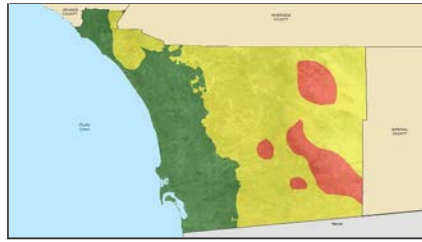


Known_Local_Wind_Map

File Geodatabase Feature Class



Tags

There are no tags for this item.

Summary

This map was requested by Electric Transmission and Distribution Engineering to support design purposes. The objective was to create a map that displayed the highest 3-second wind gusts that we could expect to see anywhere in the SDGE service territory over a 50 year period. This information will be used to support SDG&E's Standards and Design Specifications.

Description

In an effort to create the most accurate map possible, EDO Meteorology took an approach of using the Weather Forecasting and Research (WRF) Atmospheric Model to recreate hourly weather conditions on a 3km grid for the last 30 years. This is possible through using government datasets to initialize WRF to create what is known as a reanalysis dataset. We went back and created 30 years of data for a couple different reasons: the first was that the data quality degrades beyond 30 years and this was also the extent of the computing power that we were able to devote. This reanalysis dataset took close to 1 million compute core hours on our EDO computing cluster. Once the dataset was created, we were able to take the highest projected wind gusts for each point on the 3 km grid for each year going back to 1984. This gave us a preliminary value, though we wanted to add a bias correction to these values based upon the real time data that we have been receiving from our SDG&E Weather Network. To achieve this, we took two years of data from every station in our weather network and compared it to the output from the WRF Model over the same two year period. This enabled us to determine model biases for every grid cell on the map, which we were then able to apply to the entire 30 year dataset. Once we had the full 30 years of bias corrected data, we then needed to extend the 30 years of data to create a 50 year wind. This was achieved by determining the peak wind gusts for each year going back to 1984 and then applying a Generalized Extreme Value Probability Distribution Function (GEV PDF) to the data. This enabled our team to extend the 30 year wind to a 50 year wind for each grid cell in the map. Once this step was complete, our Meteorology team was then able to conduct analysis on the map to make refinements based upon their subject matter expertise. Having an understanding of the model's tendencies resolving winds around certain terrain features, the meteorologists were able to refine details of the wind map to bring added value and accuracy to the final version which exists today. Features were created from isolines and the SDG&E electric service boundary. These isolines are edited versions of the version 1 isolines that were heads-up digitized at 1:50,000 or larger scale from a georeferenced marked up map. The original marked up map was created by photographing the physical map in several pieces, rectifying, and then mosaicking the images. These new isolines incorporate edits made to the existing isolines described above. The areas to be edited were identified by SDG&E meteorologists and marked up using a Touch Table displaying the version 1 isolines in Google Earth. The edit mark ups were done at various scales and levels of detail. These edit markups

were then exported to KML and then imported into GIS for use as a template by GIS personnel to complete the update of version 2. Updated isolines were then turned into polygon features and attributed accordingly.

The “SDGE Known Local Wind” layer differs from the “Wind Gust 50 Year” layer in the 3 main respects.

1. The number of wind gust ranges were reduced from 7 to 3. Eliminated ranges were rounded up to the next range, so that 0-55mph is now part of the 65mph range, 65-75mph is now part of the 85mph range, 85-95mph and 95-105mph are now part of the 111mph range.
2. The entire Highest Risk Fire Area (HRFA) was upgraded to a minimum range of 85mph, unless previously rated higher.
3. In locations where distribution circuits straddle multiple ranges, the highest rated range was expanded to include all of the circuit. An example of this is the 111mph range in the north east section of the county. The original 111mph range was expanded eastward to encompass outlying sections of circuit 170.

Credits

San Diego Gas & Electric, Brian D'Agostino, Steven Vanderburg, Jaysen Gaines

Use limitations

There are no access and use limitations for this item.

Extent

West	-117.757418	East	-116.079959
North	33.614162	South	32.528473

Scale Range

Maximum (zoomed in) 1:5,000
Minimum (zoomed out) 1:150,000,000