

Esri Inc.

Exercise 3 – Creating a New Scenario and Creating New Features

GeoPlannerSM for ArcGIS[®]

Esri Inc.
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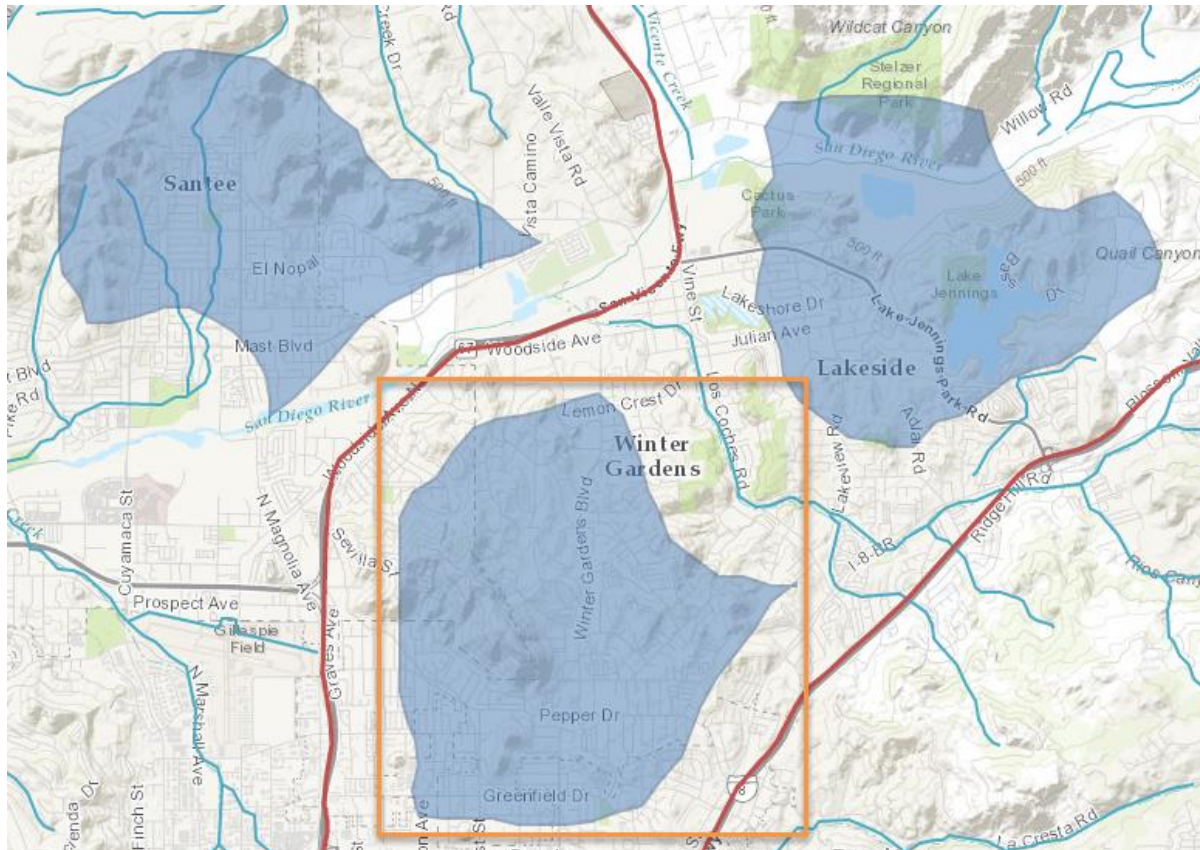
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Exercise 3 – Creating a New Scenario and Creating New Features

Introduction

In Exercise 1 and 2, you have created your new project, added project relevant data layers to your project map, and have performed data analysis to assess potential sites for the redevelopment. By visually comparing the assessment layers and site locations, you have decided that the site north of Interstate Highway 8 and east of California Highway 67 as shown below is the best location for the redevelopment. You are ready to create scenarios within your project and design land use within this proposed study area.



A GeoPlannerSM for ArcGIS[®] project contains at least one but usually multiple scenarios that are designed by one or more team members. A scenario is a single, unique alternative design for consideration in the planning process. It's a collection of features sketched using the feature symbols assigned to the project. These sketches are stored in a feature layer hosted by ArcGIS Online and are internally tracked by their associated Project IDs and Scenario IDs.

Each new scenario starts out as blank layers laid on top of the various reference layers displayed in the map view. The user is thus able to create (draw) the features in the scenario while referencing the underlying layers. All scenarios in a project use the same symbol palette and follow the same layer structure which is defined in the Landscape Planner Template that was selected during project creation.

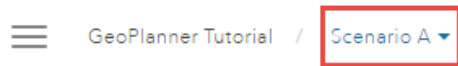
You can open multiple scenarios in a project, but only one scenario is active at a time. The scenario appears as a collection of layers prefixed with “Active Scenario” at the top of the Layers tab of the Contents widget. Drawing tools are provided to work with each scenario layer, and can be utilized to create new features.

In this exercise, you will create two new scenarios and sketch new features in both of them. You will then explore the various feature drawing and editing functions and scenario management functions. At the end of this exercise, you will open the dashboard for one scenario at a time to display its summarized key performance indicators. These indicators are useful for rapid impact assessment of designs represented by these scenarios. The scenarios and features created in this exercise will be referenced in exercises 4 and 5 for conducting evaluation, comparison, and preparing for reports.

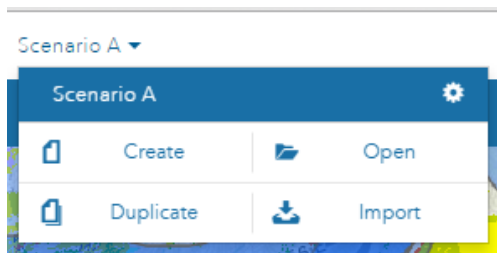
Create New Features



When a new project is created, a default scenario named “Scenario A” is automatically created and set as the active scenario. To verify this, open the Scenario widget using the following procedure:

1. Click the Scenario drop-down in the Application Status Bar.





2. Notice that “Scenario A” is selected (highlighted in blue), and is displayed in the Application Status Bar.

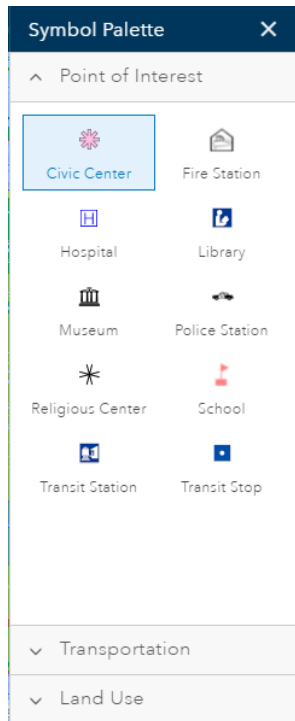



At this point, you only have one scenario in your project. You will create your first design in the default scenario by sketching various types of features in it. The  icon next to the name of scenario can be used to edit its properties, and the  icon can be used to delete the scenario. This screenshot above displays only one scenario in the project. There could be many scenarios in a project created by you or other users. Only scenarios that you are interested in and have added to the project will display in this widget. You can access other scenarios through the “Open” button. Also note that “Create” action will test for the uniqueness of the scenario name when attempting to create a new scenario.

Create Point Features

In the Land Use Planning template, point features include schools, libraries, hospitals, police stations, etc. A point feature can be created by using the Draw Point tool and one of the point templates from the symbol palette. Follow the steps below to design point features within the study area.

1. Activate the Design segment. Notice that the segment-specific tools display underneath the Application Toolbar.
2. Navigate to the study area on the map.
3. Click the Drawing Tools icon  in the toolbar. The drawing tools toolbar displays beneath the application toolbar.
4. Click the **Draw Point** tool  in the toolbar. The point symbol palette will be opened.





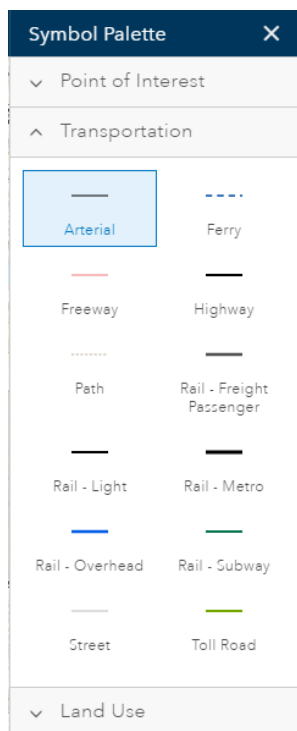
5. Select one of the point symbols (e.g. school) from the symbol palette. The selected symbol is highlighted in the palette.
6. Click on the map and release the mouse button. A point feature is created and displayed on the map.
7. If you are not satisfied with the point, click Undo  to cancel it. Otherwise, the point is stored in the corresponding scenario feature layer.

Repeat the above steps and choose different point symbols to create another 5-10 point features of different types.

Create Polyline Features

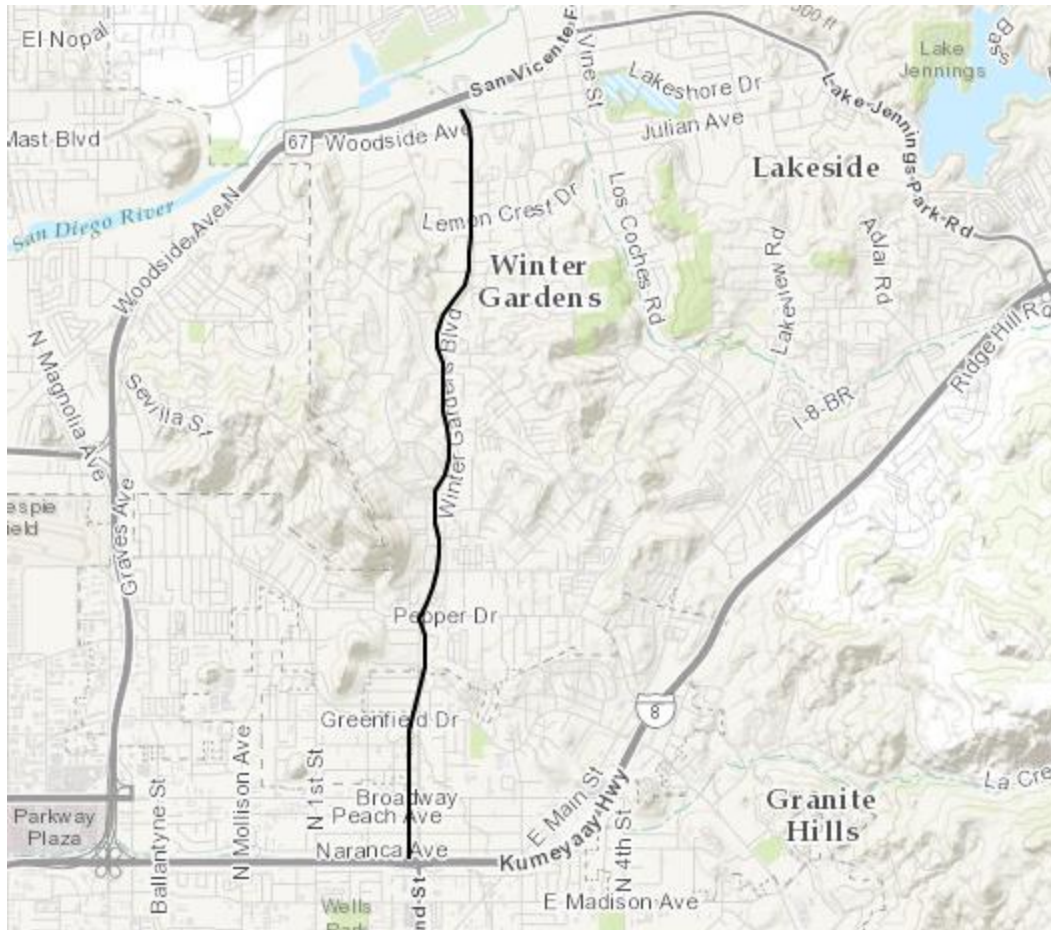
In the Land Use Planning template, line features include freeways, highways, railroad, streets, etc. Line features can be created using one of the line drawing tools, which are Draw Freehand Polyline and Draw Polyline, and using one of the line templates from the symbols palette. Follow the steps below to create some Light Railway line features within the study area, which represents the Light Railway that will be used to transport goods in and out of your proposed development in Scenario A. These railways will be referenced later in exercise 4 to create meaningful suitability layers and evaluation layers. Therefore, it is recommended that you draw the "Rail - Light" lines to resemble a real situation.


1. While in the Design segment, click the Drawing Tools icon  in the toolbar. The drawing tools toolbar displays beneath the application toolbar.
2. Click **Draw Freehand Polyline** tool  in the toolbar. The line symbol palette will be opened.




3. Click the "Rail – Light" line symbol on the symbol palette.

- Click on the map and hold down the mouse button to draw the freehand line that extends from Winter Gardens Blvd at Route 67 to Interstate 8. Release the mouse button to complete. A polyline is created following your mouse movement and is added to the map. The location of your Rail - Light line should resemble the following:





- If you are not satisfied with the polyline, click Undo  to cancel it. Otherwise, it is stored in the corresponding scenario feature service.

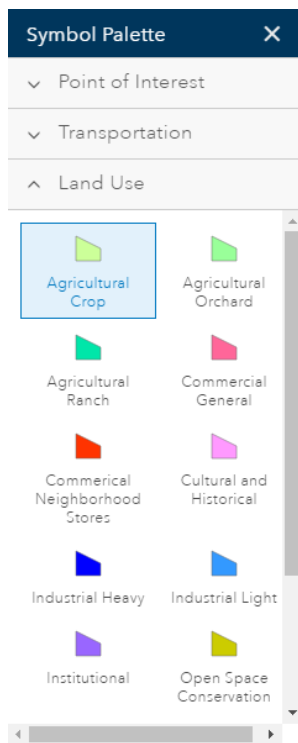
Besides using the Draw Freehand Polyline tool, you can use the Draw Polyline tool  in the toolbar to create polylines. The difference between the Draw Freehand Polyline tool and Draw Polyline tool is that the first tool allows you to draw a polyline by following mouse movement, while the second tool allows you to draw a polyline by following mouse clicks. You will need to double click to complete the drawing if using the Draw Polyline tool.


Create Polygon Features

In the Land Use Planning template, polygon features include agricultural lands, residential lands, industrial lands, etc. Polygon features can be created by using one of the polygon templates from the

symbols palette, and using one of the polygon drawing tools, which are Draw Freehand Polygon, Draw Polygon, Draw Auto-Complete Freehand Polygon, Draw Auto-Complete Polygon, Draw Circle, Draw Ellipse, and Draw Rectangle tool. Follow the steps below to create some polygon features in the study area.

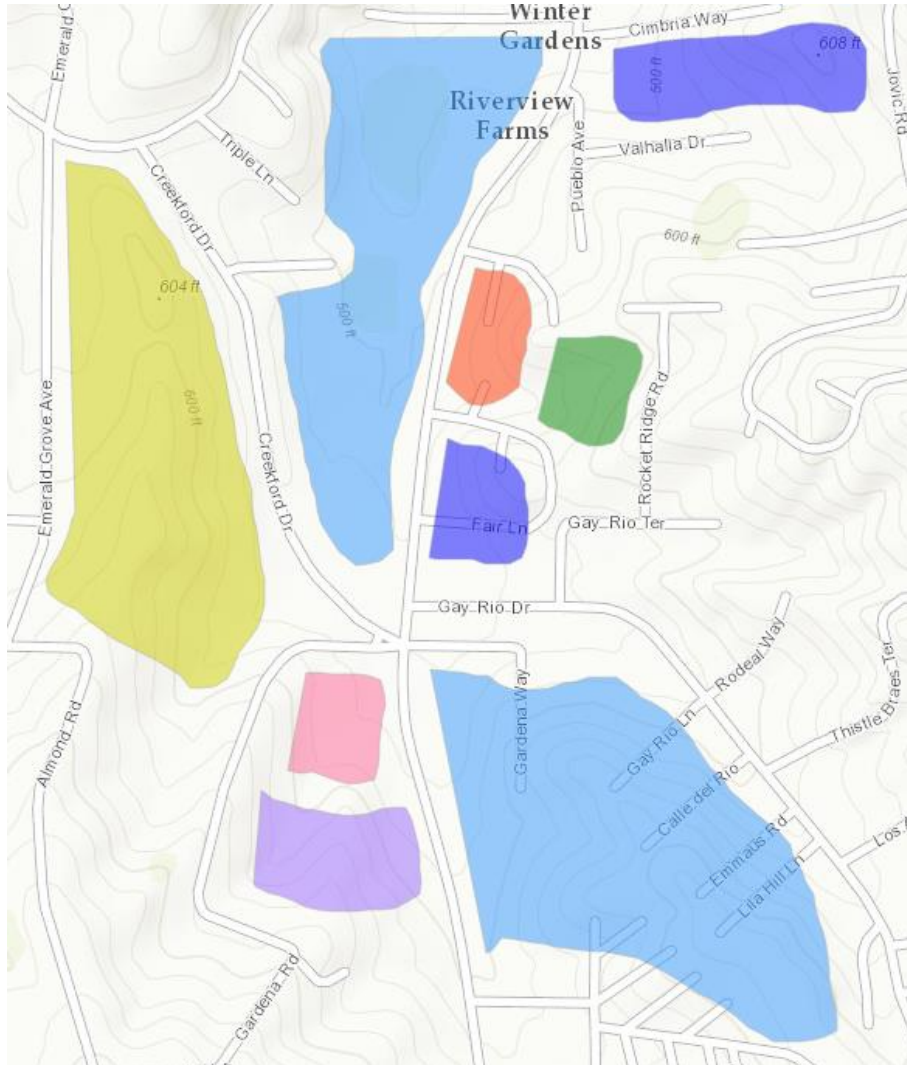
1. Pan and zoom the map to an area along Winter Garden Boulevard in your plan.
2. While in the Design segment, click the Drawing Tools icon  in the toolbar. The drawing tools toolbar displays beneath the application toolbar.
3. Click the **Draw Freehand Polygon** tool  in the toolbar. The polygon symbol palette will open.



4. Click on the “Commercial General” symbol in the symbol palette.
5. On the map, click and hold down the mouse button to draw the polygon, then release the mouse button to complete drawing. When finished drawing, the polygon is created by following mouse movement and is added to the map.
6. If you are not satisfied with the polygon, click Undo  to cancel it. Otherwise, it is stored in the corresponding scenario feature layer.
7. Repeat step 4 to create at least one polygon for each of the following Land Use types:
 - Commercial General
 - Commercial Neighborhood Stores

- Industrial Heavy
- Industrial Light
- Institutional
- Open Space Conservation
- Open Space Park

When you have finished, your map should look similar to the following:



Alternatively, you can use the other polygon drawing tools in the toolbar to create polylines. The differences between these tools are:


- Draw freehand polygon - draw freehand polygon following mouse movement on the map.
- Draw auto-complete freehand polygon - draw polygon that appends to the boundary of an existing polygon by following mouse movement on the map.
- Draw polygon - draw polygon following mouse clicks on the map.

- Draw auto-complete polygon - draw polygon that appends to the boundary of an existing polygon by following mouse clicks on the map.
- Draw shape – drop-down menu for drawing circle, ellipse, or rectangle.

Edit a Feature

Features in scenario layers are editable and can be edited in the Design segment. Both feature geometries and attributes can be edited. Changes made to the features are visible to all users who have access to the scenario.

Select a Feature


Clicking on the Select Feature icon  de-activates the drawing tools and activates the select cursor. You can then click on a feature on the map to select it. A single click on a feature will expose its bounding box, while a double click on it will expose its vertices.



After clicking the Select Feature tool, a new edit tools toolbar appears beneath the application toolbar. These tools allow you to edit, rotate, cut, copy, paste, and delete a selected feature.

Rotate, Resize and Move a Feature

A point, line, or polygon feature can be selected and moved to another location on the map. A line or polygon feature can be rotated.

1. Click on the Select Feature icon  to activate this tool.
2. Single click on a polyline or polygon feature on the map. The feature's bounding box is highlighted.

3. Click and drag on the rotation handle to rotate the feature. The rotation handle is at the top of the bounding box.




4. Click and drag on any of the four corners of the bounding box to resize the feature. You should notice the mouse pointer is changed if you move the mouse over one of the four corners.
5. Click anywhere inside the bounding box and then drag it to a new location, and release the mouse button. The feature is moved but remains selected.
6. Click a blank area to deselect the feature and complete the move.

Point features cannot be rotated in the current version of GeoPlanner. Points can be moved to a new location with the same steps shown above.



Edit Feature Geometry

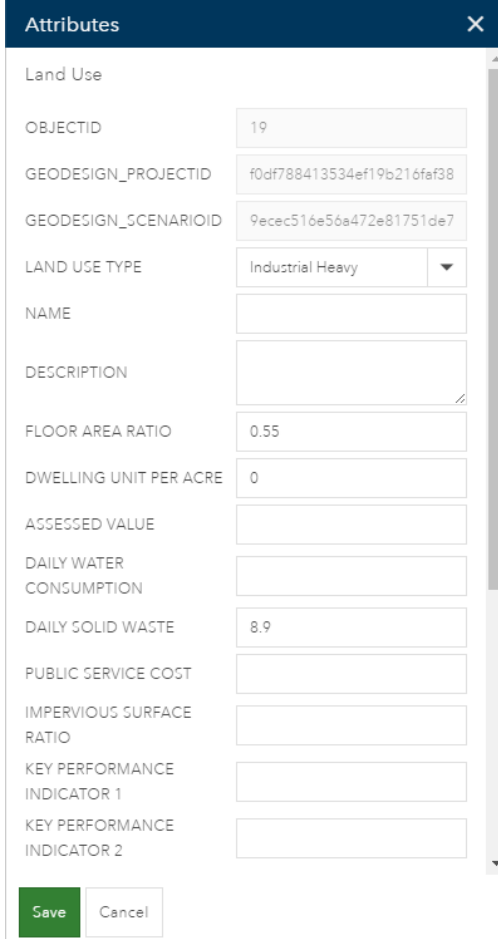
The geometry of a polyline or polygon feature can be edited using the editing functions.

1. While in the Design segment, click on the Select Feature icon  to activate this tool.
2. Double click on a polyline or polygon feature on the map. The feature's vertices are exposed.
3. Select a vertex and drag it to desired location. The vertex is moved to the new location. Repeat this step for additional vertices if necessary.
4. Click a blank area to deselect the feature and complete the geometry change.

Edit Feature Attributes and Attach Files

The attributes of a point, polyline, or polygon feature can be edited using the Attributes tool.

1. While in the Design segment, click on the Select Feature icon  to activate this tool.
2. Single click on a land use polygon feature on the map. The feature's bounding box is highlighted and several tools become enabled on the Select toolbar beneath the application toolbar.
3. Click on the Attributes tool . The Attributes window is displayed.

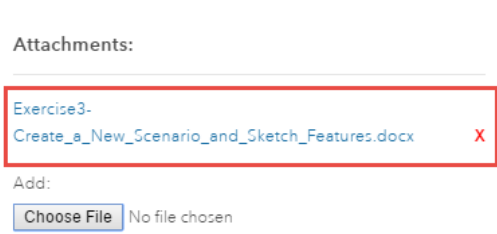


Land Use	
OBJECTID	19
GEODESIGN_PROJECTID	f0df788413534ef19b216faf38
GEODESIGN_SCENARIOID	9ecec516e56a472e81751de7
LAND USE TYPE	Industrial Heavy
NAME	
DESCRIPTION	
FLOOR AREA RATIO	0.55
DWELLING UNIT PER ACRE	0
ASSESSED VALUE	
DAILY WATER CONSUMPTION	
DAILY SOLID WASTE	8.9
PUBLIC SERVICE COST	
IMPERVIOUS SURFACE RATIO	
KEY PERFORMANCE INDICATOR 1	
KEY PERFORMANCE INDICATOR 2	

Save Cancel



4. Click the “Land Use Type” drop-down and select a different value than the current one. The “Land Use” field is used to define land use types and their associated symbols. This was done when the feature template was published.
5. Click on “Save”. The attribute window remains open, and the symbol for the selected feature has changed to reflect the new land use type.
6. In the Attachments section of the Attributes window, click “Choose File” and navigate to your local drive and select a file. The file can be in one of the formats supported by ArcGIS Online, such as PDF, PNG, IMG, JPEG, DOC, etc.

7. The attached file name is displayed in the Attachments section. You can attach multiple files to the feature by repeating the steps above.



Delete a Feature

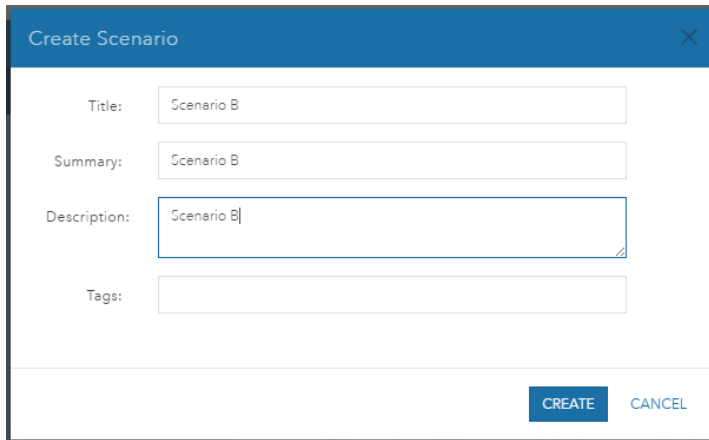
A point, polyline, or polygon feature can be deleted from a scenario. Once deleted, it is removed from both the map and the scenario feature layer.

1. While in the Design segment, click on the Select Feature icon  to activate this tool.
2. Single click on a point, polyline, or polygon feature on the map. The polygon or polyline feature's bounding box is displayed and a point will be highlighted. The Select tools toolbar underneath the application toolbar becomes enabled.
3. Click Delete . This will delete the feature. Alternatively, you can press the "Delete" key on your keyboard to delete the feature.

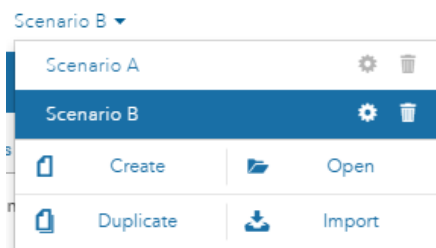
Creating a New Scenario

Now that you have created your first design by creating various types of features in the default scenario, let's create an alternative scenario and design features in it. After that, you will explore the scenario management functions and copy and paste a feature between the two scenarios.

1. Click the Scenario drop-down on the Application Status Bar.
2. Click Create to display the Create Scenario window.
3. In the title field, type in "Scenario B". Add a summary and description for the new scenario. The Create Scenario dialog should resemble the following graphic:



4. Click CREATE.
5. Click the Scenario drop-down again. Now both “Scenario A” and “Scenario B” are listed in the scenario drop-down, and the newly created “Scenario B” is the active scenario.





Scenario B is the alternative plan for the project. Once you have some features created in this scenario, it will be used to perform evaluation and comparison with Scenario A.

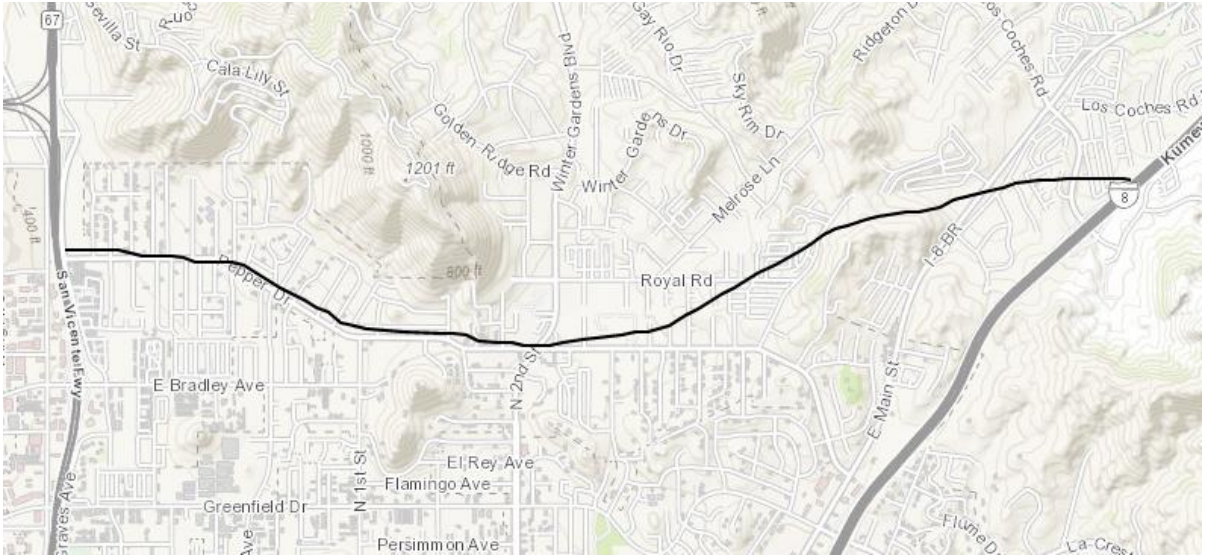
Repeat the above steps to create another scenario and name it “Scenario C”. We will use “Scenario C” to explore the functions of editing scenario properties and deleting a scenario in the later part of this exercise. We will not design any features in this scenario.

Create Line Features in the Alternative Scenario

Now you will create your second plan by sketching features in Scenario B.

1. Click the Scenario drop-down on the Application Status Bar and select “Scenario B”.
2. While in the Design segment, click the Drawing Tools icon  in the toolbar. The Draw toolbar displays beneath the application toolbar.
3. Click **Draw Freehand Polyline** tool  in the toolbar. The line symbol palette will be opened.
4. Click the “Rail - Light” line symbol on the symbol palette.

- Click on the map and hold down the mouse button to draw the freehand line that extends from Pepper Drive near route 67 through the hills to the east and west of Jackson Hill Drive to Interstate 8, then release mouse button to complete. A polyline is created following your mouse movement and is added to the map. This line represents the Light Railways line that will be used to transport goods in and out of your proposed development in Scenario B. Your Rail-Light line should resemble the following:






Get immediate feedback while you sketch

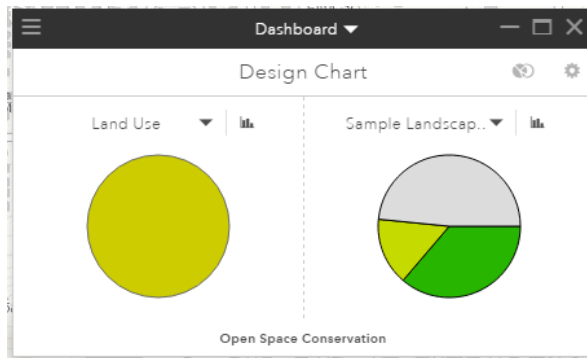
GeoPlanner dashboards display key performance indicator (KPI) information in easy-to-read gauges and charts so you can quickly visualize and understand the impacts of design decisions in real time. You can access the dashboard widget from many segments of the GeoPlanner workflow by clicking the Dashboard icon on the Common Tools toolbar. The dashboard displays qualitative and quantitative information about your Active Scenario point, line, and polygon features. As you add, update, and delete features in your Active Scenario, the dashboard automatically updates to provide you with immediate feedback on the impacts of your design decisions.

There are two types of dashboard items: charts and gauges. Charts help you understand the distribution of feature types within a dataset and how they overlay with an assessment layer. Gauges help you understand the effect or outcome of your designs relative to a specific, calculated performance metric.

In the following steps, you are going to create some polygon features in Scenario B, the alternative scenario. As you create features, you'll have a dashboard open so you can visualize your design impacts.

- On the Common Tools toolbar, click the Dashboard icon . The dashboard opens in its design mode and displays two empty pie charts.
- On your map, locate the intersection of Pepper Drive and Winter Gardens Boulevard.

3. While in the Design segment, click the Drawing Tools icon  in the toolbar. The drawing tools toolbar displays beneath the application toolbar.
4. Click the Draw Freehand Polygon tool  in the toolbar. The polygon symbol palette will open.
5. Click on the “Open Space Conservation” symbol in the symbol palette.
6. On the map, in the hilly area to the west of N 2nd Street and south of Pepper Drive, click and hold down the mouse button to draw a polygon. Release the mouse button to complete drawing. After the polygon draws on the map, you’ll notice that your dashboard updates. The chart on the left is known as the primary chart. It displays the area, in acres, of the feature you just drew. The chart on the right is known as the secondary chart. The drop-down list above the secondary chart should read **Sample Landscape Modeler Output**. You added this layer to your project at the end of exercise 2. The secondary chart shows a summary of the assessment layer (in this case, **Sample Landscape Modeler Output**) beneath your design features. If no design features overlay the assessment layer, the chart will be blank. If design features do overlay the assessment layer, the chart might look like the following graphic:

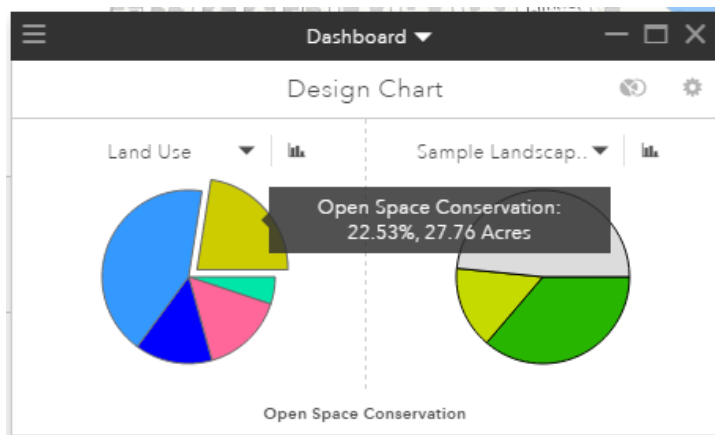


7. Repeat steps 4-6 to create at least one polygon for the following Land Use types:
 - Agricultural Ranch
 - Commercial General
 - Industrial Heavy
 - Industrial Light
 - Open Space Conservation

Once you have finished, your map should look similar to the following:






Your dashboard should look similar to the following graphic:



The chart on the left displays the distribution of feature types in your scenario. Hovering the mouse pointer over one pie wedge displays the total amount of acres of all features of a specific type. In this case, Open Space Conservation features comprise 22.53%, or 27.76 acres of this plan. Clicking on a pie wedge (in this case, Open Space Conservation) summarizes the assessment layer beneath those features and displays that summary in the secondary chart. Charts will be discussed further in Chapter 4.

Copy a Feature from One Scenario to Another


Now you have two scenarios and each contains some features. Sometime you may want to consolidate the two plans by copying and pasting some features from Scenario A to Scenario B.

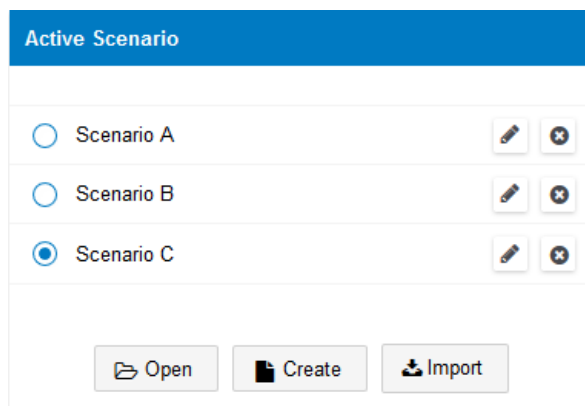
1. Click Scenario drop-down in the Application Status Bar.
2. In the Scenario drop-down, select “Scenario A” to activate it.
3. Zoom to a desired extent with features you can copy.
4. While in the Design segment, click on the Select Feature icon  to activate this tool.
5. Click on a polyline or polygon feature on the map. The selected feature is highlighted. The Select tools become enabled.
6. Click Copy .
7. Click the Scenario drop-down again, then select “Scenario B” to activate it.
8. Click Paste .

Notice the selected feature is copied from Scenario A to Scenario B. Repeat the above steps to copy/paste additional features. Then follow the create feature steps to create more feature in this scenario. We will compare Scenario A and Scenario B in Exercise 4, therefore it is critical that you sketch different types of features in each scenario.

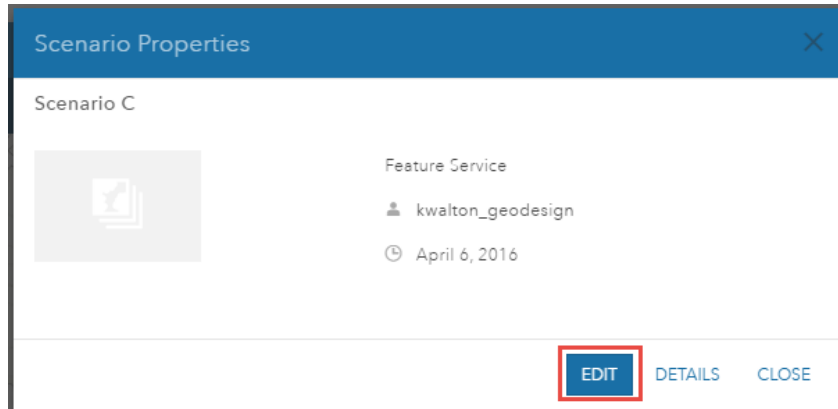
Edit Scenario Properties and Delete a Scenario


Now we will use the scenario named “Scenario C” created earlier in this exercise to explore the functions of editing scenario properties and deleting a scenario. You have not created any features in this scenario and it is ok to delete it.

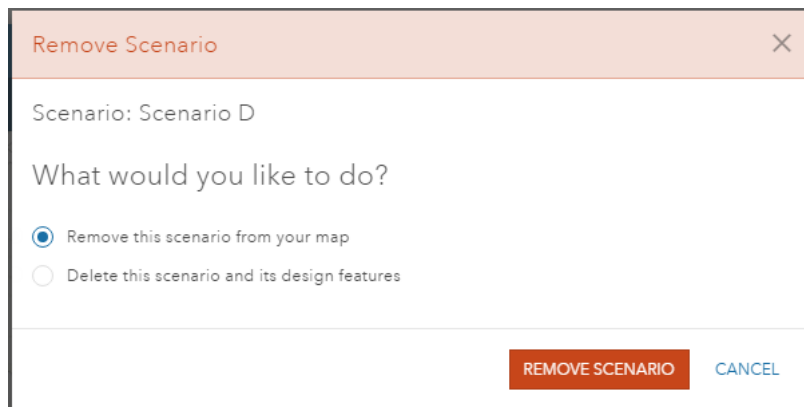
1. Click the Scenario drop-down in the Application Status Bar.
2. Click “Scenario C” to activate it.
3. Click the Scenario drop-down again, then click the Scenario Properties icon  for “Scenario C”.



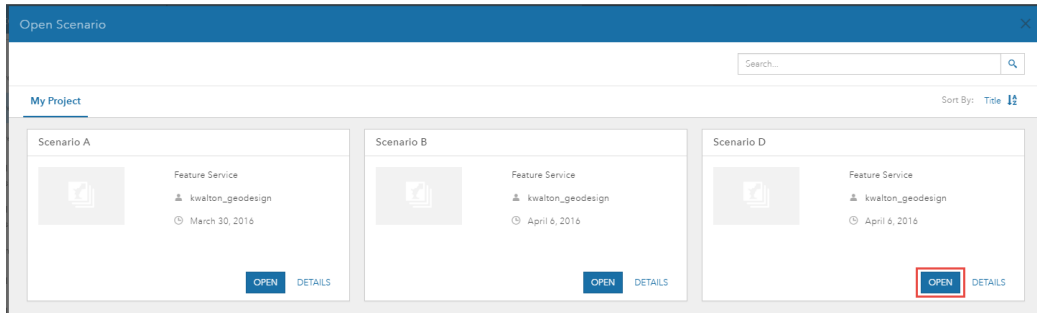
4. In the Scenario Properties window, click EDIT.



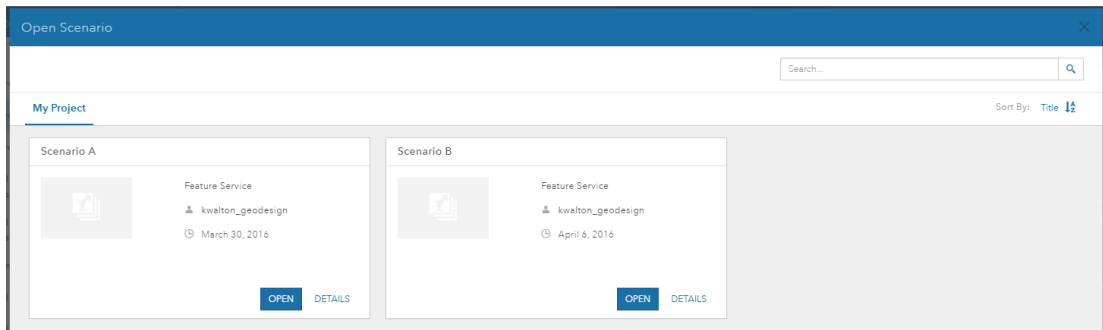
5. Edit the title, summary, and description for the scenario. Change the title to “Scenario D” for this exercise purpose.
6. Click SAVE. The edited properties are saved.
7. Click the Scenario drop-down again. Notice that “Scenario C” was replaced with “Scenario D” in the list.
8. Click the Remove Scenario icon  for “Scenario D”.
9. In the Remove Scenario window, select “Remove this scenario from your map”.



10. Click “REMOVE SCENARIO”. The scenario will be removed from your map. However, this scenario still exists in the project.
11. Click the Scenario drop-down, then click “Open”.
12. In the Open Scenario window, click the OPEN button for “Scenario D”.



13. Repeat step 8, but this time select “Delete this scenario and its design features”, then click “DELETE SCENARIO”. Confirm delete scenario in the next window.
14. This time, the scenario is removed not only from your map, but also from the scenario feature service. If you use the Open Scenario function, you will see that this scenario is no longer among the list of scenarios.



Summary

In this tutorial, you learned how to create a new scenario, how to sketch new features in a scenario, how to copy and paste features between scenarios, how to manage scenarios, and how to display a dashboard. You are ready to move to the next exercise to perform evaluation on one scenario and conduct comparison between scenarios. The scenarios and their associated features will be referenced in the later exercises.