Evaluating the Fiscal Impacts of Development

A Cost of Sprawl Model for New Hampshire

Developed Under the Auspices of the

New Hampshire Office of Energy and Planning

by

RKG Associates, Inc. – Dover, NH

Placeways, LLC – Boulder, CO

Urban Interactive Studio, LLC – Denver, CO

Today's Presentation

- Discuss Sprawl-Related Concepts and Impacts
- Explain Model Development
- Demonstration of Model's Use
- Questions

What is Sprawl and What is Not?

- How we define sprawl has a big effect on what and how we measure the impacts
- In a rural state like New Hampshire the manifestation of sprawl on the landscape is not always obvious because of its incremental nature
- Many sprawl characteristics seem self-evident but gray areas exist in its definition and public opinions

Sprawl Concepts/Characteristics

- Development With A Spatial Connotation
- Further Away, or Disconnected, from Something or Someplace
- Measurement of Density
- Resource Consumptive
- Inefficient
- More Costly

Sprawl Concepts/Characteristics

- **Unlimited Outward Expansion of Development**
- **Low Density Residential and Commercial Settlements**
- **Leapfrog Development**
- **Strip/Corridor Development**

Some Causes of Sprawl

- Easily Developable Greenfield
- Fragmentation of the Regulation of Land Use Among Many Small Localities
- Dominance of the Automobile
- Tax Base Disparity Among Municipalities
- Segregation of Land Uses in Different Zones

Reasons for Encouraging Smarter Growth

Smart Growth Benefits		
Economic	Social	Environmental
• Reduced Infrastructure costs • Reduced public service costs • Reduced transportation costs • Economies of agglomeration • More efficient transportation • Supports industries that depend on high quality environments (tourism, farming, etc.)	• Improved transport options and mobility, particularly for non-drivers • Improved housing options • Community cohesion • Preserves unique cultural resources (historic sites, traditional neighborhoods, etc.) • Increased physical exercise and health	• Greenspace and habitat preservation • Energy savings • Air pollution reductions • Water pollution reductions • Reduced “heat island” effect

Project Purpose & Objectives

- Develop a model that will estimate the effects land use planning policies and development patterns have on the provision of municipal services and use of land resources
  - Social and environmental costs not included
- Based on readily available data
- Ease of use by municipal staff, public officials, and community leaders
- Utilization by a variety of municipalities
- Model output should estimate cost of sprawl in relevant measurements

The Model – What it Does

- **Primary focus on the municipal services costs and infrastructure maintenance costs of sprawl**
- **Secondary focus on efficient site development through higher density and mixed use**
- **Estimates Impacts on Service Costs and Infrastructure Maintenance Costs for:**
  - **Emergency Services (police, fire, ambulance)**
  - **School Costs (per student & transportation)**
  - **Roads**
  - **Water & Sewer**
  - **Increases in property tax revenues**
- **Does not measure full *Social Costs*: vehicle miles, congestion, energy consumption, air/water pollution, health impacts, converted natural resources**

The Model – What it Does

- Model allows user to test alternative land development scenarios in any municipality in the state
- Comparison of results illustrates municipal services and infrastructure cost savings or increases
- Inputs offer a selection of residential housing types and commercial buildings at user-specified densities and FARs
- Model uses map interface which allows user to select “grid squares” of 40 acres in size

The Model (continued)

- Data limitations restricted what could accurately be measured from a sprawl perspective vs. simply additional growth
  - Existing service costs available only as averages (no marginal costs)
  - No detailed information of existing service levels and delivery systems at local level
- Most NH communities have decentralized land use patterns and municipal infrastructure
  - Existing town centers play small role in providing goods and services
  - Job, shopping, and service centers often located in other municipalities

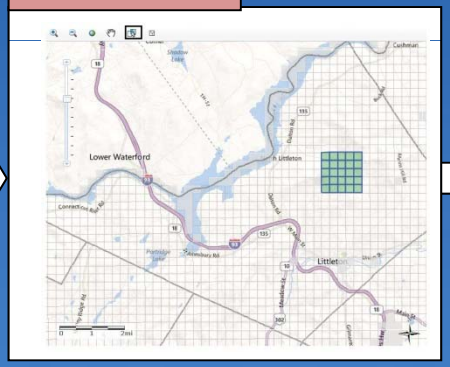
The Model (continued)

- Most data based on actual municipal budget appropriations and infrastructure systems
  - Operational costs not capital costs
- Relies on average costs & growth rates
  - Annual costs over a period of time
- Some model inputs based on statewide averages, sample data and industry standards

How the Model Works

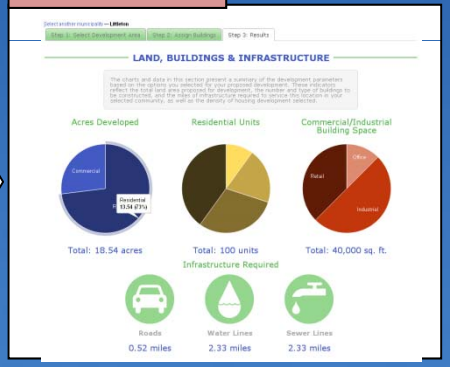
Select A City or Town

Select Development Area Using Map Grid Squares



Assign Buildings and Densities to Be Developed

View And Print Model Results



The Model Inputs

User Input Options – Cost of Sprawl Model		
Residential	**Density Options**	**Units Per Acre***
Single Family Detached	Very Low, Low, Medium, High	1, 2-3, 4-5, 6-7
Single Family Attached	Low, Medium, High	8-10, 11-15, 16-20
Multifamily Apartments (4-8 units per bldg.)	Low, Medium, High	20-25, 26-30, 31-35
Multifamily Apartments (10-20 units per bldg.)	Low, Medium, High	30-35, 36-40, 41-45
Commercial		
Retail	User Selected Building Square Footage and Acreage	FAR Calculated Based on User Inputs
Office		
Industrial		
*The average of these ranges was used to calculate density in the model. FAR = Floor Area Ratio (a ratio of building square footage to lot size)		

The Model Outputs

- **Land, Buildings & Infrastructure**
  - Total acres of land developed
  - Total housing units by type
  - Total nonresidential building square footage
  - New road mileage required
  - New water/sewer line mileage required
- **Population & Housing**
  - Total additional population
  - Total additional school children
  - Average housing density for the development (units/acre for all housing types)
- **Municipal Fiscal Impact Estimates (average annual costs)**
  - Highway maintenance costs
  - Emergency services costs
  - Utility systems maintenance costs
  - School costs
  - Total property tax revenues

Questions and Answers?

Model Demonstration