



SEQL in the Greater Charlotte Bi-State Region: Tackling Environmental Challenges In a Growing Metropolitan Area



SEQL | SUSTAINABLE
ENVIRONMENT
for QUALITY of LIFE



EPA-456/R-06-001
November 2006

SEQL in the Greater Charlotte Bi-State Region: Tackling Environmental Challenges In a Growing Metropolitan Area

United States Environmental Protection Agency
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

Centralina Council of Governments
1300 Baxter Street
Charlotte, North Carolina 28204

Catawba Regional Council of Governments
215 Hampton Street
Rock Hill, South Carolina 29731

EXECUTIVE SUMMARY

Sustainable Environment for Quality of Life, or SEQL, is a federal-state-local partnership designed to enhance the quality of life for residents in the fifteen-county Greater Charlotte-Rock Hill-Gastonia-Concord Bi-State Region in North Carolina and South Carolina (Greater Charlotte Bi-State Region). Through SEQL, local officials have worked with the U.S. Environmental Protection Agency (EPA) and the states of North Carolina and South Carolina to help support ongoing efforts to make the Greater Charlotte Bi-State Region environmentally cleaner, more livable for its residents, and a more attractive area for businesses to locate.

A key aspect of the SEQL effort is helping incorporate environmental concerns in local decision making throughout the region. Through the leadership of Centralina and Catawba Regional Councils of Governments, elected officials, citizens, and businesses are working together to address a range of issues associated with rapid growth and urban and suburban sprawl. SEQL also has helped bring federal and state resources to bear in helping local officials address environmental challenges. It has proven to be a model that other areas can adopt as they confront quality of life and environmental challenges associated with rapid growth. This report provides a step-by-step guide for establishing a SEQL program in any area.

Rapid Growth in Metropolitan Areas: A Quality of Life Challenge

Rapid growth in metropolitan areas has presented local governments across the nation with an array of new challenges. According to the U.S. Census Bureau, U.S. population is growing by more than 2.5 million people annually. This is roughly the equivalent of adding a city the size of metropolitan Denver to the U.S. every year. This trend is expected to continue until 2050. From 1982 to 2002, total land developed increased by almost fifty percent, while total cropland acreage declined by about twelve percent, according to a U.S. Department of Agriculture survey. And the American Farmland Trust reports that sprawl claims an estimated 1.2 million acres of farmland each year.

By 2030, the nation will need about 427 billion square feet of “built space” to accommodate projected population growth. Half of that space has yet to be built, according to a Brookings Institution report. Land use issues are local decisions. If local governments meet this demand with the type of development seen in recent years, sprawl is likely to continue. This sprawl can contribute to a cascade of problems, including increases in the number of cars on the road, distances traveled, demand for paved roads and parking lots, and air quality and water-quality problems.

Sprawl also has economic consequences. Traffic delays resulted in \$72 billion in wasted fuel and lost wages in 1997 alone, according to the Federal Highway Administration. Unless governments take action now to prevent sprawl, these traffic delays will become a daily fact of life for millions more Americans in the future. This rapid growth has often left local governments struggling to find effective solutions to these regional problems that are often beyond their control. Without a consensus-based approach to address these concerns on a regional basis, local governments in many areas of the

country have been left to act independently. The resulting fragmentation often leaves scores of local communities in a given region trying to manage growth from the lowest possible level of government.

Federal and state governments can help. Federal and state agencies offer a wide array of programs to support local efforts in improving quality of life and the environment. However, locating these programs and navigating through the process and paperwork necessary to qualify for and receive these funds can be daunting for local communities. Moreover, while national and state pollution control rules have helped improve air and water quality to the point that the nation's air and water is cleaner than it has been at any time over the past thirty-five years, these rules cannot completely solve local environmental and quality of life problems. For example, automobile emission standards in place today result in new cars that are 99 percent cleaner for smog-producing pollutants than those built in 1970. However, the growth in vehicle miles traveled (VMT) and associated emissions threaten to erode those gains. It is not difficult to imagine a day in the future when commuters are driving zero-emission vehicles (and air quality has, therefore, improved), but those vehicles are stuck in frequent traffic jams. Ultimately, issues like VMT growth that are connected to land use are better addressed locally because, of course, land use decisions are primarily local.

Greater Charlotte Bi-State Region: A Growing Area

Charlotte is the largest city in North Carolina and a major economic center for both North Carolina and South Carolina. The city is the country's second largest financial center, with nine Fortune 500 firms headquartered in the region. Charlotte is a hub for U.S. Airways, home to professional football and basketball franchises, and supports the largest public arts campaign in the country.

At 7,300 square miles, the bi-state area is larger than the State of Connecticut. It spans two states, with eleven counties in North Carolina and four in South Carolina.

The Greater Charlotte Bi-State Region has experienced explosive growth. Its population has nearly doubled since 1980, and the area is ranked twenty-sixth among the top one hundred fastest growing metropolitan areas, based on 1990-2000 U.S. Census data. The current population of 2.3 million is projected to nearly double again by 2030.

This growth has come at a price. Charlotte area drivers spend an average of forty-three hours a year in traffic, up from ten hours in 1982, according to the 2005 Urban Mobility Study by the Texas Transportation Institute. Based on this increase, Charlotte ranks nineteenth in traffic delays among urban areas nationwide.

To successfully address the economic, environmental, and lifestyle-related issues associated with the growth anticipated in the Greater Charlotte Bi-State Region, local elected officials *must* work closely together. This presents its own set of challenges. No one governmental body controls the entire area, which contains over 125 political jurisdictions with staggered elections for governing boards. A regional initiative requires long-term commitment, the involvement of local organizations, the business community

and citizens across the region, as well as a continual process of educating elected officials and bringing them together.

SEQL: How it Works and What it Has Accomplished

Recognizing the potential impact of rapid growth on regional livability, in 2001 Charlotte Mayor Pat McCrory and Mecklenburg County Commission Chairman Parks Helms brought together elected officials from across the region. The group identified a set of steps local governments could take to improve air and water quality and/or encourage sustainable growth. With the support of EPA and the states of North and South Carolina, and with facilitation provided by the Centralina Council of Governments, the chief elected officials from twenty-six jurisdictions agreed to a set of twenty-five action items for local consideration and implementation. These measures included incentives to encourage vanpooling, carpooling and mass transit; local government energy plans; planning for greenways and open space; sedimentation and erosion control; and pedestrian-friendly streetscapes.

Building on this effort, Mayor McCrory and other local officials decided to encourage local communities to adopt the action items across a broader region. This effort was managed by Centralina Council of Governments (COG) in North Carolina, which contracted with Catawba Regional COG in South Carolina, to include the fifteen counties that now form the SEQL region. These two COGs work with jurisdictions in thirteen of SEQL's fifteen counties.

Under SEQL, the Centralina and Catawba COGs developed a set of "how-to" documents that explain how to implement each of the action items identified. Each document describes the action, explains its impact, costs and benefits, and provides a step-by-step guide for implementing the measure. The COGs made this information available to local jurisdictions via notebooks, CDs and the SEQL website.

EPA, North Carolina and South Carolina provided technical and monetary support for special projects through grants. The COGs provided additional resources to support SEQL outreach. The COGs also worked with EPA and the states to identify a range of additional measures to improve the environment. These include diesel retrofit, truck stop electrification, lawn mower rebates, gas can trade outs, auto body shop pollution prevention training, and energy efficient coatings for heating and air conditioning units, among others. As of April 2006, eighty-six jurisdictions had reported adopting and implementing more than 750 action items.

SEQL also provided a forum for elected officials, city and county managers, business leaders, and citizen groups to meet regularly to discuss regional quality-of-life issues. The meetings were designed to help build a strong regional ethic across the fifteen counties, discuss ways to improve public health and the environment, and keep the Greater Charlotte Bi-State Region a place where people want to live and businesses want to locate. At the meetings, officials discussed how to implement specific actions in their own communities, with an emphasis on those that would produce multiple environmental benefits.

Local leaders established a Project Management Advisory Council to manage the SEQL effort. Composed of officials from the COGs, local governments, the two states and EPA, the Council met periodically to discuss progress and plan new efforts.

Under the SEQL umbrella, the Charlotte region initiated a “visioning process” for the region. Rather than starting from scratch, as is typically done in visioning projects, the COGs used an innovative approach that culled shared values from adopted jurisdictional visions and plans. This process revealed a remarkable degree of consensus on these shared values in a very cost-effective manner. Future phases of the visioning process will make use of an EPA tool designed to develop and analyze growth scenarios. The EPA’s Regional Vulnerability Assessment tool allows local governments to examine the long-term potential environmental and lifestyle impacts of various development decisions. (For more information, visit www.epa.gov/reva.)

SEQL: A Model for the Nation

SEQL is one of a number of similar efforts under way around the nation. One of the most comprehensive is Envision Utah, a private/public partnership that guides the development of a broad, publicly supported, Quality Growth Strategy for Utah’s Greater Wasatch Area. Envision Utah has used regional visioning and citizen involvement to develop alternative future scenarios for addressing rapid development and population growth. (For more information, visit www.envisionutah.org.)

Other metropolitan areas can replicate both Envision Utah and SEQL to address growth and quality of life-related problems. Communities around the Southeast have already looked to the SEQL process and adopted similar measures. SEQL’s website outlines the twenty-five action items and describes the costs, impacts and benefits, and the time it takes for implementation. Each item includes a step-by-step action plan and provides contacts for additional information. (For more information, visit www.seql.org or www.centralina.org.)

The Key Components of Success for Regional Initiatives

Based on the SEQL experience, local communities interested in developing regional environmental programs should consider:

- 1. Identify a Local Champion:** Political leadership at the local level is critical to the success of a SEQL-like initiative. Such initiatives can be difficult to maintain without a prominent political leader, or leaders, who can bring together the elected officials necessary to develop solutions to regional problems. Bipartisan leadership is ideal. While leaders from the business community assume key roles in many metropolitan organizations, support and participation from local elected officials is critical.
- 2. Engage a Respected Regional Organization to Manage the Effort:** The regional organization must be respected and acceptable to all key players, because it will handle funding, organize meetings, provide a source of staffing, etc. In the SEQL initiative, local elected officials determined that the two COGs were the appropriate organizations to serve in this role. Other initiatives have established private-public

partnerships or steering committees comprised of local and state government officials, business leaders, developers or community leaders.

3. **Develop a Multi-Year, Reliable Source of Funding:** Funding is critical. Key sources include foundations, federal or state grants, direct support from local governments, and contributions from local corporations or the business community. SEQL has succeeded partly due to steady, dedicated funding for ongoing activities, as opposed to project funding. Without a multi-year, reliable source of funding from year to year, regional efforts will not succeed. Multiple sources help ensure that the project is continually funded as sources become exhausted over time. EPA provided a majority of the SEQL funding over the first four years of the pilot project to the Centralina COG, which allocated a portion to the Catawba COG. This helped cement the EPA/COG partnership and enabled the allocation of local funds by the COGs to implement SEQL. EPA also provided North Carolina and South Carolina with some separate resources to support SEQL.
4. **Be Prepared for a Long-Term Commitment:** The growth challenges facing metropolitan regions across the nation cannot be solved with a two- or three-year effort. Given the short terms of most local officials and frequent changes in local leadership, maintaining longer-term efforts, however, can often be difficult. The COGs have used various approaches to sustain SEQL, including sponsoring events to generate support and maintain momentum, providing an interactive map on the SEQL website, and tallying the number of actions communities have taken to improve air, water, and land.
5. **Develop a Regional Vision:** Growth is inevitable. The question is: “how do we want to grow?” Bringing the public into the process to identify a long-term regional vision is critical to answering this question. This is particularly important in large, fast-growing regions, where residents in rural counties may have a very different vision of the future than those living in suburban or urban areas. This input can be used to develop or evaluate future scenarios and can serve as the foundation for the entire initiative. SEQL includes a visioning and scenario-evaluation component that helps the program influence planning practices across the region.
6. **Celebrate Early Successes:** Identifying early successes is critical. It takes time to establish a process, obtain a steady stream of funding, initiate regional meetings, and develop visions and future scenarios. Ideally, these are on-the-ground projects that can give the public, elected officials, and funding sources a tangible sense of success. Celebrating those successes and working with the media to publicize them also helps maintain momentum.
7. **Develop a Marketing Strategy and Maintain Community Involvement:** If the area is large like the Greater Charlotte Bi-State Region, considerable outreach may be necessary to engage elected officials, citizens, community groups, and businesses. In addition to working with local media, a marketing strategy should include visits to local governments, chambers of commerce, and local organizations. The COGs initiated and attended gatherings of a number of groups, including Parent Teacher Associations, local media meteorologists and environmental organizations. EPA and the COGs also have helped SEQL get national exposure through presentations at national meetings, a satellite broadcast and other means.
8. **Develop Partnerships:** Partnerships are critical. They help spread the message, leverage resources and increase the level and diversity of program activity. In the case of SEQL, the emphasis is on government partnerships. Three levels of government –

local, state, and federal – worked together toward the common goal of empowering local governments to take action to improve air and water quality. Partnerships with businesses and citizen groups are also important for advancing the projects goals and for achieving environmental results. SEQL worked very effectively with several groups, including the Carolinas Clean Air Coalition.

- 9. Enhance Participation by Providing Options for Involvement:** Finding the most effective way to engage stakeholders will vary from area to area. Providing choice was particularly effective for the Charlotte region. By providing numerous options for participation, SEQL was able to engage local governments and different groups effectively in various projects, such as implementation of the environmental action items from the toolbox. Leaders in the Charlotte region reacted very favorably to this approach, much more positively than they would probably have responded to a “one size fits all” approach. Once the COGs were able to interest a local government or group in a SEQL project, then the discussion focused on project expectations and what SEQL participation entailed.
- 10. Identify and Develop Staff Who are Committed to Action:** Elected and high-level officials come and go fairly regularly so it is very important to develop staff within both the sponsoring organization and participating jurisdictions and agencies who are essential for successful implementation of a regional project. Professional staff generally turn over less frequently and are, therefore, more likely to remain long enough to ensure the project is implemented over the long term. Key professional staff must not only have (or develop) subject area knowledge, but must also be committed to inclusive processes and integrated planning. SEQL relied upon such professional staff within participating local governments (and COGs) to look for environmental improvement opportunities in every part of their jobs. This ongoing education helped create a cadre of “doers” who can spread SEQL-type thinking into longer-term activities, plans, and programs. Ultimately, this has proven to be one of SEQL greatest challenges and successes.

How This Report is Organized

This report is organized into four sections. Section 1 provides background and history on SEQL, and the region’s environmental challenges. Section 2 provides an overview of SEQL’s phases and major activities, and Section 3 describes what SEQL has accomplished in the Greater Charlotte Bi-State Region. Section 4 highlights eight areas of key lessons learned. The document also includes SEQL’s management structure, a detailed timeline of SEQL activities, profiles of leadership, the SEQL resolution, and a CD containing SEQL details.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	2
Rapid Growth in Metropolitan Areas: A Quality of Life Challenge.....	2
Greater Charlotte Bi-State Region: A Growing Area	3
SEQL: How it Works and What it Has Accomplished.....	4
SEQL: A Model for the Nation	5
The Key Components of Success for Regional Initiatives.....	5
How This Report is Organized.....	7
TABLE OF CONTENTS	8
FIGURES.....	10
TABLES	11
SECTION 1. SEQL BACKGROUND AND HISTORY	12
1.1 SEQL and the Greater Charlotte Bi-State Region.....	12
1.2 Air and Water in the Greater Charlotte Bi-State Region	13
1.3 SEQL Starts as an EPA Sustainability Project.....	14
1.4 SEQL’s Beginnings.....	15
1.5 EPA Pursues Expanded Pilot Project in Charlotte Region.....	15
1.6 EPA’s Examination of Air Quality Management in the United States.....	16
1.7 Urban Sprawl and Population Growth Across the United States	16
1.8 Need for Tailored Air Quality Solutions	17
1.9 Governmental Institutions and Problem Misalignment.....	18
1.10 Recommendations of Air Quality Management Examination.....	18
1.11 Implementation of Recommendations by Expanding EPA Sustainability Project in Charlotte, NC.....	18
1.12 EPA Approaches Charlotte to Expand Sustainability Project.....	19
SECTION 2. WHAT SEQL IS ABOUT	20
2.1 SEQL’s Goals	20
2.2 The Transition to SEQL.....	20
2.3 Addressing the Challenges Facing the Greater Charlotte Bi-State Region	21
2.4 Phase 2: Early Successes.....	23
2.5 Phase 3: Long Term Integrated Planning.....	28

2.6 The Key Components of Success for Regional Initiatives	33
SECTION 3. SEQL ACCOMPLISHMENTS.....	37
3.1 Overall SEQL Results.....	37
3.2 Air Quality Action Items	37
3.3 Sustainable Growth Action Items	38
3.4 Water Quality Action Items.....	38
3.5 Additional Emission Reduction Measures	39
3.6 Successful Outreach and Collaboration	41
3.7 Common Information Resources or Database	42
3.8 Regional Scenarios and Vision.....	42
3.9 Integrated Planning	42
SECTION 4. KEY LESSONS LEARNED	44
4.1 Need Local Champions	44
4.2 Identify Successes by Early Adopters	44
4.3 Focus on Action through Choice	45
4.4 Connect People	45
4.5 Communicate, Communicate, Communicate.....	46
4.6 Funding.....	47
4.7 Be Aware of Many Factors Affecting Community Participation.....	47
4.8 Technical Issues to Consider	48
ATTACHMENT 1: MANAGEMENT STRUCTURE.....	49
ATTACHMENT 2: DETAILED TIMELINE OF SEQL ACTIVITIES.....	50
ATTACHMENT 3: PROFILES OF LEADERSHIP	51
ATTACHMENT 4: SEQL RESOLUTION OF SUPPORT	54
ENDNOTES.....	55

Figures

Figure 1: Greater Charlotte Bi-State Region	12
Figure 2: Catawba-Wateree River System	13
Figure 3: Yadkin River Basin	13
Figure 4: Location of the Greater Charlotte Bi-State Region	18
Figure 5: As Is, Only Better Scenario	32
Figure 6: Compact Centers Scenario	32

Tables

Table 1: Change in the U.S. Population and U.S. Land Developed	17
Table 2: SEQL Timeline of Events	21
Table 3: SEQL Overview	36
Table 4: City of Concord (Cabarrus County) Air Quality Measures	37
Table 5: Examples of Air Measures from Select SEQL Areas	37
Table 6: Examples of Sustainable Growth Measures from Select SEQL Areas	38
Table 7: Examples of Water Measures from Select SEQL Areas	38
Table 8: Examples in Select SEQL Areas of Development Policies that Consider Environment.....	40

SECTION 1. SEQL BACKGROUND AND HISTORY

1.1 SEQL and the Greater Charlotte Bi-State Region

In many respects, the Charlotte region has provided an ideal location for a pilot for exploring how to protect the environment while growing a sound economy and providing a high quality of life. Among the top one hundred fastest growing metropolitan areas in the U.S., the region is ranked twenty-sixth based on 1990-2000 U.S. Census data.¹ It has a thriving economy and leadership that recognizes the need to address the environmental and quality of life challenges posed by growth. Located in the heart of the Southeast, the region straddles the North Carolina/South Carolina border, containing over 125 political jurisdictions, including fifteen counties (eleven in NC and four in SC) (Figure 1). Mecklenburg is the region's most populous county and contains the City of Charlotte. At 7,300 square miles, the bi-state area is larger than the State of Connecticut.² Over two million people call the region home, a number which is expected to nearly double by 2030.³



This growth has come at a price. For example, Charlotte area drivers spend an average of forty-three hours a year stuck in traffic, up from ten hours in 1982. This increase has led to Charlotte's ranking as the second-worst, nationally, among thirty "medium" size urban areas, and nineteenth, nationally, among all urban areas for traffic delays.⁴

The Charlotte region, once a center for furniture and textile manufacturing, has now shifted to high-tech, banking, and service industries. Charlotte is the second largest financial center in the U.S and is home to the headquarters of nine Fortune 500 firms.⁵



Figure 1: Greater Charlotte Bi-State Region

Thirteen of the fifteen SEQL counties are contained within two convening councils of governments: the Central Council of Governments (COG) in North Carolina and the Catawba Regional COG in South Carolina. The two COGs lead SEQL in partnership.

The region does not have a formal regional authority or body, although it cooperates on many issues and programs, including SEQL.

1.2 Air and Water in the Greater Charlotte Bi-State Region

As in many U.S. metropolitan areas, the Charlotte region's rapid growth has contributed to air and water concerns. In 1991, EPA designated the Charlotte area as "nonattainment" because its ozone air quality violated EPA's one-hour ozone standard, which it then met four years later.^{6,7} In 1997, EPA issued a more protective ozone standard that covered an eight-hour period. In 2004 EPA designated the Charlotte area as nonattainment for that standard.⁸ In North Carolina, the nonattainment area encompasses all of Cabarrus, Gaston, Lincoln, Mecklenburg, Rowan, and Union Counties. The area also includes part of Iredell County and part of York County in South Carolina. Under the Clean Air Act, both states are required to develop plans to bring the area into attainment for ozone by 2010.

The Charlotte region contains two major river basins: the Catawba-Wateree and the Yadkin-Pee Dee. These basins face both water quality and water quantity issues.

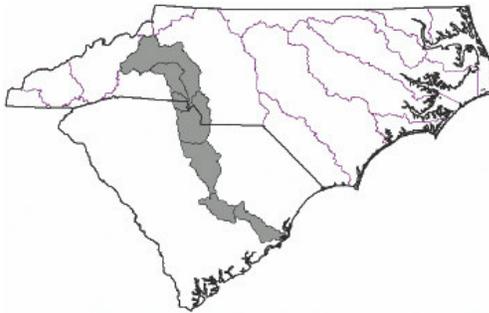


Figure 2: Catawba-Wateree River System

The Catawba River basin, along with the Broad River basin, forms the headwaters of the Santee-Cooper River system, which flows through South Carolina to the Atlantic Ocean (Figure 2⁹). The river basin is the eighth-largest in North Carolina and encompasses all or part of twelve counties in the state. The headwaters of the Catawba River are in the mountains, where many of the streams have excellent water quality. As the basin enters the Piedmont, land use shifts from forest to agricultural and urban uses. Nonpoint runoff from agriculture, urban runoff, and other sources have caused nutrient enrichment and sedimentation problems in the streams, rivers, and lakes. In this lower region, urban growth in the Charlotte metropolitan area has affected the water quality of the lakes and rivers.¹⁰

The Yadkin River basin is the second-largest basin in North Carolina, flowing through twenty-one counties. The Yadkin River originates in the North Carolina Mountains, flows northeasterly for one hundred miles and then flows southeasterly until it joins the Pee Dee River (Figure 3¹¹). Water quality concerns in the basin include increasing nutrient enrichment, increasing urbanization and suburbanization, sedimentation from nonpoint sources, and the

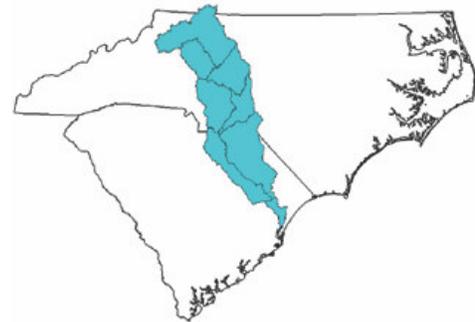


Figure 3: Yadkin River Basin

impacts of permitted municipal and industrial dischargers. Most of the monitored reservoirs, including municipal drinking water supplies, have excessive algal growth and associated concerns with dissolved oxygen and pH. These problems were caused by low flow, sedimentation, nutrients, and toxicants.¹²

The majority of streams in the SEQL area are on the Clean Water Act section 303(d) list of water bodies not meeting quality standards or which have impaired uses, either for specific pollutant such as fecal coliform, or for biological impairment. Total Maximum Daily Loads or TMDLs are required on some, but not all, of these waters; the extent to which they are in place varies greatly.¹³

Until the recent past, the region had no water quantity issues. However, a severe five-year drought several years ago nearly depleted the water supplies of a number of cities. High-growth counties that do not border a river large enough to serve as a drinking water source are faced with buying water from their neighbors, which is becoming increasingly difficult as the population increases throughout the region. Furthermore, aging infrastructure in a number of communities has resulted in a loss of treated water, according to a recent study by the North Carolina Rural Economic Development Center. The same study assessed a \$1.2 billion need for water and sewer infrastructure improvements through 2030 for all of the Charlotte metropolitan region. This need is driven not only by infrastructure maintenance costs, but also because population growth is driving up the demand for water.¹⁴

1.3 SEQL Starts as an EPA Sustainability Project



Many areas across the country are experiencing environmental issues similar to those in Charlotte. Urban growth patterns negatively impact air quality, water quality and quantity, habitat, and biodiversity. Growth has a significant impact on EPA's ability to achieve its mission to protect public health and the environment. Historically, EPA has fulfilled that mission through the implementation of environmental laws in partnership with state environmental agencies. In the late 1990s, however, EPA realized that some of the largest threats to the environment and public health were resulting from urban growth. Yet responsibility for growth management lies primarily with local officials and is largely outside of EPA's regulatory domain. EPA, therefore, decided to support the Sustainability Project in Charlotte, SEQL's precursor, as a way to demonstrate an integrated approach for a region managing its own growth.

1.4 SEQL's Beginnings

The EPA Sustainability Project was started in the fall of 2000 under the leadership of Charlotte Mayor Patrick McCrory and Mecklenburg County Commission Chairman Parks Helms. Under an EPA cooperative agreement and with support from Centralina COG staff, the city brought together the region's chief elected and appointed officials from twenty-six of the largest jurisdictions to learn about air quality, water resources and land-use issues. Additionally, Centralina Council of Governments staff and subject matter experts from Mecklenburg County and the State of North Carolina developed a set of three action item toolboxes for air, water and land use. These toolboxes were presented to elected officials at seven regional networking lunches. The officials and managers involved identified twenty-five air, water and land use action items from the toolboxes, by consensus, for consideration at the local level. These were measures they believed would work best for their communities. The Sustainability Project was a success, and helped foster a collective sense that more work needed to be done as a region by successfully engaging key officials and bringing them "up to speed" on critical environmental issues.

The decision to invite chief officials from the largest jurisdictions was based on the belief that they would be most able to act on the consensus achieved. If the largest jurisdictions adopted the twenty-five measures, it would be more likely that smaller jurisdictions would follow. Inviting elected officials versus a broad group of stakeholders was also a conscious decision: if governments could demonstrate that they could work together across the region to implement environmental action items, again, others would follow.



Mayor Patrick McCrory



Chairman Parks Helms



Christine Todd Whitman, Former EPA Administrator, Chairman Parks Helms and Mayor Patrick McCrory

1.5 EPA Pursues Expanded Pilot Project in Charlotte Region

In 2001, EPA's headquarters office in Research Triangle Park, NC undertook a long-range examination of the national air quality program, including how the program was managed. The EPA included an assessment of the direction in which air quality management is likely to head in the next ten years, development of a vision for where air quality

management should head over that same period, and recommendations on how to bring air quality management on board with this vision.



1.6 EPA's Examination of Air Quality Management in the United States

In the thirty years since Congress passed the Clean Air Act, the nation has made tremendous progress in cleaning up air pollution. Despite this progress, significant air quality management challenges remain. For example, many areas face nonattainment status for the National Ambient Air Quality Standards (NAAQS) for ozone and particulate matter (PM). Efforts to address these air quality concerns will be significantly influenced by at least three factors:

- Land use patterns associated with continuing population growth.
- Need for tailored solutions to address air quality problems.
- The alignment between the geographic scope of the responsibility of governmental institutions and the geographic scope of the air quality problems at issue.

1.7 Urban Sprawl and Population Growth Across the United States

Urban sprawl associated with population growth is a significant contributor to air quality problems. To an increasing extent, population-related activities such as transportation, land use, commercial activities, and individual behaviors influence air quality. Mitigating the effects of this growth will greatly influence the ability to attain air quality standards.



Overall, sprawl in most U.S. metropolitan areas is occurring faster than in the past.¹⁵ A major result of

the expansion of these lower-density cities has been the urban development of areas that had been farmland, forests, and fields. From 1982 to 2002, the nation's cropland acreage declined about 12 percent; the net decline between 1992 and 2002 was about 3 percent. According to the American Farmland Trust, sprawl claims 1.2 million acres of farmland annually. From 1982 to 2002, the population grew nearly 25 percent, while total land developed increased by almost 50 percent, supporting the contention that metropolitan areas across the country are developing land much faster than they are adding people.^{16, 17, 18}

Table 1: Change in U.S. Population and U.S. Land Developed^{19,20}

	1982	1992	2002	Change from 1982 to 1992	Change from 1992 to 2002	Change from 1982 to 2002
U.S. Population (millions)	232.2	256.9	287.7	11%	12%	24%
U.S. Land Developed (millions of acres)	72.8	86.5	107.3	19%	24%	47%
U.S. Cropland (millions of acres)	419.6	381.2	368.4	-9%	-3%	-12%

The U.S. population is growing by more than 2.5 million people annually,²¹ roughly the equivalent of adding a city the size of metropolitan Denver to the U.S. every year.²² By 2030, the nation will need about 427 billion square feet of “built space” to accommodate



growth projections, about 50 percent of which will have to be constructed between now and then.²³ If this demand is met through the kind of development that we have seen over recent years, the result is likely to be more sprawl. This, in turn, generally means a continued increase in the number of cars on the road and in the number of vehicle miles traveled (VMT).²⁴ In 1997, for example, traffic delays resulted in \$72 billion in wasted fuel and lost wages.²⁵ More driving also means more smog and

haze. Additional sprawl means more highways, roads, parking lots, and pavement; this, in turn, brings an array of water quality-related problems, including polluted runoff into streams and waterways.

Sprawling growth corresponds to a shift in the pattern of ozone violations in the U.S. Cities in the south, southwest and west have begun to displace northeastern and midwestern cities on the list of areas with the greatest number of days above the eight-hour ozone standard. Nine of the top ten ozone nonattainment areas for the number of days above the eight-hour ozone standard for 2003–2005 are located in the south, southwest or west.²⁶



1.8 Need for Tailored Air Quality Solutions

Some areas of the country continue to have air quality problems, the sources of which can vary greatly from city to city. For these areas, the federal role is less clear and the pollution implications are potentially significant. While certain national actions will help address these problems, some areas will require more local, customized solutions.

1.9 Governmental Institutions and Problem Misalignment

The governmental institutions that work to ensure clean air – primarily EPA and the states – often do not match the geographic scope of the air quality problem. For example, state and federal solutions are often difficult to implement in growing cities that may cross state boundaries and face environmental challenges largely outside of EPA and state regulatory control, such as VMT growth.

1.10 Recommendations of Air Quality Management Examination

In response to the findings described above, EPA’s air office made several recommendations:



1. **Focus on an integrated, problem-based approach for both criteria and toxic air pollutants.** This should be accompanied by conscious efforts to respond on different geographic scales to multiple pollutant problems in specific locations or regions.
2. **Become a “catalyst for clean air solutions” on local, regional, and international levels.** The future of air quality management is likely to rely less on federal regulation of sources and more on EPA’s serving as a catalyst to empower state, local, and tribal governments, and others, to tackle difficult problems through regulatory and nonregulatory means. EPA should focus on preventative programs to help areas take action to avoid air pollution.
3. **Make partnerships a priority in a broad array of geographic areas and stakeholder groups, fostering accountability through local stewardship, outreach, and education.** EPA should target stakeholder development efforts to those problems that offer the greatest potential for environmental benefit, and find new partnerships in areas where it has not traditionally had partners.

1.11 Implementation of Recommendations by Expanding EPA Sustainability Project in Charlotte, NC

EPA decided to implement the above recommendations, in part, by creating a pilot project in a selected area to demonstrate:

- An approach to increase integration across the criteria



Figure 4: Location of The Greater Charlotte Bi-State Region

- pollutant and air toxics programs;
- Empowerment of local officials to take ownership of air quality and action to improve it; and
- Partnerships with local governments to improve air quality.

EPA selected the Charlotte, NC, bi-State region (see Figure 4) as a pilot for several reasons:

- EPA was already supporting the Sustainability Project, so effective working relationships with key individuals and offices in the region were already established.
- The region was highly motivated to address growth issues and already had several groups and initiatives focused on these concerns.



- The region possesses many desirable characteristics which made it an ideal setting for a pilot. It is experiencing rapid growth, has water quality and quantity concerns, and has less severe air quality problems, which can be addressed through local action with state and federal support.
- EPA's offices in Research Triangle Park, NC are close to Charlotte, which facilitates an even stronger partnership between EPA and Charlotte.

1.12 EPA Approaches Charlotte to Expand Sustainability Project

In 2001, EPA approached Charlotte and other local governments and the States of North and South Carolina about expanding the established partnership, the Sustainability Project, into an integrated approach to address air quality, transportation, land-use planning, energy and economic development, and other environmental issues. On October 30, 2002, EPA Administrator Christine Todd Whitman visited Charlotte to celebrate the closure of the Sustainability Demonstration Project and to announce the continued EPA partnership with the governments of the Charlotte metro area, established through a three-year cooperative agreement with Centralina COG. Centralina, sub-contracting with its South Carolina counterpart, Catawba Regional Council of Governments, officially launched SEQL in March 2003.



SECTION 2. WHAT SEQL IS ABOUT

2.1 SEQL's Goals

SEQL is a bi-state, fifteen-county partnership across three levels of government with the goals of helping the Charlotte region achieve a clean environment, high quality of life, and a thriving economy. SEQL's leaders are achieving these goals in three ways:



- 1. Implementing regionally endorsed environmental initiatives.** The Council of Governments are encouraging local governments, schools, and others to adopt the twenty-five action items identified from the Sustainability Project, along with other measures. To help with this effort, they are providing technical assistance and sharing best practices. The COGs are encouraging local demonstrations of measures to serve as examples of innovation, and are recognizing those local actions with cumulative impacts and collaboration on specific projects.
- 2. Engaging local government officials in integrated environmental planning.** By promoting integrated environmental planning, SEQL seeks to help local governments both to realize the multiple benefits of environmentally-based actions, and to reduce the number of unintended negative consequences of local decisions.
- 3. Finding ways to “institutionalize” environmental considerations into decision making processes.** SEQL seeks to incorporate environmental considerations into local and regional decision making across the region.

EPA's goals include helping local governments to better address a wide range of environmental issues. Improving air quality requires action at three levels of government: federal (EPA), state, and local. For example, national rules make cars, trucks, and off-road equipment cleaner, while national and state strategies reduce air quality impacts from power plants and other sources. EPA also supports SEQL as a national model for integrated regional planning. Air pollution problems are traditionally addressed through separate pollutant plans. SEQL engaged local governments to address air quality, land use, energy, transportation, and economic development in an integrated manner.

2.2 The Transition to SEQL

When the COGs assumed leadership of the Sustainability Project, they faced several challenges:

- 1.** While the initial phase of the project successfully oriented one or two key leaders in each of twenty-six communities, these persons did not represent the local legislative majorities



needed to implement changes in ordinances or policies at the local government level. More elected officials would need to be brought on board.

2. Simply declaring in Phase 1 that “we should do this” was not alone sufficient to produce action item implementation in an environment of tight staff resources, tight money, and competing priorities.
3. The project’s strong local government focus did not adequately recognize local groups with strong environmental interests.
4. Several local and regional “opinion leaders,” with influence critical to the adoption of growth management policies and ordinances, needed to be brought into the process to support elected leadership.
5. A number of smaller communities and outlying counties impacted by the region’s growth and environmental change were not yet involved.
6. Finally, the Centralina COG identified a need to develop a methodology of evaluating alternative development scenarios and analyzing their impact on air quality and other planning elements in order to provide a strong technical foundation for local planning and decision making.

2.3 Addressing the Challenges Facing the Greater Charlotte Bi-State Region

To address the challenges of continuing the initiative started by Mayor McCrory and Chairman Helms, the COGs decided to structure SEQL in three phases:

1. **Phase 1: EPA Sustainability Project— Introduction to Environmental Measures:** The initial phase focused on education and identification of environmental action items. It laid out the framework for a broader regional effort at integrating

environmental and growth planning, while creating a sense of collaboration and unity to permit follow up on toolbox implementation.

2. **Phase 2: Early Successes:** Phase 2 demonstrated early SEQL successes of Phase 1 action item implementation. All of the participants were involved to ensure implementation of the Phase I toolbox commitments. SEQL also expanded from twenty-six

initial jurisdictions to over 125, conducted additional outreach to many additional stakeholders on SEQL issues and worked to promote enhanced decision making at the local level and encourage participation in voluntary environmental projects.

DATE	ACTIVITY
March 2001	Sustainability Project kick-off - start of Phase 1
October 2002	Event closing Sustainability Project featuring EPA Administrator Whitman (phase 1)
February 2003	Start of SEQL Phase 2
March 2003	SEQL kick-off
August and September 2003	Subregional meetings (1 st set)
February 2004	Start of SEQL Phase 3
August and September 2004	Subregional meetings (2 nd set)
April 2004	Charlotte region designated nonattainment for ozone
May 2004	Event at which EPA Administrator Leavitt awards truckstop electrification grant

- 3. Phase 3: Long Term Integrated Planning and Institutionalization:** In the final phase, SEQL is developing mechanisms for integrating environmental and air quality issues into collaborative decision making on land use and transportation planning on a regional basis. It also focuses on integrating across sectors (transportation, land use, air quality) in an “institutionalized” manner so that integrated planning becomes not an additional process, but a part of local government planning at the local level.

Phase 1 had a discrete beginning and end – March 2001 to October 2002. Phases 2 and 3 started in February 2003 and 2004, respectively, and will continue beyond 2006 under non-EPA funding sources.



The COGs created a management structure to lead SEQL (see Attachment 1). SEQL is administered by the Centralina COG in cooperation with the Catawba COG. The project was overseen by the SEQL Project Management Advisory Committee, which met quarterly for the duration of the project. Membership on the committee consisted of:

- Executive Directors from both COGs
- Representatives of local governments from around the region, including the City of Charlotte; City of Belmont, Union County, NC and York County, SC
- Mecklenburg County, NC environmental officials
- Representatives from NC Department of Environment and Natural Resources and SC Department of Health and Environmental Control
- EPA

The project’s management structure also included an informal technical committee, which focused on the development and evaluation of future regional growth scenarios.

Political leadership is the key to the success of an effort like SEQL. The program has allowed elected officials to champion specific environmental issues and then to relate those improvements to broader environmental and growth issues. Charlotte Mayor Patrick McCrory and Mecklenburg County Chairman Parks Helms played vital roles in launching SEQL’s first phase, and in supporting the



Harold Shapiro, Executive Director, Catawba COG, and H.C. Starnes, Mayor, Great Falls, SC

program over time. The Chairman of the COG Boards also gave considerable support to SEQL, including promoting specific SEQL action items.

“Coach” Joe White served as Centralina COG Board Chairman in 2003, while also occupying a seat on the Charlotte’s City Council. As a strong advocate for SEQL, he

promoted the use of alternative fuels for local government and private fleets. Leda Belk, Chairman White's successor, also served as a Rowan County Commissioner. She advocated for the implementation of many SEQL action items, and led the effort to bring truck stop electrification and school bus diesel retrofits to her county. Dumont Clarke, current Centralina Chairman, is a strong advocate for open space preservation and greenways. Eldridge Emory, a South Carolina State Representative, also served as Chair for the Catawba COG. He has been a consistent supporter of SEQL and greatly concerned about water quality issues (see Attachment 2 for profiles of SEQL's political leadership).



Al Sharp, Executive Director, Centralina COG, and Mike Rowe, Director of Research and Planning, SCDHEC

In addition to local leadership, state and EPA leadership has also played an important role. State participants include Bill Ross, Secretary of North Carolina's Department of Environment and Natural Resources; and Lewis Shaw, former Deputy Commissioner for Environmental Quality Control in the South Carolina Department of Health and Environmental Control (SCDHEC); and his successor, Bob King. Three EPA Administrators also have visited the Charlotte region to participate in SEQL events and to voice their support.

The Centralina and Catawba Regional COGs also provided essential leadership. Centralina Executive Director A.R. Sharp, Jr., Catawba Regional Executive Director Harold Shapiro, Rebecca Yarbrough, SEQL Project Manager, and Wendy Bell, Senior Planner at Catawba COG, all provided knowledge based leadership to the SEQL team. None of this team was new to the region covered by SEQL. Collectively they had over 80 years of experience working with local governments in the area, giving them a fundamental understanding of the region. SEQL engaged the active contribution of other staff members working in the areas of information technology, transportation, planning, public information and outreach and design.

2.4 Phase 2: Early Successes

Goals of Phase 2:

- Expand the number of SEQL communities to include smaller jurisdictions whose participation is important for a seamless planning framework;
- Introduce environmental, business, and community stakeholders to integrated planning processes;
- Engage nongovernmental stakeholders in an integrated planning process, both to foster their interest and commitment to environmental improvements and to tap their energy in supporting local governmental actions;
- Ensure implementation of Phase 1 toolbox items by providing technical support, while deepening the understanding of local elected bodies about the need to integrate local planning; and
- Design of a regional database and data management system for improved analysis of project impacts and enhanced decision making.

To implement these goals, the COGs engaged in several activities in Phase 2:

Kick-off Meeting: SEQL officially opened Phase 2 in March 2003 with a luncheon meeting. Over 80 local and state officials attended from the fifteen-county region and the States of North and South Carolina. The COGs unveiled the logo and theme for SEQL to the meeting participants with the following message:

We're in this together... As a region, we are at a critical moment regarding long-term quality of life and economic viability. Rapid growth and expanding land use is threatening our air quality and water resources. We must take action now to impact the future and preserve quality of life for the citizens of tomorrow. Today, we must begin to build our legacy. ... it starts today.

The COGs invited the meeting participants to become involved in SEQL, offering additional information and on-site visits to brief staff and elected officials. They provided specific suggestions on follow-up actions meeting participants could take, ranging from visiting the SEQL website to implementing some of the twenty-five action items for air quality, water quality, and land use.



Jurisdictional Visits: Following the kickoff, the COGs visited over sixty jurisdictions. They met with key staff and elected officials, provided background on SEQL, discussed the twenty-five action items, and explored what technical assistance was needed. These visits took place at regular governing body meetings or work sessions, in order to maximize the number of elected officials and key staff exposed to SEQL, and to demonstrate the COGs' commitment to providing implementation assistance.



Because of the nature of their work, the COG staff is routinely in contact with a number of jurisdictions throughout the region, and naturally tend to view issues through a regional lens. The staff was, therefore, effectively able to promote SEQL concepts through these existing contacts with elected and appointed leadership. Moreover, the broadly representative Boards of the COGs provided ready access to all communities in the region, which facilitated getting information out to elected officials in over 125 jurisdictions.

Subregional Meetings: To seek firmer commitments from jurisdictions on action item implementation and a better understanding of the issues involved, the COGs held a series of five subregional meetings in August and September of 2003. Meeting participants

included elected officials, planners, and city and county managers. The COGs structured the meetings to acquaint everyone with SEQL’s purpose. Professional facilitators assisted participants in choosing priority action items for their communities, and obtained the commitment to undertaking those actions. Additionally, participants provided input on other air quality action items in addition to the initial twenty-five items identified in Phase 1. Over 320 people from almost sixty jurisdictions participated in the five meetings.

Resolutions: During all of the SEQL interactions with local governments, the COGs promoted adoption of the SEQL support resolution, a non-binding commitment to participate in SEQL and to work on implementing those actions that were feasible in a given area (see Attachment 3). As of July 2006, seventy jurisdictions have adopted the SEQL resolution.



Action Item Notebooks: To facilitate implementation of the action items, the COGs developed straightforward “how-to” guides, which were made available on the SEQL website and on CD. The initial guides covered nineteen action items – thirteen air quality and six land use (water quality documents were developed later under a separate EPA cooperative agreement). The COGs are developing additional action items for the water-related action items and for the additional action items discussed immediately below. The manuals were designed to get the attention of busy elected officials by making the case for why they should implement the action item in their jurisdiction. The notebooks included:



- Action item description
 - Information on the shared impact and benefits of the action items, including an introduction to the concept of integrated planning
 - Length of time to implement and cost
 - The benefits of implementing the action
 - Who needs to be involved in implementation
 - Action steps
- Available resources
 - Who else has implemented the action item
 - Frequently asked questions
 - Co-benefits and mutually reinforcing aspects of the action items

Finally, to track progress on action item implementation, the COGs asked the jurisdictions to notify them when they had implemented an action.

Additional Action Items: In addition to the twenty-five action items, the COGs decided to pursue the eleven additional action items, many of which were identified in partnership with EPA and some of which were supported with EPA resources:

- Diesel retrofit programs
- Truck stop electrification
- Lawn mower rebates and gas can trade outs
- Idle reduction policy
- Air quality education for educators
- Design for the Environment’s program for auto body shop pollution prevention
- High-performance building techniques
- Brownfields redevelopment
- Promotion of infill development
- Pervious pavements
- Energy-efficient coatings for HVAC units



More details about each measure can be found in the CD attached to this document. The COGs also developed “how-to” documents for these measures and are working with a number of jurisdictions to implement them.

Regional Data System: When SEQL started, the Charlotte region lacked a data system that supported integrated local and regional decision making, making it difficult to assess impacts and make informed decisions. The combined development of a data system and the collection of existing baseline data from quality-assured sources was an important element of Phase 2.

This process began with identification of the local and regional data needed to support the use of the Regional Vulnerability Assessment (ReVA) tool and for other regional planning purposes. The next step was an inventory of current data – its sources, formats, availability – and an evaluation of its quality and validity. From this, a list of new data needs and indicators for regional sustainability was developed, in collaboration with the Urban Institute at the University of North Carolina at Charlotte and Voices and Choices, a local non-governmental organization engaged in the production of a “State of the Region” report.

For more information on ReVA, visit: www.epa.gov/reva



Concurrently, Centralina COG was awarded a U.S. Geological Survey National Spatial Data Infrastructure grant to explore the concept of centralized versus distributed databases. As a result of this project, the COGs worked with the Urban Institute to design a system for data collection, use, maintenance and sharing, including quality assurance standards for data. Staff collected existing baseline data. With the exception of land use, no new data were

developed through this process, both for cost savings and because there were already huge amounts of data already being collected by other parties that had not been available in one place. The data are now housed at the Centralina COG, at the Urban Institute, and at EPA and serve as the foundation for using ReVA. However, the comprehensive maintenance and update of this information will require funding that needs to be secured.

This objective was critical to beginning the “regional capacity building” in Phase 3 and for future decision making in post-EPA project years. The region’s decision makers had to have access both to data and analyses in order to be informed of economic and environmental impacts and trade-offs.

Development of Marketing and Communications Materials: In Phase 2, the COGs developed marketing materials, including a logo to help brand SEQL. They received training from a consultant on how to work with the media and developed a press kit for events. Staff also visited the editorial staff of each major print outlet to describe SEQL’s concept and mission and to alert them to upcoming SEQL events.

Early in the process Centralina COG established the SEQL website (www.seql.org) and it was later enhanced under a Foundation for the Carolinas grant. SEQL staff also implemented quarterly newsletters highlighting regional accomplishments and a monthly e-newsletter that captured more current news. Together, these communications continue to reach over 2,400 elected officials; local, state, and federal staff members; interested environmental and community groups; businesses and Chambers; and interested individuals.



Edward Munn, City Manager, Gastonia, NC, and Jennie Stultz, Mayor, Gastonia, NC

In Phase 2, SEQL identified target groups for outreach in Phase 3, including school-aged children, parents, and school transportation officials. The message to these groups focused on children’s health as impacted by poor air quality. In 2005, Centralina COG received funding from the Duke Power Foundation to implement the “Clear the Air for Kids!” program in cooperation with the Carolinas Clean Air Coalition.

Additional Outreach: During Phase 2, the COGs linked SEQL to multiple initiatives in the region by engaging with many additional stakeholders on SEQL issues, including several nongovernmental organizations. The Centralina COG invited the Carolina Clean Air Coalition to the SEQL kick-off and engaged them in an in-depth review of the action item “how-to” documents. The COG also invited the Trust for Public Land (TPL) and the Catawba Land Conservancy (CLC) to participate in discussions of open space preservation. Greenways planners from throughout the region participated in a greenways focus group and listserve, and their work was later provided to TPL and the CLC as they initiated planning for a fifteen county trail network. A non-profit group, Voices and Choices, was engaged to help develop baseline indicators for SEQL as part of their own

“State of the Region” report on the environment. American Forests, a national tree advocacy group, collaborated with the COGs to produce a regional tree canopy inventory. The Charlotte region’s Transportation Conformity Working Group helped identify potential futures scenarios for evaluation and to discuss how SEQL’s voluntary actions could be translated into measurable reductions.

The COGs also reached out to the business community through meetings and workshops with the Chambers of Commerce in Gaston County, the southern part of Iredell County, and Charlotte. These meetings were primarily introductory, although the South Iredell workshop did produce a commitment to develop a SEQL business action plan. In the meetings, the Centralina COG introduced the themes of integration and interdependency and discussed how business activities and SEQL’s environmental actions intersect. The COG also identified how these intersecting interests could be used to create “win-win” situations for economic growth and environmental sustainability. The Gaston County meeting was particularly helpful at defining the concerns of the local business community.



Polly Jackson, Former Chairman, Lancaster County Council, SC

Participants discussed concerns about the cost of environmental protection, the degree to which they already feel heavily regulated, and the need for government to set an example for businesses and others by taking action on the environment first. The frank exchange helped SEQL to engage with a broader business community across the region.

Finally, the COGs introduced SEQL to other groups in many forums, including the Environment Committee of the North Carolina Bar Association, at the annual meeting of planners in the Charlotte region, and to the Senior Tarheel Legislative Delegation to the NC legislature. The COGs met with select groups to determine what those groups felt they could offer and how they could be most effectively engaged in SEQL. During this process, the COGs actively promoted SEQL as a means of engaging new stakeholders in accomplishing mutually beneficial goals.

2.5 Phase 3: Long Term Integrated Planning

Goals for Phase 3:

1. Build longer-term capacity at the local and regional level for coordinated, integrated planning and decision making through best practices site visits and technical workshops;
2. Develop and implement additional toolbox items and regional programs, policies and legislative/regulatory agendas;
3. Strengthen local and regional decision making through visioning and scenario analysis to show the impact of various decisions;

4. Implement comprehensive public education efforts aimed at engaging the general public and specific groups in behavioral changes that support improved environmental and air quality;
5. Focus on coordinated, integrated planning as a means of improving air quality through concurrent review of issues related to ozone, particulate matter, and air toxics, and through related scenario evaluation;
6. Develop and adopt a regional vision which provides a foundation for future action to support integrated planning;
7. Implement regional actions to promote environmental sustainability; and
8. Institutionalize environmental sustainability as a priority to be considered in ongoing local and regional decision making through development of a supportive framework of non-governmental partners and the public.

To implement these goals, the COGs engaged in several activities in Phase 3:

Institutionalizing Integrated Planning and Environmental Concerns: The COGs sought to institutionalize integrated planning and environmental concerns into local and regional decision making through several activities.

Initially, the COGs approach was to raise awareness of the need for planners to work together across programs and departments to ensure coordinated and integrated planning.



John Marshall, Former Mayor, Statesville, NC

The COGs did this by holding a series of sub-regional meetings in which they introduced the concept of a feedback loop, to show the interconnectedness of different local policies. For example, a tree ordinance in a community can impact issues like walkability by making streets more attractive. Trees can also help air quality by reducing surface temperatures. By highlighting these connections, the COGs hoped to stimulate different interests to work together.

The COGs used the example of planners working together across departments in Gaston County.

This initiative, called G-Camp, later developed into a work group that crafted Gaston County's multi-jurisdictional unified development ordinance (UDO), which became another SEQL action item. COG staff promoted the G-Camp idea to bring together planners in other counties in the region. The idea has caught on, and similar groups have formed in other counties. In addition to the G-Camp idea, Cleveland County has written the need for integrated planning into their land use plan, which was adopted in 2005.

The first round of subregional meetings was followed by a number of workshops. For example, in collaboration with the Carolinas Clean Air Coalition and the Charlotte Medical Clinic Foundation, Centralina COG invited Dr. Richard Jackson to speak (at a luncheon for over 100 planners and local government officials) about the link between the built

environment and public health. The session explored ways for audience members to apply what they had learned in the local context, particularly in the area of urban planning.

The COG staff has also taken the SEQL message to older adults. In cooperation with the Charlotte Area Agency on Aging, Centralina launched “SEQL Silver,” which focuses on the impact of land use decisions on seniors’ ability to live independently and remain mobile and connected to the community, as well as air quality and health issues. The senior community is now exploring collaboration with Partners for Livable Communities, as well as seeking funding to initiate a program that looks at land use, transportation integration and walkability.



SEQL has also encouraged local government staff and others to work collaboratively toward addressing environmental concerns in connection with projects and initiatives whose goals may not be directly or overtly environmental. This aspect of SEQL is more difficult to measure, but is having an impact. Encouragement to do this occurs first with COG staff working on a broad range of technical assistance projects in the region and then

extends to the local planning, transportation, and environmental communities.



There are several examples of how this encouragement is paying off. Communities doing pedestrian plans are looking at how their land use policies promote walkability, which can reduce automobile dependence. Communities planning major road improvement projects are looking at not only requirements for buffers to protect endangered species, but also at community amenities that can be gained from such projects, including conservation easements that can produce wider buffering and greenway potential. Finally, even simple land use

plans to address zoning classifications are increasingly shifting to a focus on the development of “comprehensive plans.” Under a new North Carolina law, this shift means that, when local governments make incremental land use decisions, they must make a finding as to whether the proposed decision conforms to the more comprehensive plan.

Visioning and Scenario Development: The COGs felt that the Charlotte region was “visioned out” as a result of a number of past visioning efforts that had not produced widespread adoption or action. The region has never had a vision broadly adopted at the

local level. So, rather than develop a new vision through an elaborate stakeholder process, the COGs decided to develop a consolidated vision based on the over seventy-five visions that had been conducted around the region by various entities, ranging from chambers of commerce to local governments. This innovative approach was intended to fast-track the process and to avoid duplication of valuable local government work on visioning.

To accomplish this, the COGs engaged ACP Visioning & Planning to analyze the existing visions for common values and goals, which are intended to form the basis for a consolidated regional vision and a long-term framework for sustainability. The COGs formed a thirty seven member citizen task force to vet the consultant's findings and to recommend how a broader group of stakeholders and local governments should be engaged in crafting a final vision. The consultant's work revealed a truly remarkable degree of consensus on not only values found in the plans, but also in the policies through which those values were to be realized. Over thirty shared values were identified. The task force selected six of those as core values around which the vision should be built. The emerging regional vision will, therefore, link directly to those of individual jurisdictions, which should help create buy-in from local governing bodies. The vision consolidation and development process has received strong interest and support at the local level.



One of the frequent questions asked in visioning and other planning processes is, “What differences do development patterns make to the environment? What is the likely impact on a jurisdiction’s bottom line?” This question is important in providing local elected officials and planning staffs with the data to help guide and support decisions that produce sustainable environmental outcomes. For this reason, scenario development is becoming increasingly used as a tool to evaluate visions. To assist with scenario development, in 2003 EPA offered the ReVA program to the COGs as a resource to help develop an integrated assessment for the SEQL region. The ReVA program will be used by the COG in the next phase of the visioning process to visually demonstrate future development impacts on area-wide environmental and social issues. By providing this type of information, the COG hopes to help individual decision makers better understand the necessity of working together to meet the needs of the region.

To help address the complex issues facing the SEQL region, ReVA developed a web-based environmental decision tool (EDT). The web-based EDT allows visualization and integration of user-selected data sets, as well as an option to weight variables or decision criteria in order to evaluate different possibilities. The EDT is set up to provide information for the needs of three different users:

- Policymakers or elected officials
- Planners

- Data managers

Combining the ReVA process with an EDT will allow decision makers to put their increasingly complex environmental problems in a spatial context, and to compare alternative management options.

ReVA is working with the COGs, the States of NC and SC, planners, and transportation experts to:

- Develop protocols for realistic future scenarios
- Refine models of NPS water pollution
- Develop models to estimate vehicle miles traveled
- Generate emissions using MOBILE 6.2
- Explore indicators of fiscal impacts and quality of life

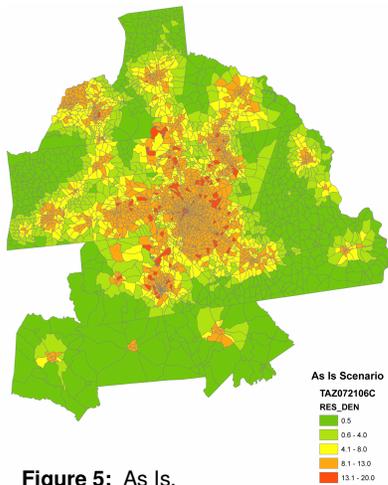


Figure 5: As Is, Only Better Scenario

One of the region's biggest challenges has been to redistribute population into alternative development patterns, and to translate those patterns into projections of land cover for environmental analyses. ReVA and the COGs have translated alternative development densities and patterns into a visual spatial form using Geographic Information Systems. Data from the alternative scenarios is being evaluated in terms of air and water quality, amenities associated with development patterns, and probable related economic changes. Results of these changes will be incorporated into the EDT and made available to decision makers to consider, weigh, and negotiate trade-offs.

There are three development conditions:

- Current Condition (2001)
- 2030 projected As Is, Only Better Scenario
- 2030 projected Compact Centers Scenario

The As Is, Only Better Scenario (Figure 5) is growth that continues according to current patterns of development, but at a greater density. This is beginning to be seen in urbanized areas today as land prices increase. This scenario takes current population and housing growth projected by the Regional Traffic Demand Models and distributes the data into a 30m gridded format within each Traffic Area Zone. The 2030 residential, industrial and non-industrial development density (highest to lowest)

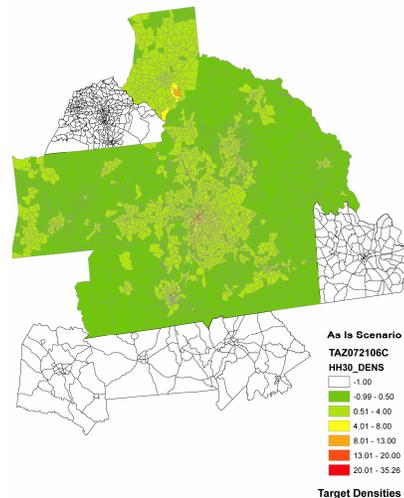


Figure 6: Compact Centers Scenario

was allocated based on five densities of development zones.

The Compact Centers Scenario (Figure 6) is a growth projection study for the fifteen-county, bi-state SEQL region for the target year 2030. The purpose of this scenario is to explore the feasibility of growth primarily directed toward higher density “centers” (and corridors in urban areas) rather than growth that continues according to current patterns of sprawl. The centers include existing municipalities, with a few additional “crossroads” and other areas where significant growth is deemed likely within the projected period.



William G. Ross, Secretary, NCDENR

A third scenario, a less dense version of the As Is, Only Better Scenario, will be developed to reflect the possibility of a slowdown in urban redevelopment and will represent more of a continuation of past land development patterns.

Implementation of Additional Action Items: The focus of this phase was on measures that achieve direct emissions reductions, and thus air quality improvements. The COGs pursued six measures:

1. Diesel emissions reduction programs
2. Truck stop electrification
3. Lawnmower rebates and gas can trade-outs
4. Idle reduction policy
5. Adsil coatings to improve energy efficiency of A/C units
6. Design for the Environment for auto body shops

The results from the implementation of the measures are described in Section 3 below.

2.6 The Key Components of Success for Regional Initiatives

Based on the SEQL experience, local communities interested in developing regional environmental programs should consider:

- 1. Identify a Local Champion:** Political leadership at the local level is critical to the success of a SEQL-like initiative. Such initiatives can be difficult to maintain without a prominent political leader, or leaders, who can bring together the elected officials necessary to develop solutions to regional problems. Bipartisan leadership is ideal. While leaders from the business community assume key roles in many metropolitan organizations, support and participation from local elected officials is critical.



2. **Engage a Respected Regional Organization to Manage the Effort:** The regional organization must be respected and acceptable to all key players, because it will handle funding, organize meetings, provide a source of staffing, etc. In the SEQL initiative, local elected officials determined that the two COGs were the appropriate organizations to serve in this role. Other initiatives have established private-public partnerships or steering committees comprised of local and state government officials, business leaders, developers or community leaders.

3. **Develop a Multi-Year, Reliable Source of Funding:** Funding is critical. Key sources include foundations, federal or state grants, direct support from local governments, and contributions from local corporations or the business community. SEQL has succeeded

partly due to steady, dedicated funding for ongoing activities, as opposed to project funding. Without a multi-year, reliable source of funding from year to year, regional efforts will not succeed. Multiple sources help ensure that the project is continually funded as sources become exhausted over time. EPA provided a majority of the SEQL funding over the first four years of the pilot project to the Centralina COG, which allocated a portion to the Catawba COG. This helped cement the EPA/COG partnership and enabled the allocation of local funds by the COGs to implement SEQL. EPA also provided North Carolina and South Carolina with some separate resources to support SEQL.



Stephen L. Johnson,
EPA Administrator



Michael O. Leavitt, Former EPA
Administrator

4. **Be Prepared for a Long-Term Commitment:** The growth challenges facing metropolitan regions across the nation cannot be solved with

a two- or three-year effort. Given the short terms of most local officials and frequent changes in local leadership, maintaining longer-term efforts, however, can often be difficult. The COGs have used various approaches to sustain SEQL, including sponsoring events to generate support and maintain momentum, providing an interactive map on the SEQL website, and tallying the number of actions communities have taken to improve air, water, and land.



Christine Todd Whitman, Former EPA Administrator,
and Alan Powell, EPA Region 4

5. **Develop a Regional Vision:** Growth is inevitable. The question is: “how do we want to grow?” Bringing the public into the process to identify a long-term regional vision is critical to answering this question. This is particularly important in large, fast-growing regions, where residents in rural counties may have a very different vision of the future than those living in suburban or urban areas. This input can be

used to develop or evaluate future scenarios and can serve as the foundation for the entire initiative. SEQL includes a visioning and scenario-evaluation component that helps the program influence planning practices across the region.

6. **Celebrate Early Successes:** Identifying early successes is critical. It takes time to establish a process, obtain a steady stream of funding, initiate regional meetings, and develop visions and future scenarios. Ideally, these are on-the-ground projects that can give the public, elected officials, and funding sources a tangible sense of success. Celebrating those successes and working with the media to publicize them also helps maintain momentum.
7. **Develop a Marketing Strategy and Maintain Community Involvement:** If the area is large like the Greater Charlotte Bi-State Region, considerable outreach may be necessary to engage elected officials, citizens, community groups, and businesses. In addition to working with local media, a marketing strategy should include visits to local governments, chambers of commerce, and local organizations. The COGs initiated and attended gatherings of a number of groups, including Parent Teacher Associations, local media meteorologists and environmental organizations. EPA and the COGs also have helped SEQL get national exposure through presentations at national meetings, a satellite broadcast and other means.
8. **Develop Partnerships:** Partnerships are critical. They help spread the message, leverage resources and increase the level and diversity of program activity. In the case of SEQL, the emphasis is on government partnerships. Three levels of government – local, state, and federal – worked together toward the common goal of empowering local governments to take action to improve air and water quality. Partnerships with businesses and citizen groups are also important for advancing the projects goals and for achieving environmental results. SEQL worked very effectively with several groups, including the Carolinas Clean Air Coalition.
9. **Enhance Participation by Providing Options for Involvement:** Finding the most effective way to engage stakeholders will vary from area to area. Providing choice was particularly effective for the Charlotte region. By providing numerous options for participation, SEQL was able to engage local governments and different groups effectively in various projects, such as implementation of the environmental action items from the toolbox. Leaders in the Charlotte region reacted very favorably to this approach, much more positively than they would probably have responded to a “one size fits all” approach. Once the COGs were able to interest a local government or group in a SEQL project, then the discussion focused on project expectations and what SEQL participation entailed.
10. **Identify and Develop Staff Who are Committed to Action:** Elected and high-level officials come and go fairly regularly so it is very important to develop staff within both the sponsoring organization and participating jurisdictions and agencies who are essential for successful implementation of a regional project. Professional staff generally turn over less frequently and are, therefore, more likely to remain long enough to ensure the project is implemented over the long term. Key professional staff must not only have (or develop) subject area knowledge, but must also be



committed to inclusive processes and integrated planning. SEQL relied upon such professional staff within participating local governments (and COGs) to look for environmental improvement opportunities in every part of their jobs. This ongoing education helped create a cadre of “doers” who can spread SEQL-type thinking into longer-term activities, plans, and programs. Ultimately, this has proven to be one of SEQL’s greatest challenges and successes.

In summary, here are SEQL’s overall phases and timeframes:

Table 3: SEQL Overview			
	Phase 1: INTRODUCTION TO ENVIRONMENTAL MEASURES	Phase 2: EARLY SUCCESSES	Phase 3: LONG TERM INTE- GRATED PLANNING
Time frame	2001 – 2002	2003 – 2006	2004 – ongoing
Goals	<ul style="list-style-type: none"> ▶ Educate local elected and other officials on environmental issues ▶ Officials select 25 action items for the environment 	<ul style="list-style-type: none"> ▶ To broaden and deepen the education of local elected and other officials on environmental issues ▶ Encourage jurisdictions to adopt 25 action items for the environment 	<ul style="list-style-type: none"> ▶ To promote long term integrated planning
Results	<ul style="list-style-type: none"> ▶ Comprehensive list of available air, water and land use measures ▶ Significant raising of awareness across the region ▶ Commitment to take action to protect the environment 	<ul style="list-style-type: none"> ▶ “How-To” action item manuals ▶ As of April, 2006, 67 jurisdictions had become formal SEQL partners and 86 jurisdictions have self-reported adoption and implementation of over 750 action items across the region. 	<ul style="list-style-type: none"> ▶ Education of elected and appointed officials about integrated planning, how to pursue it, and its benefits ▶ Identification of integrated planning tools in North and South Carolina ▶ Modeling integrated planning in a number of projects including land use plans and other processes ▶ Implementation of ReVA scenarios and completion of a baseline regional data to support future planning ▶ Inauguration of a regional vision to provide a long-term basis for regional collaboration toward sustainability
Resources	<ul style="list-style-type: none"> ▶ EPA cooperative agreement with City of Charlotte 	<ul style="list-style-type: none"> ▶ EPA cooperative agreement with Centralina Council of Governments ▶ EPA cooperative agreement with State of SC Department of Health and Environmental Control ▶ Staff resources to NC Department of Environment and Natural Resources 	<ul style="list-style-type: none"> ▶ EPA cooperative agreement with Centralina Council of Governments ▶ Cooperative agreement with UNC-Charlotte ▶ Staff resources for State of NC Department of Environment and Natural Resources

SECTION 3. SEQL ACCOMPLISHMENTS

3.1 Overall SEQL Results

SEQL has achieved significant results. As of April 2006, sixty-seven jurisdictions have become formal SEQL partners, and eighty-six jurisdictions across the fifteen county regions had self-reported implementation of 758 actions in four areas:

- Air quality
- Water quality
- Sustainable growth
- Other environmental measures

The Centralina and Catawba Councils of Government jointly developed “how-to” guidance documents to implement these action items. The notebooks were well- received across the Charlotte region and used elsewhere in the Southeast.

Table 4: City of Concord (Cabarrus County) Air Quality Measures

- 800+ employees receive air quality training, including AQI
- City employees engage community on air quality issues
- City developed air awareness program
- Concord has implemented specific actions:
 - Applying for grant to build publicly accessible natural gas refueling station
 - Plan to replace 10 gasoline vehicles with CNG
 - Stakeholders in the Clean Cities Program
 - City purchased first hybrid vehicle as part of its fleet
 - Started mass transit system
 - Fund Express Transit service into Charlotte
 - Reduced fueling hours during the summer months
 - Use of teleconferencing to reduce travel between facilities
 - Use of 4-day work weeks in various departments
 - No idling policy for city vehicles

3.2 Air Quality Action Items

In air quality, 314 actions have been taken by municipalities on the following twelve measures:

- Open burning limits
- Designated local experts on air quality
- Flexible work schedule
- Smoking vehicles
- Tax-free commuter benefits enforcement
- Tree planting standards
- Carpooling/vanpooling
- Clean cities program
- Enhanced ozone awareness
- Local government energy plan
- Air awareness programs
- MPO/RPO coordination

Table 5: Examples of Air Measures from Select SEQL Areas

City of Salisbury (Rowan County)

- No idling policy
- Alternative fuels fleet enhancements and fueling
- High-resolution tree canopy study to set canopy goals and implement changes in development policies

Gaston County Schools

- Produce their own biodiesel for school buses
- Diesel oxidation catalysts on buses of appropriate age

City of Monroe (Union County)

- Alternative fuels fleet enhancements and fueling

3.3 Sustainable Growth Action Items

In sustainable growth 184 actions have been taken on the following six measures:

- Annexation agreements
- Connectivity for multi-modal transit
- Efficient parking
- Greenways and open space
- Multi-jurisdictional land use regulations
- Pedestrian friendly streetscapes

Additional actions are being completed on urban infill and mixed or multi-use development in many places around the region.

Table 6: Examples of Sustainable Growth Measures from Select SEQL Areas

- Gaston County developing comprehensive Unified Development Ordinance for the county and 14 municipalities
 - *Provides consistent, integrated regulations to support growth and quality of life issues*
- Trust for Public Lands, Catawba Lands Conservancy, and others collaborating on development of Catawba Regional Trail system
- Nine communities working on pedestrian plans to increase walkability and connectivity
- Cabarrus County master plan for parks, greenways, recreational facilities, open space and bicycle and pedestrian transportation routes
 - *Includes County, towns, MPO, schools*
- Town of Mooresville developing an integrated transportation/land use plan based on a unified community vision

3.4 Water Quality Action Items

In water quality 191 actions have been taken on the following six measures:

- Natural buffer zones
- Sedimentation and erosion control
- Wastewater treatment plans
- Wastewater treatment programs
- Watershed impact
- Water supply plans



Table 7: Examples of Water Measures from Select SEQL Areas

- Duke Foundation provided \$2,500 for Lake Norman bike route planning to support natural buffers
- City of Gastonia received a NCDENR award for advanced wastewater treatment at the Long Creek water resources reclamation facility
- Charlotte-Mecklenburg established post-construction ordinances for stormwater management and sedimentation/erosion control

3.5 Additional Emission Reduction Measures

The COGs have also supported the implementation of other emission-reduction measures, many of which EPA helped support through funding and other resources. Sixty-nine actions have been implemented across the region for the following eleven measures:

- Diesel retrofit programs
- Truck stop electrification
- Lawn mower rebates and gas can trade outs
- Idle reduction policy
- Air quality education for educators
- Design for the Environment's program for auto body shop pollution prevention
- High-performance building techniques
- Brownfields redevelopment
- Promotion of infill development
- Pervious pavements
- Energy-efficient coatings for HVAC units



Under a diesel school bus retrofit program, thus far, 408 buses have been outfitted with diesel oxidation catalysts (DOCs) in Iredell, Mecklenburg, and Rowan Counties, achieving emission reductions for volatile organic compounds (VOCs), particulate matter (PM) and carbon monoxide (CO). Rowan County has also installed diesel emission control devices on twenty-three buses. Mecklenburg County operates forty buses using ultra low diesel fuel with diesel particulate filters and eight buses on natural gas.

Cabarrus, Lincoln and Gaston Counties are planning to retrofit 187 buses in the summer of 2006 using DOCs through a North Carolina Mobile Source Emissions Reduction (MSER) Grant. Mecklenburg also received MSER funds and will outfit buses with Global Positioning System devices to monitor idling and other route activity. Gaston County has also produced over 13,000 gallons of biodiesel from used cooking oil and uses a diesel/biodiesel mixture in its buses. They have equipment and plans in place to more than double the production of biodiesel in 2007.



South Carolina received an EPA Clean School Bus grant to help school districts in the South Carolina portion of the SEQL region retrofit approximately 197 buses with DOCs



and crankcase filters, replace up to twelve older diesel school buses, and conduct pilot programs to produce biodiesel fuel and reduce idling. Both COGs are seeking supplementary funding for other counties in the ozone non-attainment area.

In addition, the Centralina COG received an EPA grant to serve as a down payment to electrify a truck stop in Rowan County. Instead of idling their trucks, truckers can hook up to an electric system that provides all of the energy they need when resting or

spending the night, without the local emissions. Initially fifty spaces will be electrified, with more spots possible in the future. The remainder of the funding for the fifty spots will come from Congestion Mitigation for Air Quality funds. This initiative will achieve reductions of nitrogen oxides, VOCs, CO and PM. Soon, truckers will be able to drive almost the entire stretch of I-85, from central Georgia through North Carolina, without having to idle, as six sites will eventually be available along that route. Centralina is now negotiating with FHWA to determine the eligibility of an additional truck stop in Rowan County for funds under the Congestion Mitigation and Air Quality Improvement Program.

EPA provided funding to support a regional project to coat air conditioner (A/C) units with an innovative coating called Adsil. When applied to A/C units, studies have shown that Adsil can bring the unit's efficiency virtually back to that of a new unit, as well as prevent age-related efficiency loss due to the deterioration of heat transfer surfaces, saving both electrical power and early replacement costs. The ability to model expected energy savings with widespread use of Adsil is transferable to other communities nationwide. Energy savings reduce costs, limit the need for new generating capacity, and could, under certain circumstances, benefit air quality. Quantifiable air quality benefits depend on the amount

Table 8: Examples in Select SEQL Areas of Development Policies that Consider Environment

- Charlotte and Mecklenburg County adopted a series of General Development Policies
 - Provide guidance for future growth and encourage compact, pedestrian-oriented development and integration of transportation and land-use planning
 - Uses GIS-based point system to make it advantageous to developers to find building locations well-connected and to build facilities for alternative transportation modes, such as sidewalks and bicycle paths
- Cleveland County adopted "rural smart growth" land use plan
 - Greenway network
 - Rural open space preservation and farmland protection
 - Support for focusing smart growth in towns
- Four School Districts have anti-idling policies
- Salisbury has a tree ordinance and will begin a high-resolution canopy study to enable better planning
- Charlotte limits cul-de-sacs in new subdivisions
- Mooresville is coordinating land use plan, transportation plan, and pedestrian planning efforts to produce a truly integrated plan
- Midland has requested SEQL input in their new land use planning/ordinance development process

of energy savings and the extent to which, and where, fossil fuel-fired power plants reduce emissions as a result of those energy savings. The Adsil coating was applied to 150 HVAC units in 28 buildings in 13 jurisdictions. Adsil improved the energy efficiency of those units by 12.3%, resulting in projected annual savings of 461,400 kilowatt hours and over \$37,000.²⁷ (For more information, visit: <http://www.epa.gov/ttn/catc/products.html#aptecrpts>.)

EPA also provided funding for an auto body shop pollution prevention initiative to encourage auto refinishing shops to implement best practices that reduce emissions from diisocyanates, organic solvents, and other toxics. A contractor did before-and-after visits to eight shops, recommending work practice changes to shops to reduce emissions. These were quantified and implemented by the shops. (For more information, visit: <http://www.epa.gov/dfepubs/projects/auto/index.htm>.)

The Charlotte region has also been active in lawnmower and gas can exchanges. York County, SC has held two gas can exchanges, in which 275 gas cans were exchanged. The SEQL region is gearing up for a lawnmower trade-out in the spring of 2007.

In addition to these measures, communities across the Charlotte region have begun to integrate environmental considerations into local policy and regional documents in several areas:

- Anti-idling policies
- Land use plans
- “General development policies”
- Visioning

They have also begun to adopt specific tools into ordinances for land use regulation, such as connectivity in subdivisions, sidewalks, and trees.

3.6 Successful Outreach and Collaboration

SEQL serves as a model of collaboration across the local governments in the Charlotte/Rock Hill region and across three levels of government – federal, state and local. SEQL has been successful at breaking down stovepipe mentalities and creating communication and collaboration channels across programs, governments and organizations.



Through extensive outreach, the COGs successfully forged partnerships with environmental, civic, and business stakeholders by first orienting them to SEQL and then bringing them in as partners on SEQL projects.

3.7 Common Information Resources or Database

One of SEQL’s goals has been establishing a common database for the region to support development and evaluation of future regional scenarios. Meeting this goal was especially challenging, given that each government is responsible for maintaining their own data in a format and design of their own choosing. Despite these hurdles, the COGs, working with the University of North Carolina at Charlotte and EPA’s ReVA program, successfully created a regional data system framework designed to support baseline and ongoing data collection. Baseline data are in place and work is continuing to develop funding for maintenance that will permit impact analyses for implementation of both toolbox items and other environmental initiatives, and allow modeling and analysis of the impacts of various programs and decisions on transportation and air quality on an ongoing basis.

3.8 Regional Scenarios and Vision

Drawing on visions developed by numerous entities for different parts of the Charlotte/Rock Hill region, the COGs are developing a unified vision for the region that is expected to have buy-in from the majority of local governments. It will involve stakeholders across the region and will reflect a shared vision for how they want their communities to grow. The baseline document for the visioning process also will identify areas where no consensus exists, or partly exists, and where the vision is not supported by local policies or practices. This will provide the region with a basis for continuing discussions about growth and sustainability beyond SEQL. This approach to visioning has strong local government, business sector, environmental, and civic organization support because it clearly values the work that has happened in individual jurisdictions before this time, and because it is viewed as highly cost-effective.

The ReVA scenarios that are being completed will help to relate environmental and fiscal impacts to various development forms. While the regional vision will not depend on the ReVA outputs, it will inform the process and should indicate actions in the appropriate directions.

3.9 Integrated Planning

SEQL has raised awareness among governmental and nongovernmental partners on the utility of coordinated, integrated planning, and identification of intersecting interests that will support elected officials in implementing SEQL initiatives. The COGs have made great strides in promoting regional integrated planning so that it becomes an ongoing and customary activity. Specifically, the COGs significantly increased local and regional capacity for integrated



environmental planning through “best practices site visits,” technical workshops, and by continually working with people and organizations committed to SEQL. Integrated

planning is beginning to find its way into how regional plans are produced and how decisions are made. For example, Charlotte-Mecklenburg's Environmental General Development Policies require that development planning consider long term impacts on air quality through VMT reduction. Cleveland County's inclusion of an integrated planning staff-level committee in its Land Use Plan is another example.

SECTION 4. KEY LESSONS LEARNED

As SEQL developed, its leaders learned from experience and made adjustments accordingly. The SEQL initiative provides valuable lessons that others can benefit from as they develop similar programs.

4.1 Need Local Champions

For efforts like SEQL to succeed, local champions are essential; individuals and organizations make the initiative happen. More specifically, SEQL-type projects need:

- Strong, supportive political leadership.
- Strong, steady institutional support and leadership from an organization that is regionally respected, such as the Centralina and Catawba Regional COGs, and that is willing to persevere with communities that might initially be unresponsive to playing a role in SEQL.
- Local champions who are willing to partner and share success.
- Additional champions beyond the main organization driving the effort. This includes the development of local air quality commissions or sub-committees as both policy and program implementers, and as a way of creating a permanent authority to integrate environmental factors into local decision making.
- A “staff champion” is essential to ensure that technical staff continue working collaboratively on SEQL-type regional work.



4.2 Identify Successes by Early Adopters

SEQL’s ability to get underway was made possible by people who were willing to play an active role early on in the process. They helped create momentum through several early, public successes, which built a foundation for more comprehensive and time-consuming efforts later on. To make this happen, leaders of SEQL-type projects need to:

- Seek to identify a few leading jurisdictions who see the benefits of an integrated approach and who are willing to act publicly with specific actions.
- Stay focused initially, and then diversify. Begin simply, with a limited number of jurisdictions, while avoiding the impression of excluding other jurisdictions or elected officials.
- Facilitate public recognition of success and the local people who made it happen. This makes it easier for others to join the process, and to gain political and financial support. Each new member of the team needs to be nurtured and carefully listened to in order to understand their motivations for continuing involvement.

4.3 Focus on Action through Choice

Central to SEQL’s success was the emphasis on action through choice. SEQL provided local governments with a menu of air, water and land use measures from which to select specific actions that appealed to local officials and which would work in particular communities. Many officials commented that it is far easier to take action when there is choice, versus being told, “You must do this.” This approach also enabled local officials to branch out later to action items that initially were not so appealing, but that appeared more relevant after they saw the fruits of the early actions.

4.4 Connect People

Under SEQL, a considerable amount of the COGs’ time was spent connecting people and encouraging collaboration across departments, agencies and organizations to produce action. This approach had several features:

- Nontraditional stakeholders must be included. In addition to approaching “the usual suspects,” the COG tried to include new people with different perspectives.
- The COGs spent considerable time seeking commitment from local elected officials and finding ways to keep them engaged. They encouraged small and large jurisdictions to participate, and actively sought to involve local groups from different sectors. They found that local elected officials generally perceived environmental actions as favorable if they had good information, public and peer support, and a clear sense of the multiple benefits.
- SEQL enjoyed good working relationships with federal, state and local officials, which helped the COGs to overcome the silos and to identify and seek additional SEQL resources and support.
- Keeping commitment is an ongoing process. As participants come and go, it is necessary to constantly check in to ensure support.
- Stakeholders must be met on their home ground, both physically and philosophically. The COGs’ offices are located in central cities, but staff frequently travels to localities across the region to listen to concerns. This process was labor intensive, but crucial to the success of a broad-based project.
- A continuing relationship with stakeholders and partners, as well as a broad view of project interests is essential to success. COGs’ staff are often ideally suited to promote this approach, because COG membership embraces the entire region, and COG staff routinely engage local officials on a variety of projects – most of which touch on SEQL goals.
- With so many interests involved, SEQL identified participatory roles for each,



Joe White, Former Member, Charlotte, NC City Council, and Julie Burch, Assistant City Manager, Charlotte, NC

while respecting existing structures and relationships. For example, Charlotte immediately saw the benefits of participating in SEQL and was an early adopter, while some of the other governments were less inclined to participate early. Nevertheless, it was crucial that those governments be acknowledged and supported at even the most preliminary level.

- From the beginning, it was critical to seek the involvement of state-level officials. Local jurisdictions were reluctant to make commitments before the states had taken a position.
- If the SEQL message was not well received in a particular area, the COGs sought to better understand the attitudes, values and behaviors of that jurisdiction. They then revised the message in light of this new understanding and tried again to bring that previously hesitant area to the table.

4.5 Communicate, Communicate, Communicate

The importance of communication cannot be overemphasized. It has many facets:

- The program must develop communication tools for different target audiences, including local and state-level elected officials, local and state-level employees, general and targeted businesses, school teachers, general public, financial institutions and specific non-profit organizations. To be successful, each audience needs to be understood in terms of where they are, what their interests and values are, and how they see themselves as part of the broader region.
- The challenge is to develop meaningful and accurate explanations of the relevant scientific underpinnings for the various proposed actions and requirements. At the same time, these tailored communication tools must contain a consistent message. When scientific and technical confirmation cannot be readily translated for the general public, acceptance of the information will weaken and may not stimulate action.
- The need to communicate broadly and deeply and to diversify target audiences beyond chief elected officials is important. Turnover of elected officials is high, so information must reach the career staff in the organization. Even at the senior management level, there may be frequent personnel changes. For this reason, it is important to reach as many people as possible within each organization. A broad and deep communication strategy will target a jurisdiction's professional staff, elected officials, appointed boards and commissions, and other key decision makers.
- Don't over-promise or under-deliver. Be sure everyone understands and agrees on the expectations that have been set, and then work jointly to meet them.
- Follow the "no surprises" rule. The goal of the communications system should be that no one in the system gets belated information and no one is surprised when others know something that they do not know. When everyone is informed, individuals can then decide what they want to do with the information.
- Communicate frequently. For a significant paradigm shift and the behavior



changes SEQL sought, frequent communication and repetition of the same basic message was key. The website, printed newsletter and especially the e-newsletter were key to continued outreach to the varied stakeholders.

4.6 Funding

SEQL succeeded because the COGs were able to secure base funding from EPA and their own budgets, and secure project funding from EPA and several other sources.

Several lessons learned on funding include:

- For an effort like SEQL that addresses air and water quality, future funding must be available for integrated, cross-media activities. One of the limits of the base project funding was that it had to be used for air quality work. The importance of water, brownfields and other media were recognized, but the funding for pilot projects and involvement of other offices must be present to support broader activities. It is important to understand the critical link between connecting people and funding. If the right people are introduced to, and committed to, the goals, funding can follow.
- Funding processes take longer than may be originally envisioned. Leaders of SEQL-type projects need to either have a back-up plan or accept the consequences of these delays. Everyone needs to be open and honest about what is happening throughout the process. Turn-around time can take years and, therefore, thorough planning is a fundamental requirement.
- COGs are a unit of local government rather than a section 501(c)(3) entity. This proved to be an obstacle to obtaining private foundation funding. Centralina COG later established a 501(c)(3) entity which could apply for this funding. The COG's 501 (c)(3) arm successfully applied for, and received, grants from the Duke Energy Foundation and the Foundation for the Carolinas, and has since applied for additional foundation grants.
- From the outset, COG staff decided that in order to have ongoing local support after EPA funding terminates, local governments needed to be financially committed to the process. The COGs, therefore, did not fund the implementation of action items by local governments using SEQL funds. COG staff assisted local governments with grant applications for funding from outside sources, but local governments were responsible for matching any grants received.

4.7 Be Aware of Many Factors Affecting Community Participation

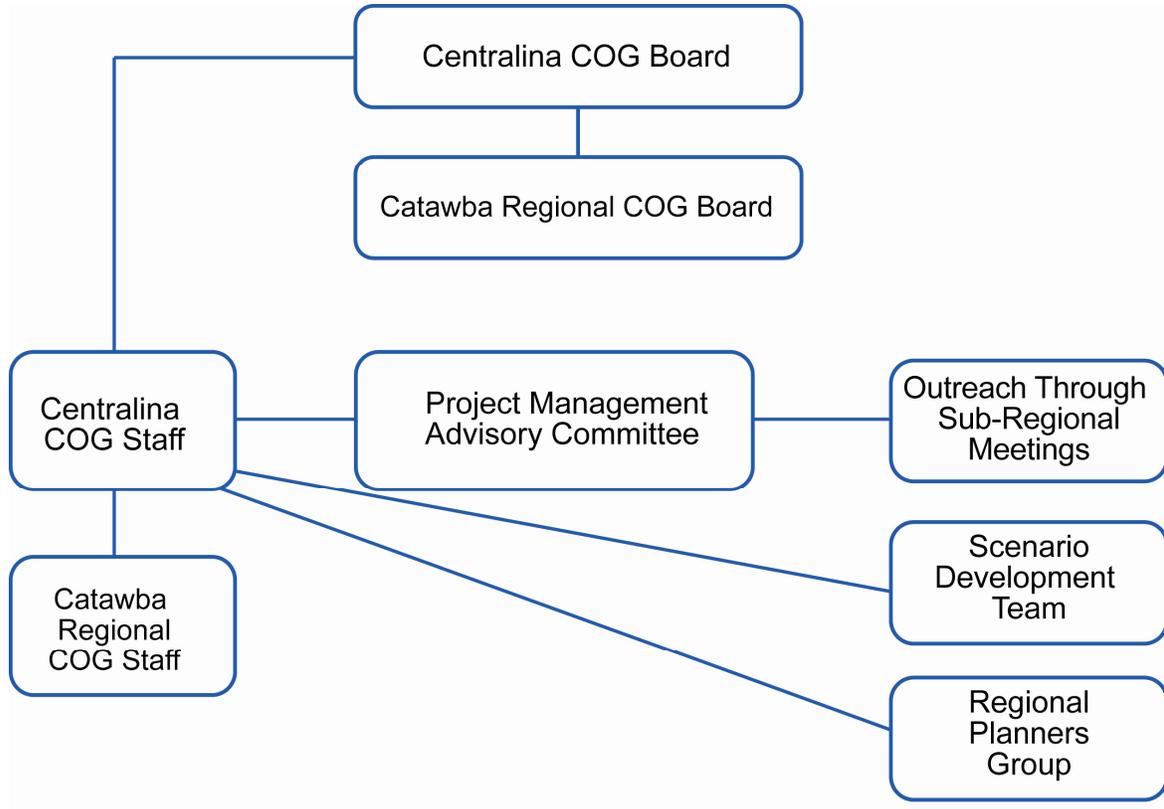
Leaders of SEQL projects need to understand that jurisdictions will more readily take risks when they are experiencing growth and general economic prosperity. Other pressures facing each locality may influence reluctance, or seeming resistance, to participate. In SEQL localities trying to recover from drought and significant employment layoffs, environmental protection measures, even modest ones, were difficult to promote. In areas with few air quality problems, leaders focused on water quality. In areas not experiencing growth, open space preservation was generally not a priority. The message was to focus on the environmental issue of greatest concern to the community as a means of gaining that community's support and commitment to the program.

4.8 Technical Issues to Consider

In the technical aspects of SEQL, two lessons were learned:

- Local and state agencies may be reluctant to share the data necessary to perform the desired analyses because of several concerns. These include the intended use of the data, the possibility that it might be taken out of context, or that it may be inappropriately used by other parties. The agencies are also concerned about using different sources of data. For example, if the state uses one data set for regulatory purposes, they want to ensure that any effort that uses a different data set does not result in the release of seemingly conflicting information or results. Furthermore, the use of different models is challenging because modelers whose results are used for regulatory purposes may be concerned that modeling done for planning purposes will yield different results. Communication about any type of data use, and joint planning for how modeling results will be framed and shared, is critical.
- 
- Communicating technical information to non-technical audiences is a challenge, especially for modeling that address air and water issues, and when elected officials receive technical input from several experts who traditionally do not communicate with each other. Part of the process may involve simplifying certain aspects of the technical program or avoiding detailed explanations about certain technical tools. It is critical to make sure the audience is aware of any simplifications and of the uncertainties associated with scientific research and models. Technical experts dealing in various fields need to work together to craft a mutual solution so that data will be useful.

Attachment 1: Management Structure



Attachment 2: Detailed Timeline of SEQL Activities

DATE	ACTIVITY
October 2004	EPA awarded grant to Centralina COG to electrify Derrick Truck Stop in Rowan County, NC
December 2004	Foundation for the Carolinas awarded grant to Centralina COG to upgrade SEQL website
March 2005	Centralina COG kicked off Pedestrian Planning Program
March 2005	North Carolina Department of Environment and Natural Resources (NCDENR) awarded a mobile source diesel emission reduction grant to Rowan County, NC
May 2005	EPA awarded SEQL water grant to Centralina COG
June 2005	Finalized methodology for Centers Scenario under the visioning and scenario development component of SEQL
June 2005	Conducted survey of local jurisdictions to determine level of environmental action implementation
September 2005	Centralina COG kicked off "Clear the Air for Kids!" campaign
November 2005	Centralina COG sponsored a workshop for regional leaders on "Urban Sprawl and Public Health"
March 2006	NCDENR awarded a mobile source diesel emission reduction grant to Gaston and Lincoln Counties, NC
March 2006	Centralina COG obtained remaining funds needed to electrify the Derrick Truck Stop through the CMAQ or Congestion Mitigation and Air Quality Program
June 2006	Centralina COG kicked off Regional Visioning Project
October 2006	Regional Visioning Project presented to regional elected officials
November 2006	Regional scenario work completed using the ReVA tool
December 2006	Second phase of the Regional Visioning Project commenced

Attachment 3: Profiles of Leadership

These are some of the key leaders who have led and supported SEQL. An effort like SEQL would not succeed without this leadership. They are listed in alphabetical order.

Leda Belk. Leda Belk, former Rowan County Commissioner, served as Chairman of the Centralina Council of Governments Board of Directors during the initial stages of the SEQL program. A native of Rowan County, Leda has taught in the Charlotte-Mecklenburg Schools and Rowan County Schools. She continues to teach drivers education classes and serves as a substitute teacher in Rowan County. Leda is a strong believer that in order to grow a community you must grow the quality of life. “Businesses aren’t going to come unless we do right by the environment,” she says. She serves as a member of the Board of Directors for Smart Start Rowan, Rowan County Parks and Recreation Department and is an active member of the Altrusa Club. She received her undergraduate degree and masters degree in educational counseling from UNC-Charlotte.

Wendy Bell. Bell serves as Senior Planner for the Catawba Regional Council of Governments and as Coordinator for the Palmetto State Clean Fuels Coalition. Bell has spent over twenty years working with local government issues. Prior experience includes serving as Planning Director for Lancaster County, S.C. Her educational background includes a Masters of City and Regional Planning from Clemson University.

Dumont Clarke. Centralina Council of Governments Chairman, Clarke is serving his third term on the Mecklenburg Board of County Commissioners. He is an attorney who concentrates his practice in corporate finance with the law firm of Moore and Van Allen PLLC. He is a former member – as a liaison from the Charlotte-Mecklenburg School Board – of the Mecklenburg County Citizens Capital Budget Advisory Committee, which helps the Board prioritize its capital spending. Clarke serves on a legislative study commission established by the North Carolina General Assembly on conflict resolution between boards of education and county commissions. From 1990-1993, he was an Assistant Professor of business law at the Belk School of Business at UNC-Charlotte.

Clarke is active in the community. He is a native of Buncombe County in western North Carolina, where he grew up on a dairy farm. He graduated from Vassar College in 1974 with a Bachelor of Arts degree in History and he earned his law degree four years later at the University of North Carolina at Chapel Hill.

Eldridge R. Emory. Catawba Regional Council of Governments Chairman and native of Lancaster South Carolina, Emory received his Bachelor of Arts degree from Wingate College in 1958. Emory currently is a member of the South Carolina General Assembly representing House District 45. Representative Emory is assigned to the committees on Labor and Commerce and Industry. Representative Emory serves on the Catawba Regional Development Corporation Board of Directors. Prior to his service in the

General Assembly, Representative Emory served on the Lancaster County Council for twenty years, four of which as Council Chairman. He is retired from Founders Federal Credit Union.

Parks Helms. Helms is serving his seventh consecutive term on the Mecklenburg Board of County Commissioners. Helms was a member of the North Carolina House of Representatives from 1974-1984 and was ranked one of the ten “Most Effective House Members” by the NC Center for Public Policy Research for three consecutive sessions.

He is an attorney and president of the law firm of Helms, Henderson & Associates, P.A. He has served as vice president of the North Carolina Bar Association (NCBA), as well as a member of several NCBA committees. Helms serves on the board of directors of the Arts & Science Council and Charlotte Center City Partners. He serves on the board of advisors of the Dowd YMCA. He is also on the board of directors of Sykes Enterprises, Incorporated. A Charlotte native, he is a graduate of the University of North Carolina at Chapel Hill.

Polly C. Jackson. Member of Catawba Regional Council of Governments Board of Directors and a native of Lancaster, South Carolina, Polly Jackson graduated from Winston Salem State University, B.S. degree; the University of Hartford, M.Ed. degree; and Winthrop University, M.Ed., specialist degree. She is a retired educator. Jackson served on the Lancaster County Council for twelve years, two of which as Council Chairman. She also served as President of the South Carolina Association of Counties in 1999-2000. She presently serves as Vice Chairman of Springs Memorial Hospital Board of Trustees, a member of the Friends of the Medford Library Board, the Lancaster County FEMA Board, J. Marion Sims Foundation, Inc. Board of Directors, and The Foundation for The Carolinas Board of Directors.

Patrick McCrory. In December 2005, Mayor Pat McCrory became the first six-term Mayor in the history of the City of Charlotte. Mayor McCrory has distinguished himself as a leader in the areas of public safety, economic development, housing, and transportation. He has been recognized nationally for his leadership in developing Charlotte’s twenty-five year transportation and land-use plan. Mayor McCrory is involved in many national organizations. He serves as President of the Republican Mayors and Local Officials organization, is the Chairman of the U.S. Conference of Mayors Environment Committee, and has been a member of the Homeland Security Advisory Committee since October 2003. Recognizing the need for coordinated lobbying among North Carolina’s twenty-five largest cities, he was the founder and inaugural Chairman of the North Carolina Metropolitan Coalition.

The Mayor has testified before Congress on environmental issues, transportation policy, and privatization initiatives and has been a guest on several national media broadcasts. Mayor McCrory graduated from Catawba College in 1978 with a B.A. degree in Political Science/Education. He currently sits on the Board of Trustees for Catawba College and received an Honorary Doctorate degree from the school in 2001. Since graduation, he has held several management positions with Duke Energy Corporation.

Harold Shapiro. Shapiro has served as Executive Director of the Catawba Regional Council of Governments for the past fifteen years. Prior to that, at the Catawba COG, he also served as planner and planning director. His educational background includes a Masters of Regional Planning from the University of British Columbia, as well as training in public finance.

Al Sharp. Sharp has served as Executive Director of the Centralina Council of Governments since 2002. He has nine years of experience in international public management consulting on local government issues and fifteen years of county management experience. Sharp has taught, managed and consulted extensively in organization change and development. He graduated from Pennsylvania State University with a Bachelor of Arts degree in Political Science and holds an Master of Arts in Management Change and Development from the University of Kentucky. He is an International City Management Association Certified Manager.

Joe White. Coach Joe White was elected as an at-large member and Chairman of the Board of Education in 2003. He has over thirty-five years of experience working with and for students and parents in the public school system. White began his career in Wilson, North Carolina, before going on to teach and coach at North Mecklenburg High School. He also served as the first football coach and athletic director at Olympic High School. In addition, White worked as a Charlotte-Mecklenburg School (CMS) administrator for sixteen years and served two terms as a member of the Charlotte City Council. He earned a Bachelor of Science degree from Wake Forest University, a Master of Arts degree from East Carolina University, an Education Specialists degree from Appalachian State University and is a graduate of the United States War College. White is retired from the CMS system and served as Centralina Council of Governments Chairman.

Rebecca Yarbrough. Yarbrough has served as Centralina COG Regional Initiatives Program Administrator since 1979, developing regional programs to address multi-jurisdictional needs ranging from Emergency Medical Services and 911 call centers to environmental issues through SEQL. She also facilitates visioning, land use planning and strategic planning and her passion is bringing people together to solve problems. She holds a Bachelor of Arts degree *summa cum laude* from Queens University and has completed the County Administration Program of the School of Government at UNC-Chapel Hill.

Attachment 4: SEQL Resolution of Support



A RESOLUTION OF SUPPORT

BY THE

WHEREAS, the _____ is keenly aware of the importance of natural resource protection and enhancement within our community; and

WHEREAS, the degradation of natural resources, including air and water pollution and the rampant consumption of open space does not recognize political boundaries; and

WHEREAS, intergovernmental cooperation, on a regional basis, is essential to any effort to protect and preserve the natural environment; and

WHEREAS, the protection and preservation of natural resources within _____ and the greater region are essential to the general health, safety, and welfare of community and regional residents; and

WHEREAS, improper management of natural resources is contrary to the ideals of a healthy, economically vital and aesthetically pleasing community and region;

NOW THEREFORE, BE IT RESOLVED, that the _____ adopts this resolution in support of SEQL: Sustainable Environment for Quality of Life; and

BE IT FURTHER RESOLVED that the _____ through its comprehensive and all other planning efforts, will seek to implement sound environmental planning principles in a manner that furthers the efforts of SEQL to the benefit of _____ and regional citizens.

Adopted this _____ day of _____, 2003.

Chief Elected Official

Endnotes

- ¹ *Ranking Tables for Metropolitan Areas: Population in 2000 and Population Change from 1990 to 2000 (PHC-T-3)*, U.S. Census Bureau, Washington, DC, <http://www.census.gov/population/www/cen2000/phc-t3.html>, April 2, 2001.
- ² *About Connecticut: General Description & Facts*, State of Connecticut, Hartford, CT, <http://www.ct.gov/ctportal/cwp/view.asp?a=843&q=246434>.
- ³ "Draft for Review: Land Use and Socio-Economic Data and Projections for the Greater Charlotte Region," University of North Carolina at Charlotte, Charlotte, NC, March 2005.
- ⁴ Tim Lomax and David Schrank, "The 2005 Urban Mobility Report," Texas Transportation Institute, Texas A&M University System, College Station, TX, <http://mobility.tamu.edu/ums/report/>, May 2005.
- ⁵ *Charlotte Regional Information*, Charlotte Regional Partnership, Charlotte, NC, www.charlotteusa.com.
- ⁶ "Designation of Areas for Air Quality Planning Purposes; Final Rule," *Federal Register*, 56 FR 56694, Washington, DC, www.epa.gov/oar/oaqps/greenbk/fr_11_6_1991_40cfr81_designations.pdf, November 6, 1991.
- ⁷ "Approval and Promulgation of Implementation Plans and Designation of Areas for Air Quality Planning Purposes; State of North Carolina; Final Rule," *Federal Register*, 60 FR 34859, Washington, DC, www.epa.gov/oar/oaqps/greenbk/6034859.html, July 5, 1995.
- ⁸ "Air Quality Designations and Classifications for the 8-Hour Ozone National Ambient Air Quality Standards; Early Action Compact Areas With Deferred Effective Dates; Final Rule," *Federal Register*, 69 FR 23858, Washington, DC, <http://www.epa.gov/oar/oaqps/greenbk/6923857.pdf>, April 30, 2004.
- ⁹ "Basinwide Assessment Report: Catawba River Basin," North Carolina Department of Environment and Natural Resources, Raleigh, NC, <http://h2o.enr.state.nc.us/esb/Basinwide/Catawba%202003%20Report.pdf>, June 2003, p. 11.
- ¹⁰ Ibid.
- ¹¹ "Basinwide Assessment Report: Yadkin River Basin," North Carolina Department of Environment and Natural Resources, Raleigh, NC, <http://www.esb.enr.state.nc.us/bar.html>, June 2002, p. 15.
- ¹² Ibid.
- ¹³ "North Carolina Water Quality Assessment and Impaired Waters List (2006 Integrated 305(b) and 303(d) Report; Public Review Draft)," North Carolina Department of Environment and Natural Resources, Raleigh, NC, http://h2o.enr.state.nc.us/tmdl/General_303d.htm#Downloads, February 2006.
- ¹⁴ "Water 2030: Water, Sewer and Stormwater Capital Needs," North Carolina Rural Economic Development Center, Raleigh, NC, <http://www.ncruralcenter.org/water2030/index.html>, 2006.
- ¹⁵ William Fulton, et al, "Who Sprawls Most? How Growth Patterns Differ Across the U.S.," Center on Urban & Metropolitan Policy, The Brookings Institution, Washington, DC, <http://www.brookings.edu/es/urban/publications/fulton.pdf>, July 2001.
- ¹⁶ *Issues and Programs*, American Farmland Trust, Washington, DC, <http://www.farmland.org/programs/default.asp>.
- ¹⁷ *International Database*, U.S. Census Bureau, Washington, DC, <http://www.census.gov/ipc/www/idbprint.html>.
- ¹⁸ *2002 Annual National Resources Inventory*, Natural Resources Conservation Service, United States Department of Agriculture, Washington, DC, <http://www.nrcs.usda.gov/technical/land/nri02/nri02lu.html>.

¹⁹ *International Database*, U.S. Census Bureau, Washington, DC, <http://www.census.gov/ipc/www/idbprint.html>.

²⁰ *2002 Annual National Resources Inventory*, Natural Resources Conservation Service, United States Department of Agriculture, Washington, DC, <http://www.nrcs.usda.gov/technical/land/nri02/nri02lu.html>.

²¹ *International Database*, U.S. Census Bureau, Washington, DC, <http://www.census.gov/ipc/www/idbprint.html>.

²² *Data Center: Demographics, Metro Denver Population*, Metro Denver Economic Development Corporation, Denver, CO, <http://www.metrodenver.org/dataCenter/Demographics/population.icm>.

²³ Arthur C. Nelson, "Toward a New Metropolis: The Opportunity To Rebuild America," The Brookings Institution, Washington, DC, http://www.brookings.edu/metro/pubs/20041213_rebuildamerica.htm, December 2004.

²⁴ "Smart Growth in Texas: TTI Researchers Examine Strategies and Potential Benefits," Texas Transportation Researcher, Volume 39, No. 2., College Station, TX, <http://tti.tamu.edu/researcher/>, 2003, pp. 12-13.

²⁵ *Traffic Congestion and Sprawl - Press Club Event*, Federal Highway Administration Office of Operations, U.S. Department of Transportation, Washington, DC, <http://www.fhwa.dot.gov/congestion/congress.htm>, November 19, 2002.

²⁶ *Aerometric Information Retrieval System*, U.S. Environmental Protection Agency, Research Triangle Park, NC, <http://www.epa.gov/ttn/airs/airsaqs/>.

²⁷ "Evaluation of Savings from the Application of Adsil™ in the NC/SC Charlotte Area," EPA-453/R-05-003, U.S. Environmental Protection Agency, Research Triangle Park, NC, <http://www.epa.gov/ttn/catc/products.html#aptecrpts>, November 2004, pp. v-vi.

United States
Environmental Protection
Agency

Office of Air Quality Planning and Standards
Research Triangle Park, NC

Publication No. EPA-456/R-06-001
November 2006
