

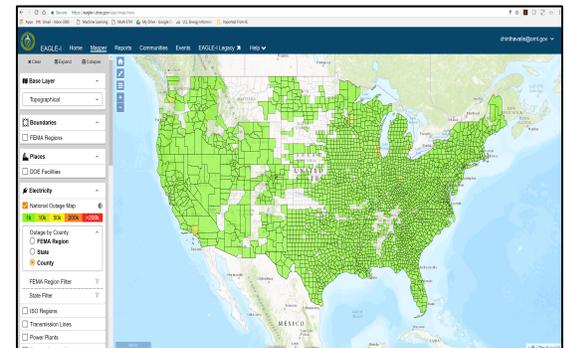
EAGLE-I : Environment for Analysis of Geo-Located Energy Information National Outage Map (NOM)

Achievement: Developed the National Outage Map ETL (Extract, Transform, Load) software application that monitors the entire nation's distribution outages in near real-time at the finest resolution.

Significance and Impact: This work enables us to move towards a more robust, reliable, and comprehensive real-time situational awareness capability to support advanced analytics as it pertains to the Emergency Support Function 12(ESF#12) mission. This has an operational focus and pulls from dynamic datasets to provide near real-time coverage of the entire electric grid and serves multiple federal agencies including FEMA, DHS, DOD and state Emergency Energy Assurance coordinators(EEACs).

Research Details:

- Developed and validated an ETL software application for accurately providing customer outage information at various geographic resolutions (including zipcode, lat/long etc) in near real-time.
- Around 330 ETL scripts for scraping utility websites were created and rigorously tested to replace the EAGLE-I backend services.



Sponsor/Facility: Work was performed at ORNL sponsored by DOE-OE ISER division.

National Outage Map displaying the total number of customers without power at a county level updated every 15 mins.

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Overview: EAGLE-I and associated energy infrastructure awareness capabilities will provide the Energy sector specific Common Operating Picture and be the authoritative federal source for historical and real-time situational awareness for the Nation's energy infrastructure. These capabilities will support DOE, Federal partners and other key stakeholder decision and response efforts consistent with the DOE ESF#12 responsibilities and integrating as appropriate with the emergency response functions of other federal agencies. The National Outage Map(NOM) is a core capability which is accessed by nearly 90% of the EAGLE-I users. Most utility companies provide customer outage status information via their websites covering their service regions. Having an integrated view of outage status across the nation is crucial for subject matter experts; but it is a challenging task because of data source variations/changes where utility companies may change their outage information data source URL's and data formats, support various data granularities such as lat/long, county, zip code, city, census area, etc., changing service areas, and the need to handle too many utility companies. This work provides an integrated, NOM system that has been systematically designed and developed composing of several python scripts that scrapes data from utility company websites, standardizes and stores collected information into database tables, and tracks erroneous scripts and maintains them. This capability will incorporate the most current and relevant data, to provide effective and comprehensive support for energy infrastructure awareness and response capabilities.