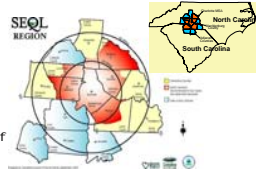# SEQL — SUSTAINABLE ENVIRONMENT for QUALITY of LIFE

## What is SEQL?

The Sustainable Environment for Quality of Life Project is a collaboration encompassing 15 counties in the Charlotte/Gastonia/Rock Hill region of North and South Carolina and includes over 100 political jurisdictions and a population base of 2.1 million people SEQL is one of the first voluntary multi-state collaborations that crosses geographic and geopolitical boundaries and considers the secondary and cumulative effects of land use, transportation, energy, and economic policies on the environment

## What is the Problem/ Opportunity?

Located in the Sunbelt, the region is a highly desirable area to live but faces many challenges: sprawl, air and water quality, and water supply problems and concern about being the "next Atlanta." The region is projected to grow by an additional 1.8 million people by the year 2030.

Within these problems lay an opportunity to develop and demonstrate nationally a Regional Integrated Planning Strategy. There are good existing relationships with officials in the region and the States, the region is a highly motivated one, with many existing initiatives already underway, and this was the logical continuation of an earlier project with EPA's Office of Air Quality, Planning and Standards (OAQPS) to improve local air quality through a number of voluntary action items.
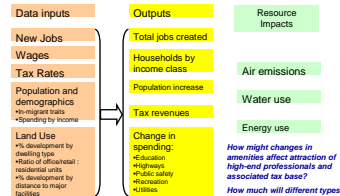
## Partners

Centralina Council of Governments, North Carolina Department of Natural Resources, Catawba Council of Governments, South Carolina Department of Health and Environmental Control, UNC – Charlotte, Duke University, American Forests Association, Voices and Choices, Charlotte/Mecklenberg Department of Transportation, EPA Region 4, OAQPS and ORD.

## How is ReVA Contributing?

**Integrating the Pieces** – to allow insights into cumulative impacts associated with alternative patterns of development, considering air, amenities, water, human health

**Developing new methods and models** – to further characterize the implications of change and trade-offs associated with choices

### Socio-Economic Modeling (U MD, UNCC, SEQL)

| Data inputs | Outputs | Resource Impacts |
|---|---|---|
| New Jobs | Total jobs created | |
| Wages | Households by income class | Air emissions |
| Tax Rates | Population increase | Water use |
| Population and demographics •In-migrant traits •Spending by income | Tax revenues | Energy use |
| Land Use •% development by dwelling type •Ratio of office/retail : residential units •% development by distance to major facilities | Change in spending: •Education •Highways •Public safety •Recreation •Utilities | |

*How might changes in amenities affect attraction of high-end professionals and associated tax base?*

*How much will different types of development cost local governments?*

Draft Model Framework Overview
Lisa Wainger

Sustainable Environment for Quality of Life (SEQL) Alternative Futures Scenarios
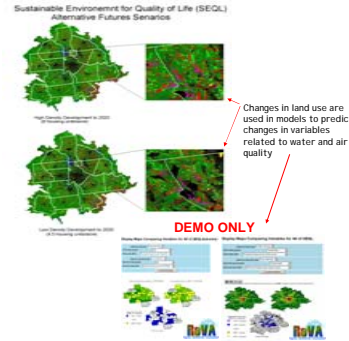
Changes in land use are used in models to predict changes in variables related to water and air quality

**DEMO ONLY**

## Impacting Future Decisions

### Web-based Environmental Decision Toolkit (EDT)

Comparing trade-offs:
Water Use vs. $NO_x$ Emissions

• Flexible visualization and exploration toolkit

• Statistical engine allows analysis of alternative data combinations within seconds

• Housed at and maintained by UNCC

• Available to Regional Planning Alliance, other regional decision-makers and analysts

• Public version for stakeholders

### New Models and Methods

• Water Supply as Influenced by Impervious Surface

• Region-specific Rule-Based Land Use Change Model

• Relationship between Land Use Pattern and Air Quality

• Relationship between Land Use Pattern and Amenities

Multi-media trading: scoring based on landscape pattern

### Lasting Linkages

Improved understanding of linkages between land use and air, and water quality and quality of life

• Guidance for Management

• Working relationships and partnerships

## Currently Underway

•Developing future scenarios and associated Traffic Demand Model runs
•Refining models of NPS pollution in water
•Developing model to estimate water supply under different scenarios
•Exploring ways to quantify air quality changes associated with alternative development patterns
•Developing indicators of quality of life (e.g. time spent in traffic, amenities associated with development choices)
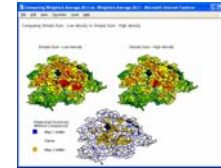•Evaluating options for cross-media trading

## Working with SEQL Partners to develop a better Vision of the Future

Because much of the region's future issue is due to transportation issues, SEQL partners envision an alternative future scenario that will encourage both mass transit and distributed economic development. ReVA is working closely with these partners to develop a GIS-rule based model of land use change that is based on what is feasible in the region.

**"Conserving ecosystem services through proactive management decisions"**