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North Carolina Recommendation for Burke County

The purpose of this paper is to discuss the rationale for recommending the metropolitan planning boundary in Burke County, along with parts of Alexander, Catawba, and Caldwell, rather than the entire Metropolitan Statistical Area as nonattainment for the 8-hour ozone standard.

- This area has a marginal 8-hour ozone problem, with the 2000-2002 design values being 0.086 ppm at the Lenoir site (Caldwell County) and 0.091 ppm at the Taylorsville site. The 2001-2003 design values are 0.084 for the Lenoir site and 0.088 ppm for the Taylorsville site.
- A back trajectory wind analysis suggests that these sites are impacted by transport from the west and northwest, and that pollution comes over the mountains and mixes down into the valleys where the monitors are located. There are also a number of days when both Charlotte and the Triad are having impacts on these sites. For these reasons, we recommend a smaller area than the full MSA.
- Burke County has a population of 89,148. The MPO Planning boundary captures 257,572 people, of the total 341,851 people living in the four county MSA, or 75 percent of the population represented in the MPO Planning boundary.
- Based on 1997 emissions, Burke County has 15.80 tons per day of NOx and the county has 21.22 tons per day of VOC. The majority of the NOx emissions are from mobile sources – 12.26 tons per day. The combination of Federal and State rules will reduce the mobile emissions in the coming years. Only 0.35 tons per day of NOx come from point sources.
- Based on the most recent modeling analysis, North Carolina expects this region to attain by 2007.
- In conclusion, the parts of Burke County that are not included in the proposed designation are extremely rural (typical population density is 0-50 and 50-100 persons per square mile). Burke County's emissions will be reduced due to the Federal and State mobile initiatives.

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North Carolina Recommendation for Cabarrus County

The purpose of this paper is to discuss the rationale for recommending less than the entire Cabarrus County as nonattainment for the 8-hour ozone standard, which is part of the Charlotte/Gastonia/Rock Hill Metropolitan Statistical Area (MSA). This MSA County does not have a monitor located in it. The recommendation includes the entire county except for three small townships in the northeastern corner of the county located in 1 Census tract containing 50-100 people per square mile. These townships not recommended to be designated nonattainment are Rimertown, Gold Hill and Mount Pleasant.

- First, the nearest monitors to Cabarrus County are located in neighboring counties of Rowan (Enochville monitor) and Mecklenburg (County Line). Recent 8-hour modeling for 2007 show that Enochville's Design Value Future (DVF) is lowered 9 ppm from the Design Value Current (DVC) of 0.099 for the three years spanning 2001-2003. County Line monitor's DVF is lowered 6 ppm to 0.090 over the same parameters. This is a significant reduction and ozone levels realized as the state and federal control measures are implemented.
- Second, there are few major point sources within the county to control (only 2.44 tons per day of NOx come from point sources) and highway mobile is the primary NOx source in Cabarrus County (12.93 tons per day out of a total of 24.35 tons) making up more than 53.1 percent of the counties daily NOx emissions. Cabarrus County had an existing I/M program (idle only); however, the newer OBD testing for newer vehicles was introduced in July 1, 2002. Several neighboring counties have or will phase in OBD testing by January 1, 2004. These counties include Catawba, Davidson, Iredell, Rowan, Lincoln, Stanley and Union.
- Third, census population density and the extent of urbanization in Cabarrus County show that the three townships recommended to be attainment only represent 6.5 percent of all residents in the county or 8,612 out of 131,063 people. The northeastern portion of Cabarrus County has low population density, with 1 tract containing 50-100 people per square mile. Also Cabarrus County as part of the Charlotte/Gastonia/Rock Hill MSA ranks number 4 out of 5 counties with regard to the number of people commuting into the urbanized county of Mecklenburg. Only 4.8 percent of Cabarrus residents commute into Mecklenburg County daily.
- In conclusion, Cabarrus County has the very rural Census tract consisting of 3 townships in the northeastern corner of the county with population densities of 50-100 people per square mile. North Carolina believes that the Federal engine standards and fuel programs, as well as the new inspection and maintenance program that requires on-board diagnostic testing in 48 counties (OBD phased in between 2002 and 2006) will not only control mobile source NOx emissions in these counties but will have a beneficial impact on rural areas within counties and neighboring counties.

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North Carolina Recommendation for Caldwell County

The purpose of this paper is to discuss the rationale for recommending the metropolitan planning boundary in Caldwell County, along with parts of Alexander, Catawba, and Burke, rather than the entire Metropolitan Statistical Area as nonattainment for the 8-hour ozone standard.

- This area has a marginal 8-hour ozone problem, with the 2000-2002 design values being 0.086 ppm at the Lenoir site (Caldwell County) and 0.091 ppm at the Taylorsville site. The 2001-2003 design values are 0.084 for the Lenoir site and 0.088 ppm for the Taylorsville site.
- A back trajectory wind analysis suggests that these sites are impacted by transport from the west and northwest, and that pollution comes over the mountains and mixes down into the valleys where the monitors are located. There are also a number of days when both Charlotte and the Triad are having impacts on these sites. For these reasons, we recommend a smaller area than the full MSA.
- Caldwell County has the second smallest population of the four MSA counties, with 77,415 people living in the county. This compares to a population of 33,063 for Alexander County, 89,148 for Burke County, and 141,685 for Catawba County. The MPO Planning boundary captures 257,572 people, of the total 341,851 people living in the four county MSA, or 75 percent of the population represented in the MPO Planning boundary.
- Caldwell County has 9.37 tons per day of NOx and the county has 39.19 tons per day of VOC, and represents the second lowest contributor to NOx and VOC emissions of the four MSA counties. The major source sector for NOx emissions in Caldwell County is mobile sources, contributing 5.36 tons per day based on 1997 emission inventories. The mobile emissions will be reduced by the Tier 2 engine standards, low sulfur gasoline, diesel engine standards, low sulfur diesel, and the I/M program.
- Based on the most recent modeling analysis, North Carolina expects this region to attain by 2007.
- In conclusion, the areas of Caldwell County that are not included in the proposed designation are extremely rural (typical population density is 0-50 and 50-100 persons per square mile). Caldwell County is clearly a “downwind” area from the emissions of any consequence and the Lenoir monitor was sited to act as a downwind monitor for the upwind source area that North Carolina is recommending for nonattainment. Caldwell County’s emissions are expected to decrease in the future as Federal and state mobile source measures take effect.

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North Carolina Recommendation for Catawba County

The purpose of this paper is to discuss the rationale for recommending the metropolitan planning boundary in Catawba County, along with parts of Alexander, Burke, and Caldwell, rather than the entire Metropolitan Statistical Area as nonattainment for the 8-hour ozone standard.

- This area has a marginal 8-hour ozone problem, with the 2000-2002 design values being 0.086 ppm at the Lenoir site (Caldwell County) and 0.091 ppm at the Taylorsville site. The 2001-2003 design values are 0.084 for the Lenoir site and 0.088 ppm for the Taylorsville site.
- A back trajectory wind analysis suggests that these sites are impacted by transport from the west and northwest, and that pollution comes over the mountains and mixes down into the valleys where the monitors are located. There are also a number of days when both Charlotte and the Triad are having impacts on these sites. For these reasons, we recommend a smaller area than the full MSA.
- Catawba County has a population of 141,685. The MPO Planning boundary captures 257,572 people, of the total 341,851 people living in the four county MSA, or 75 percent of the population represented in the MPO Planning boundary.
- Catawba County has 121.62 tons per day of NOx (state total is 2529 tons per day) and the county has 55.09 tons per day of VOC (state total is 1842 tons per day). The majority of the NOx emissions in Catawba County are from the Marshall Steam Station, which is subject to the NOx SIP Call and the Clean Smokestacks Act. The NOx emissions from this source will be reduced from about 95 tons per day in 1997 to about 48 tons per day in 2007. In addition, the mobile emissions (15.48 tons per day of NOx in 1997) will be reduced by Federal and State control programs.
- Based on the most recent modeling analysis, North Carolina expects this region to attain by 2007.
- In conclusion, the parts of Catawba County that are not included in the proposed designation are fairly rural (typical population density is 100-250 persons per square mile). Given the impact of transported pollutants on the MPO area, the proposed area to be designated nonattainment will benefit from pollution controls in downwind areas. Emissions sources in Catawba County will be controlled by the NOx SIP Call, Clean Smokestacks Act, Federal motor vehicle control program and the State I/M program. Current modeling leads North Carolina to believe the entire MPO area will attain by 2007.

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North Carolina Recommendation for Chatham County

The purpose of this paper is to discuss the rationale for recommending the township boundaries of Baldwin, Center, New Hope, and Williams in Chatham County, rather than the entire county or the entire Metropolitan Statistical Area as nonattainment for the 8-hour ozone standard.

- First, with a design value in 2000-2002 of 0.083 ppm, and a design value in 2001-2003 of 0.082 ppm at Pittsboro site, this area already meets the 8-hour ozone standard.
- Second, the population densities are not created equal. Most of the southwest part of the Chatham County has very low population density (except Siler City) and only the northeast part of the Chatham County, which borders Wake, Durham, and Orange Counties, has relatively higher population density. The population in Chatham County grew by 27.3% between 1990 (38,759 people) and 2000 (49,329 people), and is expected to grow by 21.8% between 2000 and 2010 (projected 60,060 people). Most of the population growth in Chatham County is in the area bordering Durham and Orange Counties. In contrast, Wake County's population grew by 47.3% between 1990 (426,301 people) and 2000 (627,846 people), and is expected to grow by 36.5% between 2000 and 2010 (projected 857,054 people). The population density in Chatham County is typically 0-50 persons per square mile.
- Third, back trajectories on the days when the Pittsboro monitor is violating trace to the Triangle region, Charlotte, Triad or Virginia on the all (total 13) but 2 of the 8-hour exceedance days in 2000, 2001, and 2002.
- The majority of the NOx emissions in Chatham County are generated from point and mobile sources (19.67 tons per day from point and an additional 4.74 tons per day from mobile out of the total 28.08 tons per day). The Cape Fear Steam Station will be reducing NOx emissions under both the NOx SIP Call and the Clean Smokestacks Act. The Federal and state mobile strategies will reduce mobile emission. The I/M program will be implemented in Chatham Counties by January 2004. Low sulfur gasoline will be required statewide. For these mobile sources, North Carolina has already adopted the only available strategy. Future year modeling for 2007 indicates that all of the Triangle region is expected to attain the 8-hour ozone standard with these Federal and State control programs.
- Finally, North Carolina continues to believe this is an appropriate boundary for this region which already meets the 8-hour ozone standard.

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North Carolina Recommendation for Harnett County

The purpose of this paper is to discuss recommending Harnett County as attainment for the 8-hour ozone standard.

- The majority of the NOx emissions in Harnett County are generated from mobile and non-road mobile sources (9.07 tons per day from mobile and an additional 3.11 tons per day from non-road mobile out of the total 13.20 tons per day). There is no major point source in Harnett County (total NOx of 0.55 tons per day). The Federal and state mobile strategies will reduce the mobile emissions in Harnett County. The I/M program will be implemented in Harnett County by July 2004. Low sulfur gasoline will be required statewide. For these mobile sources, North Carolina has already adopted the only available strategy.
- Harnett County is relatively rural county with population densities typically 50-100, or 100-250 persons per square mile. The population in Harnett County grew by 34.2% between 1990 (67,833 people) and 2000 (91,025 people), and is expected to grow by 28.7% between 2000 and 2010 (projected 117,192 people). In contrast, Wake County's population grew by 47.3% between 1990 (426,301 people) and 2000 (627,846 people), and is expected to grow by 36.5% between 2000 and 2010 (projected 857,054 people). Even with the growth, Harnett County still has relatively lower population density.
- In conclusion, North Carolina continues to believe that Harnett County should not include as a nonattainment county. The emissions will be controlled by Federal and State programs, and there remain no additional control strategies to be placed on the emissions in Harnett County.

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North Carolina Recommendation for Iredell County

The purpose of this paper is to discuss the rationale for recommending the townships of Coddle Creek and Davidson Townships in Iredell County, rather than the entire county, as nonattainment for the 8-hour ozone standard. This is not an MSA county, and it does not have a monitor located in the County. The northern portion of the county is rural.

- First, this is a high commuter county into the Charlotte area along the I-77 corridor. Based on 1997 emissions inventories, Iredell County has 44.29 tons per day of NOx (state total is 2529 tons per day) and the county has 28.13 tons per day of VOC (state total is 1842 tons per day – anthropogenic only). Mobile sources represent a major NOx source in Iredell County (27.35 tons from Highway and 6.80 tons from Nonroad). This represents 77.1 percent of Iredell County's total NOx emissions per day (34.15 tons of NOx from nonroad and highway out of the county total of 44.29 tons NOx per day). In July 1, 2003 Iredell County began implementing an I/M program that requires OBD testing for model year 1996 and newer cars. Expansion of this program has or will be phased in neighboring counties in the Charlotte area by January 1, 2004. These counties include Catawba, Davidson, Iredell, Rowan, Lincoln, Stanley and Union. Combined Federal and state control programs will address these emissions including the introduction of low sulfur gasoline, which will be required statewide.
- Second, traffic patterns for Iredell County is 4,579,180 Daily VMT; however, the 2000 Census data shows Iredell County contributing only 2 percent of the commuters who drive in to Mecklenburg County to work each day, or about 9,604 people. Iredell ranks number 5 in the commuting counties into Mecklenburg and there is a substantial drop after Cabarrus County which ranks number 4. Approximately 22,693 residents of Cabarrus County drive into Mecklenburg County to work each day as compared to Iredell County's 9,604.
- Third, Iredell County does not have a monitor located in it and the nearest monitor is in neighboring Rowan County (Southeast of Iredell). Enochville monitor has a current design value (DVC) of 0.099 ppm (based on years 2001-2003). Projected 8-Hour modeling results show the Enochville monitor with a future design value (DVF) of 0.090 ppm in 2007. On days this monitor has the highest readings, the winds are generally out of the southwest, indicating that the emissions from southern Iredell County are not likely to contribute to the Enochville monitor's high ozone levels. The only major point sources to control for NOx in Iredell County is the Transco Natural Gas Pumping Station. Also the Duke Energy's Marshall facility located in neighboring Catawba County will have less regional impact because of the NOx SIP call and the Clean Smokestacks Act.
- Fourth, the nonattainment recommendations for Iredell reflect consideration of Population Density from the 2000 Census as it show the rural nature of northern Iredell County. Of the 122,660 people living in Iredell County, 39,885 people reside in the two townships recommended as nonattainment, which is 32.5 percent of the county populous. The northern portion has a low population density, with 2 tracts containing 50-100 people per square mile, and 6 tracts with 100-250 people per square mile. The northern portion also includes Statesville, where I-77 and I-40 intersect, with 1 tract containing 250-500 people per square mile, and 5 small tracts with 500-1500 people per square mile.
- In conclusion, North Carolina believes this is an appropriate boundary for a county that is not in the MSA and does not have a monitor. North Carolina believes that the majority of the commuters along the I-77 corridor are captured in the nonattainment recommendation. Further, the emission sources in Iredell County are either already controlled or will be controlled under State or Federal

regulations.

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North Carolina Recommendation for Johnston County

The purpose of this paper is to discuss the rationale for recommending the western portion of Johnston County (west of Interstate-95), rather than the entire county, as nonattainment for the 8-hour ozone standard. The recommendation is for the portion of Johnston County that covers both the monitor site, and the advance of housing developments from the Wake County (Raleigh) urban area.

- First, this area has a marginal 8-hour ozone problem, with a design value in 2000-2002 of 0.085 ppm, and a design value in 2001-2003 of 0.085 ppm.
- Second, based on the 2000 census, 121,965 people live in Johnston County while approximately 98,116 people live in the area recommended as nonattainment. The eastern portion of the County is fairly rural, with one large census tract with 0-50 people per square mile and two census tracts with 50-100 people per square mile. The two remaining census tracts all have 100-250 people per square mile. The area recommended as nonattainment is adjacent to Wake County and the monitor is located southeast of Clayton. North Carolina believes that the urbanized portion of the county has been captured in the nonattainment recommendation. Additionally, there is a large area east of I-95 and bordered by US70 and Highway 701 that includes Quincosin Swamp and Raccoon Swamp where development is not likely to ever occur due to the presence of the wetlands.
- Third, the majority of the NOx emissions in Johnston County are generated from mobile sources. Based on 1997 emissions inventories, Johnston County has 33.89 tons per day of NOx (state total is 2529 tons per day) and the county has 28.27 tons per day of VOC (state total is 1842 tons per day – anthropogenic only). The majority of the total tons per day of NOx emissions are from mobile sources (25.59 tons per day). The combined effect of Federal and State control programs will address these emissions. The NC inspection and maintenance program began in Johnston County on July 1, 2003. Low sulfur gasoline will be required statewide.
- Winds in Johnston County are climatologically from the southwest during the ozone season. With this climatological wind pattern, the county is not in an upwind sector that would routinely have an impact on air quality in the urban portion of the Raleigh/Durham/Chapel Hill MSA.
- On the limited number of days when the monitor exceeds the 8-hour standard, it appears to be measuring the Raleigh/Durham/Chapel Hill urban plume. The exceedances often coincide with a wind from the northwest. A classic example is the summer of 2002 that had an abnormally frequent northwesterly wind. The West Johnston site exceeded the 8-hour standard on 19 days that year. During summers (such as 2000, 2001 and 2003) when the climatological wind pattern dominated (southwesterly), the West Johnston site averaged less than 2 exceedance days per year. As the pollution in the Raleigh/Durham/Chapel Hill area is reduced, the monitor should observe lower ozone levels.
- Finally, North Carolina expects this area to attain by 2007 based on the most recent air quality modeling analysis. The future (2007) design value - which is based on an application of the US EPA's modeled attainment test - at the monitor in Johnston County (West Johnston) is projected to be 0.075 ppm.
- Based on the information presented above, North Carolina continues to believe this is an appropriate boundary for this region. This site is clearly a "downwind" area from the

emissions of any consequence and the West Johnston monitor was sited at that location to be the downwind monitor for the upwind source area that North Carolina is recommending for non-attainment.

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North Carolina Recommendation for Lincoln County

The purpose of this paper is to discuss the rationale for recommending less than the entire Lincoln County as nonattainment for the 8-hour ozone standard, which is part of the Charlotte/Gastonia/Rock Hill Metropolitan Statistical Area (MSA). The following areas within Lincoln County are proposed to be designated nonattainment for the 8-hour ozone standard: all parts east of South Fork of Catawba River from Catawba County Line to Highway 150 to Gaston County Line. This MSA County has the Crouse monitor located in it.

- First, this area has a marginal 8-hour ozone problem, with the Crouse monitor having a design value in 2001-2003 of 0.092 ppm. More recent 8-hour ozone-modeling results show a predicted future design value of 0.083 ppm in 2007. Control measures included in the future year modeling are the NOx SIP call, new highway and nonroad mobile engine standards, low sulfur gasoline, and the phase in of NC's OBD I/M program starting in July 2002.
- Second, Lincoln County is the least populated county of the Charlotte/Gastonia /Rock Hill MSA representing only 4.7 percent of the total MSA population as reported by the 2000 census. Lincoln County's 2000 population is 63,780 out of total of 1,334,679 in the MSA. The western portion of Lincoln has a low population density, with 2 tracts containing only 50-100 people per square mile, and 2 tracts with 100-250 people per square mile. The portion that is recommended to be designated nonattainment encompasses 7 tracts with densities of under 500 people per square mile.
- Currently there are few major point sources in Lincoln County to control. The 1997 emissions inventories have Lincoln County contributing has 10.31 tons per day of NOx (state total is 2529 tons per day) and the county has 12.15 tons per day of VOC (state total is 1842 tons per day – anthropogenic only).
- There are few major point sources in Lincoln County. Regional significant point sources are subject to the NOx SIP call and include Duke Energy's Marshall facility (neighboring Catawba County) and Transco Natural Gas Pumping Station (Iredell County). Meteorology back trajectories show winds across Lincoln County are climatologically from the southwest. The impact of future emissions reduction is captured in the 2007 model runs where the Crouse monitor is attaining the 8-hour standard.
- The majority of the NOx emissions in Lincoln County are attributed to mobile sources based on 1997 emissions inventories. Highway mobile is 3.61 tons and nonroad mobile is 2.55 tons daily out of a county total of 10.31 tons NOx per day (anthropogenic). The 2007 8-hour modeling shows that Federal and state control programs help reach attainment in Lincoln County. Also rural Lincoln County's traffic and commuting patterns do not clearly indicate that it contributes significantly to the overall mobile source NOx emission traveling into Mecklenburg County. The counties 2001 Daily VMT is 1,432,320 of which only 1.4 percent of it represents commuter miles driven into Mecklenburg County to work. This commuting information based on the 2000 census ranks Lincoln County travel to work activity last as compared to the other 5 MSA counties.
- Finally, North Carolina expects the Crouse monitor to attain by 2007 based on the most recent air quality modeling analysis. North Carolina continues to believe this is an appropriate boundary for this region with a low population density, minimal Daily VMT impact on Mecklenburg County and low design value at the monitor that is located "downwind" from emissions transported from as far away as Atlanta to regions immediately south of North Carolina's border.

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North Carolina Recommendation for Person County

The purpose of this paper is to discuss the rationale for recommending the township of Bushy Fork in Person County, rather than the entire county, as nonattainment for the 8-hour ozone standard.

- First, this area has a marginal 8-hour ozone problem, with a design value in 2000-2002 of 0.090 ppm, and a design value in 2001-2003 of 0.091 ppm.
- Second, based on 1997 emissions inventories, Person County has 221.37 tons per day of NOx (state total is 2529 tons per day) and the county has 7.11 tons per day of VOC (state total is 1842 tons per day – anthropogenic only). The majority of the NOx (217.72 tons per day) comes from two major NOx utility sources in Person County (Roxboro and Mayo facilities) that are subject to the NOx SIP Call and the Clean Smokestacks Act. The expected NOx emissions in 2007 from the Roxboro and Mayo facilities are 23 and 6 tons per day, respectively. The next largest source of NOx emissions is from mobile sources (2.14 tons per day), and the combined Federal and State control programs will address these emissions. Low sulfur gasoline will be required statewide.
- Third, 35,623 people live in Person County, 2,353 people live in the townships recommended as nonattainment. The entire county is very rural, with 4 large census tracts of 50-100 people per square mile. The two remaining small tracts have 250-500 people per square mile. The area recommended as nonattainment is adjacent to Orange County nonattainment area and the monitor is located in the Bushy Fork township.
- Winds in Person County are climatologically from the southwest during the ozone season. With this climatological wind pattern, the county is not in an upwind sector that would routinely have an impact on air quality in any portion of North Carolina. On the days when the monitor exceeds the 8-hour standard, it appears to be measuring the urban plume or pollution from the other urban areas, particularly the Triad, and on a limited number of days, the Triangle. As the pollution in the nearest urban areas is reduced, and as controls required by the NOx SIP Call and the Clean Smokestacks Act are implemented, the monitor should observe lower ozone levels.
- Finally, North Carolina expects this area to attain by 2007 based on the most recent air quality modeling analysis. The future (2007) design value - which is based on an application of the US EPA's modeled attainment test - at the monitor in Person County (Bushy Fork) is projected to be 0.078 ppm.
- Based on the information presented above, North Carolina continues to believe this is an appropriate boundary for this region. This site is clearly a "downwind" area from the emissions of any consequence and the Bushy Fork monitor was sited at that location to be the downwind monitor for the upwind source area that North Carolina is recommending for non-attainment. The county is a rural county. Additionally, the major sources in the county will be reducing the NOx emissions significantly due to compliance with the NOx SIP Call and the Clean Smokestacks Act.

North Carolina Recommendation for Randolph County

The purpose of this paper is to discuss the rationale for recommending the area north of Highway 64 and the Asheboro municipal boundary, rather than the entire county, as nonattainment for the 8-hour ozone standard.

- The 8-hour ozone problem for Randolph County is marginal with a design value of 0.088 ppm from 2000-2002 and 0.085 ppm from 2001-2003.
- Based on the 2000 census, the population in the recommended area is about 91,134 and the total population in Randolph County is 130,454. Also, North Carolina believes that this boundary captures the area from which the roughly 7.5% commuters to Guilford County drive each day to work.
- The population density in the remaining portion of Randolph County is very low, with 2 large tracts with 0-50 people per square mile and one large tract with 50-100 people per square mile.
- Regarding the meteorology, the winds are climatologically from the southwest. On the days when the monitor exceeds the 8-hour standard, it appears to be measuring the urban plume or pollution from the Greensboro/Winston-Salem/High Point and Charlotte areas. Therefore, as the pollution in the Greensboro/Winston-Salem/High Point and Charlotte areas are reduced, the monitor should observe lower ozone levels.
- The majority of the NOx emissions are from mobile and nonroad sources. Of the total 25.04 tons per day from NOx, 17.96 tons per day are from mobile and 6.44 tons per day are from nonroad. Point sources contribute only 0.05 tons per day of NOx. Federal and State control programs, such as low sulfur gasoline being required statewide, will address these NOx emissions from mobile and nonroad sources. The I/M program will be implemented in Randolph County by January 2004.
- In conclusion, based on the information presented above, North Carolina continues to believe this is an appropriate boundary for this region. North Carolina expects this area to attain by 2007 with a projected design value of 0.073 ppm.

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North Carolina Recommendation for Rowan County

The purpose of this paper is to discuss the rationale for recommending less than the entire Rowan County as nonattainment for the 8-hour ozone standard, which is part of the Charlotte/Gastonia/Rock Hill Metropolitan Statistical Area (MSA). We recommend the following five small townships in the northwestern corner of the county located in 2 Census tracts containing 50-100 people per square mile not to be designated nonattainment: Cleveland, Mount Ulla, Scotch Irish, Steele, and Unity township. This MSA County has the Enochville and Rockwell monitor located in it.

- First, this area has a moderate 8-hour ozone problem, with a design value in 2001-2003 for both monitors of 0.099 ppm. Recent future year modeling results for 2007 show the DVF value of 0.090 ppm classifying this area in the marginal category.
- Second, winds in Rowan County are climatologically from the southwest. With this climatological wind pattern, the county is not in an upwind sector that would routinely have an impact on air quality in the urban portion of the Charlotte/ Gastonia/Rock Hill MSA. On the days when the two monitors exceed the 8-hour standard, it appears to be measuring the urban plume or pollution from the Charlotte. As the pollution in the Charlotte area is reduced, the monitors should observe lower ozone levels.
- Third, based on 1997 emissions inventories, Rowan County has 47.67 tons per day of NOx (state total is 2529 tons per day) and the county has 26.70 tons per day of VOC (state total is 1842 tons per day – anthropogenic only). In Rowan County there are some major point sources subject to control. In particular, the Buck Steam Station will have controls put on to meet both the NOx SIP Call and the Clean Smokestacks Act. The impact of the Transco Natural Gas Pumping Station (located southwest of Rowan County) NOx emissions from neighboring Iredell County will be controlled under the NOx SIP Call and the Clean Smokestacks Act.
- Fourth, another major NOx emissions source in Rowan County are mobile sources (16.36 tons of the 47.67 tons come from mobile sources each day, and an additional 6.03 tons per day comes from nonroad sources). The combined Federal and state control programs will address these emissions including the introduction of low sulfur gasoline statewide. In July of 2003 Rowan County began implementing an I/M program that requires OBD testing for model year 1996 and newer cars. Expansion of this program has or will be phased in neighboring counties in this region by January 1, 2004. These counties include Catawba, Davidson, Iredell, Rowan, Lincoln, Stanley and Union.
- Fifth, the population in the 5 townships North Carolina recommends to be excluded from the nonattainment area represents 7.5 percent of the total Rowan county population. The northwest corner is a rural area as indicated in the 2 Census tracts containing 50-100 people per square mile. Traffic and commuting patterns analysis show that Rowan County ranked number 7 for commuters driving into Mecklenburg County. Only 1.0 percent of all commuters are from Rowan County. Also the expected population growth for this county between 2000 and 2010 is only16.2% as compared to Mecklenburg County (29.3 percent).
- Based on the information presented above, North Carolina continues to believe this is an appropriate boundary for this region. This site is clearly a "downwind" area from the emissions of any consequence and the Enochville and Rockwell monitors were sited at these locations to be the downwind monitor for the upwind source area that North Carolina is recommending for non-attainment.

North Carolina Recommendation for Union County

The purpose of this paper is to discuss the rationale for recommending the rural eastern portion of Union County, an MSA county and part of the Mecklenburg/Union County Metropolitan Planning Area Boundary, to be excluded from the nonattainment recommendation for the 8 hour ozone standard. The Monroe monitor is located in the County.

- First, this area has a marginal 8-hour ozone problem for the three years spanning 2001-2003 season with a current Design Value (DVC) of 0.088 ppm. More recent 8-hour ozone-modeling results show the future Design Value (DVF) in 2007 as 0.077 ppm, which is well below the standard. The control measures included in the future year modeling are the NOx SIP call, new mobile source engine standards, low sulfur gasoline, and the phase in of North Carolina's OBD I/M program implemented in July 2003.
- Second, Union County has few industrial sources with only 0.15 tons of NOx emissions per day coming from point sources out of a county total of 15.01 tons per day (Anthropogenic). The non-road and highway mobile adds up to represent the bulk of the NOx emissions (14.45 tons per day) for the county's total of 15.01 tons per day. The 8 hour modeling results, which takes into account for future growth in Daily VMT and Population, clearly shows the Monroe monitor attaining the ozone standard in 2007.
- Third, Union County ranks number 1 out of the 6 commuting counties into Mecklenburg County, contributing 5.2 percent of commuters driving to work each day. The eastern portion recommended for attainment has a low population density and accounts for only 15.7 percent of the total residents in the county. By following the MPO boundary, North Carolina believes the majority of the commuters from Union to Mecklenburg would be captured in this nonattainment boundary. Additionally, Union County already has an inspection and maintenance program to address the vehicle maintenance.
- In conclusion, because the future year 8-hour ozone modeling demonstrate that the monitor in Union County will be well below the stand, North Carolina believes this is an important consideration for setting nonattainment boundaries that exclude the less populated eastern region. Also important to consider is the effect of the Federal engine and fuel standards and the expanding new I/M program requiring on-board diagnostic testing in 48 counties (nearly half of North Carolina's 100 counties), which will continue to control mobile source emissions in counties regardless of the nonattainment designations.

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