

EAST RIVER ELECTRIC

**Develops ArcGIS Mobile
for Collection and Inspection!**

Esri UC 2014

Todd Copeland

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About East River

- ž Provides electric power to:
 - 24 Rural electric cooperatives & 1 municipally-owned system
 - 113,000 homes and businesses
 - 250,000 consumers
 - 8 regional service centers
- ž Service Area
 - 40,000 square miles
 - 41 counties in South Dakota
 - 22 counties in Minnesota



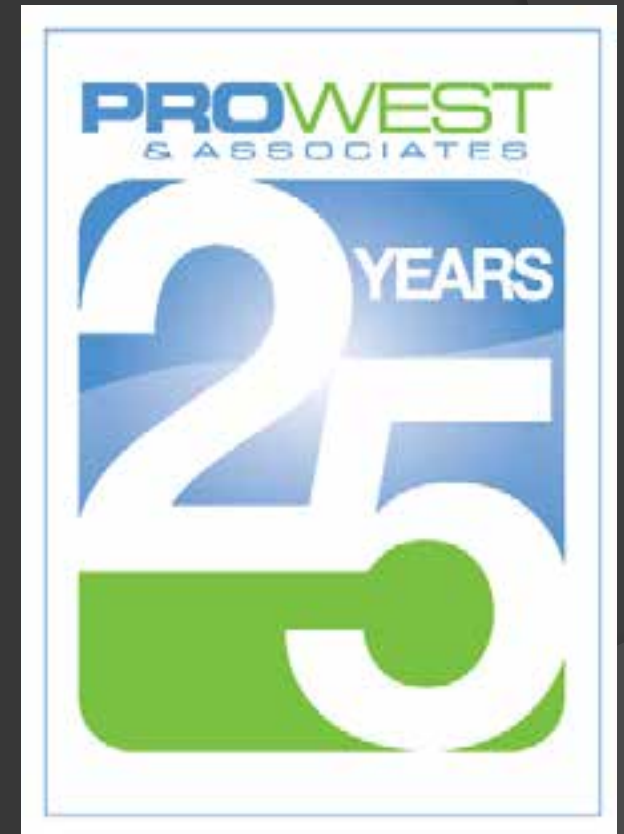
About East River

- ž 125 employees
- ž 226 substations
 - Power supply and distribution
- ž 2,800+ miles of transmission line
- ž 48,000+ transmission structures



About Pro-West

- ž Application development
 - Web
 - Mobile
 - Desktop
- ž Data development
- ž System architecture design
- ž Geodatabase design/tuning
- ž Training
- ž Consulting
- ž Aerial photography



ERE Previous Inspection System

- ž Paper Inspection form
 - Damages recorded

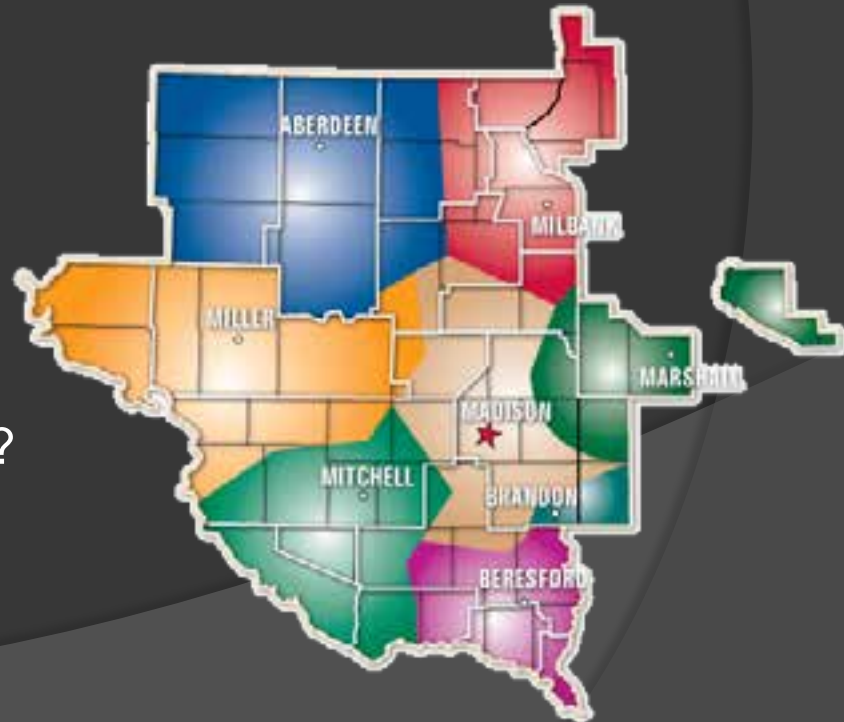
Pole No.	Size	Checked	Hazards & Clearing	Leaning	Crossarms	Braces	Insulators	Tree Trimming	Spraying	Bands - No.	REMARKS
100	65-2	ok	ok	ok	ok	ok	ok	NO	NO	NO	
101	60-2	ok	ok	ok	ok	ok	ok	NO	NO	NO	
102	60-2	ok	ok	ok	ok	ok	ok	NO	NO	NO	
103	60-2	ok	ok	ok	ok	ok	ok	NO	NO	NO	
104	60-2	ok	ok	ok	ok	ok	ok	NO	NO	NO	
105	60-2	ok	ok	ok	ok	ok	ok	NO	NO	NO	
106	60-2	ok	ok	ok	ok	ok	ok	NO	NO	NO	
107	60-2	ok	ok	ok	ok	ok	ok	NO	NO	NO	
108	60-2	ok	ok	ok	ok	ok	ok	NO	NO	NO	self supporter
shub	35-2	ok	ok	ok	ok	ok	ok	NO	NO	NO	

- ž Inspection forms were sent to be photo copied and archived.

ERE Previous Inspection System

- ž Information passed on to maintenance coordinator
 - Damaged poles entered into a spreadsheet
 - Contact made to Service Areas

- Who reported the damage?
- Was the damage fixed?
- If not, when would it be fixed?
- Who completed the work?
- When was work completed (date)?



Motivation for Application development

- System wide Inventory of transmission structures
- Agency requirements on tracking inspections
- Reduce the amount of time
 - Recording Inspections
 - Processing Inspections
- Displaying / sharing structure locations and information
- Reporting



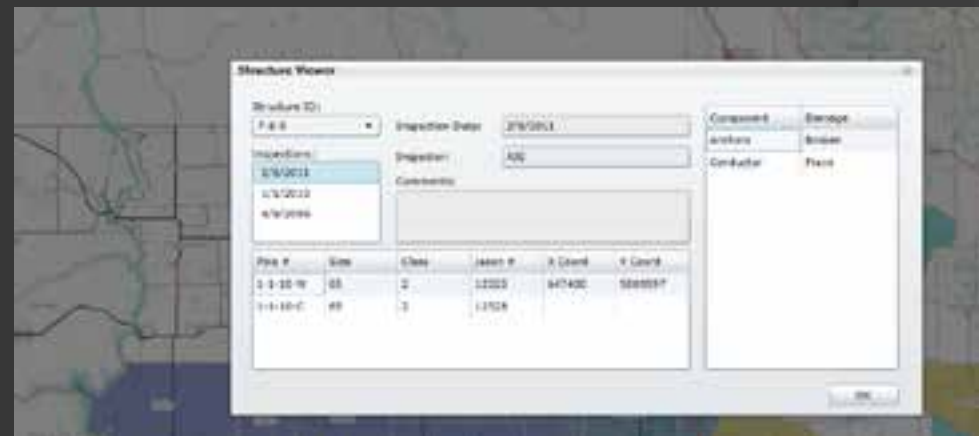
Workflow Overview



GPS Structures



Inspections



SharePoint

Planning for Mobile

ž Field devices

- Tested Trimble and Juniper devices

ž Software

- Esri: ArcGIS SDK for Windows Mobile

ž Data collection

- Field viewing/editing
- Office viewing/editing

ž Migrating existing MS Access to SQL

Mobile Application Development

- ž C#.NET, SQL Server Synchronization Services
- ž Workflow analysis
- ž Eliminating number of end user clicks
- ž Validation
- ž Draft forms

ViewInspection 4:13

Previous Inspection

Structure ID: B-2-11

Inspection Date: 3/15/12

Inspector: JLW

Comments: test comments

Component	Damage
Arrestors	Blown
Storm	Ice
Storm	Lightning
Switches	Live Parts

OK

Developing the Application

ž This and That

- Make sure design application is flexible allowing it to adapt for changes
- Application used dynamic form creation
 - Allowing items to be added to forms in application



Developing the Application

Ž **This and That** *(continued)*

- Related tables synced using SQL Server Synchronization Services
- Scheduled syncing automated from device to SDE and SQL tables
- A WCF service is required for mobile application and SQL services to communicate
- Application identifies closest pole for inspection



Application Demonstration

Structure ID

Section Tap Structure Number Optional

- - -

Number of Poles

Pole Information

Struct

Sec Tap Num Opt Type Dir

GP

Jason #

Size Class

X Coord

Y Coord

Pole #	Size	Cls	Jason	GP
ENTER POLE #				YES
ENTER POLE #				YES
ENTER POLE #				YES

Components

Anchors	Line Hardware
Arrestors	Poles
Braces	Storm
Conductor	Switches
Cross Arms	Trees
Guy Wires	Underbuild
Insulators	

End User Feedback

- ž Easy to use forms
- ž Ease of synchronization
- ž Lightweight field device with a larger screen
- ž Increased productivity
- ž More efficient



Keys to a Successful Project

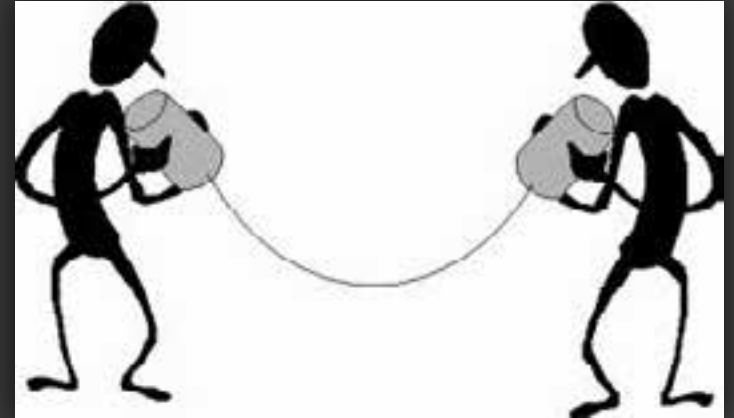
- ž End user testing and involvement
- ž Timely responses to end user requests
- ž Choosing the right field device
- ž Good development practices
- ž Communication
- ž Well thought out design



Lessons Learned

ž Communication is key

- End users
- Developers
- GIS/IT staff
- Others



ž Is there anything ERE would do differently?

- Development vs. Application Testing

Questions?

Presenters: Todd Copeland

GIS Coordinator

East River Electric

Brandon Crissinger, GISP

Data Development Manager

Pro-West & Associates