Achieving Utility Digitalization with a Strategic Roadmap
Wake Electric
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of Member-consumers</strong></td>
<td>47,000+</td>
</tr>
<tr>
<td><strong>Total Annual kWh Sales</strong></td>
<td>720 million</td>
</tr>
<tr>
<td><strong>Average Residential Monthly Electricity Usage</strong></td>
<td>1,275</td>
</tr>
<tr>
<td><strong>Miles of Line (Approximately 3,400)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Transmission</strong></td>
<td>58</td>
</tr>
<tr>
<td><strong>Overhead</strong></td>
<td>1,750</td>
</tr>
<tr>
<td><strong>Underground</strong></td>
<td>1,900</td>
</tr>
</tbody>
</table>
Seven Steps of a Digitalization Roadmap

1) Telecommunications Evaluation
   • Public network availability
   • Terrain study (vegetation, elevation changes, etc)
   • Tower infrastructure

2) Digitalization Foundational Technologies (Data Gatherers)
   • Advanced Metering Infrastructure (AMI)
   • Supervisory Control and Data Acquisition (SCADA)
   • Geographic Information System – Digital Mapping (GIS)
   • Customer Information System (CIS)
Digitalization Roadmap

3) Data Management (VEE)
   - Validation
   - Editing
   - Estimation

4) Data Integration
   - Validated data in a common database
   - Cloud hosted?
Computing Life Cycle

Functionality and Scope

Plug in & Go!
Use As Needed

Right Sized,
Pay Per Use

Ops Staff, IT
Infrastructure

Data Center,
NOC

Utility In
House

Low Cost
Fully On Demand

Over Built or Under Built

Highest Cost of Maintenance

Traditional Infrastructure

Utility Hosting
Digitalization Roadmap

Cyber Security

- Firewall Management
- Password Management
- Vendor provided tools

5) Cybersecurity

Telecommunications Platform(s)
- AMI
- SCADA
- GIS
- CIS

Data Management (VEE)

Data Enterprise System
6) Critical Tool Creation
Example - Understanding Meter Tampers

<table>
<thead>
<tr>
<th>Meter Number</th>
<th>Reported Event Time</th>
<th>Category</th>
<th>Account Number</th>
<th>Service Address</th>
<th>Service Status</th>
<th>Map Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2018-02-15T14:54:10</td>
<td>Tamper</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>2018-02-15T14:45:26</td>
<td>Tamper</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2</td>
<td>2018-02-15T13:44:07</td>
<td>Tamper</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>2</td>
<td>2018-02-15T13:33:31</td>
<td>Tamper</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2018-02-15T13:06:49</td>
<td>Tamper</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2018-02-15T11:47:42</td>
<td>Tamper</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>2018-02-15T10:56:46</td>
<td>Tamper</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This report is autogenerated

54957 – was tampering and we charged them a tamper fee
36688 – Grady is going to check to see if the seal was cut
19955 – removed meter yesterday there was a service order
54184 - removed meter yesterday there was a service order
28874 - removed meter yesterday there was a service order
20925 - removed meter yesterday there was a service order
16490 - removed meter yesterday there was a service order
17815 – electrician removed meter to do work – no service order – meter called in an outage and we sent a service man out
28049 - removed meter yesterday there was a service order
38786 - removed meter yesterday there was a service order
23272 – electrician removed meter to do work – there was a service order created on the account
Digitalization Roadmap

7) User Interfaces and Automation

Cyber Security

Telecommunications Platform(s)
- AMI
- SCADA
- GIS
- CIS

Data Management (VEE)

Data Enterprise System

- Outage Management
- Distribution Automation
- Demand Response
- System Efficiency Studies
- DER Management
- Member Engagement

Customizable Dashboards

System and Process Automation

Wake Electric Membership Corporation
A Touchstone Energy® Cooperative
Seven Steps of a Digitalization Roadmap

1. Telecommunications Evaluation
2. Foundational Digitization Technologies (Data Gatherers)
3. Data Management (VEE)
4. Data Integration
5. Cyber Security
6. Critical Tool Creation
7. User Interfaces and Automation
Thank you.

Don Bowman
Wake Electric
919-863-6487
don.bowman@wemc.com