



CHAPTER 6

Creating a scene and exploring 3D visualization

Objectives

- Explore line of sight.
- Create a dimensions layer.
- Add a spatial filter.
- Calculate an elevation profile.
- Add effects.
- Create a local scene.
- Add 3D layers.
- Configure content and style layers.
- Capture slides.

Introduction

In this chapter, you'll create a scene and take your mapping to the third dimension. You'll learn how 3D adds greater context by providing realistic visualization and advanced analytics.

Scenes (3D maps) can be categorized into two general types. First is a reality-based view in which you create an immersive style that mimics the real world. This type of scene contains many elements (see figure 6.1), and a variety of analyses can be performed on these real-world objects.

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The second approach is to focus on the 3D visualization of attributes. This approach doesn't represent the real-world look and feel of a cityscape, but it's an effective way to visualize data (see figure 6.2).

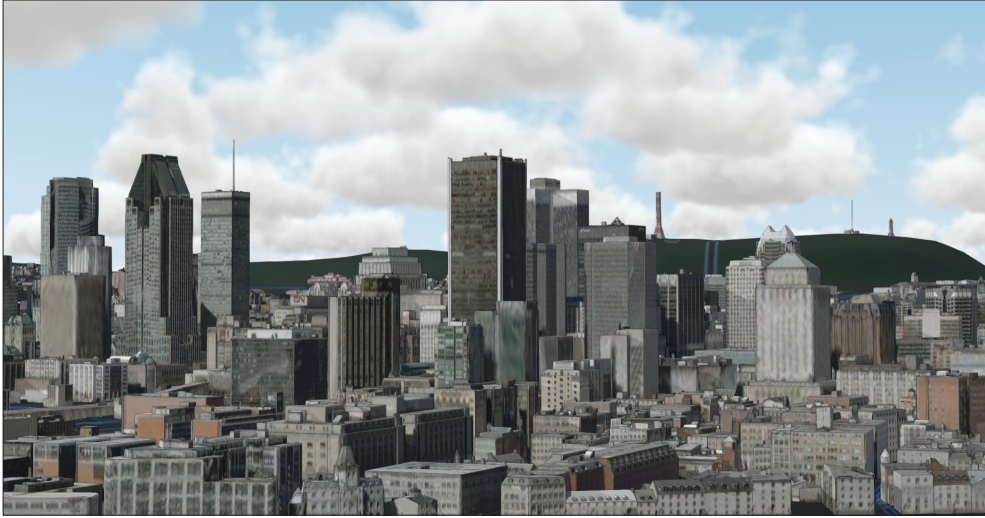


Figure 6.1. A scene of Montreal, featuring numerous elements, including clouds, sky, hills, skyscrapers, and other built structures.

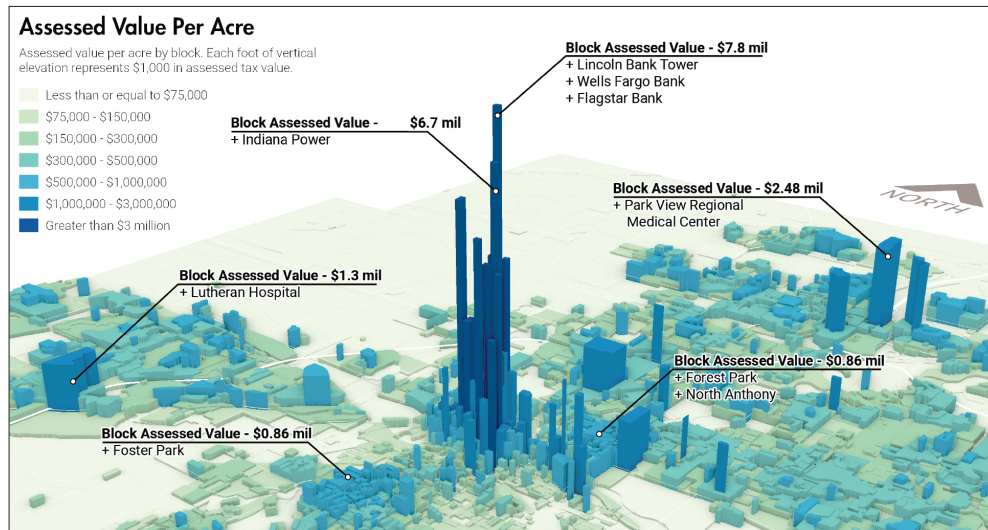


Figure 6.2. Tax values are shown based on acreage by block in Fort Wayne, Indiana. Extrusion is used to generate 3D representations of dollar amounts—the higher the block, the higher the assessed value of that plot.

Depending on what you're trying to accomplish, you can decide which approach is best for your needs; there are no rules, so you may even find creative ways to mix and match these approaches!

Tutorial 6-1: Tour a scene and make it your own

In this tutorial, you'll open an existing scene and explore line of sight, add a layer to show the real-world dimensions of objects, remove features, calculate an elevation, add weather effects, and save a slide.

Sign in and open a scene

You'll start by exploring an existing scene.

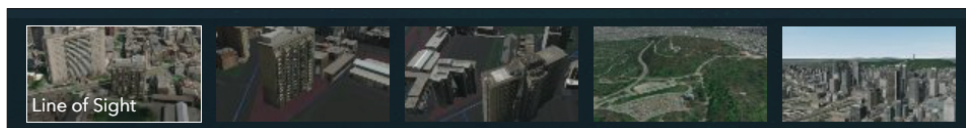
1. Sign in to ArcGIS Online.
2. On the top navigation bar, click the magnifying glass to search for items in ArcGIS Online.
3. Type **owner:Top20EssentialSkillsForArcGISOnline Montreal** and press Enter.
4. On the left, under Filters, turn off the filter for your organization and expand your search to all of ArcGIS Online.
5. On the Montreal 3D item, click Open in Scene Viewer.

A 3D scene layer of Montreal, Canada, is overlaid on the Imagery basemap. This overlay provides a detailed 3D representation of the city.

6. Zoom and pan to explore the city.

View a slide and explore line of sight

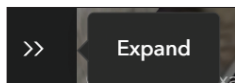
1. Point to the center bottom of the screen to see the Line of Sight slide. Click Line of Sight.



Each slide takes you to a viewpoint, similar to a bookmark in a 2D map. You can use the Line of Sight tool to visualize what you would be able to see from a particular vantage point. Once you choose an observation point and a target, green lines are added to the scene, showing unobstructed lines of sight. Red lines indicate a visual obstruction between observation points and targets.

Certain windows in the taller building to the left probably have their views blocked by the smaller building to the right. You'll calculate line of sight to see how views from the larger building are affected by the smaller building.

2. In the lower left, click the arrows to expand the Designer toolbar.



3. On the Designer toolbar, click Add layers > Line of sight.

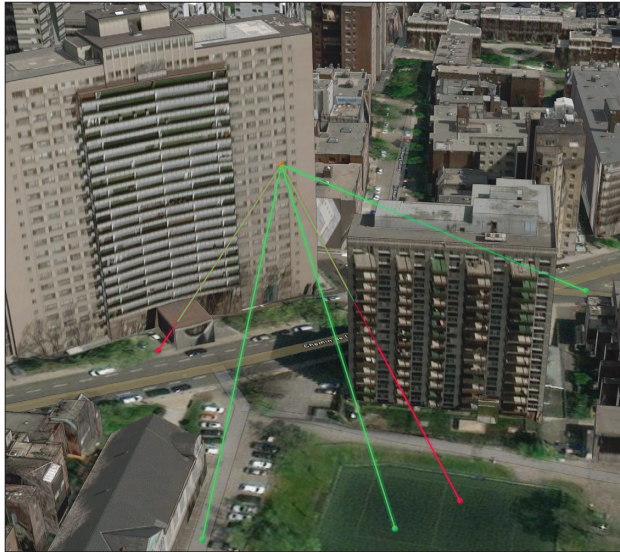
The Line of sight pane opens.

4. In the scene, click one of the windows about halfway up the right side of the taller building to add an observation point.
5. Extend the line of sight to the green, open area and click to add a point.



The first stretch of the line will be green but will become red, showing where the clear line of sight ends.

6. Click to add a few more lines of sight that are unobstructed, and add a few to show where the building begins to obstruct the view.
7. Double-click when you have finished adding lines of sight.



8. Drag the orange observer point to different window locations on the taller building. Move it to a window with a clear line of sight for all the lines you've added.
9. In the Line of sight pane, click Done.

Create a dimensions layer

You can add a dimensions layer to measure the dimensions of specific objects in a scene. Here you'll create a simple view that can show city planners the height of the obstructing building.

1. In the bottom center of the screen, click the Dimensions slide.

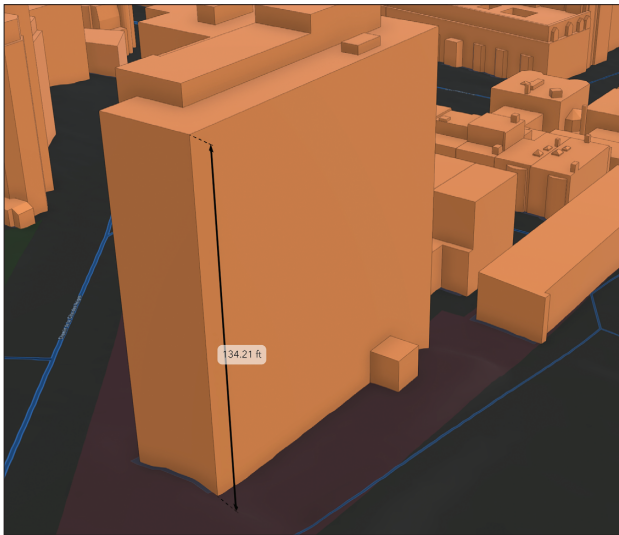
To help viewers focus on the dimensions of the building, the Dimensions slide was saved with the Streets (night) basemap, which provides a more focused view of the buildings.

2. In the Layer Manager pane, for the Montreal, Canada Buildings layer, click the options button and click Layer style.
3. Under Choose a drawing style, click Options.

4. Next to Texture, click the symbol and click Color only.

There are a number of options here to adjust the style, but the default provides a simplified schematic view.

5. On the Designer toolbar, click Add layers > Dimensions.
6. Click the top corner of the building facing you and click the corner of the building directly below it on the ground.



7. In the Dimensions pane, click the color picker for Line, change the color to red, and click Done.
8. Click the color to Label, choose red, and click Done.
9. For Size, click the down arrow, and choose large.
10. On the Dimensions pane, click Done.

Now your scene includes a layer showing the dimensions of the building. This makes it easy to communicate important details to others.

On your own

Reopen the Montreal, Canada Buildings Layer style pane and change the drawing style back to show the original texture instead of the solid color. Click Done twice.

Add a spatial filter

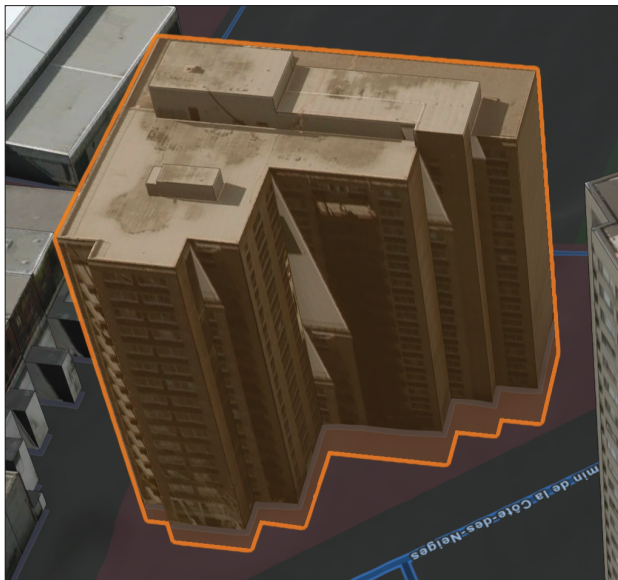
Next, you'll add a spatial filter to remove a feature. In this case, you'll remove the obstructing building.

1. On the bottom center of the screen, click the Spatial Filtering slide.
2. In the Layer Manager pane, for the Montreal, Canada Buildings layer, click the options button, and click Layer properties.

3. In the pane, under Spatial filters, click Configure spatial filters.

You can draw an area to create a filter, or click features interactively, which is the method you'll use next.

4. Under Filter by selection, click Select features to exclude.
5. Click to highlight the obstructing building to the left of the large building.



6. Click Done and click Done.

The building is removed from the scene.