Your Trusted Partner in Customer Engagement
Your Presenter Today: Joel Gilbert

BS and MS in Chemical Engineering
MS in Operations Research and Statistics
Rensselaer Polytechnic Institute
Licensed Professional Engineer

6 Yrs nuclear attack submarine power plants

6 Yrs at the Hospital Association of NY State

6 Years at MTI advance heat recovery systems

30 Years serving the Energy Utility Industry!
But did you really know...

23 years in business

90+ client retention rate

Serving over 600 US utilities

“Apogee’s Customer Engagement Platform is the most comprehensive in the industry.

It reaches customers in so many ways by educating and providing personalized and meaningful information to change behavior while providing utility clients with business analytics to make good business decisions.”

Navigant 2015
MyMeter + EEme = Even Greater Savings. MyMeter Users Can Now See How Much Energy Each Appliance in Their Home is Using and How Much it is Costing Them

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Source: PRWeb

Technology companies EEme and Accelerated Innovations today announced that they will be teaming up to provide customers with unparalleled home energy analytics. Using EEme's Machine Learning platform, a state-of-the-art technology that turns raw smart meter data into actionable insights, MyMeter users will be able to see exactly how much each appliance is affecting their home's energy use and bill.
Oh boy, I can’t wait to see my smart grid data!
What percentage of your customers routinely look at their smart grid data?
Today’s Agenda: Relevance!!!

• Where your data should appear?
• What do customers want to know?
• Data disaggregation methods available
  - Bills alone, hourly, 15 min, and 5 min data
• Tips, alerts and alarms
• Using personalized video messaging
• Add temperature analytics to the mix

rel·e·vance
\'re-lə-vəns\ noun
the quality or state of being closely connected or appropriate.

relevance in Technology . . .
information science
A measure of how closely a given object (file, web page, database record, etc.) matches a user’s search for information.
The Search for Relevance...

Maslow’s Hierarchy

Traditional
The Search for Relevance…

Maslow’s Hierarchy

Today
Today is about messaging approach …

• Please register for our next webinar …
• Susan and Suzanne will cover content
• And both dive into personalization
Put meter data w/bills and offer COST forecasts!
Stormy Weather Ahead
ENERGY FORECAST - ELECTRIC COST

YOUR PROJECTED ELECTRIC COST FOR THIS WEEK IS $26
Why do you think most customers want to see smart grid data
One hot summer day in Denver – 5 minute data
Same hot summer day in Denver – hourly data
But, see what happens when it is hot overnight!
Why thermal monitoring is better
What can you do with Bills alone?

- More than you might think
  - Especially if you link to tax records
- One year of monthly bills
  - Size of heating and cooling energy
  - Thermostat settings
  - Size of remaining energy use
- Locate along your feeders
  - Alleviate stress
  - Defer feeder/substation upgrades
Heating Season Analysis Results

~ 65% hold 68 F
Cooling Season Analysis Results

- ~30% hold < 72 F
- ~15% hold 78 F

Percent of Customers with that Tstat Temp or Lower

Cooling Tstat Setpoint

0 20 40 60 80 100

60.0 65.0 70.0 75.0 80.0 85.0 90.0
The key to harnessing the introduction of DERs to the system (EE, DR, Solar, Storage, CHP, Electric Vehicles) is **finding their true locational value** … Understanding this value can enable utilities to develop more cost-effective programs that maximize real world benefits.
Target Feeders/Substations
Target the best opportunities
What can you do with smart grid data?

- Very little with integer reads
- A lot with 15 minute data
- Less with hourly data
- Beware of false positives and negatives
  - e.g., PSA tests for men
- Can characterize house use patterns
- Hourly coincidence with high value
  - If CPP, TOU, RTP this is easy
  - With demand charges … not easy
When you have the content … use video!
Survey Says..

Sending monthly
46% Open Rate
30% Click-thru Rate
97% Easy to Understand
90+% Useful

Ideal Frequency
72% Monthly,
27% Quarterly
99%

1,000s wrote verbatims
99% extremely positive
alerts
Proactive Alerts

- **80%** • Want Alerts
- **67%** • Check for alerts even when phone isn’t vibrating
- **44%** • Sleep with their phones so to not miss alerts and calls

Source: Pew Research Center 2015
Energy Alerts

• Alerts based local weather, rates, and billing data
• Send mid-cycle email or text
• Customers set alert parameters
• Customers learn how:
  - Seasonal rate changes, weather, days in cycle affect bills
  - To avoid high bills *before* they happen
Hello, Jonathan
ACCTR: 1234567890

$423

YOUR ESTIMATED BILLING FOR THIS MONTH
$415
$430

MAJOR BILLING FACTOR
WHAT HAS CHANGED?

83%
IN COOLING

↑ UP 14% SINCE AUG

93° AVG Temp
5% HIGHER

17 Days Hotter
2 MORE SINCE AUG

SOME TIPS TO IMPROVE

Adjust Your Thermostat
It is a long established fact that a reader will be distracted by looking at its layout.

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Mid-Cycle Bill Alert
Precision Temperature Monitoring

Reinventing Energy Engagement
Apogee Software Calculates On and Off Cycles
Note First Part of Off Cycle vs. Last Part of Off Cycle

Use all data when HVAC is ON

Use first half to solve for OFF time

Use last half of the “coast” period to solve for ON time
Nothing to Install  Just stick it to the wall!

Web Service APIs in Cloud Environment

Blue Tooth or Cellular/SigFox

Customer Experience

HVAC PERFORMANCE

SHELL PERFORMANCE

BEHAVIORAL PERFORMANCE

Utility/Auditor Experience
No Wi-Fi needed in home!
No Utility IT Requirements!
No Cyber Security Issues!
Everyone has a thermostat …
But no one knows what it is doing … until now!

“Everyone talks about the weather, but no one does anything about it.”
- Mark Twain

“Until now!”
- Joel Gilbert, Apogee Interactive, Inc.

Every home and business has a thermostat, yet no one really knows what it is doing ... at least until now. Yes, the energy industry has focused on controlling thermostats for three decades from load-control switches and time-of-use rates to smart thermostats, but even here customers have had almost no information about what the thermostat was doing.

Even today's most sophisticated whole-house management systems offered by Lowe's, cell phone, and cable TV companies tell you almost nothing about the way the thermostat is operating. Apogee's Chief Software Architect Joel Gilbert will unveil a new concept with the power to revolutionize the way the world thinks about heating, cooling, and water heating loads, the way consumers view and manage these costs, and the way home energy efficiency retrofits are monitored for results.

JOEL GILBERT is a nationally recognized strategist in energy master planning, energy marketing and sales, and implementation of energy efficiency and productivity measures. He has been retained by hundreds of electric and gas utilities and industrial and commercial firms across the United States.

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by Author Joel Gilbert, P.E.
“The heartbeat of the home”℠

The Energy Industry is desperate for performance metrics!

- Conclusive Shell statistics
- HVAC SEER/AFUE statistics
- Trends and alerts to identify
  - Refrigerant leaks
  - Filter replacement
  - Thermal changes
  - Comfort challenges
  - Weatherization effects
Current PTM Devices talk to Smart Phones

- Large area on face for Utility Branding
- Light flashes green when logging and blue when being read
BLE to Ethernet

Cellular and SigFox
House 1: 1948 1,663 sf

House 2: 1959 852 sf

House 3: 1975 1,236 sf

House 4: 1987 2,200 sf

Temperature Change Rate (% of Delta T/Hr)
Here is the output from Apogee’s PTM software showing AC cycles and analysis

From 12 noon to 6 pm the AC ran 48.4% of the time.
The average indoor Air Temp was 71.4 F during that time.
The average outdoor Air Temp was 96.3 F during that time.
Bill analysis indicates 2.13 kWh per CDD = 2.44 kWh this pm
Given 48.4% on time, the AC is running just about 5.0 kW/hr
If this is a 4 ton unit, it is running 1.25 kW/Ton = 9.5 SEER
If this is a 3.5 ton unit, it is running 1.44 kW/Ton = 8.4 SEER
And if it is a 3 ton unit, it is 7.1 SEER

What you see here are all the “cycle” inflection points automatically detected in the PTM trace. Each point is analyzed in time to determine start/stop cycles plus TCRs between cycles.
From This You Can Infer kW

You can deduce minute by minute details in energy use.

AC Ran Fully For One Hour
Let’s Truly Drive Innovation

• New customer engagement channel
• Better targeting EE and DR activities
• Makes smart grid data understandable
• The first inexpensive Internet of Things (IoT) channel for the home
• Optimize utility business practices
• Increase electricity service margins
• Build out the business case for big data and analytics with real results