Development patterns & budgets:
Assessing the cost of sprawl
Planning technical assistance in 20 communities across the United States

Assist in their efforts to take advantage of enhanced internet access to promote smart, sustainable development.
Goal #1: Protect valuable farmland.

Goal #2: Enhance the existing downtown.

Goal #3: Build new neighborhoods that are adjacent to the downtown.
A scenario analysis tool

A fiscal impact model focused on the relative effects of sprawl versus compact development

The Fiscal Implications of Development Patterns

A MODEL FOR MUNICIPAL ANALYSIS

April 2015
DOZENS OF STUDIES CONFIRM:
Low-density sprawl is expensive

The Cost of Sprawl: More Than $1 Trillion Per Year, New Report Says

By LAURA KUSISTO

The sprawling suburbs of cities like Atlanta and Houston have hidden costs to the United States economy that come to more than $1 trillion a year, according to a new report.
Building Better Budgets
A National Examination of the Fiscal Benefits of Smart Growth Development
May 2013
Costs vary with Density
development scenarios
same population

Scenario A  Scenario B  Scenario C
Infrastructure and services
<table>
<thead>
<tr>
<th>Unit Type</th>
<th>Single Family Detached</th>
<th>Multifamily Units</th>
<th>Total Units</th>
<th>Total Gross Acres</th>
<th>Net Residential Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>1,543</td>
<td>3,236</td>
<td>4,779</td>
<td>2,379</td>
<td>4.1</td>
</tr>
<tr>
<td>Base</td>
<td>1,543</td>
<td>3,236</td>
<td>4,779</td>
<td>1,403</td>
<td>9.0</td>
</tr>
<tr>
<td>Compact</td>
<td>1,543</td>
<td>3,236</td>
<td>4,779</td>
<td>915</td>
<td>16.2</td>
</tr>
<tr>
<td>Plus 50</td>
<td>1,780</td>
<td>4,466</td>
<td>6,246</td>
<td>1,403</td>
<td>11.7</td>
</tr>
<tr>
<td>Compact Plus 50</td>
<td>1,780</td>
<td>4,466</td>
<td>6,246</td>
<td>915</td>
<td>23.4</td>
</tr>
</tbody>
</table>

Total Annual Budgetary Impact:
- Macon-Bibb County and Schools Combined

Diagram:
- Low Density Greenfield
- High Density Greenfield
- Downtown Infill
- Downtown Infill Premium
FIGURE 4
Capital infrastructure and annual operating costs for three development scenarios in Natrona County, WY\textsuperscript{37}
FIGURE 5
Percent of operations and capital costs covered by housing unit revenue contributions\textsuperscript{38}

<table>
<thead>
<tr>
<th>Scenarios</th>
<th>Operations</th>
<th>Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ranchette</td>
<td>18%</td>
<td>25%</td>
</tr>
<tr>
<td>Rural exurban</td>
<td>23%</td>
<td>31%</td>
</tr>
<tr>
<td>Metro infill</td>
<td>80%</td>
<td>90%</td>
</tr>
</tbody>
</table>
TYPICAL AVERAGE COST FISCAL IMPACT MODEL

- Costs are assumed to be proportional to residents and employees
- Same number of residents = same additional costs regardless of density
WHAT COST CATEGORIES MIGHT VARY BY DENSITY?

<table>
<thead>
<tr>
<th>Services &amp; Infrastructure Dependent on Density</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire</td>
<td>Yes</td>
</tr>
<tr>
<td>Roads</td>
<td>Yes</td>
</tr>
<tr>
<td>Stormwater</td>
<td>Yes</td>
</tr>
<tr>
<td>Sewer and Water</td>
<td>Yes</td>
</tr>
<tr>
<td>Solid Waste</td>
<td>Yes (collection)</td>
</tr>
<tr>
<td>Schools</td>
<td>Yes (bus transportation)</td>
</tr>
<tr>
<td>Libraries</td>
<td>No</td>
</tr>
<tr>
<td>Hospitals</td>
<td>No</td>
</tr>
<tr>
<td>Parks</td>
<td>No</td>
</tr>
<tr>
<td>Police</td>
<td>Maybe</td>
</tr>
</tbody>
</table>
Fiscal Impact Model: Data Inputs

- Roads + Maintenance
- Water/Sewer
- Stormwater
- Fire/EMS
- Solid Waste
- Schools
INFRASTRUCTURE COST METHODOLOGY
THE 60-ACRE GRID OVERLAY
NOTE: Road area per capita has a similar relationship to density.
Density Options – Population

**Baseline**
- Existing Avg. Density in City: 2.3 people / acre

**Alt. A**
- 6 people / acre

**Alt. B**
- 50% at 12 people / acre
- Infill development
- 50% at 6 people / acre
- Greenfield
Density Options – Households

**Baseline**
- Existing Avg. Density in City: 1 household per acre

**Alt. A**
- 2.6 households / acre

**Alt. B**
- 50% at 5.1 households / acre
- Infill development
- 50% at 2.6 households / acre
- Greenfield
Density Options

- Map is to geographic scale
- Building at existing densities would take up an additional 2,015 acres
- Building at 4 units to the acre would only take up 504 acres
Density Options

- Map is to geographic scale
- Building at existing densities would take up an additional 2,015 acres
- Building at 4 units to the acre would only take up 504 acres
Density Options

- Land Requirements
  - Map is to geographic scale
  - Building at existing densities would take up an additional 2,015 acres
  - Building at 4 units to the acre would only take up 504 acres
# Results

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Alt A</th>
<th>Alt B</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capital Costs – 20 years</strong></td>
<td>$156.8 mil</td>
<td>$101.4 mil</td>
<td>$56.2 mil</td>
</tr>
<tr>
<td><strong>Amortized Costs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(20 years at 2.2% rate)</td>
<td>$195.6 mil</td>
<td>$126.4 mil</td>
<td>$70.1 mil</td>
</tr>
<tr>
<td><strong>Maintenance Costs – 20 years</strong></td>
<td>$7.8 mil</td>
<td>$5.1 mil</td>
<td>$2.8 mil</td>
</tr>
<tr>
<td><strong>Total Costs – 20 year</strong></td>
<td>$203.4 mil</td>
<td>$131.5 mil</td>
<td>$73.0 mil</td>
</tr>
<tr>
<td><strong>Fiscal Cost per year</strong></td>
<td>$10.2 mil</td>
<td>$6.6 mil</td>
<td>$3.7 mil</td>
</tr>
</tbody>
</table>

Study costs to accommodate +20% more residents
Thank you.

Alex Hutchinson
John Robert Smith
Christiaan Mader

Pittsburg, KS
October 12, 2016