City Explained Inc.

community*viz*®

Scenario Planning

Case Study
CEDAR HILL, TX

Major Components of the Model

01 **Carrying Capacity Analysis**—what areas can accommodate development?

02 **Link to Excel Tables**—information on general development characteristics. (Model updates when data changes.)

03 **Buildout Potential**—quantify the type, location, and intensity of development for a theoretical condition.

04 **Land Suitability Analysis**—measures the appropriateness of an area for a specific condition or use.

05 **Growth Allocation**—determine where growth is likely to occur, based on probability-based algorithm.

Scenario Planning provides an objective view of the trade-offs associated with competing growth alternatives

Using CommunityViz software, City Explained, Inc. prepared a Scenario Planning and Likely Impacts Report for the City of Cedar Hill, Texas, to accompany their new Comprehensive Plan. The report compared alternative growth scenarios, measured their impacts, and evaluated the trade-offs for meeting goals expressed in the Plan,.

The growth scenarios presented were also used to analyze the City's potential financial performance (Return on Investment) in future years and to evaluate the infrastructure and government finance trade-offs associated with different development visions. Conclusions from the report influenced the creation of an official Growth and Conservation Map, as well as Plan recommendations.

Return on Investment

Potential revenue calculated for the alternative growth scenarios focused on five local revenue streams considered most sensitive to future growth and development decisions in Cedar Hill: ad valorem tax, sales tax, hotel occupancy tax, development impact fees, and utility fees. Potential infrastructure needs and the costs-to-serve them were calculated for the alternative growth scenarios using the local expenditure categories most sensitive to future growth and development decisions: fire protection, police protection, parks and recreation, trails and greenways, water service, and sewer service.

The ratio of annual revenue in the numerator to annual expenditures in the denominator for each growth scenario represented its return-on-investment index. An index greater than 1.0 indicated annual revenues were greater than annual expenditures, and the surplus would be available to the City to finance new construction or purchase new capital projects to serve the planning area.

Comparison of scenarios confirmed different land use and development decisions in the planning area could have a significant impact on community cohesiveness, quality-of-life, design character, financial stability, and efficient use of infrastructure for decades to come.

Example ROI results for one possible future vision

Full Build-Out ROI: 2.16
Net Annual Revenue Potential: $63.1M

Total Revenue

$365.9M
Total One–Time Fees

$117.2M
Adjusted Revenue

Total Expenditures

$420.3M
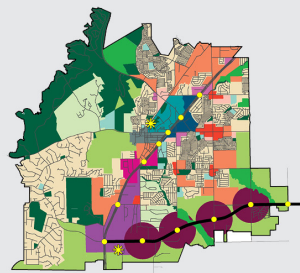Total New Capital Costs

$54.2M
Annual Operation & Maintenance

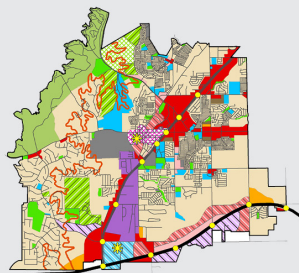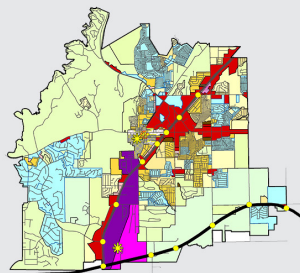$1.6B
Total Replacement Costs

Infrastructure Needs Assessed

- Fire Protection
- Police Protection
- Water Infrastructure
- Sewer Infrastructure
- Trails & Greenways
- Parks & Recreation

Scenario 1

+2 Fire Stations
+1 Training Facility

+1 Police Headquarters

+28.6 Miles Water Lines

+22.4 Miles Sewer Lines

Scenario 2

+5 Fire Stations
+1 Training Facility

+1 Police Headquarters

+32.2 Miles Water Lines

+28.3 Miles Sewer Lines

Scenario 3

+4 Fire Stations
+1 Training Facility

+1 Police Headquarters

+18.7 Miles Water Lines

+15.6 Miles Sewer Lines

Example results demonstrating increased infrastructure needs resulting from three possible future visions for the City. These estimates helped the Cedar Hill planning team and decision-makers understand the trade-offs involved with different land use choices and had a major impact on the chosen future land use map included in the Comprehensive Plan.