



Creating the *Know Your Hazards Tool* – County of San Diego OES, GIS Team

Objective: Create a public mapping interface that is interactive, provides hazard information (wildfire, earthquake, flooding, and tsunami) to residents and visitors based on a searched San Diego County address, and connects the user to disaster preparedness resources available across www.ReadySanDiego.org.

Collect the publicly available data:

- Wildfire: [CALFIRE Fire and Resource Assessment Program \(FRAP\) data](#)
Earthquake: [CGS/USGS Earthquake Shaking Potential for California – 2016](#) & [2014 Fault Sources](#)
Flooding: [FEMA 100-Year Floodplain](#)
Tsunami: [CGS Tsunami maximum inundation zone](#)

Explore/Research map applications: The team chose to use the out-of-the-box *ArcGIS Online Web AppBuilder*, utilizing our agency's existing ArcGIS Online subscription and licensing.

Putting it all together (Workflow Overview):

1. *Prepare the data:*
 - a. Consider the desired pop-up information and symbology for the mapping tool.
 - b. If datasets are not available as REST services, publish them as services that can be consumed online. Tile services work well for visualization, feature services work well to drive pop-up information.
 - c. Add tile and feature services to the web map. Feature services can be left unchecked (turned off).
 - d. Configure custom pop-ups, if desired. This information will feed into the Near Me widget (see below).
2. *Create the map application using Web AppBuilder:*
 - a. The *Foldable Theme* allows a widget to be anchored on one side of the display, while another is open simultaneously.
 - b. Add the *Layer List* widget for checking/unchecking the tile services.
 - c. Add the *Near Me* widget for the display of the pop-up results.
 - i. Under search settings, be sure *Only draw selected layer results* and *Return intersecting polygon(s)* are checked on.

Tips and Tricks:

1. Optimizing hosted feature services for high demand:
 - a. If the data has more than 1,000 features, publish it as a hosted feature service and make sure editing is disabled.
 - b. Remove any filters from the hosted feature service in the web map.
 - c. Ensure there are less than 8,000 points and less than 250,000 vertices in your data.
 - d. See also... <https://blogs.esri.com/esri/arcgis/2017/03/02/best-practices-for-high-demandviral-apps/>
2. Create a tile service for large complex datasets that don't need to be updated frequently.
3. Keep number of records around no more than 1,000 as a guideline for good performance.
4. Beware of multi-part polygons that are large and complex. The time it takes for the geometry to be called and drawn could be lengthy. Create single-part polygons, if possible.
5. ArcGIS Online servers will scale hosted feature services during high traffic periods as long as the service is not attempting to draw more than 250,000 vertices.
6. There are many ways to configure pop-ups in a web map. Use "a custom attribute display" in the pop-up settings to add images, links and call attributes from specific fields (e.g. {Field_Name}).
7. Customize visible scales for layers in the web map if needed, as well as the visible scales inside Web AppBuilder.
8. In a web app, pop-ups will still work for feature services if they are unchecked in the web map. Additionally, the app will load faster because the geometry is not being drawn during the initial loading period.