

Kansas House Energy Committee

Electric & Water Smart Meter Presentation

Board of Public Utilities

February 7, 2013



**Kansas City
Board of Public Utilities**

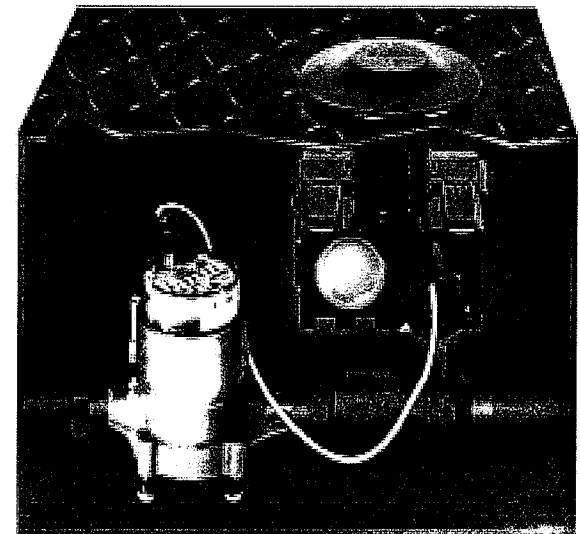
Electric Utility Profile

- 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 –
- Water Mains – Miles
- Water Pumping Capacity –
- Water Storage Capacity – 34 Million Gals.
- Water Production – 45 Million Gals (Avg.)
- Peak Production –



AMI System Components

➤ Electric and Water Smart Meters

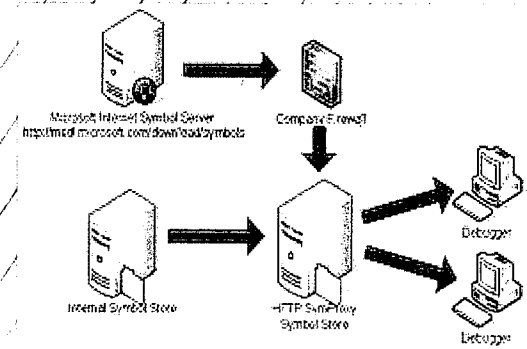
- Elster for Electric
- Neptune for Water

➤ AMI Backhaul Communications

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

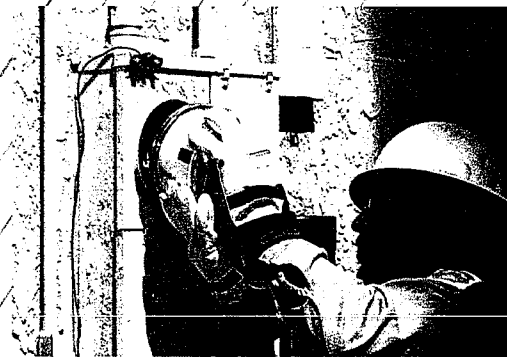
➤ Meter Data Management System

- eMeter / Siemens



Remaining KCBPU Project Schedule

- Replace all electric and water meters
 - For industrial, commercial and residential accounts
 - All electric meters will be replaced by 3/31/2013
 - All water meters will be replaced by 4/31/2013
- Complete software integration
 - Remaining phases should be completed by 9/1/2013

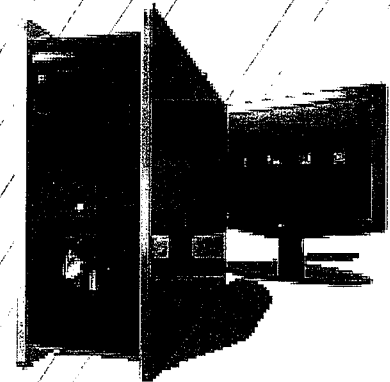


Distinguishing Characteristics

- Electric and Water Smart Meter Project
 - Zigbee Communications
 - Xxx digit register water meters

- 2.4 GHz Wireless Broadband
 - Smart Grid – Electric
 - Smart Grid – Water
 - 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

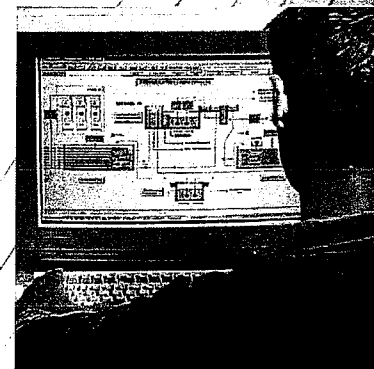
Phase 3

- MDMS Upgrade
- Demand Response
- Distribution Automation
- Data Analytics



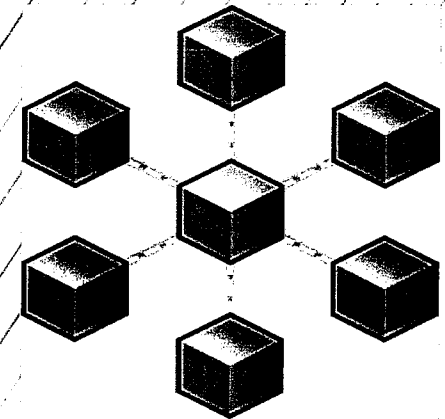
Smart Grid Communications

- 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



Third (3rd) Party Integration

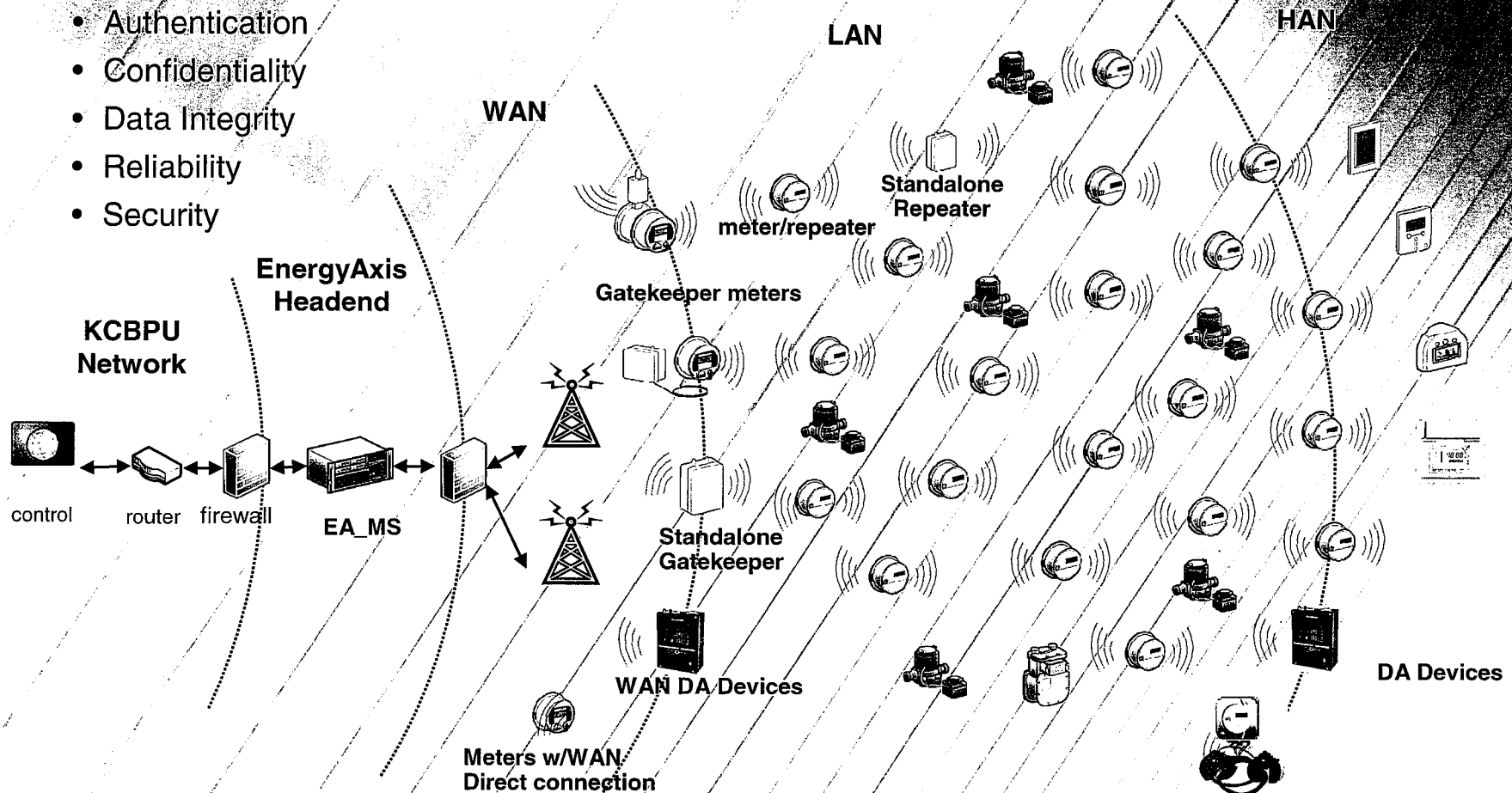
- AMR/AMI
 - Elster Headend
- Customer Information System
 - Harris “Cayenta”
- Meter Data Management System
 - eMeter
- Outage Management System
 - Milsoft “Dispatch”
- Demand Response
 - Honeywell Thermostats
- ESB Integration Software
 - Software AG



Structure of EnergyAxis

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

- Authentication
- Confidentiality
- Data Integrity
- Reliability
- Security



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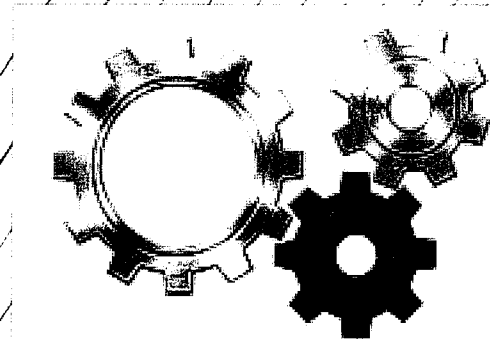
Key Factors in Determining Plan

- Conduct thorough planning process
- Plan had to improve operations/cut costs
- Needed more than just a meter reading system
 - Data collection from all customers
 - Integration with other systems
 - Replication of events on the system
- Ability to access load & water usage
 - Reporting / Business Intelligence
 - Events & alerts
 - Web portal / customer



Business Plan Objectives

- Create technology business & financial plan
- Engage multiple vendors through competitive bids
- Measure cost reductions (ROI)
 - Remote functionality/Less drive time
- Enabling smart grid technologies
 - CIS, MDM, OMS, DA, DR / interoperability
- Interact with customers
 - Present usage data via web portal
 - Support energy efficiency
- Improve operational planning



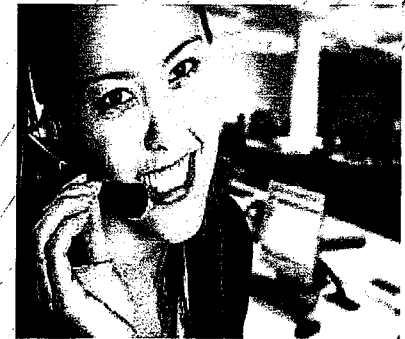
Utility Benefits

- ✓ 15 minute interval reads
- ✓ Upload load profile data every 6 hours
- ✓ Real time forecasting
- ✓ Reduced operating costs
- ✓ Perform remote connects/disconnects
- ✓ Rapid notification of outages
- ✓ Water leak detection
- ✓ Support distribution automation
- ✓ Realign staff to cover critical service areas
- ✓ Network analytical tools
- ✓ Improve environmental footprint
- ✓ Tamper and theft detection
- ✓ Voltage/transformer monitoring



Customer Benefits

- ✓ Quickly obtain recent usage
- ✓ Two-way communication
- ✓ Improved customer service
 - ✓ Speeds up all transactions
 - ✓ Flexible billing options
- ✓ Eliminate meter reading errors
- ✓ Identify days of high electric & water usage
- ✓ Enable demand response programs
- ✓ No need to access customer premise
- ✓ Launch customer portal
- ✓ Specialized customer care to Key Accounts
- ✓ Reducing outage related costs for customers
- ✓ Efficient management of energy use
- ✓ Pre-pay



Schedule Metrics



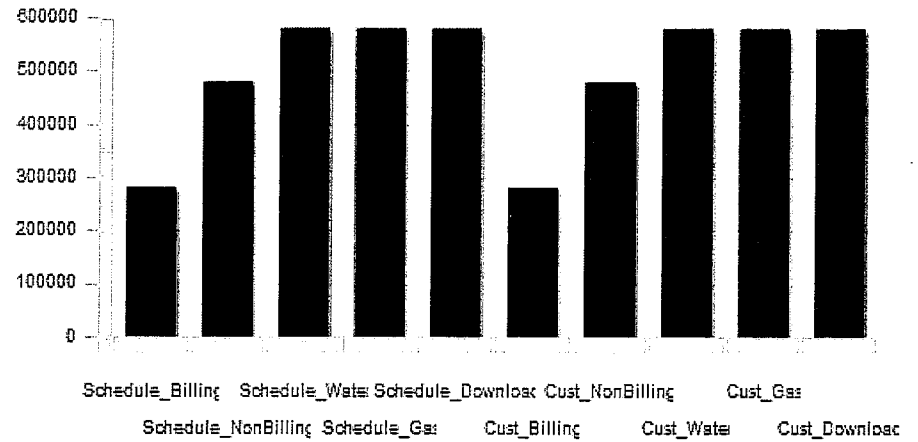
Show Details

Name	Meter Read Status			Success/F...
	State	Errors	Tampers	
Schedule_Billing	2	3	1	92/18
Schedule_NonBi	2	5	1	160/40
Schedule_Water	10	5	3	475/25
Schedule_Gas	10	8	5	790/40
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

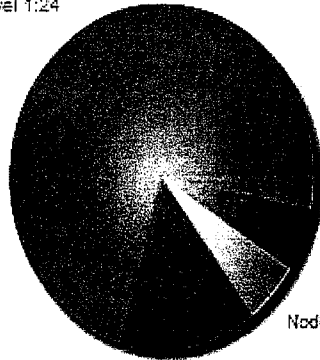


System LAN Metrics



System LAN Metrics

Node Level 1:24



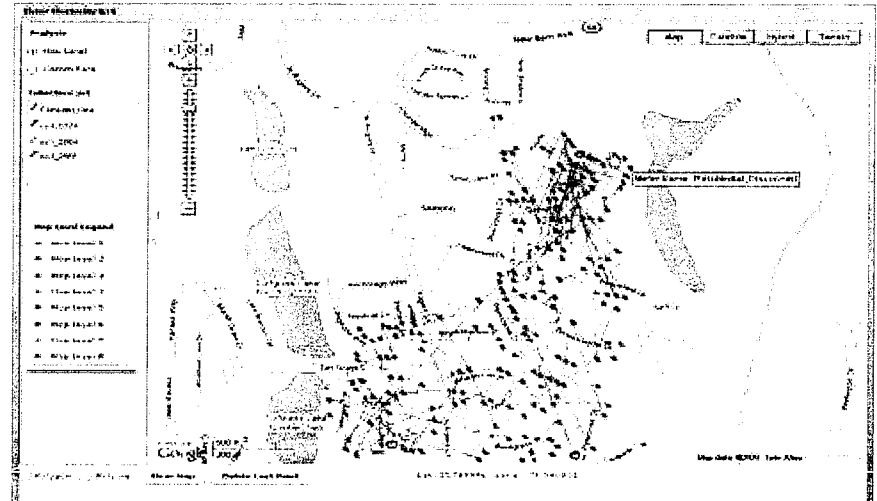
Node Level 5:1

Node Level 4:2

Node Level 3:2

Node Level 2:5

GIS Mapping



Demonstration Energy Engage: Engaging Consumers

- **Leading Consumer Engagement**

Integrated into utility CIS

Encouraging peak load reduction

Proactive demand response

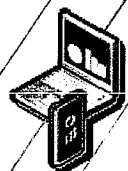
Variable pricing promotions

Consumer collaboration for conservation

Improved customer support through education

The screenshot displays a user interface for 'Energy Engage' with the following sections:

- Navigation:** Home, My Energy, Alerts, Profile
- Alerts:** Scheduled Maintenance Outage for your service on Monday, JUL 29
- Welcome Back, Annabelle Lea:** Account # 246721209, Current Bill Per JUL 04-AUG 03, Last Payment: received JUN 28, Your Balance: Due by JUL 30
- Compare Usage:** A bar chart comparing 'Neighbors' (80 kWh), 'Your Use' (120 kWh), and 'Efficient Neighbor' (54 kWh). Includes a 'Details' link.
- Costs to Date:** \$1.87 projected, Current Costs \$112. Includes a 'Details' link.
- Energy Usage:** Usage is up 132%. Includes a 'Details' link.
- Environmental Impact:** 16 Propane Tanks. Includes a 'Details' link.
- Additional Information:**
 - Your pricing plan is currently set for Time Of Use (TOU).
 - This billing period so far compared to last billing period at this time.
 - Burning this much propane equals your impact within this bill period.
- Energy Tips:**
 - Keep It Cool:** 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 Savings Tips](#)
 - Consumption At A Glance:** Though accounting for only 5 percent of the world's population, Americans consume 26 percent of the world's energy. [More Usage Tips](#)
 - Renewable Energy:** Within renewable energy generating enough to power 40 million homes and offset 70 days of oil imports. [More Green Tips](#)
- Bottom Right:** **Reduce Your Impact** section with a globe icon and text: 'Within 15 years, renewable energy could be generating enough electricity to power 40 million homes and offset 70 days of oil imports. [More Green Tips](#)'



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A spike in your usage occurred on Monday, JUL 29

Settings

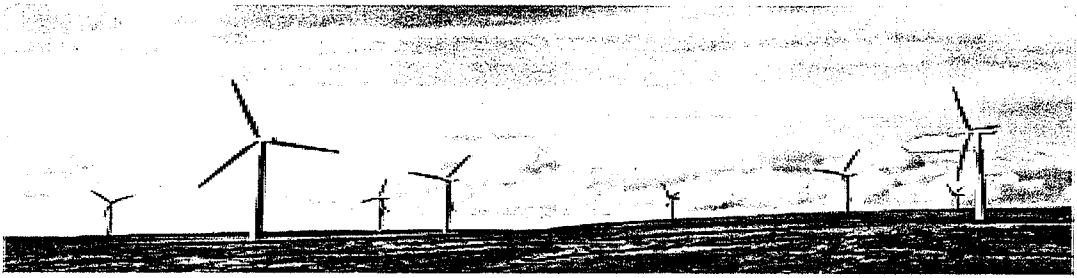


Photo caption can go here

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

[Details](#)

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

Cut Costs



Keep It Cool

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

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

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

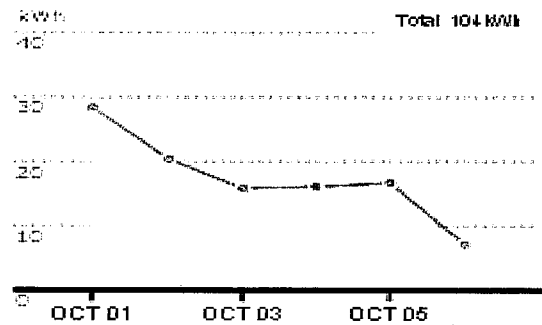


Energy Usage

Average Usage

Carbon Impact

My Energy Usage



What should I be looking for?

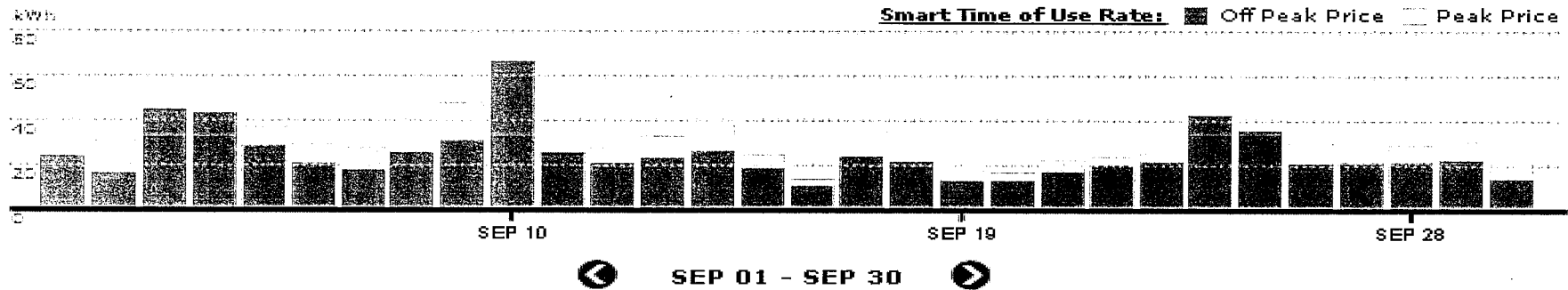
Look at your usage during times that you aren't using power; on vacation (days) or asleep (hours). This usage might be attributed to things that are running that don't need to be.

Now, ask yourself these questions:

- Do these things need to be on during those times?
- Could a timer/outlet be a worthwhile purchase to manage these appliances during off hours?

My Usage Details

Zoom: 1 Day 1 Month 12 Months Max



Date	Off Peak Price	Peak Price	Total
SEP 01 - SEP 30	763.2	165.9	929.1

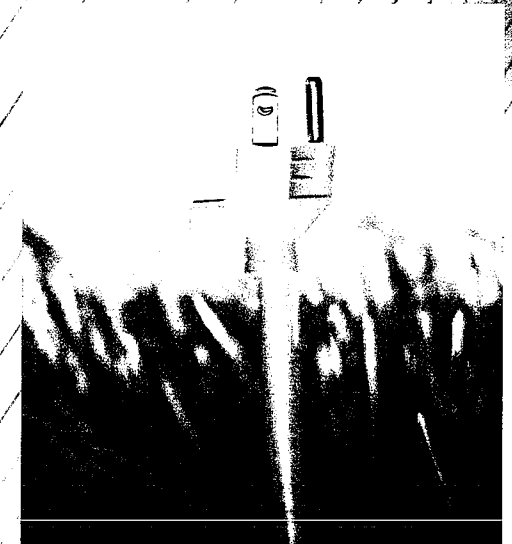
Note: Totals may not add up due to rounding.

More Details

Feedback

What is a Smarter Grid for KCBPU?

- **Empowering consumers/consumer response**
 - Choice: Billing options, rates, source of supply
 - Information: Education, usage, projections, notice
 - Response: Outage management, move in/out
- **Efficiency improvements**
 - Distribution optimization
 - Asset management
- **Empowering future applications**
 - Distributed Generation
 - Electric Vehicles
 - Load control



Thank You

Questions?

