



# 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

March 29, 2017 · 115 views · [start a discussion](#) · [follow](#)

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.

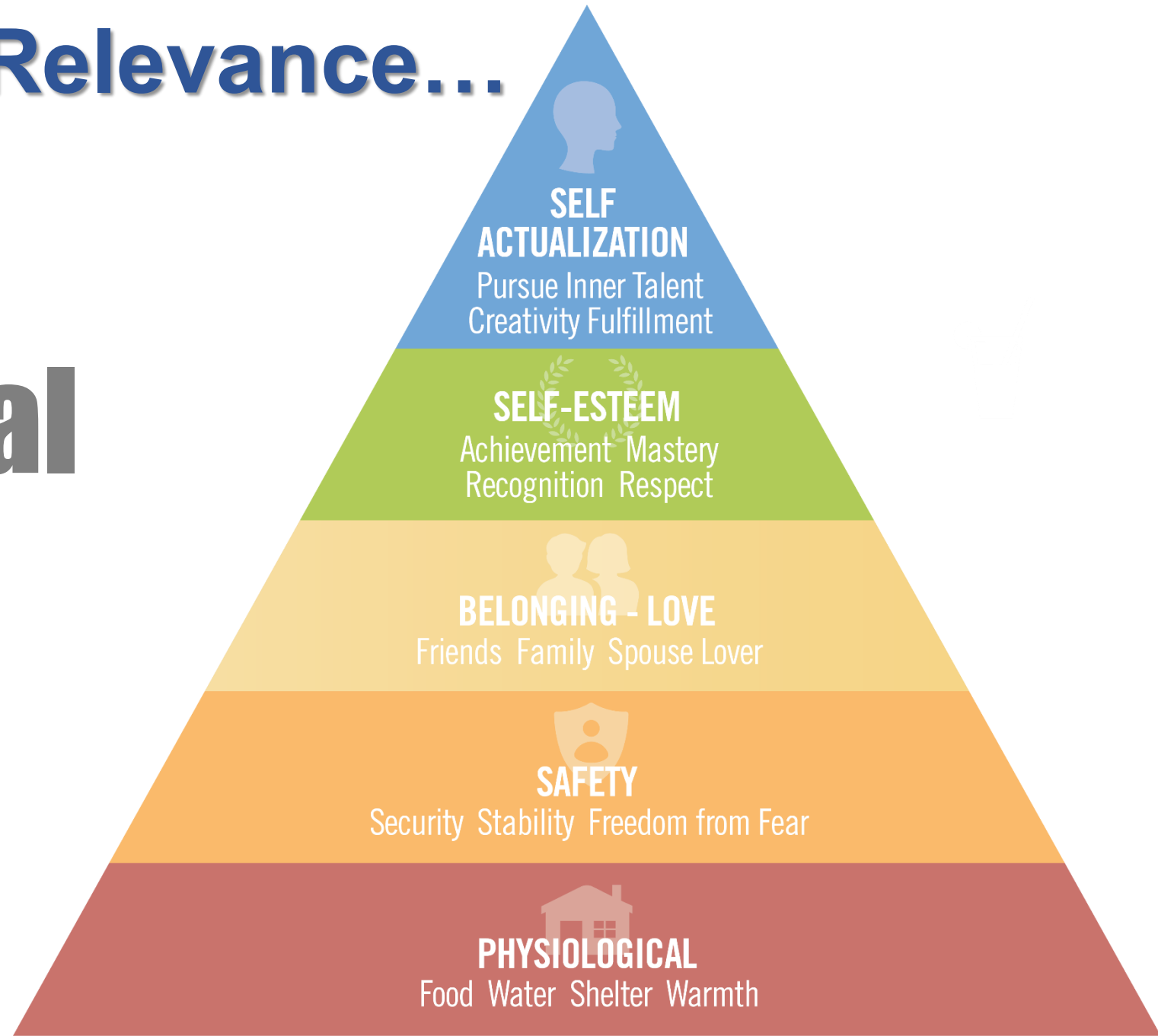
**relevance in Technology . . .**

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...

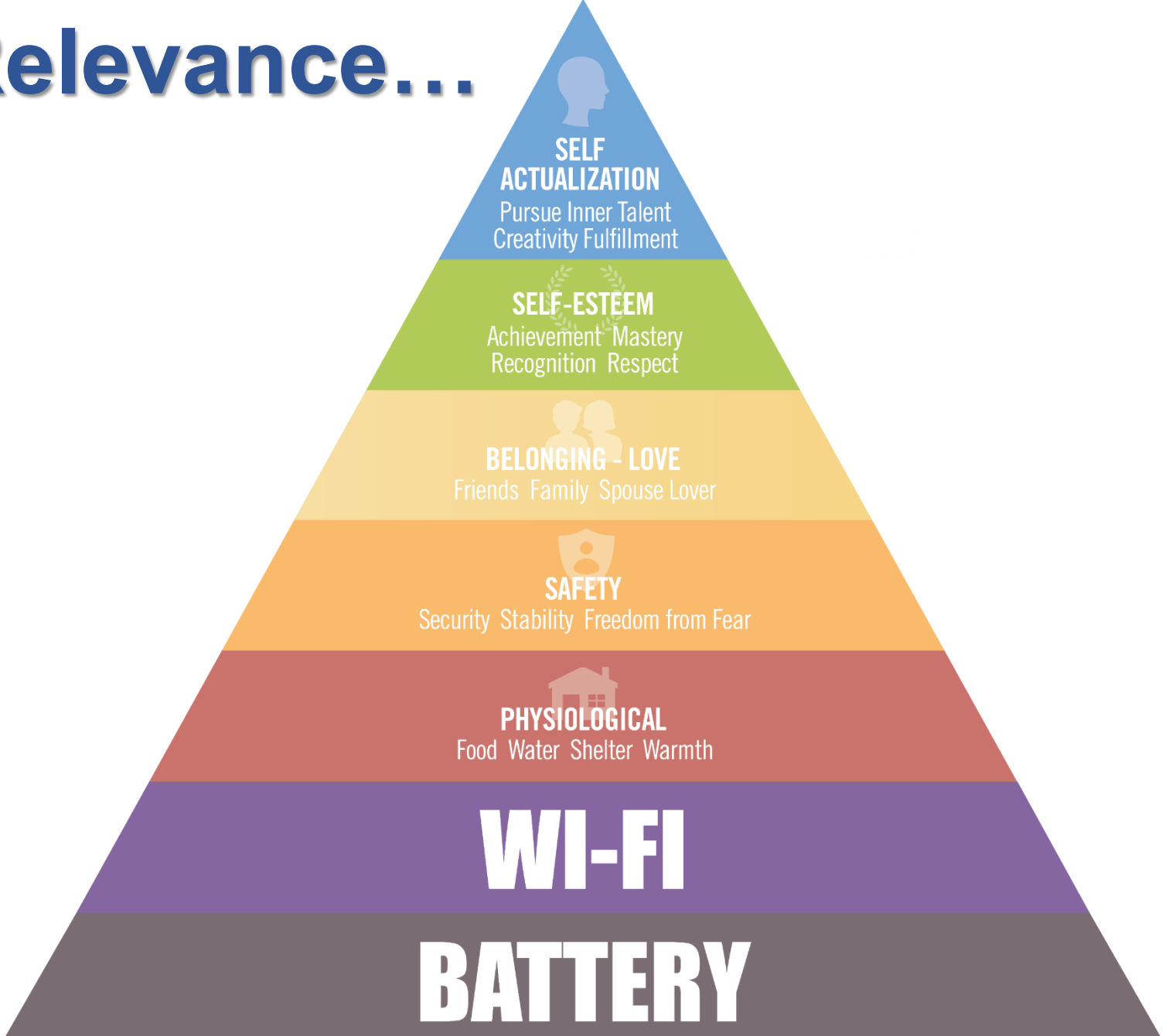
## Maslow's Hierarchy **Traditional**





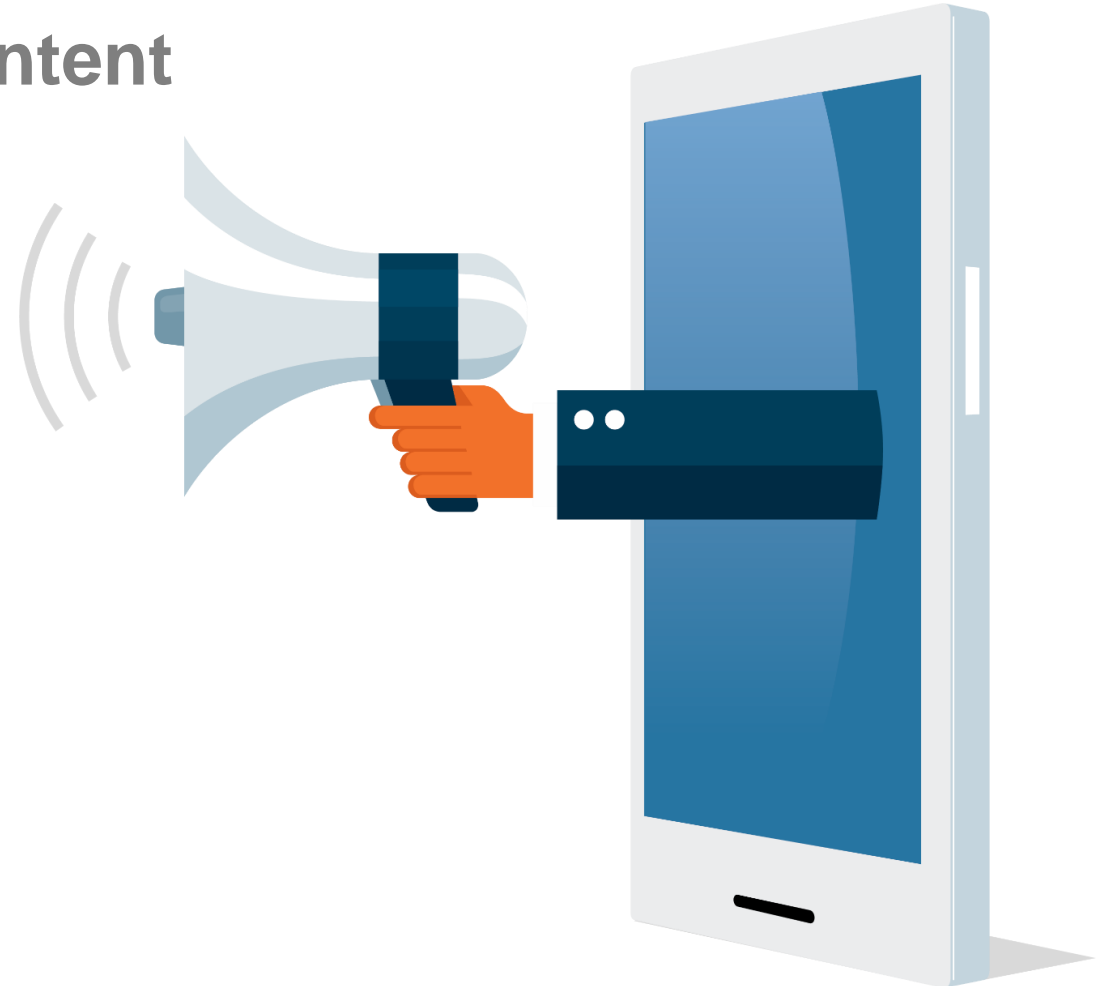
# The Search for Relevance...

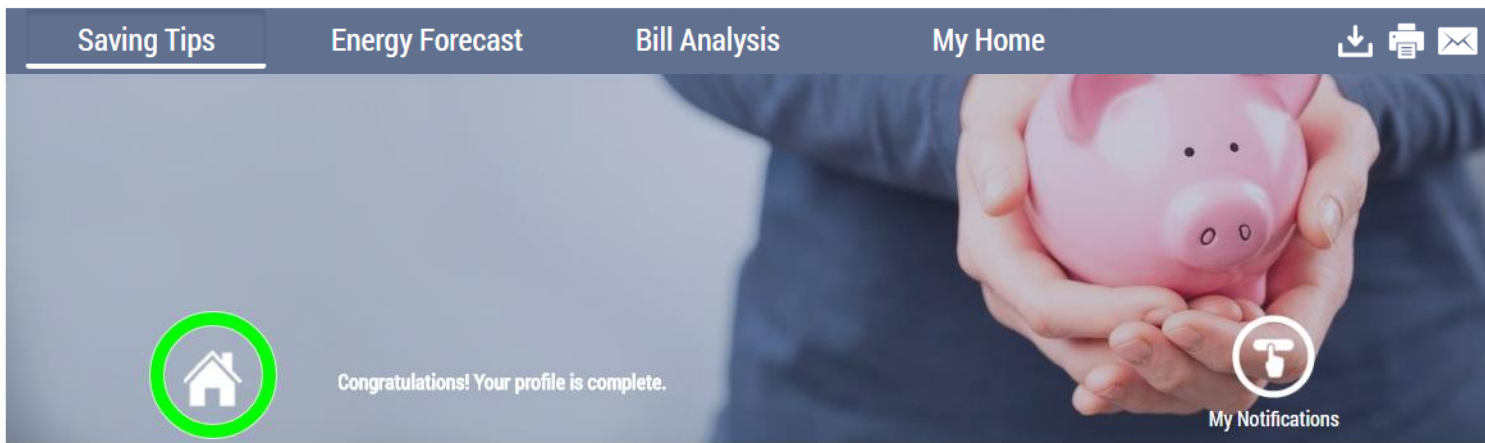
## Maslow's Hierarchy **Today**



# Today is about messaging approach ...

- Please register for our next webinar ...
- Susan and Suzanne will cover **content**
- And both dive into personalization

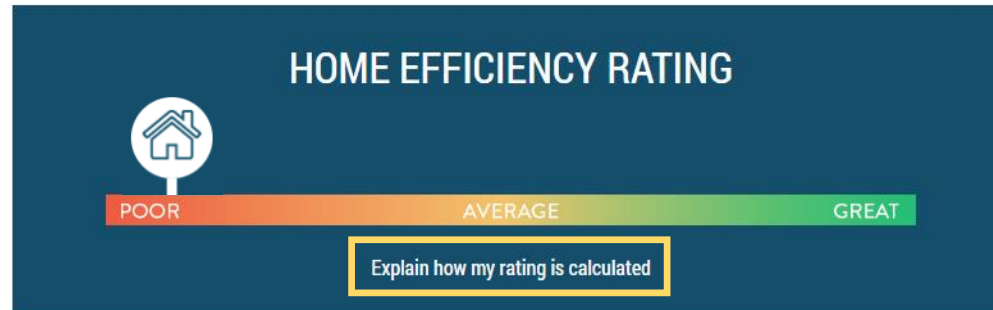




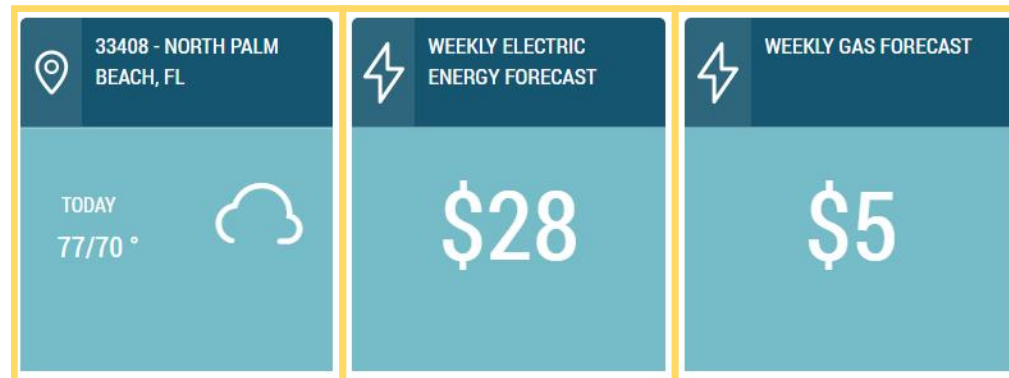
Record ID: 3734485

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E  
E  
D  
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▶

Home Efficiency Rating

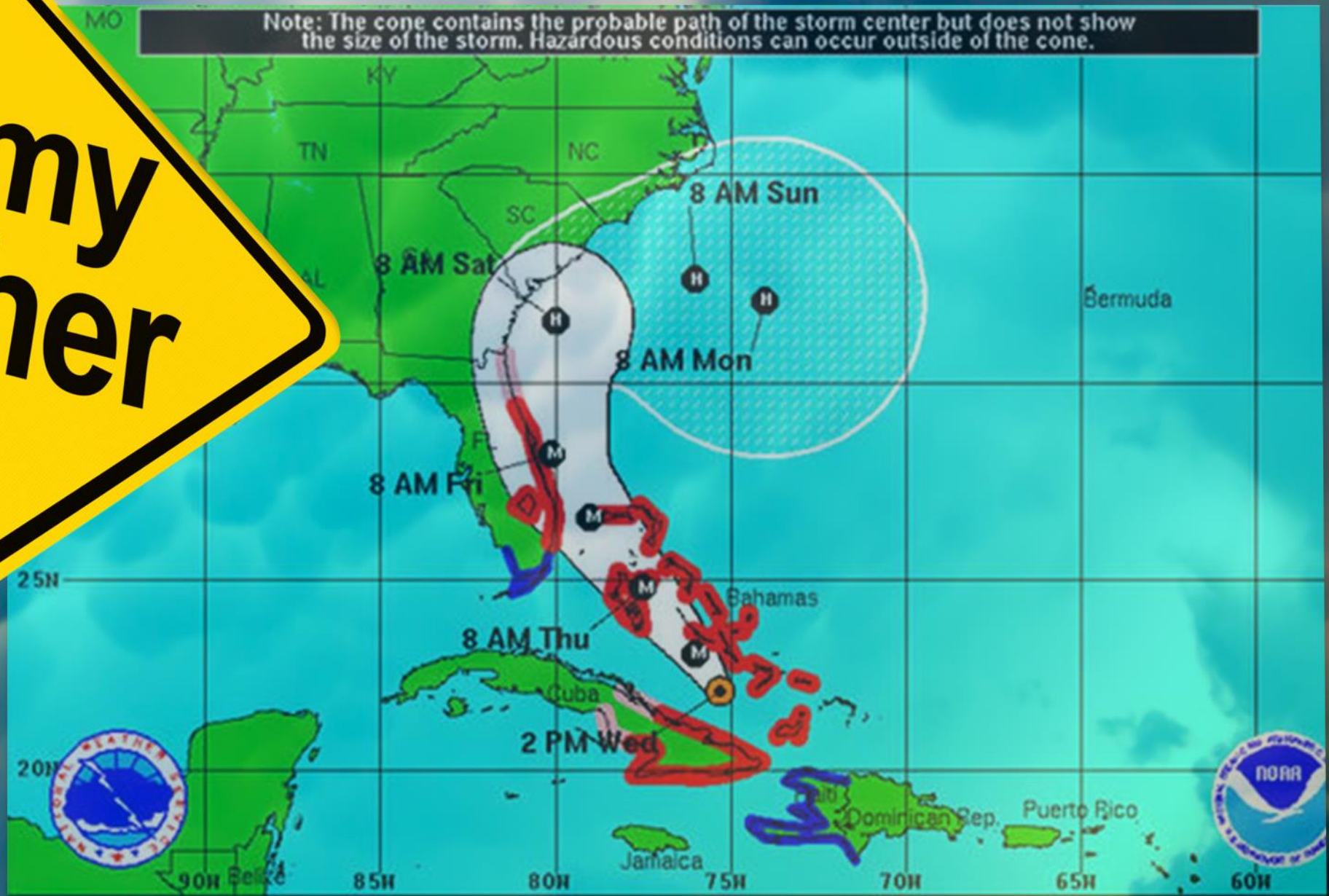


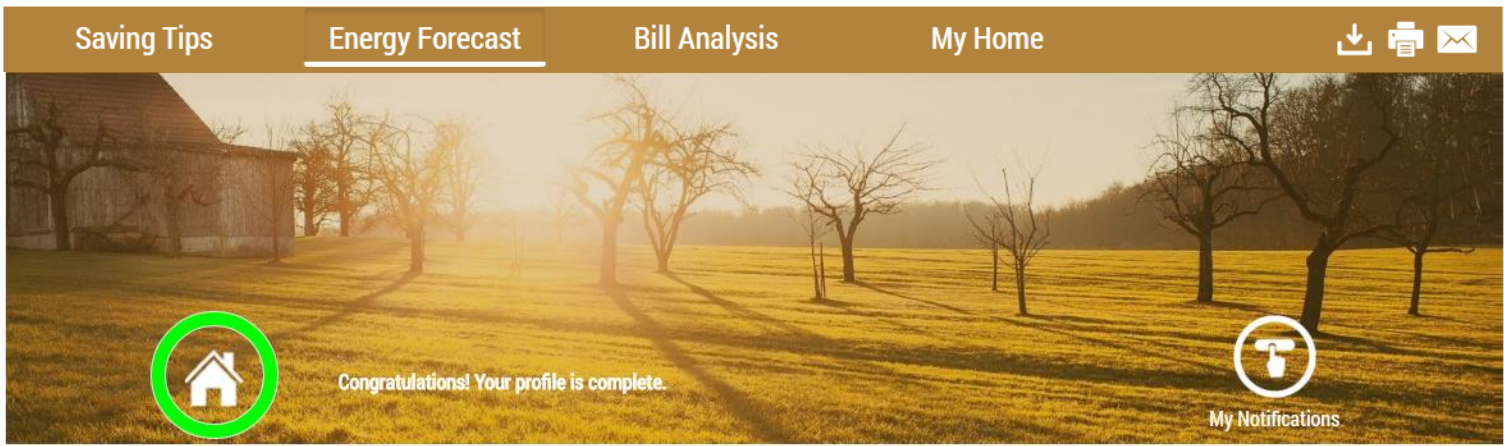
Energy Forecast



**Put meter data w/bills and offer COST forecasts!**

WAYS TO SAVE





Electric Forecast Natural Gas Forecast

Record ID: 3737541

ENERGY FORECAST - ELECTRIC COST

YOUR PROJECTED ELECTRIC COST FOR THIS WEEK IS \$26

Electric Forecast

Annual Usage Breakdown

Weather & Projected Cost

FEEDBACK



Electric Forecast

**TODAY'S WEATHER**

33408 - NORTH PALM BEACH, FL

79°/64°

ELECTRIC COST: \$4

**THIS WEEK'S FORECASTED ELECTRIC COST\***

**\$26**

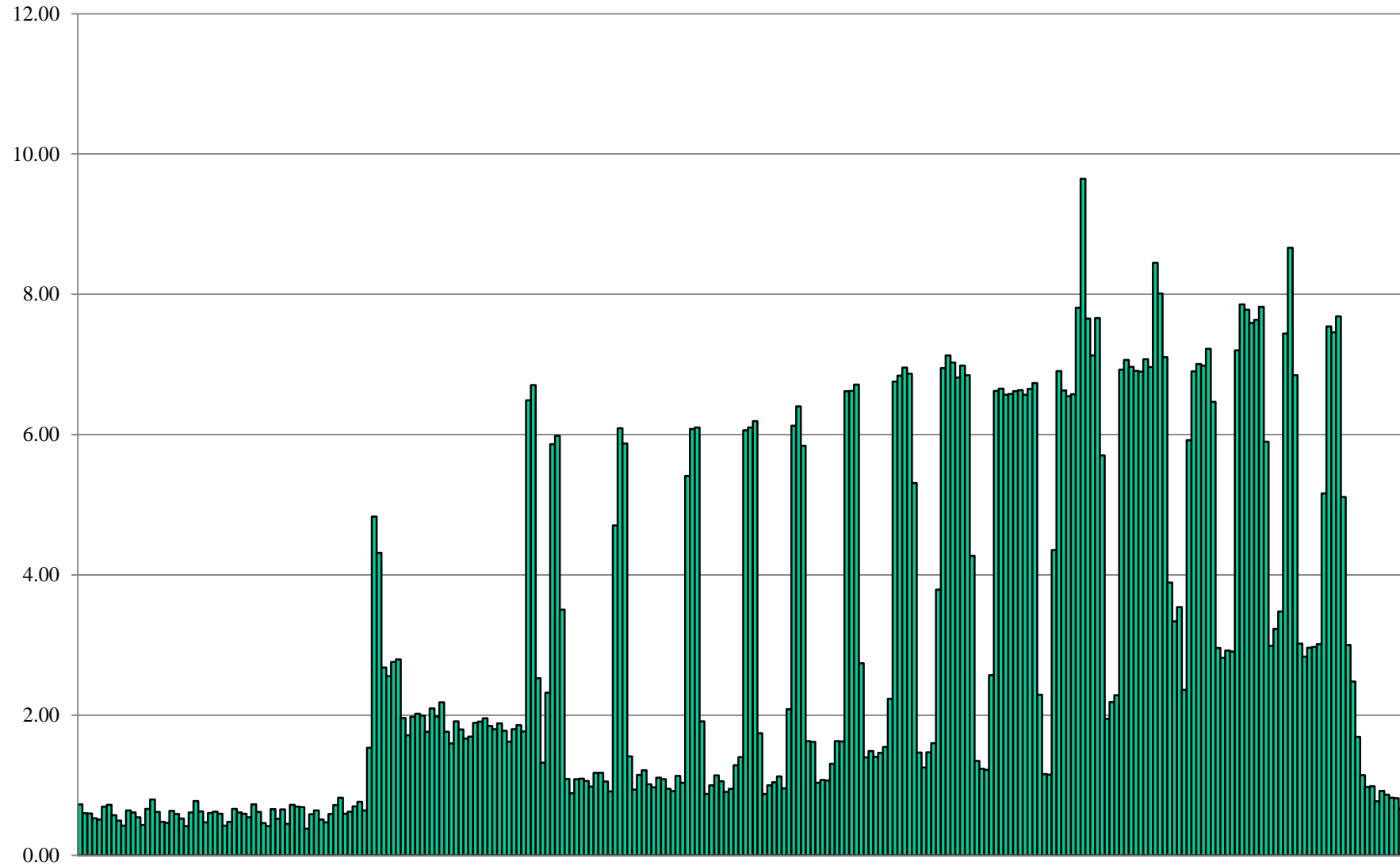
\* Costs are estimates based on your home's profile and the current forecast.

**WEEKLY FORECAST**

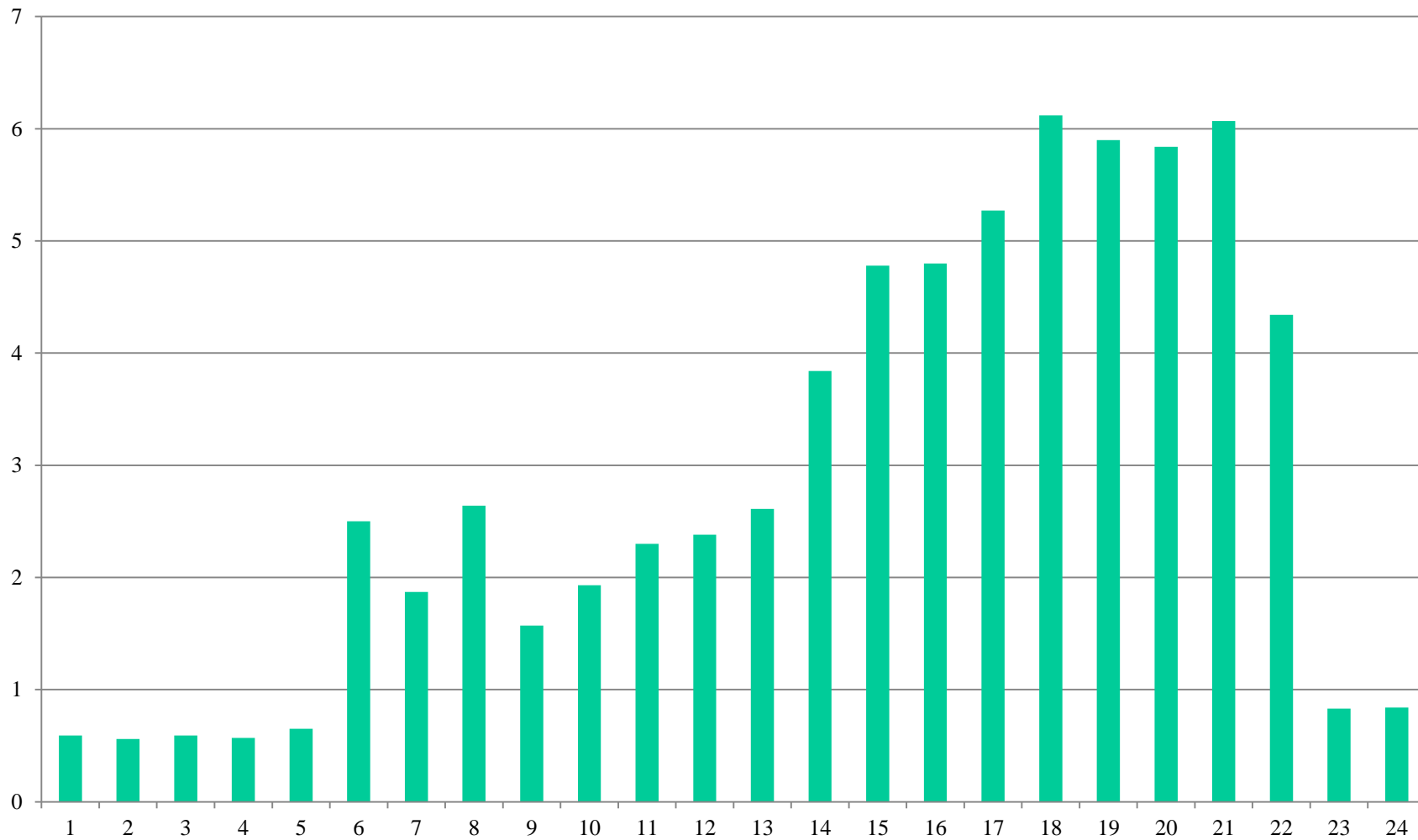
Day	Temp	Weather	Electric Cost
Wed, Jan 18	83°/61°	☁️☀️	\$3
Thu, Jan 19	81°/62°	☀️	\$3
Fri, Jan 20	85°/61°	☀️	\$3
Sat, Jan 21	86°/68°	☀️	\$3
Sun, Jan 22	89°/64°	☁️☀️	\$6
Mon, Jan 23	75°/57°	☁️🌧️	\$4

Why do you think most customers want to see smart grid data

# One hot summer day in Denver – 5 minute data



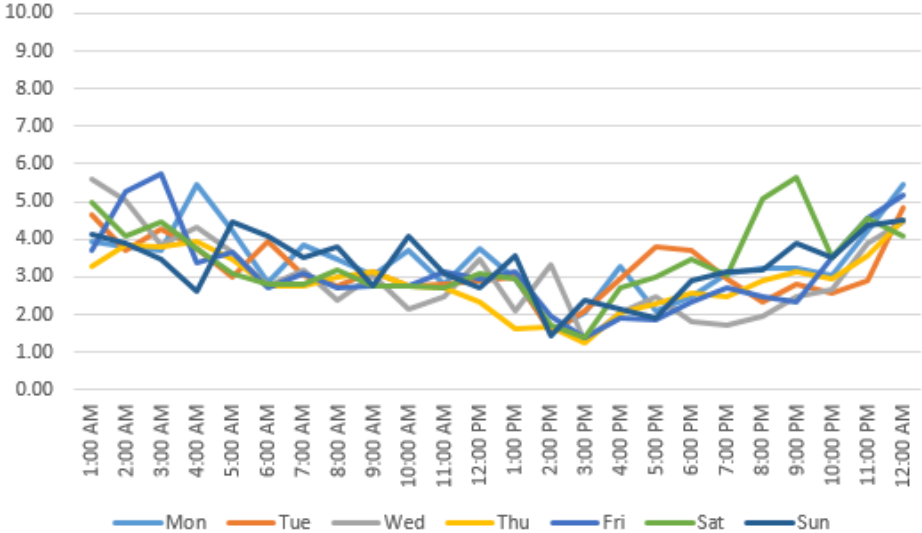
# Same hot summer day in Denver – hourly data



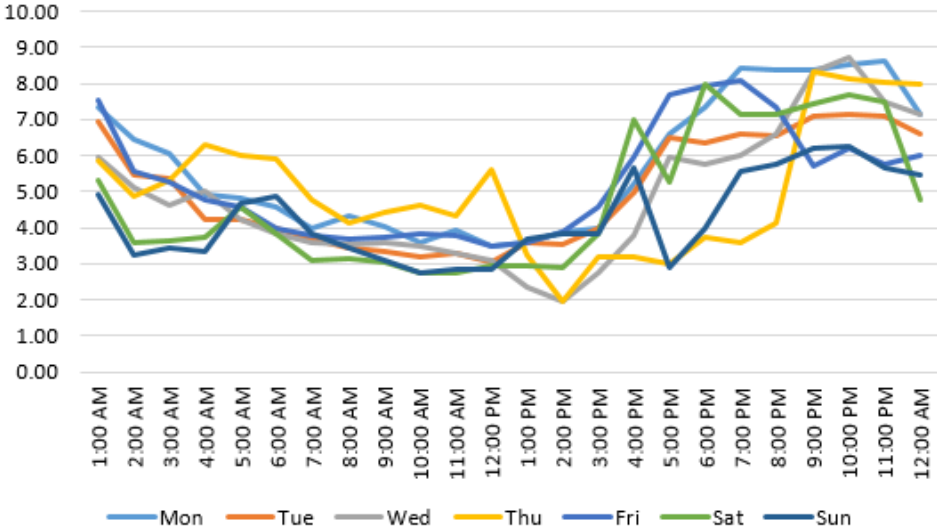


# But, see what happens when it is hot overnight!

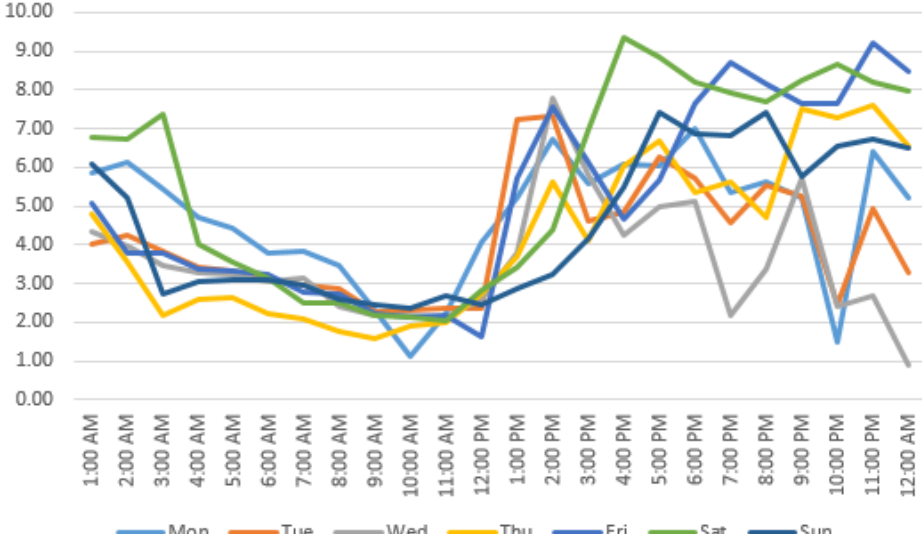
Customer 112 ending 08/21/2016



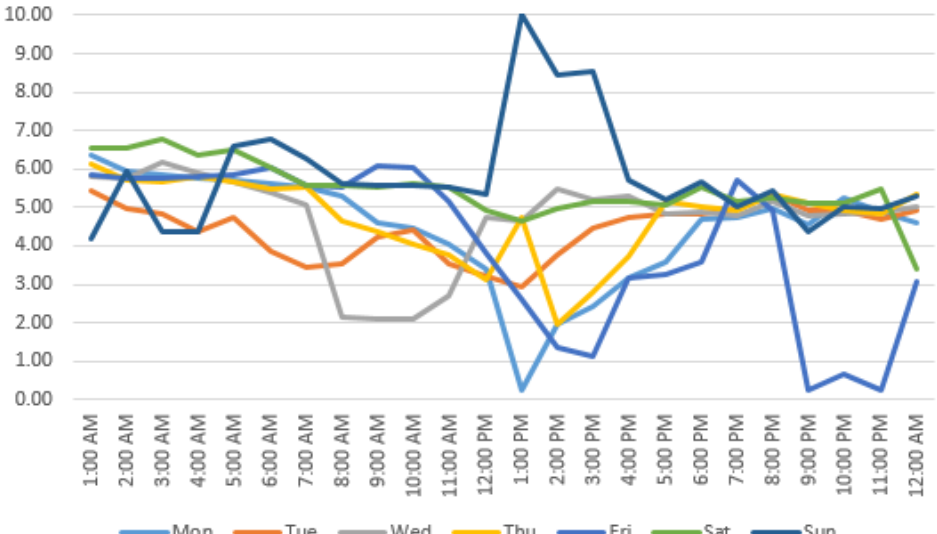
Customer 114 ending 08/21/2016



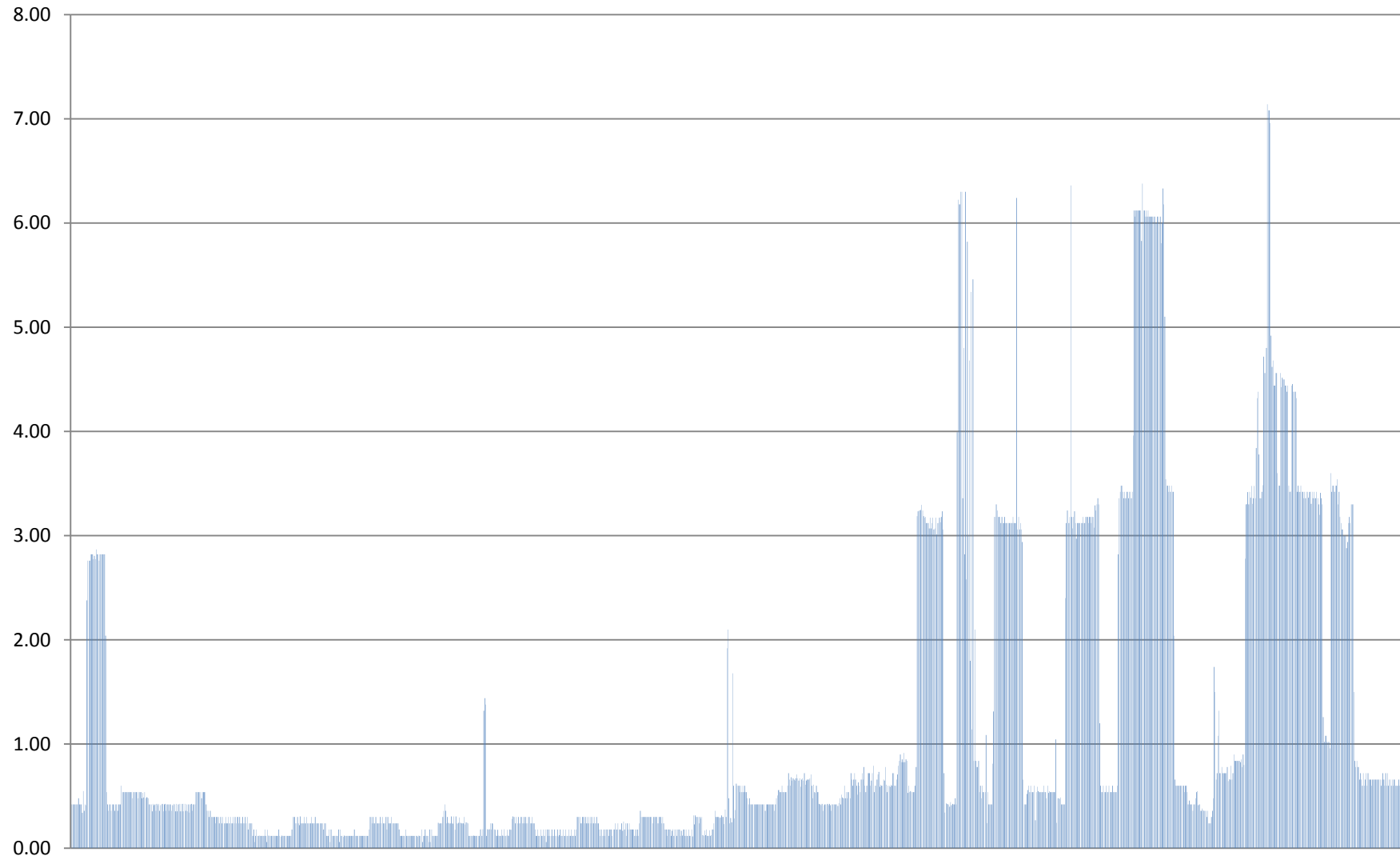
Customer 340 ending 08/21/2016



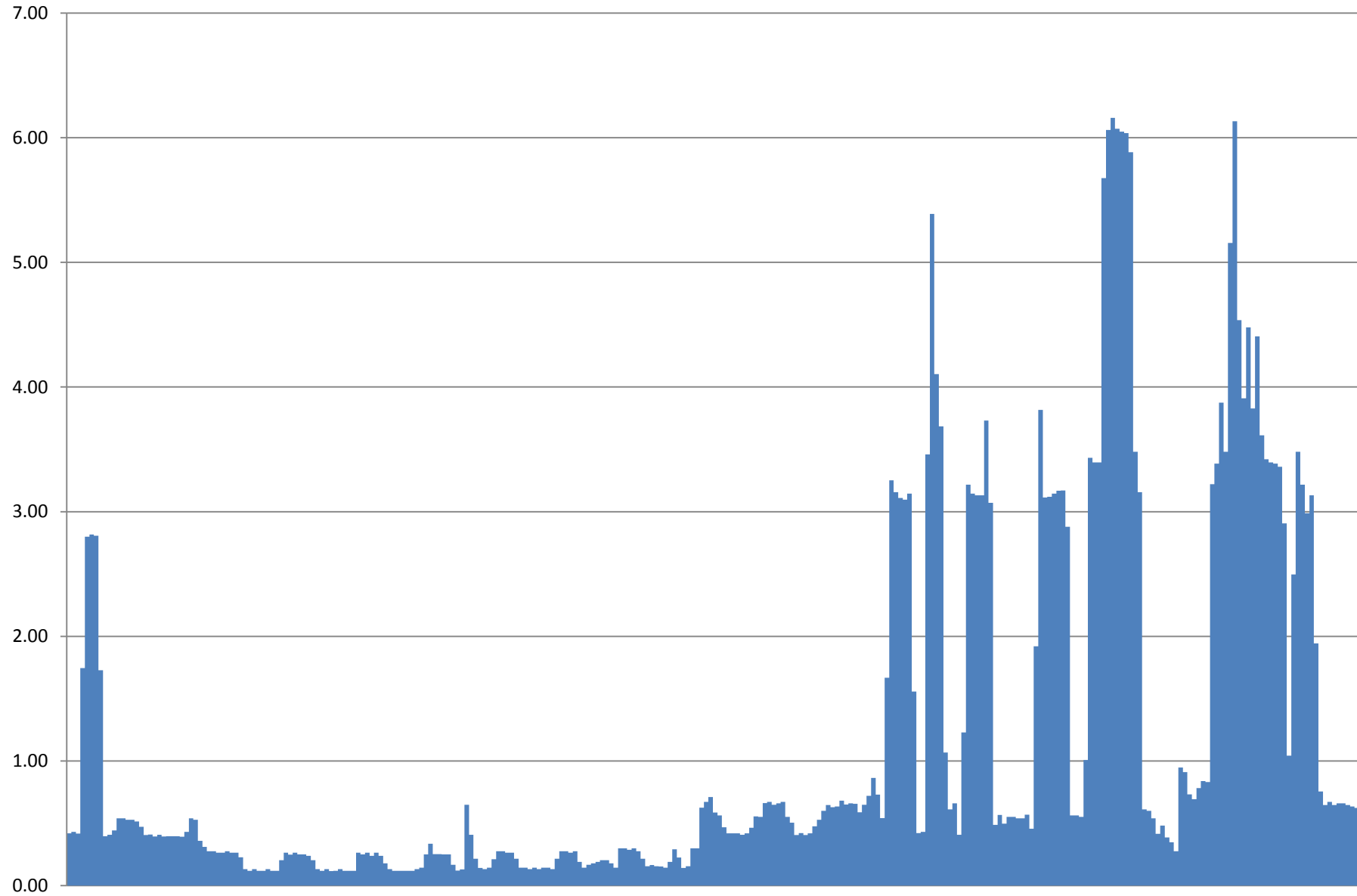
Customer 343 ending 08/21/2016



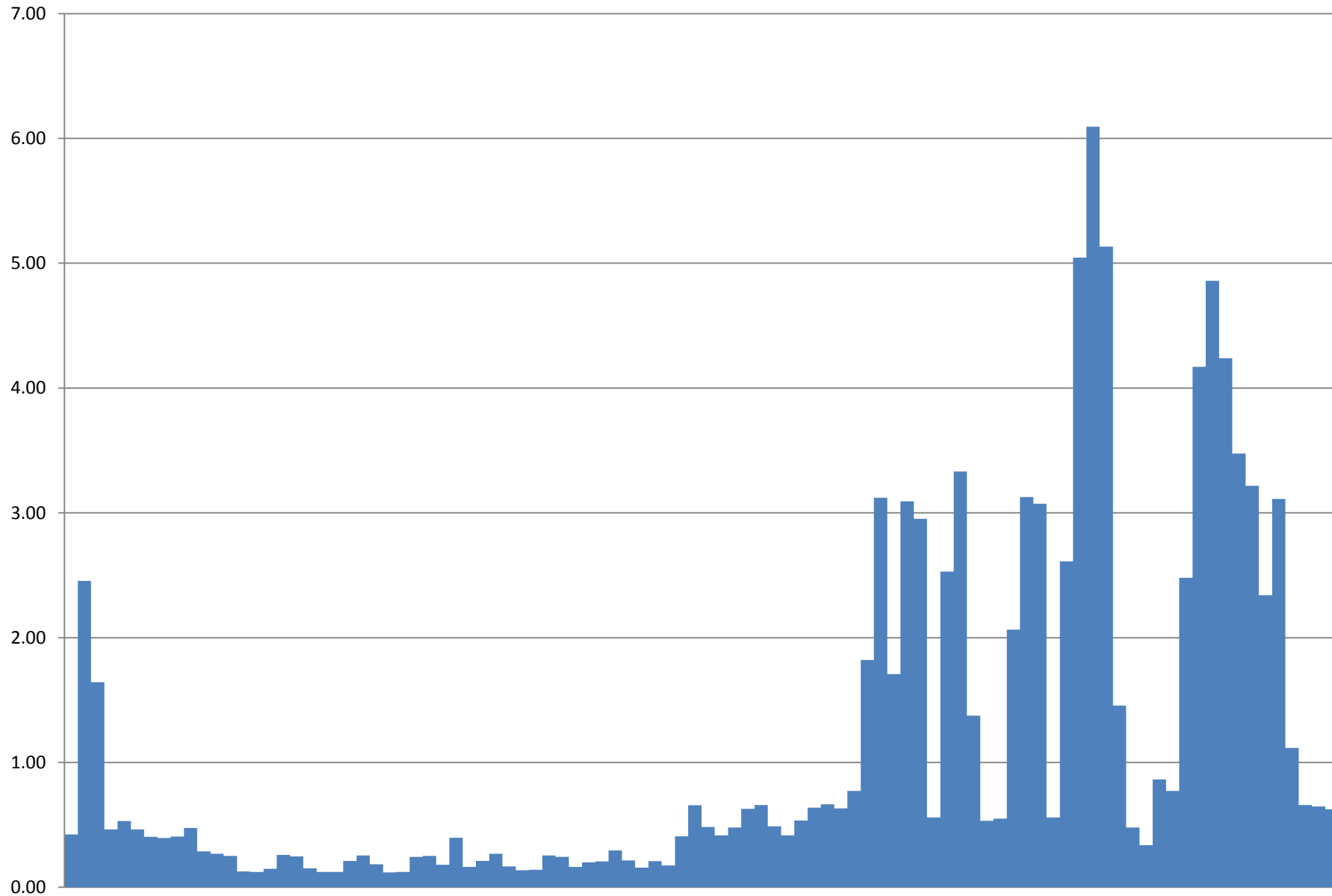
# 1 min kW



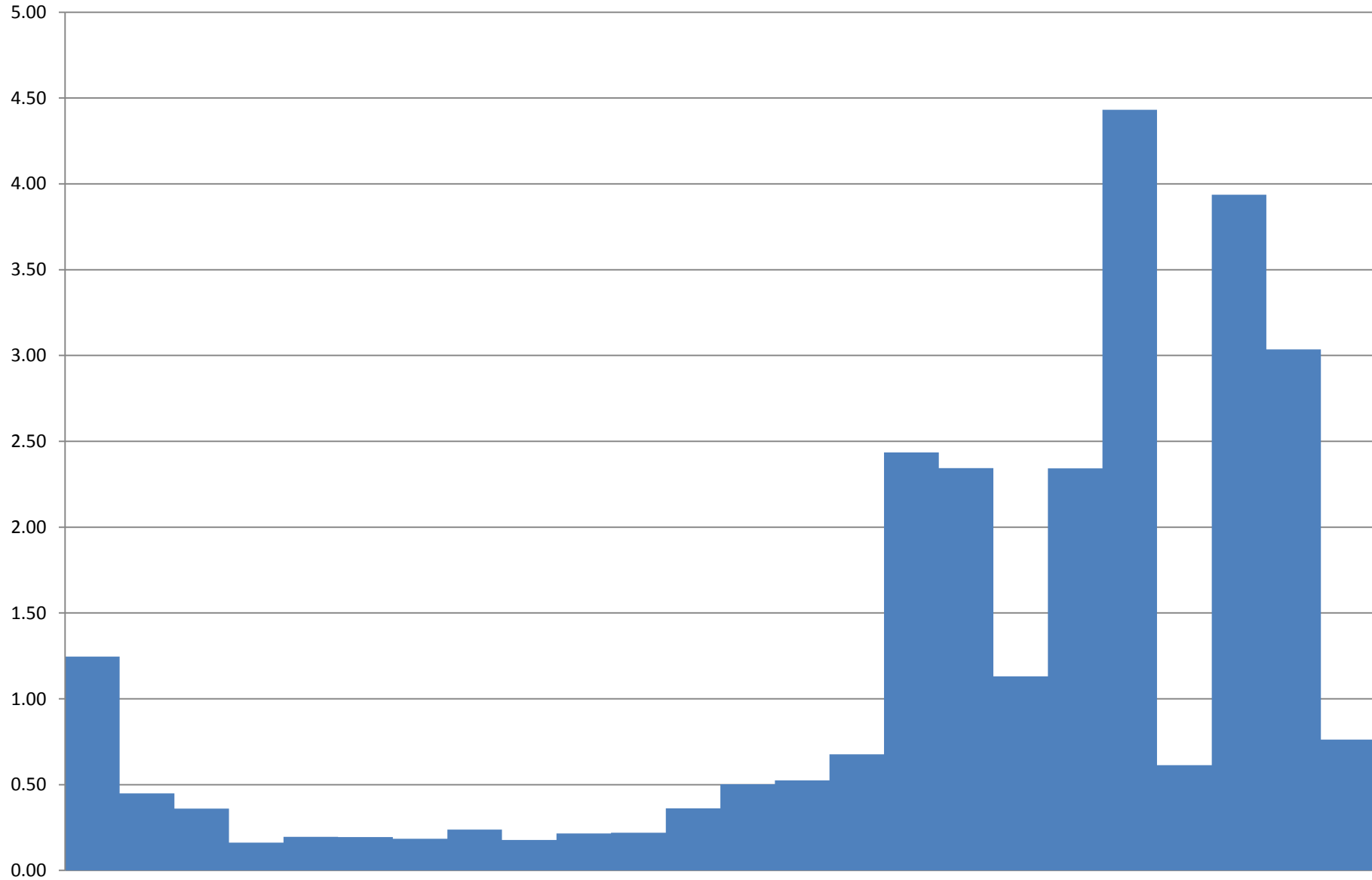
# 5 min kW



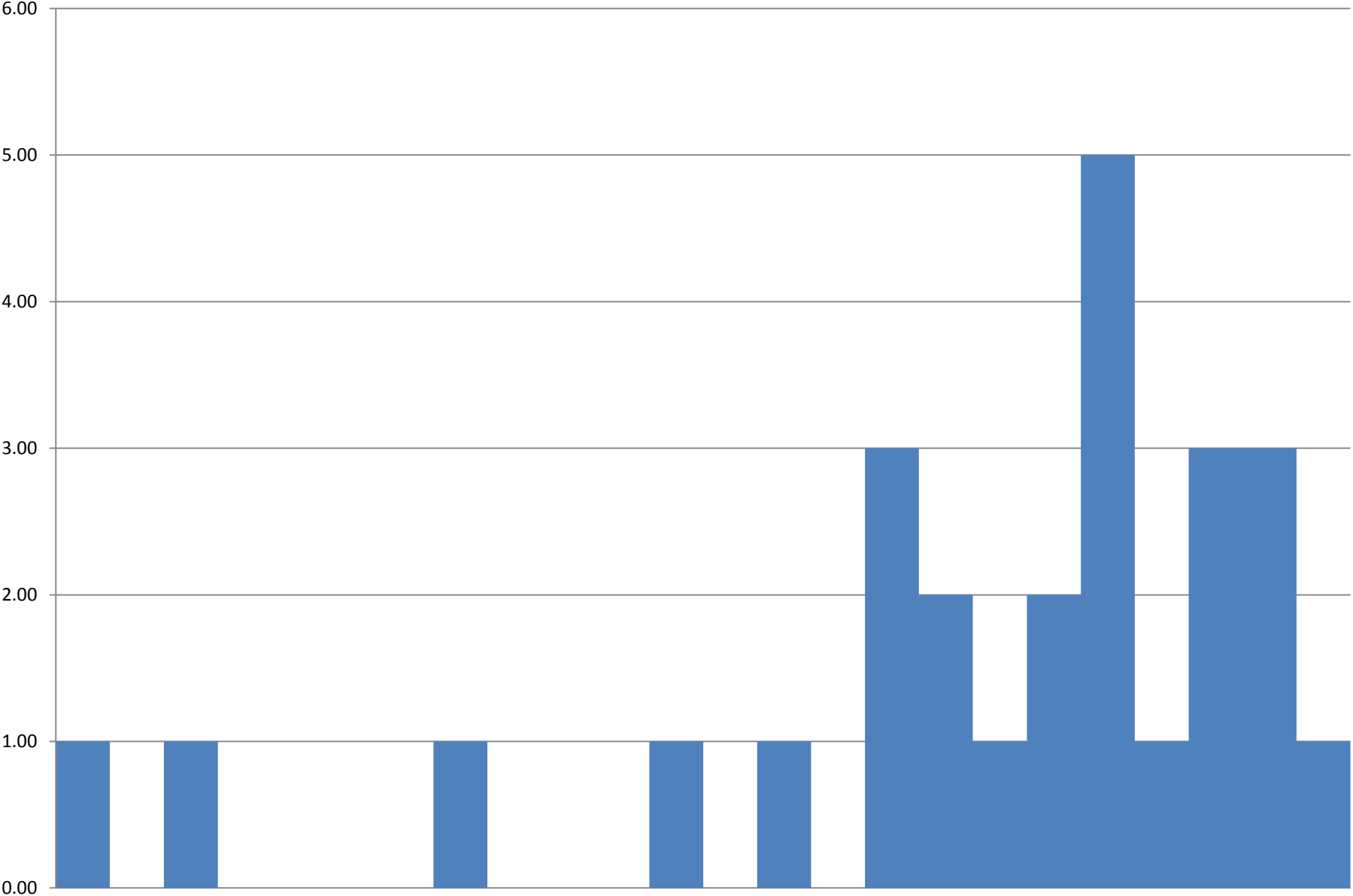
# 15 min KW



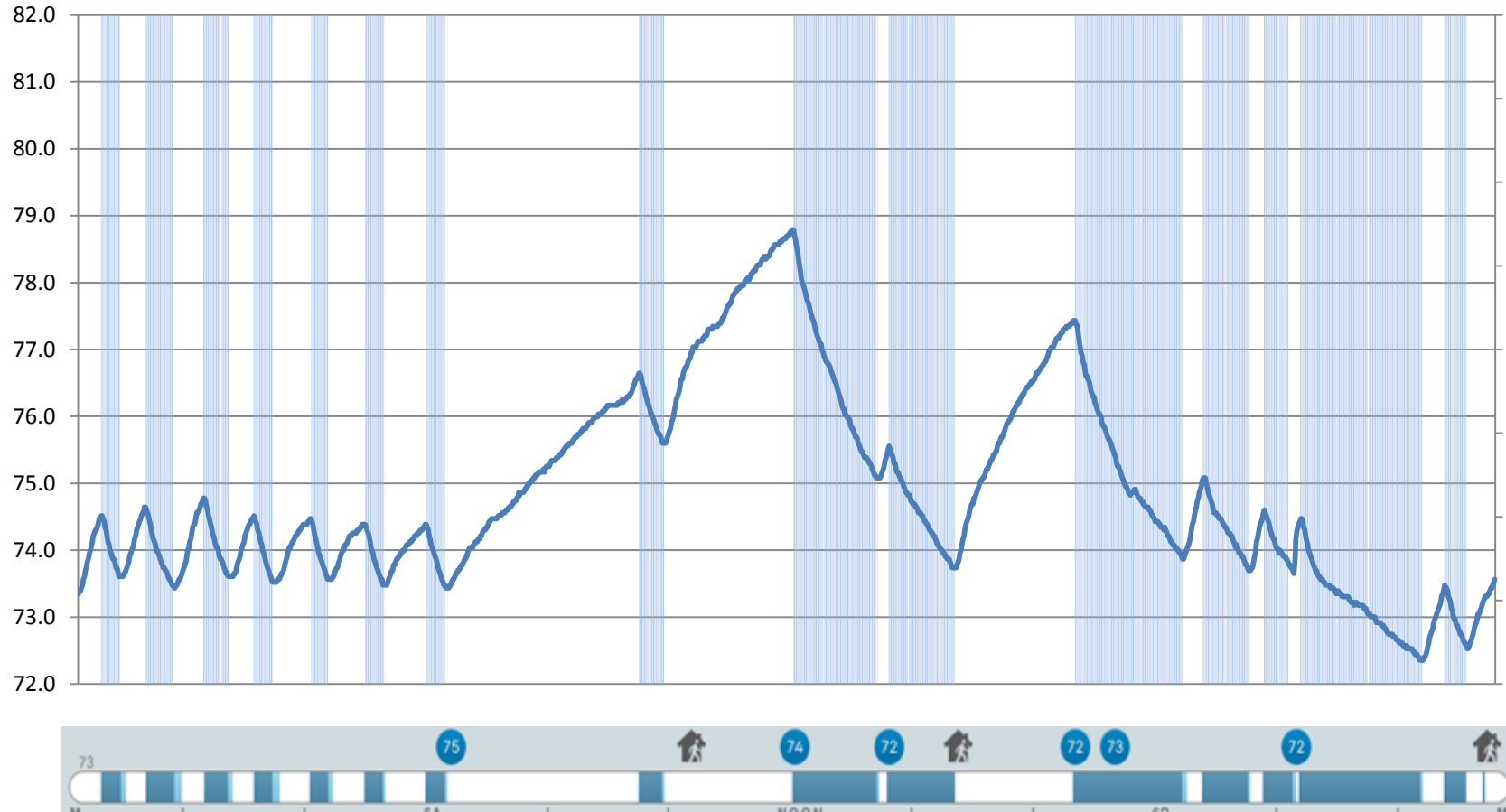
# Hourly kW



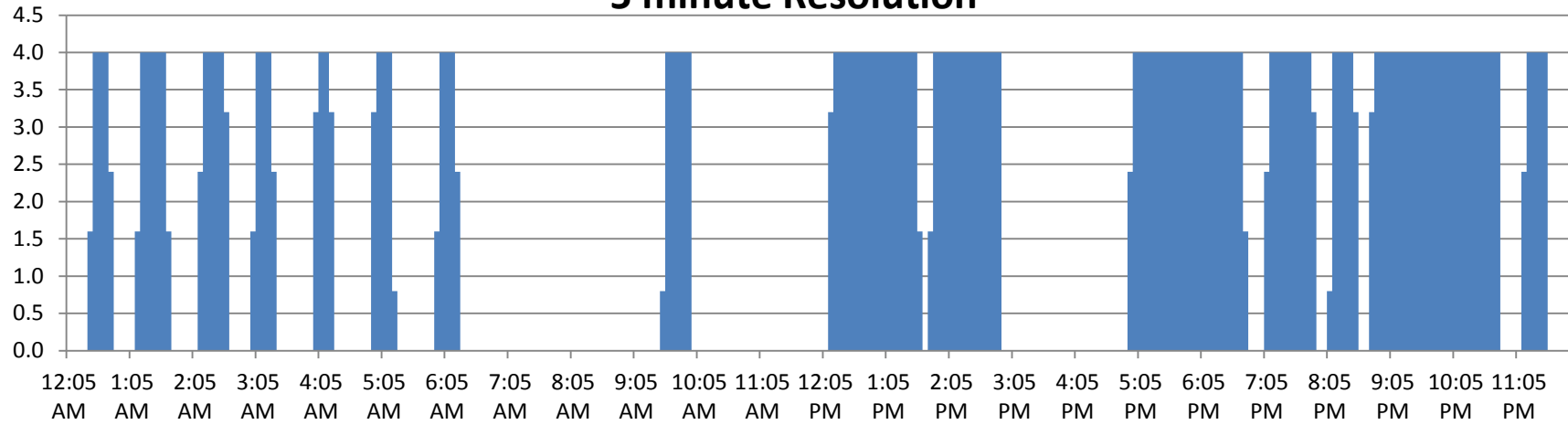
# Integer kW



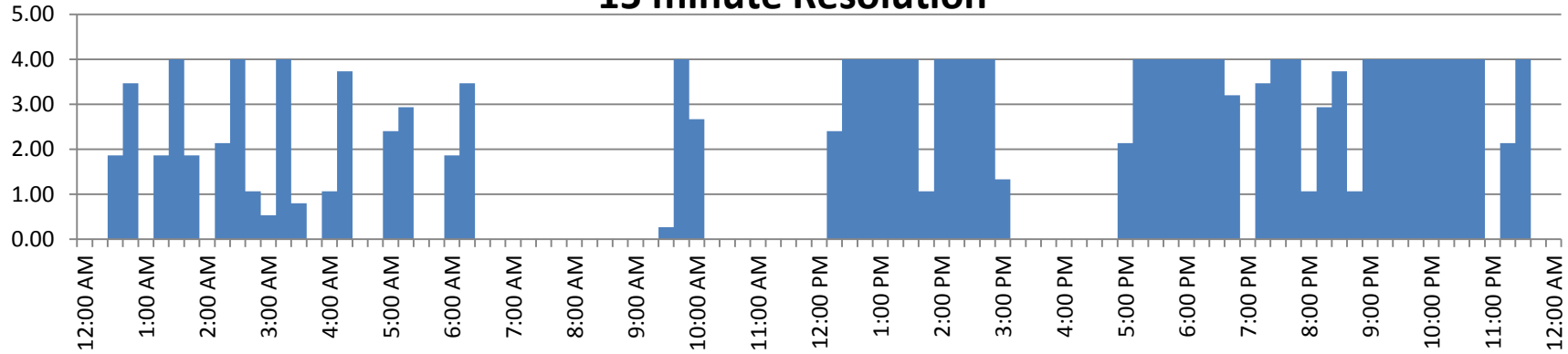
# Why thermal monitoring is better



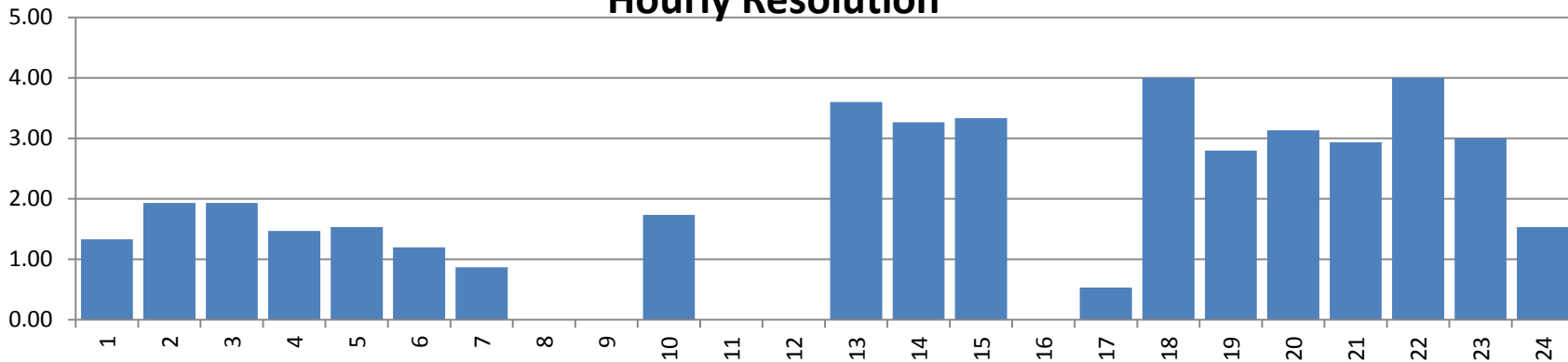
### 5 minute Resolution



### 15 minute Resolution



### Hourly Resolution

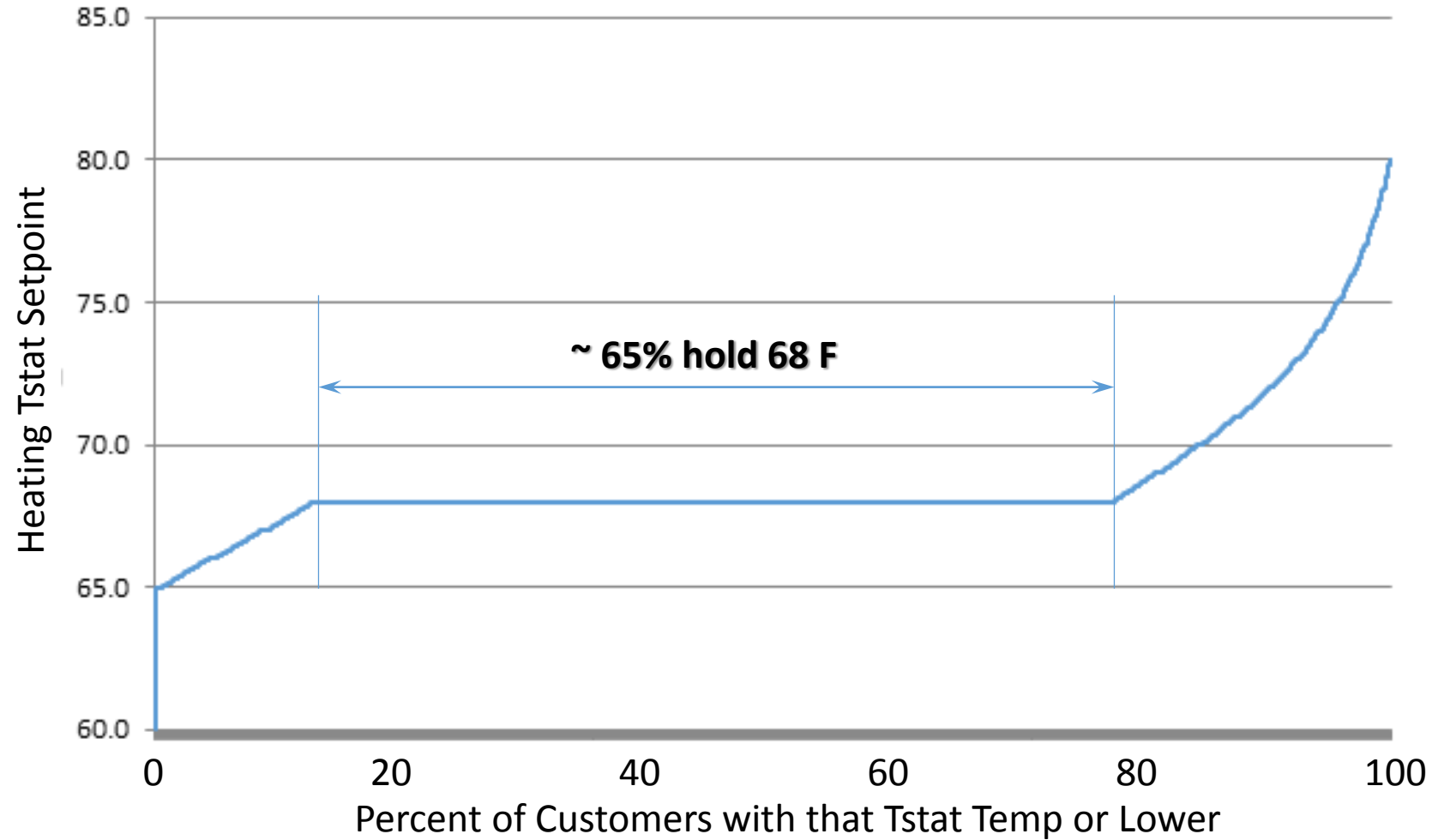




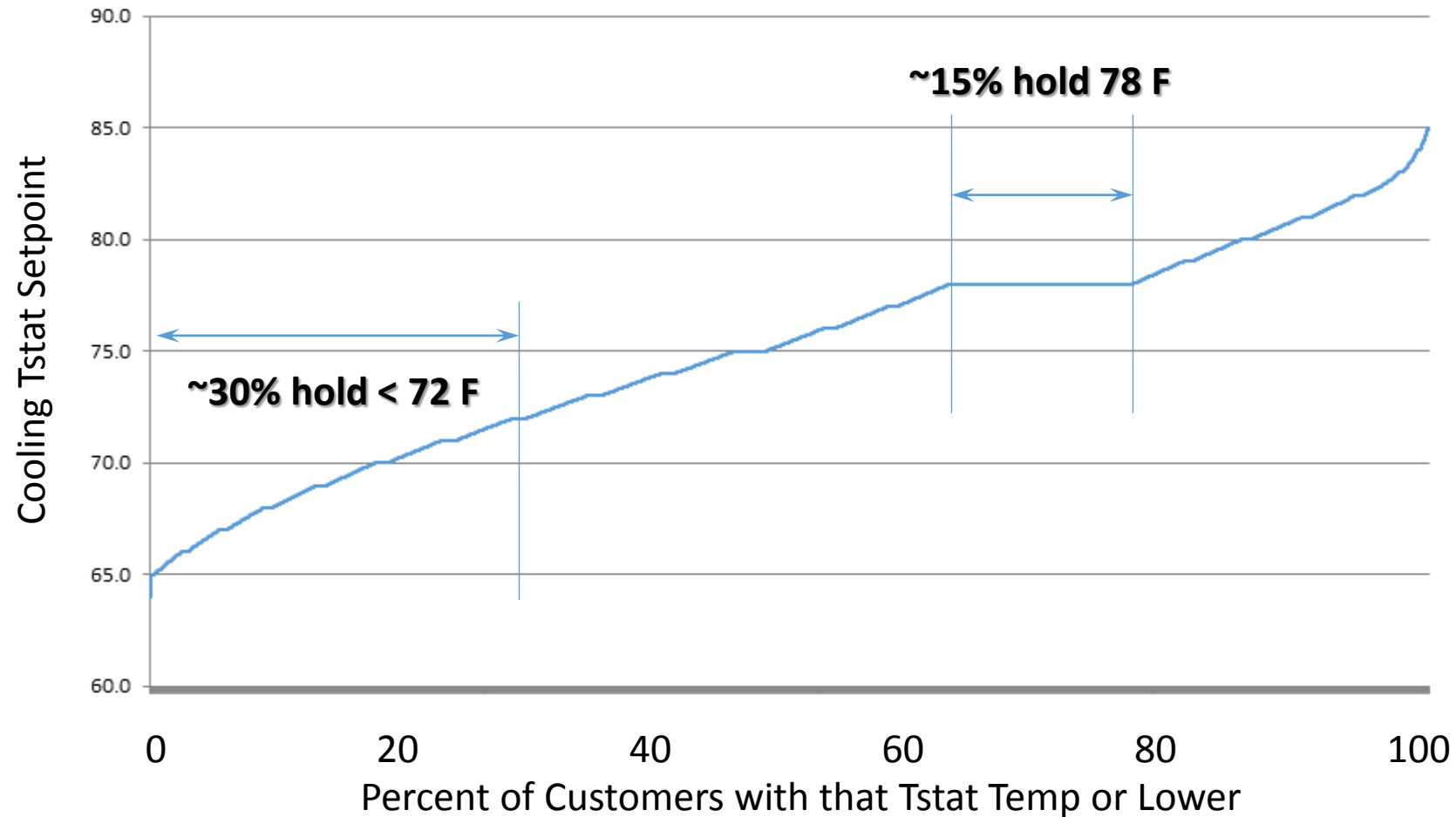
# What can you do with Bills alone?

- 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



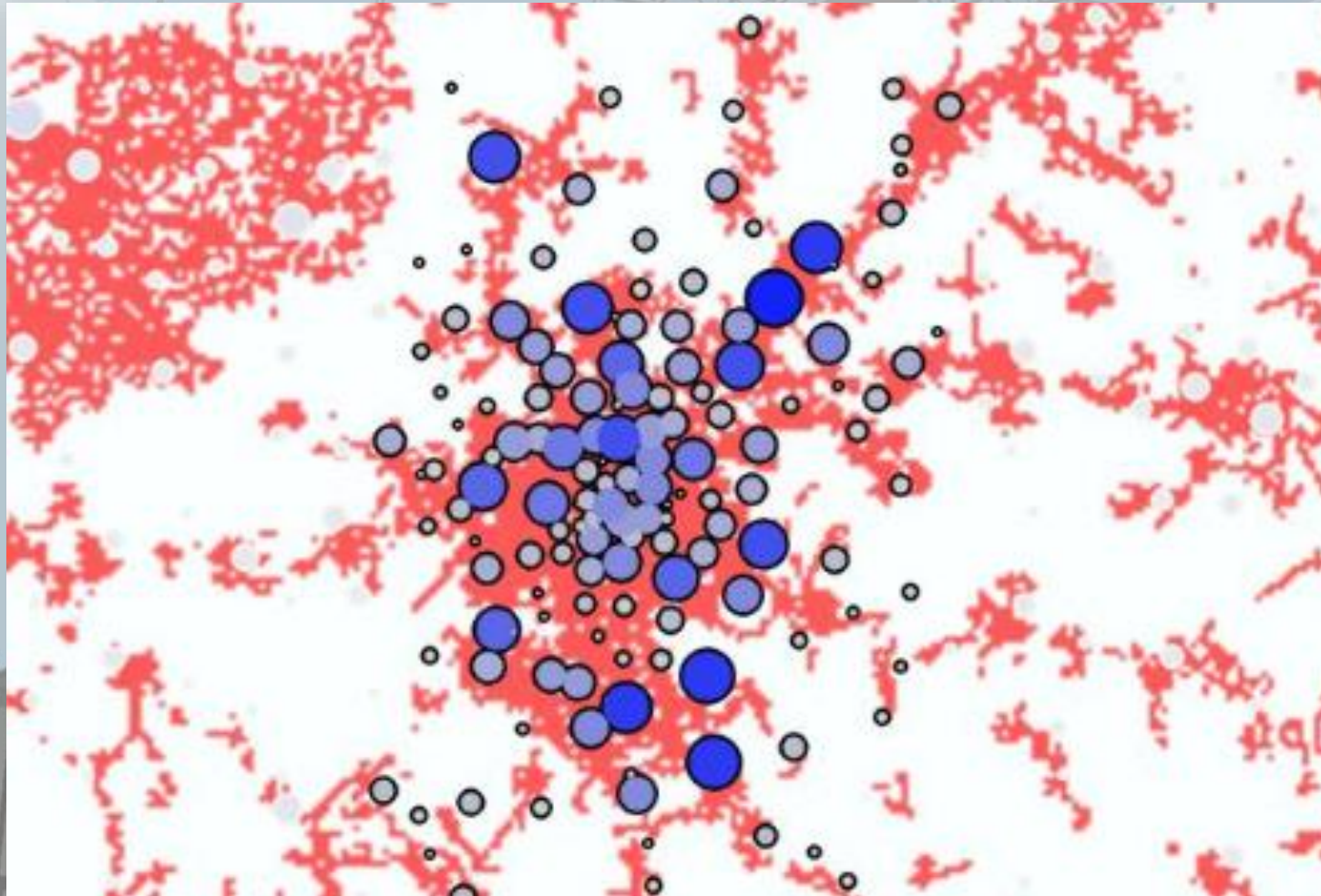
# Cooling Season Analysis Results



# ICF Webinar Yesterday

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



An aerial photograph of a residential neighborhood with a grid of streets. Several houses are circled in yellow, indicating they are the focus of the image. The text "Target the best opportunities" is overlaid in the center in a bold, yellow font. The neighborhood features a mix of single-family homes, some with swimming pools, and a larger commercial or industrial area in the lower-left quadrant. A large green field is visible in the middle-right section.

**Target the best opportunities**

# What can you do with smart grid data?

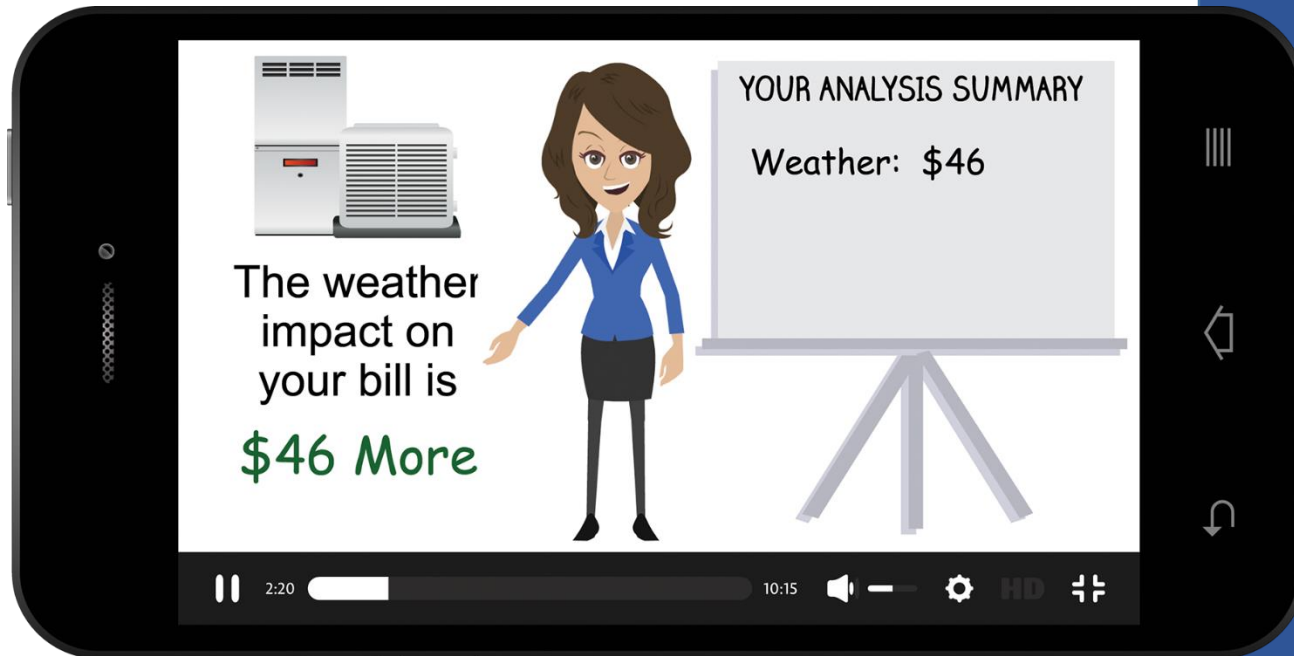
- Very little with integer reads
- A lot with 15 minute data
- Less with hourly data
- Beware of false positives and negatives
  - e.g., PSA tests for men
- Can characterize house use patterns
- Hourly coincidence with high value
  - If CPP, TOU, RTP this is easy
  - With demand charges ... not easy

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



<https://www.youtube.com/watch?v=P7O693mzp6M>

alerts

My Saving Tips

My Weather

My Usage Details

My Alerts

My Profile

Sign up for usage alerts:

Email:

or

Mobile:

Alerts you would like to receive:

- Mid cycle alert
- When my usage reaches \$
- Unusual usage

Record ID: 1531

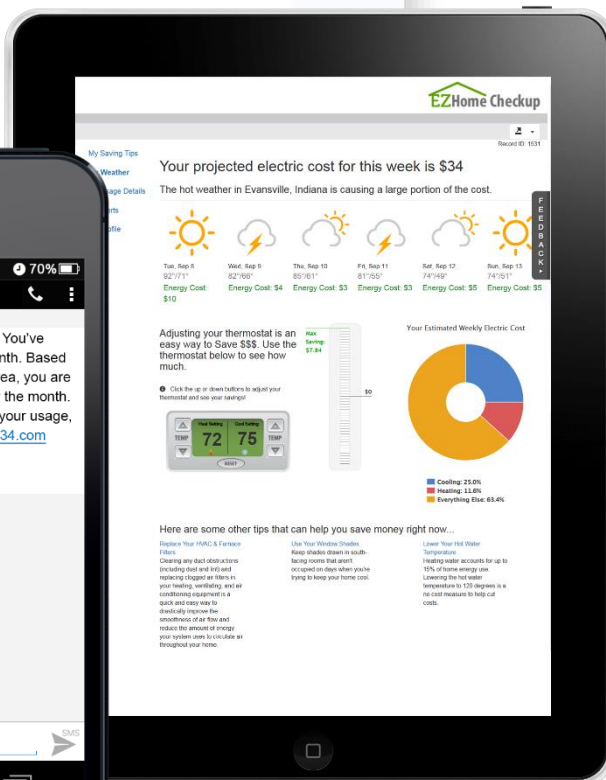
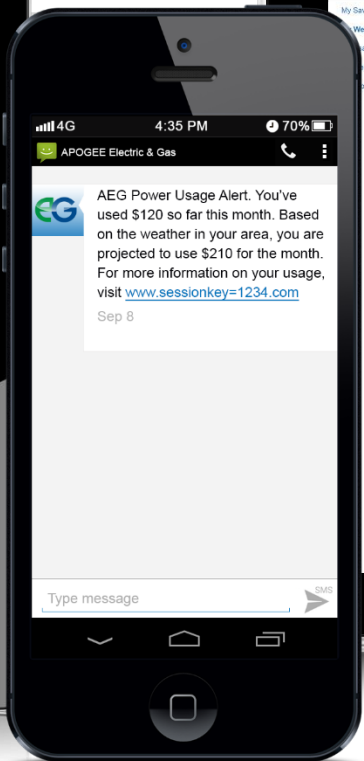
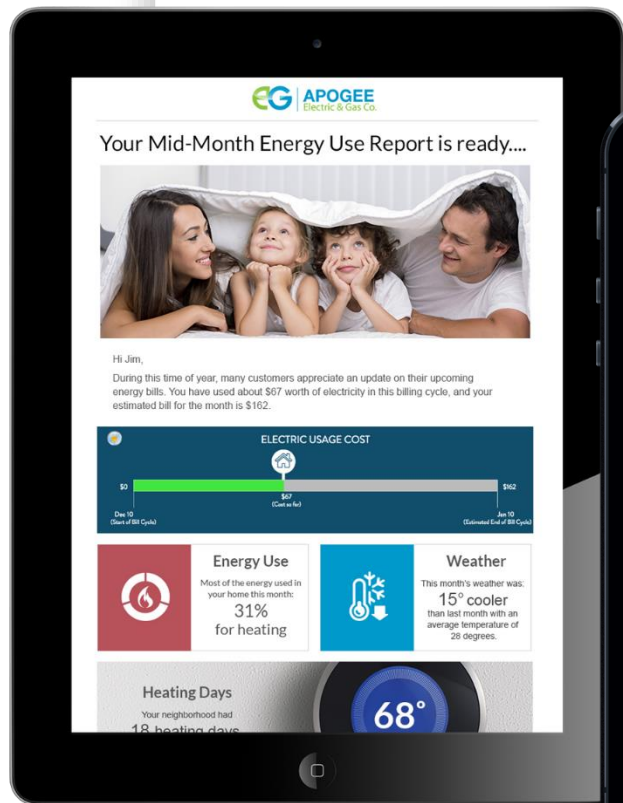
FEEDBACK

# 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



# 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

ACCT#:1234567890

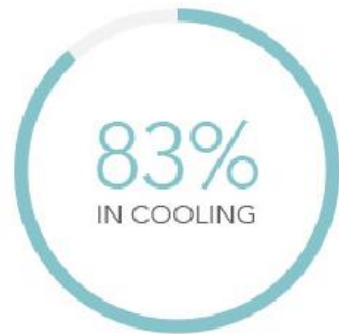
\$423

YOUR ESTIMATED BILLING FOR THIS MONTH

\$415

\$430

MAJOR BILLING FACTOR

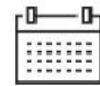


↑ UP 14% SINCE AUG

WHAT HAS CHANGED?



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.



Adjust Your Thermostat

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

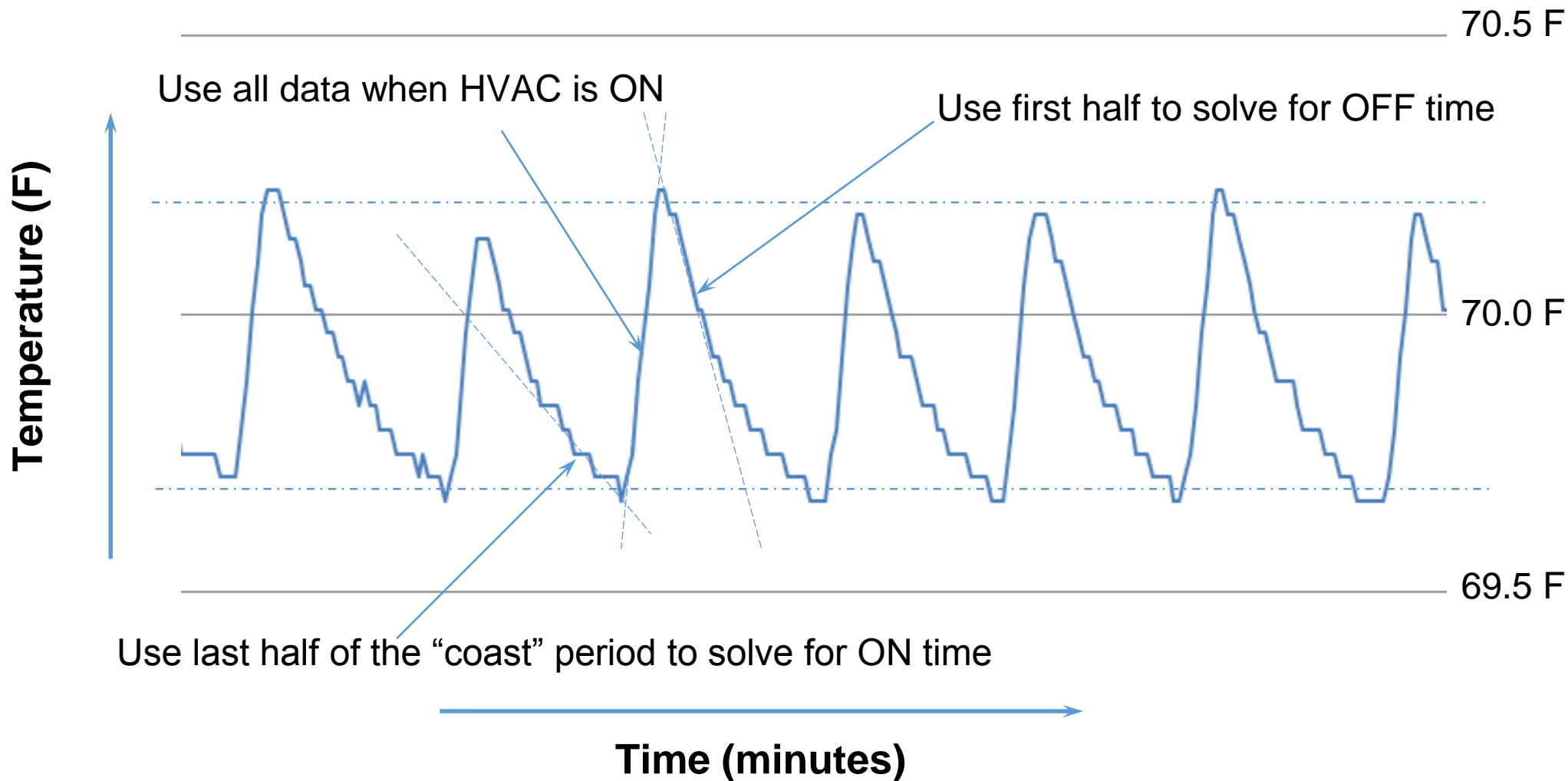
# Mid-Cycle Bill Alert

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



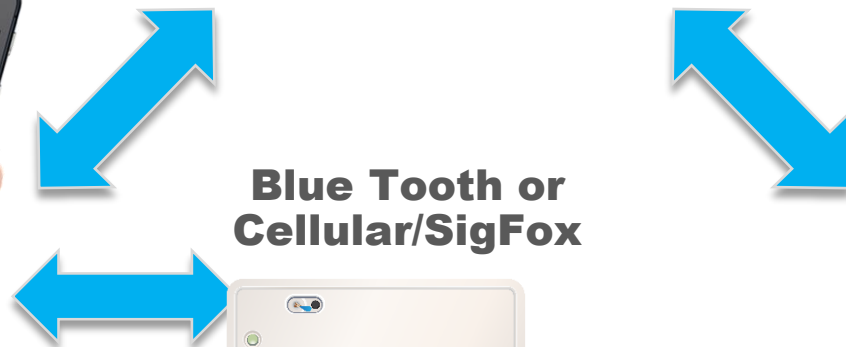


# Nothing to Install

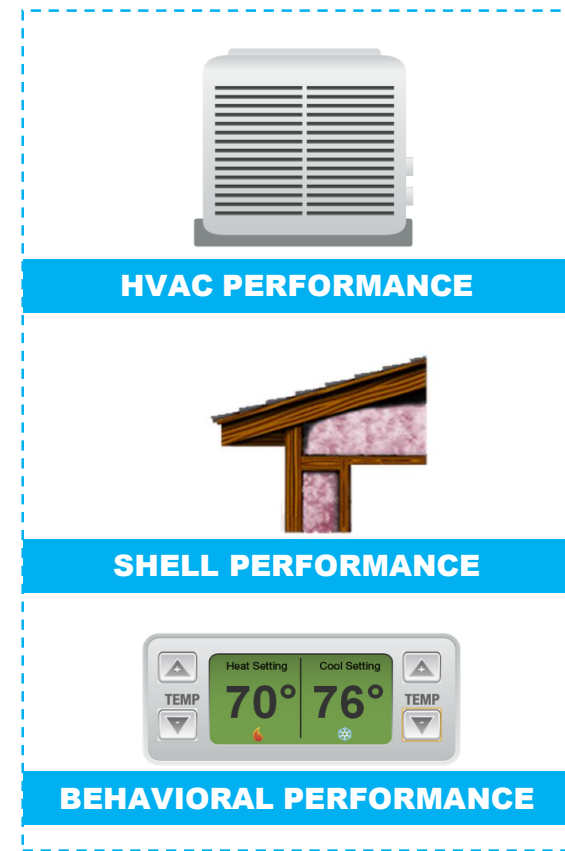
# Just stick it to the wall!



**Customer Experience**



**Blue Tooth or Cellular/SigFox**



**Utility/Auditor Experience**

**No Wi-Fi needed in home!**

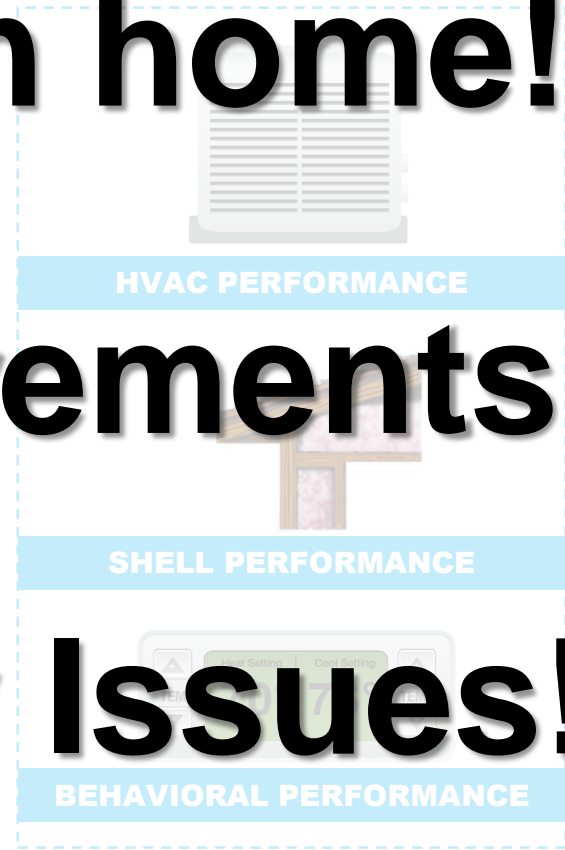
**No Utility IT Requirements!**

**No Cyber Security Issues!**



Customer Experience

Blue Tooth or Cellular/SigFox



Utility/Auditor Experience

# 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.

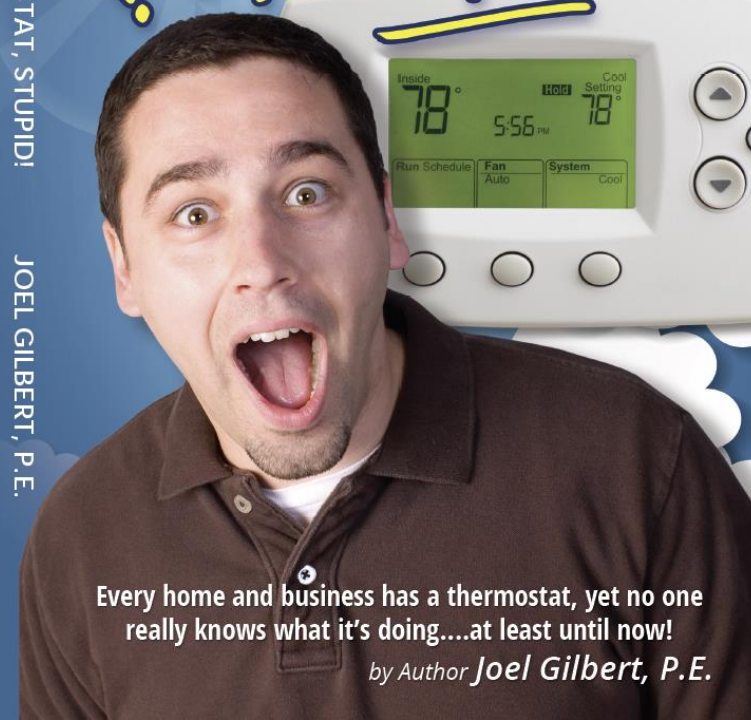


JOEL GILBERT is a nationally recognized strategist in energy master planning, energy marketing and sales, and implementation of energy efficiency and productivity measures. He has been retained by hundreds of electric and gas utilities and industrial and commercial firms across the United States.

IT'S THE THERMOSTAT, STUPIDI!

JOEL GILBERT, P.E.

It's the  
**THERMOSTAT,**  
! ? ! stupid!



Every home and business has a thermostat, yet no one really knows what it's doing...at least until now!

by Author *Joel Gilbert, P.E.*

# “The heartbeat of the home”<sup>SM</sup>

***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**



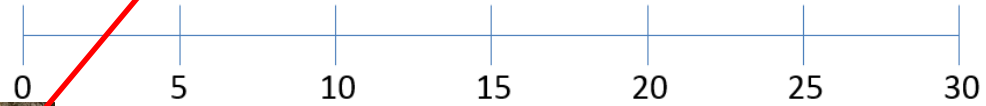
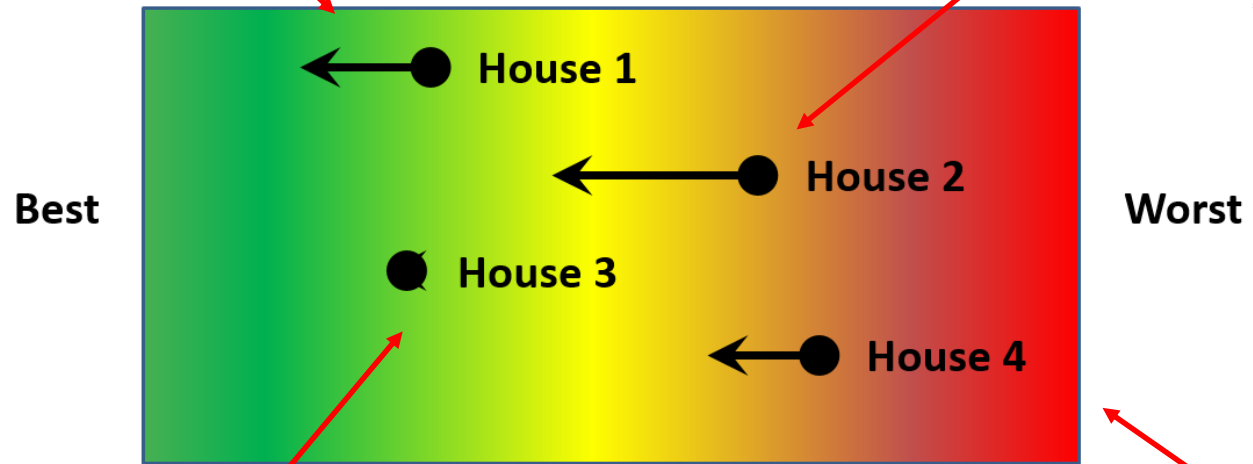
**Cellular and SigFox**



House 1: 1948 1,663 sf



House 2: 1959 852 sf



Temperature Change Rate (% of  $\Delta T/Hr$ )



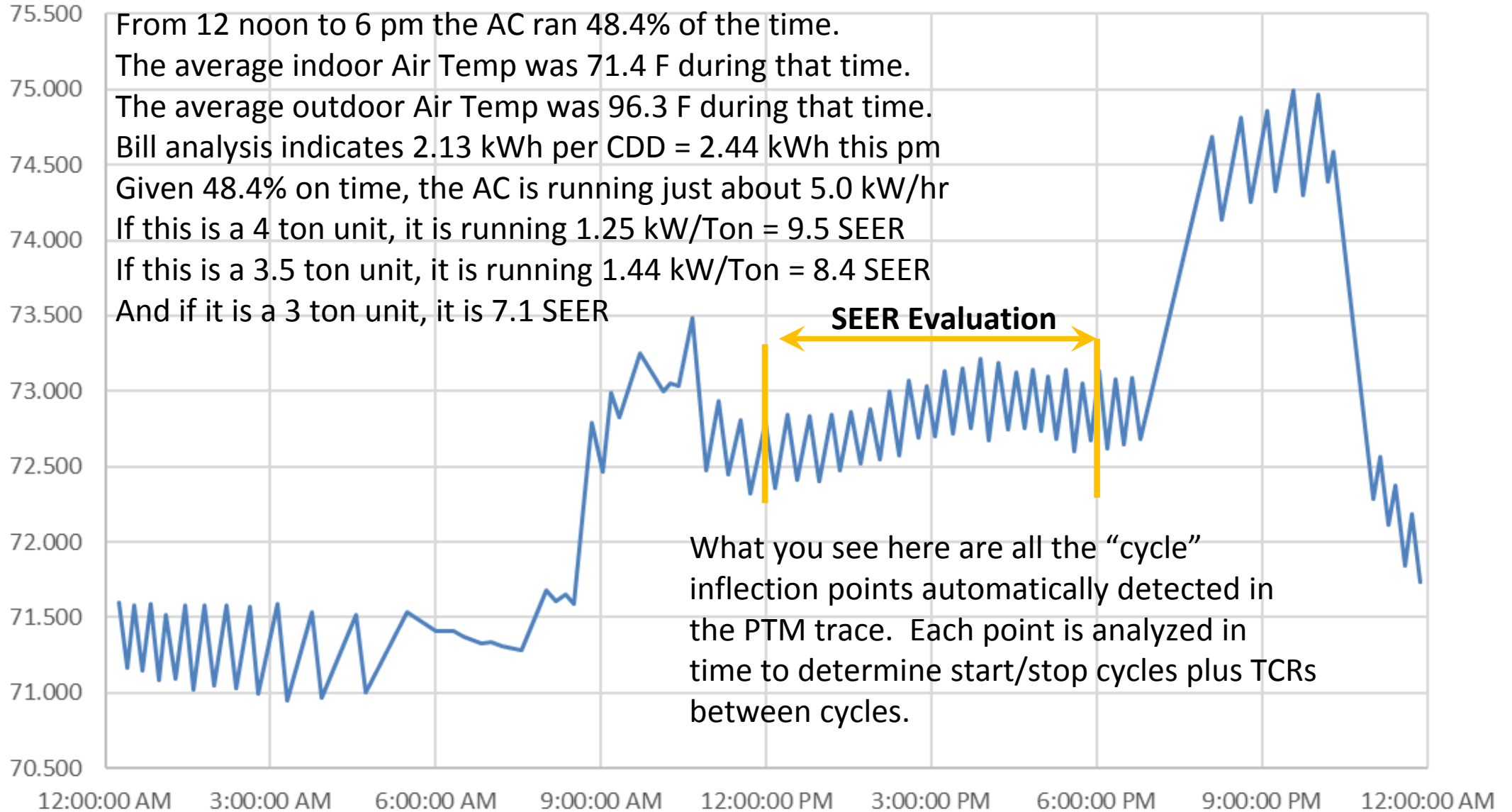
House 3: 1975 1,236 sf



House 4: 1987 2,200 sf

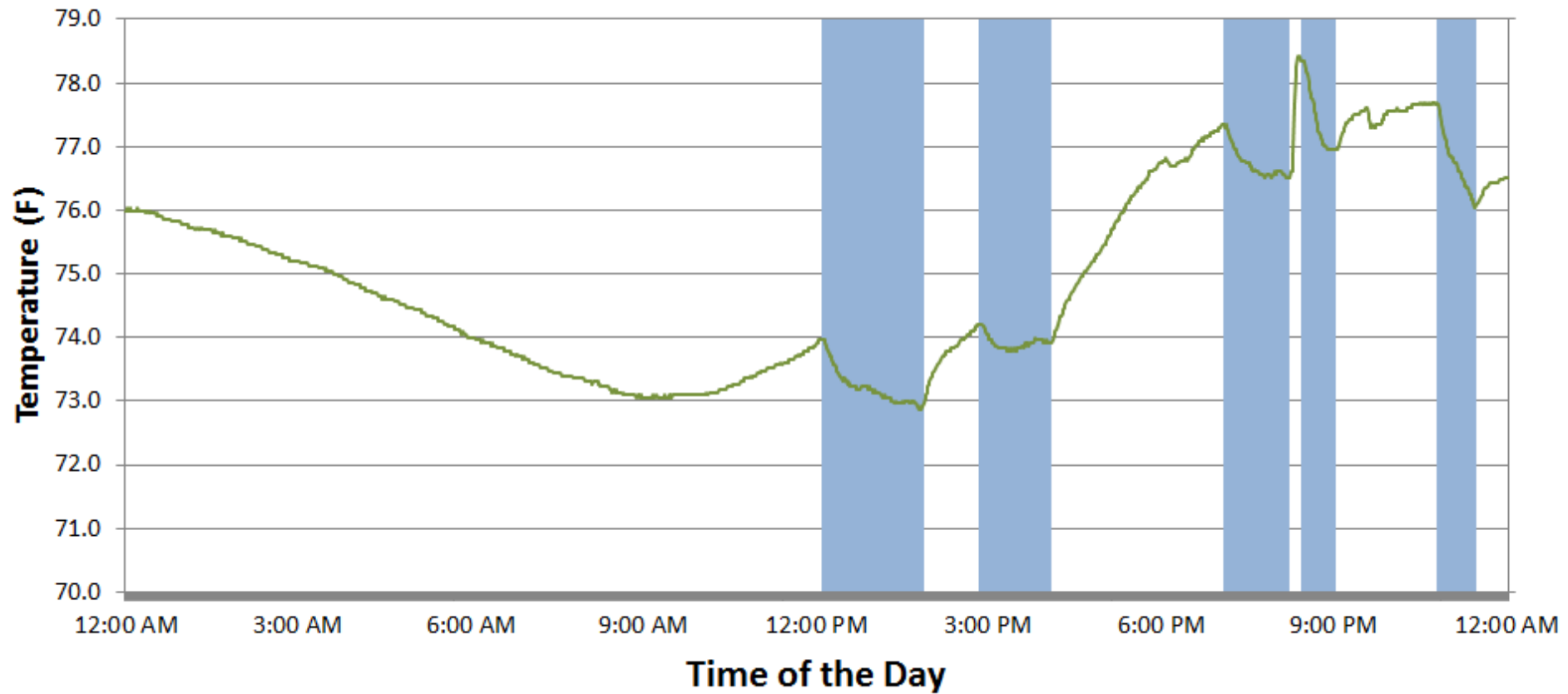
# Here is the output from Apogee's PTM software showing AC cycles and analysis

## Apogee Software Cycle Estimates

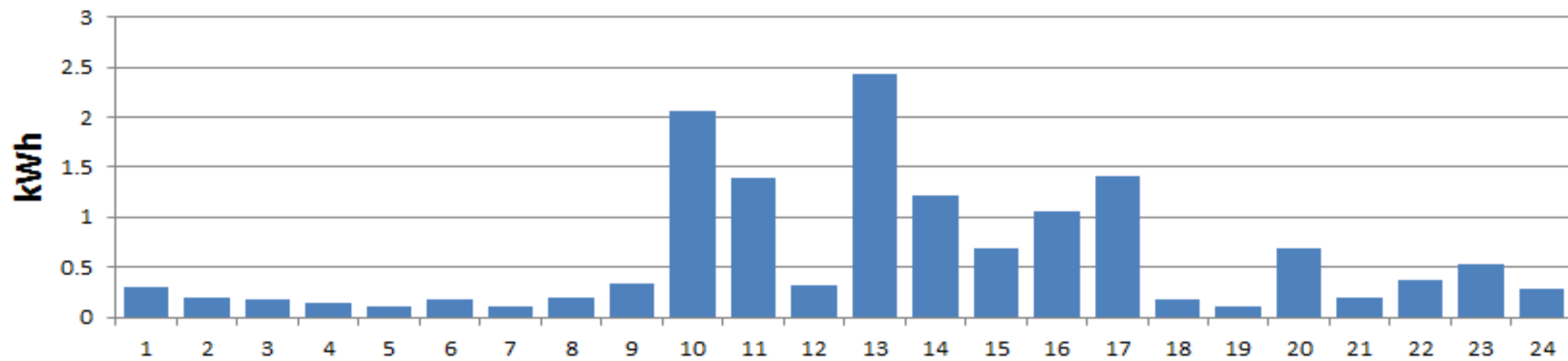




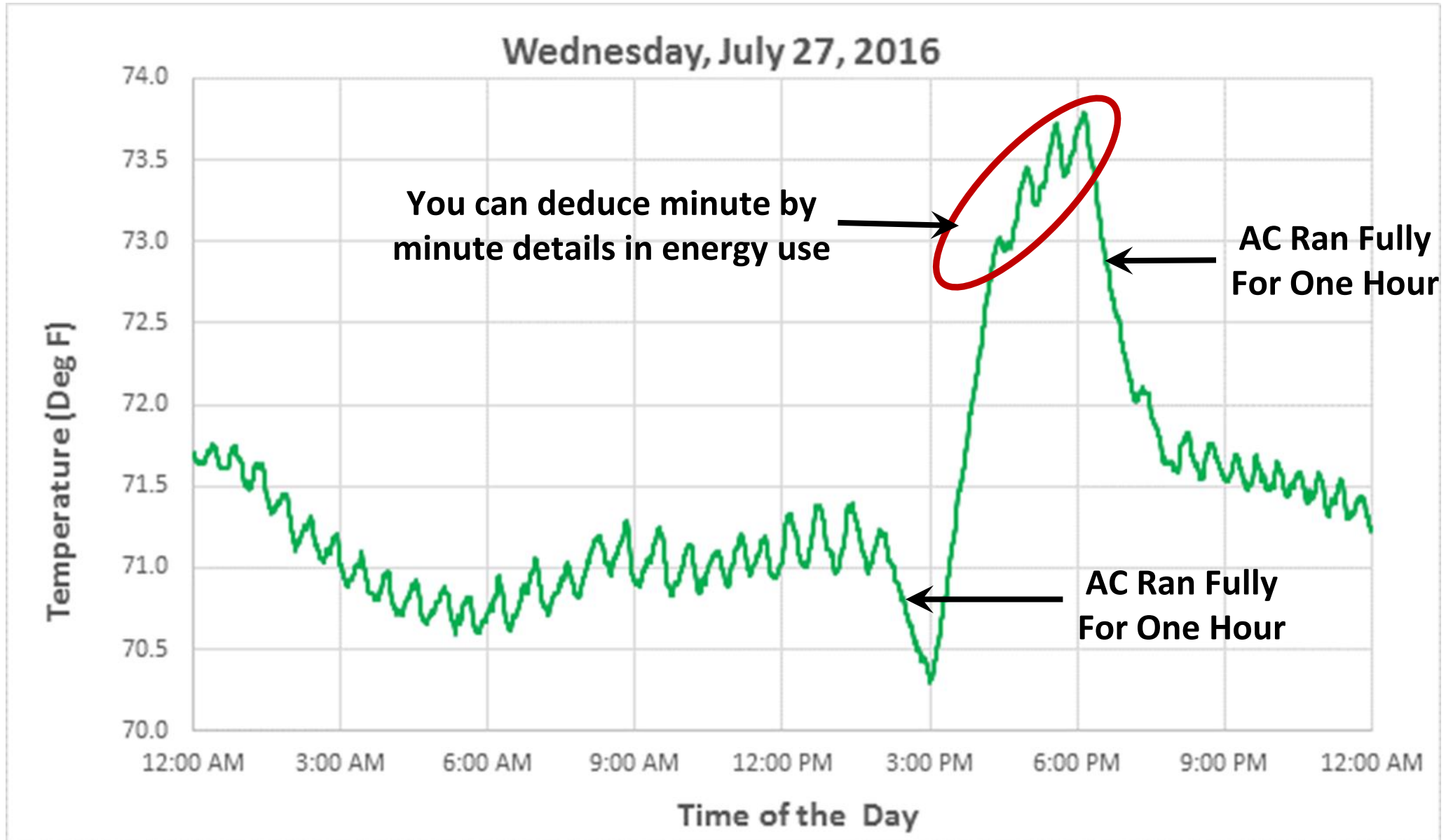
# Temperature vs. Time of Day for Monday 8/12/2013



AC ran 5 Hours and 24 Minutes



# From This You Can Infer kW



# 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

