Green Map tutorial: Building and customizing Story Map Tours

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Overview	Esri's Story Map Tour template allows you to create interactive map-based tours, containing a collection of points that are displayed on a Web map with accompanying photos and descriptions. This tutorial describes how Green Map contributors can create their own Map Tours from data stored in a CSV spreadsheet, and how these Map Tours can be customized to use Green Map's own icon set.
Outline	• Create a Map Tour from a CSV • Download and set up the Map Tour template • Use Green Map icons in the Map Tour • Fix issue with Green Map icon positioning • Make your Map Tour publicly accessible online • Prepare your public Map Tour for social-media sharing (optional)

Part 1: Create a Map Tour from a CSV

In this section, you will create a Map Tour that displays a set of locations around New York City, which are stored in a CSV (comma-separated values) spreadsheet provided with this tutorial. The spreadsheet contains all information needed to build a working Map Tour, though you can also build Map Tours from scratch or using online photos or map layers as a starting point.

Note: The example points in this CSV were provided by Wendy Brawer of Green Map, based on the NYC Energy Green Map available at http://www.opengreenmap.org/greenmap/nyc-energy.
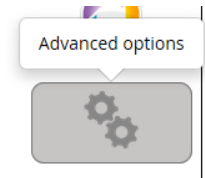
Getting started

1. Go to storymaps.arcgis.com into your Web browser, and sign in using the **Sign In** link at the top-right corner of the page.

2. After signing in, click the **My Stories** link in the top menu. This will take you to a page where you can create and manage your Story Maps.

   • **Note:** You can also use the standard ArcGIS Online interface to create Story Maps. For example, if you sign in at www.arcgis.com or through your own ArcGIS Online organization, you can create Story Maps from the **Item Details** page for a given Web map, or from the **Map Viewer** when sharing a map. The Story Maps you create at storymaps.arcgis.com will also appear in your ArcGIS Online **Content** page.

3. Click the **Create Story** or **Create My First Story** button.

4. In the menu that appears, select **Map Tour.** This will take you to the **Map Tour Builder** app, where you can configure your Story Map app without writing any code.

Adding locations to the Map Tour

There are a variety of methods for adding point locations to your Map Tour, each of which allows you to include a photo or video at each location on the map. You can import a set of photos from Flickr and Picasa, or a set of videos from YouTube or Flickr. You can also add points individually to link to custom images and videos, or upload photos from your own hard drive to your ArcGIS Online account. However, in this tutorial, we will upload a CSV spreadsheet that contains all of the required point data for the Map Tour.

5. In the Map Tour Builder, click the **Advanced Options** button (see screenshot at right), and then click **Import Tour Data from a CSV File.**

6. Open a Windows My Computer or Explorer window (or Finder on Mac), and browse to the **NYCEnergyExampleMapTour.csv** file provided with this tutorial. Open the CSV file in a spreadsheet program such as Microsoft Excel, or in a text editor such as Notepad or TextEdit. Each row in the spreadsheet, after the top ("header") row, represents a separate geo-registered point that will be included in the Map Tour.

   In the header row of the spreadsheet, note the field names that appear: the **latitude** and **longitude** of each point (in unprojected decimal degrees), the **color** of the icon that will appear on the map at this point (R = red), the location **name** and **description**, the Web addresses to the point's image or video (**pic_URL**) and to a smaller thumbnail image to represent it (**thumb_URL**), and whether the pic_URL field refers to a video (**is_video**).

   For the next row in the spreadsheet, the point that will appear in the Map Tour uses a YouTube video instead of a photo[1]. In this case, the row's **is_video** value is set to `true`, and the video URL is included as the **pic_URL** value. For most video sites, this URL can be found by clicking the **Embed** button beside the video:

   <div align="center">

   `//www.youtube.com/embed/OpsvjJv2SW0`

   </div>

   The URLs for YouTube video thumbnails use a standardized format based on the video ID number seen in the link above – an example of this can be found in the **thumb_URL** field:

   <div align="center">

   `//img.youtube.com/vi/OpsvjJv2SW0/default.jpg`

   </div>

   Other custom fields can be included in the CSV, such as how the Green Map specification's **Primary_Term** field is included in this example, but these fields will not be shown in the Map Tour.
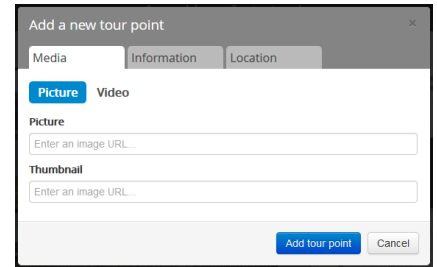
   - **Important:** If you opened the spreadsheet in Microsoft Excel, either close the spreadsheet without saving it, or if you are prompted to save the spreadsheet, make sure "CSV (Comma Delimited) (*.csv)" is set as the file type in the **Save As** window. By default, Excel saves spreadsheets in its own format (".xlsx" or ".xls"), but these cannot be opened by the Map Tour Builder at the time of writing.

   - **Note:** Esri recommends image sizes of 1000x750 pixels for the main image and 250x166 for the thumbnails (see [the FAQ](#) for more information). For the Flickr URLs included in the spreadsheet above, the "Large" Flickr image size was used for the main images (or "Original" if this was unavailable), and the "Small" size was used for the thumbnails.

7. From your file explorer, drag and drop the CSV file into the Map Tour Builder app in your Web browser. Alternatively, in the Map Tour Builder, click the **Select or drop a CSV file** button to find and upload your CSV.

8. The Map Tour Builder will display a preview of the Web map. Click **Import**. The points from the CSV are automatically added to the Map Tour, both in the Web map and in the "carousel" at the bottom of the window that displays the thumbnail images.

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[1] Instead of including video links in the CSV, you may find it easier to add videos using the **Add** button later, following the instructions at https://blogs.esri.com/esri/arcgis/2016/06/03/add-youtube-videos-story-map-tour/.
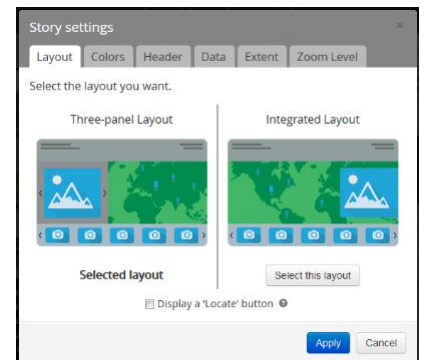
Configuring the Map Tour

Scroll through the Map Tour using the image viewer or carousel, or by clicking on the map points, and note how the site names and descriptions from the CSV are displayed inside the app. You can edit the caption for each point, as well as many other parts of the Map Tour interface, by clicking the pencil button that appears beside each. Note also the buttons to **Change Media** and **Change Thumbnail** for the current point, the **Organize** button for reordering and deleting tour points, and the ability to reposition or recolour points using the embedded Web map.

You can also use the **Import** button, located above the carousel, to add another set of points from Flickr, Picasa, YouTube, or a CSV, as performed in the previous section. Alternatively, you can click the **Add** button to add individual points as needed. In the point options box that appears (see screenshot at right), note the three sets of options: for the point's **media** and **thumbnail,** the **title** and **description** of the point, and its location. These are similar to the fields included in the CSV you uploaded.

9. Set a title for the Map Tour by clicking the pencil button towards the top-left corner of the app, beside the text "Edit me!".

10. Click the **Change Basemap** button at the top-right corner of the map pane. The **Topographic** basemap, selected by default, provides the most detailed coverage of our study area, but the National Geographic, Light Gray Canvas, and Dark Gray Canvas basemaps also work well with the Green Map icons that we will add in Part 3. Change the basemap to **National Geographic.**

11. Click the **Settings** button at the top of the window to configure more options for your Map Tour (see screenshot at right). Here, you can change the layout and colour scheme, the header logo and text, the region ("extent") of the map to display at startup, and the zoom level at each tour point. As well, on the **Data** tab, you can change which fields from the CSV are used to build the Map Tour.

    On the **Colors** tab, change the colour scheme from the default grey to green.

12. When finished, click the **Save** button at the top of the window. This will save your Map Tour to your ArcGIS Online account – you can find it in the **My Stories** page at storymaps.arcgis.com or on the **Content** page in your ArcGIS Online account.

13. Click the **Share** button at the top of the window to set the sharing settings for your Map Tour. By default, a Map Tour will only be visible to yourself, but you can also share it publicly or only with other members of your ArcGIS Online organization. After selecting an option here, you will be given a link so that others can access the Map Tour directly.

    - **Note:** If you want to share the Map Tour with only specific members of your organization, you can create a **group** of members in ArcGIS Online, and from the ArcGIS Online **Content** page, click the checkbox for this group in the Map Tour's sharing settings.

Part 2: Download and set up the Map Tour template

To make modifications to the Map Tour beyond those possible through the online Map Tour Builder, you can download the Map Tour template to your own personal computer or your institution's Web server. The template is 'open', in the sense that it allows you to modify the code to produce custom HTML, CSS, and JavaScript, as well as to modify files such

as the point symbols that are used on the map (see Part 3 below). In this section, you will download the Map Tour template and associate it with the Map Tour you created in the previous section.

If you want to be able to open the Map Tour in a Web browser on your machine, and see the effects of the changes you are making to the template, you will need to host the template on a local Web server, such as Microsoft Internet Information Services (IIS) or Apache. The steps to set up a Web server are beyond the scope of this tutorial, but for any Windows machine, IIS activation is very easy[2]. Apache requires a download and install, and instructions for its configuration are available on the Web[3].

Please see below for some important notes in regards to editing the template files:

- Editing the HTML and JavaScript files for this tutorial is best performed using a code editor such as Notepad++ or Sublime Text, both of which are freely available online. Notepad, the plain-text editor pre-installed with Windows, will also work, but this is not recommended as it is less user-friendly when saving files with administrative privileges (see below).

- The storage folder used by IIS on Windows, "C:\inetpub\wwwroot", is protected by Windows in order to block unauthorized changes. As a result, when you edit one of the Map Tour template files and try to save your changes, you may see an error message saying you do not have sufficient privileges to save the file (for example, in Notepad, you will see a "Save As" dialog, and then an "Access Denied" error when you try to overwrite the file).

  To run your code editor as an administrator, (1) right-click the code editor's Start Menu or Desktop shortcut, (2) click "Run as administrator", (3) accept the security prompt that appears, and (4) open the file through the program's File menu.

  o If you are using Notepad++ as your code editor and you try to save the file, it will give you the option of restarting the program as an administrator, which will give you the correct privileges.

- If you are using Windows, it is recommended to turn on file extensions[4] – for example, this will allow you to see at a glance whether a file called "index" is an HTML page (i.e., "index.html") or a plain-text ".txt" file (i.e., "index.txt"), since the latter cannot be opened as a Web page in your browser. If you accidentally save an HTML or JavaScript file as a .txt file, you can simply remove the ".txt" extension and change it to ".html" or ".js", respectively, since HTML and JavaScript files use the same type of plain text as regular .txt files.

- The main file for the Map Tour Web app is "index.html", which we will manually edit in this section. Unlike most other files on your computer (such as images, videos, or Microsoft Word documents), Web apps cannot be opened directly by double-clicking on them. As a result, if you try to view the Map Tour app in your Web browser by double-clicking on the index.html file, you will see an error message saying that the application needs to be run using your Web server[5]. The server address for the app is described in step 3 below.

- If you make changes to the template, and refresh the app in your Web browser, but are unable to see the changes, you may need to clear your browser's cache before refreshing the page. The steps for this will vary depending on your browser.

Use the following steps to set up the Map Tour template on your local machine:

1. Download the latest version of the template, available from http://links.esri.com/storymaps/map_tour_template_zip. The file will be named "Storytelling-MapTour-2.8.2.zip" or similar.

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[2] See https://technet.microsoft.com/en-us/library/cc731911(v=ws.11).aspx
[3] See https://httpd.apache.org/docs/2.4/platform/windows.html
[4] See https://www.howtogeek.com/205086/beginner-how-to-make-windows-show-file-extensions/
[5] Additionally, the URL in the browser's address bar will start with "file:///" instead of the correct "http://".

2. Unzip this zip folder to a new folder within your Web server. For the purposes of this tutorial, we will assume that you are using Microsoft IIS and have unzipped the Map Tour folder to "C:\inetpub\wwwroot\maptour".

3. Load the Map Tour by entering the following URL into your Web browser (assuming you unzipped the zip folder to a "maptour" folder above): http://localhost/maptour/index.html. This URL opens the Web page using your local Web server: the "localhost" root points to the "C:\inetpub\wwwroot" server folder you worked with in the previous step.

   You will receive an error saying that a "Web map or application identifier" needs to be provided. The application identifier refers to the ArcGIS Online ID number for the Map Tour you created in Part 1 above.

4. Return to the Map Tour you created in Part 1, and note the "appid" ID number in the page URL (e.g., for the Map Tour at https://edu.maps.arcgis.com/apps/MapTour/index.html?appid=288b631cc57c49b58fd0c72c7426d17f, the app ID is "288b631cc57c49b58fd0c72c7426d17f"). Select the app ID and copy it to your computer's clipboard.

5. In your code editor (remember to run this as an administrator), open the index.html file found in the Map Tour folder on your hard drive. Scroll down until you see a section of code that looks like the following:

```
<script type="text/javascript">
    //-------------------------------------------------
    //     Template configuration (ignored on Portal)
    //-------------------------------------------------
    configOptions = {
        // Enter either a web map ID or a web application ID
        // - Using a Map Tour application ID created through the interactive builder in ArcGIS.com allow to reuse
        //   the settings like the header configuration without having to edit any configuration here
        // - Web map and application can be dynamically specified through url parameters (webmap and appid)
        //   if the authorizedOwners property is specified (see below)
        // - If an application id is specified, the webmap configuration isn't used
        webmap: "",
        appid: "",
        // Optional list of authorized application or web map owners
        // Has to be specified when using appid or webmap url parameters (e.g. ["user1"], ["user1", "user2"])
        // To authorize all users you can use ["*"]
        authorizedOwners: [""],
        // Select the application layout between "three-panel" and "integrated"
        layout: "three-panel",
        // The application header title, if no title is specified, the webmap's title is used
        title: "",
        // The application header subtitle, if not specified the ArcGIS.com web map's summary is used
        subtitle: "",
        // Optionally force a web map layer to be used as the tour points data source (can be overridden through URL)
        // Otherwise the upper visible point layer is used (excluding map notes)
        sourceLayerTitle: "",
        // Use the first data record as an introduction instead of a point (can be overridden through URL)
        firstRecordAsIntro: true,
```

6. In the line that starts with `appid`, paste the ID number from step 4 in between the empty quotes. This associates the Map Tour code on your hard drive with the Map Tour you created in ArcGIS Online.

7. In the line that starts with `firstRecordAsIntro`, change **true** to **false**. This feature allows you to not show a point on the map for the Map Tour's first location, effectively turning this location's slide into an introduction slide. However, for the purposes of this tutorial, we will disable this feature.

8. Scroll down to around line 203, where you will find a line that reads `/* CUSTOM CSS RULES */`. Create a new line underneath, and paste in the following line of CSS code, which will prevent the Green Map icons from being cropped on mobile browsers:

```
.tpIcon { clip: rect(0px, 32px, 40px, 0px) !important; }
```

9. Save index.html, refresh your Web browser, and the Story Map you created in Part 1 should appear. If you did not share your Map Tour publicly in Part 1 above, you will be asked to enter your ArcGIS Online username and password first.
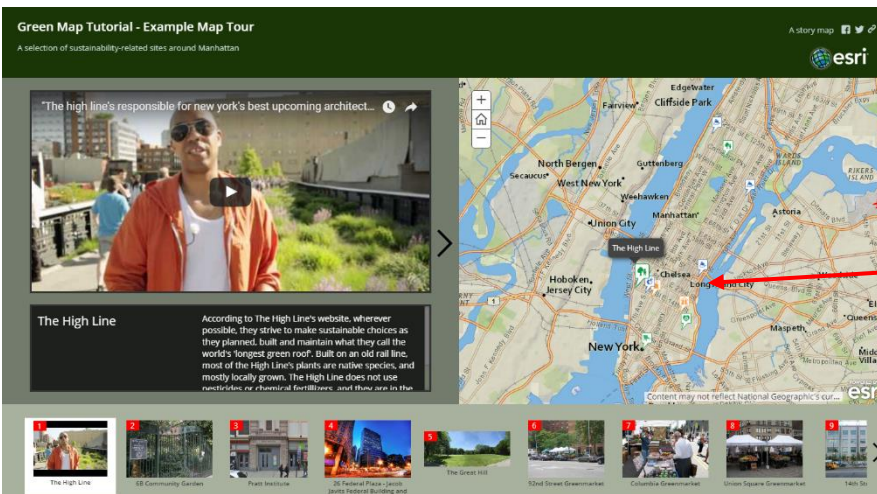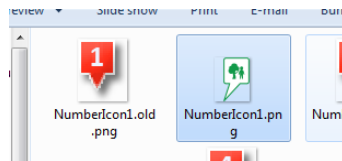
   If you wish to perform further edits to the Map Tour as in Part 1, you can add "&edit" (no quotes) to the end of the URL.

Please note that if you want to run multiple Map Tours on the same computer, you can create a separate folder for each one, and change the `appid` each time. You will also need to re-do the customizations in Parts 3 and 4 below.

Part 3: Use Green Map icons in the Map Tour

By default, the Map Tour template displays points on the map using one of four colour options – red, blue, green, and purple. The colour of each point can be changed individually using the Map Tour Builder, or using the **color** column in the CSV. However, using the local version of the Map Tour template, the point symbols can also be replaced with the Green Map icons. In this section, this process is described.

1. In your computer's file explorer, go to the "src/resources" folder within the Map Tour folder on your Web server. You will see four folders, one for each marker colour used by the Map Tour template. Open the folder for the marker colour used by your Map Tour, i.e., "red" for our example Map Tour from the sections above.

2. The folder contains a set of images called "NumberIconX.png", where X is a number between 1 and 99. These are the marker images that are displayed at each point on the Web map.

3. For each of the points in your Map Tour, in order:

    1. Rename the default "NumberIcon" file for the current Map Tour point – for example, "NumberIcon1.png" becomes "NumberIcon1.old.png".

    2. In a separate file-explorer window, go to the icons folder provided with this tutorial, and find the Green Map icon associated with the current map point (see the "Primary_Type" column in the CSV). For example, the first site in our Map Tour, the High Line, uses the Green Map "Park/Recreation Area" icon. This icon can be found in the "Nature" subfolder in the icons folder.

    3. Copy this Green Map icon to the folder with the "NumberIcon" files.

    4. Rename the Green Map icon to use the name of the icon you renamed above – e.g., "Park – Recreation Area.png" becomes "NumberIcon1.png". See the screenshot below for an example.

    5. Repeat for the remaining Map Tour points, changing the number in the filename each time. If the same Green Map icon is used multiple times within the Map Tour (e.g., "Farmers/Local Market" is used three times in this example), create copies with different numbers for each.

4. Once finished, refresh the Map Tour in your browser, and all points on the map will use the appropriate Green Map icons (see screenshots below).
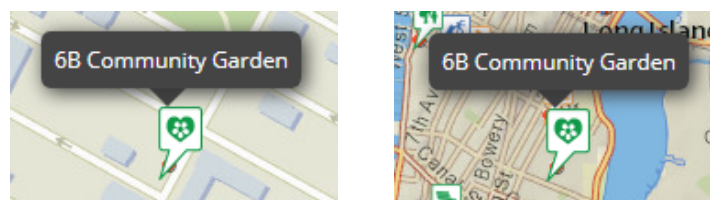
Please note that since the Map Tour template allows you to set the colour of each point marker individually, you may need to go between multiple icon folders when replacing the icons. For example, if your first point used a red marker and your second point used a green marker, you will need to replace "NumberIcon1.png" in the "red" folder and replace "NumberIcon2.png" in the "green" folder, etc. For this reason, it is recommended to use the same colour for all points when creating your initial Map Tour in Part 1.

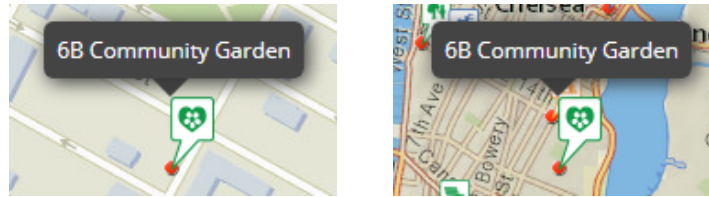# Part 4: Fix issue with Green Map icon positioning

The icon used by Green Map for each green site includes a "callout" symbol similar to a speech bubble. On all Green Maps, the bottom-left corner of this callout points directly to the location of the 'green' site being described. However, the recommended size of the Green Map icons (40x24 pixels) is larger than the default size of Map Tour markers, which causes the corner of the callout to not point exactly at the green site.

As an example, please see the following screenshots of the "6B Community Garden" site from the Manhattan Green Map Tour. In each screenshot, the actual site location from the CSV is represented by a red point. The difference between the actual location of the site and the location pointed to by the callout is not a significant issue when zoomed in closely to the site (on the left), but becomes more of an issue the further you zoom out of the map, since the icon obscures the point and actually points to an area below it. It is also more of an issue with the larger-sized icon that appears after a point has been clicked.

The Green Map icons provided with this tutorial, and shown in the screenshots, were created to minimize this issue as much as possible while keeping the icons at the same size currently used online at Open Green Map. However, this issue can be solved entirely by modifying the Map Tour's default icon offset, allowing the icons to be positioned correctly. To achieve this, follow the next steps.

1. In your computer's file explorer tool, browse to the Map Tour folder on your Web server, and go to the "app" subfolder.
2. Open the "maptour-config.js" file in your code editor (remember to run this as an administrator).
3. Search for the `Pin states` text. This will take you to the area of the file that specifies the size and position of the default Map Tour icon, for each of its three states:
   a. As the icon normally appears on the map ("`normal`")
   b. When the user moves their mouse over the icon ("`hover`"), and
   c. When the icon has been clicked, and appears on the map at its largest size ("`selected`").
4. In the "`normal`" rule, increase `offsetX` from 3 to 6, and increase `offsetY` from 8 to 12.
5. In the "`hover`" rule, increase `offsetX` from 3 to 6, and increase `offsetY` from 8 to 13.
6. In the "`selected`" rule, increase `offsetX` from 3 to 8, and increase `offsetY` from 11 to 18.
7. Save maptour-config.js, and refresh the Map Tour in your Web browser. The Map Tour icons should now appear at the correct locations. The screenshots below provide an example of the difference:

Part 5: Make your Map Tour publicly accessible online

You have now finished creating a Map Tour from a CSV and modifying the Map Tour template for use with Green Map's custom icons. Please feel free to create any further customizations to the Map Tour's HTML, CSS, JavaScript, and configuration options.

Once you are ready for anyone on the Internet to view your finished app, you can make the app publicly accessible by copying the Map Tour folder to a public Web server. The Web server running on your local machine, as set up earlier in this tutorial, is a private Web server, with the "C:\localhost\wwwroot" folder structure as its storage location. A public Web server, such as the one hosting the Green Map Web site, will have a similar storage location from which it will serve the Map Tour to the broader Internet.

1. If you have access to a public Web server, you can copy and paste your local "maptour" folder to the storage folder on the public Web server (e.g., "wwwroot" for IIS or "htdocs" for Apache). As the exact steps for this will vary depending on the public Web server platform and its operating system, it is recommended to contact your Webmaster for more information. Alternatively, you may wish to save your local "maptour" folder into a .zip folder, and send this to your Webmaster so that they can copy it to the server.

As well, if you have not already done so in Part 1 of this tutorial, you will also need to change the sharing settings for the Map Tour in ArcGIS Online. Whereas the previous step made your custom code available over the Web, the current step is necessary for your map data, as well as basic Map Tour settings such as the title and logo, to be publicly accessible.

2. Return to the Map Tour Builder app. Click the **Share** button at the top of the screen, and click **Share publicly**.

Your Map Tour app is now accessible via any Web browser, and you can share it with other users through the social-media sharing links at the top-right corner of the app.

Happy Green Mapping!

Part 6: Prepare your public Map Tour for social-media sharing (optional)

The Map Tour template includes sharing buttons at the top-right corner (see screenshot at right), which allow users to share the Map Tour on Facebook or Twitter. After sharing using one of these buttons, or after creating a new Facebook post or Tweet from scratch that includes the Map Tour URL, Facebook and Twitter will detect the URL and include a "card" with information about the Map Tour – see the example Tweet below:

To customize the default card to display information relating specifically to your Map Tour, you can modify the Map Tour's index.html file, and upload the updated version to your Web server as described in Part 5 above. The card is generated based on the `<meta>` tags listed at the beginning of index.html.

Information on customizing the "Open Graph" tags used by Facebook can be found in an Esri blog post at https://developerscorner.storymaps.arcgis.com/grow-your-story-maps-audience-with-open-graph-tags-b7639cb65d5c. You can also add similar sharing tags for Twitter, documented at https://dev.twitter.com/cards/types/summary-large-image and https://dev.twitter.com/cards/types/summary/. For the image that is included in the card, such as the Esri globe logo in the screenshot above, you may consider taking a screenshot of the Map Tour, saving it as a .jpg image, and uploading it to your Web server (note that for Twitter's "Summary Card with Large Image" format, screenshots with a 2:1 aspect ratio work best).

Note that once you have finished customizing the Open Graph and Twitter sharing tags, and uploaded the new version of index.html to your Web server, you may need to refresh the default cards that are cached by Facebook and Twitter before the changes appear. For Facebook, use the "Object Debugger" tool described in the "Update Facebook's Cache" section of the blog post above. For Twitter, an equivalent tool can be found at https://cards-dev.twitter.com/validator.

An example of a customized Twitter card can be found in the screenshot below:

http://hed.esri.ca