METER DATA MANAGEMENT
LESSONS LEARNED
LIFE AFTER GO LIVE
Insight on Leveraging Integration While Preserving Technical Investment

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Agenda

Introductions
• About the Presenters
• About Tallahassee
• About OUC

What is Smart Grid? MDM?
• Considerations before you implement

What is the End/Desired State?
• Start with the end in mind

What will it take to Implement and Go Live?
• Establish realistic expectations – Expect the unexpected

Lessons Learned

Q & A – Open Discussion
INTRODUCTIONS
About the Presenters

Matt Matherne
- Utility Business Systems Administrator
- Joined CoT in 2006
- Project Manager for Smart Grid, MDM & Customer Web Portal projects – over 8 years experience with utility business systems

Dawn Frye
- Manager of Application Services
- Rejoined OUC September 2013
- Total of 12 ½ years Utility Domain Experience

Eddie Fee
- Manager of MDM & Revenue Assurance
- Joined OUC July 1998
- Total of 17 years Metering, Revenue Assurance and Utility Data Analysis Experience
About Tallahassee

- Provides Electric, Gas & Water to 115,000 customer in & around Tallahassee
- 805 MW of generation capacity
- 630 MW peak demand – 2700 GWh of annual sales
- 2.2 billion cubic feet (Bcf) annual natural gas sales
- 11 billion gallons annual water sales
- $480M annual gross revenues
- 225,000 meters
- 250,000 service orders annually
- 400,000 customer initiated contacts annually
About OUC

- Ranked 1st in electric reliability since 1998 amongst all FL utilities
- Ranked 2nd in the state by JD Power in Customer Satisfaction
- ~310,000 customers in 2 counties
- 8.5 trillion kwh/year
- 31 billion gallons per year
- Implemented over 10 Major IT Projects in 18 months and another 4 in the next 6 months
- In 2014, won “Best Smart Grid Infrastructure Award” in the large utility category for North America by CS Week and Electric Light & Power Magazine

OUC’s Vision is to be recognized as the best utility in the nation.
What is Smart Grid? MDM?

• Considerations before you implement
Meter to Cash Integration

EnergyAxis® System
AMI for the Smart Grid

City of Tallahassee
Your Own Utilities

OMIC
The Reliable One
What is the Smart Grid?

• **Smart Grid** – use of digital technology to save energy, reduce cost and increase reliability & transparency

• **Essential Smart Grid Components:**
  – AMI Network – how the meters talk (WAN/LAN)
  – Corporate Network – how data is transferred
  – Web Application – business administration of system
  – Customer Tools – consumption dashboards, etc.
What is MDM?

- **Meter Data Management System (MDM)**
  - Meter-to-Cash Integration is at the ‘core’

- **Essential MDM Functions:**
  - Store/Test/Analyze/Process large volumes of meter data
  - Heartbeat of Smart Grid Network
  - Share data with CIS, OMS & other utility applications
  - Centralized Repository of meter data
Smart Grid / MDM Data Sets

- **Register Read Values**
  - kWh, KVAR, ccf, BTU, gallons, TOU buckets, etc.

- **Interval Consumption**
  - 15-minute, hourly, etc.
  - End-of-Interval snapshot read values (check-sum validation)

- **Instrumentation Data**
  - Voltage Values (snapshot vs interval)

- **Meter Events** (tamper, removal, meter health, etc.)

- **Real Time Outage/Restoration Notifications**

- **Real Time Responses to Remote Disconnect/Connect**

- **Distribution Switches, Capacitors, etc.**
Considerations Before You Implement

- **AMI device selection & deployment**
  - Test devices in ALL possible conditions (water intrusion, heat, etc.)
  - Phased deployment is almost always best
    - Technology matures
    - Utility & vendor have time to identify & react to issues (they WILL exist)
    - Phased aging of equipment/components for future replacement

- **Understand reporting capabilities of MDM**
  - If none, will need analytics tool and/or database queries

- **VEE Configuration**
  - Daily readings
  - Monthly billing consumption

- **Meter Configurations**
  - How you order meters from factory can impact you later
  - Instrumentation recording, etc.

- **Consider every meter-to-cash process**
  - How will AMI/automation impact it? Hi/Lo Billing, etc.
What is the End/Desired State?

• *Start with the end in mind*
Smart Grid / MDM Desired/End State

- Predictive Analytics
  …or at least quicker identification of issues
- Improved Customer Experience
- Reduce Operational Costs
- Optimize Field Credit & Collections
Increasing the ‘Value’ of Smart Grid Investment

• Dozens of Smart Grid Use Cases across the utility
  – Internal & External Value
• Meter Data synchronization to customer & asset info.
• New customer pricing programs (TOU, etc.)
• Remote disconnect/connect functionality
  – Including Pre-pay offerings
• Theft detection
• Improved break-to-fix time
• VEE Rules (validation, estimation & editing)
Smart Grid / MDM – Customer Engagement Drivers

- Unified view of data - integrate billing & AMI usage
- One-stop shopping
- Billing notifications (all services)
- Manage customer participation in programs
- Analytics consider commodity interactions
  - (shower head replacement reduces water & electricity for hot water)
- Tools to provide meaningful information
  - Why did their bill change?
  - How does TOU impact their bill?
  - How can they reduce their bill?
  - How much has been spent month-to-date (off-cycle)?
- Enables customers to develop energy management strategies
- Supports pricing & other programs
What will it take to Implement and Go Live?

• *Establish realistic expectations – Expect the unexpected*
Partnership - It Takes a Village

A Collaborative Effort Across the Company

- Executive Focus
- Business Focus
- Technology Focus
- Vendor Focus

As a result:
- Continued Alignment
- Constant Communication
- Negotiate Priorities
- New Methodology
- Recognition of Tight Integration
Planning

- How long should we test?
- What environment can we test in?
- What interfaces & integrations (up/downstream) must we consider?
- Is the business available for UAT?
- What else is going on with other teams?
- How do we simulate a days’ activities (full load)?
Lessons Learned

• *It is a whole new world*
Lessons Learned – People Impact

• Be Realistic
  – Transition time
  – New business processes/tasks
  – IT/Business knowledge & troubleshooting techniques

• Establish Vendor Management & Coordination
  – Understand your goals as a municipal utility vs IOU
  – At times, you may know more than your vendors
  – AMI, MDM, OMS (etc.) vendors must be willing to work with each other
  – Trust your vendors to do a good job…but verify

• Have Tough Skin - You may be unpopular at the beginning…and then have many friends at the end
  – Set expectations with other departments/divisions early and update

• ‘Pilot’ every change or new feature

• Establish Data Analyst Team
  – Business review of data from every system and process
  – Don’t assume data from source is accurate

• Ensure field staffing is available
Lessons Learned – Procedures (Business)

• Learn ‘How Meters Fail’
  – Post-triage, document, communicate & modify

• Continued Need for ‘Manual Contingencies’
  – Critical system(s) failure, widespread meter malfunctions, inspections, etc.

• Establish a Physical Meter Farm
  – Test HW/SW/FW releases
  – Include ALL devices (solar, charging stations, water, etc.)

• New devices need old practices & new ones
Lessons Learned – Process (manual vs auto)

- **Build Traceability**
  - Follow the meter activity from meter to billing
  - What will be needed to ensure accuracy of readings?
  - What will be needed to track events?
  - What additional data is helpful that is captured at Head End system that you would like stored in MDM?
  - Are your services, meters behaving differently?
    - Water, Electric, Gas, etc

- **Remember Old manual reports are gone**

- **Understand Business operations change**
  - What is needed to marry the data between field and billing?
  - How not to create additional work?

- **Align systems**
  - Meter needs to be set up in Head end, MDM, Billing
  - What happens on new meter set, exchange, etc
  - Does data sync? (all new concepts when you move from manual to automated)
Lessons Learned – Product

Business System has morphed into a Technical Tool

- **Standardize Platform for End-Users Wanting AMI Data**
  - Many consumers of same data
  - Interval data – raw can help internal teams with reliability while validated data is used for billing

- **Release application schedule – new features, break fixes**
  - Give teams time to vet new features
  - Company change management practices
  - Application configurations will change, tweak, adapt to business practices

- **Technical Alignment with rest of company initiatives**
  - Back up and recovery
  - Data Retention
  - Patching
  - Database Upgrades
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