What is UrbanFootprint?

UrbanFootprint is a scenario modeling tool developed by Calthorpe Analytics. Urban growth scenario modeling is an analysis of the impacts of various styles of growth. Customization of the tool for Madison is funded by a federal TIGER grant with matching funds from the City.

Municipalities have not typically considered the long-term impacts of maintenance costs, service provision, and property tax collections associated with various styles of development. However, different styles of development create ongoing obligations for maintenance and services while generating varying returns when it comes to property tax collections.

As an example, two different styles of single-family development are shown below.
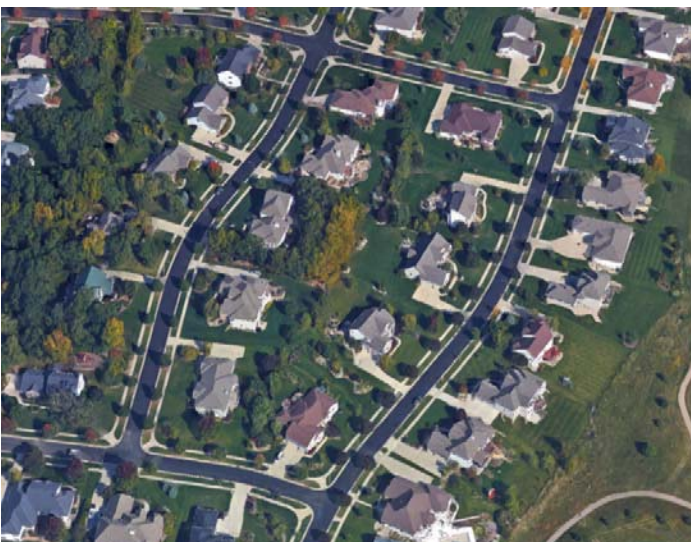
The block in the top photo contains approximately $5 million of property value on 2.3 acres, for an average value of about $2.2 million per acre. The block on the bottom contains about $4.8 million of property value on 5 acres, for an average value of about $950,000 per acre. The block on the left is bounded by about 1,500 linear feet of street, while the block on the right is bounded by about 2,100 linear feet of street. The block on the left generates *more* taxes that supports *less* infrastructure than the block on the right. Expanded across the City, such development decisions can make a huge impact on property tax collections and provision of services.

The above example is simplistic in that it only looks at municipal fiscal impacts of development with relation to tax collections and infrastructure maintenance. UrbanFootprint will also consider the following impacts of the development pattern, allowing for a comparison of impacts across multiple scenarios:

1. Public health
2. Energy and water use (for buildings)
3. Emissions (for transportation and energy)
4. Household costs
5. Transportation
6. Land consumption

How does UrbanFootprint work?

UrbanFootprint establishes existing conditions on a "base canvas" map using a library of building types and place types that is customized to Madison and Dane County. Once the base canvas is established, scenarios can be "painted" on to the canvas using the library of building types or place types. Other non-land use factors, such as policy changes, technology changes, and transportation investments can also be integrated in to scenarios.

Building types allow for detailed scenarios to be created on a parcel-by-parcel basis for neighborhood level plans. Examples of potential building types are shown on the back of this page. There will be approximately 60 building types to capture the variety of development styles that are present in and around Madison.
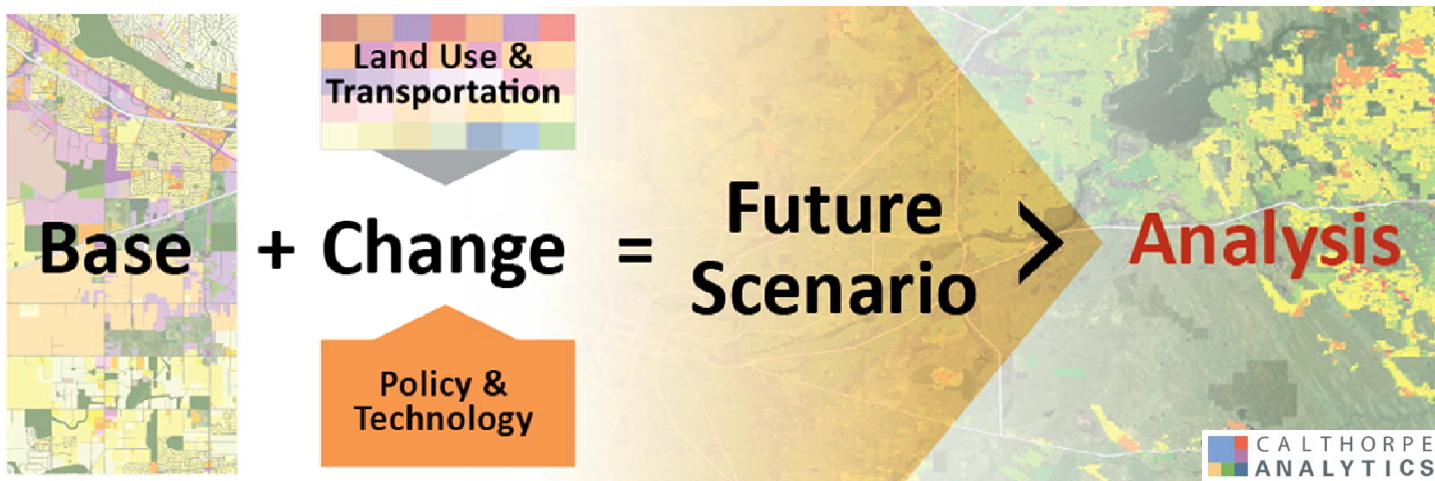
Place types will aggregate building types, and allow for more rapid creation of scenarios across larger geographies (cities or counties). Place types are mapped block by block, instead of parcel by parcel. A comparative analysis of scenarios can be done once multiple scenarios have been created by painting changes onto the base canvas through the use of building types or place types. For example, "Scenario A" might increase land consumption by 6 square miles and annual vehicle miles traveled (VMT) by 100 million, while "Scenario B" might increase land consumption by 2 square miles and annual VMT by 40 million.

What will UrbanFootprint be used for?

As specified in the TIGER grant, the UrbanFootprint tool will initially be used for a study of planned bus rapid transit corridors—one on the west side from West Towne Mall eastward to University Research Park, one on the South Side from John Nolen Drive west to the Arboretum, and one on the East Side from Mendota Street northeast to the Interstate. Among other things, staff anticipates using UrbanFootprint to illustrate the impacts of redevelopment on the transportation system through creation of various alternative scenarios. This use of UrbanFootprint will help predict the effectiveness of various modes of transportation in serving different styles of redevelopment in the three BRT study areas.

After its use in the BRT corridor study processes, UrbanFootprint may be used as part of the City's Comprehensive Plan update and as part of future neighborhood/corridor planning efforts.

Example Building Types

Category: Residential
Building Type: Standard Podium Multifamily
Example: Seven27 (727 Lorillard Ct.)

Category: Residential
Building Type: Single-Family Medium Lot
Example: 3902 Manitou Way

For more information, contact:
Ben Zellers, AICP, CNU-A
Transportation Planner
Planning Division
608-266-4866
bzellers@cityofmadison.com