

Exercise: Explore an existing model

In this exercise, you will open and examine a gas utility model that has already been built and answer questions about it. Understanding how a model is put together can help you determine the proper workflow and tools for building your own models.

Estimated completion time: 20 minutes

To complete exercises, you need the following:

ArcGIS Desktop 10.0 or ArcGIS Desktop 10.1 or ArcGIS Desktop 10.2 (Advanced)

Note: This course contains four exercises. An Advanced license of ArcGIS for Desktop is required to complete two course exercises. An ArcGIS for Desktop Basic or Standard license can be used to complete the other course exercises.

- Step 1: Download the data

To complete the exercise, you must download the data. If you have already downloaded and installed the data, continue to the next step.

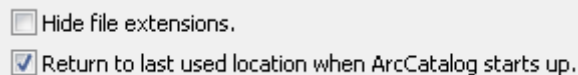
- Step 2: Set ArcGIS options and open an ArcMap document

In this step, you will use ArcCatalog to set the option to view file name extensions, and then create a folder connection to your exercise data. Finally, you will open an ArcMap document.

Start ArcCatalog.

From the Customize menu, choose ArcCatalog Options.

At the bottom of the General tab, uncheck the box next to Hide file extensions, and click OK.



Close ArcCatalog.

Next, you will open an ArcMap document.

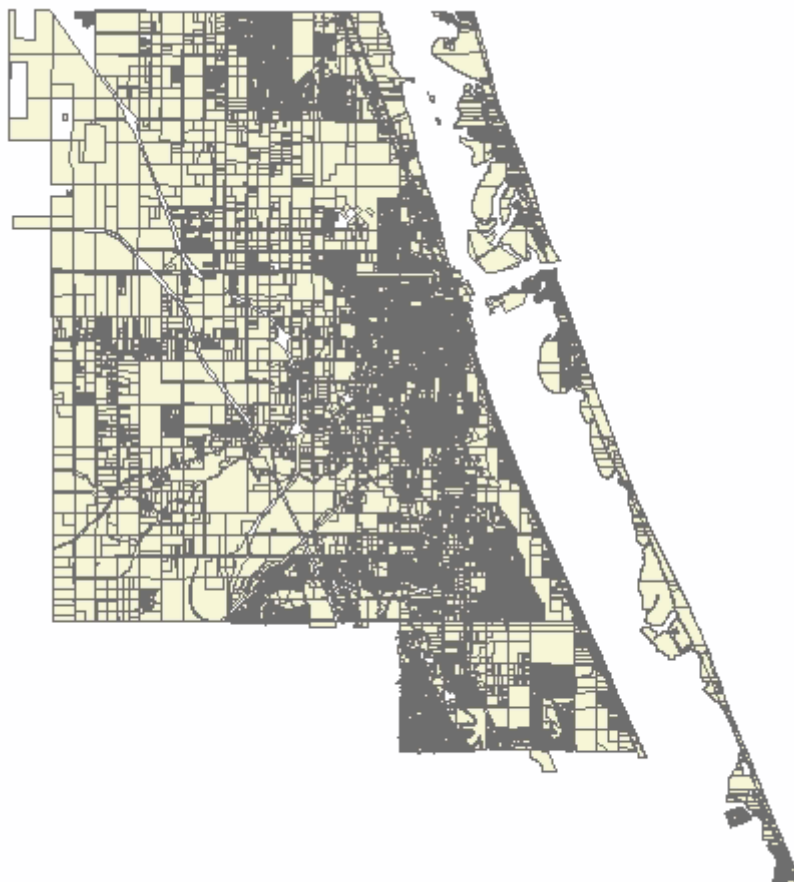
Start ArcMap.

Tip: From the Start menu, choose All Programs > ArcGIS > ArcMap 10.0, 10.1, or 10.2, whichever version you are using.

In the ArcMap Getting Started dialog box, under Existing maps, click Browse for more.

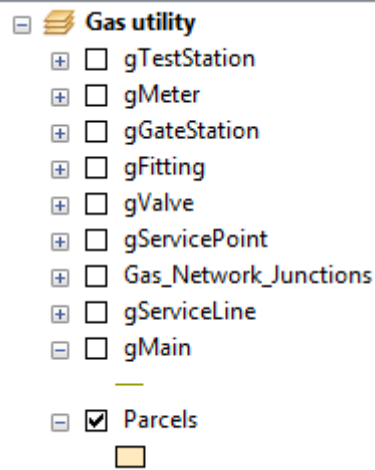
Browse to the `..\Student\BldgModels10_0` folder and open `ExploreGasModel.mxd`.

The map opens, displaying parcels for Fort Pierce, Florida.



Step 2a: Set ArcGIS options and open an ArcMap document.

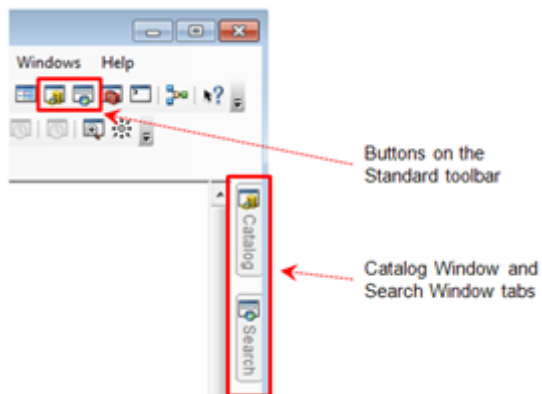
The table of contents contains several geometric network layers that are being used to model a gas utility network within Fort Pierce. A geometric network is a geodatabase element that allows you to model connectivity between points and lines. It is commonly used in the utility industry to model gas, electric, water, and other types of utility networks. There is also a parcel layer for Fort Pierce.



Step 2b: Set ArcGIS options
and open an ArcMap
document.


Next, you will create a folder connection to the exercise data for this course.

Open the Catalog window .



Click the Auto Hide button  so that it points down.

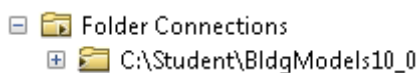
Tip: To set the window to auto hide, click the Auto Hide button again.

From the toolbar at the top, click the Connect To Folder button .

In the Connect to Folder dialog box, expand Computer > OSDisk (C:).

Click Student > BldgModels10_0, and then click OK.

The new folder connection appears in the Catalog window.



Step 2c: Set ArcGIS options and
open an ArcMap document.



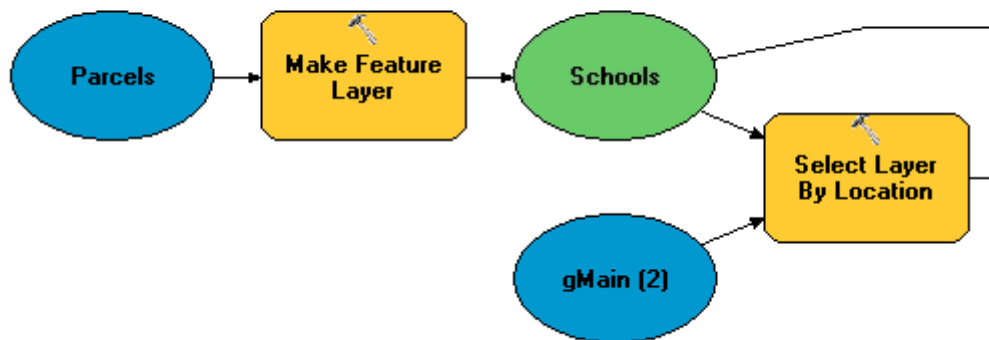
One of the first things you notice about this model is that half the elements are white, and the other half are in different colors.

? What does it mean when a model element is in color?

? What does it mean when a model element is white?

In order to run your entire model at the same time, you need to know why half the elements (the white elements) are not yet ready to run. In the next step, you will explore why many of your model elements are not in a ready-to-run state.

Using the Zoom In tool , draw a box around the left half of the model to zoom in to it.



Step 4a: Analyze a model.

You can see different sizes and shapes of model elements in this portion of the model.

? Which type of model element is represented by a blue oval?

? Which type of model element is represented by a rounded rectangle?

? Which type of model element is represented by a green oval?

Double-click the Make Feature Layer tool to open its dialog box.

Notice that Input Features is set to Parcels and Output Layer is set to Schools. These names match the elements you see in the model for input data and output data.

Change the Output Layer from Schools to **Schools_New** and click OK.

The output data element name now reflects the change you made in the tool dialog box.



Step 4b: Analyze a model.

Open the dialog box for Make Feature Layer again.

Change the output layer name back to **Schools**, and keep the tool dialog box open.

Notice the following expression in the Expression text box:

```
BUSINESSNA LIKE '%School%'
```

(**ArcGIS 10.0 or 10.1 users:** Your expression will appear as "BUSINESSNA" LIKE '%School%'.)

Tip: If you are using ArcGIS 10.2, then the field name in the expression will not have double quotes around it. If you are using ArcGIS 10.0 or 10.1, there will be double quotes.

This expression uses a LIKE operator to select any parcels that have the word "school" in their name, and then creates a new ArcMap layer of those schools.

Click OK to close the dialog box.

- Step 5: Explore the Select Layer By Location tool

Open the Select Layer By Location dialog box.

Input Feature Layer
gMain (2)

Relationship (optional)
WITHIN_A_DISTANCE

Selecting Features (optional)
Schools

Search Distance (optional)
500 Feet

Selection type (optional)
NEW_SELECTION

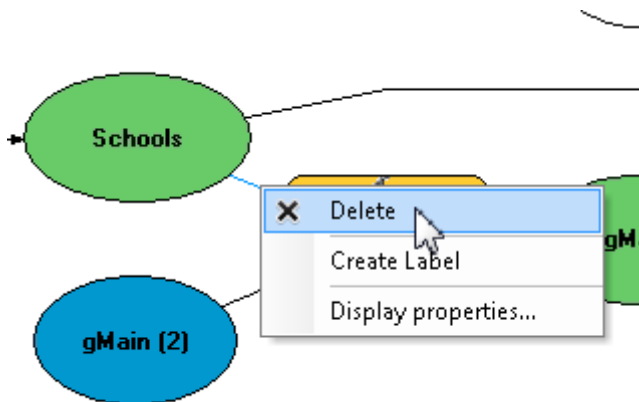
Step 5a: Explore the Select Layer By Location tool.



Based on the information in this dialog box, what is the purpose of this tool?

Close the dialog box.


Using the black Select tool in the ModelBuilder toolbar, click the arrow connector between the Schools output data element and the Select Layer By Location tool (the line will turn blue when selected), right-click, and choose Delete.

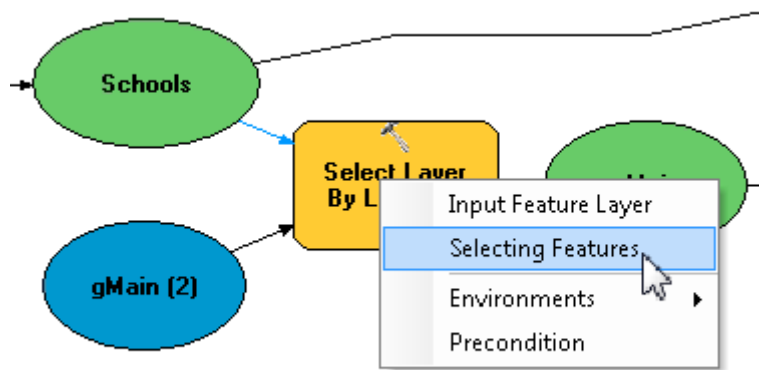


Step 5b: Explore the Select Layer By Location tool.

Open the dialog box again and notice that the Selecting Features parameter is blank.

Close the dialog box.

Using the Connect tool , click Schools, and then click Select Layer By Location.



Step 5c: Explore the Select Layer By Location tool.

Notice how you can choose to connect this data element to the tool as the input feature layer or the selecting feature.

Choose Selecting Features, and then open the dialog box to see that Schools is again set as the selecting feature.

You can set up tool parameters by connecting elements or by using the browse buttons in the dialog box to set a data source. If you set a data source to a dataset that is not added in the model, ModelBuilder will automatically add a blue input data element to the model to represent that dataset.

Click OK.

- Step 6: Explore the Buffer tool

Double-click the Buffer(2) tool to open its dialog box.

Tip: To see the Buffer(2) tool element, you may need to scroll to the right in your zoomed-in view of the model.



Based on what you see in the dialog box, what is this tool currently set to do?

Close this dialog box and open the Buffer tool dialog box that is not ready to run (the white element).




What is this tool currently set to do?



What distance is being used?

Open the dialog box for the Intersect tool.

Tip: If necessary, use the Zoom In tool  to draw a box around the middle section of the model to zoom in to it.

The Intersect tool is being used to overlay the two buffer feature classes, to keep the common areas between them, and to put those features into a new feature class called Intersect.

Close the dialog box, and then open the Dissolve tool.

The Dissolve tool is being used to dissolve any borders between intersected buffer polygons so that each polygon is treated as one individual feature. Dissolve is an effective data management operation that can be used to limit the number of features being stored.

Close the dialog box.

Now you will run the model.

From the Model menu, choose Run Entire Model.

If necessary, close the progress dialog box.

Zoom in to the left half of the model.

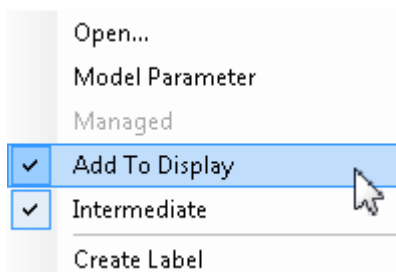


?

What does the shadow under a model tool or output data element indicate?

In the ArcMap table of contents, notice the two new layers: GasLeakAreas and Schools. Running your model created these layers.

In the model, right-click the Schools output data element.



Step 7a: Explore remaining tools and run the model.

For this data element, Add To Display is selected, which will add the data element automatically as a map layer after that model process runs. A model process is a single tool that creates new data when it is run.

Click anywhere to dismiss the menu, and scroll to the GasLeakAreas output data element at the far right.

Right-click the GasLeakAreas element and verify that Add To Display is selected.

You can manually set data elements to be added to the display when your model runs by selecting Add To Display from this list. In this instance, the setting was already made.

Note: If you do not see the GasLeakAreas layer in your map, from the Catalog window, drag GasLeakAreas in FtPierce.gdb into the map.

Close the model and choose Yes when prompted to save it.


- Step 8: Analyze model output data

Now you will analyze the data created in this model.

In the map, turn off the Parcels layer (this should leave Schools and GasLeakAreas visible).

Zoom in to the Schools layer.

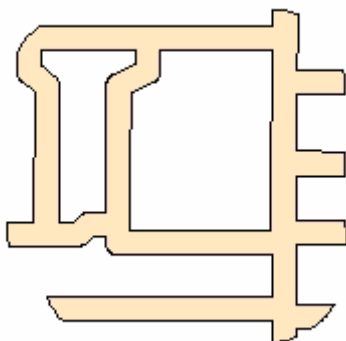
Note: In the table of contents, right-click Schools and choose Zoom To Layer.

From the Tools toolbar, use the Zoom In tool  to draw a box around the cluster of smaller school parcels.

Turn off Schools to view only the GasLeakAreas layer.

Zoom in closer to some of the polygons to see them more clearly.

The following graphic may differ from your zoomed view.



Step 8a: Analyze model output
data.

These polygons represent the gas leak detection areas that the model identified.

Close ArcMap without saving your map document.