Leveraging Web GIS for Everyday Work & Disaster Response in Utilities

Presented By
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A Little Background

- Customers Served – Approx 820,000,
- Approx 850,000 Poles, 45,000 mi Distribution & 5,500 mi Transmission
- Service area is approx 30,000 sq miles of Oklahoma and a small part of Arkansas
- GIS Dept ArcServer set up October 2013
Smart Meters
Implementation of Smart Meters

Implementation started in February, 2010 and was completed December 2012 with approximately 820,000 meters deployed.

Implementation Of Smart Meters completed Dec 2012

- Meters send a “Last Gasp” when power is interrupted
- Rely on Access Points, Relays, and other meters to transmit those “Last Gasps”
- Recently integrated with Verified Outage System
F4 Tornado May 20, 2013
May 20th, 2013 Tornado

EF 4 Tornado hits Moore, OK

Wipes out a path of OGE electric devices, including meters

Many meters were unable to send a last gasp due to the network being destroyed
Smart Meters

Everyday Web Maps
OMS Routing Map

Dispatchers request new maps for routing trucks

The current ones had not been updated in several years

They were difficult to read

A web map was determined to be the best solution

- Dynamic
- Search by address
- Easily modified
- Truck starting locations
- Device and Circuit Info
The Way It Used To be Done
OMS Routing Web Map

Click to start video
Need for a Transmission System View

No System View, line by line only

In a storm event, difficult to identify area of damage, especially if new

No quick access to related files
Links to ProjectWise

A Link to ProjectWise and line specific drawings was provided for quick access to files.
Quick Access to Specific Meter types

Load Research Analysts needed a quick way to identify meters that were tagged Barns, Shops, and Wells in our customer databases.

- Each site would have to be visited to determine the meter actually belonged to a Barn, Shop, or Well.
- With aerials turned on, they can now quickly see if meters belonged to one of those structures.
- Only visit those that could not be conclusively identified.
Barns, Shops, & Wells
Quickly Identify OGE Service Territory

- Search by Township, Range, and Section
- Quickly see if existing Distribution lines available for new service
- In the future, would like to add to AGOL

OGE Distribution Territory

There was a need to quickly identify if new customers were located within negotiated territorial boundaries and to see if distribution lines were readily available for service.
OG&E Distribution Territory
Smart Meters

Everyday Web Maps

ICS
Having weather information available along with Transmission and Distribution information allows the ICS to
- Pre-position crews and material
- Be aware of dangerous weather
- Know when its safe to send crews out
- Visualize where the most extensive damage may exist

Severe Weather in Oklahoma
Oklahoma is known for its severe weather that can drastically effect our electric Transmission and Distribution lines.
Whether it’s tornados, straight line winds, or ice storms, the ICS groups needs to be prepared and if possible pre-position resources
Weather depending on the Season
Radar

Additional Layers

Layer Visibility

- WMSLayer1069
- District Outage Labels
- District Outages
- OGE Facilities
- PriOH Backbone
- PriOH All
- PriUG All
- Transmission
- Transmission Poles

Radar Loop

2014-08-19 6:30 AM

WMS radar reflectance service courtesy of Iowa State University. Click here for details.
Current Outage Information

Most of our future improvements hinge on being able to access current outage information.

Actively Working On

- Adding NWS warnings and alerts of severe weather
- Customer Minutes of Interruption
- Automatic updates for weather layers
- New Reconnaissance and Assessment tools
- Logistics support
- Material lists
Customer Counts & Duration

Legend
- Customer Count
  - 1 - 20
  - 21 - 50
  - 51 - 100
  - 101 - 200
  - 201 - 401
Downstream Outage

Layer List
- Layer Visibility
  - CMI (Customers X Duration)
  - Customer Count
  - Duration (Minutes)
  - Downstream Outage

Attribute Table

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Smart Meters

ICS

Everyday Web Maps

Moving Forward
Reconnaissance

- Tasked with finding new technology to quickly assess storm damage and the need for resources
- Real-time view in the ICS
- ESRI Collector App seems to fit the company’s needs
- Researching tablet costs and data packages
Collector App

Operations Dashboard

- Configurable
- Real – Time View
**Verified Outage System**

The company recently went live with a system that uses both meter alerts and customer call information to verify that in fact an outage has occurred and not just a bump in the system.

**Using Verified Outage Data**
- Show real-time outages in the ICS
- Use in Customer Count & Duration view to effectively route resources
- No longer need to wait on that one person that can provide the Excel file
Another View

Currently exploring options for high resolution aerial imagery

The Need for High Resolution Imagery

- Comparison – Before and After
- Efficient use of Resources – Send people where needed
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