

# House Energy Committee

## Electric & Water Smart Meter Presentation

Board of Public Utilities

March 2, 2012



**Kansas City**  
**Board of Public Utilities**

# Electric Utility Profile

- Electric Meters – 69,336
- Electric Gen. Capacity – 613 MW
- Summer Peak (8/2007) – 529 MW
- Electric Substations – 29
- Electric T&D Lines – 3,139 Miles
- Customer Classes by Sales
  - Residential – 27%
  - Commercial – 36%
  - Industrial – 23%
  - Other – 14%



# Water Utility Profile

- Water Meters – 56,809
- Pumping Stations – 6
- Water Mains – Miles
- Water Storage Capacity – 22 Million Gals.
- Avg. Water Production – 30 MGD
- Peak Treatment Production – 48 MGD
- Peak Treatment Capacity – 54 MGD



# AMI System Components

## ➤ Electric and Water Smart Meters

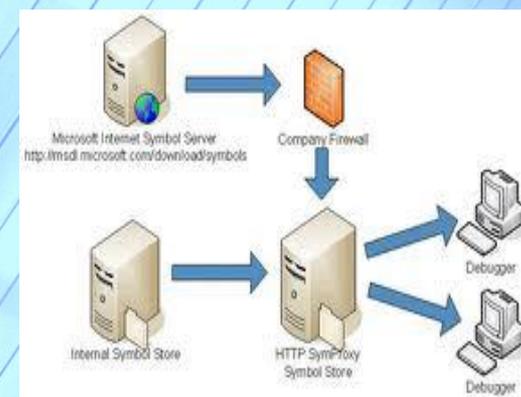
- Elster for Electric
- Neptune for Water

## ➤ AMI Backhaul Communications

- Elster “Gatekeepers”
- Tropos – Wireless broadband
- Fiber – KCBPU fiber optics

## ➤ Meter Data Management System

- eMeter / Siemens



# KCBPU AMI Project Details

- Two year deployment plan
  - Complete software integration
  - Complete communications system by May
  - Replace 7,000 electric meters/month
  - Replace 3,000 water meters/month
  - Install MDMS in 10 months
  - Introduce prepay services
  - Pilot time-of-use rates



# Distinguishing Characteristics

- Electric and Water Smart Meter Project
  - Zigbee Communications
  - 8 digit register water meters
  
- 2.4 GHz Wireless Broadband
  - Smart Grid
  - Mobile Work Management
  
- Electric and Water Web Presentment
  - Interval Usage & Cost



# MDMS Project Phases



Phase 1

- Meter-to-Cash Functionality



Phase 2

- Remote connect/disconnect
- On Demand Reads
- Outage Mgmt System integrations
- Web Portal



Phase 3

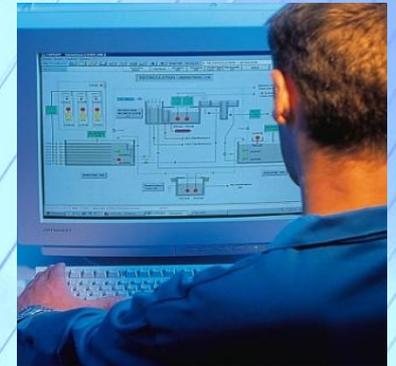
- MDMS Upgrade
- Demand Response
- Load Research
- Distribution Automation



# Smart Grid Communications

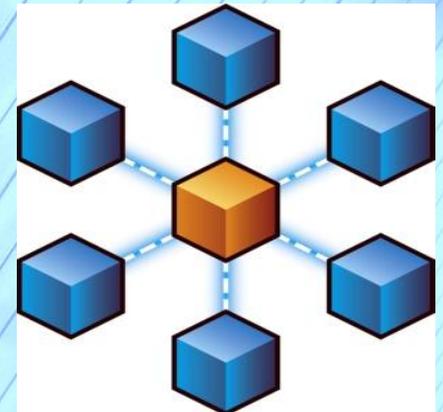
## ➤ Building a WiFi system using Tropos

- Network includes pole top devices
- Broadband through Tropos
- Fiber backhaul @ substations
- Enable distribution automation
  - Cap banks, switches, reclosers
  - Monitor system pressure zones/leak detection
- Enable smart city communications
  - Public safety
  - Mobile work management



# Smart Grid Integration

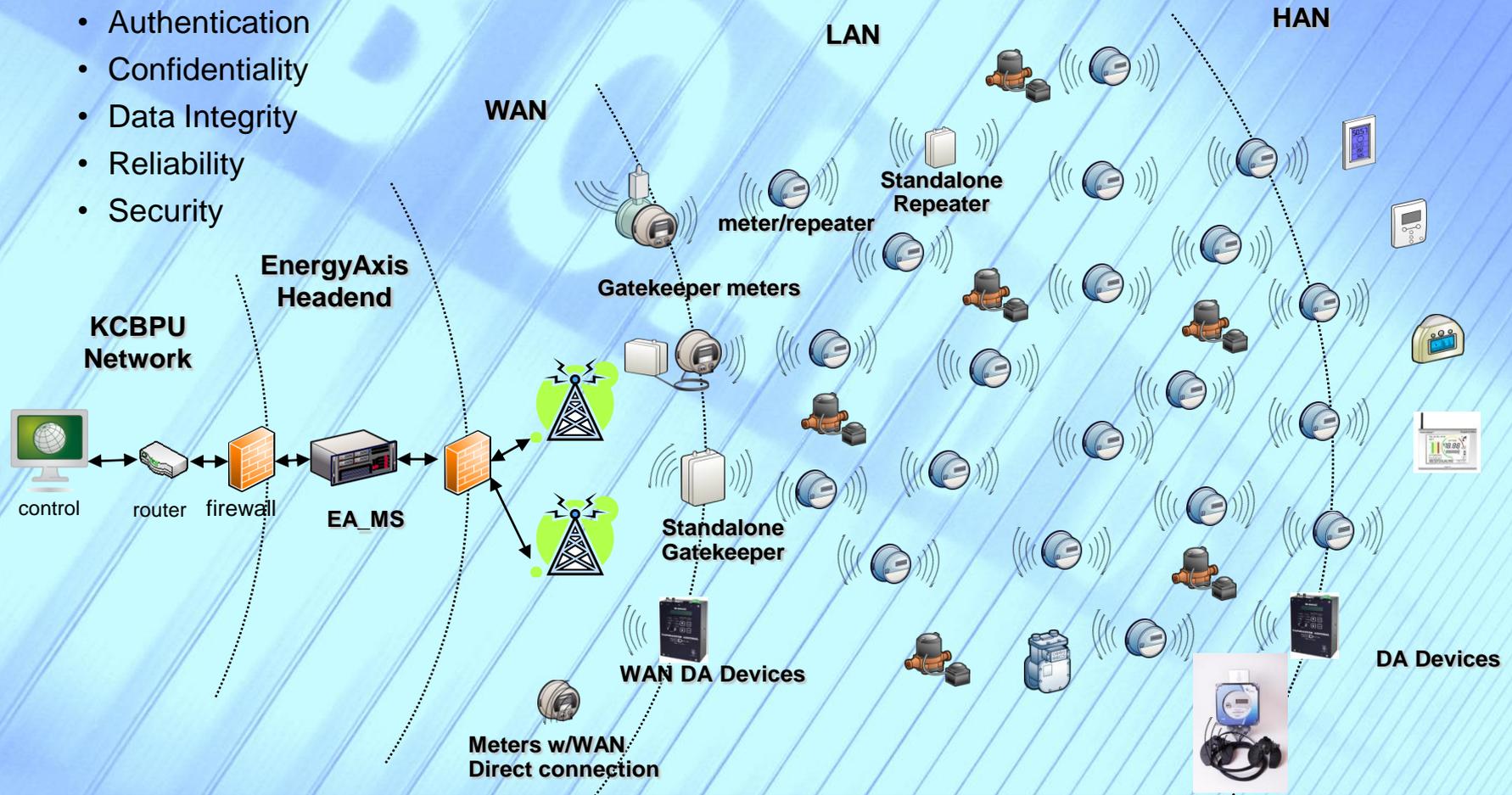
- AMR/AMI
  - Elster Headend
- Customer Information System
  - Harris “Cayenta”
- Meter Data Management System
  - eMeter
- Outage Management System
  - Milsoft “Dispatch”
- Demand Response
  - Honeywell Thermostats



# Structure of EnergyAxis

A field proven, end-to-end Network providing required Smart Grid characteristics;

- Authentication
- Confidentiality
- Data Integrity
- Reliability
- Security



# Key Factors in Business Plan

- Needed more than just a meter reading system
  - Conduct thorough planning process
  - Had to improve operations/achieve cost reductions
  - Collect usage data on all customers
- Ability to present load & water usage
  - Reporting / Business Intelligence
  - Web portal / customer
- Enabling other smart grid technologies
  - CIS, MDM, OMS, DA, DR / interoperability



# Electric Utility Benefits

- ✓ 15 minute interval reads
- ✓ Upload load profile data every 6 hours
- ✓ Reduced operating costs
- ✓ Perform remote connects/disconnects
- ✓ Rapid notification of outages
- ✓ Leak detection
- ✓ Aggregated voltage points
- ✓ Network analytical tools
- ✓ Improve environmental footprint



# Customer Benefits

- ✓ Quickly obtain recent usage
- ✓ Speed up read & billing processes
- ✓ Eliminate meter reading errors
- ✓ Identify days of high electric & water usage
- ✓ Enable demand response programs
- ✓ Revenue assurance
- ✓ Launch customer portal
- ✓ Specialized customer care to Key Accounts
- ✓ Reducing outage related costs for customers



### Schedule Metrics

Show Details

Name	Meter Read Status			Success/F...
	Stale	Errors	Tampers	
Schedule_Billing	2	3	1	92 / 8
Schedule_NonBi	2	5	1	160 / 40
Schedule_Water	10	5	3	475 / 25
Schedule_Gas	10	8	5	790 / 10
Schedule_Down	10	2	0	490 / 70
Cust_Billing	12	3	1	89 / 11
Cust_NonBilling	12	5	0	194 / 6

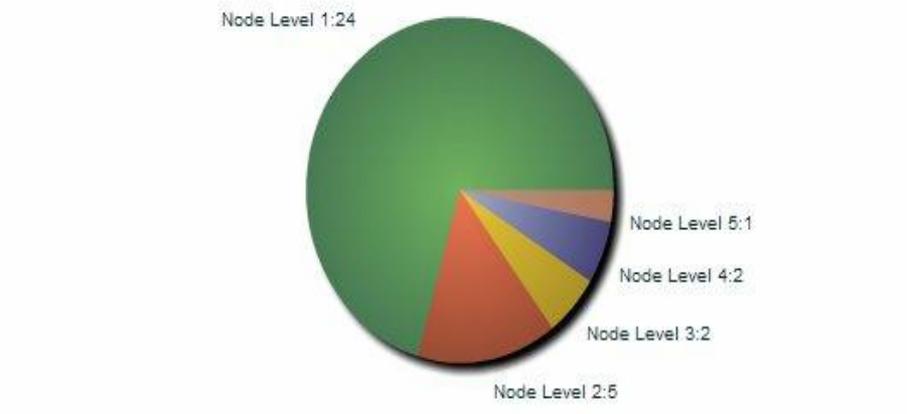
### WAN Metrics

#### WAN Metrics - Total Bytes

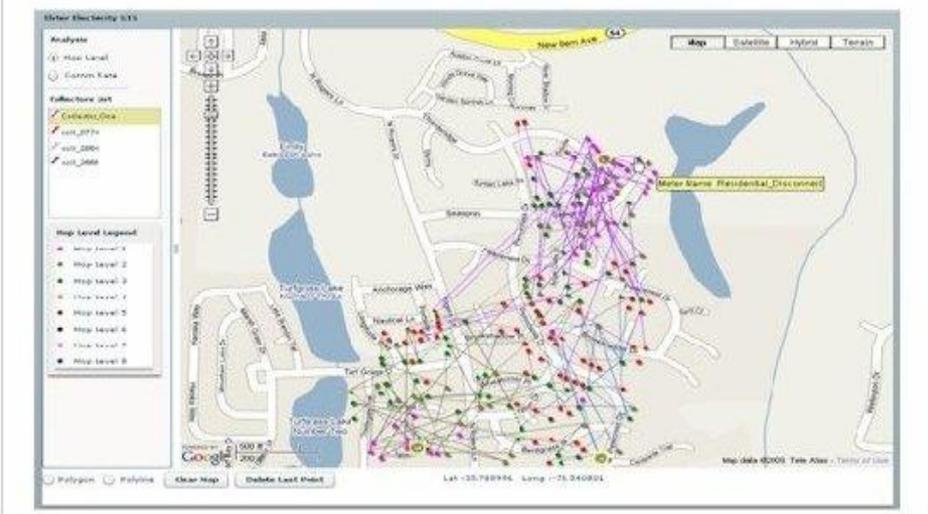


### System LAN Metrics

#### System LAN Metrics



### GIS Mapping



# Demonstration Energy Engage: Engaging Consumers

- **Leading Consumer Engagement**

Integrated into utility CIS

Encouraging peak load reduction

Proactive demand response

Variable pricing promotions

Consumer collaboration for conservation

Improved customer support through education



Home My Electric My Water Alerts Profile

A spike in your usage occurred on Monday, JUL 29 Settings



Photo caption can go here

**Account #**  
246721209  
**Website updated through**  
OCT 10 02:35PM

**Costs to Date**  
**\$147.00**  
(not billed till NOV 02)  
[Details](#)

[Go To BillPay](#)

**Electric Costs**

\$132 projected  As of Oct 10  
\$ **112**

[Details](#)

Your pricing plan is currently set for Time Of Use (TOU).

**Water Costs**

\$46 projected  As of Oct 10  
\$ **35**

[Details](#)

Locavore esse fugiat twee mixtape, art party fanny pack lomo fixie

**Environmental Impact**

< **16**  >  
**Tanks**

[Details](#)

Burning this much propane equals your impact within this bill period.

### Cut Costs



#### Keep It Cool

**Water**

Cool your home at 78° or warmer with the thermostat fan switch on "auto." For additional savings, raise your thermostat to 82° or warmer when you're away from home.

[More like this](#)

### Be Efficient



#### Consumption At A Glance

**Electric**

Though accounting for only 5 percent of the world's population, Americans consume 26 percent of the world's energy.

[More like this](#)

### Reduce Your Impact



#### Renewable Energy

**Water**

Within 15 years, renewable energy could be generating enough electricity to power 40 million homes and offset 70 days of oil imports.

[More like this](#)

Multi-commodity with usage & cost



# Lessons Learned

- ❖ Continue to refine system data
- ❖ Continue to improve internal processes
- ❖ Continue to build 'smart grid' utility
- ❖ Continue to improve customer service



**Thank You**

**Questions?**

