8: Projecting Demand

Overview

What if? can be used to project six types of land use demand–residential, group quarters, employment-related, preservation, local, and mixed uses. The computational procedures used to project these demands is described in detail in Appendix E. The procedures for using What if? to project these demands and the procedures for viewing the demand analysis results are described in this chapter.

Projecting the Demand for Land

The following seven-step process is used to compute the projected land use demands:

1. Selecting a demand scenario;
2. Specifying residential demand assumptions;
3. Specifying employment-related demand assumptions;
4. Specifying preservation demand assumptions;
5. Specifying local demand assumptions;
6. Computing the projected land use demands; and
7. Viewing the projected land use demand outputs.

These steps and the forms used to conduct them are described below.

8.1 Selecting a Demand Scenario

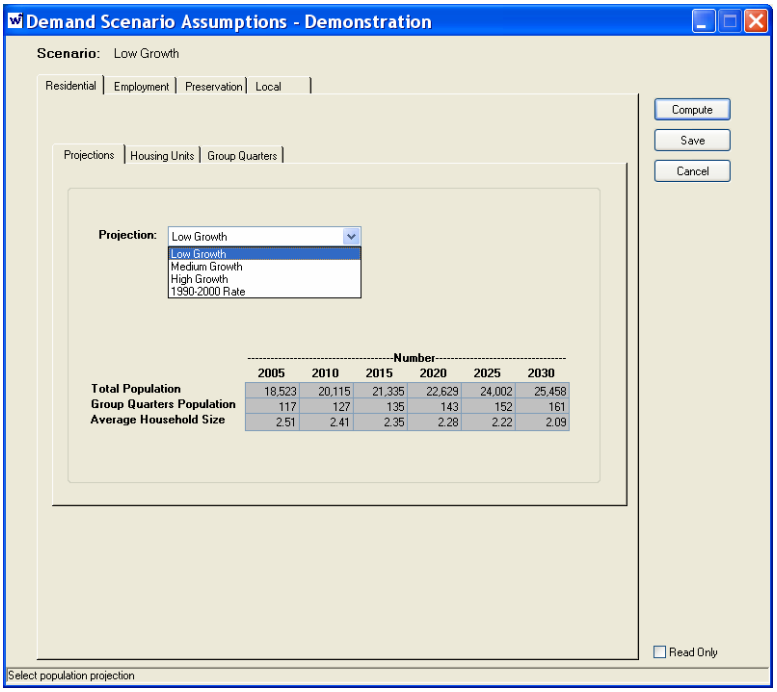
The What if? demand projection process is initiated by selecting the **Demand | Scenarios** option from the main What if? form. The procedures for opening, copying, creating, and deleting demand scenarios are identical to those for the suitability option described in Section 7.1 Selecting a Suitability Scenario.

Demand Scenario Assumptions Form

Demand Scenario Assumptions Form

After selecting a scenario to create, review, or revise, you are presented with the **Demand Scenario Assumptions** form which is used to specify the assumptions which underlie a particular demand scenario.

As shown below, the **Demand Scenario Assumptions** form contains four tabbed sheets which are used to specify the residential, employment-related, preservation, and local land use demand assumptions. The procedures for doing this are described below.



8.2 Specifying Residential Demand Assumptions

As shown above, the **Residential** sheet contains three tabbed sheets which are used to specify the projected residential population, housing unit, and group quarters population information that determine the projected demand for residential land. The procedures for doing this are described briefly below.

8.2.1 Specifying Projected Population

Specifying Projected Population

The first Residential sheet, labeled **Population,** is used to select a set of projections for the total population, the group quarters population, and average household size for each future year.

As shown above, the **Residential | Projections** sheet contains a drop-down list labeled **Projection:** that can be used to select one of a number of previously computed projections for the future residential population.

The number of projections is dependent on the information that was specified in the Setup program's **Define Projections** option, described in Section 4.14.1 Selecting Projection Option.

Trend Projections

The model will normally provide one to three "trend" projections (e.g., "1990-2000 Rate" in the figure above) which assume that future growth will continue at the rate observed in the designated observation period. Thus, for example, the 1990-2000 Rate projection assumes that future population growth will occur at the same rate as that observed between 1990 and 2000. These projections are automatically computed from the observed population values you specified in the **Project | Values | Past | Population** option described in Section 5.2.3.1 Defining Past Population Data.

Non-Trend Projections

The **Projections** sheet may also list one or more "non-trend" projections (e.g., "Low Growth," "Medium Growth," and "High Growth" in the figure above) that were specified in the **Project | Values | Projected | Population** option described in Section 5.2.4.1 Defining Projected Population Information.

You should first select an assumed set of projections for the total population, group quarters population and average household size from the list provided in the **Projection:** drop-down list. You can then use the second, **Housing Units**, sheet (described below) to specify the housing units assumptions that will help determine the future demand for residential land.

8.2.2 Specifying Housing Unit Information

Specifying Housing Unit Information

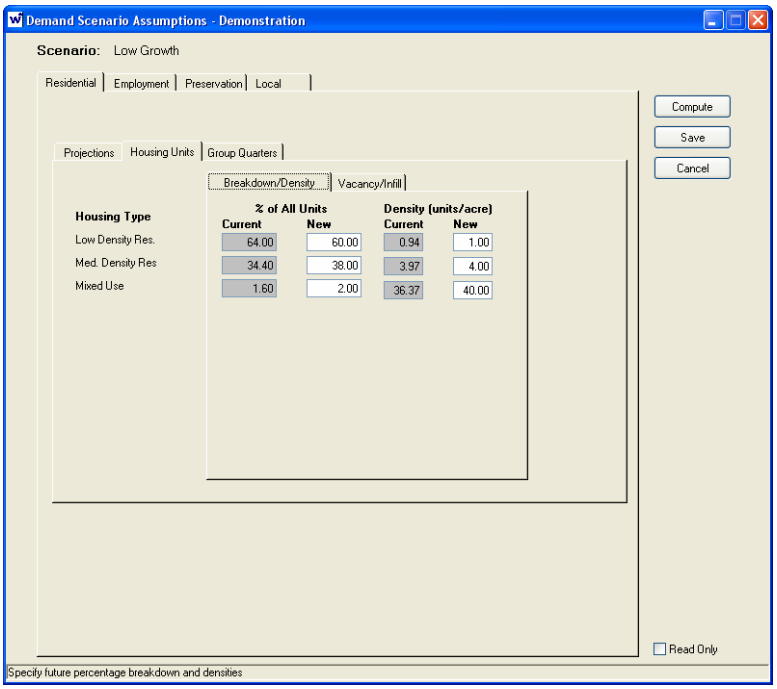
The second sheet, labeled **Housing Units,** contains two subsidiary sheets, **Breakdown/Density** and **Vacancy/Infill**, described briefly below.

8.2.2.1 Specifying Breakdown and Density Information

Specifying Breakdown and Density Information

The **Housing Units | Breakdown/Density** sheet (shown below) is used to specify the future percentage breakdown by housing type and the housing density (units per acre or hectare) for new housing units by housing type.

The current values for each of these variables is automatically displayed on the form for reference purposes. The sum of the **New % of All Units** values must equal 100.



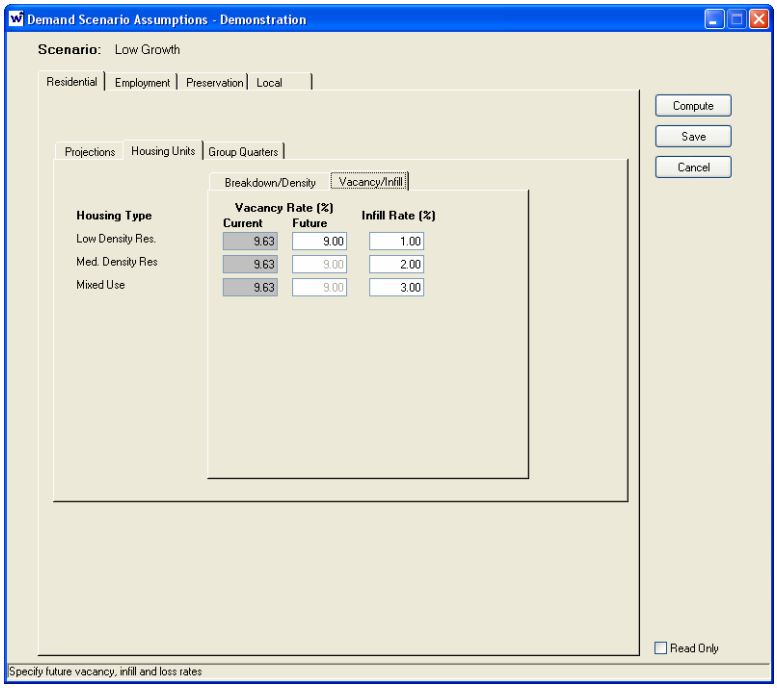
8.2.2.2 Specifying Vacancy Rate and Infill Percentage

Specifying Vacancy Rate and Infill Percentage

The **Housing Unit | Vacancy/Infill** sheet (shown below) is used to specify the vacancy rate and infill percentage for each type of residential housing.

Vacancy Rate. The ***vacancy rate*** is the proportion of the housing units which is vacant and available for sale. It is computed by dividing the number of vacant units available for sale by the total number of housing units, and multiplying by 100. The current vacancy rate for all housing units is automatically displayed for your reference.

Infill Percentage. The ***infill percentage*** is the percentage of new housing units that is assumed to be allocated as "infill" to areas that are already devoted to residential uses, e.g., new residential units created on currently vacant residential lots. The land use demands for these "infill units" are deducted from the total residential demand in a year because they are assumed to be satisfied by filling in land that is already devoted to residential uses.

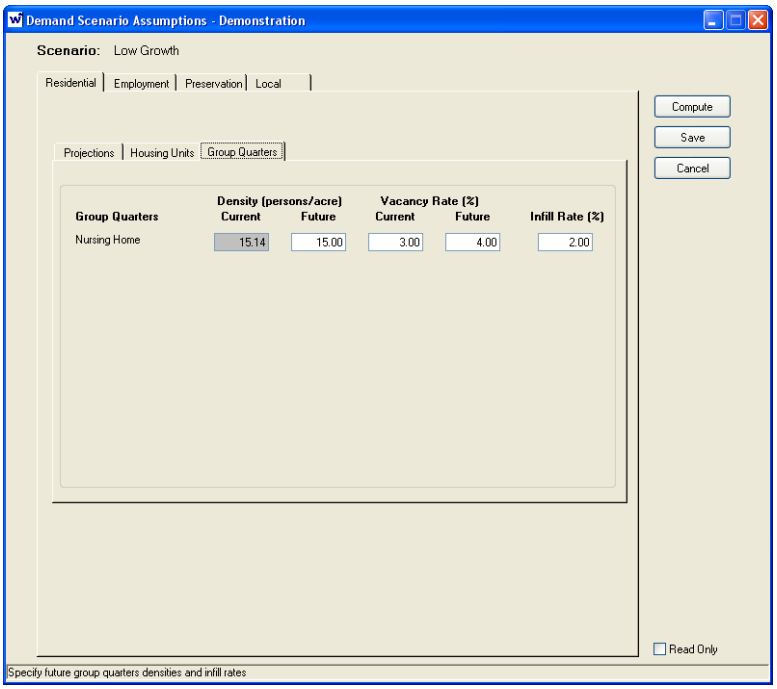


8.2.3 Specifying Group Quarters Information

Specifying Group Quarters Information

The final **Residential | Group Quarters** sheet is used to specify the assumptions that determine the future demand for the group quarters population. As shown below, the form can be used to specify:

1. The future group quarters population density (persons per acre or hectare);
2. The current and future vacancy rates for the group quarters population; and
3. The assumed future infill rate for the group quarters land uses.



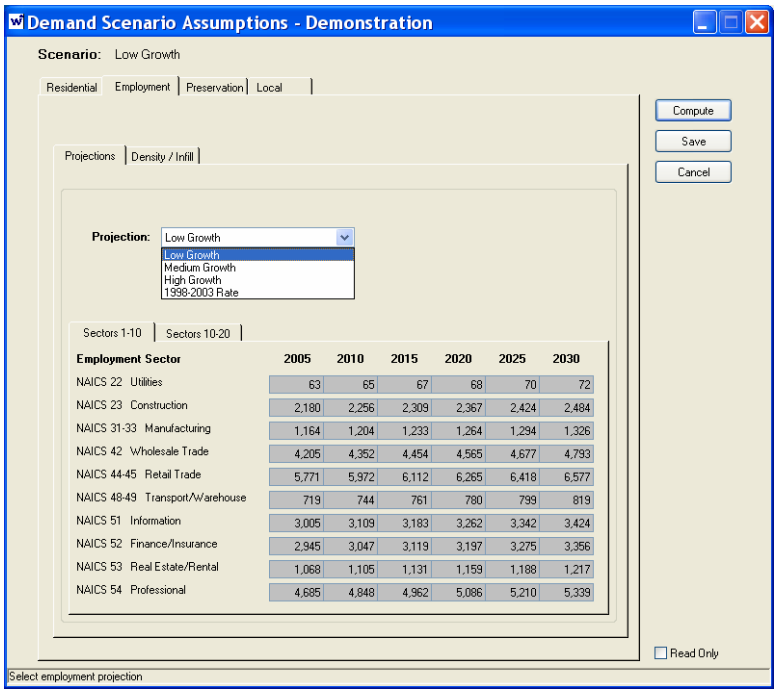
8.3 Specifying Employment-Related Demand Assumptions

You can then use the **Employment** sheet to specify the assumptions to be used in computing the future demand for employment-related land uses, i.e., demands whose size is dependent on the population that works in the study area.

8.3.1 Specifying Projected Employment

Specifying Projected Employment

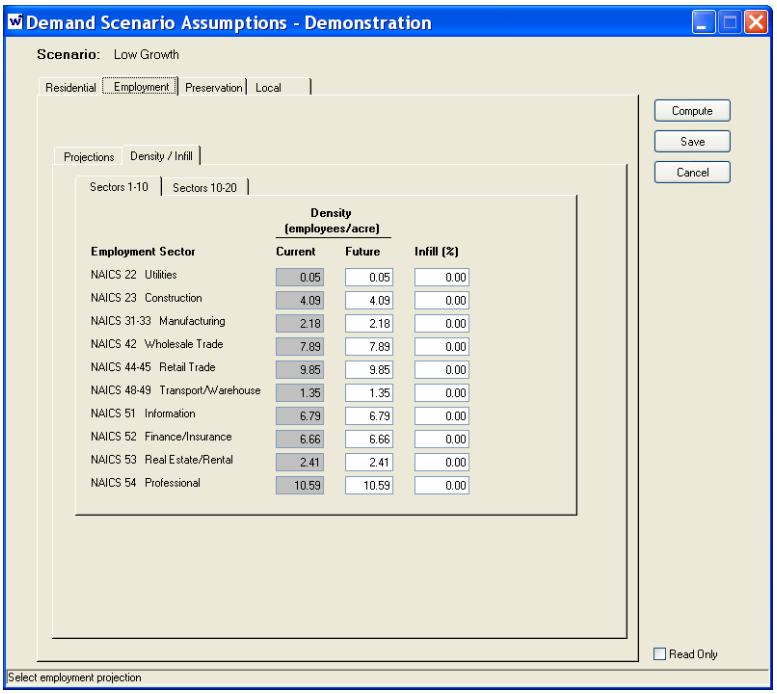
The **Employment** sheet contains two subsidiary sheets, labeled **Projections** and **Density/Infill**. The **Employment | Projections** sheet (shown below) allows you to select between a number of projections for the future employment in each employment sector. The trend projections assume that growth rates that were observed in the past (e.g., between 1998 and 2003 in the example below) will continue into the future. Additional "non-trend" projections (e.g., "Low Growth" or "Medium Growth") may also be available.



8.3.2 Specifying Density and Infill Information

Specifying Density and Infill Information

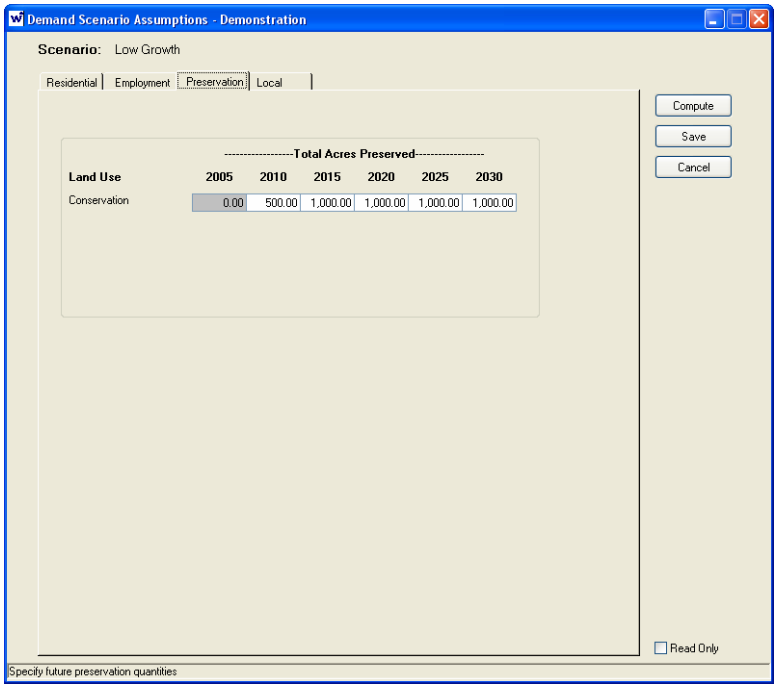
The **Employment | Density/Infill** sheet (shown below) can be used to specify the future density (employees per acre or hectare) for each employment sector and the percentage of the employment-related demand that will be used to infill areas that are currently devoted to employment-related land uses. The infill demand will be deducted from the projected land demand in each projection year.



8.4 Specifying Preservation Demand Assumptions

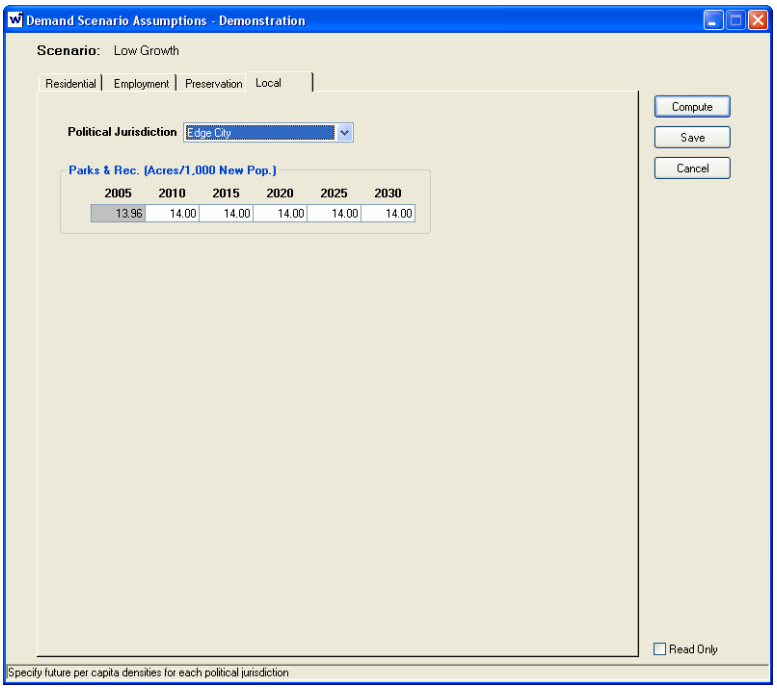
Next you can use the **Preservation** sheet (shown below) to specify the total amount of land which should be preserved for agriculture, conservation, or open space/environmental protection in each projection year. Zero values can be entered for scenarios which assume that no land will be preserved.

The values on the Preservation sheet are the total amounts of land to be preserved in projection year, not the additional land to be preserved in a given year. That is, in the example below, the total demand is 500 acres in 2010 and 1,000 acres for the remaining years. In this situation the preservation demand will be 500 acres in 2010 and 2015 and zero for 2020 through 2030.



8.5 Specifying Local Demand Assumptions

Finally, use the **Local** sheet (shown below) to specify the quantity of land that will be required per thousand new residents in each political jurisdiction for locally-oriented land uses, i.e., uses whose location and size are dependent on the local (e.g., municipal) population. Possible local land uses include local public and semi-public facilities, e.g., schools, fire stations, hospitals, libraries, and local parks and recreational facilities.



Use the drop-down list at the top of the form to select one of the political units in the study area and the text boxes on the body of the form to specify the land use standards for this political unit. Repeat this process until land use standards have been specified for all of the political units.

The specified land use standards for each locally-oriented land use will be multiplied by the projected residential population in each political unit in each projection year to compute the amount of land in that jurisdiction which must be devoted to each locally-oriented land use.

8.6 Computing Land Use Demands

After specifying all of the values for the residential, employment-related, preservation, and local land use demands, you can click on the **Compute** button to compute the land use demand for all land uses and all projection years. The computations will be completed in less than a second.

Once the computations are complete, you can click on the **Save** button to save the scenario assumptions and computational results. Click on the **Cancel** button if you do not want to save the current scenario assumptions or analysis results. After one of these buttons is pressed, you will be returned to the main What if? screen to view the demand scenario outputs.

8.7 Viewing Demand Outputs

The following options are available for viewing the demand scenario outputs:

1. Viewing demand report;
2. Comparing demand reports; or
3. Viewing demand assumptions report.

8.7.1 Viewing Demand Reports

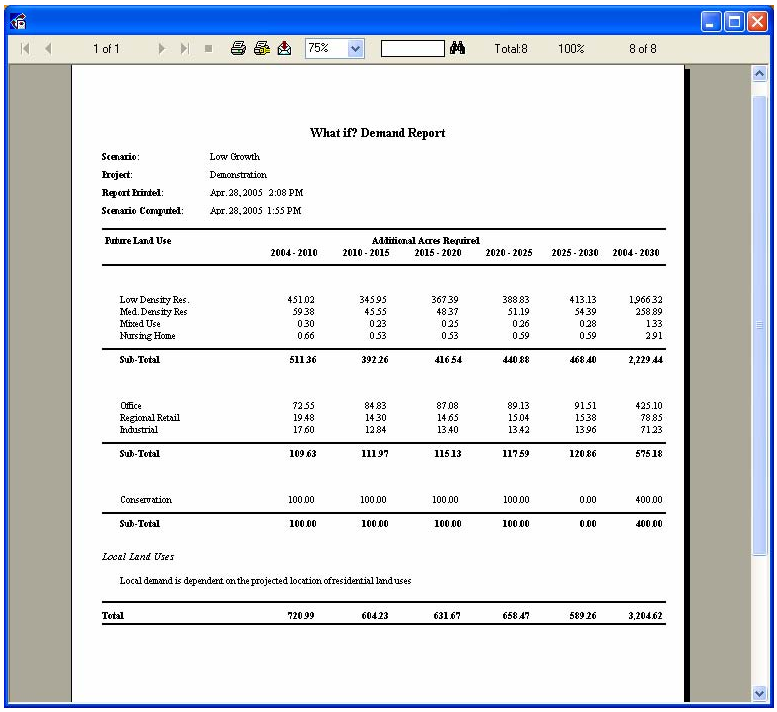
Viewing Demand Reports

The demand report can be viewed by:

1. Selecting the **Demand** option from the main What if? screen;
2. Selecting the **Report** option; and
3. Selecting the desired demand scenario from the list of demand scenarios that is displayed on the screen.

The **Demand Report** (shown below) identifies the projected demand for all land uses in each projection year, given the values you specified on the **Demand Scenario Assumption** form.

The procedures for viewing this report are described in Section 6.2 What if? Reports Option.



NOTE!

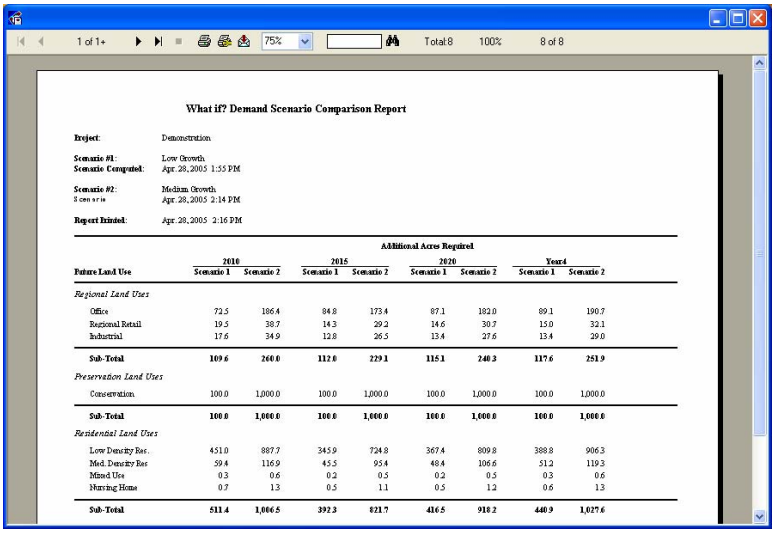
NOTE: Negative land use demand values for preservation land uses such as Agriculture and Open Space/Preservation are not errors. What if? treats the demand for preservation land uses as quantities of land that will be preserved for that land use in the future. As a result, if a demand scenario assumes that the quantity of land to preserved will be reduced, there will be a "negative demand" for that land use, and no additional preservation land will be required.

8.7.2 Comparing Demand Reports

Comparing Demand Reports

The projected land use demands for two different demand scenarios can be compared by reviewing the demand scenario comparison report, shown below. These reports can be viewed by:

1. Selecting the **Demand** option from the main What if? screen;
2. Selecting the **Compare…** option from the list that is displayed on the screen; and
3. Selecting the desired demand scenarios from the drop down lists on the **Compare Demand Scenarios** form; and
4. Pressing the **OK** button.



What if? Demand Scenario Comparison Report

Project: Demonstration

Scenario #1: Low Growth
Scenario Computed: Apr. 28, 2005 1:55 PM

Scenario #2: Medium Growth
Scenario Computed: Apr. 28, 2005 2:14 PM

Report Printed: Apr. 28, 2005 2:16 PM

Additional Acres Required

Future Land Use	2010 Scenario 1	2010 Scenario 2	2015 Scenario 1	2015 Scenario 2	2020 Scenario 1	2020 Scenario 2	Year4 Scenario 1	Year4 Scenario 2
Regional Land Uses								
Office	72.5	186.4	84.8	173.4	87.1	182.0	89.1	190.7
Regional Retail	19.5	38.7	14.3	29.2	14.6	30.7	15.0	32.1
Industrial	17.6	34.9	12.8	26.5	13.4	27.6	13.4	29.0
Sub-Total	**109.6**	**260.0**	**112.0**	**229.1**	**115.1**	**240.3**	**117.6**	**251.9**
Preservation Land Uses								
Conservation	100.0	1,000.0	100.0	1,000.0	100.0	1,000.0	100.0	1,000.0
Sub-Total	**100.0**	**1,000.0**	**100.0**	**1,000.0**	**100.0**	**1,000.0**	**100.0**	**1,000.0**
Residential Land Uses								
Low Density Res.	451.0	887.7	345.9	724.8	367.4	809.8	388.8	906.3
Med. Density Res	59.4	116.9	45.5	95.4	48.4	106.6	51.2	119.3
Mixed Use	0.3	0.6	0.2	0.5	0.2	0.5	0.3	0.6
Nursing Home	0.7	1.3	0.5	1.1	0.5	1.2	0.6	1.3
Sub-Total	**511.4**	**1,006.5**	**392.3**	**821.7**	**416.5**	**918.2**	**440.9**	**1,027.6**

As shown above, the demand comparison report identifies the projected demand for all land uses in each projection year for both scenarios, making it easy to determine the impacts that different demand assumptions have on the projected land use demands.

8.7.3 Viewing Demand Assumptions Reports

Viewing Demand Assumptions Report

The assumptions which underlay a given demand analysis can be viewed by:

1. Selecting the **Demand** option from the main What if? screen;
2. Selecting the **Assumptions** option; and
3. Selecting the desired demand scenario from the list that is displayed on the screen.

As shown below, the demand scenario assumptions report includes all of the values that were specified on the Residential, Employment, Preservation, and Local sheets of the Demand Scenario Assumptions form.