Western Piedmont Council of Governments
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Over 30 Years of Regional Leadership

June 30, 2004

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

Dear Ms. Prince:

Please find enclosed the Unifour Area's six-month progress report due June 30, 2004 as required by the Early Action Compact. The report has been e-mailed and a "hard copy" mailed. A few items were only available in paper form, and those items you will find with the "hard copy".

We look forward to continuing work with the US EPA and the NC Division of Air Quality in efforts to help reduce pollution in the air that we breathe. Thank you for all the support you provide us in our efforts to make these goals successful. If you have any questions, or if we can provide any additional information please feel free to contact John Tippett at 828-322-9191 ext. 237.

Sincerely,

Judy G. McKee
WPCOG Air Quality Planner

Cc: Richard Schutt, USEPA
Sheila Holman, NCDAQ
Unifour Air Quality Committee

1 Introduction

As a requirement of the Early Action Compacts (EACs), the progress report due June 30, 2004, must include a status report regarding the air quality modeling. This report satisfies this requirement. Discussed in this report is an overview of the changes in the emission inventories and the air quality modeling results.

2 Emissions Inventories

Emissions modeling performed by NCDAQ estimates NOx and VOC emissions for an average summer day, given specific meteorological and future year conditions and using emission inputs based on emission inventories that include anticipated control measures. The biogenic emissions are kept at the same level as the episodic biogenic emissions since these emissions are based on meteorology. Projections for 2007 take into account all State and Federal control measures expected to operate at that time, including Federal vehicle emissions controls, NOx SIP Call controls, and North Carolina Clean Smokestacks controls.

The modeling emission inventories changed since the last progress report for both the current year and the 2007 attainment year. These revisions were made to address errors that were found and the use of better available data.

Current Year (2000) Inventory Changes

The changes in the current year point source emission inventories included:

- using actual 2000 emissions data for sources in North Carolina when available,
- corrections to Alabama and Illinois emissions modeling files to remove duplicate sources, and
- inclusion of dropped CEM emissions data.

The current year mobile source emission inventory was changed to correct:

- the vehicle miles traveled data in South Carolina,
- the vehicle age distribution that was used in North Carolina,
- the mobile input files for North Carolina so that the modeled temperatures were used to calculate the emission factors.

The current year nonroad mobile source emission inventory was changed to reflect changes in EPA's NONROAD mobile model. The NONROAD mobile model was re-run for all counties within the 36-km modeling domain. The changes to the inventory were minor, but NCDAQ wanted to use the most recent data available for this modeling project. There were no changes made to the current year area source or biogenic source emission inventories.

Attainment Year (2007) Inventory Changes

The changes in the 2007 attainment year point source emission inventories included:

- growing the North Carolina 2000 emissions data to 2007,
- correction of stack temperatures in the North Carolina emission files,
- using the latest North Carolina utility emissions according to the Clean Smokestacks Act compliance plan update,
- corrections to Alabama and Illinois emissions modeling files to remove duplicate sources,
- growing the other States non-utility current year emissions to 2007 via EGAS growth factors, and
- using the Clear Skies modeling emission files for the other States utilities.

The 2007 attainment year mobile source emission inventory was changed to correct:

- the vehicle age distribution that was used in North Carolina,
- the mobile input files for North Carolina so that the modeled temperatures were used to calculate the emission factors.

The 2007 attainment year nonroad mobile source emission inventory was changed to reflect changes in EPA's NONROAD mobile model. The NONROAD mobile model was re-run for all counties within the 36-km modeling domain. Again, the changes to the inventory were minor, but NCDAQ wanted to use the most recent data available for this modeling project. Also, the airport projection factors were updated for the three major airports in North Carolina, as well as the airport in Forsyth County. The updated projection information was obtained from the Federal Aviation Administration (FAA).

For area sources the 2007 attainment year inventory was changed to apply North Carolina's open burning rule, and apply federal control strategies expected to be in place by 2007. There were no changes made to the biogenic source emission inventory.

Updated Emission Inventories

The emissions summary for both the 2000 current year and 2007 attainment year for the EAC area is listed in Table 2-1. These emissions represent typical weekday emissions and are reported in tons per day.

Table 2-1: Estimated NOx and VOC emissions

Source	NOx Emissions		VOC Emissions	
	2000	2007	2000	2007
Point	115.49	47.50	41.07	39.14
Area	1.19	1.24	21.57	21.98
Nonroad	10.20	10.14	7.07	6.90
Mobile	34.67	23.37	20.81	14.13
Biogenic	0.40	0.40	213.80	213.80
Total Emissions	161.95	82.65	304.32	295.95

The total predicted NOx emissions for the EAC area decreased by 48%, from 162 tons per day (TPD) in 2000 to 83 TPD in 2007. The total predicted VOC emissions for the EAC area decreased by approximately 3%, from 304 TPD in 2000 to 296 TPD in 2007.

There are few VOC control measures expected for area and point sources in the Unifour area, resulting only a slight decrease in emissions between the two years. However, the Unifour area contains a power plant, resulting in the point source NOx emissions decrease significantly due to the NOx SIP Call rule. Additionally, there are significant decreases in highway mobile source VOC and NOx emissions.

3 Control Measures

Several control measures already in place or being implemented over the next few years, will reduce point, highway mobile, and nonroad mobile sources emissions. These control measures were modeled for 2007 and are discussed in the Sections below.

3.1 State Control Measures

3.1.1 Clean Air Bill

The 1999 Clean Air Bill expanded the vehicle emissions inspection and maintenance program from 9 counties to 48, phased in between July 1, 2002 through January 1, 2006. Vehicles will be tested using the onboard diagnostic system, an improved method of testing, which will indicate NOx emissions, among other pollutants. The previously used tailpipe test did not measure NOx. The inspection and maintenance program will be phased in from July 1, 2003 through July 1, 2005, in the Unifour area. Table 3.1.1-1 lists the phase in dates for the Unifour area.

Table 3.1.1-1 Phase-In Dates for the Unifour Area

County	Phase-In Date
Burke	July 1, 2005
Caldwell	July 1, 2005
Catawba	July 1, 2003

3.1.2 NOx SIP Call Rule

North Carolina's NOx SIP Call rule will reduce summertime NOx emissions from power plants and other industries by 68% by 2006. The North Carolina Environmental Management Commission adopted rules requiring the reductions in October 2000.

3.1.3 Clean Smokestacks Act

In June 2002, the N.C. General Assembly enacted the Clean Smokestacks Act, requiring coal-fired power plants to reduce annual NOx emissions by 78% by 2009. These power plants must also reduce annual sulfur dioxide emissions by 49% by 2009 and by 74% in 2013. The Clean Smokestacks Act could potentially reduce NOx emissions beyond the requirements of the NOx SIP Call Rule. One of the first state laws of its kind in the nation, this legislation provides a model for other states in controlling multiple air pollutants from old coal-fired power plants.

3.1.4 Open Burning Bans

In June 2004, the Environmental Management Commission approved a new rule that would ban open burning during the ozone season on code orange and code red ozone action days for those counties that NCDAQ forecasts ozone.

3.2 Federal Control Measures

3.2.1 Tier 2 Vehicle Standards

Federal Tier 2 vehicle standards will require all passenger vehicles in a manufacturer's fleet, including light-duty trucks and Sports Utility Vehicles (SUVs), to meet an average standard of 0.07 grams of NOx per mile. Implementation will begin in 2004, and most vehicles will be phased in by 2007. Tier 2 standards will also cover passenger vehicles over 8,500 pounds gross vehicle weight rating (the larger pickup trucks and SUVs), which are not covered by current Tier 1 regulations. For these vehicles, the standards will be phased in beginning in 2008, with full compliance in 2009. The new standards require vehicles to be 77% to 95% cleaner than those on the road today. Tier 2 rules will also reduce the sulfur content of gasoline to 30 ppm by 2006. Most gasoline currently sold in North Carolina has a sulfur content of about 300 ppm. Sulfur occurs naturally in gasoline but interferes with the operation of catalytic converters in vehicle engines resulting in higher NOx emissions. Lower-sulfur gasoline is necessary to achieve Tier 2 vehicle emission standards.

3.2.2 Heavy-Duty Gasoline and Diesel Highway Vehicles Standards

New EPA standards designed to reduce NOx and VOC emissions from heavy-duty gasoline and diesel highway vehicles will begin to take effect in 2004. A second phase of standards and testing procedures, beginning in 2007, will reduce particulate matter from heavy-duty highway engines, and will also reduce highway diesel fuel sulfur content to 15 ppm since the sulfur damages emission control devices. The total program is expected to achieve a 90% reduction in PM emissions and a 95% reduction in NOx emissions for these new engines using low sulfur diesel, compared to existing engines using higher-content sulfur diesel.

3.2.3 Large Nonroad Diesel Engines Proposed Rule

The EPA has proposed new rules for large nonroad diesel engines, such as those used in construction, agricultural, and industrial equipment, to be phased in between 2008 and 2014. The proposed rules would also reduce the allowable sulfur in nonroad diesel fuel by over 99%. Nonroad diesel fuel currently averages about 3,400 ppm sulfur. The proposed rules limit nonroad diesel sulfur content to 500 ppm in 2007 and 15 ppm in 2010. The combined engine and fuel rules would reduce NOx and particulate matter emissions from large nonroad diesel engines by over 90 %, compared to current nonroad engines using higher-content sulfur diesel.

3.2.4 Nonroad Spark-Ignition Engines and Recreational Engines Standard

The new standard, effective in July 2003, will regulate NOx, HC and CO for groups of previously unregulated nonroad engines. The new standard will apply to all new engines sold in the US and imported after these standards begin and large spark-ignition engines (forklifts and airport ground service equipment), recreational vehicles (off-highway motorcycles and all-terrain-vehicles), and recreational marine diesel engines. The regulation varies based upon the type of engine or vehicle.

The large spark-ignition engines contribute to ozone formation and ambient CO and PM levels in urban areas. Tier 1 of this standard is scheduled for implementation in 2004 and Tier 2 is scheduled to start in 2007. Like the large spark-ignition, recreational vehicles contribute to ozone formation and ambient CO and PM levels. They can also be a factor in regional haze and other visibility problems in both state and national parks. For the off-highway motorcycles and all-terrain-vehicles, model year 2006, the new exhaust emissions standard will be phased-in by 50% and for model years 2007 and later a 100%. Recreational marine diesel engines over 37 kW are used in yachts, cruisers, and other types of pleasure craft. Recreational marine engines contribute to ozone formation and PM levels, especially in marinas. Depending on the size of the engine, the standard for will begin phase-in in 2006.

When all of the standards are fully implemented, an overall 72% reduction in HC, 80% reduction in NOx, and 56% reduction in CO emissions are expected by 2020. These controls will help reduce ambient concentrations of ozone, CO, and fine PM.

3.3 Local Control Measures

Overall Summary of the EAC Progress for the Unifour Area Local Strategies:

The Unifour Air Quality Committee (UAQC) continues to improve and advance in the overall air quality efforts in the region. Rough data indicates the levels of ozone in the region are reducing each year.

Stakeholders are committed to the adoption of the emission reduction control measures and continue to work towards our common goal of reducing the Ozone levels in the region. The stakeholders have modeled the control strategies after the Sustainable Environment for Quality of Life (SEQL) and continue to progress in each area. As noted in this report, and the previous

reports, the stakeholders are successfully using the Local Emission Control Measures in all fourteen categories. The stakeholders use the control measures as a guide, and many times go above and beyond the stated measures.

Local Control Measure #10 will be updated to reflect the approval of NC Administrative Code-Title 15A Chapter 2--Subchapter 2D-Air Pollution Control Requirements Section .1900 – Open Burning. June 1, 2004 the administrative code was amended to prohibit open burning as specified in the code on Code Orange and higher Ozone Alert Days. A copy of the amended code is attached. The approval did not occur in time to vote on the amendment. The Open Burning Regulation includes the entire Unifour area; as well as other areas in the state of NC.

The UAQC received at the June Air Quality Meeting a draft document with recommendations for the Local Control Strategies that was taken from a discussion held between the Southern Environmental Law Center (SELC) and North Carolina Division of Air Quality (NC DAQ). The UAQC did not have time to review and make recommendations in time for this report. Therefore, the UAQC is reviewing the recommendations to incorporate as many of the ideas as feasible into the strategies. The overall goal is to lower the pollutants and get the best results possible.

The stakeholders are committed to completing and achieving all the local emission control strategies as adopted. Many of the areas have implemented the strategies as stated. Some of the smaller areas are working towards the same goals, but will take longer to achieve the strategies. Through educational efforts citizens in the Unifour Area are becoming more cognizant of the Air Quality Issues. Changing people's habits through awareness, education, and motivation is one key to decreasing mobile source emissions. Educational efforts are ongoing and are making a difference in how people respond to air quality efforts.

Since 1990 the Federal Conformity Regulation has required that transportation projects not cause or worsen violations of air quality standards. A conformity lapse can mean delay or stoppage of road and transit design work, right-of-way acquisition, new construction, and permitting. Smart Growth is growth that allows a community to grow and expand its economy in a manner that protects the environment, expands living working and travel choices, and strategically targets public resources to address community wide needs. The Unifour Area Stakeholders are working on ways to make sure Smart Growth; Transportation and Air Quality strategies are all tied together to make the area more desirable for everyone.

Alexander County

Sylvia L. Turnmire, AICP - Director of Planning and Development for Alexander County reported the following progress:

- ✓ Attended monthly UAQC meetings
- ✓ Attended Regional Air Quality Forum (6/1/04)
- ✓ Attended MPO/RPO meetings in which air quality information was discussed (4/29/04, 5/26/04)

- ✓ County staff met with Debra Manning, NCDAQ-MRO, in regards to placement of a second monitor in Taylorsville. A site was chosen at the Alexander County Maintenance Facility and installation is expected by June 30, 2004. (May)
- ✓ Met with the County Economic Development Director to discuss initiatives with local businesses and industries. Also discussed options for air quality education with those individuals and county residents. (6/14/04)
- ✓ Continued working on an air quality action plan. Once the plan is completed, it will be taken to the Planning and Zoning Commission for recommendation and forwarded to the Board of County Commissioners for review and approval. (April, May, June)
- ✓ Met with environmental health specialists to discuss contacting local daycare centers and assisted living facilities on high ozone level days. (6/15/04)

Burke County

In April 2003 the Commissioners appointed Wayne Abele, David Rust, and Burke Partners for Economic Development (BPED) selected a representative for this committee Bruce Hershock.

April 2004 Maynard Taylor was appointed to replace Wayne Abele.

Working on Air Quality Plan to be adopted this year

Caldwell County

According to Debi Nelson, Public Information Officer of Health Education/Promotion Supervisor for Caldwell County Health Dept. (1966-B Morganton Blvd. SW Lenoir, NC 28645 828-426-8462, 828-426-8450 fax) the following strategies have been taken to promote Air Quality Education in Caldwell County:

- ✓ 8 billboards with info on flags and air quality (attachment)
- ✓ Air awareness emails sent daily to approximately 500 people (under review and will revise)
- ✓ Local cable and local newspaper daily
- ✓ Information booth at May Butterfly Festival in Hudson
- ✓ Local newspaper - Two articles on Ozone in May, and one in June

Bill Duquette, Caldwell County Environmental Engineer reported the following information concerning Caldwell County progress:

Flag Locations:

1. County Office
2. Caldwell County Health Department
3. Granite Falls County Office
4. Granite Falls
5. Sawmills
6. Hudson
7. Cajah's Mountain

8. Gamewell
9. Hudson Cloth (Shuford Mills)
10. Caldwell Memorial
11. Caldwell Community College & Technical Institute

Fire Departments

1. Collettsville
2. Gamewell
3. Grace Chapel
4. Granite Falls
5. Hudson
6. Kings Creek
7. Lenoir #1
8. Lenoir #2
9. Little River
10. North Catawba
11. Patterson
12. Sawmills
13. Valmead
14. Yadkin Valley

More Flag locations are being identified.

Monday, May 24, 2004, Caldwell County Manager Bobby White, Caldwell County Commissioners Herb Greene and Dr. John Thuss, Hazardous Waste Inspector Mike Lane, Bill Duquette Environmental Engineer and Eric Woodridge Senior Planner, LC Coonse, and an intern from Congressman Ballenger's office, Mark Guerra Jr. met to discuss possible direction for the community to move in order to lower ozone and pm2.5. The commissioners will meet with commissioners from Alexander and Burke counties to attempt to encourage them to join regional efforts to abate air pollution. A meeting will be arranged with area manufacturers in an effort to enlist their support and cooperation in air pollution control. A meeting will also be arranged with the Forrest Service and local Fire Departments to eliminate planned burning on bad air quality days.

June 25, 2004 Caldwell County Representatives from Caldwell County, Bobby White, Bill Duquette and Mike Lane and NC DAQ Representatives Sheila Holman and Hoke Kimball met with Trigon Engineering Consultants, Inc. met to discuss Air Quality Issues and strategies that Caldwell County can perform to aggressively address the Air Quality Issues in the area.

June 1, 2004 Bill Duquette gave an Ozone Presentation to the Rotary Club in Caldwell County at 6:45 AM.

5th Grade Ozone Presentations provided by Bill Duquette, Caldwell County Environmental Engineer as follows:

April 30th –Granite Falls @ 9:00 AM

2 – 5th Grade Classes

May 21st - Kings Creek @ 12:00 PM
1 – 5th Grade Class

May 24th - Baton Elementary @ 1:00 PM
3 – 5th Grade Classes

May 27th - Hudson Elementary @ 8:30 AM & 9:30 AM
5- 5th Grade Classes

Air Quality Plan attached

Catawba County

Sarah Lawson, Nursing Supervisor and Tracey Paul, Catawba County Public Health Educator reports the following progress in Catawba County:

Proposed Ozone Plan To Date: 5/4/04- Updated 6/29/04

1. **County Employee Intranet Ozone Activities Program:**
   - Met with ITC staff Lee Yount on 5/4 to discuss how to proceed working with ITC to set up an intranet program for county employees to self-report ozone prevention activities on an individual and county building basis during ozone season - must be very user friendly.
   - The goal is to implement this program by late July if possible.
   - ITC representative recommended talking to Marcia Hardy who handles the intranet. He suggested putting this under "hot topics" and thought it should be fairly simple to do via an excel spread sheet to calculate individual and county building points on an on-going basis, i.e. in order to pull monthly totals.
   - Incentives will be built into this program on an individual and county building basis, i.e., movie tickets to individual employees once they score 100 points, an ice cream social for the county building with highest number of points, etc.
   - Employees would log into the program, identifying themselves individually and by county building, using the honor system to self report and record activities such as:
     a. Did you carpool or rideshare to work today?
     b. Did you bring your lunch to work today?
     c. Did you order in for lunch today?
     d. Did you carpool to lunch today?
     e. Did you wait until after 6pm to fill up your car with gas yesterday?
     f. Did you not top off the tank today when you filled up with gas?
     g. Did you wait until after 6pm yesterday to cut your grass?
     h. Did you wear your orange or red ozone alert button, if applicable, today?
     i. Did you distribute ozone information to the general public today?

j. Did you combine errands, reduce trips and limit idling yesterday?

Intranet Program has been designed and is ready for implementation upon approval from County Management.

2. **County Carpooling/Ridesharing Program:**

- Contacted the GIS department regarding mapping out addresses of all county employees
- Contacted Personnel to request employees with Catawba County addresses be shared with GIS for mapping
- Contacted WPCOG (Western Piedmont Council of Government) if they would be able to map addresses for employees not living in Catawba but surrounding counties, but will first check with personnel to see if non-Catawba County resident employee addresses can be shared for this purpose
- Obtained approval and subsequently obtained GIS Maps showing where county employees live within Catawba County as well as Burke, Caldwell, and Alexander counties to encourage employees to consider the ridesharing option.

    - Attended Air Quality Forum at Catawba Valley Community College 6/1/04-Barry Blick, Health Director of Catawba County Health Department participated as one of the presenters, discussing the physiological effects of ozone and particulate matter.

    - Developed PowerPoint presentation that outlines the health care concerns due to effects of ozone, the financial repercussions of non-attainment status, and describes the above mentioned county intranet competition for employees and the potential ridesharing program. This PowerPoint will be used as a training tool for the county employees to be educated regarding ozone reduction strategies that will be implemented.

    - Presented PowerPoint presentation to Assistant County Manager, Mick Berry 6/23/04-obtained approval to present ozone presentation to Department Heads on 7/6/04.

City of Hickory

Cal Overby, Planner for the City of Hickory reports the following progress:

The City of Hickory is in the process of putting together a press release that will be sent to all the local media: a local radio station WHKY, local newspapers Hickory Daily Record, The Charlotte Observer, and Charter Communication local television channel.

Information similar to that contained within the above referenced press release is to be included within utility billing statements that will go out to approximately 40,000 to 45,000 public utility users.

On June 15, 2004 the Hickory City Council adopted the City's updated Air Quality Plan (Revised Air Quality Plan is attached).

According to Cindy McGinnis, the Director of Piedmont Wagon Transit System, funding has been secured for the purchase of four 35-foot buses that employ Clean Diesel Engines. These buses will also be equipped with lower floors that facilitate more efficient passenger loading and unloading, which in turn reduces idling time at stops. These elements create a much more efficient and emission friendly bus. The Piedmont Wagon Transit System is also in the process of initiating an Efficiency Study that will help identify areas where transit services can be expanded as well as identifying areas where services are under utilized.

City of Lenoir

Chuck Beatty, Planning Director for the City of Lenoir reports the following progress:

Lenoir has implemented the following Air Quality Control Measures:

The black rubber roof for City Hall was replaced with white vinyl;

40 acres of land have been rezoned for high-density in-fill development;

The traffic and parking enforcement vehicle for Lenoir Police Department was replaced with a zero-emission Global Electric Motorcar;

The City Council endorsed a DOT Enhancement Grant for a 2-mile extension of the Lenoir Greenway;

The color-coded air quality flags are being flown daily at Central Fire Station and Fire Station Two.

LPD' and #039; green and #039; ticket machine now on street

Lt. Scott Brown, training officer for the Lenoir Police Department, states the new vehicle went into service last week. He described it as an energy efficient, zero-emission traffic enforcement vehicle.

The new Global Electric Motorcar, or GEM car, produced by Daimler-Chrysler, was recently purchased as a replacement for the department and #039; 1987 Cushman scooter and began operation in Lenoir and #039; uptown business district June 7. 12-volt batteries, making it quiet and efficient, while still offering the lighting and safety features required to operate on public streets and highways, power the GEM car.

For more of this story, click on or type the URL below:

http://www.newstopic.net/articles/2004/06/17/news/39greenmachine.txt

LPD's 'green' ticket machine now on street

By DAVE CRUZ, News-Topic Staff Writer, dcruz@charter.net With gasoline prices going through the roof in an area with air quality issues, the purchase of an environmentally-friendly electric car to enforce Lenoir's parking ordinances appears to have been a good decision.

Lt. Scott Brown, training officer for the Lenoir Police Department, said the new vehicle went into service last week. He described it as an energy efficient, zero-emission traffic enforcement vehicle.

"The new Global Electric Motorcar, or GEM car, produced by Daimler-Chrysler, was recently purchased as a replacement for the department's 1987 Cushman scooter and began operation in Lenoir's uptown business district June 7. The GEM car is powered by 12-volt batteries, making it quiet and efficient, while still offering the lighting and safety features required to operate on public streets and highways.

Capt. Sharon Poarch, commander of the Department's Patrol Division, said the new vehicle, having a wheelbase of only six feet, is very maneuverable.

The lighting on the vehicle makes it highly visible, she said. Higher visibility means a higher level of safety.

Brown said Parking Enforcement Officer Martin Hartso conducted extensive research into replacement possibilities for the old scooter that was becoming expensive to maintain.

"The GEM car, which was purchased for a third of what a new gasoline engine unit would cost, offered an affordable and environmentally-friendly solution," said Brown. "With the revitalization efforts in Lenoir's uptown area, the GEM parking enforcement vehicle should prove an invaluable tool in ensuring parking availability."

Poarch said the GEM was purchased at a cost of approximately $10,000. The least expensive gasoline-powered replacement for the Cushman would have cost the city about $25,000.

In addition to costing less money, Poarch said the new vehicle will be less expensive to operate. In addition to using electricity to power it instead of gasoline, the GEM has fewer moving parts and should require less maintenance than a gasoline-powered vehicle.

In addition to parking enforcement, Poarch said the new vehicle can be used to patrol events held in uptown Lenoir. The GEM is small and maneuverable enough to be operated on streets crowded with pedestrians.

The parking enforcement vehicle may be the Department's first electric-powered vehicle but it probably won't be the last, Poarch said. Police departments and other municipal agencies are looking at alternatives to polluting, expensive to operate gasoline-powered vehicles out of "absolute necessity."

According to Daimler-Chrysler, GEM vehicles are street-legal in most states where they can be driven on roadways posted up to 35 mph. The vehicles have a top speed of 25 mph and meet all safety standards established by the federal government for neighborhood electric or low-speed vehicles.

The vehicle can travel up to 15 miles on a full charge, according to Hartso. The manufacturer claims a cruising range of up to 30 miles.

"Our research shows that GEM owners use the vehicles to replace their conventional cars and trucks for the most polluting trips, short drives with cold vehicles," Richard J. Kasper, president and chief operating officer of Global Electric Motorcars, said. "That's why GEMs are having an impact in the real world in improving air quality. GEMs are recognized as zero emission vehicles by California, New York and other states."

Global Electric Motorcars, based in Sacramento, Calif., has been in business for seven years. According to a company spokesman, about 28,000 GEMs are in use across the United States and internationally, in settings such as city centers, master planned

communities, rural areas, military bases, local, state and national parks, industrial developments, airports and college and university campuses.

Working on Air Quality Plan to be adopted this year

City of Morganton

Larry Pressley, City of Morganton Engineer reports that the City of Morganton has taken the following steps to assist with ozone compliance,

1. Established communication procedures with the following:
   City of Morganton Cable TV System
   Charter Cable TV System
   News Herald
   Local radio
   To get high ozone alerts to the public.

2. Established a link on city website www.ci.morganton.nc.us for public use to track ozone readings.

3. Began developing air quality awareness action plan by gathering information from city departments and will work with WPCOG staff to draft a plan this ozone season.

4. Notified Morganton citizens thru utility bill mailings of City Pride, enclosed for your information September 2003 and July 2004 (attached).

5. City Council passed ozone resolution in March of 2004.

City of Conover

Conover's items for the UAQC Early Action Compact:

Local Control Strategy #2.

1. Include an "Air Aware" article in the upcoming summer Conover Neighbor newsletter - going out in July.
2. Public Works Day was held on May 22nd at which the Sanitation Division had a display of recycling and composting benefits and distributed pertinent information.

Ordinances are already in place that addresses Local Control Measures 7, 8, & 9 and already support and/or done #s 5, 6, 11, & 14.

Preprinted brochures from NC DAQ are being distributed.

Taylorsville

Jon Pilkenton, Planner for Taylorsville reports that the following measures have been taken since the December report:
The Town has continued its efforts to notify citizens on high ozone days, by posting notice at the Town Hall and other public places. Air Quality Color Guides are distributed throughout the town. The Public Works and Police Departments are continually educated on ways to reduce exhaust emissions into the atmosphere (reduction of idling). In the future the Town may take more steps to notify the public using radio ads and flags like those used in Caldwell County.

Working on Air Quality Plan to be adopted this year

Subject: Open Burning Regulations (This will revise Strategy #10)

North Carolina Administrative Code 15A 2D .1900 "Open Burning" was amended on May 20, 2004. The amendment is effective June 1, 2004. The most significant changes involve open burning restrictions in ozone forecasts areas. As part of the North Carolina Air Awareness Program, Meteorologists issue the forecasts at 3 p.m. every day during the ozone season (May through September) for the following day in order to allow everyone to plan the next day's operations.

15A NCAC 2D .1902 "Definitions" Item 13 states that "Ozone forecast area means for

(a) Asheville ozone forecast area: Buncombe, Haywood, Henderson, Jackson, Madison, Swain, Transylvania, and Yancey Counties;

(b) Charlotte ozone forecast area: Cabarrus, Gaston, Iredell South of Interstate 40, Lincoln, Mecklenburg, Rowan, Union, and York Counties;

(c) Hickory ozone forecast area: Alexander, Burke, Caldwell, and Catawba Counties;

(d) Fayetteville ozone forecast area: Cumberland and Harnett Counties;

(e) Triad ozone forecast area: Alamance, Caswell, Davidson, Davie, Forsyth, Guilford, Randolph, Rockingham, and Stokes Counties; and

(f) Triangle ozone forecast area: Chatham, Durham, Franklin, Johnston, Orange, and Wake Counties."

Ozone, the primary component of smog, is a colorless gas that can be harmful to humans and vegetation. Ozone is of particular concern during hot, hazy weather. Most open burning is prohibited in the above noted counties on days when the ozone forecast is "code orange", "code red", or "code purple". The Division of Air Quality discourages open burning on those days in other areas of the state. On such "orange", "red" or "purple" days, there is a high potential for ozone levels to exceed the standard. Open burning is allowed on "code green" and "code yellow" days. To hear forecasts, dial 1-888-RU4NCAIR (1-888-784-6224) and choose options for your area. This information also is available on the Internet at http://ncair.org click on the ozone map.

15A NCAC 2D .1903 prohibits the following types of otherwise allowable open burning on Ozone Action Day Code "Orange" or above during the time period covered by that forecast:

(a) Yard waste, leaves and tree branches

(b) Land clearing debris

(c) Natural disaster material (result of tornado, hurricane, flood, etc.)

(d) Fire fighter training (Live burn training)

Exceptions to prohibited open burning on code orange or above days includes the following:

(a) Camp fires and fires used solely for outdoor cooking and other recreational purposes, ceremonial occasions, or for human warmth and comfort

(b) Forest management practices acceptable to the Division of Forest Resources

(c) Agricultural practices acceptable to the Department of Agriculture

(d) Wildlife management practices acceptable to the Wildlife Resources Commission

(e) Fires for the disposal of dangerous materials when it is the safest and most practical method of disposal (Requires DAQ approval)

(f) Fires purposely set by manufacturers of fire extinguishing materials or equipment, testing laboratories, or other persons, for the purpose of testing or developing these materials or equipment in accordance with a

standard qualification program

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Newspapers in all four counties receive or have committed to check daily the Air Quality Forecast for the Day. The Lenoir News Topic has chosen to print the Daily Forecast in the paper on the front page daily. The News Topic has reported numerous informational articles and explanations concerning the air quality in the area.

The Local Weather Channel displays the Air Quality Index each day.

John Tippett, Chair of the Air Quality Committee has performed the following activities:

- ✓ Participated on a panel with other air quality specialists on June 1 at an event sponsored by the League of Women Voters, Catawba Valley Heritage Alliance, Catawba County Chamber of Commerce and the Unifour Air Quality Committee.

- ✓ Spoke to the NC Association of Lead Regional Organizations in Raleigh on June 3rd regarding our EAC process.

- ✓ May 5th met with NCDAQ staff in Raleigh (along with Kitty Barnes, Catawba County Commission Chairman, Tom Lundy, County Manager and Barry Blick, County Health Director to discuss progress on ozone and PM planning.

- ✓ Spoke to National Association of Regional Councils in Chicago on June 28th reference the EAC planning in the Unifour.

- ✓ Attended CAPCA conference in Asheville on April 15th. (Carolina's Air Pollution Control Association)

- ✓ May 12th presented to the Caldwell County Manager's (representatives in the cities in the county and the county) reference air pollution issues.

- ✓ April 5th presented information on the EAC to the Alexander County Commissioners.

- ✓ February 27th participated on conference call with DAQ and SELC on the EAC process.

The UAQC has met on the following dates since the last six-month report was submitted in December as follows:

January 27th at 3:30 PM at WPCOG
February 24th 3:30 PM at WPCOG

March 23rd at 1:30 PM at LP Frans Stadium at Winkler Park
April 27th at 10:30 AM at WPCOG
May 25th at 3:00 PM at WPCOG
June 23rd at 9:00AM at WPCOG

REGIONAL AIR QUALITY STRATEGIES

We suggest a two-pronged approach. First, we work toward minimizing the economic fallout in the short term and second we work toward solving the problem in the long term.

1. Minimize the economic fallout in the short term.
   a. We use all our political devices, US House and Senate delegations, President, Governor,

   NC General Assembly, NCDENR, local elected officials, etc., to request that the non-attainment designations not be made until June 2005, so that all of calendar 2004 data can be included (which should take us into attainment) and to request that the non-attainment boundaries be set on as small a geographic area as possible to reduce the economic impact. We should also point out that there are many federal and state air quality initiatives coming online in coming years that will address these issues (i.e. industry MACT standards, clean smokestacks, low sulfur diesel, reduction in traditional industry production, local "smart-growth"/"anti-sprawl" initiatives, end of the three-year drought, etc..)

   ACTION Items:
   1. Draft a letter to cover these points to be sent by UAQC, local governments and grass roots activists to raise the level of political pressure to state and federal elected officials and environmental and commerce administrators.
   2. A meeting will be held March 23 to brief local elected leaders and municipal managers on the issues and our strategy to address them.

3. Local county commissioners visited our delegation in Congress at the end of February and raised the concerns.

COST ESTIMATE: $ no new funding required

b. We explore our legal options. If an environmental group challenges 8-Hour Ozone level Early Action Compacts, as Southern Environmental Law Center is indicating they will, and they include PM 2.5 as their letter indicates they will, what can we do and what should we do from a legal standpoint to defend our EAC, respond to the legal challenge and try to force the federal EPA (a party to the contractual agreement, the EAC) to stand with us in defense of the EAC. What can the NC EAC's do together legally to defend them? Also, do we have any recourse to bring legal action against the EPA for the designations they make for 8-Hour Ozone and PM 2.5 non-attainment areas if we think that makes any sense down the road?

ACTION Items:

1. Retain an environmental attorney to advise us of our current options and actions we should be taking and help formulate a legal strategy on ways to challenge some of the designations and present our scientific finds and results after they are done.
2. Approach the other EAC's and see if they are interested in sharing the cost of an attorney to defend the EAC's and approach Davidson County to see if they are interested in sharing cost to defend us on PM 2.5

COST ESTIMATE: $ 25,000

c. We seek regulatory change or legislative action (whichever needed) to make sure that non-attainment designations are reviewed as often as possible so that when an area falls back into attainment, it gets the credit right away and not several years down the road.

ACTION Items:

1. Ascertain where the change needs to be made.
2. If regulatory rule changes are needed, launch political effort to affect that.
3. If legislation changes are needed, lobby Congress and General Assembly as appropriate to introduce the legislation.

COST ESTIMATE: $ no new funding required

d. We educate the public using all the media we can get on just what the size of the problem is, what the science is, or isn't, proving, what the economic ramifications are and what we are trying to do about it for our long term benefit (both economically and health wise).

ACTION Items:

1. Do press releases that explain the problem, and describe why we need to fix it (health and economics)

2. Hold public forums to discuss the problem, educate the public on what they can do to help and what our strategy is to fix the problem
3. Develop a tool box similar to the tool box of Ozone control measures that illustrates we have no idea what to do about PM 2.5

COST ESTIMATE: $10,000 (public meetings, publication of pamphlets or flyers, and possible advertising costs)

e. Staff for regional air quality efforts. This would be an air quality specialist who would be funded by local money, through the WPCOG, to handle all air quality efforts for the Greater Hickory Metro Area. This person would have responsibility for all on-going programs, for example provide staff support for UAQC, and serve as liaison with elected officials and environmental administrators on behalf of the EAC and the UAQC.

ACTION Items:
1. Hire a full time staff person based in the WPCOG to handle regional air quality for at least the four counties in the Greater Hickory Metro.

COST ESTIMATE: $100,000 (first year, salary, fringe, office)

f. Seek DOT, CMAQ (Congestion Management for Air Quality) and TEA-21 grant monies for installation of traffic light signalization controls which electronically would coordinate signals and reduce idling times of traffic on major thoroughfares.

ACTION Items:
1. Make new grant applications for grant monies now that we face non-attainment designation
2. Lobby General Assembly for legislation similar to NC Go that passed in the long session last year to let DOT use monies for that purpose.

COST ESTIMATE: $ no new funding required

2. Work toward solving the problem in the long term.
   a. We establish a scientific basis for remediating our air quality. We fund additional monitors and scientific study to base our approach to fixing the problem on sound science and real solutions. It makes more sense for us to figure out what causes the problem and how to fix the problem rather than how to avoid the designation.

      1. We would strategically place monitors around the Greater Hickory Metro region (the four counties of Caldwell, Burke, Alexander and Catawba) at locations that meet the EPA site specifications, but also logically are in the spots we expect to have the highest readings and that would give us the greatest geographical area covered. Thereby we would have real data that we could use to

lower the levels at our worst locations as well as across our four county region. These would be speciated monitors that will tell us what the particles are at what times of day. We suggest at least four, maybe six new monitors.

2. Using the data collected from the monitors placed around the region, we would hire an independent source to analyze the data for us. They would be charged with finding out:

   A. What the specific causes of our problem are regionally and by individual counties/municipalities (whatever the placement of monitors can reasonably show us) including specific particles and sources of those particles.
   B. What are the possible external sources of our problem based on the data and probable locations of specific particles we find at monitoring (does the mercury have a finger print)?
   C. What can we infer from the data from the monitors about wind and weather patterns, comparing weather history, traffic patterns, economic changes, and any other factors that logically would have an impact on the collected particles to help us understand what is causing this.

ACTION Items:

1. Hire on a consulting basis an environmental scientist/engineer who will advise us on a placement strategy for and types of new monitors, what kind of data to collect for analysis, analyze the data and recommend strategies to correct the problem.

2. Be prepared to fund up to six new speciated monitors (maybe to include ozone as well) and the monitoring costs for those monitors for the foreseeable time frame, at least next 10 years. (We should seek state and federal funds for the monitors and the monitoring, but if that fails we need to be prepared to pay for them ourselves).

COST ESTIMATE: $25,000/year for 4 years
COST ESTIMATE: $108,000 - 6 monitors ($18,000 each)
COST ESTIMATE: $112,000 annually for monitoring (2 @ $35K plus 60% benefits)

b. Study economic impact of air quality issues. This would include projecting what types of industry we expect to be coming to the region and which ones we expect to be growing, what road projects need to be done and what transportation plans have been made, what non-manufacturing economic development we expect to be coming and what residential growth we expect to be happening. This on-going study would help us understand the potential economic effects of being designated “non-attainment” (or remaining so designated) and how to target our various development efforts away from non-compliant schemes and ameliorate current deficient conditions.

ACTION Items:

1. Identify study methodology that fits the intended purpose and designate WPCOG staff to perform the on-going data collection, analysis and recommendations. Establish the study.

COST ESTIMATE: $ 45,000 year one, $90,000 year two

c. Create regional authority to manage air quality program. This authority would ideally be housed and operated under the auspices of the WPCOG and would have responsibility for operating a local environmental program. This program would include monitoring and enforcement of a regional effort to address at least PM 2.5 and Ozone, and possibly water quality and other components (sediment reduction programs, wetland buffer regulations, etc.)

ACTION Items:

1. Study other area authorities, Charlotte, Forsyth, and others to find best practices, structure and initiatives
2. Negotiate an authority to include at least the local EAC partners, but ideally all the municipal governments in the four Greater Hickory Metro counties.
3. Establish the legal structure needed to create such an authority and establish it.

COST ESTIMATE: $ 25,000

d. UAQC will partner with the local elected officials on an on-going basis to provide input and advisory support level technical and strategic advice on future actions necessary.

ACTION Items:

1. Establish a formal reporting schedule for UAQC to make periodic status reports to the elected bodies, either as part of or in addition to the regional environmental authority's reports. Perhaps annual reports that would outline current issues and efforts as well as completed projects and upcoming issues.

COST ESTIMATE: $ no new funding required

Regional Air Quality Strategies Summary

We suggest a two-pronged approach. First we work toward minimizing the economic fallout in the short term and second we work toward solving the problem in the long term.

I. Minimize the economic fallout in the short term.
ACTION ITEMS:

- Draft a letter to state and federal elected officials and administrators to delay non-attainment designations and lobby for the smallest geographic area possible.
  COST ESTIMATE: $ no new funding required
- Retain an environmental attorney to explore options and formulate a legal strategy.
  COST ESTIMATE: $
- Lobby Congress, General Assembly or Agencies to seek regulatory change or legislative actions to ensure non-attainment designations are reviewed often.
  COST ESTIMATE: $ no new funding required
- Media campaign (public forums) to educate public on the problem and strategy.
  COST ESTIMATE: $ 10,000
- Hire full time WPCOG staff person to handle regional air quality.
  COST ESTIMATE: $100,000 (annually)
- Make applications for grant monies for traffic light signalization controls and lobby General Assembly to allow DOT to use monies for this purpose.
  COST ESTIMATE: $ no new funding required

II. Work toward solving the problem in the long term.
ACTION ITEMS:

- Hire an environmental engineer consultant to establish a scientific basis for remediating our air quality and fund six new speciated monitors and scientific interpretation of resulting data.

  COST ESTIMATES:
  - $ for consulting engineer
  - $108,000 for 6 monitors
  - $112,000 annually for monitoring personnel (2)

- Initiate data collection, analysis and recommendations of economic impact of a "non-attainment" designation on the region.
  COST ESTIMATE: $ 45,000 year one, $90,000 year two
- Study other regional authorities (Charlotte, Forsyth, and Buncombe) toward creating one here to manage a local air quality program, negotiate an authority to include at least the local EAC partners, establish the legal structure needed to create such an authority and establish it.
  COST ESTIMATE: $ 25,000
- Establish a reporting schedule for UAQC to report to elected bodies.
  COST ESTIMATE: $ no new funding required

4 MODELING STATUS

4.1 Status of Current Modeling

Modeling completed to date include: the base case model evaluation/validation runs, the current year modeling runs and the 2007 future year modeling runs. The results of these modeling runs can be viewed at the NCDAQ modeling website:

http://www.cep.unc.edu/empd/projects2/NCDAQ/PGM/results/

NCDAQ still needs to complete the 2012 and 2017 future year modeling runs with the updated emission inventories.

4.2 Modeling Results

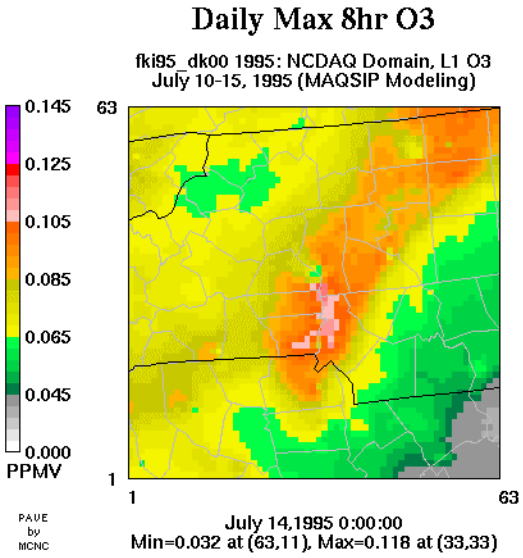
The base case model runs for all three episodes met the validation criteria set by the EPA. The model evaluation statistics can be viewed at the NCDAQ modeling website cited above.

An example (July 14, 1995) of the 8-hour ozone modeling results for the 2000 current year and 2007 future year are displayed in Figures 4.2-1 and 4.2-2, respectively. One can see a significant decrease in the 8-hour ozone maximums between the current year and the future year. These decrease were the results of the all of the controls listed in Section 3 that are expected to be in place by 2007. The 1996 and 1997 episodes show similar results. Additional modeling results can be viewed on the NCDAQ modeling website cited above.

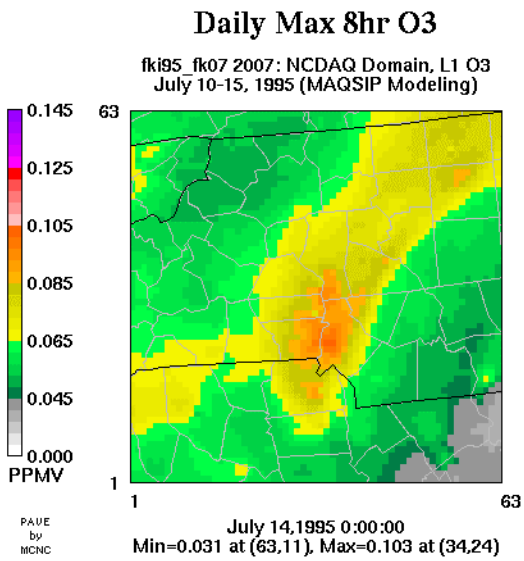
Figure 4.2-1 2000 current year 8-hour

Figure 4.2-2 2007 future year 8-hour

ozone maximum for July 14, 1995.



ozone maximum for July 14, 1995.



4.3

Geographic Area Needing Further Controls

The current draft version of EPA's attainment test was applied to the modeling results. In very basic and general language the attainment guidance states if the future year design value for a given monitor is below 0.085 parts per million (ppm) then the monitor passes the attainment test. The future year design value of a monitor is calculated by multiplying the current year design value of a monitor by a relative reduction factor (Equation 4.3-1).

$$DVF = DVC \times RRF \qquad \text{Equation 4.3-1}$$

Where DVF is the Future year Design Value,
DVC is the Current year Design Value, and
RRF is the relative reduction factor.

The Current year Design Value (DVC) in the attainment test framework is defined as the higher of: (a) the average 4th highest value for the 3-yr period used to designate an area "nonattainment", and (b) the average 4th highest value for the 3-yr period straddling the year represented by the most recent available emissions inventory. In this exercise, the DVC used to designate an area nonattainment will be 2001-2003 and the DVC straddling the year represented by the most recent available emissions inventory is 1999-2001. The higher of those two values is shown in Table 4.3-1 as the DVC.The relative reduction factor (RRF) is calculated by taking the ratio of the future year modeling 8-hour ozone daily maximum to the current year modeling 8-hour ozone daily maximum "near" the monitor averaged over all of the episode days (Equations 4.3-2).

$$RRF = \frac{\text{mean future yr. 8-hr daily max "near" monitor "x"}}{\text{mean current yr. 8-hr daily max "near" monitor "x"}} \qquad \text{Equation 4.3-2}$$

There are two ozone monitors in EAC area. These monitors are: Lenoir, located in Caldwell County; and Taylorsville, Alexander County. The location of these monitors are shown in Figure 4.3-1.

Figure 4.3-1: Unifour Area's Ozone Monitor

The results of applying the attainment test showed all monitors in the EAC area in attainment of the 8-hour ozone NAAQS in 2007. These results are displayed in Table 4.3-1 below.

Table 4.3-1 Attainment Test Results for the EAC Area

Monitor Name	DVC (ppm)	RRF	DVF (ppm)
Taylorsville	0.088	0.86	0.075
Lenoir	0.087	0.85	0.073

It appears from these results that the expected controls already in place will result in attainment of the 8-hour ozone NAAQS.

4.4 Remaining EAC Schedule

Emissions Modeling Schedule	
7/9/2004	Submit 2012 future maintenance emissions
7/16/2004	Submit 2017 future maintenance emissions

AQ Modeling Schedule	
7/23/2004	2012 future maintenance AQ runs done
8/2/2004	2017 future maintenance AQ runs done

General Schedule	
7/7/2004	Preliminary "concept" presented to AQC

7/9/2004	Share MOBILE inputs w/ DOT and MPOs (95,96,97,00,07,12,17)
7/30/2004	Draft MOBILE documentation to DOT and MPOs
8/6/2004	EAC modeling complete
8/20/2004	Comments from DOT/MPOs due
9/1/2004	Final documentation complete
9/9/2004	AQC meeting
10/19-22/2004	Public Hearings
10/29/2004	Public comment period ends
12/3/2004	Submit EAC SIPs

4.5 Anticipated Resource Constraints

The resource constraint of most concern is the funding needed to implement some of the local control measures. NCDAQ and the local EAC areas are both looking for grant opportunities to help fund EAC initiatives.

Unifour Early Action Compact
Emission Reduction Strategies

	Emission Reduction Strategy	Description and analysis of how the strategy will be implemented	Estimate of emission reductions (if available/details on status	Date of Implementation	Resource Concerns/Constraints	Geographic area and/or local government
1.	Local governments join and participate with the private sector in the NC Air Awareness Program	Division of Air Quality (DAQ) and WPCOG will encourage local governments and the private sector to join the Air Awareness Program.	Not quantifiable, but effective	2003/ongoing	Need the Division of Air Quality's support and coordination assistance	Unifour Areas All stakeholders
2.	Enhanced Ozone Awareness (Outreach-Communication): assign a local agency to develop and implement an aggressive program to educate and motivate individuals and businesses/organizations, to take actions to minimize ozone pollution. Can include a wider distribution of educational materials, increased media alerts, promoting NC Air Awareness program, etc.	All EAC members will coordinate program.	Not quantifiable, but effective	2003/ongoing	WPCOG will need education materials	Unifour Areas All stakeholders
3.	Evaluate the benefits of participation in the Clean Cities program	WPCOG will coordinate program if UAQC desires to participate	Not quantifiable, but effective	2003/ongoing	None	Unifour Areas All stakeholders
4.	City and County Energy Plan (Energy Conservation Plan): An energy plan could be developed that directs city & county departments to reduce energy use. This could include new construction standards for new buildings, retrofitting city/county buildings, schools, & street lights for energy efficiency, and energy renewable sources i.e. Sustainable Building Design Stds. "Energy Star" Program, white roofs, etc., promoting transportation alternatives, and encouraging recycling & composting.	Local governments will develop their own energy plan (possibly involve Cooperative Extension Service)	Not quantifiable, but effective	2005/ongoing	Need outside expertise to develop plans	Unifour Areas All stakeholders
5.	Assign staff to become air quality contact	Local governments will designate staff member as air quality contact person	Not quantifiable, but effective	2003/ongoing	None	Unifour Areas All stakeholders
6.	Adopt a local clean air policy & appoint a stakeholder group to identify & recommend locally feasible air improvement actions	Unifour Air Quality Committee (UAQC) will continue to serve as this group	Not quantifiable, but effective	2003/ongoing	None	Unifour Areas All stakeholders
7.	Landscaping Standards: Planted trees and vegetative landscaping reduce the need for air conditioning, reduce the heat island effect in urban areas, and reduce energy usage. Landscaping and tree ordinances could be drafted to establish minimum tree planting standards for new development; and to promoted strategic tree planting, street trees, and parking lot trees "Urban Forests Program"	All local governments should develop tree and landscaping ordinances. Local governments should educate and encourage citizen participation with tree and other vegetative plantings. Riparian buffer regulations should also be supported	Not quantifiable, but effective	2005 (Some in 2003)	None	Unifour Areas All stakeholders
8.	Implement Smart Growth, mixed use, and infill development policies.	Encourage compact development to reduce travel and promote Smart Growth concepts and redevelopment activities	Not quantifiable, but effective	2005 (Some in 2003)	None	Unifour Areas All stakeholders
9.	Develop plans to encourage bicycle and pedestrian usage.	Each EAC member will develop plans within a regional context.	Not quantifiable, but effective	2005 (Some in 2003)	None	Unifour Areas All stakeholders
10.	Discourage Open Burning on Ozone Action Days (Pledge Program) ***See amendment note in report**	Request all major land development and grading businesses to sign pledges to not engage in open burning activities on high ozone days.	Will survey participants for # of days that open burning did not occur	2003/ongoing	None	Unifour Areas All stakeholders
11.	Support Coordination of Metropolitan Planning Organization (MPO) and Rural Planning Organization (RPO) efforts	MPO and RPO will coordinate transportation and air quality planning efforts	Not quantifiable, but effective	2003	None	Unifour Areas All stakeholders
12.	Encourage the use of compressed work weeks or flexible work hours, which helps reduce traffic congestion during the peak driving hours by spreading out the number of vehicles on the roadway over a longer period of time	MPO and RPO will promote benefits of telecommuting, flexible work hours and staggered work schedules	Will determine # of participants and estimate reduction in VMT	2004	None	Unifour Areas All stakeholders
13.	Expand Transit and Ridesharing programs (carpooling/vanpooling). These are options where employers living in the same area agree to ride to work together rather than to drive their individual vehicles to work.	MPO and RPO and local governments will educate and promote these benefits Produce Maps to locate employees to assist with ridesharing programs	Will determine # of participants and estimate reduction in VMT	2004	None	Unifour Areas All stakeholders
14.	Improve traffic operational planning, engineering and maintenance for existing and future transportation infrastructure.	MPO, RPO, NCDOT, and municipalities, will expand traffic operational and engineering technologies (signal timing, signing, message boards, etc., and other intelligent transportation strategies)	Not quantifiable, but effective	2004	None	Unifour Area Municipalities & NC DOT

APPENDIX C-Tool Box

NOTE: These Control Measures and Emission Reduction Strategies were developed based upon guidance from the Unifour Air Quality Committee, other Stakeholder involvement and input from Public Meetings.

Caldwell County Air Quality Plan

Adopted
July 21, 2003

Caldwell County Air Quality Plan 2003
Action Plan

Table of Contents

Introduction

In December 2002, Caldwell County signed an Early Action Compact (EAC) in an effort to begin reducing ozone levels in the Unifour Area. One of the requirements in the EAC is to develop an Early Action Plan that will, when combined with the State and Federal measures, demonstrates attainment by the year's end 2007 of the 8-hour ozone standard and maintenance until at least 2012. Ozone is the main ingredient of smog, and presents a serious air quality problem in many parts of the United States. Even at low levels, ozone can cause a number of respiratory effects. For example, it aggravates individuals with asthma, the leading cause of absence in schools. This project will support the efforts of the Unifour Air Quality Committee (UAQC) by educating county employees, schools, and the community about ozone awareness and reduction measures. Ground level ozone, not stratospheric ozone, is the primary pollutant most likely to cause air quality problems in the Unifour counties of Catawba, Caldwell, Burke and Alexander and across all of North Carolina. It is measured 214 days each year from April to October of each year and can frequently reach levels, which exceed the EPA's new National Ambient Air Quality Standards (NAAQS) with the Clean Air Act, particularly during the warmest months of May through September. High ozone levels usually occur on hot sunny days with stagnant air, when pollutants such as nitrogen oxides and volatile organic compounds combine in the atmosphere. In the Unifour counties, coal fired power plants and vehicle emissions (88-90% of the problem) are the main contributors to the formation of ground-level ozone.

Although today's automobiles are 70 to 90 percent cleaner than their 1970 counterparts, vehicle emissions continue to be a significant cause of air pollution due to rapid increase in vehicle miles traveled since 1970. Therefore, the primary purpose of the County's Action Plan is the reduction in vehicle emissions as measured by vehicle miles traveled (VMT).

The county will partner surrounding local governments and other agencies to positively impact clean air efforts in Caldwell County, and the Unifour in an effort to avoid designation as "non-attainment." This project supports the Air Quality Control Measures as established by the Unifour Air Quality Committee (UAQC) for county action items, and the regional air quality goal to achieve and maintain clean healthful air as determined by national, state and local ambient air quality standards for the well being of its citizens, and the economic vitality of this community. Caldwell County will act proactively to achieve this goal.

Reducing ground level ozone concentrations in the region would provide the following benefits:

- Protect public health, especially for children, the elderly and asthmatics.
- Improve visibility and reduce environmental damage to plant life and ecosystems.
- Provide economic benefits through reduced health care costs, improved economic development opportunities and enhanced tourism.

Environmental & Health Issues

Air Pollution contributes to lung disease, including respiratory tract infections, asthma, and lung cancer. Lung disease claims close to 335,000 lives in the United States every year (338,890 in 1995) and is the third-leading cause of death in the country. Over the last decade, the death rate for lung disease has risen faster than that of any of the top five causes of death. In 1995, North Carolina had above average (for the United States) rates for the following lung diseases: Lung Cancer, Pneumonia, Asthma, and chronic Obstructive Pulmonary Disease (which includes chronic bronchitis and emphysema). These lung diseases account for 9,651 lung disease deaths during 1995 alone.[1] Ozone is especially harmful to young children and the elderly. According to the Environmental Protection Agency (EPA), high

[1] American Lung Association web site at http://www.lungusa.org

ozone levels can cause crop damage and suppressed growth in trees and native vegetation. Ozone can also damage elastics, textiles, dyes, electrical insulation, and fine art.

Primary Activities:

1. Provide ozone in-service training/awareness for the various county departments via staff meetings to educate county employees about ozone awareness and reduction measures. Partner with WPCOG to accomplish this goal.
2. E-mail county employees on ozone alert days. Encourage car-pooling to work and/or lunch on high ozone days.
3. Form a committee of county agency representatives to address the ozone issue/activities. Post ozone alert information at agency exits for general public information on bad air days.
4. Encourage the county to consider purchasing alternative fuel vehicles in the future if feasible.
5. Partner with the school systems to address the ozone issue/activities.
6. Partner with health care providers and non-profit organizations to address the ozone issue.
7. Coordinate a public awareness campaign about ozone, including TV, radio, web page and newspaper, and possibly a press conference or community forum to educate the public about ozone.
8. Utilize the Air Quality Control Measures for Caldwell County and support the air quality improvement actions.
9. Investigate Methane Production feasibility and pursue depending on results.
10. Fly HIGH OZONE Action Flags on Orange, Red, & Purple Coded Days.
11. Involve Chamber of Commerce and EDC in Planning Activities.

Time Line:

On-Going Activities:

1. Attend monthly Unifour Air Quality Committee meetings.
2. Utilize the Air Quality Control Measures for Caldwell County and support the air quality improvement actions.
3. Participate in Unifour Air Quality Committee (UAQC) meetings and activities.
4. Encourage the county to consider purchasing alternative fuel vehicles in the future if feasible.
5. Provide ozone alert emails countywide as needed during the ozone-forecasting season. (May through September) Include municipalities and schools.
6. Post ozone alert information at agency exits for general public notification via county ozone committee during the Ozone Forecasting Season. (May through September)
7. Form partnerships with health care providers and non-profit organizations to address the ozone issue.
8. Provide ozone information to the media during the Ozone Forecasting Season. (May through September).

By April 30th of each year: (The ozone monitoring season begins.)

1. Meet with the County Manager to approve a final plan for the year.
2. Partner with the school systems to address the ozone issue. Identify an ozone contact person(s) at each school system.
3. Provide ozone information via coloring books and crayons to elementary students.
4. Form a committee of county agency representatives and coordinate activities to address the ozone issue.
5. Begin providing ozone in-services for the various county departments via staff meetings to educate county employees, as individuals, about ozone awareness and reduction measures.
   (See Attachment 1: Handout for County Employees.) Partner with WPCOG to accomplish this goal.

By May 31st of each year: (The ozone reporting season begins.)

- **Inclusive of Previous Month's Activities**

1. Participate in the Care for the Air Day and provide Caldwell County representatives to assist.
2. Partner with school nurses and Caldwell Community College & Technical Institute Health students to offer a respiratory health class (including ozone and asthma information) to at least three 5th grade classes, one in each of the school systems, with the goal to expand to all 5th grade classes next year.
3. Work with the school system representatives and provide them with information to encourage schools to incorporate ozone awareness/education/activities into their curriculum in May and August.
4. Work with the school system representatives and provide them with information to encourage schools to participate in the ozone alert days by changing outdoor play times to earlier in the day.

By June 28th of each year:

- **Inclusive of Previous Month's Activities**

1. Provide ozone in-services for the various county departments via staff meetings to educate county employees, as individuals, about ozone awareness and reduction measures. Partner with WPCOG to accomplish this goal.

By July 31st of each year:

- **Inclusive of Previous Month's Activities**

1. Support and work with WPCOG staff to conduct a press conference or community forum to educate the public about ozone.

By August 31st of each year:

- **Inclusive of Previous Month's Activities**

1. Work with the school system representatives and provide them with information to encourage schools to incorporate ozone awareness/education/activities into their curriculum in May and August. Encourage or have a drawing contest for students.
2. Work with the school system representatives and provide them with information to encourage schools to participate in the ozone alert days by changing outdoor play times to earlier in the day.

By October 31st of each year:

- **The end of the ozone monitoring season**

1. Evaluate ozone season activities.
2. Begin planning for the NEXT ozone season.

By November 29th:

1. Begin Plan for the 2004 ozone season.

By December 31st:

1. Finalize Plan for the 2004 ozone season.

ATTACHMENT 1: Handout for County Employees

OZONE AWARENESS AND PREVENTION MEASURES

Ozone is the main ingredient of smog, and presents a serious air quality problem in many parts of the United States. Even at low levels, ozone can cause a number of respiratory effects. For example, it aggravates individuals with asthma, the leading cause of absence in schools. This project will support the efforts of the Unifour Air Quality Committee by educating county employees, schools and the community about ozone awareness and reduction measures. Public Health will partner with other health care providers and agencies to positively impact clean air efforts in Caldwell County and the Unifour in an effort to avoid designation as "non-attainment." This project supports the UAQC Control Measures to achieve and maintain clean healthful air as determined by national, state and local ambient air quality standards for the well being of its citizens, and the economic vitality of this community. Caldwell County Government will act proactively to achieve this goal.

I. County Employees (as individuals) can reduce ozone levels in our air by:

A. On the Road
1. Avoid idling and drive through locations when and where possible on high ozone days.
2. Consolidate driving trips.
3. Get regular tune-ups as part of an overall maintenance plan for your vehicle.
4. Minimize the use of air conditioning for local trips.
5. Drive at 55mph instead of 65mph to increase mileage by over 15%.
6. Consider buying new car models rated to get 35 mpg or more.

B. At Home
1. Avoid using motorized yard tools before 6pm or on high ozone days.
2. Use environmentally sound substitutes for cleaning and pest control.
3. Compost yard wastes.
4. Avoid lighter fluid when barbecuing with charcoal.
5. Insulate your home.
6. Caulk and weather-strip doors and windows.
7. Use ceiling fans vs. air-conditioning whenever possible.
8. Close off unused home areas.
9. Buy energy efficient appliances.
10. Avoid spray painting.
11. Choose water-based paints, stains, and sealers vs. oil-based products.
12. Plant trees.
13. Recycle.

ATTACHMENT 2: Agenda for County Action

OZONE AWARENESS AND PREVENTION MEASURES

Ozone is a public health issue. For example, it aggravates individuals with asthma, the leading cause of absence in schools. This project will support the efforts of the UAQC by educating county employees, schools and the community about ozone awareness and reduction measures. Public Health will partner with other health care providers and agencies to positively impact clean air efforts in Caldwell County and the Unifour in an effort to avoid designation as "non-attainment." This project supports the UAQC Control Measures and other air quality goals to achieve and maintain clean healthful air as determined by national, state and local ambient air quality standards for the well being of its citizens and the economic vitality of this community. Caldwell County Government will act proactively to achieve this goal.

II. Caldwell County Government (as an employer) can reduce ozone levels in our air by:

A. Consider providing convenient or covered parking for employees who rideshare.
B. Make sure employees are aware of teleconference facilities in the county and encourage using teleconferencing vs. driving to meetings, when feasible.
C. Encourage walking, riding a bike, or ride sharing to work.
D. Consider obtaining and promoting transit maps and schedules for nearby routes to employees.
E. Consider starting a ridesharing program, use intranet and GIS mapping to assist in this effort.
F. Offer incentives, recognition, and praise for alternatives to driving alone.
G. Consider encouraging flextime to reduce roadway congestion during peak commuting hours in accordance with county personnel policy.
H. Consider buying a bike rack for employees' use, or allowing them to park bikes safely indoors.
I. Encourage employees to bring their lunch, stay in during lunch and have it delivered, carpool to lunch, and/or walk to lunch (if possible) on high ozone days.
J. Consider delaying refueling vehicles and equipment until late in the day (after 6:00 PM).
K. Consider conversion of fleet vehicles to use alternative fuels: CNG, LNG, propane, or electricity, or retrofit upgrade diesel and hybrid.
L. Pursue feasibility of Methane Production.

Attachment 3

This is an Optional Section with Examples of General Departmental Procedures and Measures

- Educate employees, contractors, and developers on ways to be sensitive to emissions.
- All County co-workers will be encouraged to carpool on Ozone Action Days where feasible.
- Postpone or consolidate non-essential fieldwork, business errands and other travel requiring the use of County vehicles.
- All County-co-workers will be encouraged to bring their lunch to work rather than driving to a restaurant.
- Have all vehicles fueled before 6:30 AM or after 6:00 PM.
- Encourage co-workers to avoid intersections that are noted for congestion if they must travel by vehicle.
- Keep all County Vehicles properly maintained.
- Minimize warm-up time for all vehicles.
- Explore the potential of equipping some vehicles with alternate fuel retrofits.
- Police Officers not responding to calls for service or that are working details not requiring automobile usage will park their vehicles and turn off the engine, remaining visible in the community by utilizing foot patrol.
- During extremely hot weather requiring the use of air conditioning, police officers will use businesses and other sites for report writing as opposed to completing this task in their police vehicles. If temperatures are not excessive, police vehicle windows will be down for cooling as opposed to using the vehicle's air conditioning.
- Foot patrol units will be utilized during Air Alert Days.
- All personnel will be encouraged to carpool to and from work. When feasible, personnel will also carpool or vanpool to work assignments and training.
- When possible, personnel should use public transit or walk to locations within reasonable distances during and after work
- Eliminate, delay or consolidate business errands requiring the use of automobiles.
- All personnel will be encouraged to refuel business and personal vehicles after 6:00 PM.
- Detectives will car pool while conducting investigations to minimize the use of vehicles.
- Drivers Training will be limited to a minimum and when feasible, delayed until after 6:00 PM.
- All personnel will be encouraged to bring their lunch and not utilize vehicles for this purpose.

- All personnel will seek to obtain the cooperative efforts of friends, relatives, and neighbors to minimize the amount of pollution on poor air quality days.

- Completely close the fueling station during daylight hours of an air alert day. Emergency fueling could be accommodated.
- Limit or postpone the amount of test driving, idling or moving of vehicles being serviced.

- Minimize trips for parts delivery. We would consolidate our trips and also request that our vendors work with us to consolidate their deliveries to us.

- Schedule our fuel truck (for off-road equipment) to make deliveries the evening prior to the air alert day. We would also make sure that our fueling station does not receive tanker deliveries.

- Postpone all non-essential vehicle use as long as the alert is in effect, including but not limited to:
    1. Reduction in non-critical driving both on and off plant sites
    2. Carpooling or vanpooling to off-site activities, such as training, etc.
    3. Trip to obtain parts and supplies will only be made by authorization of plant supervisor.
- Lawn mowing and landscape maintenance activities will be suspended. This will apply to contract operations and county staff.
- Emergency generators will not be exercised for maintenance purposes. Generators will only run in the event of power interruption.

- Facilities that have the option of using alternate fueled equipment will do so when possible.

- Not operate motorized pesticide sprayers on these days, but utilize pump sprayers.

- Not utilize our auger on construction projects. Assign duties where hand tools are appropriate.

- We will not operate gas-powered hedge clippers on these days. Utilize hand shears.

- Minimize the use of combustion equipment (chain saws, compressors, backhoes, etc.)

- Utilize crews responsible for weed trimming and mowing for duties such as litter. This will not require small engine equipment.

- Notify mowing contractors of this condition. It is not proposed to that the department dictate a schedule.

- Combine crews working together on a project and have them ride together.

- Reschedule non-priority maintenance work to reduce vehicle use.

Departmental Coordinators	Department	Phone	Fax	E-mail	Back-up Coordinator
	Commissioners				
	Manager's Office				
	Animal Control				
	Board of Elections				
	Building Inspections				
	C.I.S.				
	Cooperative Extension				
	Emergency Management				
	Emergency Medical Services				
	Finance				
	Fire				
	G.I.S.				
	Health Department				
	Home Health				
	Human Resources				
	ICAN				
	Library				
	Planning & Development				
	Police				
	Register of Deeds				
	Sheriff				
	Social Services				
	Soil & Water Conservation				
	Taxes & Mapping				
	Veteran Services				
	Water Program				

CITY OF HICKORY
AIR QUALITY AWARENESS PROGRAM
ACTION PLAN

Prepared by the Department of Planning and Development
And Revised by Hickory City Council
June 15, 2004

Table of Contents

1. Introduction

Background

The Environmental Protection Agency (EPA) has developed new stringent standards for air quality. The air quality standards set maximum allowable levels of ground-level ozone, which is the primary pollutant in smog. Failure to meet these standards can result in health and environmental hazards to local citizens and in the reduction of federal funds. In response to these new standards, the North Carolina Department of Environment and Natural Resources (DENR), Division of Air Quality established the North Carolina Air Quality Awareness Program. The purpose of the program is to conduct an outreach effort to inform the public about air pollution and prevention.

Representatives of the various city departments collaborated in developing an air quality Action Plan, designed to educate and encourage City employees to reduce the number of vehicles and equipment being used during potentially high ozone periods. This plan outlines a number of citywide measures and specific departmental strategies to lessen vehicle and equipment usage on high ozone days. **The City's Air Quality Awareness Program's Action Plan will only be implemented on "Orange", "Red", and "Purple" Action Days (the most severe and unhealthy ozone condition days**). A code Orange Alert will be issued when ozone levels are between 88 and 100 percent of the national ozone standard. A Code Red Alert will be issued when ozone levels are above 100.

Ground level ozone, not stratospheric ozone, is the primary pollutant most likely to cause air quality problems in the Unifour counties of Catawba, Caldwell, Burke and Alexander and across all of North Carolina. It is measured 214 days each year from April to October of each year and can frequently reach levels, which exceed the EPA's new National Ambient Air Quality Standards (NAAQS) within the Clean Air Act, particularly during the warmest months of May through September. High ozone levels usually occur on hot sunny days with stagnant air, when pollutants such as nitrogen oxides and volatile organic compounds combine in the atmosphere. In the Unifour counties, vehicle emission is the main contributor to the formation of ground-level ozone. Other pollutants can be problematic as well.

Although today's automobiles are 70 to 90 percent cleaner than their 1970 counterparts, vehicle emissions continue to be a significant cause of air pollution due to rapid increase in vehicle miles traveled since 1970. In the aggregate, mobile sources pollute the most because these modes constitute the majority of all travel. In addition, diesel vehicles, including both highway and rail, contribute more to Nitrogen Oxide (Nox) emissions than gasoline powered vehicles, both on an aggregate and per mile basis. Therefore, the primary purpose of the City's Action Plan is the reduction in vehicle emissions as measured by vehicle miles traveled (VMT).

Short-Term Objectives

- To ensure that the City identifies, manages and promotes to its employees practices and procedures that control, reduce and/or eliminate harmful emissions that create ozone.
- To identify, prioritize and advocate to others in the region the importance of recognizing urban air quality issues and support actions that reduces ozone
- Reducing transportation-related emissions by improving energy efficiency in city fleets, equipments and planning policies.
- To inform and promote the awareness of the air quality issue to City co-workers and the public in Hickory in partnership with other local governments and organizations.

Long-Term Objectives

- Discouraging emission growth in the long term through land use and transportation policies.
- To encourage and partner with others in the region to support air quality initiatives.

It is important to note that local initiatives will reduce the need for state mandatory regulations.

Why do we need an Air Quality Awareness Program Action Plan?

Air pollution is an issue most of us are concerned about- after all, we all want good air to breathe. The big challenge is finding a way of involving each and every one of us in protecting air quality, because much of our city's air pollution is caused by the cumulative impact of our everyday legitimate activities. In particular, motor vehicles are responsible for a higher total percentage of air pollution in the region than that contributed by large manufacturers. (A definitive figure will be available in the next couple of months from the Division of Air Quality of the DENR).

What is an Air Quality Awareness Action Plan?

The Air Quality Awareness Action Plan for the City of Hickory will set out a framework for how we can improve air quality in the city and region.

- It will canvass the wide ranging, and often-complex issues, which we must deal with to tackle, air pollution.
- Most importantly it will provide a focus to help get the various departments involved in protecting air quality.
- It would not be a statutory policy, but will be endorsed by City Council.
- It will be a guide to influence the decisions made by the city so that as our region continues to grow and expand, it is not at the expense of our air quality.

Reducing Ground Level Ozone Concentrations

Reducing ground level ozone concentrations in the region would provide the following benefits:

- Protect public health, especially for children, the elderly and asthmatics.
- Improve visibility and reduce environmental damage to plant life and ecosystems.
- Provide economic benefits through reduced health care costs, improved economic development opportunities and enhanced tourism.

Environmental & Health Issues

Air Pollution contributes to lung disease, including respiratory tract infections, asthma, and lung cancer. Lung disease claims close to 344,000 lives in the United States every year (344,044 in 2000) and is the third-leading cause of death in the country. Over the last decade, the death rate for lung disease has risen faster than that of any of the top five causes of death. In 1995, North Carolina had above average (for the United States) rates for the following lung diseases: Lung Cancer, Pneumonia, Asthma, and chronic Obstructive Pulmonary Disease (which includes chronic bronchitis and emphysema). These lung diseases account for 9,651 lung disease deaths during 1995 alone.[1]

Ozone is especially harmful to young children and the elderly. According to the Environmental Protection Agency (EPA), high ozone levels can cause crop damage and suppressed growth in trees and native vegetation. Ozone can also damage elastics, textiles, dyes, electrical insulation, and fine art.

Ambient Air Quality Standards

The purpose of the ambient air quality standards is to establish certain maximum limits on parameters of air quality considered desirable for the preservation and enhancement of the quality of the nation's air resources.

The ambient air quality standard for ozone measured by a reference method based on Appendix D of 40 CFR Part 50 and designated according to 40 CFR Part 53 is 0.08 parts per million (ppm), daily maximum 8-hour average. The standard is obtained at an ambient air quality monitoring site when the average of the annual fourth-highest daily maximum 8-hour average ozone concentration is less than or equal to 0.08 parts per million (ppm) as determined by Appendix 1 of 40 CFR Part 50, or equivalent methods established under 40 CFR Part 53.[2]

Federal Regulations

[1] American Lung Association web site at http://www.lungusa.org
[2] North Carolina Administrative Code

The City of Hickory will be in violation of the new more restrictive ozone standard that EPA adopted in July 1997. Although the area has not been officially designated as a non-attainment area, the Action Plan is intended to demonstrate a proactive effort and a first step in minimizing public exposure to ozone and to comply with the NAAQS.

If the City is in violation of the new standard, it *could* face the following regulations:

1. **Reduction or suspension of federal transportation funding to this area.**
2. **Restrictions on the location and expansion of industry that would slow economic growth by keeping new job opportunities from coming to Hickory.**
3. **Mandatory vehicle emissions testing program in Hickory and other counties in the area that do not currently have these programs**
4. **Requiring alternative fuels for cars, which could results in higher gas and vehicle purchase prices.**

1. Notification & Incentives

Notification Process for Ozone Action Days

The following procedures will be used in the event of a Code Orange or Red Ozone Action Day.

- The Division of Air Quality will send an Air Quality Alert Forecast to the Public Information Office via e-mail by 3:00 PM on the afternoon *before* an ozone action day.
- The Public Information Office will: (1) e-mail, fax or telephone the Air Quality Coordinators (see Section 4 for contact list) before the close of the business day and (2) e-mail all co-workers with e-mail capabilities to communicate the forecast.
- Air Quality Coordinators will prominently post the alert notice in each work place.
- The Air Quality Coordinators will be responsible for monitoring their department's Ozone reduction effort.

Incentives to Participate

In an effort to promote the City's air quality (vehicle emission reduction) efforts, the following incentives will be provided to those co-workers who choose to participate in the program:

- Free Piedmont Wagon Transportation System bus pass will be provided to city co-workers to use on ozone alert days.
- The individual and department that demonstrates the greatest percentage and overall reduction in vehicle miles traveled (VMT) will be recognized.
- A raffle for prizes will be open to all participants.

3. Trip Reduction by City Co-workers

The ability of the City to reduce vehicle trips could be constrained by the lack of commuting alternatives available to co-workers. For this situation, significant trip reduction might require that the City facilitate a vanpool program. Its implementation by city co-workers will be voluntary and have the full support and encouragement of the City of Hickory. A vanpool program will help to substantially reduce the amount of vehicle emissions produced by city co-workers and will be an example of their contribution to a better quality of life in the region.

4. Air Quality Coordinators

For implementation of the Air Quality Action Plan, two city coordinators will work with the various departments to implement this program. The Air Quality Coordinators for each department will be responsible for disseminating information and for tracking their department's emission reducing efforts (primarily by monitoring VMT). The tracking procedures for the measures listed in Section 5 are provided in Section 6 (page 9). The coordinators will be expected to provide a brief presentation or update on the Air quality Awareness Program at the beginning of each summer (i.e. ozone season). The coordinators will also be responsible for posting the ozone action notice in the departments. For those departments that have additional procedures, the coordinator will be asked to provide an assessment of the costs, ease of implementation, etc. of the measures. This information will be used to modify the Action Plan if necessary, during the annual evaluation, to improve the efficiency of the Plan's programs.

City of Hickory Coordinators:

1. Mandy Pitts, Public Information Officer
2. Cal Overby, Planner

AIR QUALITY COORDINATORS					
Departmental Coordinators	**Department**	**Phone**	**Fax**	**E-mail**	**Back-up Coordinator**

Parks & Rec. Director Mack McLeod	Parks & Recreation	323-7046	323-1042	Yes	**Parks & Rec. Main. Supr.**. Eric Starnes
Exec Asst.-Planning & Dev Tom Carr	City Manager's Office	323-7405	323-7500	Yes	**Executive Asst. – Operations** Sam Chambers
Asst. City Engineer Brendon Prichard	Engineering	323-7416	323-7476	Yes	**Civil Engineer** Miles Champion
Finance Director Tim Inch	Finance/Accounting	323-7417	323-7550	Yes	**Asst. Fin. Dir.** Rodney Miller
Deputy Fire Chiefs Fred Hollar & Greg Rohr	Fire Dept.	323-7420	323-7566	Yes	**Deputy Fire Chief** George Byers
H. Resources Dir. Joan Patterson	Human Resources	323-7421	323-7550	Yes	**Training Coord.** Claudia Main
I. T. Director Jeff Brittain	Information Technology	323-7428	323-7550	Yes	**Network Admin.** Kevin Harris
Library Director Philip Cherry	Library	304-0050	323-0023	Yes	**Ref. Manager** Beth Bradshaw
Manager Cynthia McGinnis	Piedmont Wagon	464-9444	466-0570	Yes	**Admin. Tech** Dawn Kemp
Planner Cal Overby	Planning & Development	324-4651	323-7476	Yes	**Planner** Eric Ben-Davies
Police Captain Clyde Deal	Police Dept.	324-2060	324-0607	Yes	**Admin. Asst** Lisa Drum
Director Chuck Hansen	Public Services Administration	323-7570	323-7403	Yes	**Director** Chuck Hansen
Public S. Mgr. Gene Haynes	Public Utilities Administration	323-7427	323-7403	Yes	**Public S. Mgr.** Gene Haynes
Public S. Mgr. Ed Bowman	Public Works	323-7500	323-7403	Yes	**Public S. Mgr**. Ed Bowman
Fleet Manager Doug Ingle	Garage	323-7500	323-7403	Yes	**Supervisor** Danny Carver
Director Timothy B. Deike	Airport	323-7408	323-8456	Yes	**Admin. Tech.** Duncan Cavanaugh

5. General Departmental Procedures and Measures

- The City shall seek to implement a Stage II vapor recovery system.

- Join and participate in the activities of the Unifour Early Action Compact (EAC).

- Educate employees, contractors, and developers on ways to be sensitive to emissions.

- The City will explore opportunities for telecommuting. It is a strategy that improves congestion and is a result of our electronic age. Many employees can work productively away from their offices with the aid of computers, modems, telephones, and fax machines. Well-planned telecommuting can reduce the need for office space, as well as reduce congestion and air pollution. It may be used on a full-time basis or only on OADs.

- The City will seek Emission Reduction grants estimated at around $10,000.00

- All City co-workers will be encouraged to carpool or vanpool on Ozone Action Days where feasible.

- Postpone or consolidate non-essential fieldwork, business errands and other travel requiring the use of City vehicles.

- All City-co-workers will be encouraged to bring their lunch to work rather than driving to a restaurant.

- In an effort to reducing exposure to gasoline vapors the city will consider using vapor recovery system. Note that although cleaner-burning gasoline pollutes less, all gasoline vapors contain hazardous substances.

- Encourage co-workers to avoid intersections that are noted for congestion when they must travel by vehicle.

- Keep all City Vehicles properly maintained in accordance with current city maintenance schedule

- Refocus yard work to reduce the use of 2-cycle gasoline-powered lawn equipment.

- Minimize warm-up time for all vehicles.

- Explore the potential of equipping some vehicles with alternate fuel retrofits.

- Emergency generators will be test run at more appropriate time of day.

- Ensure optimal energy efficiency by city facilities through routine maintenance and when renovations occur, retrofit older facilities with systems that promote energy conservation.

- Work with contractors to ensure the energy consumption standards for newly constructed public facilities are in excess of national standards.

- Work with contractors to develop procedures to minimize the use of heavy equipment on OAD's.

6. Quantifying Reductions in Vehicle Miles Traveled

In order to determine the effectiveness of the City of Hickory's Air Quality Awareness Program, a mechanism to quantify the success has been included. Vehicle miles travel (VMT) is a quantifiable measure that is at the core of the ozone problem. Therefore, reducing the number of vehicles on the road during potentially high ozone periods can help in reducing high ozone concentrations. By monitoring the reduction in VMT, the City of Hickory will be able to quantify its reduction in automobile emissions.

The strategies to reduce VMT focus on baseline commuting VMTs and daily at-work VMTs (i.e. what a person would have driven if it were not an Ozone Action Day). Co-workers would be asked to identify the number of miles they drive to work as their baseline. Then, on the Ozone Action Day (OAD), if the co-workers carpools, vanpools, uses public transit, bikes or walks, then that co-worker's OAD miles traveled will represent a VMT reduction. The same holds true for the at-work trips. For non-participants, their baseline commuting mileage will be counted every OAD that they worked. For co-workers on travel, sick leave, or vacation, no VMTs would be recorded (either as driven or reduced). **An <u>example</u> of the OAD Survey is shown below.**

Individual Code:_____ Date_____

Name	Baseline Mileage				OAD Mileage			
	Cmute	**@ work**	**Lunch**	**Total**	**Cmute**	**@ work**	**Lunch**	**Total**
John Doe	12	**10**	**4**	**26**	**12**	**0**	**4**	**16**
Jane Doe	Travel	**-**	**-**	**0**	**-**	**-**	**-**	**0**
Sally Doe	38	**-**	**3**	**41**	**0**	**-**	**0**	**0**
Alex Doe	20	**-**	**-**	**20**	**20**	**-**	**-**	**20**
Total Baseline				**87**	**Total OAD**			**36**

VMT Reduction (%)……59%
VMT Reduction (Miles)……..51
Percent Participation……...? % of total City work force

These spreadsheets will be provided to each departmental coordinator electronically. Coordinators will post a hard copy of this spreadsheet in a common area of the department on Ozone Action Day. Co-workers will write in their mileage. Coordinators will tally the mileage reduced for that OAD and forward that number electronically to

the Planner (a citywide coordinator) who will consolidate the information from all the departments into a citywide spreadsheet.

7. Specific Departmental Procedures

In addition to the citywide co-worker measures, the individual departments have identified specific measures to implement to help reduce harmful emissions during high ozone days. The coordinators will be asked to inform their department's co-workers about these measures. If there are measures that may have a financial impact (for example, having contractors postpone work on an OAD), then the coordinator will be responsible for measuring the cost to the City where feasible. In addition, when contracts are up for bid, departments are encouraged to incorporate language in new contracts addressing the OAD and the rescheduling of work tasks.

Air alerts will be forecasted by **NC Division of Air Quality** at 3:00 PM on the day that ground level ozone levels are expected. The Air Alerts will be relayed to or obtained by the **Public Information Officer** who will relay the forecast to all departments.

The specific departmental measures are listed below.

Engineering

- If feasible, postpone construction projects that entail the usage of heavy equipment on an OAD.
- If feasible, direct contractors to avoid open burning on an OAD.
- Postpone all non-essential vehicle use on an OAD.

Planning and Development

- Develop and implement development policies which promote smart growth and infill development.
- Postpone all non-essential vehicle use on an OAD.
- Support and work in conjunction with the Unifour MPO.
- Take steps to develop facilities for bicycle and pedestrian use.
- Ensure all development activities provide landscaping and buffering in compliance with the City's Land Development Code.

Fire Department

- Upon receiving an Air Alert from the Public Information Officer, Fire Administration will notify all fire department personnel through the chain of command.
- Company officers beginning their tour of duty during the Air Alert shall:

    1. If feasible, postpone and/or reschedule inspections, pre-fire surveys, hydrant maintenance, driver training and other non-essential activities that involve driving.
    2. Refrain from using charcoal grills for station cooking.
    3. If feasible, reschedule lawn mowing until the evening.

- Personnel will be encouraged to eat at the stations and not utilize vehicles for this purpose.
- As two-cycle lawn mowers engines are replaced, four-cycle engines will be purchased.
- Depending on the location of the station, emergency generators will be tested in the evenings.
- Minimize and consolidate trips to obtain parts and supplies. This includes the delivery of supplies to the various stations.
- Office staff will strive to limit trips for business and postpone all unnecessary trips.
- There will be no changes in response to fire alarms and medical calls.

Police Department

- Officers not responding to calls for service or that are working details not requiring automobile usage will park their vehicles and turn off the engine, remaining visible in the community by utilizing foot or bike patrol.
- During extremely hot weather requiring the use of air conditioning, officers will use businesses and other sites for report writing as opposed to completing this task in their police vehicles. If temperatures are not excessive, police vehicle windows will be down for cooling as opposed to using the vehicle's air conditioning.
- All personnel will be encouraged to carpool or vanpool or utilize public transit to and from work. When feasible, personnel will also carpool or vanpool to work assignments and training.
- When possible, personnel should use public transit or walk to locations within reasonable distances during and after work.
- Eliminate, delay or consolidate business errands requiring the use of automobiles.
- All personnel will be encouraged to refuel business and personal vehicles after 1900 hours.
- Investigators will car pool while conducting investigations to minimize the use of vehicles. Evening shift detectives will be encouraged not to utilize vehicles until after 1900 hours, unless an emergency occurs.
- Drivers Training will be limited to a minimum and when feasible, delayed until after 1900 hours.

- All personnel will be encouraged to bring their lunch or eat on site locations (in lieu of driving home, etc.) and not utilize vehicles for this purpose.
- All personnel will seek to obtain the cooperative efforts of friends, relatives, and neighbors to minimize the amount of pollution on poor air quality days.
- There will be no mobile enforcement of parking regulations. This will eliminate emissions from the vehicles used to perform this function.

Public Services Department

FLEET SERVICE DIVISION

- The City shall seek to implement a Stage II Vapor Recovery System
- Limit or postpone the amount of test driving, idling or moving of vehicles being serviced. We will also seek to replace all two-cycle engines.
- Minimize trips for parts delivery. We would consolidate our trips and also request that our vendors work with us to consolidate their deliveries.
- Ensure vehicles follow established routine maintenance schedule to optimize engine performance.
- Continue use of vehicles operating on Compressed Natural Gas (CNG).
- Explore opportunities to expand the number of city-owned vehicles operating on Compressed Natural Gas (CNG).
- Ensure annual routine emissions inspections for all required vehicles.

WATER & WASTEWATER TREATMENT PLANTS

- Postpone all non-essential vehicle use as long as the alert is in effect, including but not limited to:

  1. Reduction in non-critical driving both on and off plant sites
  2. Carpooling or vanpooling to off-site activities, such as training, etc.
  3. Trip to obtain parts and supplies will only be made by authorization of plant supervisor.

- Lawn mowing and landscape maintenance activities will be suspended. This will apply to contract operations and city staff.
- Emergency generators will be test run at more appropriate time of day.
- Facilities that have the option of using alternate fueled equipment will do so when possible. The test running of emergency generators will be tied in the use of alternate fuels.

LANDSCAPE MAINTENANCE CREW

- We will not operate motorized pesticide sprayers on OAD days, but utilize pump sprayers.
- The City will consider rescheduling the use of augers on construction projects.
- The City will not operate gas-powered hedge clippers on OAD days.

CONSTRUCTION & GROUNDS MAINTENANCE CREW (Mowing)

We have limited ability to reduce production within this operation because of the tight schedule we run to meet expected intervals of mowing. If it is one day or an isolated day, we will make it a goal to lessen this operation's impact. The following are possibilities if schedule will not be adversely affected.

- The City will consider rescheduling crews responsible for weed trimming and mowing based on OAD.
- Will incorporate OAD provisions on future maintenance contracts. It is not proposed that the department dictate a schedule.
- Combine crews working together on a project and have them ride together.
- Reschedule non-essential maintenance work to reduce vehicle use.

Note: It is proposed that the department stop the operation of tractor mowers.

BUILDING SERVICES

- Reschedule non-essential maintenance work to reduce vehicle use.
- Combine crews working together on projects and have them ride together.

TRAFFIC

- Reschedule non-essential maintenance work to reduce vehicle use.
- Take steps to ensure the computerize signalization control computers are controlling signalized intersections to minimize vehicle idling.

Piedmont Wagon

- Engine warm up will not exceed five minutes
- All vehicles will be shut down at the end of each run if the wait time is greater than five minutes
- Office staff will attempt to limit trips for business and vehicle change outs to a minimum and postpone all unnecessary trips
- Vehicles will be kept tuned and tire inflation will be checked to improve miles per gallon (mpg)
- All demand response vehicles will shut down their engine if there is more than five minutes wait time between pickups.
- Exploration of expansion of transit and ride-share programs.

8. Conclusion

The Air Quality Awareness Action Plan offers background information and outlines the goal and short and long-term objectives; and proposes actions to implement those objectives. The plan will provide general and specific departmental procedures and measures and also baselines and trends of Vehicle Miles Travel (VMT) in city fleet operations. It will be dynamic and responsive, to take account of new information about air pollution as it becomes available and appropriate changes made as they relate to the management of air quality in the region.

The plan is the outcome of a broadly collaborative effort among the various departments and has developed a vision and an approach that make common sense. The process will never really stop, as the plan will be updated to keep it relevant

Appendix A
Air Quality Index Color Code Guide

Air Quality	Weather Conditions	Recommended Actions	Health Effects
Good **AQI: 0-50 (Green)**	• Cool summer • Windy conditions • Significant cloud cover • Heavy or steady precipitation	• Keep cars and boats tuned up • Use environmentally safe paints and cleaning products • Conserve electricity-set A/C to highest comfortable level	• No health effects are expected.
Moderate **AQI: 51-100 (Yellow)**	• Temperatures in the upper 70s to lower 80s • Light to moderate winds • Partly cloudy or mostly sunny skies • Chance of rain or afternoon thunderstorms	• Keep cars and boats tuned up • Use environmentally safe paints and cleaning products • Conserve electricity-set A/C to highest comfortable level	• Unusually sensitive people should consider limiting prolonged outdoor exertion.
Unhealthy For Sensitive Groups **AQI: 101-150 (Orange)**	• Temperatures in the 80s and 90s • Light winds • Mostly sunny skies • Slight chance of afternoon thunderstorms	• Limit day-time driving • Limit vehicle idling • Refuel vehicles after dusk • Don't "top off your gas" tank • Avoid congested periods • Use water-based paints • Use transit, vanpool or carpool • Bike or walk for short trips • Use newest or best maintained car	• Active children and adults, and people with respiratory disease, such as asthma, should limit prolonged outdoor exertion.

Unhealthy **AQI:151-200 (Red)**	• Hot, hazy, and humid • Stagnant air • Sunny skies • Little chance of precipitation	• Limit daytime driving • Limit vehicle idling • Refuel vehicles after dusk • Don't "top off" gas tank • Avoid congested periods • Use water-based paints • Use transit, vanpool or carpool • Bike or walk for short trips • Use newest or best maintained car • Combine trips and share rides • Postpone using gasoline mowers • Barbeque without starter fluid	• Active children and adults, and people with respiratory disease such as asthma, should avoid all outdoor exertion; everyone else, especially children, should limit outdoor exertion

Very Unhealthy **AQI: 201-300 (Purple)**	• Hot, and very hazy • Extremely stagnant air • Sunny skies • No precipitation	• Limit daytime driving • Limit vehicle idling • Refuel vehicles after dusk • Don't "top off" gas tank • Avoid congested periods • Use water-based paints • Use transit, vanpool or carpool • Bike or walk for short trips • Use newest or best maintained car • Combine trips and share rides • Postpone using gasoline mowers • Barbecue without starter fluid	• Active children and adults, and people with respiratory disease such as asthma, should avoid all outdoor exertion; everyone else, especially children, should limit outdoor exertion

AQI refer to Air Quality Index.
The weather conditions listed above are common weather types associated with the respective air quality levels. A combination of part or of all these weather conditions could lead to a certain level of observed air quality

Source: Division of Air Quality- A division of the NC Department of Environment and Natural Resources (DENR).

Appendix B
Public Outreach and Education

In addition to the City's internal policies and procedures, the City should also work to provide information to its citizens regarding air quality issues. Such measures could include periodic press releases and/or educational programs design to enlighten school age children of the importance of air quality and techniques used to maintain safe and acceptable air quality levels.

These could include the following:

1. Annual pre-ozone season press releases highlighting the dangers of ground level ozone and steps that can be taken to prevent or mitigate its presence.

2. Periodic press releases throughout the peak season to demonstrate steps being taken by the City of Hickory and how citizens of the City of Hickory can take similar measures.

3. Provide informational narratives in monthly City of Hickory publications regarding air quality issues.

4. Explore the possibility of inserting informational pamphlets in utility mailings.

5. Explore opportunities to establish partnerships with Hickory City Schools and the Catawba County Health Department to provide educational programs that can be provided to school age children.

6. Explore the development of public awareness campaigns that participate in or hold public events highlighting the values and necessities of air quality awareness.

Appendix C
Unifour Early Action Compact
Emission Control Measures

On February 17, 2004 the Hickory City Council adopted the Unifour Early Action Compact Emission Reduction Strategies. These strategies were collaboratively developed through partnership with the U.S Environmental Protection Agency, the North Carolina Division of Air Quality, and each of the local governments of the Unifour participating in the Early Action Compact. The reduction strategies are designed to mitigate diminished air quality and improve the quality of the air in an effort to provide safe and clean air for the citizens of and visitors to the Unifour.

The emission reduction strategies adopted are made up of fourteen (14) distinct measures that are to be taken to improve and maintain air quality standards within the City of Hickory and Unifour. The number list below delineates each of these strategies. The details of each of the below listed strategies can be found in Appendix D. This document outlines the description of how these strategies will be implemented as well as other information including target implementation dates and how the strategies are to be quantified.

1. Local governments join and participate with the private sector in the NC Air Awareness Program.
2. Enhanced Ozone Awareness (Outreach-Communication): assign a local agency to develop and implement an aggressive program to educate and motivate individuals and businesses/organizations, to take actions to minimize ozone pollution. Can include a wider distribution of educational materials, increased media alerts, promoting NC Air Awareness program, etc.
3. Evaluate the benefits of participation in the Clean Cities program.
4. City and County Energy Plan (Energy Conservation Plan): An energy plan could be developed that directs city & county departments to reduce energy use. This could include new construction standards for new buildings, retrofitting city/county buildings, schools, & street lights for energy efficiency, and energy renewable sources i.e. Sustainable Building Design Stds. “Energy Star” Program, white roofs, etc., promoting transportation alternatives, and encouraging recycling & composting.
5. Assign staff to become air quality contact.
6. Adopt a local clean air policy & appoint a stakeholder group to identify & recommend locally feasible air improvement actions.
7. Landscaping Standards: Planted trees and vegetative landscaping reduce the need for air conditioning, reduce the heat island effect in urban areas, and reduce energy usage. Landscaping and tree ordinances could be drafted to establish minimum tree planting standards for new development; and to promoted strategic tree planting, street trees, and parking lot trees “Urban Forests Program”.
8. Implement Smart Growth, mixed use, and infill development policies.

9. Develop plans to encourage bicycle and pedestrian usage.
10. Discourage Open Burning on Ozone Action Days (Pledge Program).
11. Support Coordination of Metropolitan Planning Organization (MPO) and Rural Planning Organization (RPO) efforts.
12. Encourage the use of compressed work weeks or flexible work hours, which helps reduce traffic congestion during the peak driving hours by spreading out the number of vehicles on the roadway over a longer period of time.
13. Expand Transit and Ridesharing programs (carpooling/vanpooling). These are options where employers living in the same area agree to ride to work together rather than to drive their individual vehicles to work.
14. Improve traffic operational planning, engineering and maintenance for existing and future transportation infrastructure.

APPENDIX D

Unifour Early Action Compact
Emission Reduction Strategies

	Emission Reduction Strategy	Description and analysis of how the strategy will be implemented	Estimate of emission reductions (if available/details on status	Date of Implementation	Resource Concerns/Constraints	Geographic area and/or local government
1.	Local governments join and participate with the private sector in the NC Air Awareness Program	Division of Air Quality (DAQ) and WPCOG will encourage local governments and the private sector to join the Air Awareness Program.	Not quantifiable, but effective	2003/ongoing	Need the Division of Air Quality's support and coordination assistance	Unifour Areas All stakeholders
2.	Enhanced Ozone Awareness (Outreach-Communication): assign a local agency to develop and implement an aggressive program to educate and motivate individuals and businesses/organizations, to take actions to minimize ozone pollution. Can include a wider distribution of educational materials, increased media alerts, promoting NC Air Awareness program, etc.	All EAC members will coordinate program.	Not quantifiable, but effective	2003/ongoing	WPCOG will need education materials	Unifour Areas All stakeholders
3.	Evaluate the benefits of participation in the Clean Cities program	WPCOG will coordinate program if UAQC desires to participate	Not quantifiable, but effective	2003/ongoing	None	Unifour Areas All stakeholders
4.	City and County Energy Plan (Energy Conservation Plan): An energy plan could be developed that directs city & county departments to reduce energy use. This could include new construction standards for new buildings, retrofitting city/county buildings, schools, & street lights for energy efficiency, and energy renewable sources i.e. Sustainable Building Design Stds. "Energy Star" Program, white roofs, etc., promoting transportation alternatives, and encouraging recycling & composting.	Local governments will develop their own energy plan (possibly involve Cooperative Extension Service)	Not quantifiable, but effective	2005/ongoing	Need outside expertise to develop plans	Unifour Areas All stakeholders
5.	Assign staff to become air quality contact	Local governments will designate staff member as air quality contact person	Not quantifiable, but effective	2003/ongoing	None	Unifour Areas All stakeholders
6.	Adopt a local clean air policy & appoint a stakeholder group to identify & recommend locally feasible air improvement actions	Unifour Air Quality Committee (UAQC) will continue to serve as this group	Not quantifiable, but effective	2003/ongoing	None	Unifour Areas All stakeholders
7.	Landscaping Standards: Planted trees and vegetative landscaping reduce the need for air conditioning, reduce the heat island effect in urban areas, and reduce energy usage. Landscaping and tree ordinances could be drafted to establish minimum tree planting standards for new development; and to promoted strategic tree planting, street trees, and parking lot trees "Urban Forests Program"	All local governments should develop tree and landscaping ordinances. Local governments should educate and encourage citizen participation with tree and other vegetative plantings. Riparian buffer regulations should also be supported	Not quantifiable, but effective	2005 (Some in 2003)	None	Unifour Areas All stakeholders
8.	Implement Smart Growth, mixed use, and infill development policies.	Encourage compact development to reduce travel and promote Smart Growth concepts and redevelopment activities	Not quantifiable, but effective	2005 (Some in 2003)	None	Unifour Areas All stakeholders
9.	Develop plans to encourage bicycle and pedestrian usage.	Each EAC member will develop plans within a regional context.	Not quantifiable, but effective	2005 (Some in 2003)	None	Unifour Areas All stakeholders
10.	Discourage Open Burning on Ozone Action Days (Pledge Program)	Request all major land development and grading businesses to sign pledges to not engage in open burning activities on high ozone days.	Will survey participants for # of days that open burning did not occur	2003/ongoing	None	Unifour Areas All stakeholders
11.	Support Coordination of Metropolitan Planning Organization (MPO) and Rural Planning Organization (RPO) efforts	MPO and RPO will coordinate transportation and air quality planning efforts	Not quantifiable, but effective	2003	None	Unifour Areas All stakeholders

12.	Encourage the use of compressed work weeks or flexible work hours, which helps reduce traffic congestion during the peak driving hours by spreading out the number of vehicles on the roadway over a longer period of time	MPO and RPO will promote benefits of telecommuting, flexible work hours and staggered work schedules	Will determine # of participants and estimate reduction in VMT	2004	None	Unifour Areas All stakeholders
13.	Expand Transit and Ridesharing programs (carpooling/vanpooling). These are options where employers living in the same area agree to ride to work together rather than to drive their individual vehicles to work.	MPO and RPO and local governments will educate and promote these benefits Produce Maps to locate employees to assist with ridesharing programs	Will determine # of participants and estimate reduction in VMT	2004	None	Unifour Areas All stakeholders
14.	Improve traffic operational planning, engineering and maintenance for existing and future transportation infrastructure.	MPO, RPO, NCDOT, and municipalities, will expand traffic operational and engineering technologies (signal timing, signing, message boards, etc., and other intelligent transportation strategies)	Not quantifiable, but effective	2004	None	Unifour Area Municipalities & NC DOT