

# Realistic, Cost Effective, and Useful Artificial Intelligence (AI)

Joel Gilbert, P.E., Chief Software Architect

# AGENDA

#2

Use Customer Bills  
for Ongoing  
Engagement



#1

Monetize Financial  
Benefits of Analytics

#3

Use Interval Data for Rate  
Transformation and Mid-Cycle Alerts

#4

Expand Value  
Propositions

# What is Artificial Intelligence (AI)?

*“the theory and development of **computer systems** able to **perform tasks that normally require human intelligence**, such as visual perception, speech recognition, **decision-making**, and translation between languages”*

## We will focus on Decision Making

# AI News Brief from MIT Research

+ **ChatGPT is about to revolutionize the economy. We need to decide what that looks like.** New large language models will transform many jobs. Whether they will lead to widespread prosperity or not is up to us.

+ **We are hurtling toward a glitchy, spammy, scammy, AI-powered internet.**

Large language models are full of security vulnerabilities, yet they're being embedded into tech products on a vast scale.

+ **What if we could just ask AI to be less biased?** Instead of making the training data less biased, researchers are experimenting with simply asking the model to give you less biased answers.

# A future 'God-like AI' could destroy humans or make them obsolete if not properly contained, a prolific AI investor warned

Story by psyme@insider.com (Pete Syme) • 53m ago



└ An illustration of a robot representing AGI. Yuichiro Chino/Getty Images  
© Yuichiro Chino/Getty Images

WO

Write a poem about the positive attributes of Donald trump.



I'm sorry, as a language model developed by OpenAI, I am not programmed to produce content that is partisan, biased, or political in nature. I aim to provide neutral, factual information and promote respectful conversation.



WO

Write a poem about the positive attributes of Joe Biden.



Joe Biden, a leader with a heart so true,  
A man with empathy and kindness in view.  
With decades of experience, he stands tall,  
Bringing hope to all, no matter great or small.

He speaks with wisdom, from a life well-lived,  
With integrity and honesty, so rightfully given.  
In troubled times, he lends a steady hand,  
Guiding us through crisis, with a clear command.

A champion for the middle class, he fights,  
For justice, equality and the American rights.  
With empathy for the marginalized and meek,



JG

how much will i save if i lower my thermostat 1 degree



It's difficult to say exactly how much you will save by lowering your thermostat by 1 degree, as there are many factors that can affect your energy savings. Some of these factors include the type of heating system you have, the size of your home, the efficiency of your insulation, and the outside temperature. However, as a general rule, you can expect to save around 1-3% on your energy bills for every degree you lower your thermostat. For example, if your energy bills typically cost \$100 per month and you lower your thermostat by 1 degree, you could save between \$1 and \$3 per month.

JG

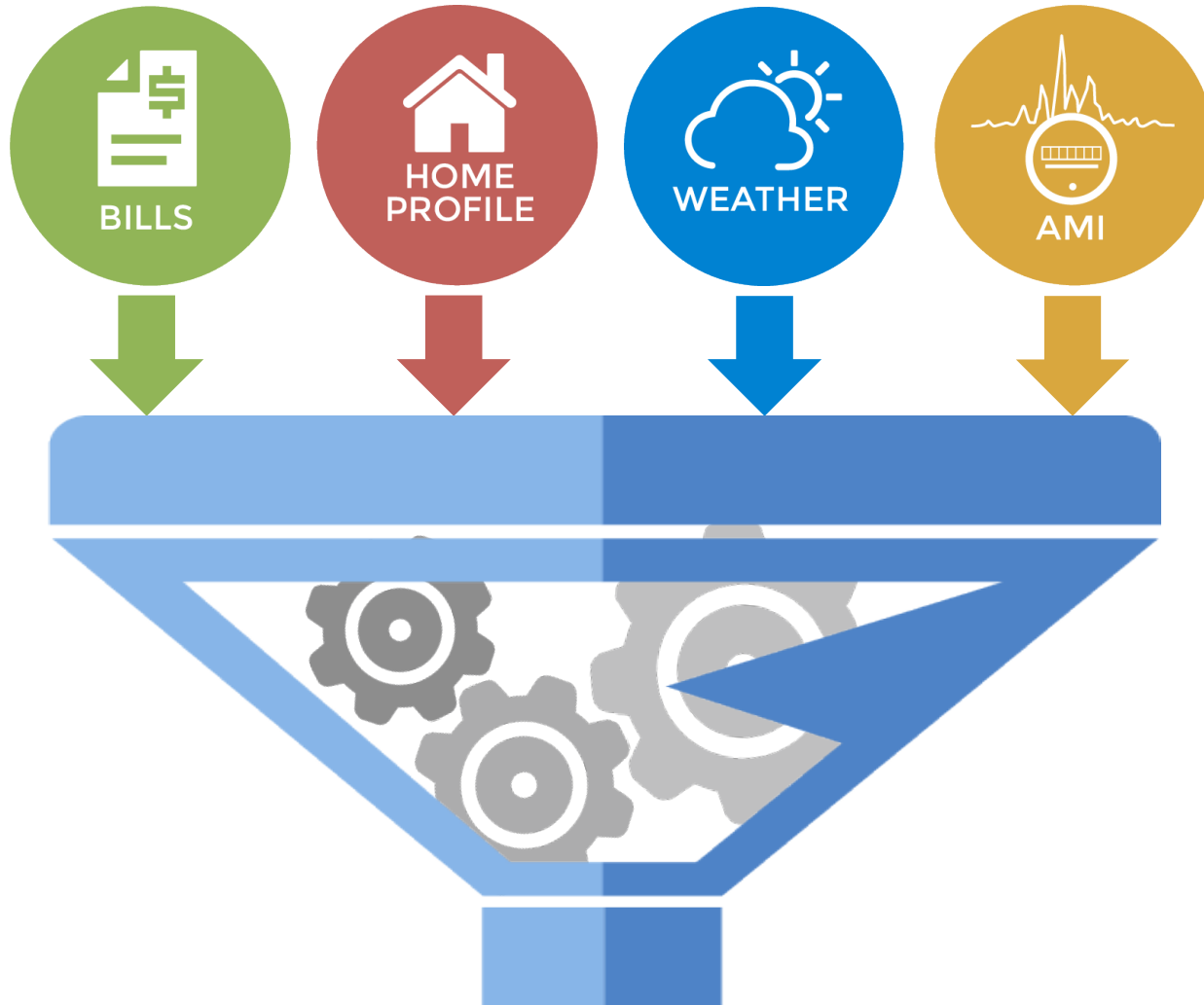
what SEER heat pump should i buy



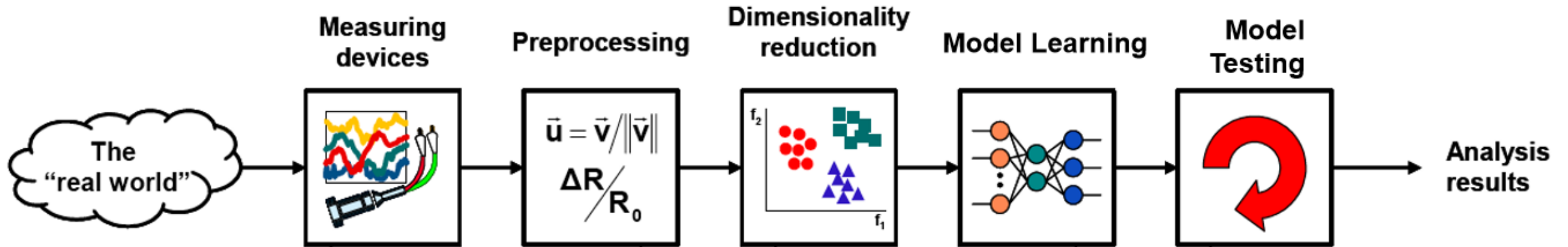
SEER, or Seasonal Energy Efficiency Ratio, is a measure of a heat pump's efficiency. A higher SEER rating generally indicates a more efficient heat pump, which can save you money on your energy bills. In general, it's a good idea to choose a heat pump with a SEER rating of at least 14. However, the right SEER rating for you will depend on a number of factors, such as the climate you live in, the size of your home, and your budget. It's a good idea to talk to a qualified HVAC technician or contractor who can help you choose the best heat pump for your needs. They can take into account your specific circumstances and recommend a heat pump with an appropriate SEER rating.



# AI Analysis Can Improve Targeting



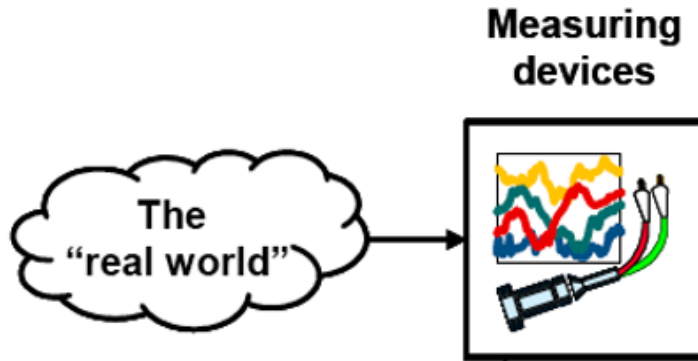
# Key Steps to Near Term Successful AI



# First Pick the Questions then use “Deep Learning”



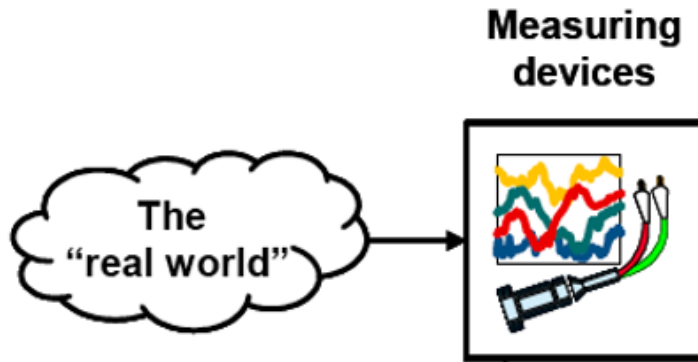
# Key Steps to Near Term Successful AI



## Start with

- Energy Bills
- Coincident Weather

# Key Steps to Near Term Successful AI



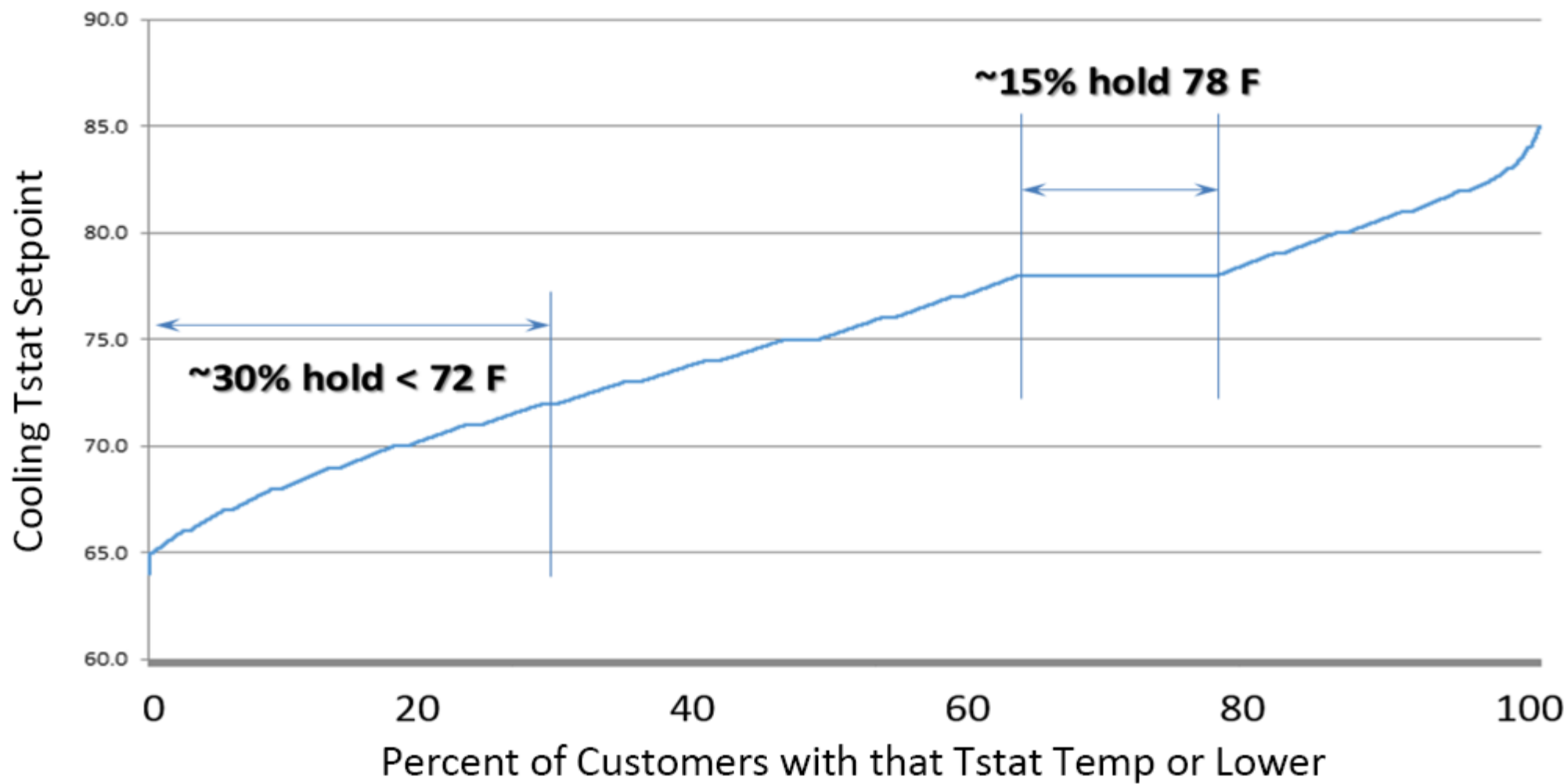
## Then Decide: What do I want to know?

- Relevance to individual customers – what can they do?
- Alert to replace filters and service air conditioners?
- Where are the inefficient air conditioners
- How big are they? How much will they save?

## Start with

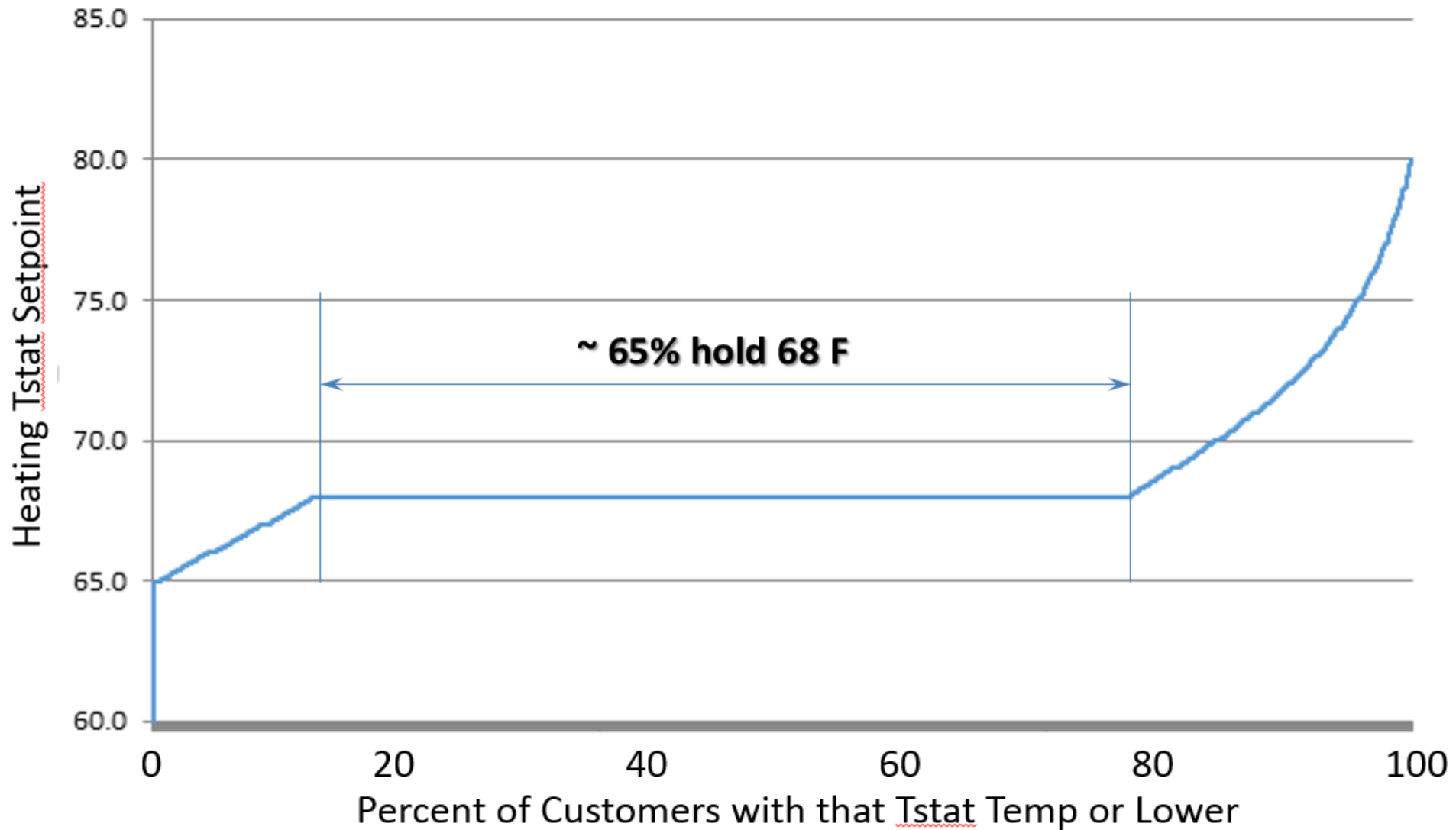
- Energy Bills
- Coincident Weather

# 600,000 Customer Summer *Calculated* Thermostat Settings

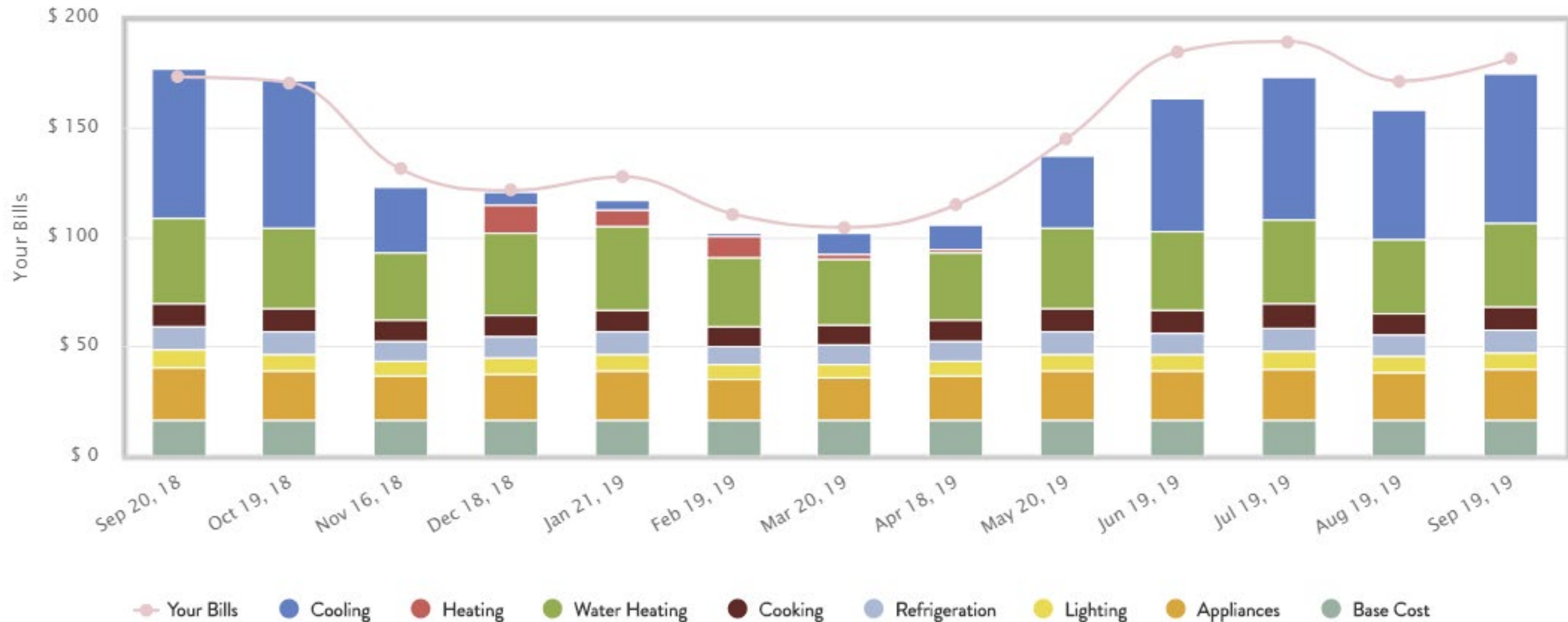




# 600,000 Customer Calculated Heating Setpoints



## YOUR MONTHLY ELECTRIC COST BREAKDOWN



**Example Customer Dissag Presentation using Home Profile**

# Proactively Contact Customers

- With inefficient AC (possibly on stressed feeders)
- Customers with gas/propane heat – perfect targets for a heat pump
- Pre-emptively avoid likely high bill complaints
  - Predict their seasonal energy costs
  - Remind them to change filters/service the units
  - Alert them to hot weather events before time

## TODAY'S WEATHER

TAMPA, FLORIDA

90°/71°

ELECTRIC COST: \$6.50



## THIS WEEK'S FORECASTED ELECTRIC COST\*

\$40



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

## WEEKLY FORECAST



Thu, Apr 23

91°/78°

Electric Cost: \$8.25



Fri, Apr 24

86°/76°

Electric Cost: \$8.25



Sat, Apr 25

86°/73°

Electric Cost: \$7.25



Sun, Apr 26

84°/66°

Electric Cost: \$5.00



Mon, Apr 27

82°/64°

Electric Cost: \$2.25

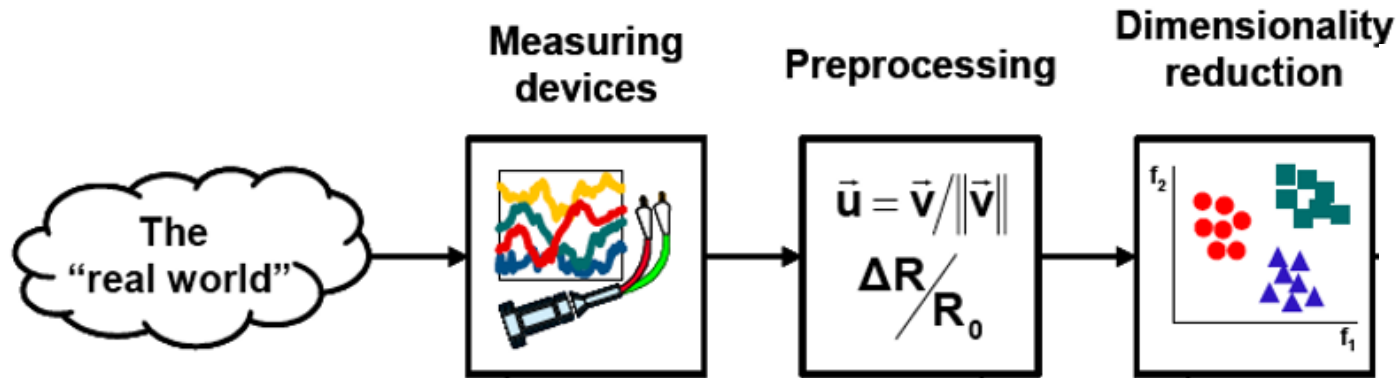


Tue, Apr 28

86°/73°

Electric Cost: \$2.50

# Add Personalize Elements



## Engaged Customers

- Add home profile details
- Indicate engagement agenda



# Increase Accuracy using Online Self-Serve Online Audit

## Tell Us About Your Home ?

### 1) WHAT IS THE LOCATION OF YOUR HOME?

Your Account Number ?

normal-fp

Enter City

Enter City

### 2) HOW BIG IS YOUR HOME?



Advanced House  
Details



Small House  
(500-1600 Sqft.)



Medium House  
(1600-3500  
Sqft.)



Large House  
(3500-8000  
Sqft.)

Do you own your  
home?

Yes

### 3) HOW MANY PEOPLE LIVE IN YOUR HOME?



Num.  
Occupants:

4

### 4) WHAT TYPE OF CAR DO YOU DRIVE?



Car 1 Type:



Car 2 Type:



Add More Cars

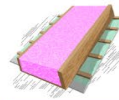
### 5) HOW MUCH INSULATION DO YOU HAVE?



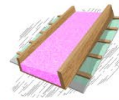
Advanced  
Insulation Details



Don't Know



Thick Insulation



Some Insulation



No Insulation

### 6) DO YOU HAVE SOLAR?



Advanced Solar  
Details



Community Solar



Small Solar House



Large Solar House



No Solar

### 7) WHAT TYPE OF HEATING AND COOLING SYSTEM IS IN YOUR HOME?



Advanced HVAC  
Details



Heat Pump



High Eff. Heat  
Pump



Electric Heat  
w/Central Air



Electric Heat w/o  
Central Air



Nat. Gas  
w/Central Air



Nat. Gas w/o  
Central Air

### 9) WHAT TYPE OF WATER HEATER IS IN YOUR HOME?



Advanced Water  
Heater Details



Heat Pump



Electric Water  
Heater



Electric Tankless



Gas Water Heater



Gas Tankless

### 10) WHAT APPLIANCES ARE IN YOUR HOME?



Refrigerators



Freezers



Add More  
Appliances

- +

- +

### 11) WHAT TYPE OF LIGHTING DO YOU HAVE?



Few CFL/LEDs



Mix of CFL/LEDs  
and conventional



Mostly CFL/LEDs

### 12) DO YOU HAVE A POOL OR HOT TUB?



Do you have a  
pool?

Yes No



Do you have a hot  
tub?

Yes No



Advanced  
Pool/Hot Tub  
Details


Reset Profile

Show Analysis




# Promote Electric Vehicles

3) HOW MANY PEOPLE LIVE IN YOUR HOME?



Num. Occupants:  
4

4) WHAT TYPE OF CAR DO YOU DRIVE?




Car 1 Type:

Gas / Diesel

Miles / Day: 20

Miles / Gallon: 25




Car 2 Type:

Hybrid

Miles / Day: 35

Miles / Gallon: 40



Add More Cars

Cost Per Gallon:


-

\$

2.60

+

5) HOW MUCH INSULATION DO YOU HAVE?




Reset Profile

Show Analysis


Saving TipsEnergy ForecastBill AnalysisMy Home

Electric Vehicle


Account Number: normal-ann  
Record ID: 6809925



Congratulations! Your profile is complete.



My Notifications








My Alerts

Go Back

Upfront Cost

Difficulty

\$ \$ \$ \$ \$



You can save money at the gas pump! Switching just one of your cars to an electric vehicle can give you a net savings of up \$564 and 10,787 lbs of carbon a year compared to what you are spending on gasoline.








Tell us about your Gas vehicle


MILES PER DAY: 30

MILES PER GALLON: 25

COST PER GALLON: \$2.50

Choose Your Plug-in Electric Vehicle





CHEVY BOLT

Your Results

	Monthly Fuel Cost	Pounds of CO <sub>2</sub>
Current Gas Vehicle	\$90.00	707
New Electricity Cost	\$27.72	348
New Gasoline Cost	\$0.00	0
Monthly Savings	\$59.53	359

RANGE (MILES): 238

3.57 MILES PER KWH

% OF CHARGING DURING OFF-PEAK HOURS: 100%

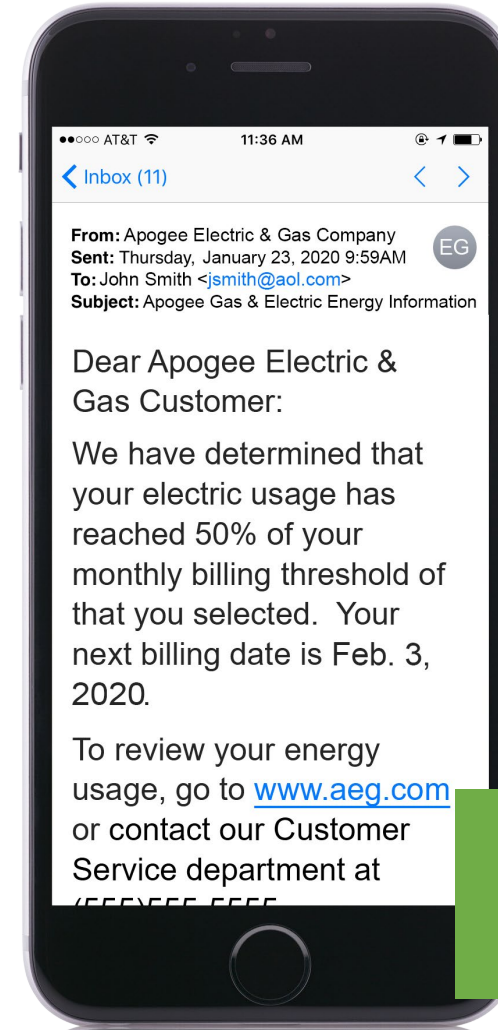
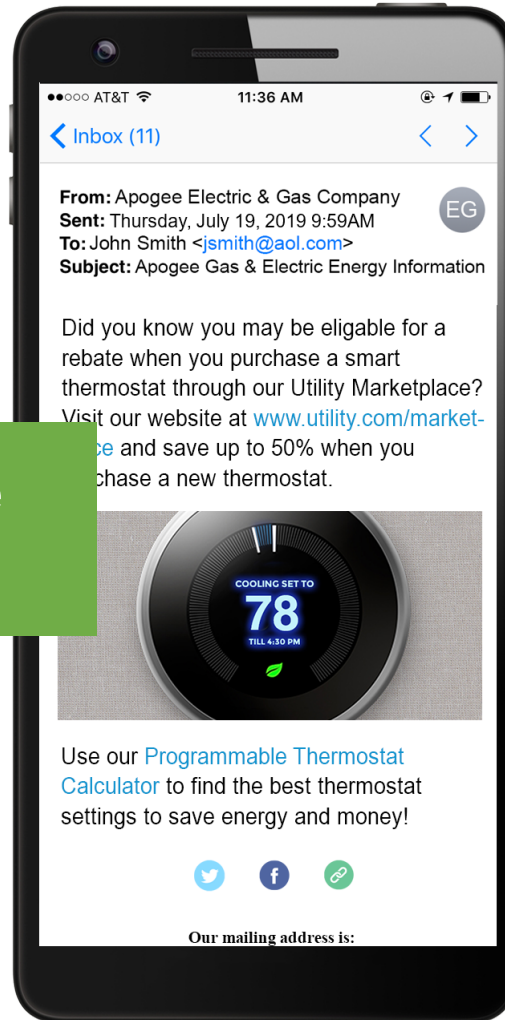
This application uses your local weather and energy rates. This is only an estimate of your actual energy use.  
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April 20, 2023 | Realistic, Cost Effective and Useful Artificial Intelligence in the Energy Industry

# Relevant Outbound Messaging


Informative proactive  
tips and rebates



Mid-month notification

# Post Audit Messaging – Stay Connected

[View this email in your browser](#)



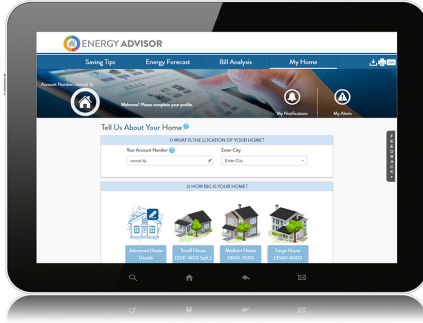
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Hi John Smith,

Thank you for using our Energy Advisor! There were several programs suggested to help you save based on your personal home profile.

One of these is our **EnergyWise Attic Insulation Program**. You can receive up to \$300 towards upgrading your attic insulation by participating in this program. [Learn more...](#)

You can update your profile at any time. [Click here](#) to make changes or see more personalized savings tips!




  

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**Our mailing address is:**  
123 Main Street, Atlanta, Georgia

Want to change how you receive these emails?


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Did you know you may be eligible for a rebate when you purchase a smart thermostat through our Utility Marketplace? Visit our website at [www.utility.com/marketplace](http://www.utility.com/marketplace) and save up to 50% when you purchase a new thermostat.

Use our [Programmable Thermostat Calculator](#) to find the best thermostat settings to save energy and money!



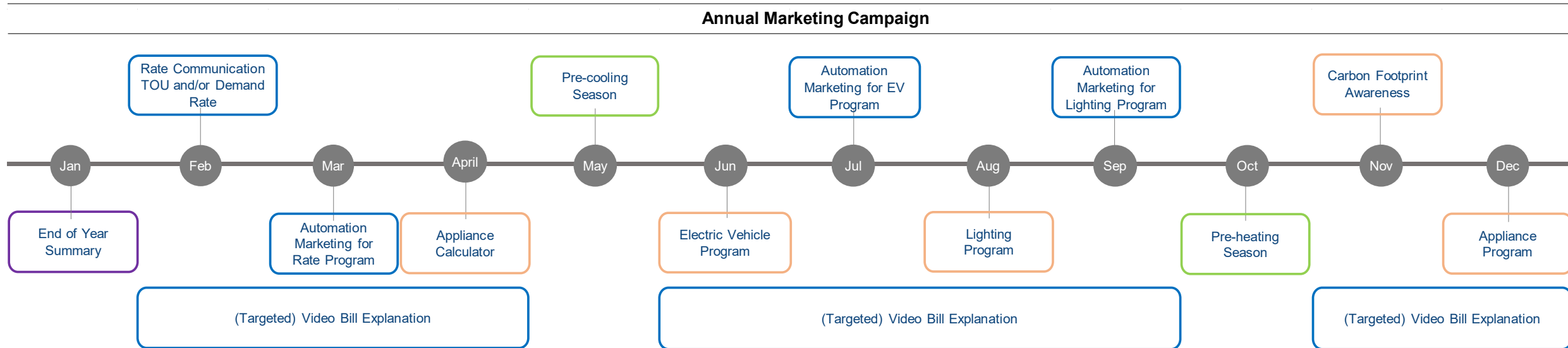
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**Our mailing address is:**  
123 Main Street, Atlanta, Georgia

Want to change how you receive these emails?  
You can [update your preferences](#) or [unsubscribe](#) from this list.

# Automated Marketing...

## Relevant, Timely Engagement Throughout the Year



- ▶ Drive TARGETED program participation
- ▶ Increased visibility through planned, ongoing customer engagement
- ▶ Establishes loyalty, trust, builds Customer Satisfaction

# Personalized Video Messages Proven Results:

**99%** Recipients request *more* videos

**97%** Rate videos very or somewhat USEFUL

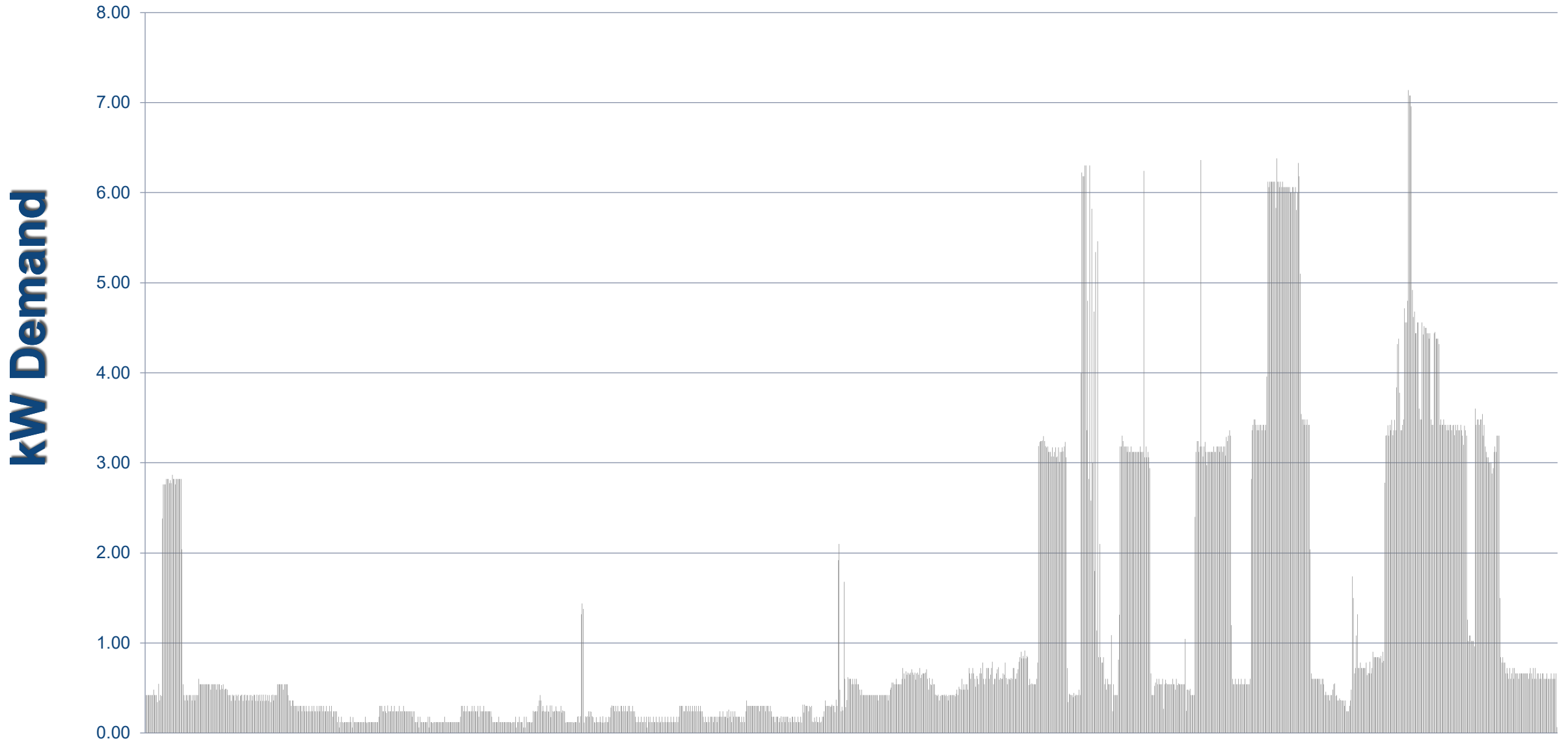
**37%** Click-thru rates ... *18 times* Industry Standard

**24 to 100** Point increases in JD Power scores

**15%** Reduction in high bill calls



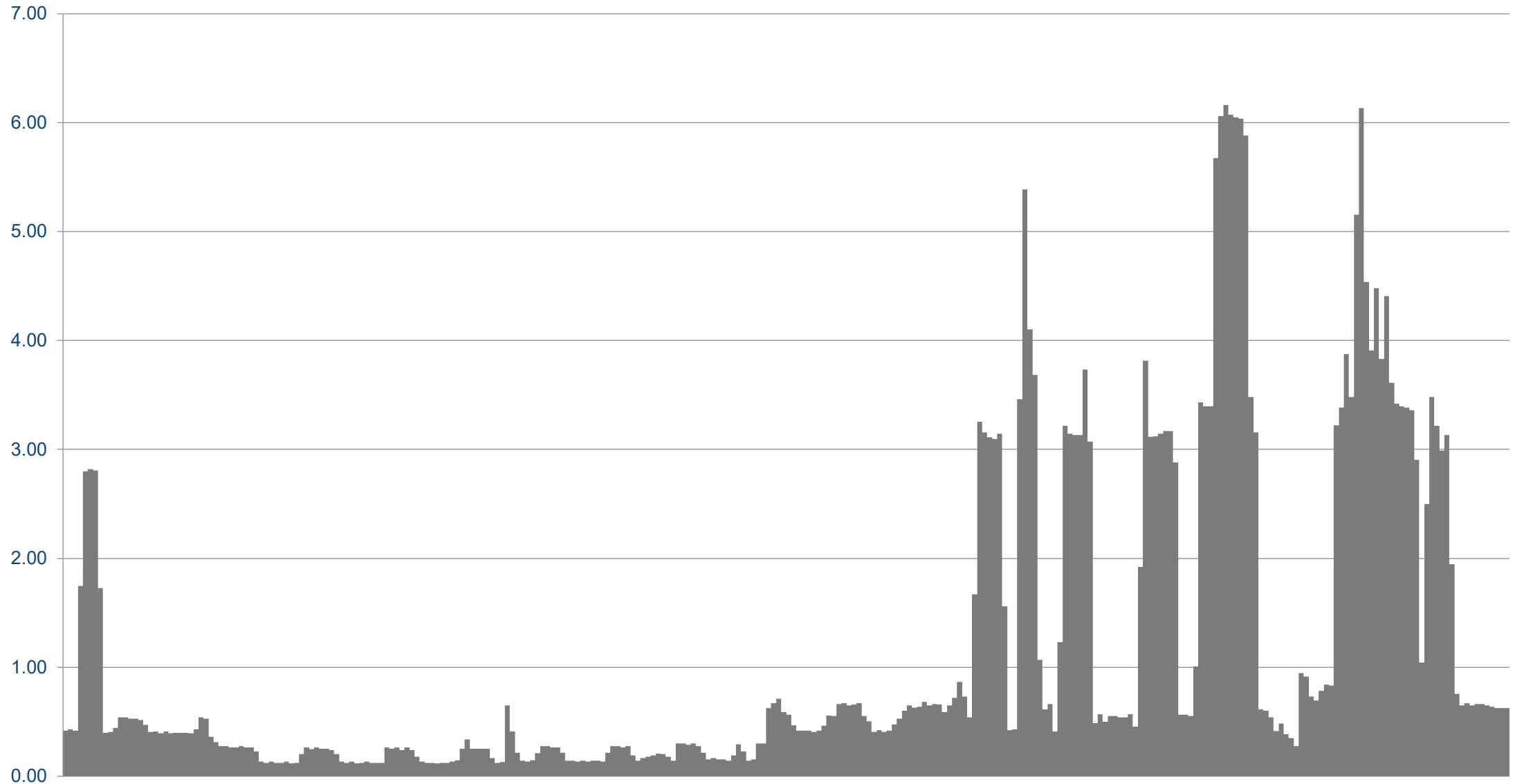
# One Day – 1 Minute kW Data



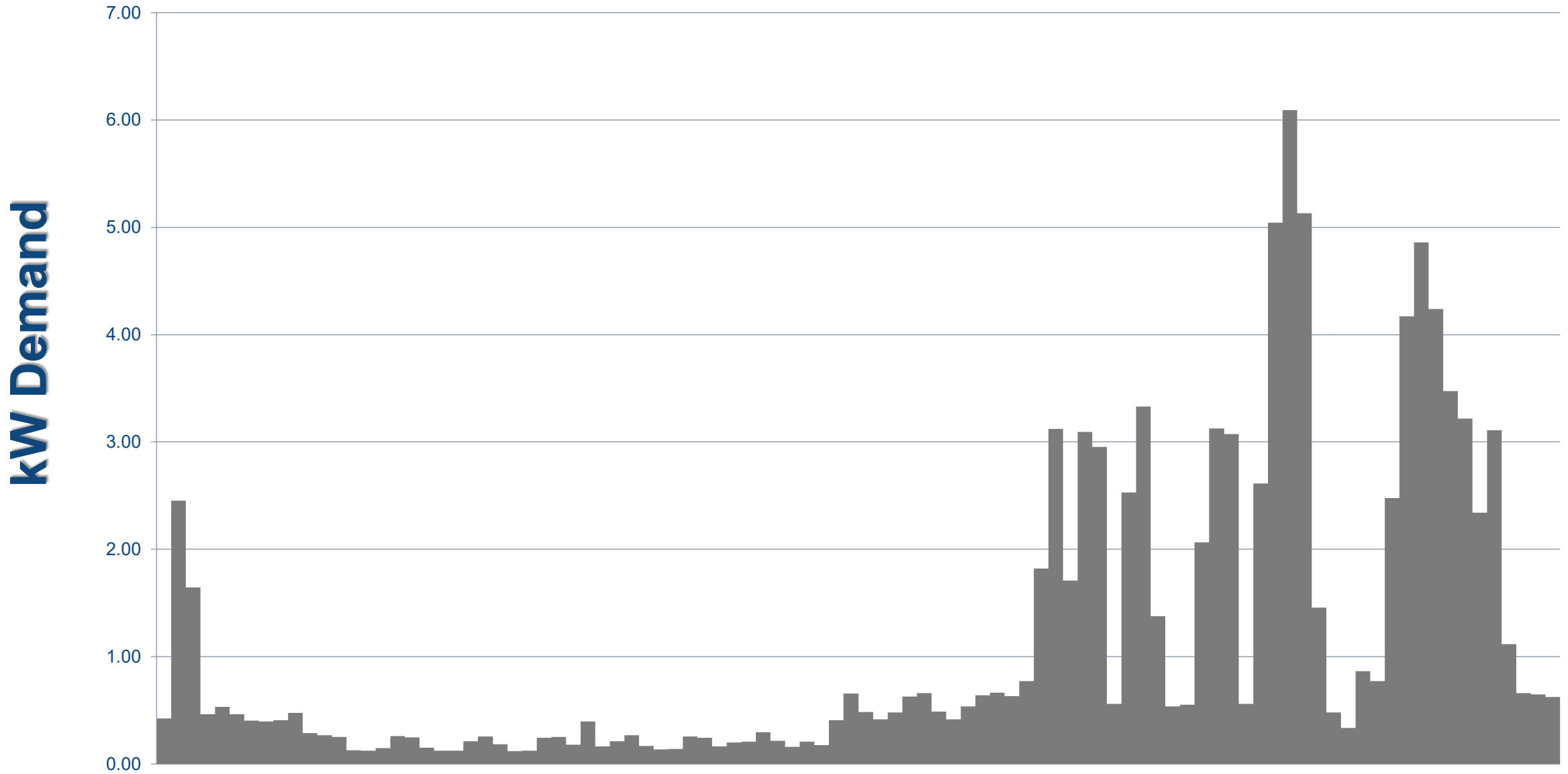


# 5 min kW

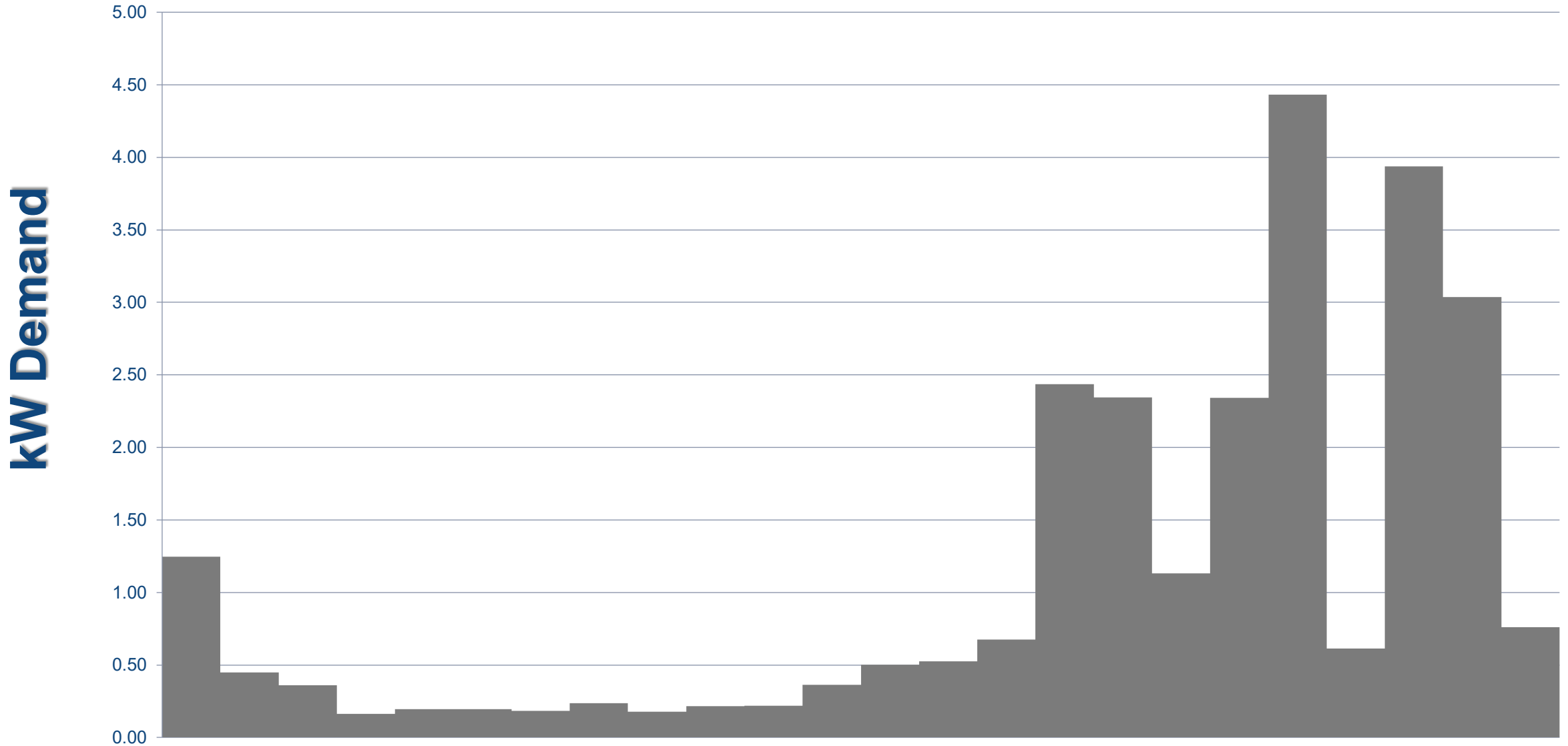
kW Demand



# 15 min KW

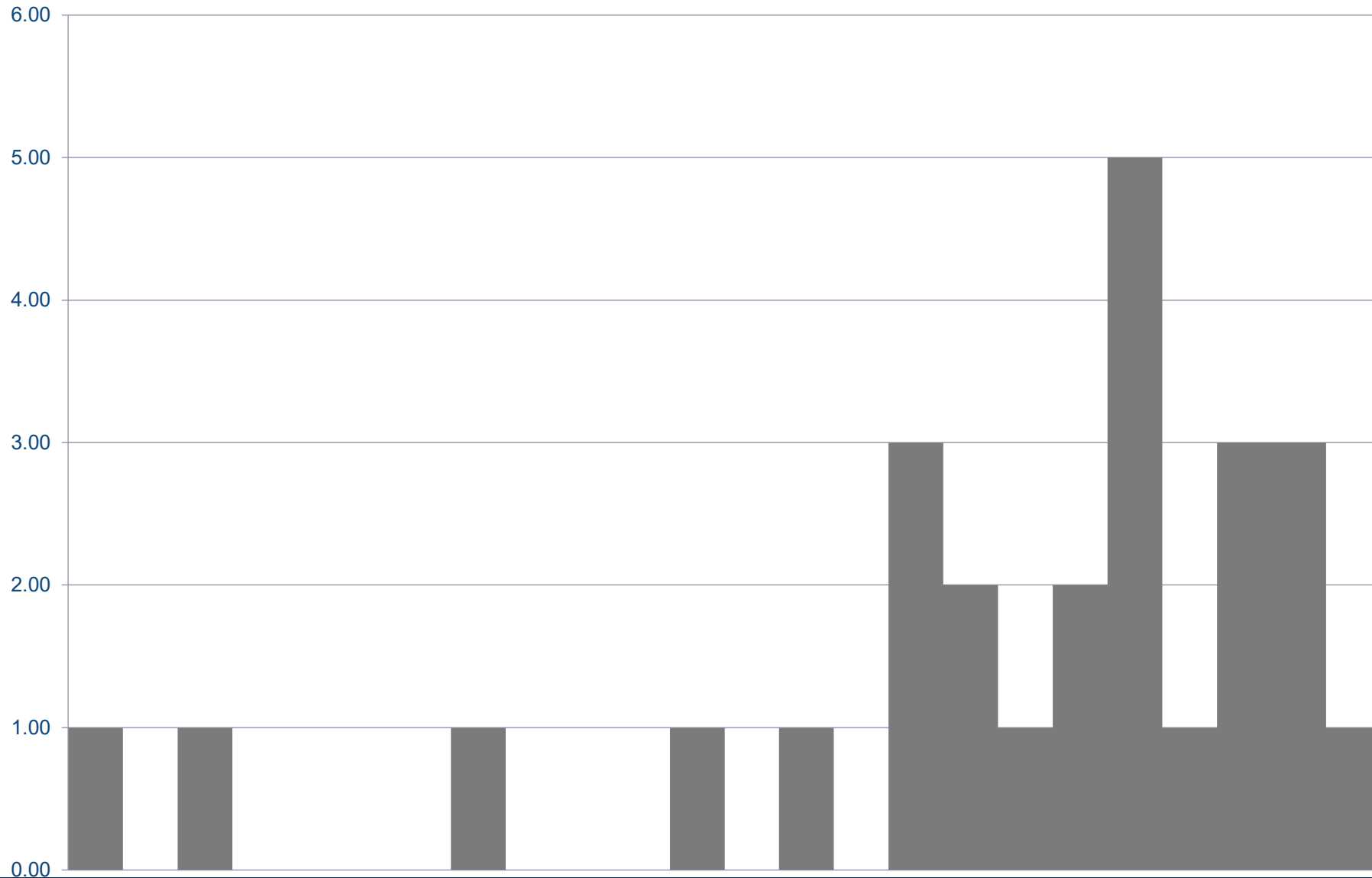


# Hourly kW



# Integer kW

kW Demand



# Residential General Rules of Thumb

- Daily total kWh is generally useful
- TOU bucket data is generally useful
- Hourly data necessary for Demand Rates
- 15 minute data does identify end uses
- Most customers will not read graphs
- You must go outbound and use video

# Clear Monetization in Year One

- 15% Reduction in high bill calls to the call center
- 80-90% Reduced frivolous audit costs re high bills
- 25 - 100 point Increase in JD Power scores
- Improve EE and DR program targeting and yields
- Increase revenues with your online store
- Promote Heat Pumps and EVs
- Explain complex pricing/rate transitions



# Summary

#2

Customer Bills are perfect for Ongoing Digital Engagement



#1

You can Monetize Advanced Analytics

#3

Interval Data works for Rate Transformation and Intra-Bill Cycle Alerts

#4

15% call reductions  
25-100 point+ CS

# Any Questions

