





# ENVISION TOMORROW OVERVIEW

Envision Tomorrow, an innovative, open source, set of urban and regional planning tools developed by Fregonese Associates, is an integral piece of our scenario planning process. It can be used to model development feasibility on a site-by-site basis as well as create and evaluate multiple land use scenarios, test and refine transportation plans, produce small-area concept plans, and model complex regional issues. The software also provides a real-time evaluation of relevant indicators such as land use, energy consumption, and financial impacts that measure a scenario's performance. It can also provide baseline carbon emissions analysis of different land use patterns, enabling planners to model the relationship between greenhouse gas emissions and land use and transportation decisions.

Envision Tomorrow consists of two primary tools: the *Prototype Builder*, an ROI model spreadsheet tool, and the *Scenario Builder*, an ArcGIS add-on.

# WHAT IS ENVISION TOMORROW?

The **Prototype Builder**, a return on investment (ROI) spreadsheet tool, can be used to model buildings and test the physical and financial feasibility of development. The tool allows the user to examine land use regulations in relation to the current development market and consider the impact of parking, height requirements, construction costs, rents and subsidies. Use this tool to see what is market feasible. Use it to see how preferred forms of development, such as mixed-use retail with housing above, might become more financially feasible within your existing code.

The **Scenario Builder** adds scenario-building functionality to ArcGIS. First, design a library of buildings in the Prototype Builder. Next, use the Scenario Builder to create development types and “paint the landscape” by allocating different development types across the study area to create unique land use scenarios. The tool then allows real-time evaluation of each scenario through a set of user-defined benchmarks or indicators. The indicators measure such things as the scenario’s impact on land use, housing, sustainability, transportation, and economic conditions. It also allows communities and regions to monitor progress over the short-and long-terms.

## WHAT MAKES ENVISION TOMORROW UNIQUE?

### ***Transparent and Versatile***

Envision Tomorrow is a versatile and expandable tool that can easily be adapted to accommodate various uses. Unlike most planning software, Envision Tomorrow allows the user to easily and transparently change the assumptions of the prototype buildings, development types, and scenario inputs. By making the tool transparent, you can quickly and easily adjust the assumptions to more accurately reflect the dynamics of your particular neighborhood, city, or region. This transparency allows planners to adjust assumptions in the scenario process if necessary.

### ***Building Level Data***

Since the Envision Tomorrow analysis process begins at the building level, anything we know about a building, we can test in a scenario. These are examples of common indicators used for evaluation:

- **Housing and jobs**  
(mix and density)
- **Jobs-housing balance**
- **Land consumption**  
(vacant, agricultural, infill)
- **Impervious surface**
- **Open space**
- **Housing affordability**
- **Resource usage**  
(energy and water)
- **Waste production**  
(water, solid, carbon)
- **Transportation** (travel mode choice, vehicle miles traveled)
- **Fiscal impact** (local revenue and infrastructure costs)
- **Balanced housing index**  
(how a scenario’s housing mix matches the expected future demographic profile)

# ENVISION TOMORROW PROCESS

1

## Develop Building Prototypes

Create prototype buildings using the return on investment (ROI) model.

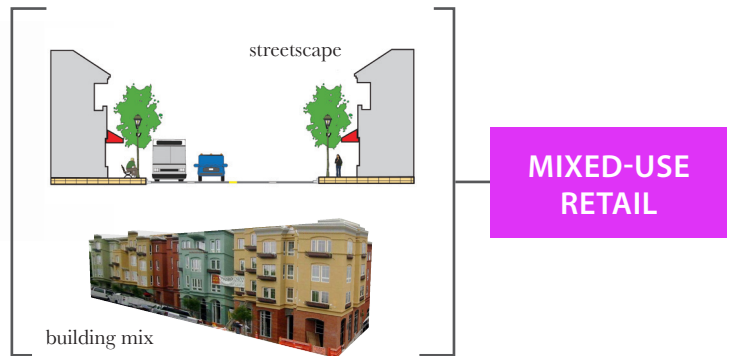
Prototype Name	Corridor Mixed-Use	(enter name of building)
Project City/State	Long Beach	(enter name of city/state or project)
Site area	43,560	square feet
	1.00	acres
Site gross-to-net ratio	100%	(enter percentage)
Landscaping or open space	5%	(enter percentage)
Building height (stories)	4	stories
Under-build	70%	(enter percentage)



2

## Create Scenario Development Types

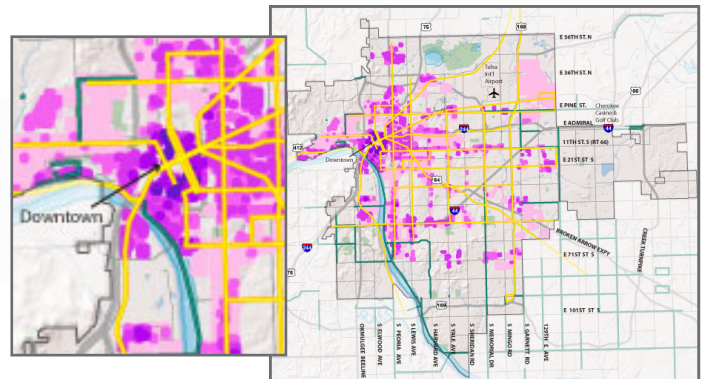
Development types include all of the elements in a city: a mix of buildings, streets, civic uses and open spaces.



3

## Build Scenarios

Create scenarios by applying the development types to the landscape using the scenario builder.

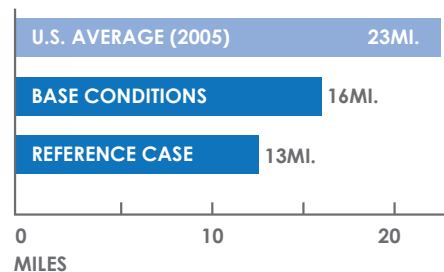


4

## Evaluate Scenario Performance

Using the ROI model, examine a whole host of benchmarks based on the built scenario.

### VEHICLE MILES TRAVELED Per Person Per Day



# WHAT IS ENVISION TOMORROW?

## *Relevant and Cutting-Edge Research*

Fregonese Associates has partnered with a number of institutions, organizations and government entities around the country to further the capabilities of Envision Tomorrow. These partnerships provide access to leading thinkers and the latest research and data about urban form and development which are then incorporated into Envision Tomorrow. Most recently, through collaboration with the University of Utah, 18 expanded indicators were developed that allow Envision Tomorrow users the ability to measure, for example, employment growth and resilience, public health, transportation safety, workforce housing and air quality impacts.

## HOW IS IT USED AND WHO USES IT?

Municipalities, regional governments, and private organizations around the nation use Envision Tomorrow. The Chicago, Illinois region uses the tool to conduct housing studies; Baton Rouge, Louisiana is analyzing future growth scenarios, while the Southern California Association of Governments in California is examining the potential for greenhouse emissions reduction through different land use policies. In Portland, Oregon, the regional government, Metro, is refining their ability to test land use and transportation policies through scenario planning. Smaller cities like Waco, Texas and Mountlake Terrace, Washington, have found Envision Tomorrow to be a valuable addition to their planning toolbox. Below is a brief list of Envision Tomorrow users:

- Sonoran Institute/Lincoln Land Institute joint venture
- Southern California Association of Governments
- Envision Utah
- Chicago Metropolitan Agency for Planning
- City of Portland
- Portland Metro
- City of Tulsa
- Montana State University
- City of Long Beach



# FAQ

## What software do you need to run Envision Tomorrow?

Envision Tomorrow requires Windows XP or Vista, Microsoft Office 2000 Professional or greater, and ESRI's ArcGIS desktop software 9.3 or greater. The tool supports all ArcGIS license types (ArcView, ArcEditor, ArcInfo).

## What types of indicators can Envision Tomorrow report?

**Land Use:** density and mix of uses

**Transportation:** mode choice, VMT—requires local calibration including travel survey results, land use and demographic inputs

**Housing:** mix and affordability

**Fiscal Impact:** local revenue and infrastructure—requires local calibration of revenue, rates and costs inputs

**Environment:** open space and agriculture conversion

**Sustainability:** energy use, carbon footprint, water usage and wastewater—requires local calibration based on local climate and typical resource use

Visit the Envision Tomorrow wiki page for more information on indicators: [www.frego.com/etwiki](http://www.frego.com/etwiki)

## How long does it take to get up and running?

Start-up time depends on the indicators you use to evaluate the scenarios. Basic land use indicators can be inputted into the tool and calibrated within a few days. More complex transportation and sustainability indicators, including carbon footprint, could take several weeks to collect the input data. To reduce local calibration time, you can use national averages.

## Can Envision Tomorrow be used to analyze different levels of geography?

Yes, Envision Tomorrow is designed to model land use decisions at a range of scales starting at the parcel level. By first designing Prototype Buildings that are financially feasible at the local level, the user then combines these prototypes into a series of Development Types, such as Main Street, mixed-use neighborhood, strip commercial, etc. The Development Types are used to create a series of land use scenarios at the district, city, county, and regional scale. The Scenario Builder tool allows the creation and comparison of up to five land use scenarios concurrently. The user can edit, switch between, and compare all five scenarios. A scenario spreadsheet in Excel format is dynamically linked to the tool and maintains the scenario outputs, such as housing mix, in a series of tabs for quick comparison. As you make changes to a scenario, the results automatically report in the spreadsheet for instant monitoring. Users can focus in small areas for detailed design control as well as zoom to a larger scenario with small area changes intact. Detailed scenario results are easily exportable and reportable at any geography.

## **How does Envision Tomorrow evaluate different land uses and policy alternatives?**

The tool evaluates scenario differences based on a variety of indicators. Most indicators derive from what particular mix of buildings the user chooses to place on the landscape and where they place them. For example, if the user paints an area with a main street development type as opposed to a strip commercial development type, the underlying buildings that compose those places are different, and that difference will be reflected in the indicators. Main Street development might include some multifamily housing and mixed-use, whereas the strip commercial might include low intensity retail. The choice to put in main street development could result in a lower housing density, but achieve a reduction in per capita water and energy usage and the number of vehicle miles traveled. The implications of different land uses are reflected instantly as the user makes alternative decisions.

## **Does Envision Tomorrow model carbon footprint?**

Envision Tomorrow uses a predictive algorithm combined with local travel and demographic data to estimate the impact of land use changes on key transportation indicators, such as travel mode split, vehicle miles traveled, and greenhouse gas emissions. By using a predictive algorithm approach, the tool does not require a direct link to a transportation model to evaluate the impact of land use changes on travel behavior and carbon emissions.

## **Can you modify underlying assumptions to align with local conditions?**

Yes, all assumptions to the prototype buildings, development types, and scenario inputs are transparent and editable in Excel. From our experience, it is important that planners see all of the assumptions in the scenario process and be able to adjust the assumptions, if necessary. Because the tool is dynamically linked in Excel, changing an assumption results in instant updates to the scenario outputs.

## **Can the tool display impacts graphically and visually?**

Yes, Envision Tomorrow provides visual results in multiple formats, including maps, charts, and graphics. Scenario results can be used to create 2D and 3D visualizations.

## **How much does Envision Tomorrow cost?**

The software license for Envision Tomorrow is free-of-charge. The only fees associated compensate our time to train users in using the tool. Contracts are driven by the client's needs; we typically create a contract for data gathering, training and customization.