

## 2016 Biography:

Ben Teran is a GIS Professional with 13+ years working in both the public & private sectors. Providing GIS support for the Power department as well as database administration and web development.

Presentation Title: Transformer Capacity Analysis

### Abstract:

Many power utilities have a SCADA system that helps monitor the load and capacity at a substation level. This is very helpful as an overview for monitoring the system at a circuit level. However, there is also the problem on a lower level knowing the load on transformers. A transformer is a device used to transfer electrical energy from one circuit to another, it can also raise or lower the voltage. For example: if the transformer load is higher than its capacity this can cause the transformer to fail which results in a power outage. By using GIS to model the power network, as well as using a process developed using Model Builder to trace peak power meter consumption back to each transformer, we can solve this problem. First, we export all the customer power consumption information from utility billing for the peak usage month of the year, usually July & August. This data is then joined to our meter points. Next, we use the geometric trace downstream tools to select all the meters that are connected to a given transformer. Once they have all been selected we total the consumption of all those meters and that becomes load for that transformer. This process has been automated using Model Builder because it needs to run thousands of times for all the transformers in the system. Then with the load and capacity this can help us identify and upgrade transformers that are regularly over 140% capacity thus eliminating possible power outages for the customers that we serve. This information is then given to our Operations Manager as a printed map & report, and has become part of the regular planning process to improve our system.