Brothers Company		2.0 Tons (1999)
National Linen and Uniform Service LLC ** INACTIVE **		2.4 Tons (2004)
Highland Paving Company, LLC		3.6 Tons (2004)
Pope Air Force Base		7.5 Tons (2003)
Cape Fear Valley Med Center		8.5 Tons (2003)
Barnhill Contracting - Fayetteville Plant		8.9 Tons (2002)
Dupont Teijin Films		9.4 Tons (2004)
DAK Resins Cedar Creek Site		10.6 Tons (2002)
Barnhill Contracting Company - Shaw Plant		17.8 Tons (2003)
Total Reported Emissions	**595.1**	
Total Assumed Emissions		**74.2**
Grand Total	**669.3**	

Table B9: Facilities in Davidson County Reporting NOx for Calendar Year 2005		
Facility Name	**Reported Amount (2005)**	**Additional Assumed Amount (year)**
Hekman Furniture Company ** INACTIVE **	0.1 Tons	
Exopack - Thomasville, LLC	0.1 Tons	

Appendix C

Vehicle Miles Traveled (VMT) Grow Data

Note: The following VMT data was generated by the North Carolina Department of Transportation (NCDOT) based on vehicles registered with the North Carolina Division of Motor Vehicles. Travel demand models are used by metropolitan planning organizations to calculate speeds and VMT for their local coverage area. The VMT used in the Early Action Compact State Implementation Plan (EAC SIP) attainment demonstration modeling was derived from the travel demand model for Davidson, Forsyth and Guilford Counties. The VMT for the remaining counties is from NCDOT data that is reported to the Federal Highway Administration (FHWA) to estimate lane miles and VMT for national highway systems. On average, VMT derived from the EAC SIP travel demand models are 25%-40% higher than NCDOT VMT data.

Since travel demand data is not available every year for this annual tracking report, the average annual VMT growth rate used in the EAC SIP is compared to the average annual VMT growth rate of the NCDOT data submitted to the FHWA. Therefore, the data in Table C1 contains travel demand model VMT estimates for both 2000 and 2007, while the data in Table C2 contains only the NCDOT data submitted to the FHWA.

Table C1: Annual VMT Growth Rate Based on 2000 - 2007 EAC SIP

	2000 VMT	2007 VMT	Annual VMT Growth Rate
Cumberland County Area			
Cumberland	7,578,450	8,460,602	1.66
Unifour Area			
Alexander	594,210	755,500	3.88
Burke	2,518,540	2,873,401	2.01
Caldwell	1,651,220	2,010,100	3.10
Catawba	4,314,040	5,138,099	2.73
Total Area	**9,078,010**	**10,777,100**	**2.67**
Mountain Area			
Buncombe	5,736,440	6,603,801	2.16
Haywood	2,244,520	2,625,298	2.42
Madison	492,930	571,879	2.29
Total Area	**8,473,890**	**9,800,978**	**2.24**
Triad Area			
Alamance	3,598,930	4,176,499	2.29
Caswell	619,580	723,600	2.40
Davidson	4,112,280	4,924,498	2.82
Davie	1,245,080	1,464,200	2.51
Forsyth	9,595,433	11,153,970	2.32
Guilford	14,349,184	16,533,141	2.17
Randolph	3,675,570	4,414,300	2.87
Rockingham	2,469,390	2,874,500	2.34
Stokes	924,340	1,066,800	2.20
Surry	2,485,200	2,937,501	2.60
Yadkin	1,330,380	1,544,000	2.29
Total Area	**44,405,367**	**51,813,009**	**2.38**

Table C2: Annual VMT Growth Rate Based on 2000-2006 Universe Data

	2000 VMT	2006VMT	Annual VMT Growth Rate
Cumberland County Area			
Cumberland	7,578,450	7,935,150	0.78
Unifour Area			
Alexander	594,210	636,070	1.17
Burke	2,518,540	2,618,140	0.66
Caldwell	1,651,220	1,786,500	1.37
Catawba	4,314,040	4,830,550	2.00
Total Area	**9,078,010**	**9,871,260**	**1.46**
Mountain Area			
Buncombe	5,736,440	6,452,470	2.08
Haywood	2,244,520	2,411,350	1.24
Madison	492,930	551,140	1.97
Total Area	**8,473,890**	**9,414,960**	**1.85**
Triad Area			
Alamance	3,598,930	3,712,820	0.53
Caswell	619,580	637,360	0.48
Davidson	4,112,280	4,202,350	0.37
Davie	1,245,080	1,360,990	1.55
Forsyth	7,882,840	8,535,410	1.38
Guilford	10,740,240	11,591,180	1.32
Randolph	3,675,570	3,833,040	0.71
Rockingham	2,469,390	2,378,330	-0.61
Stokes	924,340	987,670	1.14
Surry	2,485,200	2,493,320	0.05
Yadkin	1,330,380	1,426,450	1.20
Total Area	**39,083,830**	**41,155,920**	**0.88**

This Air Quality Report was compiled by the

Fayetteville Area Metropolitan Planning Organization

in cooperation with

The Cumberland County Air Quality Stakeholders

The Air Quality Technical Committee and

The North Carolina Department of the Environment and Natural Resources, Division of Air Quality

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