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MEAM Conference, Jiminy Peak
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Agenda

- Utility Drivers
- AMI Overview & Benefits
- Q&A

UTILITY DRIVERS

- **Resource management**
  - Peak power reduction
  - Conservation
- **Infrastructure management**
  - Extending the life of existing infrastructure assets
  - Enhanced targeted maintenance activities
  - Improved prioritization of investments
- **Customer Engagement**
  - Access to timely and reliable usage information to consumers
  - Education through information

CUSTOMER ENGAGEMENT

Emerging demand for customer interaction

Why is my bill so high?

Why didn't you tell me that I had a problem before my bill went up?

WHAT CAN I DO TO SAVE ELECTRICITY?

I don't understand my bill

Can you show what I consume?

How can I reduce my carbon footprint?

CUSTOMER SOLUTIONS REQUIRE TIMELY DATA

- **Acceptance, and expectation of higher utility interaction demand new engagement strategies**
  - Customers want to know what ***IS*** happening and not what ***DID*** happen
- **To support efforts to be Green, need more timely information:**
  - Reducing electricity reduces carbon footprint
  - Regulators at state and national levels are demanding that utility initiatives support social imperatives

WHAT TYPE OF INFORMATION ARE USERS INTERESTED IN?

- **Graphs which reflect a home's monthly electricity usage**
  - Identifies long term trends
- **Tools that provide estimated savings for different electricity-reduction initiatives**
  - Identify options and costs
- **Comparison of use versus neighborhood average**
  - Desire for peer usage comparison
  - Spurs efficiency in electricity

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AMI Overview

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EVOLUTION OF METERING

Metering technology capability has evolved over time:

- **Manual:** Mechanical accumulation meters, manually read, single consumption per meter read
- **AMR:** Mechanical accumulation meters, drive-by or remote meter reading, single consumption per meter read
- **AMI:** Pulse or time interval based consumption measurement, drive-by or remote meter reading, multiple consumption values within a day's consumption
- **AMI:** Addition of 2-way communication capability

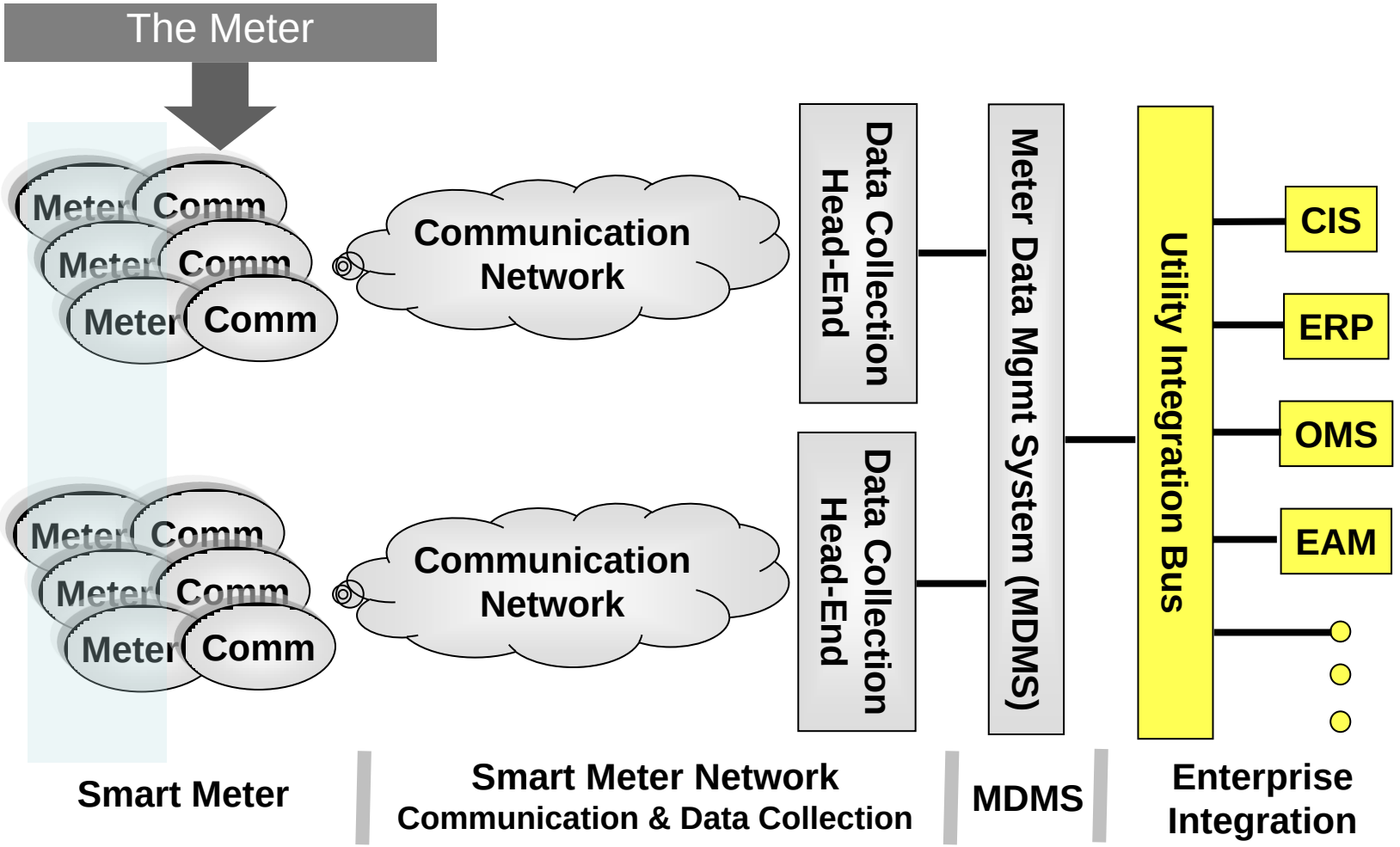
AMI (SMART METERING) IS …

- **A program comprised of integrated solutions**
  - A platform for metering and non-metering information
  - A foundation for other initiatives
  - A Focus on high customer engagement
- **Capable of providing**
  - An underlying two way communications network
  - Interval data – 15 minute, hourly, etc.
  - Quality of Service information
  - Information management solutions
- **Attributes**
  - A connection to the consumer
  - Massive amounts of data
  - Dependence on communications networks to facilitate interconnection of smart devices and systems

WHAT IS AMR

- **A pure meter reading system**
  - Data comes back as frequently as you roll a truck
  - A Focus on basic meter reading
- **Capable of providing**
  - Monthly meter reads
- **Attributes**
  - No communications network
  - 1 way communication from meters
  - Low amount of data
- **Cost**
  - Used to be much cheaper than AMI, cost difference has come down immensely –> harder to make a cost savings argument

SMART METER SOLUTION



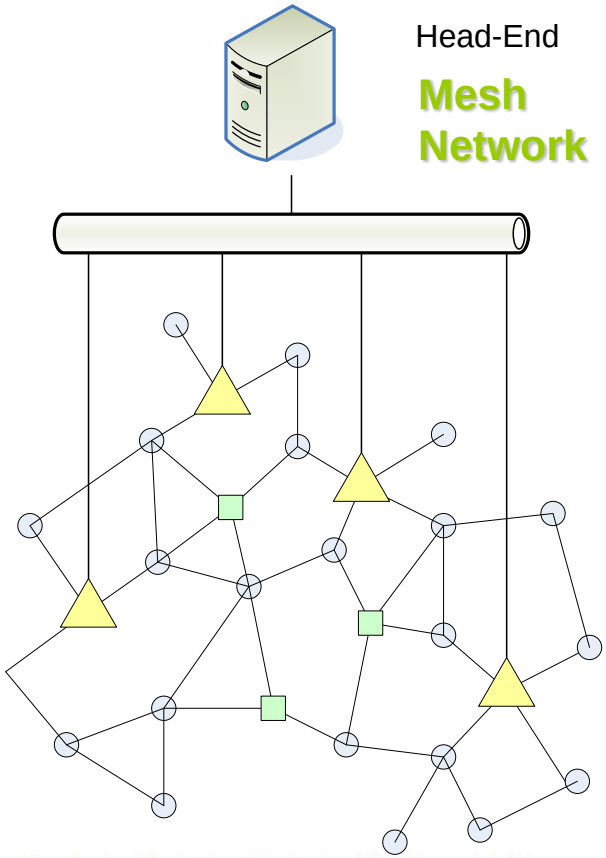
Smart Meters

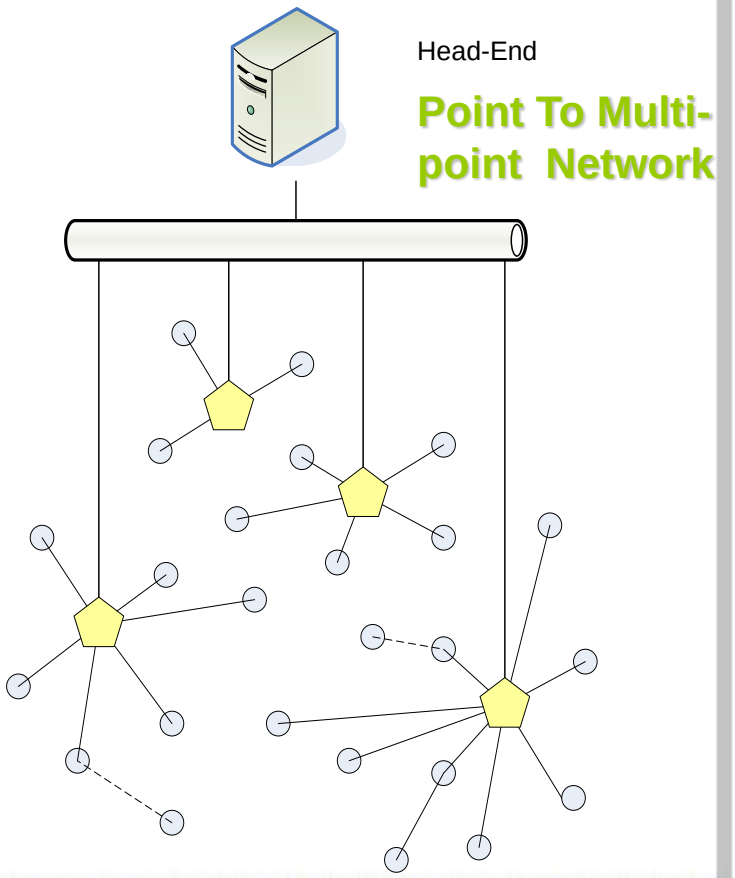
It isn't just about the meter! They are important, but……

It is about the network and software!

COMMUNICATIONS NETWORK

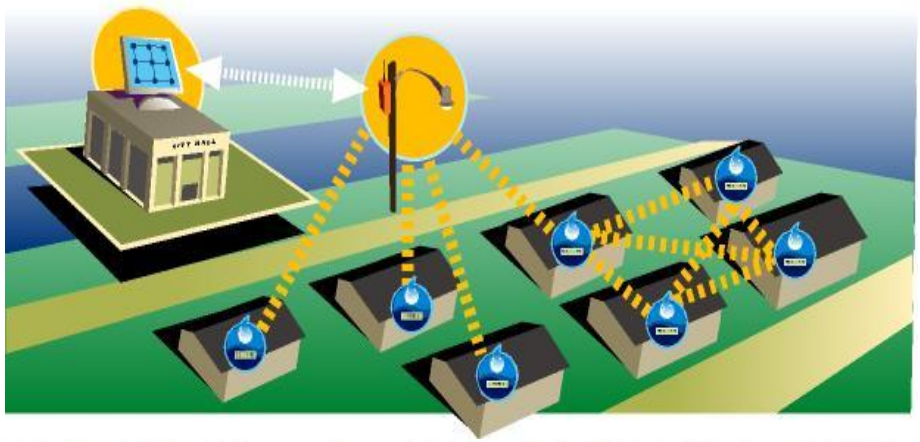
Two leading types of smart meter communications architectures in use across all commodities:





Multi-Path Network for Reliability

- Data " hops" from meter to meter to extend range and alternate paths
- *Controlled* Multi-Path network
  - Collector sets up the local network
  - Any meter can be a repeater
  - Algorithms emphasize path
  - Reliability to each meter, during and after registration



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AMI OPERATIONAL EFFICIENCY BENEFITS

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Meter Reading

- Reduced meter reading costs
- Better read accuracy
- Exception reporting
- Asset management
- Automated move in/out (turn-on/off)
- Alerts and messaging

Revenue Management

- Identification of electricity theft
- Reduced billing adjustments
- Improved credit and collections
- Time of Use (TOU) rates

Planning

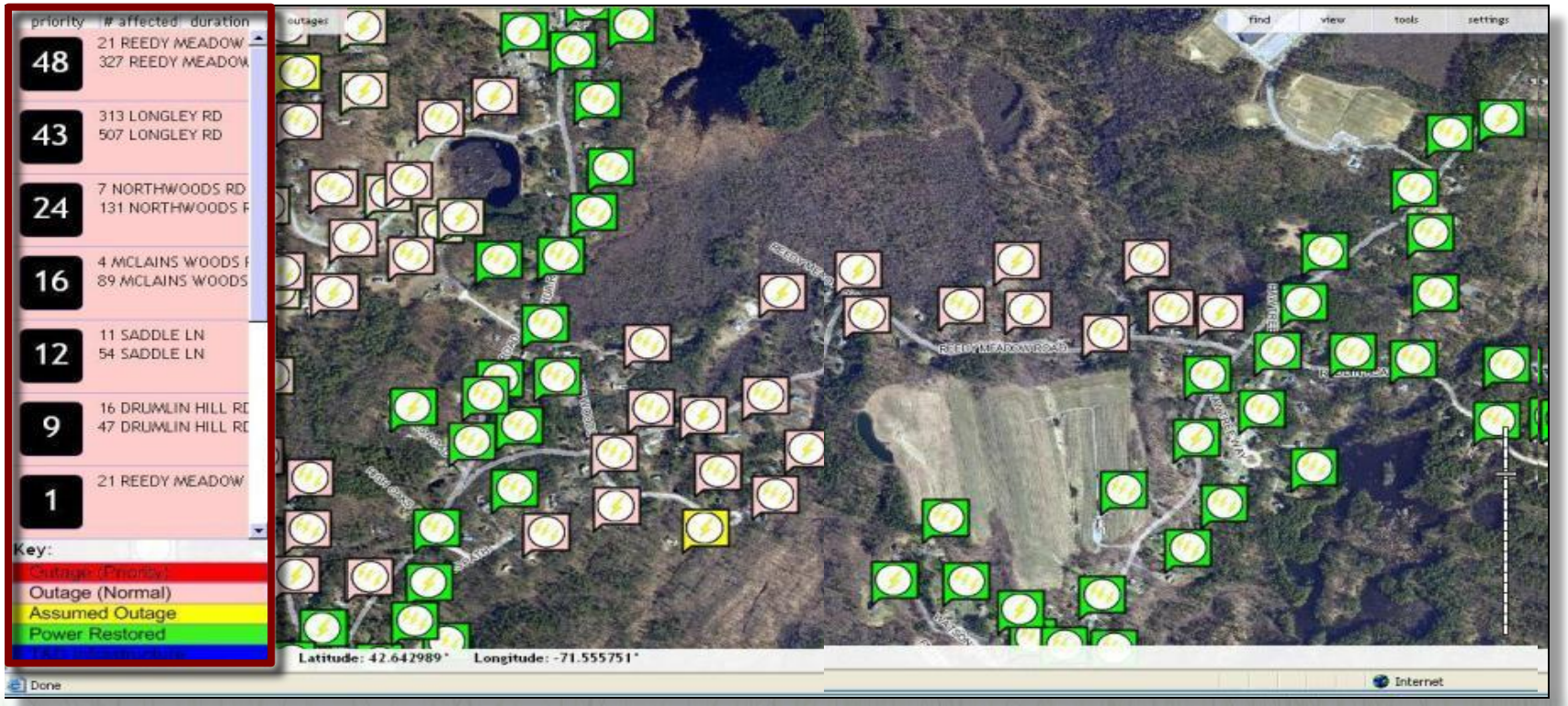
- Capital and O & M expenditure budgeting

Cost & Loss Management

- Reduced employee accidents
- Demand Response programs

Outage Notification

- GIS Tool—Plotted Notifications
- Full outage list shown for sorting and prioritizing work



Transformer Loading

- To Identify Potential Overload Failures
- Sum Hourly or Daily Load and Compare with Threshold

Transformer Loading Reports

Select Report: Peak Transformer Load During Time Frame (Hourly)

Date / Time Range: 07/01/10 12:00 AM through 09/01/10 12:00 AM

View Report

Export to Excel

STATUS	TRANSFORMER NUMBER	TRANSFORMER LOCATION	PEAK HOUR	RATING (KVA)	LOAD (KVA)
	205	COW POND BROOK ROAD (POLE 9)	07/06/2010 7:00 PM - 8:00 PM	15	16.35
	206	CULVER ROAD (POLE 1)	07/06/2010 5:00 PM - 6:00 PM	5	6.86
	207	CULVER ROAD (POLE 7)	07/06/2010 5:00 PM - 6:00 PM	10	11.01
	208	CYPRESS ROAD (POLE 2)	07/14/2010 1:00 PM - 2:00 PM	15	21.20
	209	DALE LANE (POLE 3)	07/06/2010 7:00 PM - 8:00 PM	15	15.10
	210	DOROTHY PLACE (POLE 1)	07/30/2010 11:00 AM - 12:00 PM	15	12.09
	211	DOROTHY PLACE (POLE 2)	07/30/2010 12:00 PM - 1:00 PM	25	16.45
	212	DUCK POND DRIVE (PAD 15)	07/14/2010 2:00 PM - 3:00 PM	15	24.32
	213	ELM STREET (POLE 2)	07/06/2010 4:00 PM - 5:00 PM	15	18.50
	214	ELM STREET (POLE 3)	07/06/2010 4:00 PM - 5:00 PM	25	19.71
	215	ELM STREET (POLE 3)	07/06/2010 4:00 PM - 5:00 PM	15	19.65

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AMI Software

Operational Efficiency

- Demand Response
- Outage Support
- Leak Detection
- Disconnect - Reconnect

Consumer Awareness

- Consumer Portal
- HAN – ZigBee
- TOU - Billing Determinants
- Alerts & Notification

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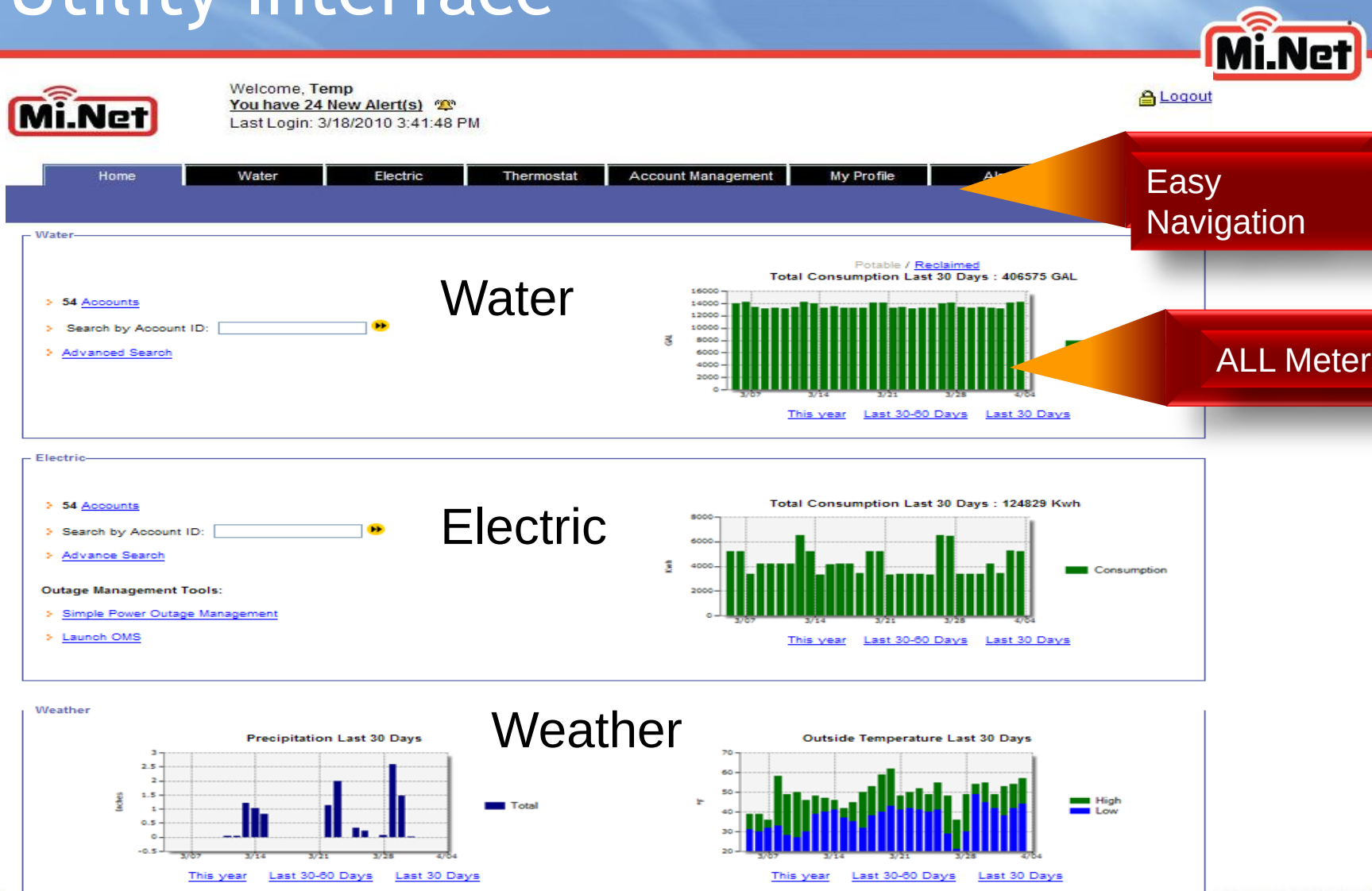
Utility Interface



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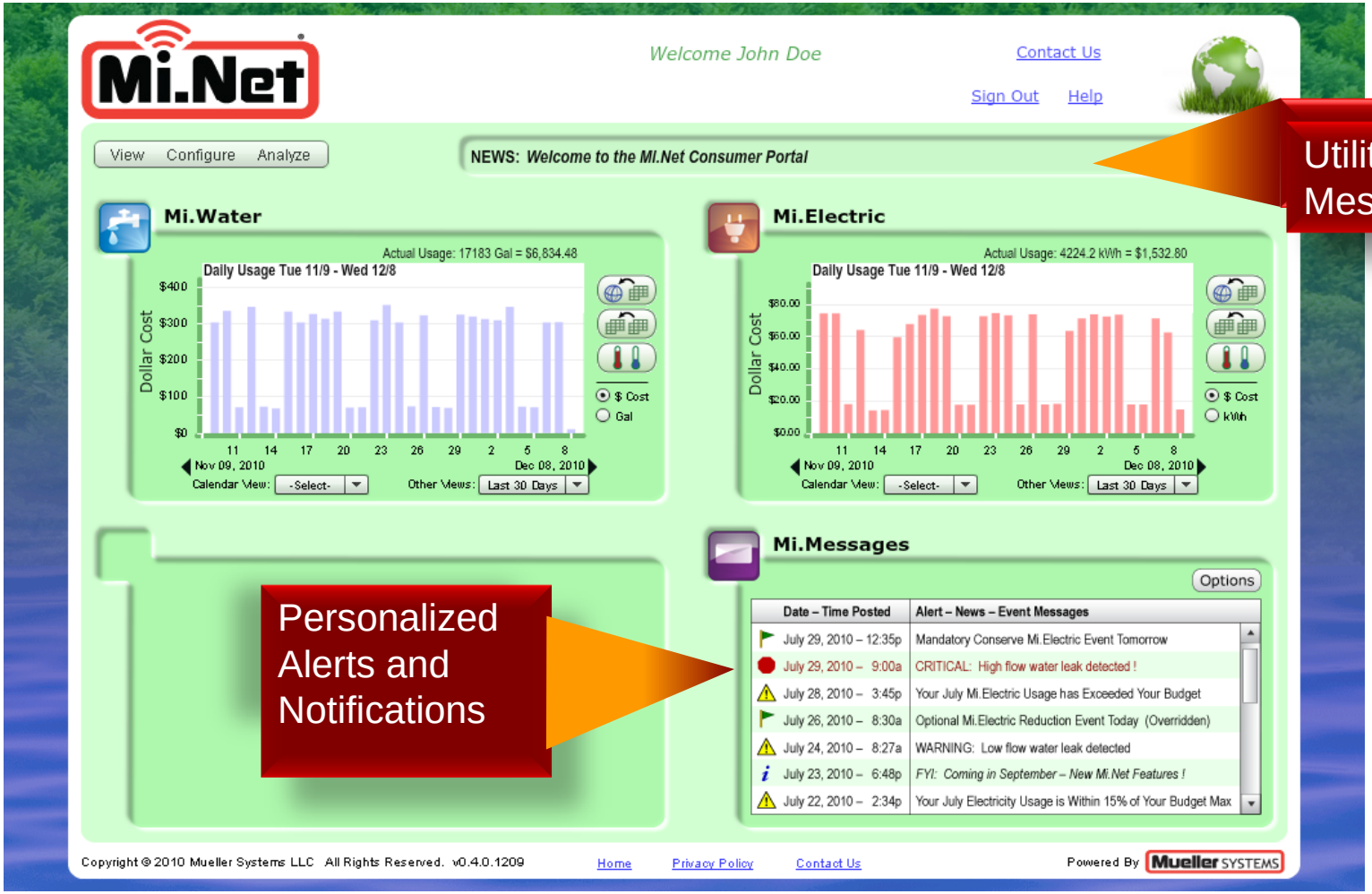
AMI CUSTOMER SERVICE BENEFITS

- Enhanced billing accuracy
- Allows changes in billing cycles
- Efficient resolution of bill inquiries (high bill complaints)
- Conservation and efficiency
- Timely identification of customer premise leaks
- Customer information (portal)
- Pay-as-you-go or pre-payment options

Consumer Portal



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Questions?

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