

Learn ArcGIS

Guided lessons based on real-world problems

Animate the Oso Mudslide

learn.arcgis.com/



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Time: 1 hour

Overview

Animated videos are a great way to share GIS knowledge. Sometimes it is simpler to communicate your story or analysis in a scripted presentation instead of an interactive map or scene. A video can also present very large and cumbersome data in a streamlined way and can be easily shared on social media, allowing you to engage with a larger audience.

In ArcGIS Pro, videos are the output of an animation, and are most often created as a final step after your maps or scenes are fully prepared. An animation is authored by creating an ordered set of keyframes, in which each keyframe contains the current position and state of the map. When the animation is exported to a video file, intermediate frames are interpolated between the states captured in your keyframes.

In this lesson, you will learn to do the following:

- Author a simple 3D fly-through animation.
- Change the visibility of content to help tell a story.
- Add on-screen text to provide additional information.

Add an animation to a scene

The first step in making a video is to make a map or scene, and add an animation to it.

1. Download the [OsoMudSlide.zip](#) compressed folder.
2. Locate the downloaded file on your computer and extract it to a location you can easily find, such as your **Documents** folder.
3. Inside the **OsoMudslide** folder, double-click **OsoMudslide.mpkx** to open it in ArcGIS Pro.

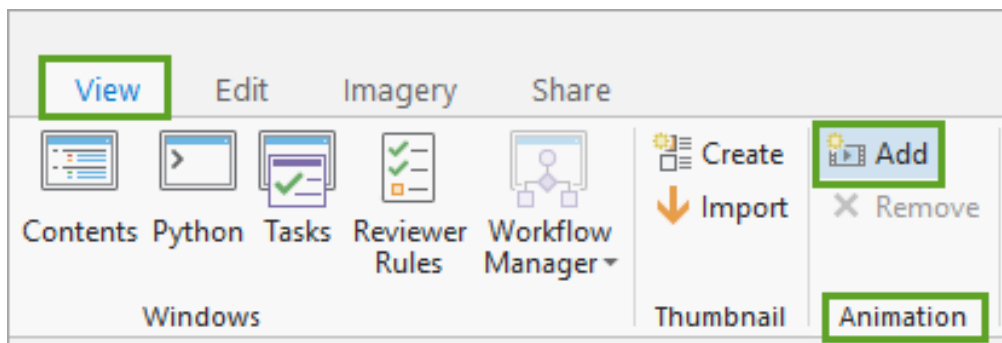
Note: If you don't have ArcGIS Pro or an ArcGIS account, you can sign up for an [ArcGIS free trial](#).

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A scene opens to display the Steelhead Haven community near Oso, Washington.

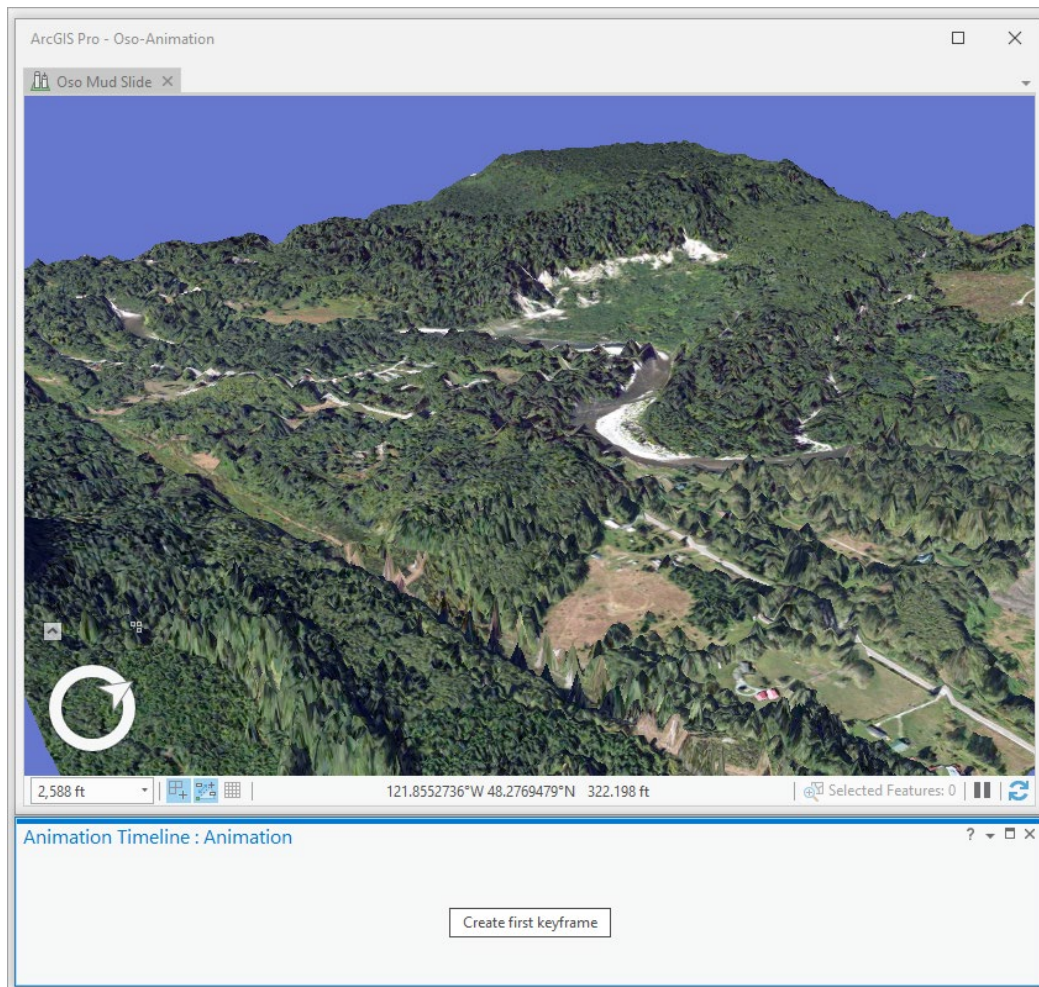


4. On the **Ribbon**, click the **View** tab. In the **Animation** group, click **Add**.

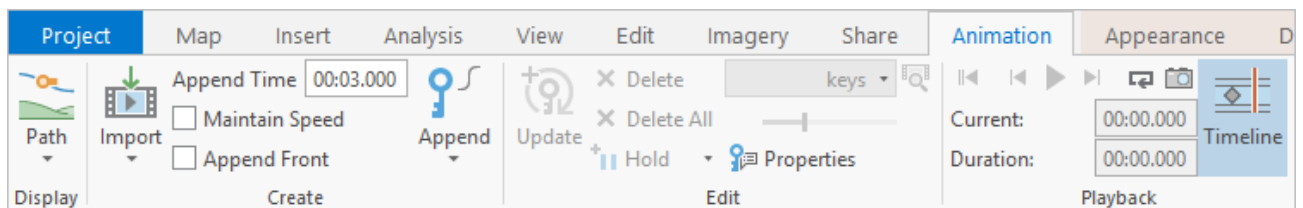


An animation is added to the scene and the **Animation Timeline** pane displays at the base of the application.

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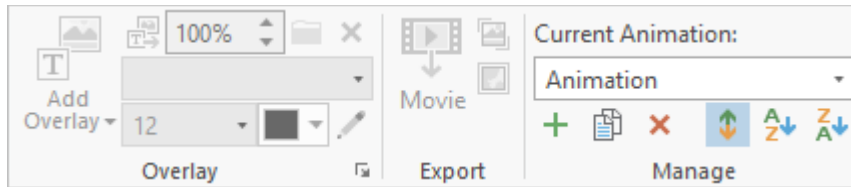
An **Animation** contextual tab also appears on the ribbon, with groups of tools for the display, creation, editing, and playback of an animation.



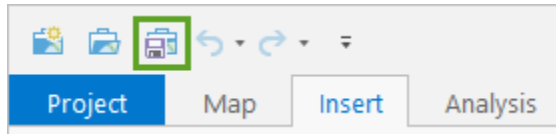
Tip: If the timeline pane is not shown automatically, you can open it by clicking the **Timeline** button on this tab.

The **Animation** tab also contains groups of tools used to add overlays, and export and manage your animation.

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5. On the **Quick Access Toolbar**, click **Save**, or press **Ctrl+S** to save your project.



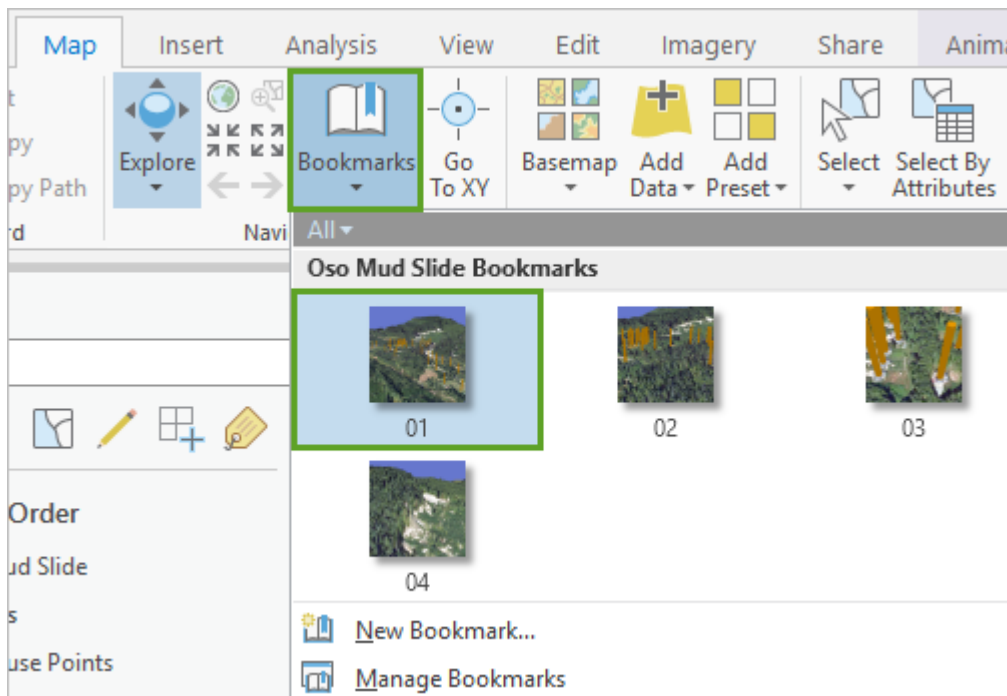
6. In the **Save Project As** window, accept the default storage location and name the project *OsoMudslideAnimation*.

7. Click **Save**.

Create the first keyframe

You need to define the starting point for your animation. You should review the appearance of the scene before you create new keyframes, because they will capture the camera's location and the visibility states of all layers.

1. On the **Ribbon**, click the **Map** tab. In the **Navigate** group, click **Bookmarks** and choose **01**.



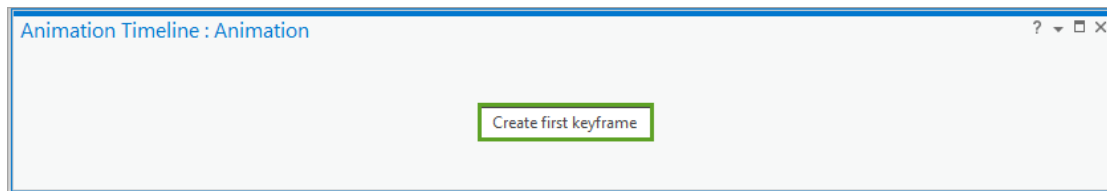
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The scene updates to the starting camera position. The scene's layers are currently configured in the following manner:

- The **HousePoints** layer is turned off.
- The **Imagery (Before)** layer is turned on.
- The **Imagery (After)** layer is turned on, but with layer transparency set to 100 percent, so it is invisible.

Tip: Layer transparency is controlled from the **Appearance** tab on the ribbon. Later, you will see how transitioning layer transparency allows content to fade in/out in an animation.

2. On the **Animation Timeline**, Click **Create first keyframe**.



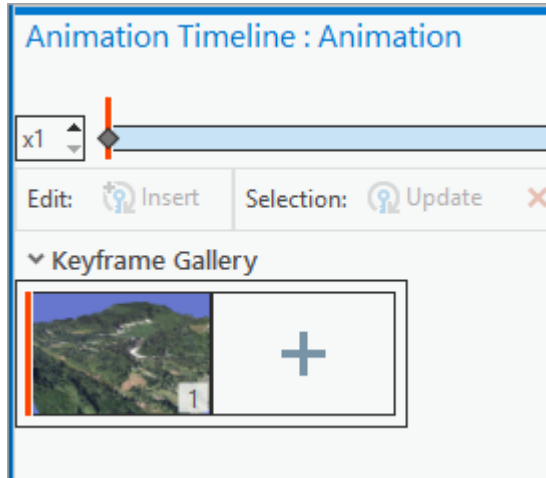
You have just created your first keyframe. This will be the starting point for the animation and video. You may notice that extra space has been added around the view.



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By default, video export is configured for YouTube using an MP4 video file format with a resolution of 1280x720.

On the **Animation Timeline**, a thumbnail image for the new keyframe has been added.

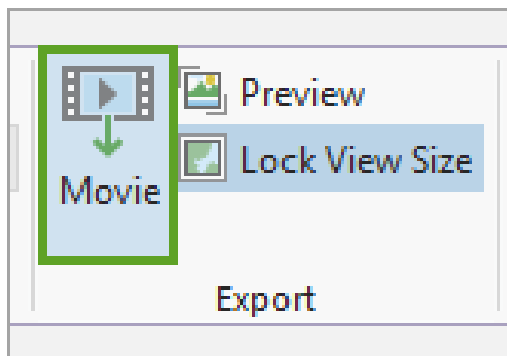


Set the export video format and size

The extra space on the view (view-clipping) indicates which section of the view will be captured in the video, based on the aspect ratio of the export format.

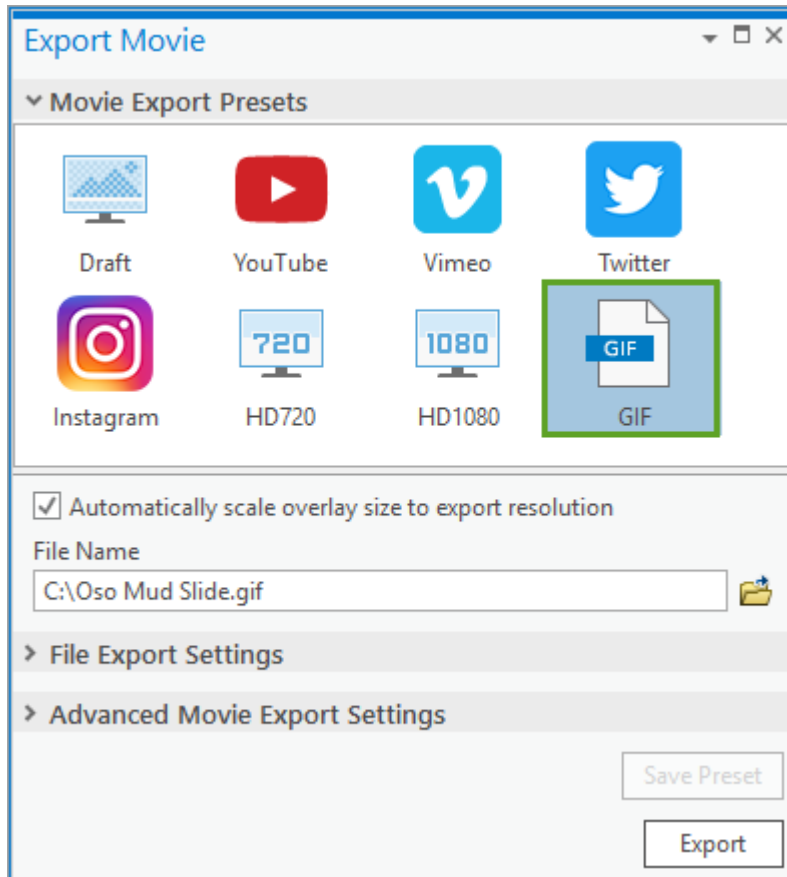
For this lesson, we want to create an animated Graphic Interchange Format (GIF) file, a series of images creating a soundless video, for a web page. Next, you will modify the export format.

1. On the **Animation** tab, in the **Export** group, click **Movie** to open the **Export Movie** pane.



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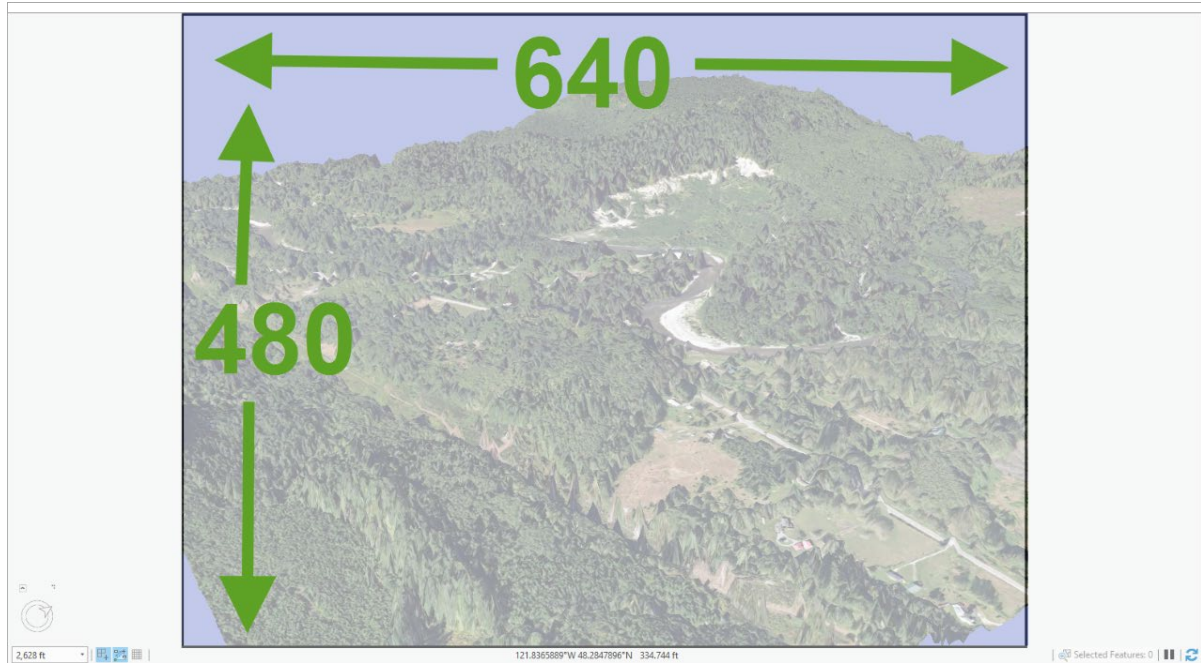
2. In the **Export Movie** pane, under **Movie Export Presets**, click **GIF**.



This action changes the export file type to GIF and updates the export resolution to 640x480.

Since this is a different aspect ratio than the YouTube preset, you will notice that the framing of the view also has been adjusted.

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Tip: You can expand the **File Export Settings** and **Advanced Movie Export Settings** sections in the **Export Movie** pane for fine-grained control of the video export settings.

☒ Automatically scale overlay size to export resolution

File Name
C:\Oso Mud Slide.gif

▼ File Export Settings

Media Format
GIF movie (.gif)

Frames Per Second: 24 Total Frames: 1

Start Frame: 0 End Frame: 0

Start Time: 00:00.000 End Time: 00:00.000

▼ Advanced Movie Export Settings

Resolution
480p Letterbox (640 x 480)

Quality
Small file ————— Large file

Save Preset

Export

Be aware that the specific export format may not support all possible aspect ratios.

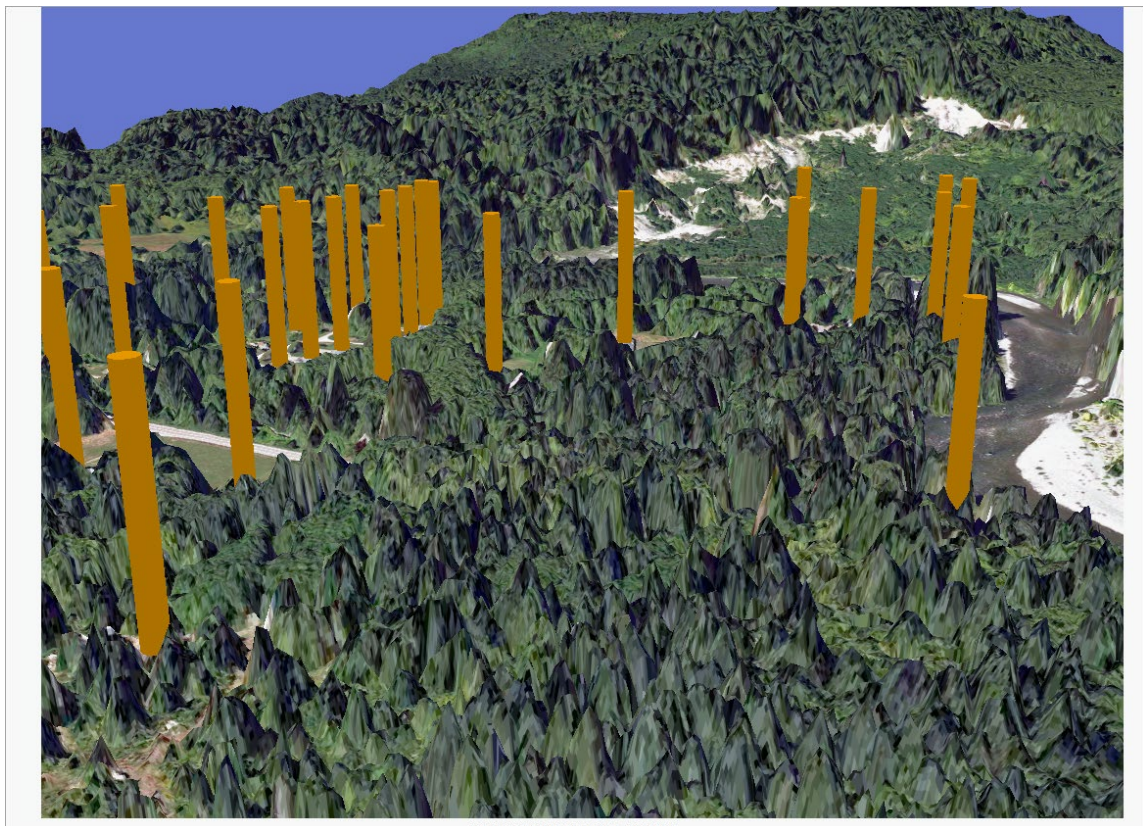
Add intermediate keyframes

To make an animation, you'll add keyframes to the **Animation Timeline**. You'll use the first half of the video to highlight the state of the landscape before the Oso mudslide, and the second half to highlight the state afterward.

You want to present an understandable visual comparison between the two states, so the same flight path will be applied for the two stages. You also want the animated GIF to loop continuously, so the animation needs to finish and then transition seamlessly into the start of the next loop.

A set of bookmarks is included in the scene to position the camera for the flight path. You can rerun this exercise later to experiment with different flight paths.

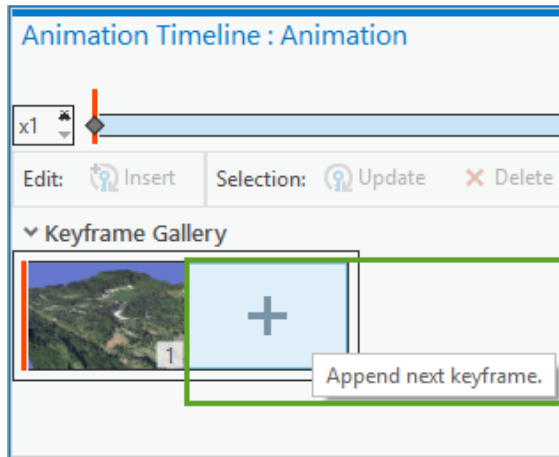
8. On the ribbon, click the **Map** tab. From the **Bookmarks** gallery, choose **02**.
9. In the **Contents** pane, turn on the **House Points** layer.



In the scene, the orange columns show the locations of houses in the area.

10. In the **Animation Timeline**, click the **Append next keyframe** button.

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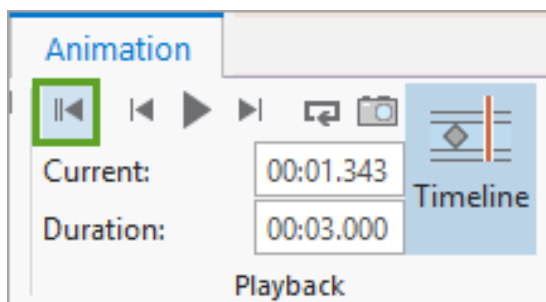


You now have a video with two keyframes and a default duration of 3 seconds.



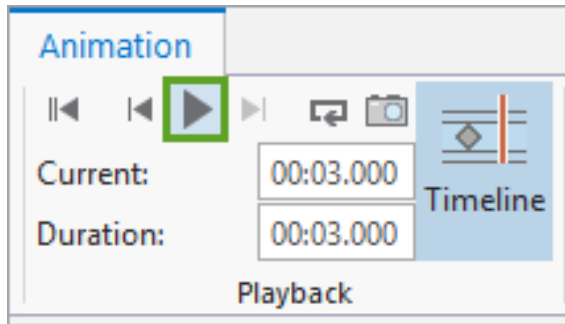
Next, you'll preview your animation in the application.

11. On the **Ribbon**, click the **Animation** tab. In the **Playback** group, click the **Reset** button to return to the start of the animation.



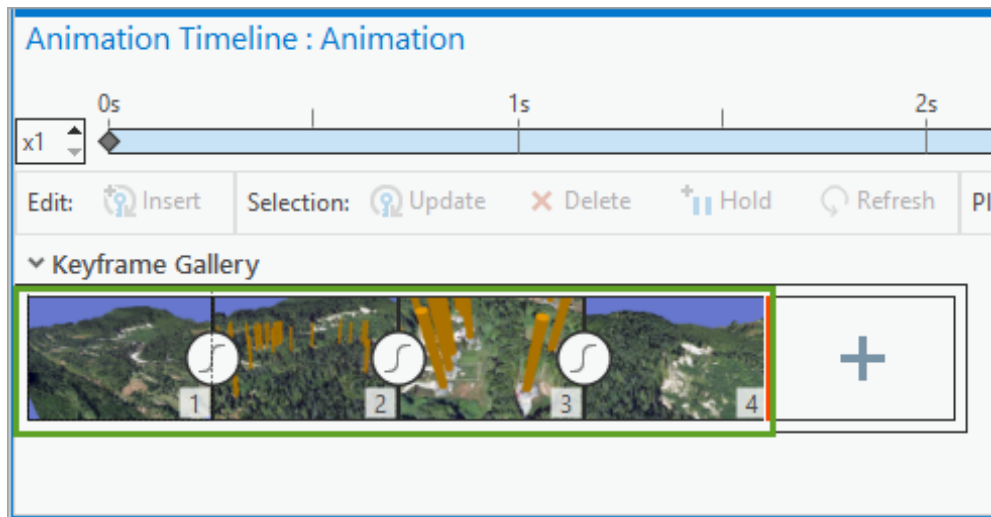
12. In the **Playback** group, click the **Play** button to preview your fly-through.

Animate the Oso Mudslide



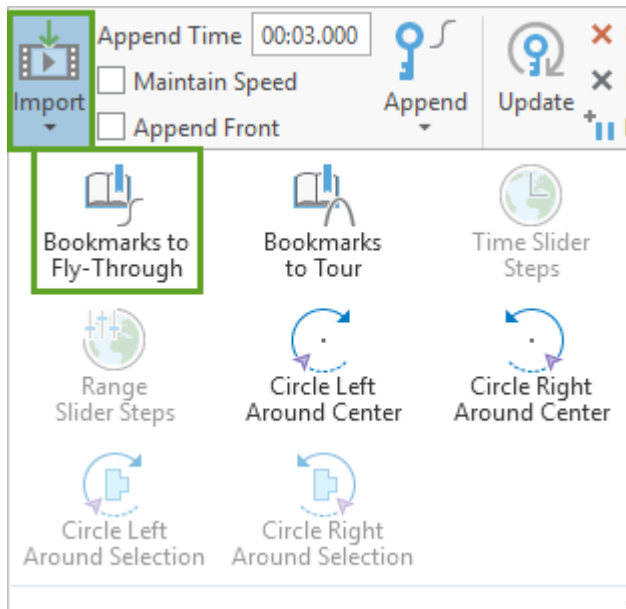
Notice how the House Points appear partway through the animation.

13. Use the **Bookmarks** gallery to zoom to bookmark **03**.
14. In the **Animation Timeline** pane, add a third keyframe.
15. Zoom to bookmark **04**.
16. In the **Animation Timeline** pane, add a fourth keyframe.



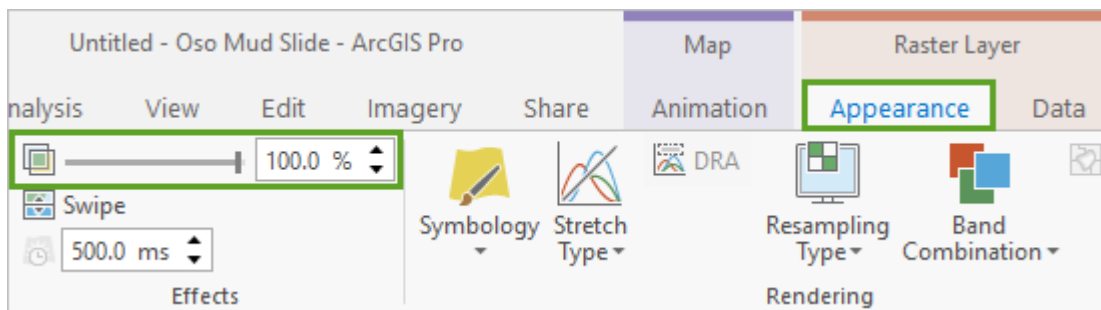
Note: In this lesson, you are adding keyframes one at a time. For future animations, you can generate keyframes quickly using the **Import** tool in the **Create** group of the **Animation** ribbon tab. For example, you can use the **Bookmarks to Fly-Through** option to automatically create keyframes from bookmarks.

Animate the Oso Mudslide



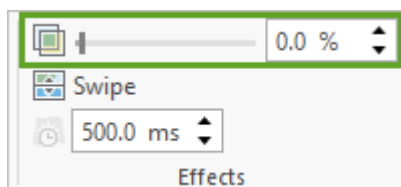
Next, you want the animation to transition smoothly from the landscape before the mudslide to the one after.

17. In the **Contents** pane, click the **Imagery (Before)** layer to select it.
18. On the ribbon, click the **Appearance** tab. In the **Effects** group, set **Layer Transparency** to 100 percent.



The imagery disappears from the scene, leaving a blank blue background.

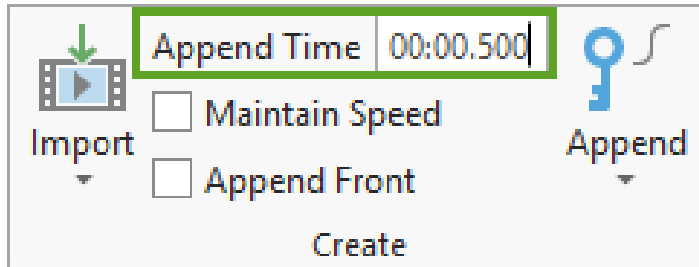
19. In the **Contents** pane, select the **Imagery (After)** layer.
20. On the ribbon, set **Layer Transparency** to 0 percent.



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Next, you want to make the transition between the before and after imagery relatively fast. A duration of a half-second should be enough.

21. On the ribbon, click the **Animation** tab. In the **Create** group, update **Append Time** to 0.5 seconds (00:00.500).



22. In the **Animation Timeline** pane, add a fifth keyframe.



Tip: Using layer transparency to fade between the two layers, rather than switching layers on/off, will make the transition between the before and after states less jarring.

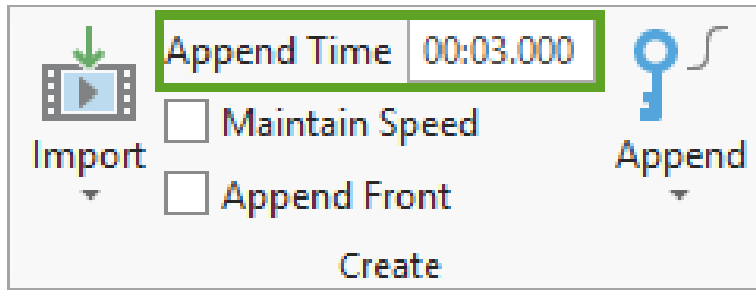
Now that you have updated the transparency of the before and after layers and effectively turned off the before layer, you can add additional keyframes showing the after state of the mudslide.

To achieve this, the camera needs to fly back to its starting point, along the same route, to highlight the after state of the topography with the same visual consistency of the before state.

To do so, you will revisit the same bookmarks but reverse the order.

23. On the ribbon, update **Append Time** to 3 seconds (00:03.000).

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24. Zoom to bookmark **03**.

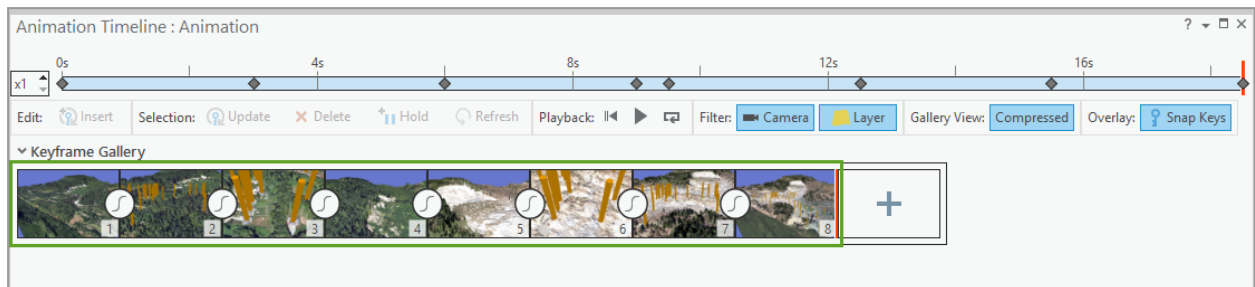
25. In the **Animation Timeline**, add a sixth keyframe.

26. Zoom to bookmark **02**.

27. Add a seventh keyframe.

28. Zoom to bookmark **01**.

29. Add an eighth keyframe.



30. Save the project.

Transition back to the starting point, and update the duration

The last keyframe step is to transition back to the starting point so the animated GIF will loop nicely. As with your earlier transition between the before and after states, you'll use a faster transition time.

1. On the **Animation** tab, update **Append Time** to 0.5 seconds (00:00.500).

Now you'll reset the scene so the layers are back in their initial state and you can capture a final keyframe.

2. In the **Contents** pane, click the **Imagery (After)** layer to select it.

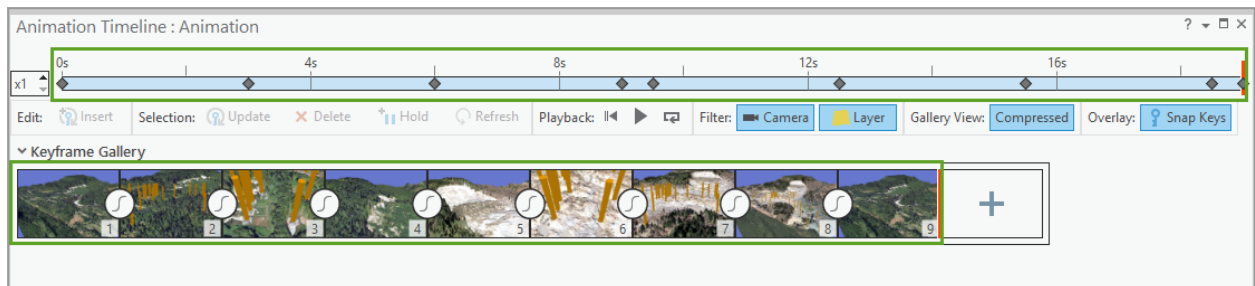
3. On the ribbon, on the **Appearance** tab, set **Layer Transparency** to 100 percent.

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The scene updates to show only the orange columns on a blue background.

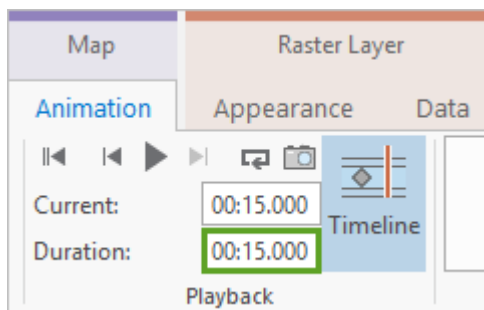
4. In the **Contents** pane, select the **Imagery (Before)** layer.
5. On the ribbon, set **Layer Transparency** to 0 percent.
6. In the **Contents** pane, turn off the **House Points** layer.
7. In the **Animation Timeline**, add a final keyframe.

You now have an animation with nine keyframes and a duration of 19 seconds.



Nineteen seconds is a bit slow for a looping video, so you'll compress the duration of the video.

8. On the **Animation** tab, in the **Playback** group, change the **Duration** to 15 seconds.



9. Also, in the **Playback** group, click the **Reset** button to return to the start of the animation.
10. Click the **Play** button to preview the animation.

Don't worry if the interactive playback looks a bit jerky. This is just a preview of the animation. When you export the video, each frame will be fully rendered, resulting in a smooth, continuous display.

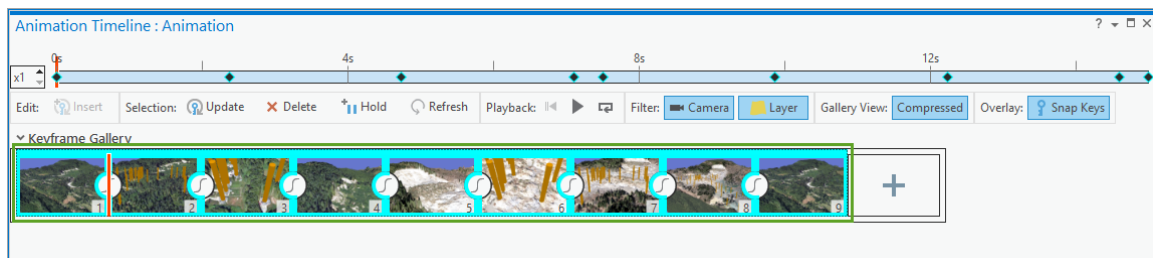
Tip: You can click the **Camera Only Playback** button in the **Playback** group to see the animation play with only the camera flight path calculated. Slower playback performance is more common when layer transparency, map time, or map range is changing between exported frames.

Add overlay text

Your video now has a well-authored flight path and layer transitions, but there is nothing that explains where you are, or when the event happened. You can add this kind of information as a text or image overlay. When adding an overlay, you can also define how long it will be shown in the video.

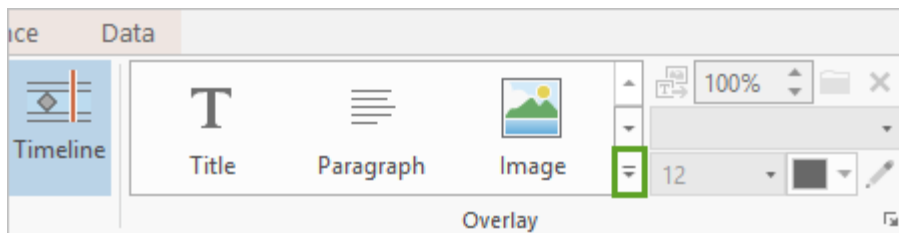
Next, you'll add a title that displays for the entire video.

1. In the **Animation Timeline** pane, click any keyframe then press **Ctrl+A** to select them all.



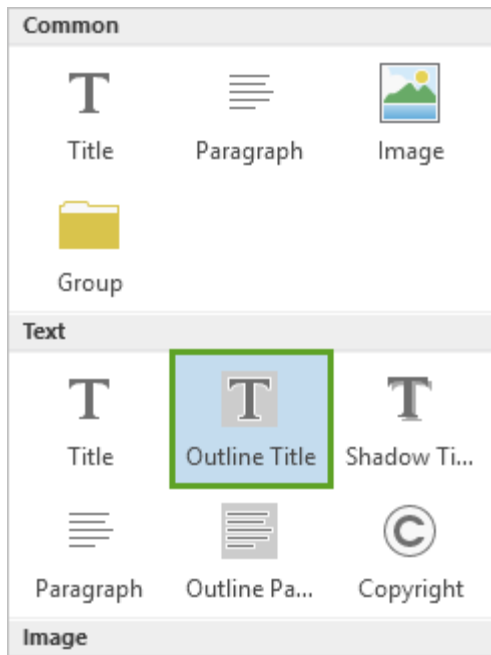
When an overlay is added, it displays for the extent of the selected keyframes. In this case, the overlay will display for the entire animation.

2. On the **Animation** tab, in the **Overlay** group, expand the **overlay** gallery

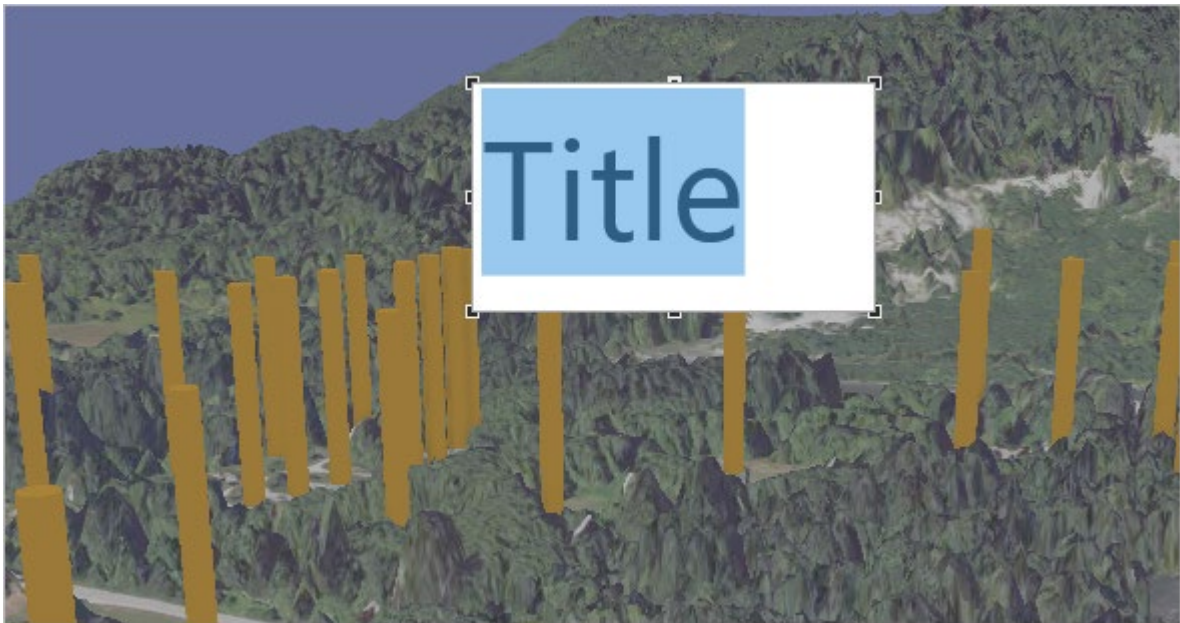


3. Choose **Outline Title**.

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A text box appears on top of the scene, with the placeholder text **Title**.

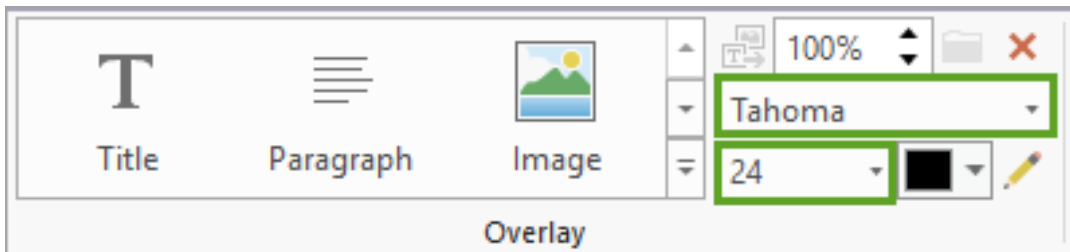


4. In the text box, type *Steelhead Haven (near Oso, WA)*.
5. Click the red **X** in the upper right corner of the view to exit edit mode.



The overlay is created, but it is too wide for the video export size. Next, you'll decrease the text size.

6. On the **Animation** tab, in the **Overlay** group, change the font to **Tahoma** and the size to **24**.



In the view, the title font and text size are updated.

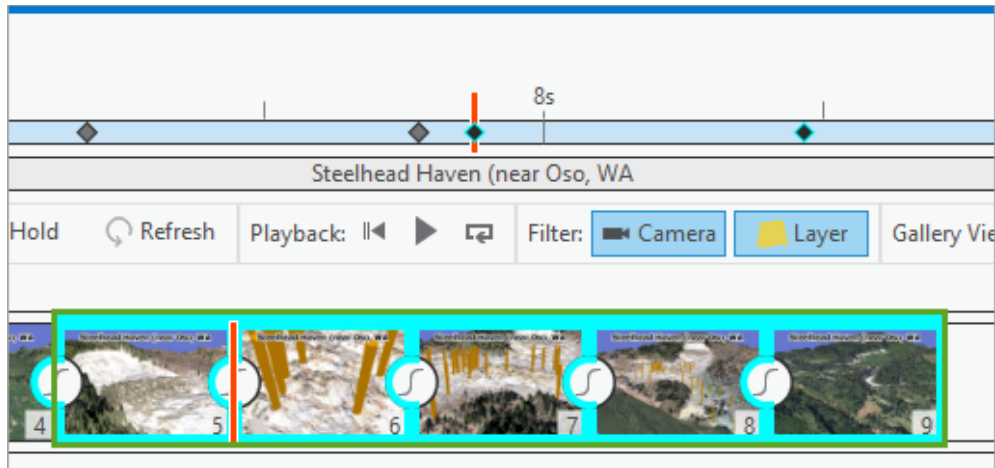


Next, you want to show the date of the mudslide, but you don't want this text to always be visible.

Instead, you want it to appear when the content in the view switches from the before state to the after state.

7. In the **Animation Timeline** pane, select keyframes 5 through 9, which represent the after state of the mudslide.

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8. On the ribbon, expand the **Overlay** gallery.
9. Click **Outline Title**.



10. In the text box, type *March 22nd, 2014*.
11. In the view, click the red **X** in the upper right corner to exit edit mode.
12. On the ribbon, update the font to **Tahoma** and the size to **24**.

The date overlay text is now in the view, but it overlaps with the other overlay text. It needs to be placed elsewhere on the view.

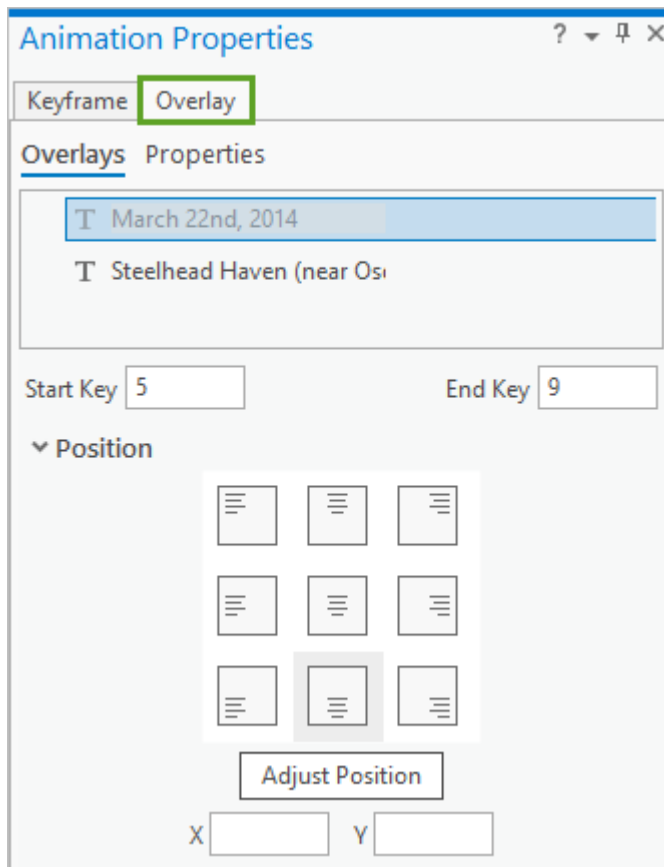


13. On the **Animation** tab, in the **Edit** group, click **Properties** to open the **Animation Properties** pane.

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14. In the **Animation Properties** pane, click the **Overlay** tab.

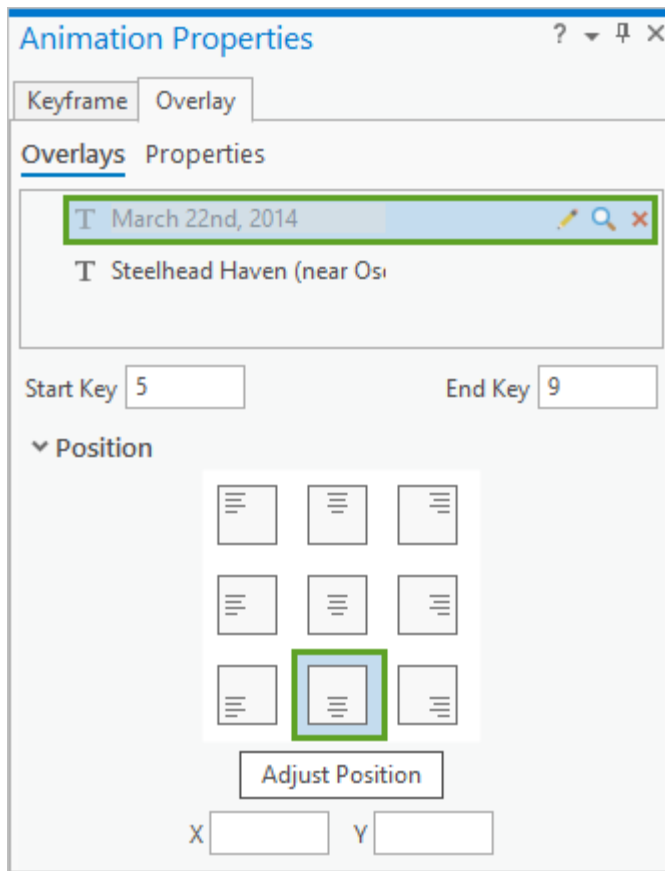


Notice that the **Overlays** tab list includes all the current overlays in the animation. In this case, you have two overlays, one for the title and one for the date.

15. In the **Overlays** list, click the **March 22nd, 2014** overlay to select it.

16. For **Position**, click **Place overlay bottom center**.

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The date overlay text is updated and now positioned at the bottom center of the view.



17. Close the **Animation Properties** pane.

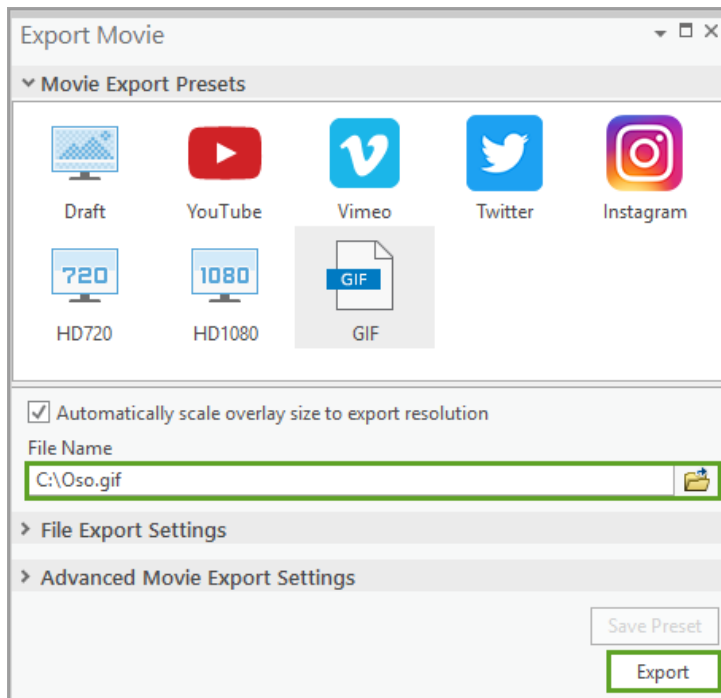
18. Save the project.

Export the animation

Your animation is now ready to be exported to a file to share.

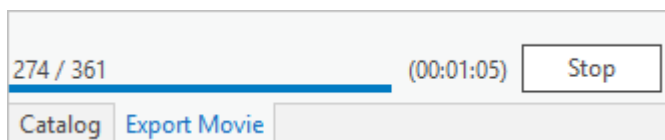
1. If necessary, open the **Export Movie** pane: on the ribbon, on the **Animation** tab, in the **Export** group, click **Movie**.
2. In the **Export Movie** pane, for **File Name**, specify an output location and name for your movie. For example: *C:\Oso.gif*.

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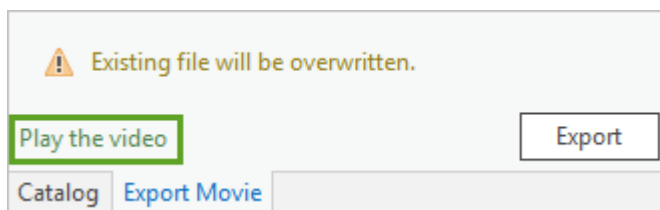
3. Click **Export**.

The time required to export the animation to a GIF depends on your machine. The progress and estimated time remaining are displayed in a status bar at the bottom of the **Export Movie** pane.



If necessary, you can discontinue the export at any time by clicking **Stop**.

4. When the export is complete, click **Play the video** to view it.



The video will play in your default GIF viewing application and repeat (loop) after 15 seconds.

Summary

Animation videos are a great way to share GIS information.

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In this lesson, you learned how to author camera fly-throughs, show before-and-after scenarios by transitioning layer visibility, and add on-screen text to a video.

There are many other capabilities available within animations. For example, you can set the transition type between keyframes to linear, fixed curve, hopped, and stepped, or use the scene's lighting to cast shadows through time—so spending more time [reading the help](#) or watching these [instructional videos](#) is highly recommended.

Whatever GIS story you want to tell, animation is a powerful way to get your message out to a huge range of people. Good luck animating!