Embracing GIS:
Denton Deploys a GIS-Based Outage Management System

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Agenda

• About Denton & DME
• Business Need
• Design, Development & Configuration
• Integrations
• Project Challenges
• Project Successes
• Questions
Denton, Texas
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- University of North Texas
- Texas Woman’s University
- Denton Arts & Jazz Festival
- 35 Denton
- Thinline Film Festival
- 41% growth rate from 2000 to 2010
- In top 25 of fastest growing cities in the nation
Denton Municipal Electric

- Denton is a full service city
  - Electric (Transmission & Distribution), Water, Wastewater, Landfill & Fiber (City only)
- 50,000 Customers
- Founded in 1905
- Power Distribution:
  - 50% Gibbon Creek coal plant
  - 40% Wolf Ridge Wind Facility in Muenster, TX
  - Small percentage from landfill gas to energy project
  - Remainder through new power purchasing group
- More wind power per capita than any other city in the nation
Outage Management Systems

- Outage Management System
- A way for system operators & dispatchers to track outages
- Can also track archived events
- Useful tool for utilities
- Vendors:
  - Schneider Electric Responder
  - Milsoft DisSpatch
  - ABB
  - GE, etc
Why Responder?

- Issues with previous OMS
- Infrequent updates (roughly 2-4 weeks)
- Unreliable model
- No SCADA integration
- Frequent problems, little support
- Three maps
  - OMS, Enterprise & Mobile GIS
Why Responder?

- GIS central to business
- Better functionality
- Better integrations
- Better support internally
  - Staff has experience with product
From this...
To this..
To this..
Field GIS
Responder OMS Implementation

• Upgrade ArcMap & ArcFM GIS to 10.1
  - September 2013
• Project Kick Off
  - October 24, 2013
• Data Review
Responder OMS Implementation

• Integration Design
  - IVR
  - SCADA
  - CIS
  - AMI
• Integration Development
• Configuration
• Deployment
Integration Design

- Utilizing GIS Web Server
- IVR
- SCADA
- AMI (Design Only)
- CIS
Integration Design

- **MultiSpeak used for SCADA and IVR Integration**
  - Standard that addresses needs of utilities
  - Minimized time spent developing interfaces
  - Offers true interoperability in COTS products
    - Facilitates the adoption of new applications
    - Enables better tech support from vendors
IVR Integration

- Milsoft PORCHE
- Multispeak 3.0AB
- Customer Calls
- Callbacks
- Revised Call Scripts
- Upgraded Hardware in 2014
  - Moved to GIS Network
SCADA Integration

• OSI
• OSI OpenDMA Platform
• Multispeak v4.1.3
• Inbound/Outbound Verification
• 60 second threshold
  - Circuit Breaker Recloser
  - Opens/Closes 3 times to “Lock Out”
CIS Integration

- Daily .csv Export
- Single/Bulk Meters
- Location -> Account -> Meter Relationship
AMI Integration

- **Trillion**
- **Did Not Deploy**
  - At development stage – 80% of meters were AMI
  - 97% now
- **Multispeak v4.1.6**
  - New version of Trilliant software
- **Receive Power Up/Power Down**
- **Meter Pings**
  - Yes or No?
  - vs. IVR Callbacks?
Challenges & Solutions

- Multicasting on City of Denton Network
- Two Domains: City of Denton & DME GIS
- Responder Clustering
  - Did not cluster
- Depending on Vendors for IVR, SCADA & AMI support
- No AMI/MDMS in-house knowledge
Challenges & Solutions

• Backup Server Rack with License Manager, Database, OMS & Domain Controller Servers
• Fiber link between DME GIS Switches
• Two network gateways, in case one failed
  - VRRP
• Two backup control center clients
Challenges & Solutions

• Database Speed
  - CIS Update & Compression
  - Implemented several scripts to Reconcile, Compress, Analyze and Reindex database to improve performance
Successes

• Successful Rollout on June 24, 2014
• Began using Responder Switching Orders
  - October
• Large Monitors Placed Around Buildings
• Public Facing Outage Map
Public Facing Outage Map

- Emergency Management
- ArcGIS Online
  - XY Event Layer of RX_INCIDENT_DEVICES_VIEW
    - 10 or more customers out
  - Certification Boundaries for reference

A public facing outage map that has all of Denton Municipal Electric's current system outages. Points indicate the approximate area of the outage. To preserve customer privacy, incidents with only 10 or more customers are shown. To report an outage please call 940-349-7000 and follow the instructions to log an outage.
Public Facing Outage Map

- Live on January 7, 2015
- Local Media Attention
System Operations
Real-Time Display
The Future
Questions?