

4.3.3 Triad Area EAC Control Measures

A. State Measures Enforceable in the Triad

- **Emission Reductions from Expanded Inspection & Maintenance Program**

The 1999 Clean Air Bill will expand the vehicle emissions inspection and maintenance program in North Carolina from 9 counties to 48 July 1, 2002 through January 1, 2006. Vehicles will be tested using the onboard diagnostic system (OBDII), an improved method of testing, which will indicate NOx emissions, among other pollutants. The previously used tailpipe test (i.e., idle test) did not measure NOx. For most of the counties in EACs, the inspection and maintenance program is above and beyond what is required federally for these areas. The exception is Forsyth and Guilford Counties which were required to have an inspection and maintenance program due to the 1-hour ozone nonattainment/maintenance status of those counties. The table below lists the phase-in schedule for the expanded inspection and maintenance program applicable to Triad EAC counties.

<i>Phase-In Date: July 1, 2002</i>
Guilford Forsyth
<i>Phase-In Date: July 1, 2003</i>
Davidson
<i>Phase-In Date: January 1, 2004</i>
Alamance Randolph
<i>Phase-In Date: July 1, 2004</i>
Rockingham
<i>Phase-In Date: January 1, 2005</i>
No EAC counties
<i>Phase-In Date: July 1, 2005</i>
Stokes Surry
<i>Phase-In Date: January 1, 2006</i>
No EAC counties

The amount of emission reductions associated with the expanded inspection and maintenance program were estimated in a series of MOBILE 6.2.03 model runs. The MOBILE runs were processed for only those Early Action Compact (EAC) counties in North Carolina that will have OBDII testing in 2007.

The study was designed to compare 2007 mobile emissions from 2 model runs. The intention of the first run was to simulate what 2007 mobile emissions would look like if the expanded inspection and maintenance program was not in place. The second run simulated the 2007 mobile emissions with the expanded inspection and maintenance program in place. The vehicle age distribution that was used for this comparison was the 2002 data since it is the most recent available data. This vehicle age distribution data is not what was used in the modeling demonstration for 2007, since the MOBILE model requires the vehicle age distribution remain constant through all of the simulations and the current year (2000) vehicle age distribution was used in the modeling. However, since these simulations were for purposes of estimating the expected reductions NCDAQ believes that using the most recent vehicle age distribution available is appropriate. The table below provides the specifics of the simulations. Please note that Guilford and Forsyth Counties' estimates included the idle test that was already in place prior to implementation of the expanded program.

Triad EAC Area						
County	RVP	I/M program modeled (w/o expansion)	I/M program modeled (with expansion)	Maximum Temp	Minimum Temp	Met Station
Forsyth	7.8	Idle test	OBDII	85.4	67.7	GSO
Guilford						
Davidson	7.8	none	OBDII	85.4	67.7	GSO
Alamance	9.0	none	OBDII	85.4	67.7	GSO
Randolph						
Rockingham						
Stokes						
Surry						
Davie	No runs were done for these counties since they will not have an I/M program.					
Caswell						
Yadkin						

The resulting emission factors for the with and without the expanded inspection and maintenance program were multiplied by the vehicle miles traveled (VMT) estimates for 2007. The table below shows the volatile organic compounds (VOCs) and nitrogen oxides (NOx) reductions resulting from the expanded inspection and maintenance program in each of the EAC counties.

Triad EAC Area		
County	VOC (tons/day)	NOx (tons/day)
Alamance	0.3	0.3
Caswell	0.0	0.0
Davidson	0.4	0.5
Davie	0.0	0.0
Forsyth	0.0	0.9
Guilford	0.0	1.3

Triad EAC Area		
County	VOC (tons/day)	NO_x (tons/day)
Randolph	0.3	0.4
Rockingham	0.2	0.3
Stokes	0.1	0.1
Surry	0.4	0.2
Yadkin	0.0	0.0
Triad Area	1.7	4.0

- **Emission Reductions from Open Burning Rule**

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. This is a mandatory no burn rule and became effective in June 2004.

The way the emissions are calculated for open burning is multiplying the rural population by an emission factor provided by the U. S. Environmental Protection Agency. To model the open burning rule, a 50% compliance/penetration/effective combined rate was assumed for only those counties in our ozone forecast areas. Statewide the reductions were 84.61 tpd CO, 5.97 tpd NO_x and 8.52 tpd VOC. For the purpose of modeling, the emissions for 2007 were all reduced by 50% since there was no way in the emission model to turn this control on or off for any given day. For the 2012 and 2017 modeling runs, it was assumed that all of the days would be below a code orange day, so no reductions were taken. The EAC counties emission reductions are listed in the table below. These emissions are in tons/day since it would be difficult to adjust these numbers to an annual number due to the ban only occurring on ozone action days. The annual emission reductions would then be dependent on the number of predicted code orange and red days, which would vary from ozone season to ozone season.

Triad EAC Area						
County	2007 Emissions Before Reduction			2007 Emissions After Reductions		
	VOC	NO _x	CO	VOC	NO _x	CO
Alamance	0.4	0.3	3.9	0.2	0.1	1.9
Caswell	0.2	0.2	2.3	0.1	0.1	1.1
Davidson	0.8	0.6	8.1	0.4	0.3	4.1
Davie	0.3	0.2	2.6	0.1	0.1	1.3
Forsyth	0.3	0.2	2.7	0.1	0.1	1.3
Guilford	0.7	0.5	6.6	0.3	0.2	3.3
Randolph	0.8	0.5	7.6	0.4	0.3	3.8
Rockingham	0.5	0.4	5.3	0.3	0.2	2.6
Stokes	0.3	0.2	3.5	0.2	0.1	1.7
Triad Area	4.3	3.0	42.5	2.1	1.5	21.3

B. Enforceable Local/Regional Initiatives

1. Continue support for PART (Piedmont Authority for Regional Transportation) the regional transportation service and planning entity - In 2003 Guilford and Forsyth counties granted PART ongoing legal authority to impose an automobile rental tax to support PART's regional work program. Newly authorized funding provided about \$2.5 million in 2003. In addition, PART secured nearly \$7 million in state and federal funds. Begun as an urban core MPO-based organization, PART's membership has now expanded to 7 Triad counties.

Implementation Dates - 2003 - Ongoing

Geographic Area - 7 counties

Responsible Party - PART and Guilford, Forsyth, Alamance, Davidson, Randolph, Rockingham and Surry counties

Reductions - Nonquantifiable. However, PART is the central connecting transportation element in linking the counties and cities in the Triad's urban core as well as planning and financing regional mass transit. In addition, PART's transportation strategies are based on land use principles in the Triad Coordinated Land Use and Transportation Policies adopted by PART and endorsed by the governing boards of 27 jurisdictions. Support for PART is further evidenced by increasing ridership on PART's transportation options, thereby reducing commuter miles and VMTs.

2. Build and Use Sidewalks, Greenways and Bicycle Routes - (See also Strategy # 16. *This strategy is partially enforceable because local government funds for many of these projects are already budgeted. Other sidewalk, greenway and bicycle routes are in capital improvements plans but not yet budgeted.*) Between March 31 2004 and December 31, 2007 local governments within the EAC will have constructed an additional 98 miles of public sidewalks, constructed an additional 14.25 miles of public linear greenways suitable for pedestrian and bicycle transportation, and established or improved an additional 190 miles of signed bicycle routes.

Greenway development will focus on segments which will extend connectivity of pedestrian and bicycle transportation routes to additional neighborhoods, institutions and activity centers (e.g. in Winston-Salem extending the Salem Creek Trail to the N.C. School of the Arts, Forsyth Technical College and the Winston Lake area.). The above figures are derived primarily from transportation plans in Greensboro, Winston-Salem and High Point.

Implementation Dates - Ongoing between March 31, 2004 and December 31, 2007.

Geographic Area - 11 county EAC area, most mileage concentrated in urban core.

Responsible Party - Each jurisdiction. These figures are derived primarily from transportation plans from Greensboro, Winston-Salem and High Point for which funding is already allocated or anticipated. (Greensboro: [2030 Greensboro Urban Area Long Range Transportation Plan](#). Actual amount to be built by 2007 is available from Greensboro Engineering & Inspection ProTrack Project Status Tracking System. Winston-Salem, page 26 2015 Greenway Plan for Winston-Salem and Forsyth County; document available on the City County Planning Board's webpage. The bicycle route estimate, from consultant recommendation for comprehensive bicycle plan, completion date Spring 2005. The sidewalk estimate, from the City's Sidewalk Bond Projects listed to be built by 2007, the Rural Hall Bicycle and Ped Plan sidewalk projects to be built by 2007, and the capital improvement funds of the other municipalities within the MPO.)

Reductions - Reductions are not quantifiable but definitely decrease VMTs, promote a healthy lifestyle and contribute toward more pedestrian friendly communities. (The Triad EAC's December 2004 report to EPA will include information on the Triad's pedestrian friendly ranking in a Surface Transportation Policy Project, along with news articles and editorials in response.)

3. Eliminate Coal Fired Boilers at R. J. Reynolds Tobacconville facility in Forsyth County - RJR has eliminated use of coal-fired boilers identified in Title 15A, North Carolina Administrative Code Chapter 2D, Section 1416 during ozone season. For purposes of determining attainment the implementation period is defined as 2004 through 2007. The "ozone season" shall be those defined in Title 15A of the North Carolina Administrative Code Chapter 2D Section 1401(a)(18) as "the period beginning May 31 and ending September 30 for 2004 and beginning May 1 and ending September 30 for all other years." The Facility's NOx allocations listed in Title 15A of the NC Administrative Code, Chapter 2D, Section 1417 that will not be needed for compliance purposes may be traded in the NOx trading program in accordance with requirements of Section 1419. This strategy was implemented in 2004 before the ozone season began. This measure will reduce NOx emissions. The attached letter from RJR, dated November 24, 2004, addresses emissions trading and net emissions as a result of retiring the Tobacconville coal-fired units. (See **Attachment A** to Triad EAC submission.)

Reduction: The reduction from this strategy has already been included in State calculations.

4. Adopt Planned Growth Measures Including Pedestrian Friendly Communities and Transportation Strategies that Promote Connectivity and Less Reliance on Automobiles (See also Strategy #25 and **Appendix B**) Some local planned growth measures are enforceable ordinances. Other ordinances provide a mechanism or incentives; they are optional and do not include penalties. **Appendix B** contains examples from selected local government ordinances, categorized as "enforceable" or "voluntary.")
5. Build A Network of Regional Park and Ride Lots - Between January 2005 and June 2007, PART and local governments within the EAC will create an average of four additional park and ride lots per year. This is a conservative estimate. Four are currently completed, and design has been completed for a fifth lot. PART was awarded \$3.5 million in Federal Transit Administration grants which cover site location and design, conducting environmental and other required approvals, construction and maintenance of lots, signage and marketing of the Park and Ride program. Commitments for the new lots do not exist at this time, but sites in Alamance, Rockingham, Davidson, Randolph and Surry counties are under active consideration. Like any kind of property development, commitments to locate, acquire, and maintain each location are negotiable. Based on experience and interest in the program, all parties believe the goal of an average of four new lots a year is reasonable.

Implementation Dates - Implementation of this strategy began in 2003 and will continue through June 2007, the end of the grant period (assuming an extension.)

Geographic Area - This strategy will be implemented in the urban core first in Guilford, Forsyth and Alamance Counties, moving then to the adjacent counties of Davidson, Rockingham and Randolph.

Responsible Party - Piedmont Authority for Regional Transportation is responsible for expenditures as required by the grant. Local governments are responsible for matching funds.

Reductions - Forsyth County Environmental Affairs Department estimates if the projected number of lots are built, 3.2 tons of NOx per year for 2007 and 1.8 tons per year of VOCs for 2007. This is based on 15 VMT/trip and a 10% increase / 5 years. The source is PART and NCDOT. Calculation method is DOT Spreadsheet.

6. Retrofit and/or Replace Diesel School Busses – School systems within the EAC will initiate programs to retrofit or replace at least 165 school busses with lower emissions equipment between March 31, 2004 and December 31 2005.

Implementation Dates - Implementation has begun in many school systems, and results will be assessed annually.

Geographic Area - 11 county EAC region.

Responsible Party - The 14 school systems within the EAC are primarily responsible. EAC also has responsibility to provide grant information and provide progress and comparative information to all school systems.

Reductions - These reductions can be quantified once information is obtained on how many of the 165 or more will be retrofits or new lower emissions buses. Figures from Guilford County schools show that: (a) Funds were awarded, contract let and approximately 123 diesel oxidation catalysts are now being installed on Guilford County school buses model year 2000-2003. (b) August 2004 48 new lower emissions buses delivered. Similar information will be gathered from the region's other school systems

7. Provide Electrification Equipment at Truck Stops - The first truck stop electrification site opened in the Triad in July 2004 in the city of Mebane at Exit 157 off Interstate 85/40. Phase I of this project has 52 electrified spaces. The in-cab service offers electrical outlets and attachments for internet, telephone and satellite TV. Funding to purchase and install the equipment was provided by a grant from the National Association of State Energy Offices to the NC Division of Air Quality. Remaining costs for installing the electrified parking spaces will be provided by IdleAire Technologies Corp., which has installed and will operate the Advanced Travel Center Electrification system. The service costs \$1.25 per hour compared to \$1.68 or more per gallon of diesel fuel. The IdleAire system costs about \$8000 per parking space but is financially self-supporting once operational

Implementation Dates - July 2004. Installation date for Phase II additional units not known at this time.

Geographic Area - Mebane, eastern portion of Triad, I-85/40 corridor

Responsible Party - IdleAire Technologies

Reductions - By not idling diesel engines 8-10 hours at a time, each electrified truck stop is projected to save 263,000 gallons of fuel annually. Each stop will prevent about 2,732 tons of carbon dioxide, 35 tons of nitrogen oxides (NOx), 15 tons of carbon monoxide, 1.8 tons of hydrocarbons, and 1 ton of particulate matter emissions from reaching the air per year.

C. Voluntary Local/Regional Initiatives

8. Reduce Fleet Emissions - Reduce aggregate fleet emissions in Triad EAC cities and counties as quickly as possible, considering public budget constraints.

- a. EAC staff will meet with fleet managers at least 3 times between October 2004 and August 2005^[HB1] to develop a process and assign responsibilities for:
 - Collecting scientific data on emissions reductions approaches and products including: (a) replacing vehicles with new lower emission models, (b) retrofits, (c) alternative fuels, and (d) retiring old high emission vehicles
 - Collecting cost information
 - Comparing costs and benefits of the various approaches and products
 - b. EAC will use this data to develop an analytical tool by March 2005^[HB2] for local government use in purchasing and decision-making to achieve maximum feasible emissions reductions by considering fleet emissions in the decision making process.^[HB3]
 - c. Tool will be made available to local governments before December 31, 2005^[HB4].
 - d. Feed results from local purchasing into the central strategic monitoring and reporting clearinghouse described in Strategy # 9.
 - e. Results will be reported to EPA annually as part of the Clearinghouse, Strategy #9.
- Evidence of local government commitment is demonstrated by endorsement resolutions approved by local governments in 11 counties. The reporting mechanism described in this strategy, and the specified time and number of deadlines demonstrate local buy-in.

Implementation Dates - The implementation date for this strategy began in October 2004 and will be completed by December 31, 2005.

Geographic Area - Strategy will be implemented in the 11 county area.

Responsible Party - Triad EAC

Reductions - Reductions are not quantifiable but are directionally strong for the following reasons: they verify and assimilate accurate information on emissions reductions methods and products; they provide information to local governments; they motivate action by giving local governments a basis for decision-making and a benchmark to compare their own with the progress of other governments in the region.

9. Develop and Maintain a Regional Emissions Reduction Clearinghouse - The EAC will develop and implement a central strategic monitoring and reporting clearinghouse function by April 2005. This function will be housed within the Piedmont Triad COG, with additional staff support provided by the Northwest Piedmont COG, Forsyth Environmental Affairs Department, and PART. The clearinghouse function will include, at a minimum, the following elements:
 - (a) Receive and compile implementation reports from local governments participating in the EAC, on the following matters:
 - (i) Public fleet vehicle purchases, with alternate/clean fuel vehicles noted.
 - (ii) Program developments intended to boost availability or utilization of public transit, including public and private employer transit pass programs, transit route extensions, transit use promotional activities, incorporation of transit stop requirements into development/zoning ordinances, and other transit promotional incentives for employers and developers.
 - (iii) Development/zoning ordinance modifications to increase sidewalk, bike path, bike route, and greenway requirements or incentives.
 - (iv) Construction and funding commitments for additional public sidewalks, bike paths, bike route improvements, and greenways, by estimated length and population served.

- (b) Publish cumulative results for the region on at least a semi-annual basis to local media, participating governments, EPA and monitoring agencies.
- (c) Compile and circulate model and innovative strategies and programs in the above areas to participating local governments on at least an annual basis. The initial distribution of these materials will be made by July 2005.

Implementation Dates - The implementation date for this strategy began in October 2004 and will be completed by December 31, 2005.

Geographic Area - Strategy will be implemented in the 11 county region

Responsible Party - The Triad EAC and participating local governments are responsible for implementation and will be accountable if not implemented by 12/31/2005.

Evidence of local government commitment is demonstrated by a specific provision in each endorsement resolution approved by local governments in 11 counties in December 2002:

"[The Triad] Early Action Plan will include a process to monitor and maintain long-term compliance with the standards [established by EPA]"

Then in May 2003 each local government approved a resolution adopting our strategies which committed each city and county to :

"Use applicable strategies as policy guidelines in decisions affecting purchasing, workplace practices, evaluation and implementation of capital projects, transportation and land use planning, and communications with its citizens."

In order to follow through on these commitments, the councils of governments, Piedmont Triad COG and Northwest Piedmont COG, incorporated this strategy into their programs of work. In the Triad region, there are no grants, MPO or other outside funds for this initiative. Thus, it is entirely supported by *significant* expenditures of local government dues to their COGs. Well over \$100,000 in unreimbursed staff time has been devoted to the EAC. This strategy falls into the "voluntary" rather than the "enforceable" category. However, as long as the incentive remains to pursue this and other strategies, local government and COG commitment can be counted on.

Reductions - Reductions are not quantifiable but are directionally strong. The purpose of this strategy is to create an information system that, although not enforceable, builds in local government accountability for emission reduction commitments made by their governing boards.

10. Increase ridership on regional (PART Express) bus services– The regional bus service travels from downtown transit centers in Greensboro, Winston-Salem and High Point to the PART regional transfer facility. There, shuttles travel to businesses and hotels in the airport area and to the airport itself. During the one year this strategy has been in effect PART has had a 52% increase in ridership over 2003. The goal was a 50% increase. Monthly ridership (on average) is 800 boardings a day for an average 20 operating days per month, this equals 16,000 boardings a month and a significant monthly reduction in miles traveled on the region's road network. Ridership goals for 2005 and 2006 have not yet been adopted; the PART staff will establish these goals in January.

Implementation Dates -Implementation for 50% ridership increase in 2004 began January 2004 and has been exceeded.

Geographic Area - Primarily Guilford and Forsyth counties

Responsible Party - PART

Reductions (2004) -

NOx reduction	7060 pounds
SOx reduction	303 pounds
CO reduction	102,053 pounds
VOC reduction	9929 pounds
PM10 reduction	-95 pounds

Assumptions: 15 VMT/trip with 16,000 trip/month = 2,880,000 VMT/yr; PART vehicles operate 205 Trips/day @ 15 VMT/trip = 738 VMT/yr; Assume NO INCREASE in ridership

Source: Forsyth County Environmental Affairs Department using STAPPNALAPCO and ICLEI's Clean Air and Climate Protection Software developed by Tonie Smith Associates Inc.

11. Expand PART Ride Sharing and Vanpooling of the Piedmont (RSVP) –RSVP provides vanpool and ride-match services to employers and employees. Less than a year ago when this strategy was first developed, the program had 20 vans. Now it has 27. RSVP now principally serves Guilford and Forsyth Counties, but it is ready to expand and will do so depending upon employee recruitment in outlying counties. Projections are that 5 new vans will be added per year in 2005 and 2006. This estimate is based on population projections, new business openings such as Dell Computer which will hire 1300 workers, and the need for increased employee recruitment in outlying counties. In addition, PART has worked in concert with other regional organizations to create of a statewide commuter information network that connects riders with transportation options. The web site is www.sharetheridenc.com

Implementation Dates - Beginning 2004 through 2007

Geographic Area - Principally Guilford and Forsyth counties with expansion on demand into Rockingham, Surry, and Davidson counties

Responsible Party - PART

Reductions - Currently, 27 vans at 14 persons per van, two trips a day, 21 days a month = 15,876 passenger trips per month. Assuming 5 new vans per year transporting 12 persons/van and 30 VMT per person per day, reductions will be 0.7 tons per year NOx and 0.7 tons per year for VOC for 2007. Calculation method: CACPS

12. Carpool – Expand carpooling through PART website sign-ups, promotions, and advertisements. This strategy also benefits from PART's participation with other regional organizations in the statewide commuter information network that connects riders with transportation options (see above). PART will work to a 1% increase per year beginning January 2004 in Guilford and Forsyth counties.

Implementation Dates - Beginning January 2004 through December 2007

Geographic Area - Triad urban core - Guilford and Forsyth counties

Responsible Party - PART

Reductions - A conservative assumption based on 5.73% carpool population, approximately 30 VMT/person/day and 1% annual increase yields 19 tons per year NOx for 2007 and 23.2 tons per year VOC for 2007. Source: 2000 census. Calculation method: CACPS

13. Initiate and Grow a Hospital Transportation Shuttle That Connects Hospitals in the Triad and Triangle Regions - This new strategy, PART Connections Express, began operation in April 2004. The express shuttle service provides trips twice a day on a fixed schedule taking residents of any Triad county to hospitals in Durham and Chapel Hill (university and veterans hospitals). Trips originate in Winston-Salem (Forsyth County) and make three stops in Guilford and Alamance counties. Families and human services transportation agencies from other counties bring riders to the collection points. Formerly, county human services transportation agencies were making multiple trips to Durham and Chapel Hill per week. Since April, passenger trips have increased from 300 to 450 a month.

Implementation Dates - Beginning 2004 and continuing through 2007

Geographic Area - 11 county region

Responsible Party - PART

Reductions - Nonquantified at this point. However, this strategy yields a savings of numerous trips per week (VMTs) by county agency vans to Durham and Chapel Hill. Now they need only link with PART Connections Express at convenient collection points, and they can remain in their counties to serve residents needing local transportation. A study, to be completed December 31, 2004, by the Transportation Institute of North Carolina A&T University will quantify the financial and miles saved value of this new regional transportation service. The study will develop a method for analyzing out-of-county transportation and its benefits. The information derived will help PART and county human services agencies attract more riders to PART Connections Express.

14. Enhance Municipal Mass Transit Facilities, Bus Stops and Accessibility - Improve existing transit systems with bus shelters, web based schedules, etc. Add bus stops for municipal bus systems at employers. Greensboro Transit Authority (GTA), Winston-Salem Transit Authority (WSTA), and High Point Transit Authority (HiTran) purchase and erect shelters and add bus stops by request - either of riders or employers. They will continue to budget funds for this purpose annually. Greensboro has a Riders' Advisory Panel that meets monthly to identify customer service needs. Greensboro and Winston-Salem have web based scheduling.

Implementation Dates - Ongoing

Geographic Area - Greensboro, Winston-Salem, High Point in Guilford and Forsyth counties.

Responsible Party - Three individual transit systems

Reductions - No quantifiable reductions. These are all efforts to increase the comfort and convenience of mass transit riders thereby increasing ridership and decrease VMTs in the three municipalities. See more in "Reductions" following Strategy #15.

15. Provide Mass Transit Incentives and Passes - By December 31, 2005, at least two of the EAC's four transit systems (Winston-Salem Transit, Greensboro Transit, High Point Transit and PART) will have initiated incentives such as employer based transit passes, passes for special populations, or other successful outreach programs with the goal of increasing transit ridership in the region by 11% between December 31, 2003 and December 31, 2005. Following are examples of current pass and incentive programs:

- High Point does not have any employer based programs or public transit pass programs.

- Winston-Salem does have a marketing and outreach program targeting employers. The notable success is one offered by the Veterans' Hospital which has resulted in a 2% increase in employee ridership since 2003
- Greensboro Transit has a variety of passes:
 - a 31 day rolling pass for unlimited rides at \$35 for adult fare.
 - a summer ozone season "buses to books" pass for students who can ride free on any route by showing their local library card.
 - GTA's Corporate Connection program provides tax deductions, up to \$65 per employee, for passes employers purchase for their employees. (No data on participation.)
 - a 180-day rolling pass, the equivalent of a semester, at a nominal fee of \$75 for college students.
 - Plans are in the works for dedicated service routes at a nominal fee for students at Greensboro's 5 colleges and universities that will provide expanded options for getting to and from classes, shopping, off campus housing, and employment.

Implementation Dates - This strategy has already begun through marketing and outreach programs at Winston-Salem Transit Authority, PART and Greensboro Transit Authority. By December 31, 2005 the EAC will verify that the overall regional goal of an 11% increase in ridership has been accomplished.

Geographic Area - Greensboro, Winston-Salem, High Point, Guilford and Forsyth counties.

Responsible Party - Each transit authority is responsible for its own outreach efforts. Consistent with Strategy # 9, the Regional Clearinghouse, the Triad EAC will obtain reports and verification of each system's progress.

Reductions - Increasing bus ridership provides many community benefits including a decrease in VMTs, promoting a healthy lifestyle and access to employment and medical services. Expanding bus ridership also goes hand-in-hand with smart growth development patterns which call for transportation services to town centers, employment centers and other densely populated areas.

NOTE: Results for Strategies #14 and #15 will be measured against ridership data. Following are partially complete numbers:

HITran - 23% increase from June 2004 - October 2004

WSTA - Total annual ridership June 2002-May 2003 2.65 million.

Total annual ridership June 2003- May 2004 2.74 million.

PART - 52 % increase in ridership from January 2004-October 2004. Average ridership September 2002 200/day; October 2003 575/day; October 2004 810/day

GTA - 2004 ridership grew 17% systemwide compared to 2003. Ridership continues to increase. Between July 2004 and October/November 2004 weekday ridership has increased 9%. Sunday service has increased 45%. In 2003 total annual ridership exceeded 2.2 million riders, a first in history of GTA.

16. Build and Use Sidewalks, Greenways and Bicycle Routes - Between March 31 2004 and December 31, 2007 local governments within the EAC will have constructed an additional 98

miles of public sidewalks, constructed an additional 14.25 miles of public linear greenways suitable for pedestrian and bicycle transportation, and established or improved an additional 190 miles of signed bicycle routes. The new or improved bicycle routes will include repair of roadway hazards specific to nonmotorized transport. Greenway and bicycle route improvements will also address security concerns of pedestrians and cyclists. Greenway development will focus on segments which will extend connectivity of pedestrian and bicycle transportation routes to additional neighborhoods, institutions and activity centers (e.g. in Winston-Salem extending the Salem Creek Trail to the N.C. School of the Arts, Forsyth Technical College and the Winston Lake area.). The above figures are derived primarily from transportation plans in Greensboro, Winston-Salem and High Point. However, projects outside the urban core have already been identified by rural transportation planners and the goal will likely be exceeded.

Implementation Dates - Ongoing between March 31, 2004 and December 31, 2007.

Geographic Area - 11 county EAC area, most mileage concentrated in urban core.

Responsible Party - Each jurisdiction. These figures are derived primarily from transportation plans from Greensboro, Winston-Salem and High Point for which funding is already allocated or anticipated. (Greensboro: [2030 Greensboro Urban Area Long Range Transportation Plan](#). Actual amount to be built by 2007 is available from Greensboro Engineering & Inspection ProTrack Project Status Tracking System. Winston-Salem, page 26 2015 Greenway Plan for Winston-Salem and Forsyth County; document available on the City County Planning Board's webpage. The bicycle route estimate, from consultant recommendation for comprehensive bicycle plan, completion date Spring 2005. The sidewalk estimate, from the City's Sidewalk Bond Projects listed to be built by 2007, the Rural Hall Bicycle and Ped Plan sidewalk projects to be built by 2007, and the capital improvement funds of the other municipalities within the MPO.)

Reductions - Reductions are not quantifiable but definitely decrease VMTs, promote a healthy lifestyle and contribute toward more pedestrian friendly communities. (The Triad EAC's December 2004 report to EPA will include information on the Triad's pedestrian friendly ranking in a Surface Transportation Policy Project, along with news articles and editorials in response.)

17. Syngenta Crop Protection: 1) Delivery vehicles are not allowed to idle in shipping and receiving area during deliveries or during pick ups. 2) Instituted temperature adjustments to reduce operations of the boilers since 2001. Temperatures are raised in the buildings after hours during the summer months. Temperatures are lowered in the buildings after hours during the winter months. 3) Improved the efficiency of boiler operations and removed one of the boilers from one of the buildings in 2001. 4) Boilers go through annual tunings as part of the preventive maintenance program to increase the efficiency of operations.

Implementation Dates - Already implemented in 2002 and 2003.

Geographic Area - Guilford County

Responsible Party -Syngenta Crop Protection

Reductions - Strategy is considered voluntary since it is not associated with an enforcement mechanism or permit status. Reductions have not been quantified. They are ongoing and do not add a new emissions reduction benefit. However, the EAC believes these actions should be acknowledged. They represent long-range corporate policy and in some cases financial investment. A return to pre-implementation status is highly improbable.

18. Energizer Battery Company, Inc. 1) Reduced fleet of vehicles by 57%. 2) 90% of fork lift trucks are now battery powered. 3) Use the smaller of two natural gas fired boilers during the months of June through October as the weather permits. 4) Test diesel powered fire pumps and natural gas powered emergency generators during the cooler morning hours only.

Implementation Dates - Implemented in 2003 and summer of 2004.

Geographic Area - Randolph County

Responsible Party -Energizer Battery

Reductions - Strategy is considered voluntary since it is not associated with an enforcement mechanism or permit status. Reductions have not been quantified. They are ongoing and do not add a new emissions reduction benefit. However, the EAC believes these actions should be acknowledged. They represent long-range corporate policy and in some cases financial investment. A return to pre-implementation status is highly improbable.

19. Duke Energy. 1) Mobile meter reading program will yield a reduction of 56 pick-up trucks per day that would normally be running or idling 6 out of 8 hours per day. 2) Instituted company-wide idling reduction guidelines for fleet vehicles in addition to the mobile meter reading program.

Implementation Dates -Mobile meter reading program implemented 2003

Idling reduction guidelines implemented summer 2004

Geographic Area - 11 counties

Responsible Party -Duke Energy

Reductions - This strategy is considered voluntary since it is not associated with an enforcement mechanism or permit status. The reductions have been quantified but are not considered to add new emissions reductions benefits. Reductions are:

- a. Mobile Meter Reading - 1308 pounds of NOx per ozone season (56 routes eliminated @ 90 miles per day. NOx emissions per vehicle = 1.1 grams per mile. Ozone Season May 1-September 30 = 153 days. Week days = 153 x 5/7 = 109 days. NOx reduced = 12 pounds per day x 109 days = 1308 pounds
 - b. Estimate 133 diesel truck engines and 483 gasoline truck engines reduce 30 minutes per day of idling. Reduced idling is assumed to produce an overall benefit in the form of lower NOx emissions but the extent can not be quantified based on information available at this time. DAQ does not have a reliable emissions factor but does recommend idling reduction as directionally correct for attaining ozone standards.
20. Idling Reduction Efforts - By December 31, 2005 three additional school systems will adopt anti-idling policies for school buses in their fleet. School systems are leaders in the Triad with anti-idling policies. Also, Duke Energy instituted an idling reduction policy for all fleet vehicles in the summer of 2004. See strategy #19. Examples of newly adopted school system anti-idling policies:
- Guilford County Schools - “When the temperature is 50 degrees or higher, upon arrival at school sites while awaiting afternoon boarding, school bus engines will be turned off and not restarted until loading is completed and buses are ready to begin the routes.” As of November 2004 Guilford County Schools transportation department has downloaded software that allows tracking of each bus to determine over use of fuel and identify violators.

- Davidson County Schools and Alamance-Burlington School System - similar policies “Five minute maximum on idling; no idling while loading or unloading on school grounds; buses should not park “nose to tail” when avoidable; buses should not park on school grounds near building air-intake systems; no bus to run without the driver being within three feet of the bus.”

Implementation Dates - 2004. At least three additional school systems by December 2005.

Geographic Area - County by county in Triad region. Three counties to date.

Responsible Party - Triad EAC to monitor and promote. Individual county school systems to adopt and monitor.

Reductions - This is a potentially quantifiable reduction but no calculations have been run to date. Reduced idling results directly in reduced diesel emissions.

21. Implement energy efficiency in operation and design of facilities, purchase and use of equipment
 - Principles include: a) use of design and construction standards for energy efficient buildings, b) retrofitting public buildings and schools for energy efficiency, c) seeking out and purchasing energy efficient products, d) using programmable thermostats and lighting to lessen use when the office is closed, e) rescheduling nonessential operations (lawn maintenance, outdoor painting, paving) to non-peak ozone times.

Implementation Dates - Implemented 2003 - 2004 in High Point municipal buildings, Davidson County office buildings, Guilford County schools, Rockingham County schools and City of Asheboro (Randolph County) municipal buildings.

Geographic Area - Selectively in Guilford, Davidson, Rockingham and Randolph counties

Responsible Party - Individual jurisdictions

Reductions - Reductions in fuel, electricity and other energy costs have been identified by local governments and their vendors, such as Johnson Controls, and their architects and engineers. This has not been quantified as emissions reductions. This strategy is directionally strong because of the linkage between reduced energy use and emissions. There is no vehicle to make this an enforceable or mandatory strategy for local governments. However, the EAC, through the COGs, will continue to advocate this strategy with local government managers

22. E-government / increase available locations. Provide telephone and web-based services, both for information and transactions and/or multiple locations for payments, etc. Implemented in City of Thomasville in Davidson County. Others with telephone and electronic e-bill pay will be identified.

Implementation Dates - 2003 in City of Thomasville, Davidson County

Geographic Area - Thomasville, Davidson County

Responsible Party - EAC and COGs will advocate

Reductions - A directionally strong strategy because it saves VMTs for those who often pay in person at the municipal or county building.

23. Use Intelligent Transportation Systems (ITS) – Local transportation departments to use detection loops and other systems which monitor traffic. The system provides drivers with information such as lane closures, traffic delays and is used to reduce non-recurring congestion and associated emissions.

Implementation Dates - Already implemented in Greensboro, Winston-Salem and High Point; incorporated into their long-range transportation updates. Funding to expand these systems will be forthcoming and is based on each MPOs Long-Range Transportation Plan.

Geographic Area - MPO area for Greensboro, Winston-Salem, and High Point.

Responsible Party - Each MPO

Reductions - Nonquantified but these measures reduce congestion and vehicle idling, leading to lower emissions.

24. Direct Deposit - Offer employees direct deposit of pay checks. A sampling of local governments in the region shows 3 of 4 counties contacted and 3 of 5 larger cities have mandatory direct deposit. The remaining 3 governments in the contact group have voluntary direct deposit; 2 have 90% participation and 1 has 60% participation.

Implementation Dates - Implemented in various jurisdictions in 2002, 2003 and 2004

Geographic Area - Various jurisdictions in Guilford, Forsyth, Randolph, and Davidson counties

Responsible Party - Each jurisdiction. EAC and COGs will advocate for increased implementation.

Reductions - Nonquantifiable but this saves each employee at least one vehicle errand per pay period.

25. Adopt Planned Growth Measures Including Pedestrian Friendly Communities and Transportation Strategies that Promote Connectivity and Less Reliance on Automobiles -

Throughout the region Triad local governments have adopted and are formulating new comprehensive development plans and unified development ordinances that incorporate smart growth principles. The development ordinances, typically zoning and subdivision ordinances, implement principles in their communities' comprehensive plans. The ordinances provide for street connectivity, more sidewalks, traditional neighborhood developments (TNDs), mixed use and infill development, and landscaping. Some of these provisions are required (enforceable), and others are optional (voluntary). The same smart growth principles found in the comprehensive plans and zoning and subdivision provision are integrated into the region's four MPO multi modal transportation plan updates. In addition, 27 local governments have adopted PART's Land Use and Transportation Principles. These principles serve as a regional guide to link land use and transportation planning.

By way of example, **Attachment B** to this submission responds to requests for details, demonstrations of commitment, and ordinances that either require or provide incentives for smart growth principles.

NOTE: On November 17, Greensboro's Southside neighborhood was announced as one of EPA's five winners of the 2004 National Awards for Smart Growth Achievement. Greensboro's Department of Housing and Community Development developed a Traditional Neighborhood District Ordinance to assist redevelopment of this 10 acre project. Southside is a five- to ten-minute walk from the central business district and includes single-family homes, two-family homes, townhouses, restored historic homes, and live/work units.

Implementation Dates - Ordinances cited in **Attachment B** have been adopted in 2003 and 2004 by the jurisdictions identified.

Geographic Area - Ordinances with provisions similar to those cited below are found in 8 of the 11 Triad counties.

Responsible Party - Individual jurisdictions

Reductions - As recommended in the EPA guidance, these measures reduce reliance on automobiles, make walking to destination points more convenient, promote infill and mixed uses and reduce sprawl, and require tree planting and preservation. These are long-term strategies to reduce emissions and provide a greener environment.

26. Increase Use of Biodiesel Fuel in the Region -

- a) The City of Greensboro's use of up to 1.5 million gallons of B20 has been noted in previous submissions. As of November 2004, two local universities (UNCG and NC A&T University) have agreed to start using biodiesel in their refuse trucks. UNCG has designed a logo to be applied to city and university vehicles. Local media will be contacted once the logo is finalized. In addition, both universities are working on educational materials. These efforts will provide another avenue for advertising the benefits of biodiesel.
- (b1) One of North Carolina's major distributors of biodiesel will secure property in the Triad by the Spring of 2005 as a wholesale distribution facility.
- (b2) Assuming this wholesale outlet for biodiesel is established, it is likely that a major corporation with an extensive fleet in the region will work with the EAC to purchase biodiesel for its Triad based fleet, as it has done elsewhere in the state. Demand numbers have already been developed. The EAC acknowledges that use of biodiesel by this corporate fleet depends on financial and other considerations and is only a potential strategy.

Implementation Dates - Greensboro biodiesel, November 2002. Universities and biodiesel, November 2004

Geographic Area - Guilford County, to date

Responsible Party - City of Greensboro and universities

Reductions - Not quantified at this time. However, in general the following reductions result from use of biodiesel:

-30% total unburned hydrocarbons	-20% sulfates
-20% carbon monoxide	-13% PAH
-22% particulate matter	-50% nPAH
+2% NO _x	

27. Determine Potential and Value of Open Burning and Lawnmower Buy-Back Policies- The Forsyth County Environmental Affairs Department will study the potential and value of additional open burning restrictions and a lawn mower buy-back program for one or more jurisdictions and make recommendations on both of these issues to the EAC by December 31, 2005.

Implementation Dates - The implementation date for this strategy will begin January 2005 and will be completed on or before December 5, 2005, the date of the December meeting of the Triad EAC.

Geographic Area - The entire 11 county region will be studied; however the likelihood of implementing one or both programs is stronger in the urban core counties of Guilford and Forsyth.

Responsible Party - The Triad EAC and the Forsyth County Environmental Affairs Department are responsible for implementation and will be accountable if not implemented by 12/31/2005.

Reductions- This strategy is directionally strong because it will identify the most feasible policies to restrict open burning beyond the statewide ban on code orange and red days. It will also provide a lead agency, Forsyth County Environmental Affairs, to assemble key elements of a lawn mower buy-back program. The EAC will identify jurisdictions for potential implementation

D. Organizational Support and Public Education for Emissions Reduction

28. Support Our Regional Consortium - Continue the Triad EAC as a regional air quality consortium involving county and municipal governments, environmental interests, business and industry to develop and carry out initiatives to reduce ozone emissions in the region. See also comments in Strategy #9 re: local government and COG commitment.

Implementation Dates - December 2002 and continuing

Geographic Area - 11 counties

Responsible Party - local governments, Piedmont Triad COG and Northwest Piedmont COG

Reductions - This is not an emissions reduction measure. However, if it were not for the Triad EAC, many of these strategies would not be adopted or implemented, and emissions reduction would not be receiving its current level of support in the region.

29. Continue Existing Air Awareness Programs – Continue regional education and outreach services provided through the N.C. Division of Air Quality and the Triad Air Awareness Program. Implement outreach programs with added emphasis on ozone season (May – September) and ozone episodes. Activities of the Triad Air Awareness program include:

- Ads and Special Events - Placing radio and TV ads, which can be used free of charge by organizations and local government/business. The “Breathing” TV spot just won an international award. Cost of airtime is a barrier to more frequent airing of these spots. Running the radio spots as public service announcements is an option but not widely accepted by radio stations. To view the TV spots and listen to some of the radio spots go to the triad air web site. www.co.forsyth.nc.us/envaffairs/triadair

The two major special events consist of a big family Air Awareness day at SciWorks in Winston-Salem and an event in collaboration with the Greensboro Children’s Museum. as well.

- Targeted Outreach - The Triad Air Awareness Program uses communications designed for special populations developed by various national organizations. This information is distributed in a variety of settings such as special events at public libraries and school visits.
- Go into the Schools – Develop school-based outreach to educate children, who, in turn can inform their families. This strategy is similar to the approach that worked when

children educated their families about recycling. The NC Air Awareness program has been successful in getting the topic of air quality included in the 7th grade science curriculum. Seventh graders in North Carolina study atmosphere, and air quality fits in nicely.. For younger grades there are coloring books called “Air Pollution From A To Z.”

- Media Reports - Support Air Quality reports on TV, radio, newspaper, and web sites with advocacy and information. A few TV stations in the Triad and one or two newspapers provide strong coverage of air quality episodes, but it tends to be sporadic. Coverage is, however, much improved from 2002 and previous years. This is in large part a result of personal appeals and information from the Triad Air Awareness Program.

Implementation Dates - Beginning in 2001. New techniques implemented frequently. Note, funding of the Triad and other regional Air Awareness program through NC Division of Air Quality will be under discussion at NCDAQ this month.

Geographic Area - 11 counties

Responsible Party - Triad Air Awareness Program, N.C. Division of Air Quality

Reductions - Nonquantifiable. Public education and exposure are critical to making air quality an issue of public concern, as water quality has become. Also, as children are educated, they can impact the habits of their families for healthier living, walking, mowing lawns after 6:00 p.m. etc.

30. Partner with Triangle area in a two-region Clean Cities program - First joint venture was an AFV road show conducted in Greensboro and Winston-Salem on April 21, 2004. Programming and outreach provided by Triangle Clean Cities program, City of Greensboro and City of Winston-Salem. Subsequent joint ventures include publicizing grant opportunities and eliciting applications for Mobile Source Emissions Reduction Grants, and creating a user group of local governments for Clean Cities Webcasts.

Implementation Dates - February 2004 and ongoing.

Geographic Area - 11 county Triad region and eastward to Raleigh-Durham-Chapel Hill area of N.C.

Responsible Party - Triad EAC, Piedmont Triad COG, Northwest Piedmont COG, NC Solar Center, Triangle Clean Cities program

Reductions - No emissions reductions. Provides opportunity for information sharing and air quality program development.

E. Long-Term Planning for Emission Reductions

31. Proceed with Plans for Commuter and Intercity Rail – In the fall of 2004 PART signed a contract for phase II of the Major Investment Study a regional mass transit system. Under this phase, costs and benefits will be calculated for multiple approaches to providing mass transit within the Triad. Options include monorail, commuter rail, and bus rapid transit. The study will recommend the option that will work best. This phase II study will include a public travel demand model being developed by PART. It will help consultants forecast demand and use of the mass transit options. Phase I of the study identified the mass transit corridor from western Winston-Salem to eastern Greensboro. The corridor will later be lengthened to go into western Forsyth County and

Alamance County. This Study incorporates land use policies of activity centers, village centers and infill in designated centers along the corridor.

Implementation Date - Phase II of the study began in the fall of 2004 and will be complete by the summer of 2005.

Geographic Area - Initially Guilford and Forsyth counties

Responsible Party - PART

Reductions - This strategy does not affect near-term air quality improvement, but it demonstrates progress in a positive direction.

32. Determine feasibility of developing HOV / HOT lanes along I-40 (main east-west corridor through the Triad.) - PART is partnering with NC A&T University and UNC Chapel Hill on this study which began in February 2004 and will be completed by the summer of 2005. This is a value pricing study and only one component of the process to determine the feasibility a value pricing line along this major east-west artery. Even if it is determined that the Triad is not ready for a value travel lane, study results may be useful. As traffic increases, there could be a need for this information in the future.

Implementation Dates - Study began in 2004; to be completed by summer 2005

Geographic Area - Forsyth, Guilford and Alamance counties

Responsible Party - PART

Reductions - To be determined. Long-term

November 24, 2004

RJReynolds

Ms. Laura Boothe
Chief of Attainment Planning
Division of Air Quality
North Carolina Department of Environment & Natural Resources
1641 MAIL SERVICE CENTER
RALEIGH, NC 27699-1641
Laura.Boothe@ncmail.net

Subject: EAC (Triad) SIP

Dear Ms. Boothe:

R. J. Reynolds Tobacco Company is pleased to have the opportunity to respond to a question on NOx allowances at our Tobaccoville facility.

R.J. Reynolds retired the coal-fired units at Tobaccoville prior to the start of the 2004 ozone season. The NOx SIP Call (effective May 2004) resulted in massive NOx emissions reductions across a multi-state (22 states and DC) area in the Southeast and Midwest. The program was designed to enable the reductions to be made in a cost-efficient manner through the use of an emissions allocations trading program. Allocations for the Tobaccoville facility noted in NCAC 15A were traded as allowed by the code.

The question of what other sources in the Triad may emit is not germane to the reductions achieved by R.J. Reynolds. Other sources in the Triad regulated by the NOx SIP Call may emit more or less than allocated by the rule, but in the end, must own sufficient allocations for every ton emitted. Those allocations are traded across a multi-state area. Retirement of a limited number of allocations (256 allocated to R.J. Reynolds in 2006) would not prevent or hinder any source from buying more on the open market (approximately 1,185,000 allocations¹ in the multi-state area).

The analysis of emissions in small geographic areas uses best estimates of future emissions. In the case of R.J. Reynolds boilers, the emissions estimates are zero. This reduction is certain and is appropriate for inclusion in the model as an emissions reduction measure in the Triad Early Action Compact.

Sincerely,

Stephen C. Curl, PE, Director - Environmental, Health and Safety

**References and Citations to Planned Growth Ordinances
From Selected Triad Communities
That
Promote Infill, Mixed Uses, Connectivity, Less Reliance on Automobiles
and Green Communities**

A. Ordinances That Are Enforceable (Penalties for Nonperformance)

1. Sidewalks required in new developments

High Point - Section 9-6-16 (e) of the High Point Development Ordinance requires sidewalks to be installed in most new subdivisions on one or both sides of streets depending on street classification and use conditions.

Lexington - Sidewalks required on one side of the street. Land Development Ordinance (Section .5.7.3.F). In addition, all new streets are required to have a bike path. (Section 5.7.4.2)

Elon - Sidewalks are required on both sides of the street – see Section 5.7.3.F. All new streets within Town limits are required to have a bike lane, a minimum of four feet in width. New streets outside of town limits (within the extra-territorial zoning jurisdiction) are required to have a bike path, a minimum of eight feet in width and separated from vehicular traffic – see Section 5.7.4.2.

Greensboro - Sidewalk Ordinance 30-6-13.5. Sidewalks required on both side of streets for new and existing major and minor thoroughfare streets. Required on one side of the street for new and existing collector and subcollector streets.

2. Sidewalks required in front of redeveloped properties

High Point - Section 9-6-16 (e) of the Development Ordinance also requires sidewalks when property is redeveloped unless exempted by the Technical Review Committee. One specific exemption listed is in primarily industrial areas where there are no existing sidewalks and sidewalks are deemed unnecessary or unfeasible.

Lexington - Within each planning district, development and redevelopment must support the pedestrian environment, so pedestrian access and/or sidewalks may be required depending upon the location. Land Development Ordinance, Section 3.2.3.J, 3.4.3.L, 3.5.3.K, 3.6.2.I, 3.7.3.I, and 3.9.3.E

Elon - Within each planning district, development and redevelopment must support the pedestrian environment, so pedestrian access and/or sidewalks may be required depending upon the location - see Sections 3.2.3.L., 3.3.3.L.,

3.4.3.L., 3.6.3.K., 3.7.2.E., 3.8.3.I., 3.9.3.G., 3.10.3.G., 3.11.3.I., 3.12.3.D., and 3.13.3.H.

Greensboro - Sidewalk Ordinance 30-5-1.5. Sidewalks required for redeveloped property subject to a site plan. Conditions specified in ordinance.

3. Require street connectivity

Winston-Salem/Forsyth County - Subdivision Regulations require stub streets to be built to property lines and those streets to be connected and extended as more property is developed. This creates a connected street pattern. Uniform development Ordinance Chapter D.

4. Planting new trees or preservation of specimen trees required

High Point - Section 9-5-11, Landscaping Requirements, of the Development Ordinance covers development city-wide. Section 9-4-4 (c) (4) c contains more extensive requirements for the Eastchester Scenic Corridor District.

Lexington - All development and substantial redevelopment requires planting of new trees as well as preservation of existing trees. Parking lots containing more than 36 spaces are required to have trees as well. Street trees are required along all new streets. (Land Development Ordinance, Sections 5.6.3, 5.7.3 and 5.8)

Elon - All development and substantial redevelopment requires planting of new trees as well as preservation of existing trees. Parking lots containing more than 36 spaces are required to have trees as well. Street trees are required along all new streets – see Sections 5.6.3. and 5.7.6.

Greensboro - 30-5-4 Landscaping and Tree Preservation Requirements

30-5-4.1 Applicability

30-5-4.2 Tree Conservation Plan Procedures

30-5-4.3 Tree Conservation

30-5-4.4 Tree Conservation Area Determination

30-5-4.5 Tree Conservation Flexibility Standards

30-5-4.6 Landscape Plan Procedures

30-5-4.7 Planting Areas

30-5-4.8 Planting Yard Determination

30-5-4.9 Planting Yard Design and Maintenance Standards

Winston-Salem/Forsyth County - The Uniform Development Ordinance requires both bufferyards and streetyards with tree plantings. UDO Sections 3-4 and 3-5.

4. Greenways Required (used as bicycle or pedestrian transportation elements - not primarily recreation)

High Point - When development occurs that includes a stream corridor identified on the Land Use Plan for the High Point Planning Area, the city obtains a greenway easement for future greenway construction. The city's highest greenway priority at the present time is to connect the central city with Piedmont Environmental Center and the Bicentennial Trail and thus, eventually, Greensboro. A trail connecting the greenway to Montlieu Elementary School was recently constructed.

Greensboro - Between March 31 2004 and December 31, 2007 Greensboro will construct an additional six to seven miles of new greenways for bicycle and pedestrian transportation. This commitment is enforceable, not as a zoning provision, but as part of Greensboro long-range transportation plan and budget. The actual amount to be built by 2007 is available from Greensboro Engineering & Inspection ProTrack Project Status Tracking System. Greenway development will focus on segments which will extend connectivity of pedestrian and bicycle transportation routes to additional neighborhoods, institutions and activity centers.

Winston-Salem/Forsyth County - Any plan reviewed by the Planning Board that has an adopted greenway trail on the site is required to dedicate and easement. City-County Greenway Plan.

See B.6 below for additional greenway provisions from other jurisdictions that are voluntary.

B. Ordinances That Are Voluntary (Encourage or Provide Incentives for Smart Growth)

1. Urban infill such as allowing residences in downtown areas

High Point - Sections 9-4-2 (c) (1) and 9-4-3 (a) of the Development Ordinance will be amended in early 2005 to provide incentives for infill with Planned Unit Developments including a mix of residential uses, or a mix of residential and non-residential uses, on small infill or redevelopment sites. In addition, the High Point Development Ordinance (Table 4-5-1, Permitted Use Schedule) has a use called "Mixed Developments," which is permitted in the Neighborhood Business, General Business, Highway Business, Central Business, Shopping Center, Corporate Park and Light Industrial zoning districts with development standards. The use is allowed as of right in the Traditional Neighborhood District. This use is defined as a mix of residential uses along with whatever non-residential uses are allowed in the particular district.

Lexington - Residences are permitted and encouraged in the upper story of the Uptown businesses. Section 3.5.2 In addition, a variety of housing types (detached, duplexes, attached, mixed-use) and lot sizes (no minimum lot size and a

requirement for variation) are permitted in the Traditional Neighborhood Development, which is a permitted use with additional requirements. (Land Development Ordinance, Chapter 4)

Elon - Residences are permitted and encouraged in the upper story of businesses and live/work units located within the Neighborhood and Urban Residential Planning Districts – see Sections 3.3.2 and 3.4.2.; within the Neighborhood, Village, and Town Center Planning Districts – see Sections 3.6.2 and 3.7.2; within the Commercial, Office & Institutional, Public Institutional Planning Districts – see Sections 3.8.2., 3.9.2., and 3.10.2.; and within the Traditional Neighborhood Development Overlay District – see Section 3.12.2. In addition, a variety of housing types (detached, duplexes, attached, mixed-use) and lot sizes (no minimum lot size and a requirement for variation) are permitted in the Traditional Neighborhood Development Overlay District, which is a use permitted with additional requirements in several planning districts – see Section 3.12.

Greensboro - Planned Unit Development - Infill - permits innovative developments with small lots, unconventional lot size and setbacks and mixed housing and commercial uses on small parcels in inner-city and other developed areas Zoning Ordinance 30-4-3.3(E) See also Traditional Neighborhood Development Ordinance , 30-4-2 and note 2004 EPA award to Greensboro’s Southside neighborhood as one of five winners of EPA’s National Awards for Smart Growth Achievement.

Winston-Salem - The Central Business District allows residential as well as combined uses in the downtown area. Uniform Development Ordinance Section 2-1.3.

2. Permit or encourage traditional neighborhood developments

High Point - Section 9-4-2 (c) (2) and 9-4-3 (b) provide for a Traditional Neighborhood District, which “is intended to allow for the development of land consistent with the design principles of ‘traditional’ neighborhoods that were widely used in the United States prior to World War II.” The regulations establish several use categories, including single-family detached, single-family attached, multi-family, mixed use, commercial, civic and open space. Depending in part on the size of the development, one, two, or more of these use categories can be included.

Lexington - In order to encourage Traditional Neighborhood Developments, we created it as a use and it is permitted with additional requirements. (Land Development Ordinance, Chapter 4) The majority of the City’s land is designated as Traditional Neighborhood Planning District with a variety of housing types permitted. Land Development Ordinance Map

Elon - Traditional Neighborhood Developments are encouraged as an Overlay District permitted in all residential planning districts – see Sections 3.1., 3.2., 3.3.,

and 3.4.; and within the Neighborhood, Village, and Town Center Planning Districts – see Sections 3.6. and 3.7.

Greensboro - Zoning Ordinance 30-4-2 The intent of Traditional Neighborhood Developments is to adhere to a higher standard of design, placing a premium on long-term livability, and full use of land to discourage sprawl. NOTE: On November 17, Greensboro’s Southside neighborhood was announced as one of EPA’s five winners of the 2004 National Awards for Smart Growth Achievement. Greensboro’s Department of Housing and Community Development developed a Traditional Neighborhood District Ordinance to assist redevelopment of this 10 acre project. Southside is a five- to ten-minute walk from the central business district and includes single-family homes, two-family homes, townhouses, restored historic homes, and live/work units.

Winston-Salem - The Uniform Development ordinance permits TNDs. Also the Mixed Use Zoning District (MU-S) was amended to allow for many TND elements. Uniform Development Ordinance 2-1.5.

3. Provide for density bonuses/clustering provisions

High Point - Section 9-4-11 (a) (2) provides for single-family detached cluster development.

Lexington - All residential developments containing more than 10 units are required to provide 15% open space. (Section 5.5.2) In exchange for this, Traditional Neighborhood Developments have no minimum lot size requirements, enabling the developer to increase density. (Chapter 4, Traditional Neighborhood Development additional requirements)

Elon - All residential developments containing 10 or more units are required to provide 15% open space – see Section 5.5.3. Density bonuses are provided when the rural cluster development option is used within the Rural Residential Planning District – see Section 3.1.

Greensboro - See 30-4-1.1(C) Planned Unit Development districts

Winston-Salem/Forsyth County - The Planned Residential Development (PDR) regulations allow for residential densities to be clustered on the most developable land, and credit is given for preserving floodplains and steep slopes. UDO Section 2-5.58.

4. Provide for mixed use development with a residential component

High Point - Sections 9-4-2 (c) (1) and 9-4-3 (a) of the High Point Development Ordinance provide for Planned Unit development including a mix of residential uses, or a mix of residential and non-residential uses.

Lexington - Mixed-use development with a residential component is permitted within the Traditional Neighborhood Development, which is permitted in the SN District (Section 3.2.2). Mixed-use development with a residential component is permitted within the TN District (Section 3.3.2), the Neighborhood and Village Center Districts (Section 3.4.2), the Uptown Center Planning District (Section 3.5.2), and the Commerce Center Planning District (Section 3.6.3).

Elon - Mixed-use development with a residential component is permitted within the Traditional Neighborhood Development Overlay District, which is permitted in all residential planning districts – see Sections 3.1., 3.2., 3.3., and 3.4.; and within the Neighborhood, Village, and Town Center Planning Districts – see Sections 3.6. and 3.7.

Greensboro - Pedestrian Scale Overlay District - A new provision of the Zoning Ordinance with development credits for street connectivity and park and walk features. Has already been used in the East Market Street Redevelopment Area at A & T University. Zoning Ordinance 30-4-4.7

Winston-Salem/Forsyth County - See No. 3 above.

5. Provide for multi modal / transit oriented development

High Point - Several plans adopted by City Council discuss the desirability accommodating multi-modal transit into new development, including the Johnson Street/Sandy Ridge Road Area Plan, the Northeast Davidson Area Plan and the PART Master Plan.

Lexington - Multi-modal / transit oriented development is encouraged in the Uptown District (Section 3.5) and permitted in the Traditional Neighborhood Planning District (Section 3.2).

Elon - Multi-modal / transit oriented development is especially encouraged within the Town Center Planning District – see Section 3.7; and within the Traditional Neighborhood Development Overlay District – see Section 3.12. Transit shelters are allowed as a use with additional requirements within all planning districts – see Sections 3.1 through 3.12.

Greensboro - Multi-modal transit oriented development is considered at length in Greensboro's 2020 Comprehensive Plan. Provisions are being worked on for inclusion in the Zoning ordinance.

Winston-Salem - Visions 2005 the Winston-Salem Forsyth County comprehensive plan promotes transit oriented development, but the UDO has not been amended to promote such development.

6. Greenways that can be used as bicycle or pedestrian transportation elements (not primarily recreation)

See A4 above for greenway provision that are enforceable in some jurisdictions.

Lexington - Higher densities are permitted within walking distance of community destination points such as schools, shopping areas, etc. This development may be required to provide pedestrian access to these locations by greenway or sidewalk. The primary objective of greenways in the ordinance is to create a secondary transportation network connecting people to destinations. (Section)

Elon - Higher densities are permitted within walking distance of community destination points such as schools, shopping areas, etc. This development may be required to provide pedestrian access to these locations by greenway or sidewalk. The primary objective of greenways in the ordinance is to create a secondary transportation network connecting people to destinations. All new residential developments containing 10 or more units are required to provide 15% open space, which may be in the form of greenways. Greenway design principles, specifications and acceptance policies are provided to help insure the multi-modal functionality of new greenways – see Sections 5.7.7., 5.7.8., and 5.7.9.

7. Other provisions that aim to reduce automobile traffic or promote smart growth?

High Point - See above.

Lexington - Traditional Neighborhood development with a strong emphasis on mixed-use and pedestrian support is the overriding objective found throughout the Land Development Ordinance. (Introduction and Community Building Principles) Cul-de-sacs are strongly discouraged and sidewalks, open space, greenways and bike paths are required (Chapter 5).

Elon - Smart growth principles emphasizing mixed-use, pedestrian-friendly development are an overriding objective integrated throughout the Town of Elon Land Development Ordinance – see *Community Building Principles* within the ordinance Introduction Chapter. Cul-de-sacs are strongly discouraged and an integrated network of sidewalks, open space, greenways and bike paths are required – see Chapter 5 – Design Regulations.

Greensboro - Pedestrian Scale Overlay District - A new provision of the Zoning Ordinance with development credits for street connectivity and park and walk features. Has already been used in the East Market Street Redevelopment Area at A & T University. Zoning Ordinance 30-4-4.7