

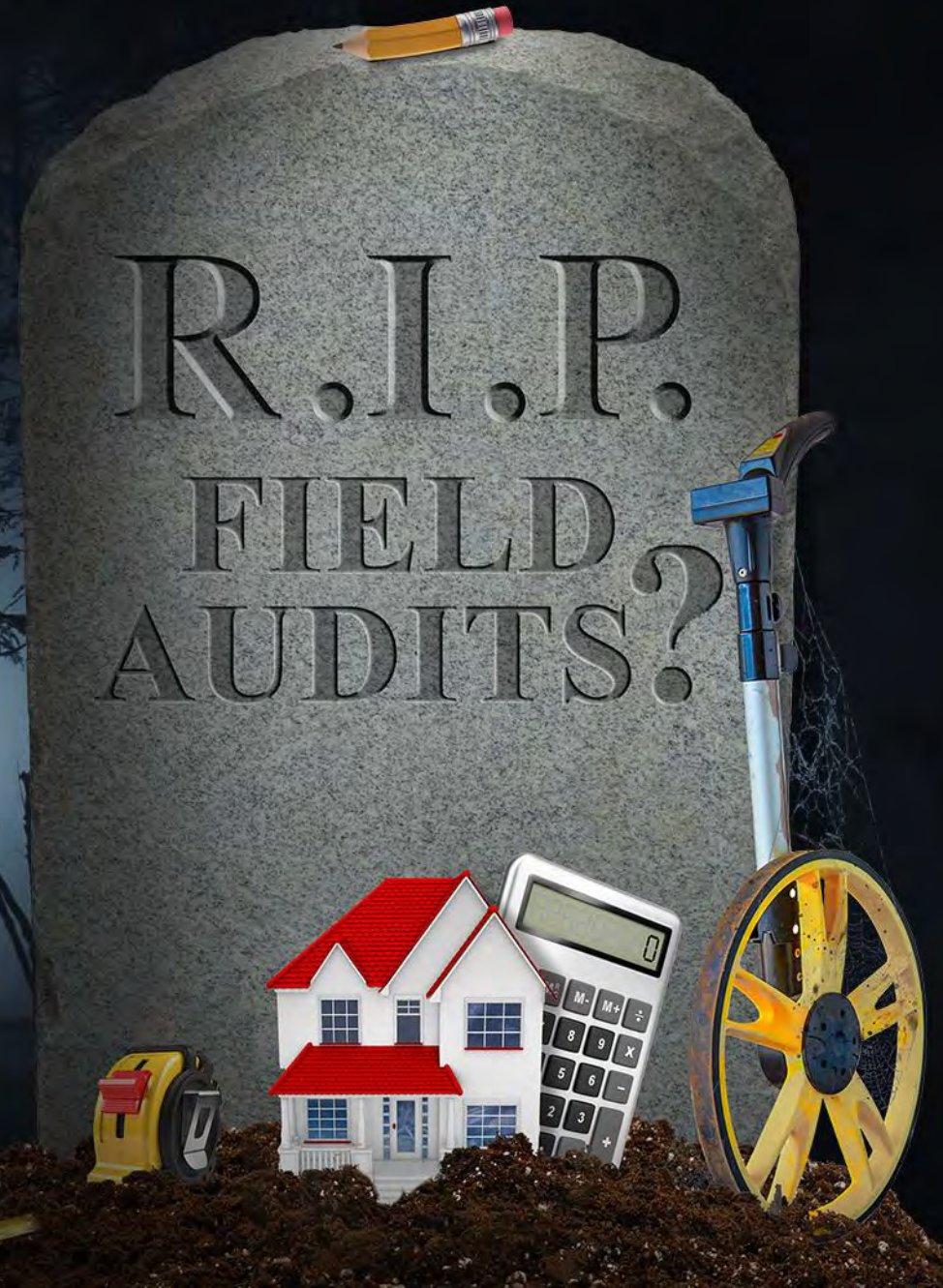
Are Field Audits Dead?

Presented by

Susan Gilbert, CEO

Joel Gilbert, P.E.

Chief Software Architect



APOGEE PRESENTERS



Susan Gilbert

CEO & Co-Founder

A career motivated by a passion for energy stewardship.

Driven to leverage technology to help customers understand and better manage energy.



Joel Gilbert, P.E.

President, Chief Software Architect



Leads Apogee's accomplished team of engineers, data scientists, analysts, and researchers.

Responsible for applying highest standards of excellence in building science and engineering, applying artificial intelligence and predictive analytics to build strong customer relationships.

"Moving from *anecdotes* to *analytics*!"

AGENDA

#2

Targeting for
efficiency *and* cost
effectiveness



#1

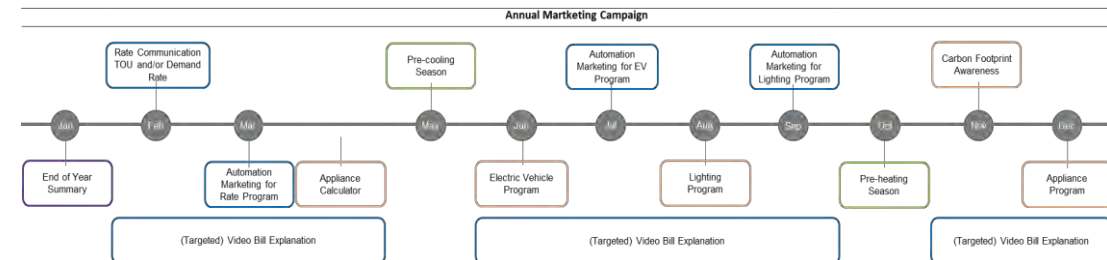
You **CAN** effectively
audit **without**
visiting homes

#3

Ongoing customer engagement

#4

New frontier of
home diagnostics



Evolution of Health Care

Traditional



Early Use of Technology



Remote



The Future



How It All Began...

1973 and 1978
Oil Embargos



1977 Jimmy Carter's Fireside Chat

...43 Years Ago



- Energy independence is the “*Moral Equivalent of War*”
- Established Department of Energy
- Formed the National Energy Policy act of 1978 which...
 - Launched the Residential Energy Conservation Program (RCS)...
 - Mandating IOUs do free audits

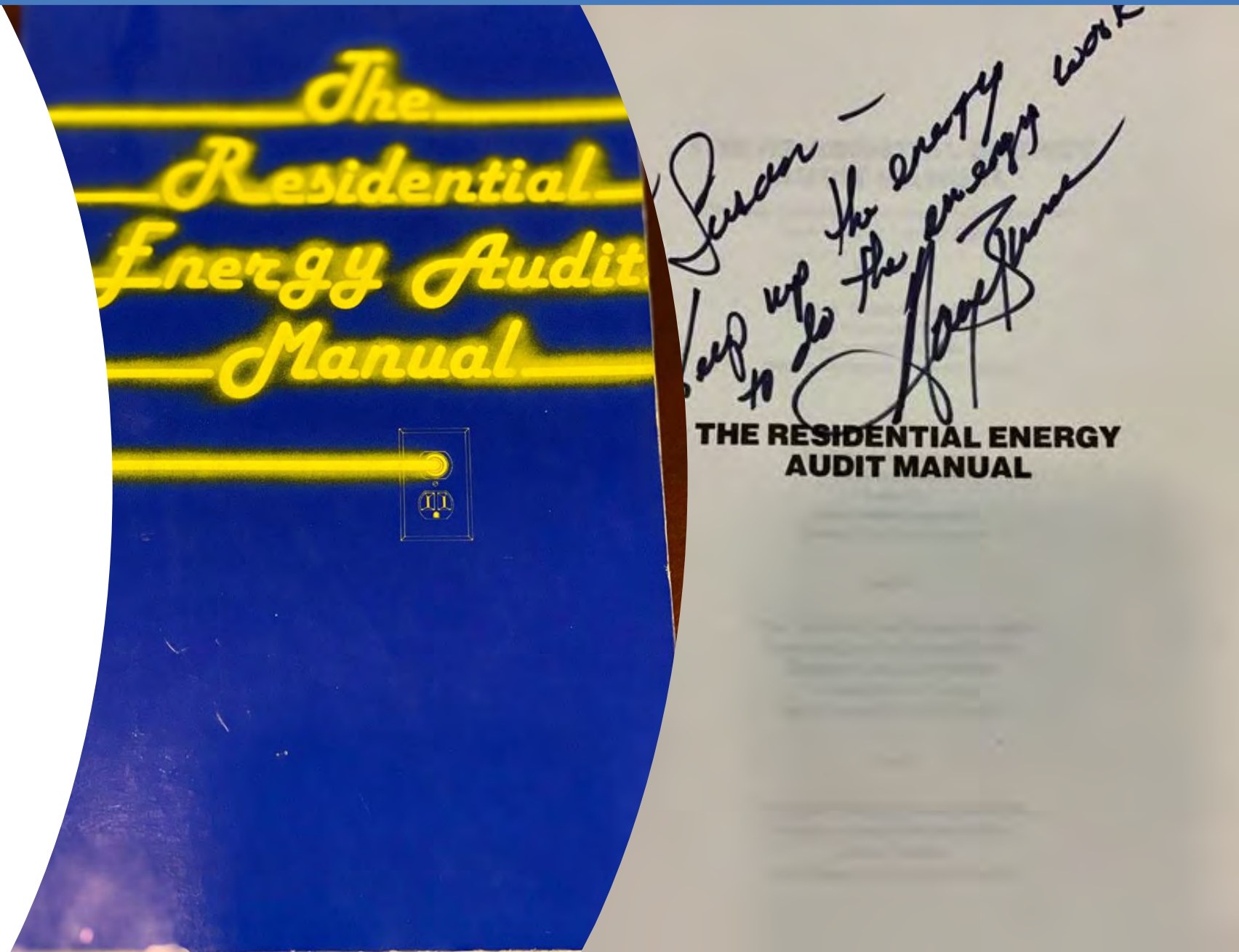


Thousands
of energy
auditors
trained

Pictured, the 1982 RCS Auditing Class: (front row from left to right) Bob Floyd, Dan Evans, Al Harwick, Jane Holden, Kate Weber, Debbie Ziccone, Kelly Gordon, and Donna Walker; (middle row from left to right) Charles Segerstrom, Mike Wightman, Charles James, David Missall, Denny McKee, Thomas Harrington, Ted Pearce, Ethel Cappelluti, Pete Niewieroski, and Roger Dent; (top row from left to right) Charles James, Brien Carlson, Al Harwick, Bill Wallace, and Duane Larson.

Tools of the Trade

- Our Bible
- Mine Signed by Project Manager Gary Bunce



around masonry chimneys or any masonry enclosing a flue, to provide a minimum two inch clearance between the insulation and the outside face of the masonry. Blocking should also be installed around vents, chimney and vent connectors, and non-masonry chimneys, to provide minimum clearances. Blocking is not necessary around vents and chimneys for non-combustible mineral fiber, or mineral cellular insulation. For fire safety, this material must be non-combustible in conformance with ASTM E 136-79.

Electrical Hazards

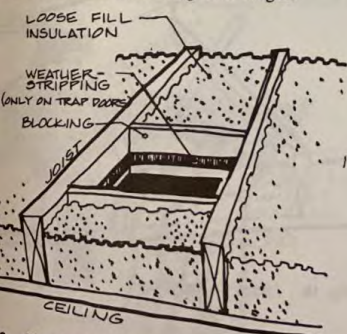
Before installing attic/ceiling insulation, note any frayed or deteriorating wiring. If the wiring is in satisfactory condition, the installer must still take care not to cut or stretch it while installing the insulation, and not to trip over wiring stretched across the floor joists.

Wiring in need of repair should be referred to a certified electrician.

Access Panels/Stairways: A Special Case

Access panels, with or without retractable ladders, should be insulated. Access panels without a retractable ladder can be insulated on the attic side.

Install permanent blocking around access panel openings and any bathroom, kitchen, and laundry vents which open into the attic, if the insulation will be installed at levels exceeding their height.



2. Blocking around Access

9.3b CEILING INSULATION 25

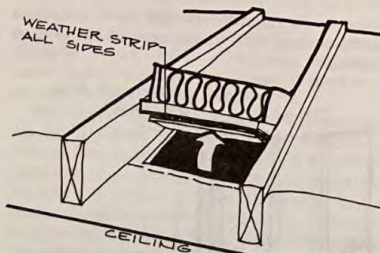


Fig. 13. Insulate Access Panel

Rigid board or blanket insulation may be installed on the conditioned side of access panels with retractable ladders. If insulation is installed on the conditioned side of the access panel, a finish material (such as gypsum board) should be attached, for aesthetic reasons, and for protection of the insulation. If rigid board is used, the finish material should meet fire codes.

To reduce air infiltration, weatherstripping should be installed along either the perimeter of the access panel or to the frame which it fits into.

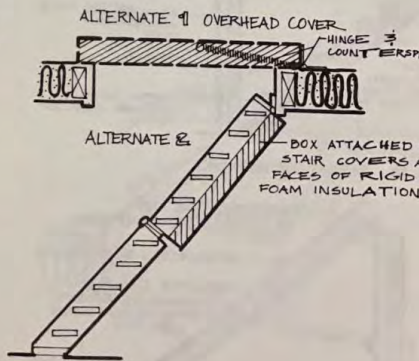


Fig. 14. Insulation on Retractable Stairway

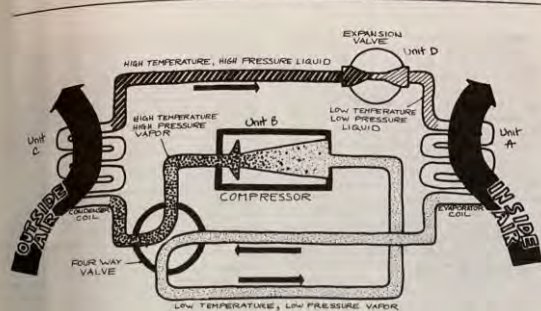


Fig. 4. Heat Pump—Cooling Cycle

except now the flow through the finned heat exchanger coils is reversed by the four way valve. The function of the two coils is interchangeable. This reversal is possible because both of the finned heat exchanger coils are similar, and can function as either a condenser coil or an evaporator coil.

finned heat exchanger coil, which now functions as an evaporator coil. As a fan draws the outside air across the evaporator coil (Fig. 5), the "cold" refrigerant (10-25° Fahrenheit below the outside air temperature) cools the air.



passage of air into the attic. The problem is complicated by the fact that in order to reduce fire hazards, insulation must be kept away from the fixtures. The existence of an air passage and the absence of insulation can create a wide-open pathway for air infiltration, and severely reduce the cost-effectiveness of adding insulation in other parts of the attic.

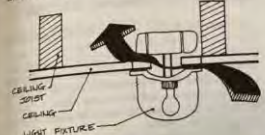


Fig. 26

Entrances to an attic may also present special problems. An unconditioned attic may have a trap door with a sliding cover, a hinged trap door with a folding ladder, or no cover at all. In some older homes, where the attic was used for storage, as well as in homes in which the attic is "finished off" and conditioned, the attic is often reached by a set of stairs with a door at the top, the bottom, or both. The auditor should check the tightness of the fit of whatever attic entrances are encountered. If the closure separates a conditioned space from an unconditioned space, it should be checked to see if it is secure. In regions with high heating demands, such an area should be insulated. If there is no closure, the movement of air through the wide open space can be significant, constituting a serious energy drain for both heating and cooling.

structures, and are usually made of masonry. They generally carry room-temperature air which has been contaminated by cooking and other activities to the outside.

The introduction of warm air into the attic during winter has two harmful effects. First, the warm air heats the attic, wasting heat.

The second effect of air leaks is to carry moisture from the home into the attic; the cold roof surface can condense this water vapor, which may cause damage to the structure.

The openings around vents and flues (where they pass through floors, walls and ceilings) have been discussed. An additional problem, however, is the opening within the structure itself—the chimney of a fireplace for example or kitchen range hoods.

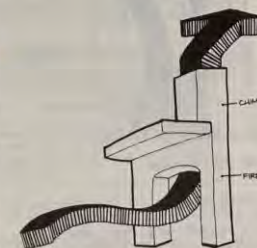


Fig. 28. Fireplace/Heat Loss

Five-Day Auditor Training

- Heat Transfer
- Conversions
- Building Envelope
- Mechanical Systems
- Special Problems
- Conservation Measures
- Cost & Savings Analysis
- Solar & Wind
- Putting It All Together

In the 1980s...

- Auditors carried phone modems
- Called computers to create audit reports
- Customers were impressed!



Software Enabled In-Home Audits

- Efficient
- Involved Customer
- Instant, Impressive Report
- Profile Data Available:
 - For Mining
 - For Following up



In the 1990s...

Advances in Technology



HOT attics are BAD...



and can be



DANGEROUS!

Reasons for *NOT* Doing **Field Audits**

- Dangerous
- Too Expensive
- Hard to Prove Cost-Effective
- “One-&Done” vs. Ongoing Engagement
- Don’t Impress Customers
- Especially if they had to **Wait**



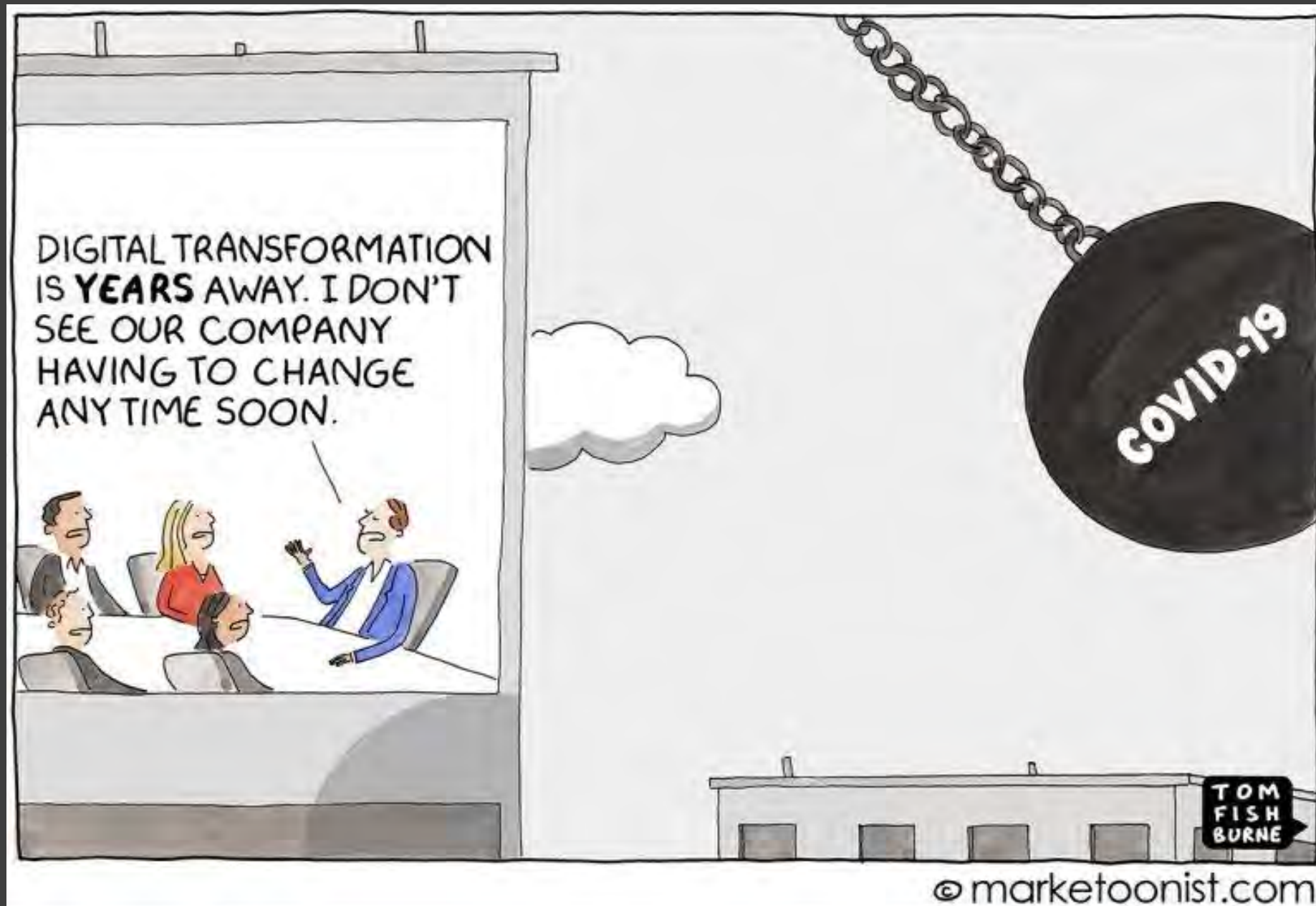


Audit reports
lacked appeal

And Today....

**Unless You
Are
Bringing
Pizza**







...going the way
of the Dodo Bird



**Creating
Efficiency**

in the

**Energy
Efficiency
Business**

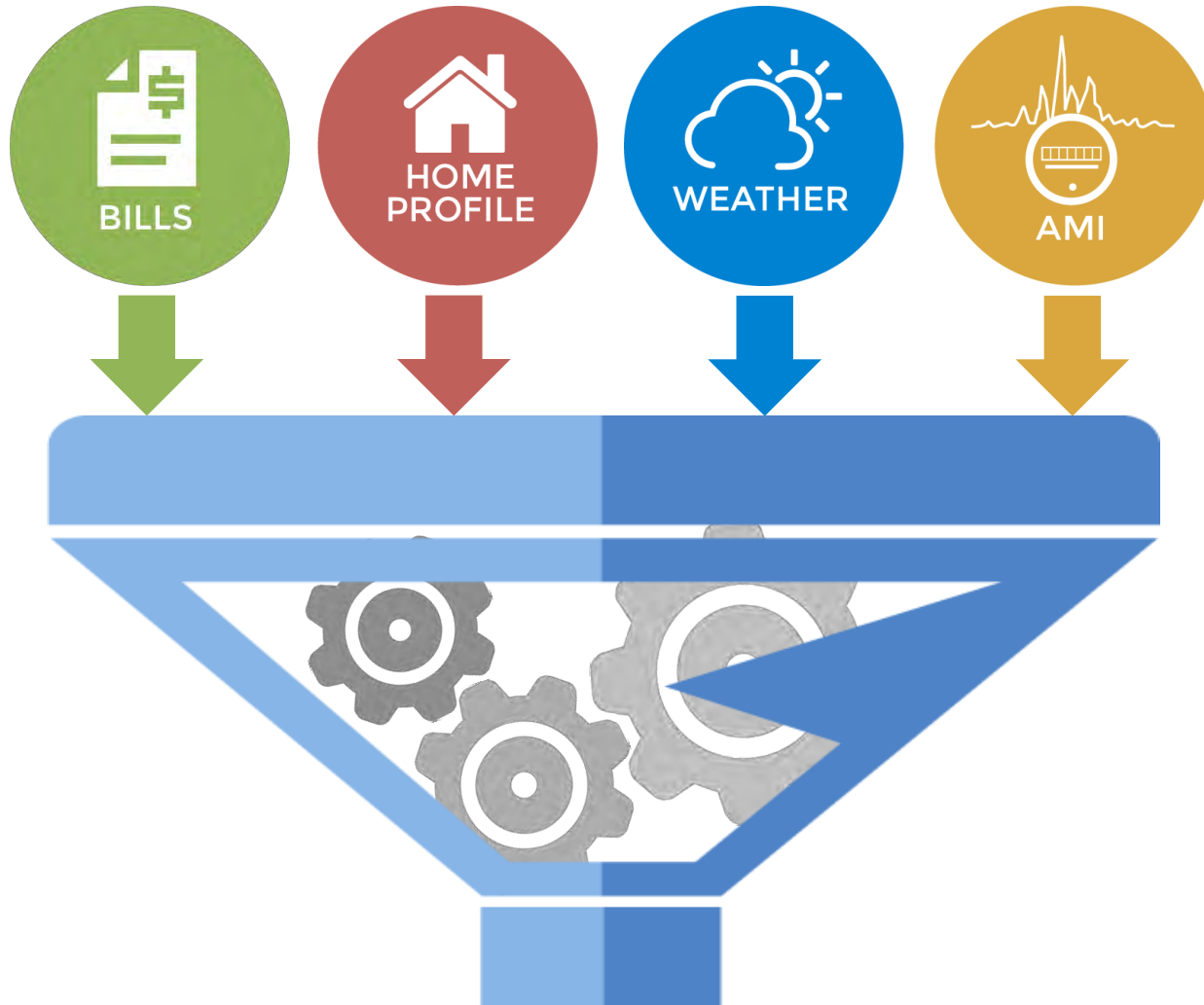


Which Homes Get Audited?

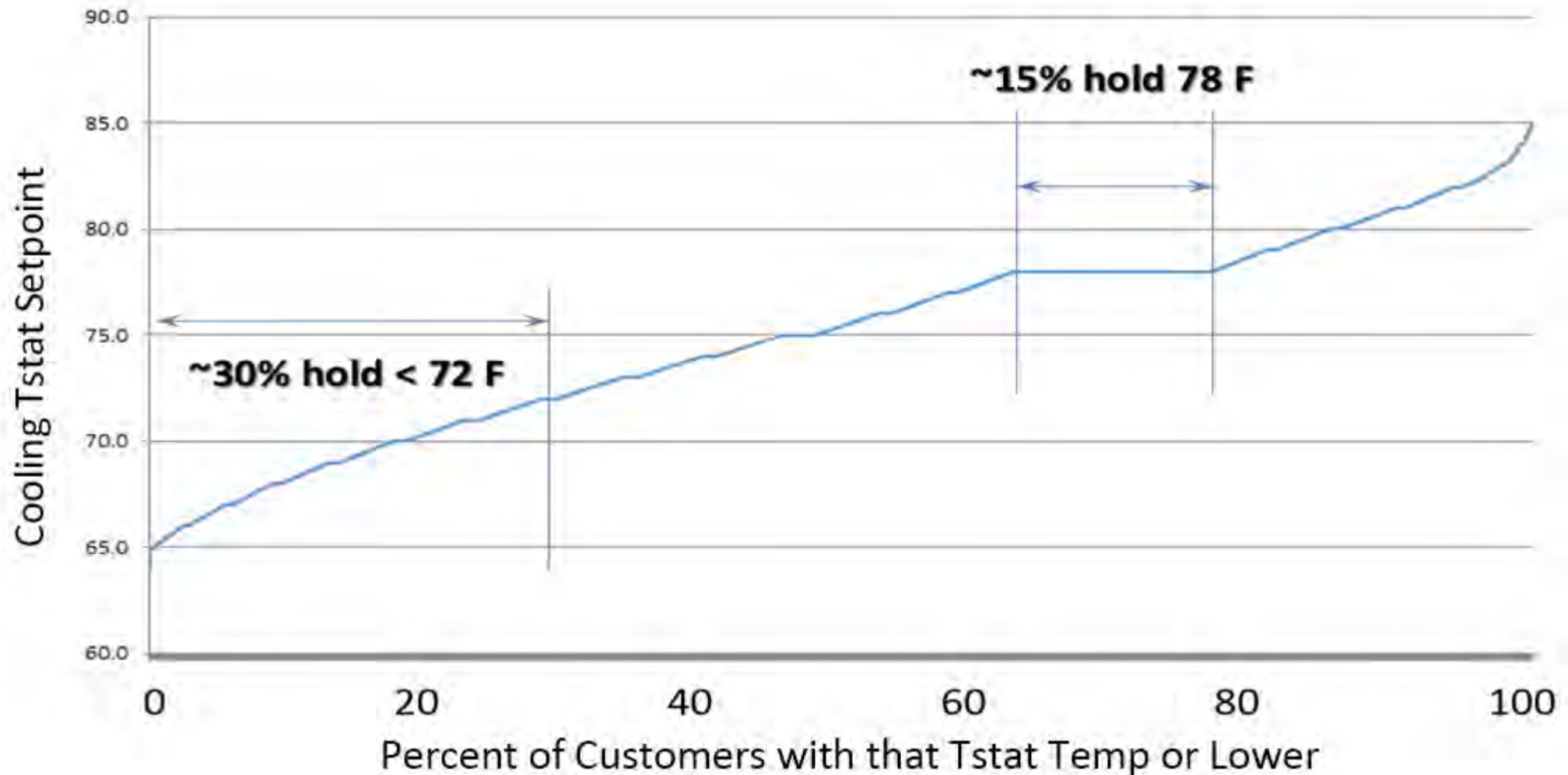
- One calling about **high bills?**
- or
- Ones identified as **high potential?**
- Ones likely **best program candidates?**



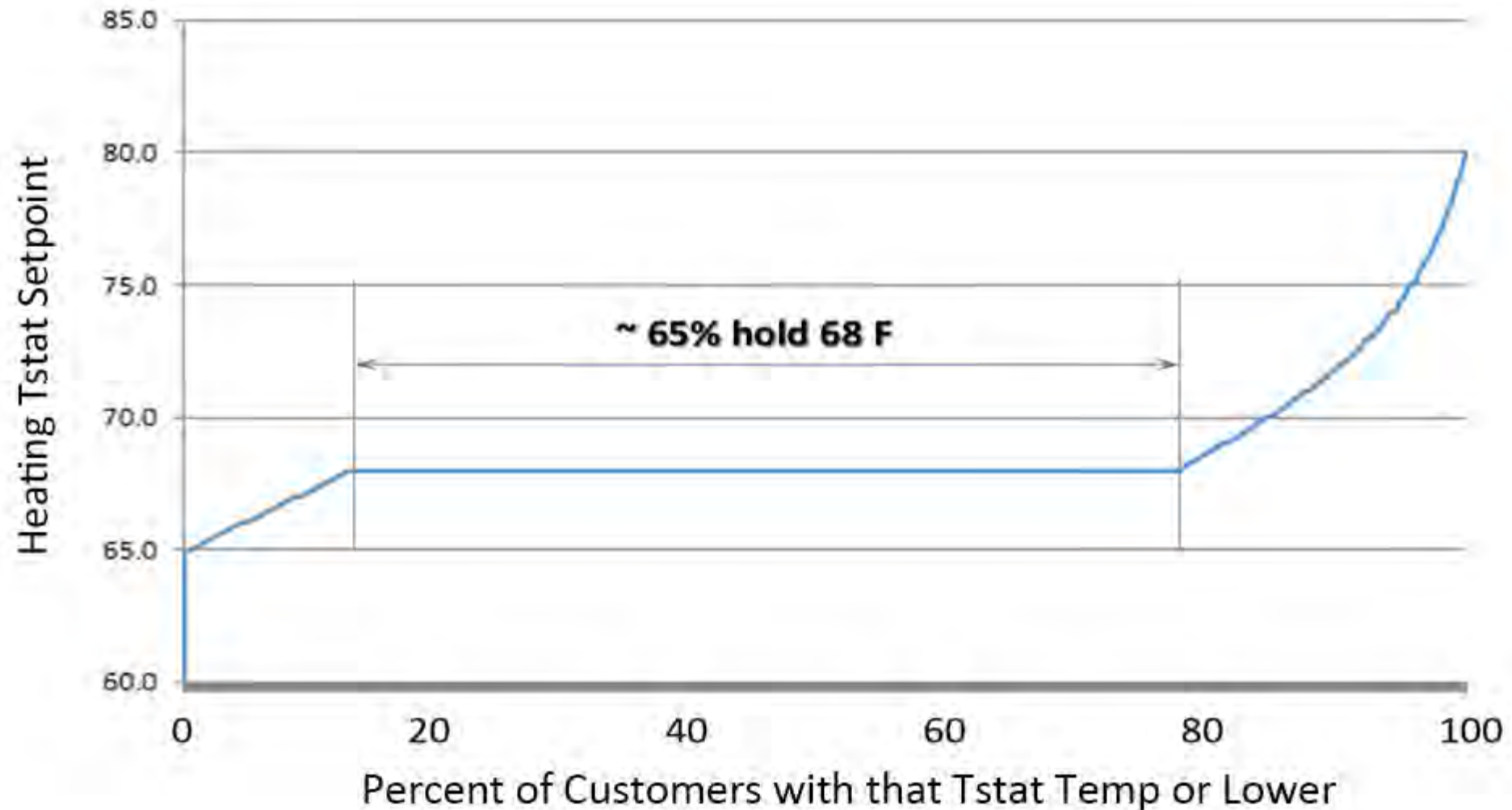
Analysis Enables Targeting



600,000 Customer's Summer *Calculated* Thermostat Settings



Same Customer's *Calculated* Winter Thermostat Settings



Use *Analysis* Not *Automobile*

- Answer 6 Questions
- Run Analysis
- Problem Revealed
- Look Closer...

Customer ID:

Or Load Audit Form:

Weather Zone:

SqFt Not Incl. Basement:

Occupants:

Heating Type:

Average Heat Setting:

Average Cool Setting:

Water Heater Type:

Auditor Company:

Auditor Name:

Employee ID:

Audit Date:

Customer Name:

Phone:

Address:

City:

State:

Zip:

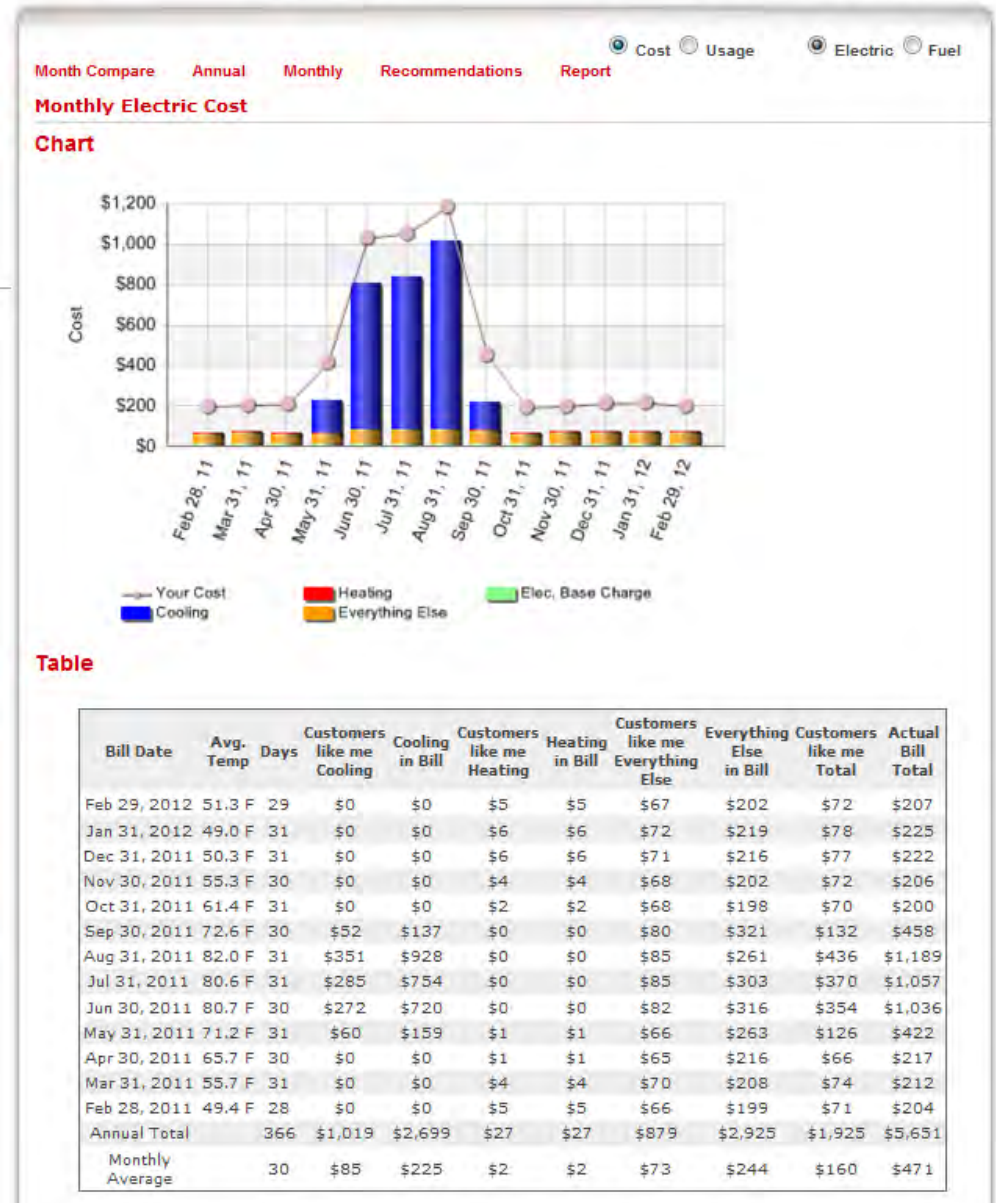
Export File Name*:

RUN ANALYSIS

DOWNLOAD NUMBERS

DOWNLOAD EXCEL

RESET CALCULATOR



Don't Need Site Visit to Diagnose This

Bill Date	Avg. Temp	Days	Customers like me Cooling	Cooling in Bill	Customers like me Heating	Heating in Bill	Customers like me Everything Else	Everything Else in Bill	Customers like me Total	Actual Bill Total
Feb 29, 2012	51.3 F	29	\$0	\$0	\$5	\$5	\$67	\$202	\$72	\$207
Jan 31, 2012	49.0 F	31	\$0	\$0	\$6	\$6	\$72	\$219	\$78	\$225
Dec 31, 2011	50.3 F	31	\$0	\$0	\$6	\$6	\$71	\$216	\$77	\$222
Nov 30, 2011	55.3 F	30	\$0	\$0	\$4	\$4	\$68	\$202	\$72	\$206
Oct 31, 2011	61.4 F	31	\$0	\$0	\$2	\$2	\$68	\$198	\$70	\$200
Sep 30, 2011	72.6 F	30	\$52	\$137	\$0	\$0	\$80	\$321	\$132	\$458
Aug 31, 2011	82.0 F	31	\$351	\$928	\$0	\$0	\$85	\$261	\$436	\$1,189
Jul 31, 2011	80.6 F	31	\$285	\$754	\$0	\$0	\$85	\$303	\$370	\$1,057
Jun 30, 2011	80.7 F	30	\$272	\$720	\$0	\$0	\$82	\$316	\$354	\$1,036
May 31, 2011	71.2 F	31	\$60	\$159	\$1	\$1	\$66	\$263	\$126	\$422
Apr 30, 2011	65.7 F	30	\$0	\$0	\$1	\$1	\$65	\$216	\$66	\$217
Mar 31, 2011	55.7 F	31	\$0	\$0	\$4	\$4	\$70	\$208	\$74	\$212
Feb 28, 2011	49.4 F	28	\$0	\$0	\$5	\$5	\$66	\$199	\$71	\$204
Annual Total		366	\$1,019	\$2,699	\$27	\$27	\$879	\$2,925	\$1,925	\$5,651
Monthly Average		30	\$85	\$225	\$2	\$2	\$73	\$244	\$160	\$471

Building Customer Trust with Savings Estimates

- **Accuracy** in savings predictions matter
- Table-look-ups *don't* cut it
- Deemed savings means nothing to customers
- Contractor match-up don't provide likely savings
- Contractors often exaggerate savings



Build Trust by Providing **Accurate, Conservative** Estimates



ACCURACY LEVELS

Highest Diagnostic Level

Retrofit Savings
HERS Ratings

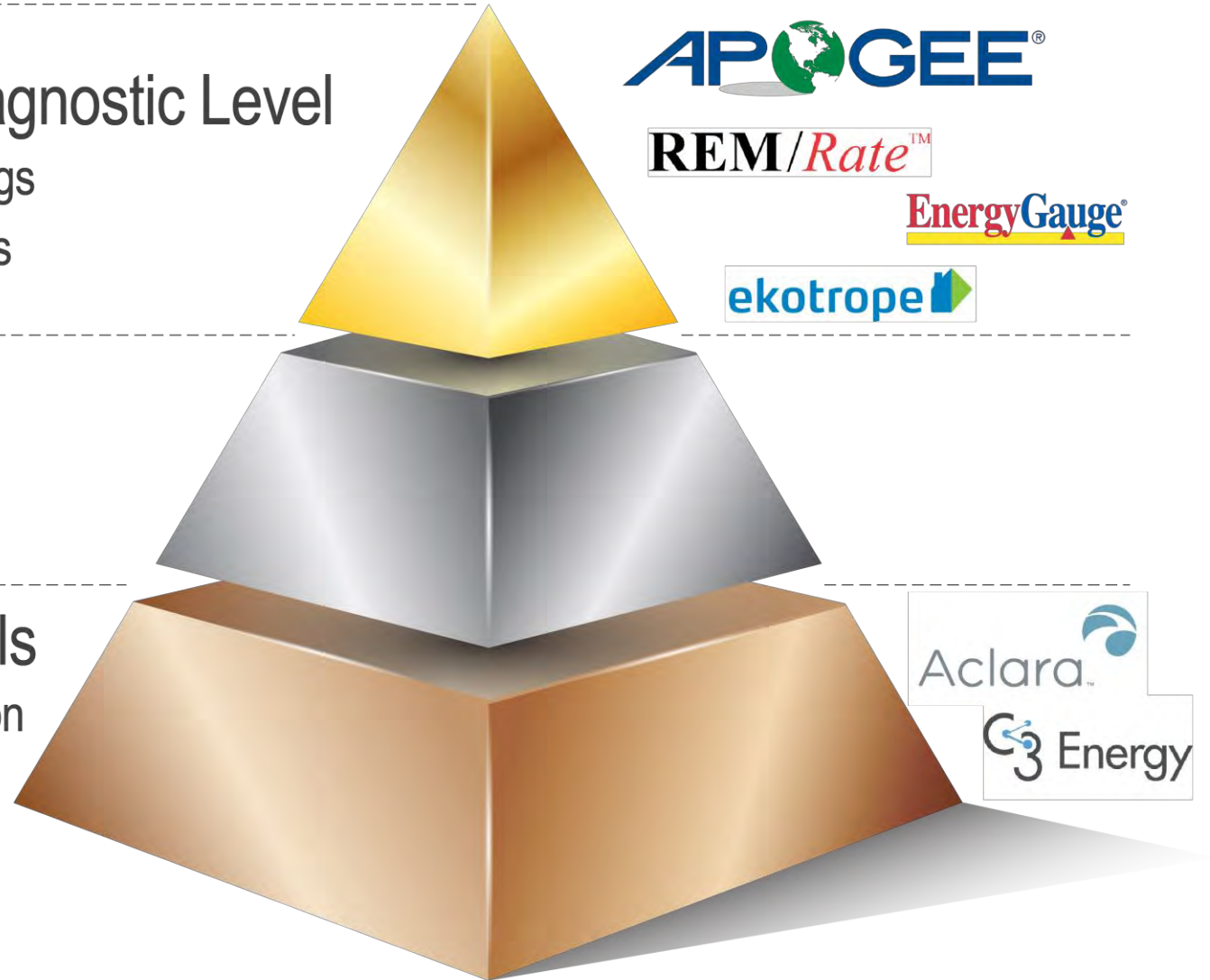


Diagnostic

Blower Door
Duct Blaster

Survey Tools

Data Collection



Accredited Rating Providers

Accredited HESP Providers

Accredited Rating Sampling Providers

Accredited Rater Training Providers

Accredited RESNET Green Rater Training Providers

Accredited BOP Providers

Accredited HERS® Software Tools

NATIONAL REGISTRY OF ACCREDITED RATING SOFTWARE PROGRAMS

The following is a listing of energy rating software programs that have been accredited by RESNET.

OptiMiser

4801 West Yale Ave.

Denver, CO 80219

Phone: 303-934-3851

Fax: 303-975-8513

Email: andy@bardwellconsulting.com

Website: www.optimiseraudits.com

Contact: Robert A. Bardwell, Partner

EnergyGauge® USA Version 2.8

Florida Solar Energy Center

1679 Clearlake Road

Cocoa, FL 32922-5703

Phone: 321-638-1437

Fax: 407-638-1010

Email: tkucharski@fsec.ucf.edu

Website: www.energygauge.com/usares

Contact: Tei Kucharski

Accreditation Identification Number: 2006-001

EnergyInsights™ V5

APOGEE Interactive, Inc.

100 Crescent Centre Parkway, Suite 450

Atlanta, GA 30084

Phone: 678-684-6804

Fax: 678-684-6832

Email: joelgilbert@apogee.net

Website: www.apogee.net

Contact: Joel Gilbert, P.E., Chief Software Architect

Accreditation Identification Number: 2006-003

REM/Rate v12.96

Architectural Energy Corporation

2540 Frontier Avenue

Suite 100

Boulder, CO 80301

Phone: 303-459-7438

Email: rsalcido@archenergy.com

Contact: Robert Salcido, P.E.

Accreditation Identification Number: 2006-002

	Tests	Apogee	B	C	D	E	F
Test 1	25	91%	76%	76%	81%	86%	81%
Test 2	76	89%	75%	77%	61%	42%	76%
Test 3	58	87%	83%	76%	76%	80%	64%

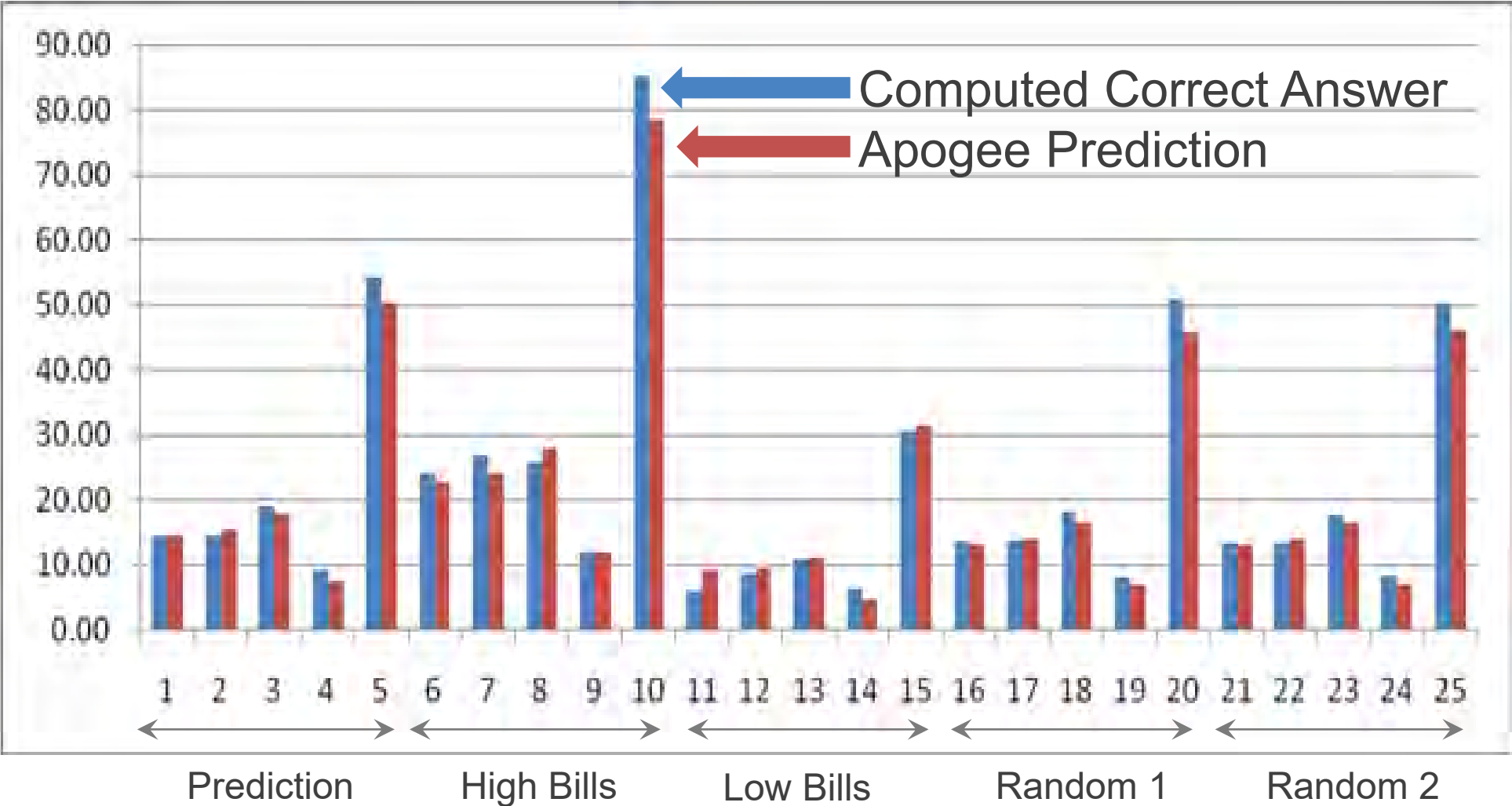
Bill Prediction Accuracy Scores

100%=Perfect Accuracy

Vendor B in this table is APOGEE

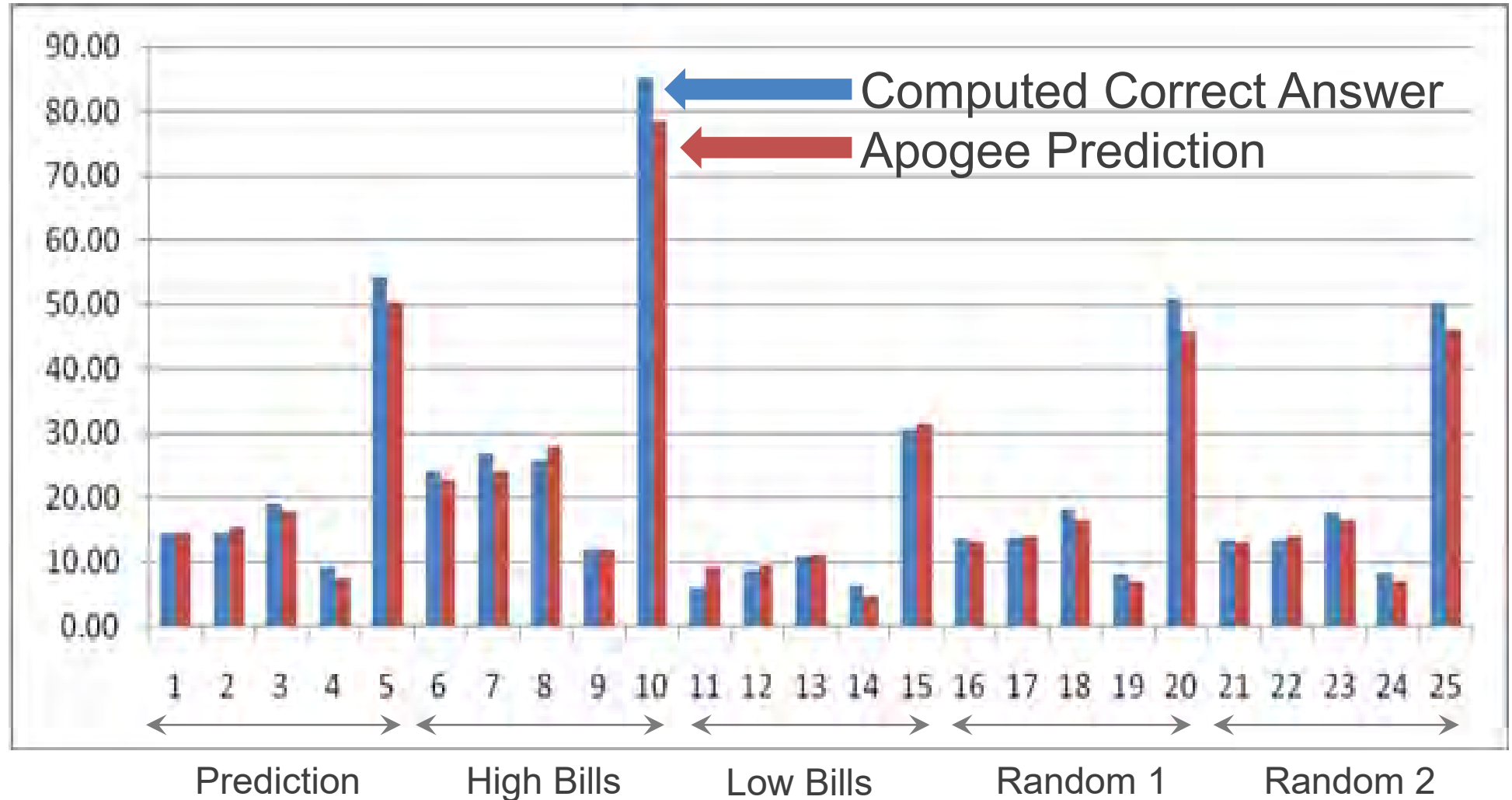
	A	B	C	D	E	F	G
Prediction	71.4%	91.6%	59.3%	79.8%	85.3%	89.8%	70.3%
High Bills	82.1%	95.4%	77.7%	86.3%	88.3%	88.4%	88.1%
Low Bills	74.6%	88.7%	73.3%	52.4%	77.2%	70.5%	77.4%
Random 1	84.7%	94.7%	78.8%	76.4%	82.9%	88.6%	87.7%
Random 2	85.9%	85.6%	88.5%	84.3%	71.8%	90.2%	81.7%
Average	79.8%	91.2%	75.5%	75.8%	81.1%	85.5%	81.0%

Results Test Bank 1 in BESTEST EX Savings Predictions

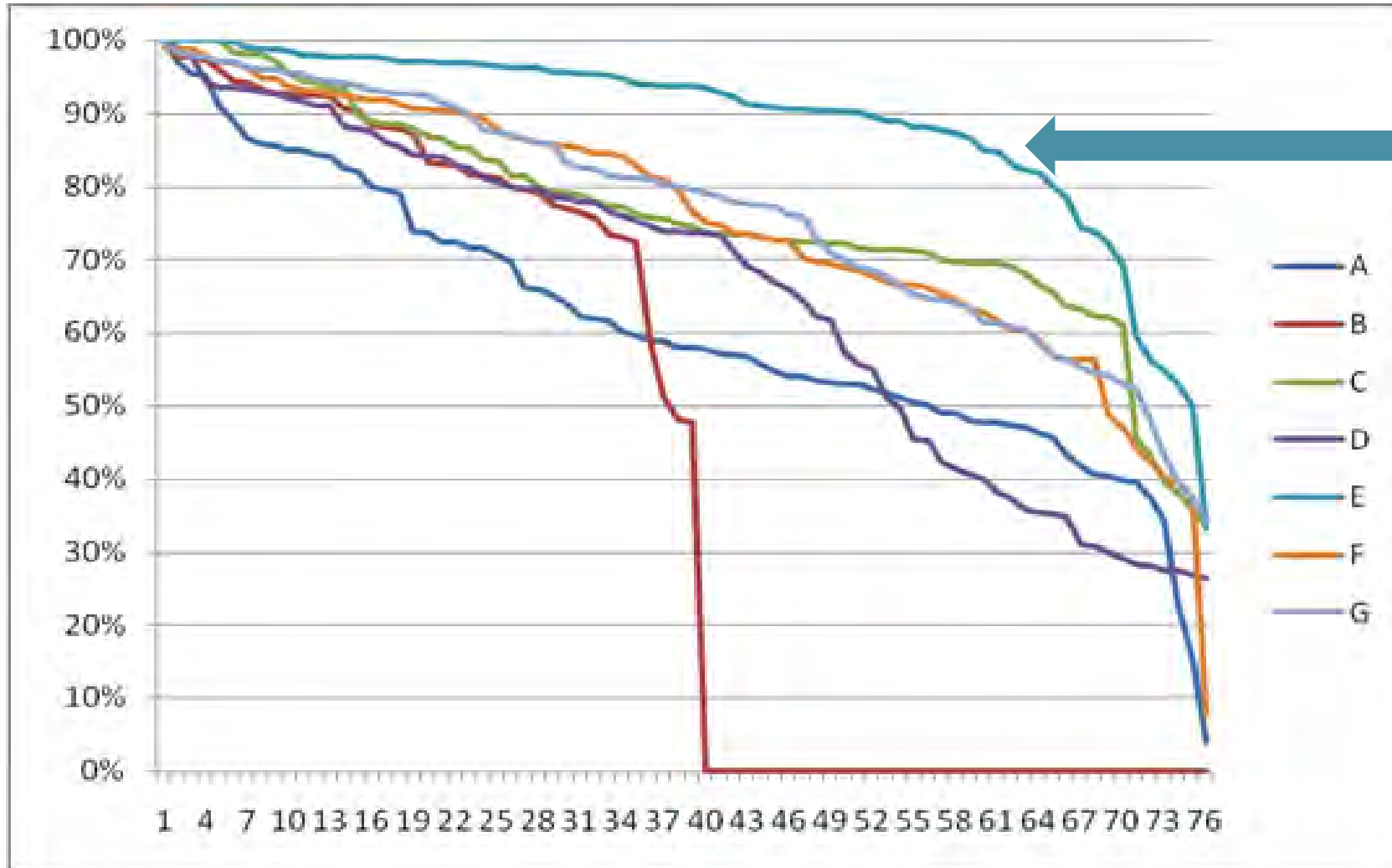


Results Test Bank 1 in BESTEST EX Savings Predictions

- Replace old windows
- Insulate the attic
- Weatherize the shell
- Reduce heating setting
- All of the above



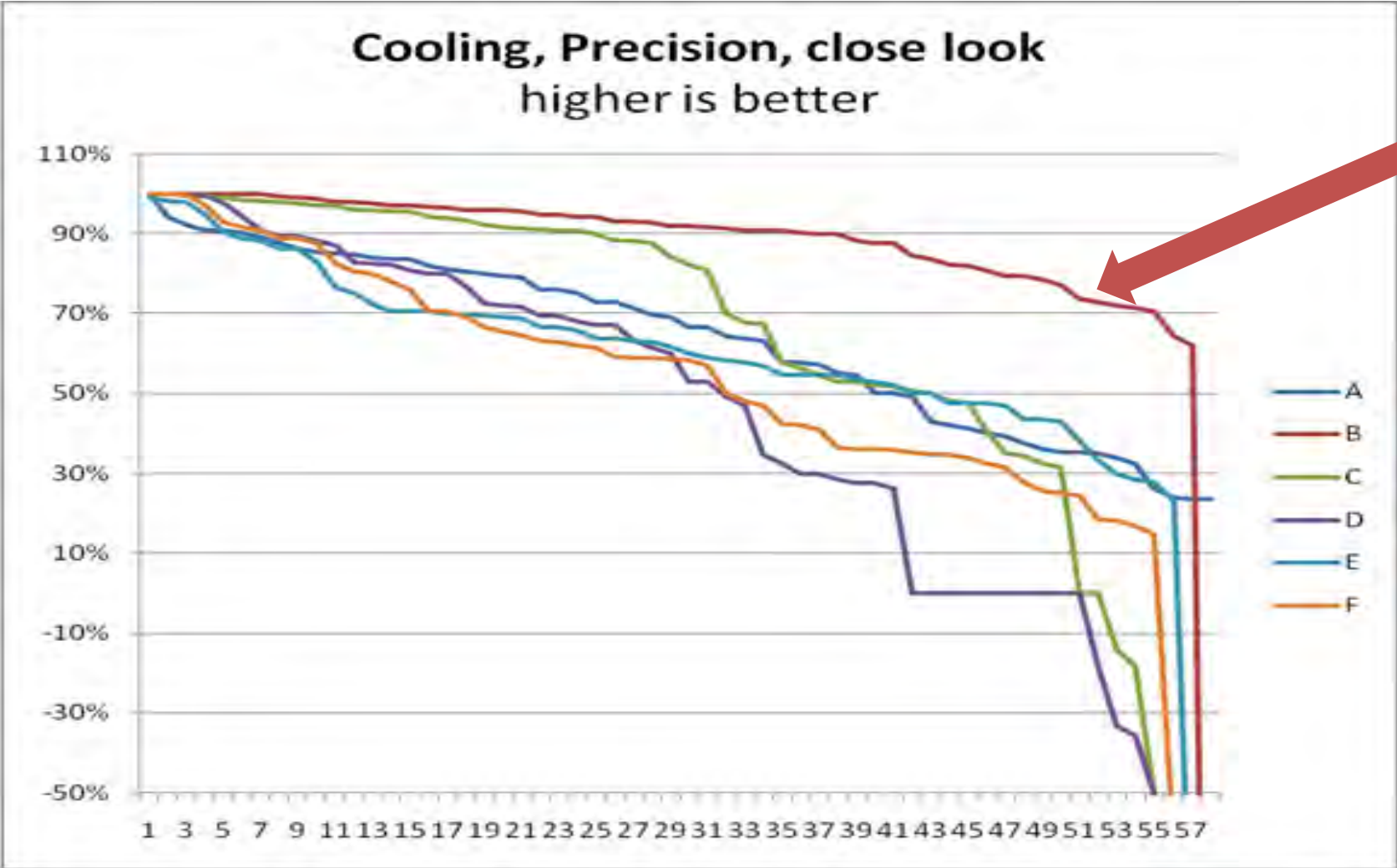
Results Test Bank 2 in BESTEST EX



APOGEE

**80% of the time
within 10% of the
Correct Answer**

Results Test Bank 3 in BESTEST EX



APOGEE

80% of the time
within 10% of the
Correct Answer

Access Accurate Answers with Self-Serve Online Audit


Tell Us About Your Home ²


1) WHAT IS THE LOCATION OF YOUR HOME?


Your Account Number ²
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:

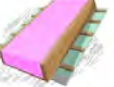

Car 2 Type:

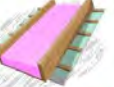

Add More Cars


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

Include and 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:

Car 2 Type:

Add More Cars

Cost Per Gallon:

Gas / Diesel

Hybrid

Miles / Day:

Miles / Day:

Miles / Gallon:

Miles / Gallon:

20

35

25

40

\$ 2.60

5) HOW MUCH INSULATION DO YOU HAVE?

Reset Profile
Show Analysis

Saving Tips
Energy Forecast
Bill Analysis
My Home

Electric Vehicle

Account Number: normal-ann
Record ID: 5809925

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 ₂
Current Gas Vehicle	\$98.00	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.
APOGEE INTERACTIVE, INC. © 2020. ALL RIGHTS RESERVED.

APOGEE | apogee.net


2020 APRIL WEBINAR | ARE FIELD AUDITS DEAD?

38


Promote Solar

Make it Easy!


6) DO YOU HAVE SOLAR? ?




Advanced Solar Details




Community Solar



Small Solar House



Large Solar House



No Solar

Type:

☐ None

☒ Roof

☐ Community

Shade:

☐ No Shade

☒ Some Shade

☐ Lots of Shade


Roof Pitch:

☐ Flat


☒ 7/12

☐ 12/12


Roof type indicates that your solar panels are located on your house or yard and will have parameters that can be customized for more accurate power estimations.



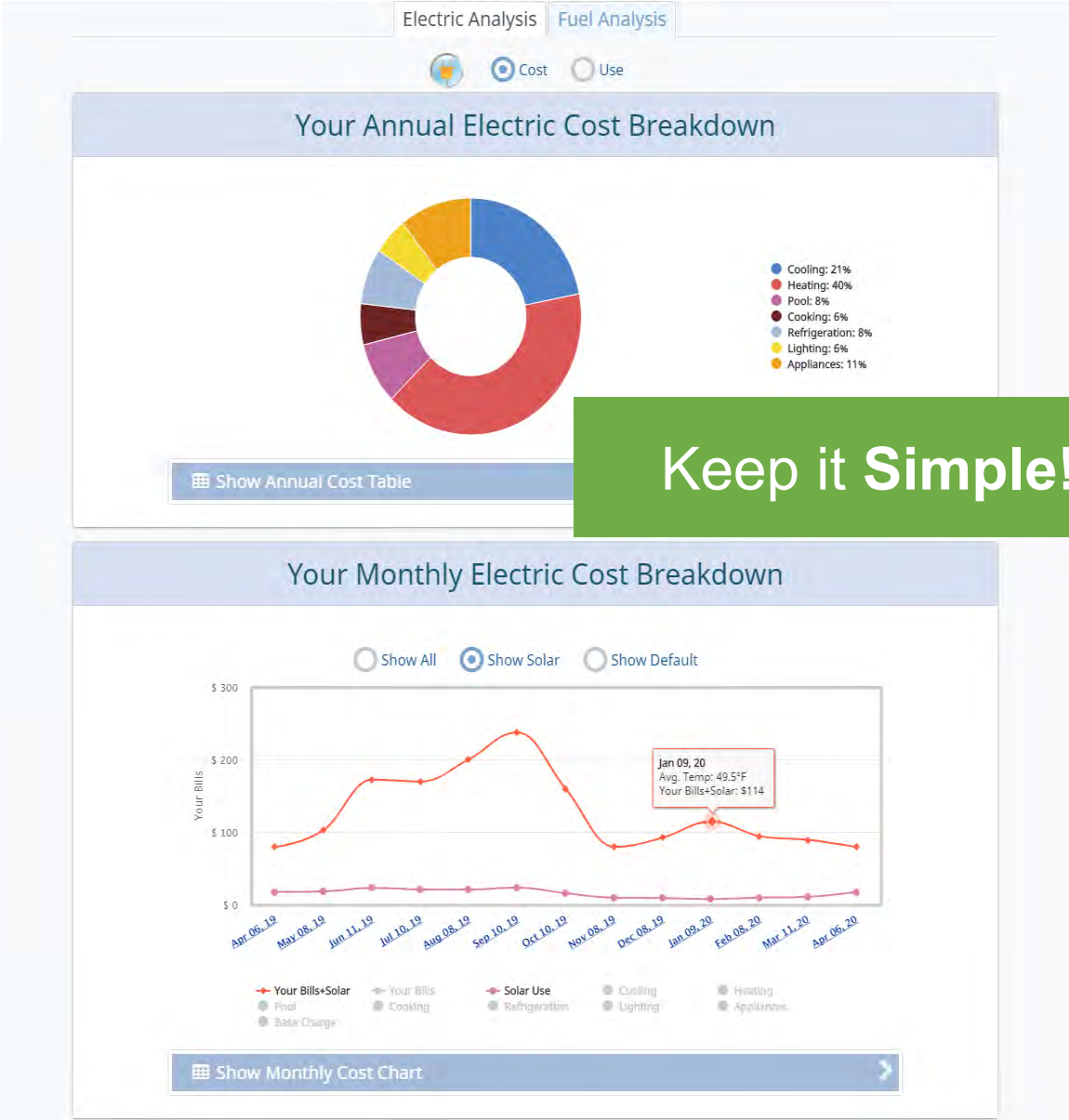
Total Panels



7/12



Panel Direction: S



Keep it Simple!

Recommendations

- Speak Their Language
Dollars?
Carbon Impact?
- Dollarized Recommendations
- Appealing Program Links



EnergyWise Attic Insulation Program

Receive up to \$300 towards upgrading your attic insulation by participating in this EnergyWise program.

My Home's Environmental Impact

17,082 lbs
carbon / year

Your Ways to Save

\$ Filter

Did You Know...



Do your part to reduce air pollution and save money. Carpool to work if you can.



Plant deciduous trees near your house to shade it during the summer.



Use solar powered walkway lighting to provide safe energy efficient night lighting.



Recycle your plastic, paper, and glass to reduce waste going to landfills.

Window Upgrade:

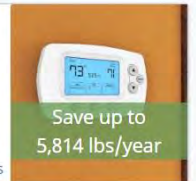
Replacing your single pane windows with high-efficiency windows can save you up to 6,157 lbs a year.



Save up to
6,157 lbs/year

Programmable Thermostats:

Your best money saving tip is using a programmable/SMART thermostat. It can save you as much as 5,814 lbs a year by holding 68°F for heating and 78°F for cooling when you are home and automatically setting to 55°F for heating and 85°F for cooling when you are away. Caution: Older heat pumps should only be adjusted by 2°F for heating to avoid triggering the emergency heat mode.



Save up to
5,814 lbs/year

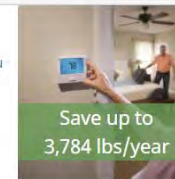
Cooling Setting:

If you raise your cooling setting from 75°F to 78°F, you could save as much as 3,784 lbs per year.



Cooling System Tune-Up Program

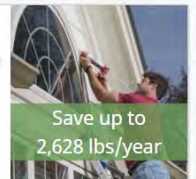
Get \$30 for Residential Cooling System Tune-up with our cooling system rebate. Check out our other offers and rebates for system upgrades too.



Save up to
3,784 lbs/year

Weatherize By Professional:

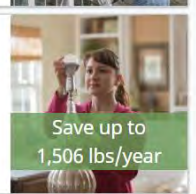
If you have your house professionally weatherized, you could save up to 2,628 lbs a year.



Save up to
2,628 lbs/year

LED Bulbs:

If you replace the remainder of the incandescent light bulbs you use most often with LED bulbs, you could save up to 1,506 lbs a year.



Save up to
1,506 lbs/year

Insulation Upgrade:

Installing ceiling and floor insulation can save you up to 685 lbs a year.



EnergyWise Attic Insulation Program

Receive up to \$300 towards upgrading your attic insulation by participating in this EnergyWise program.



Save up to 685
lbs/year

Weatherize Your Home:

If you caulk around your windows and doors, make certain the weatherstripping on your doors and windows is tight, weatherstrip your attic door, and take other actions to seal your house further, you could save up to 292 lbs per year.

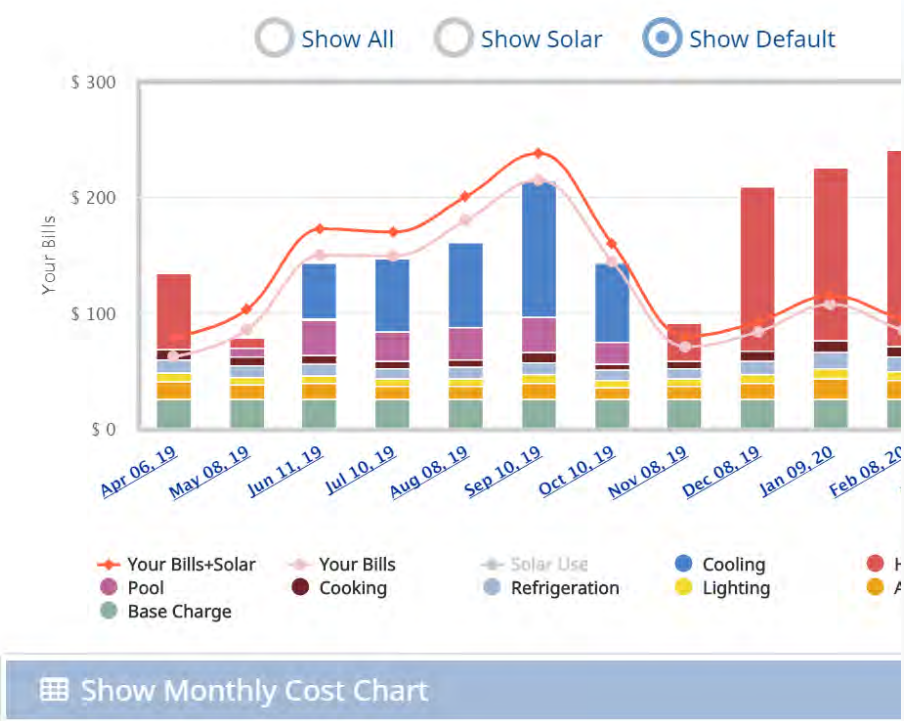


Save up to 292
lbs/year

FEEDBACK

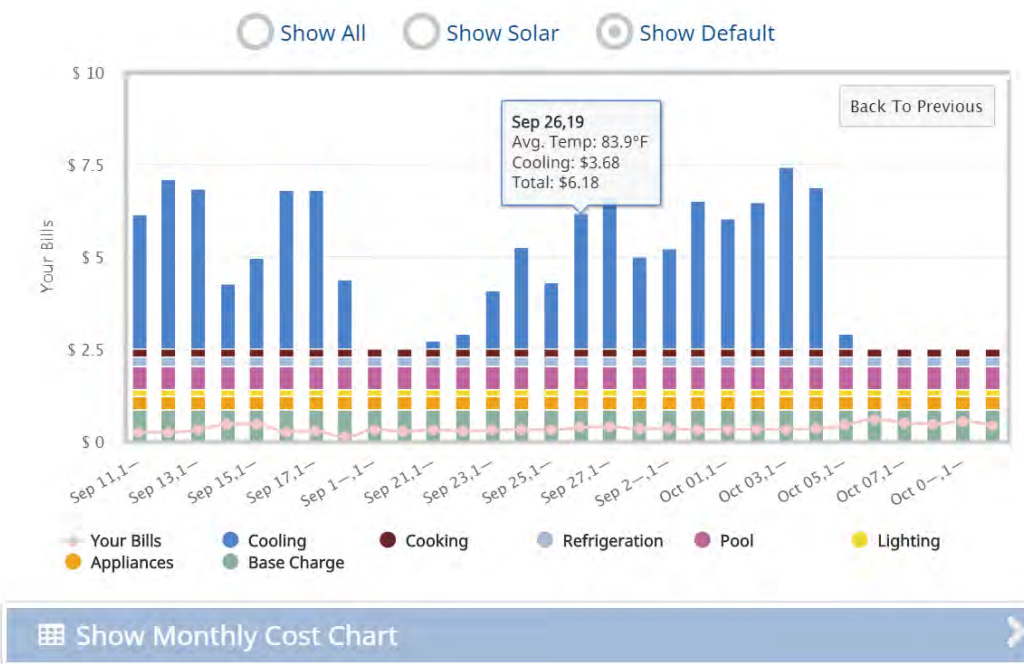
Monthly Disaggregation

Your Monthly Electric Cost Breakdown



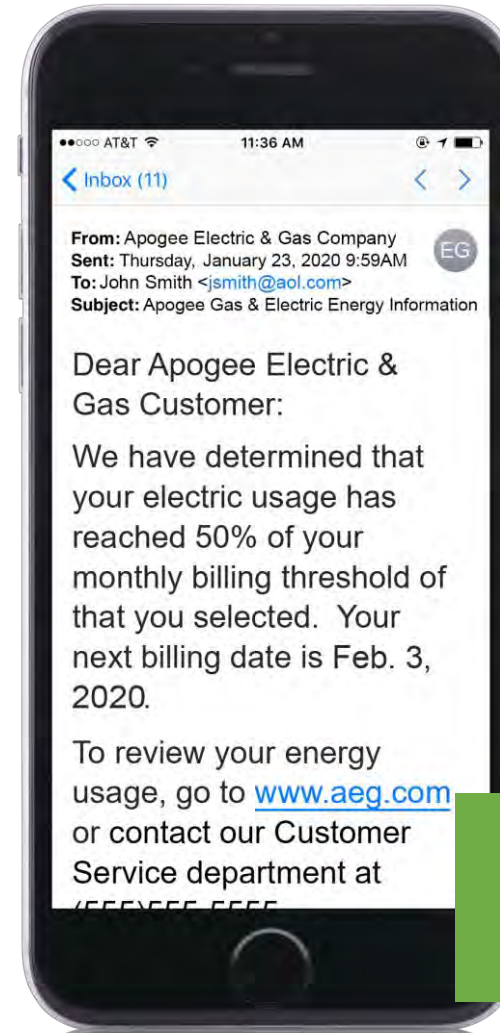
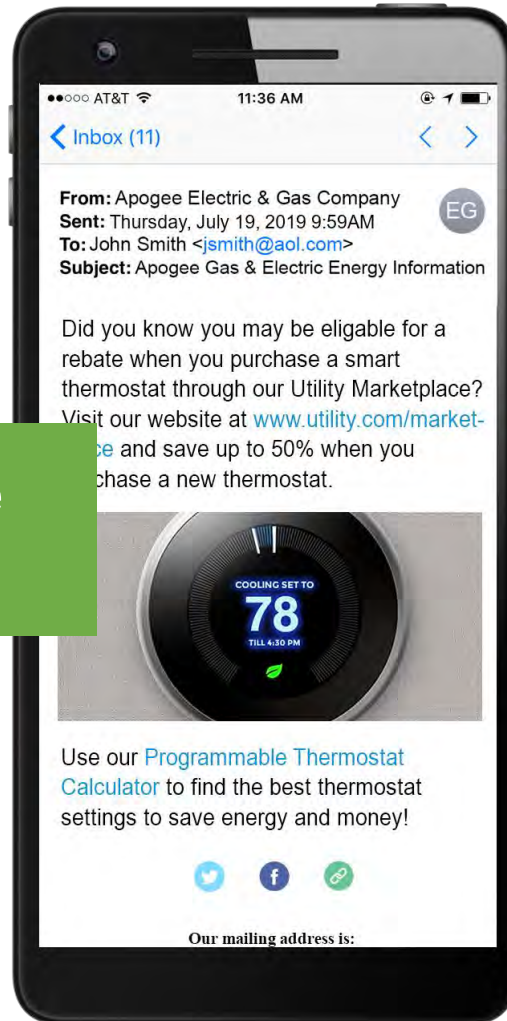
Daily Drilldown

Your Monthly Electric Cost Breakdown



Relevant Outbound Messaging

Informative proactive
tips and rebates



Mid-month notification

Post Audit Messaging – Stay Connected

View this email in your browser


EG | APOGEE
Electric & Gas Co.

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!



[Twitter](#) [Facebook](#) [LinkedIn](#)

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


Want to change how you receive these emails?

View this email in your browser

EG | APOGEE
Electric & Gas Co.

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 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!



[Twitter](#) [Facebook](#) [LinkedIn](#)

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

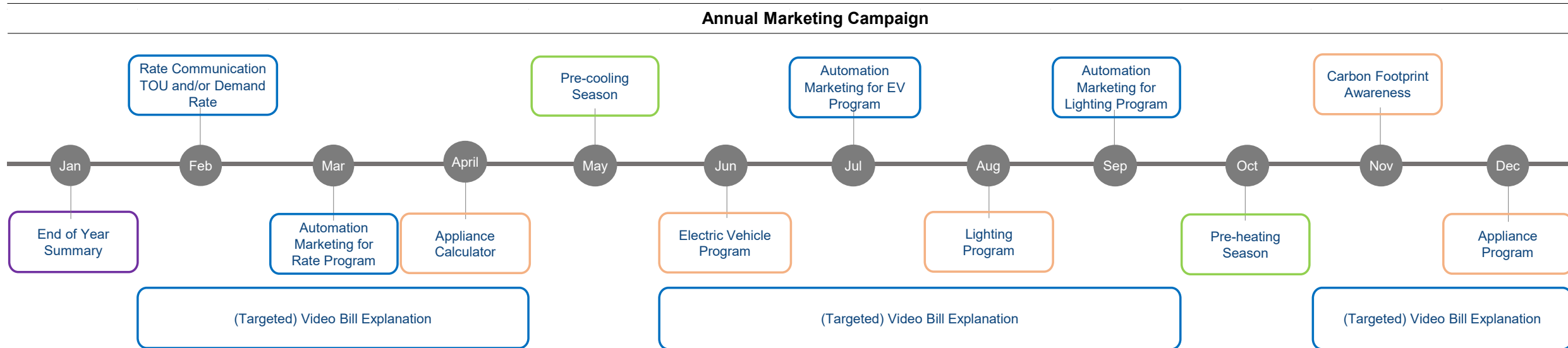
Want to change how you receive these emails?
You can [update your preferences](#) or [unsubscribe](#) from this list.

Smith House



Automated Marketing...

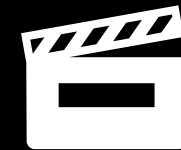
Relevant, Timely Engagement Throughout the Year



- ▶ 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



EKG monitoring defines
Heart Health

Thermal monitoring defines
Home Health

Precision Temperature
Monitoring
For Homes and Small
Business

We call it the
“Heartbeat of the Home”

THERMAL...

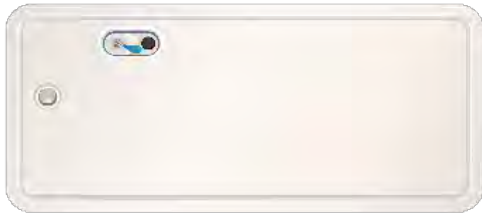


Energy Industry performance metrics

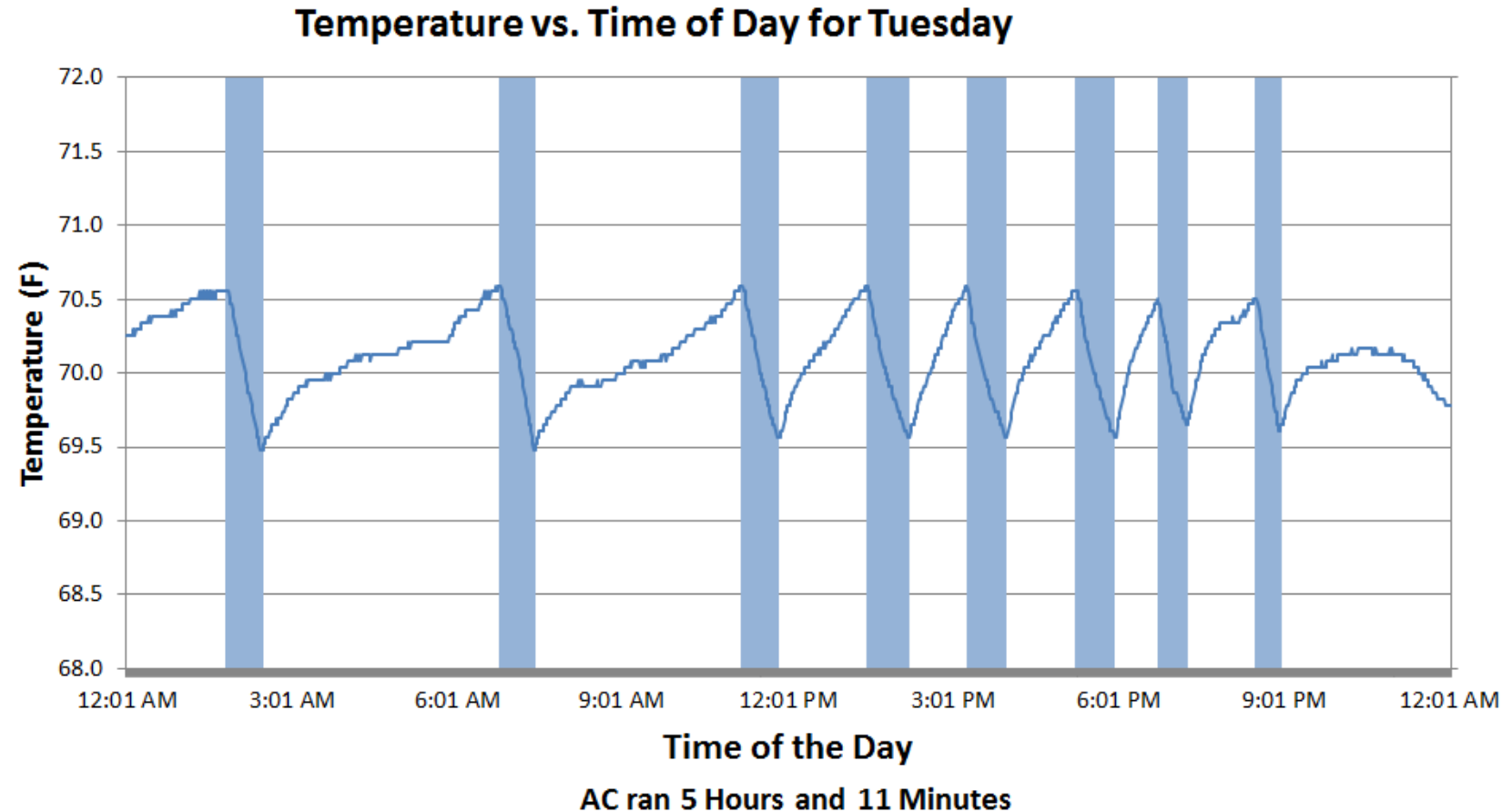
- Thermal Envelope statistics
- Thermostat performance
- Trends and alerts to identify:
 - ✓ Comfort challenges
 - ✓ Refrigerant leaks
 - ✓ Filter replacement
 - ✓ Retrofit performance



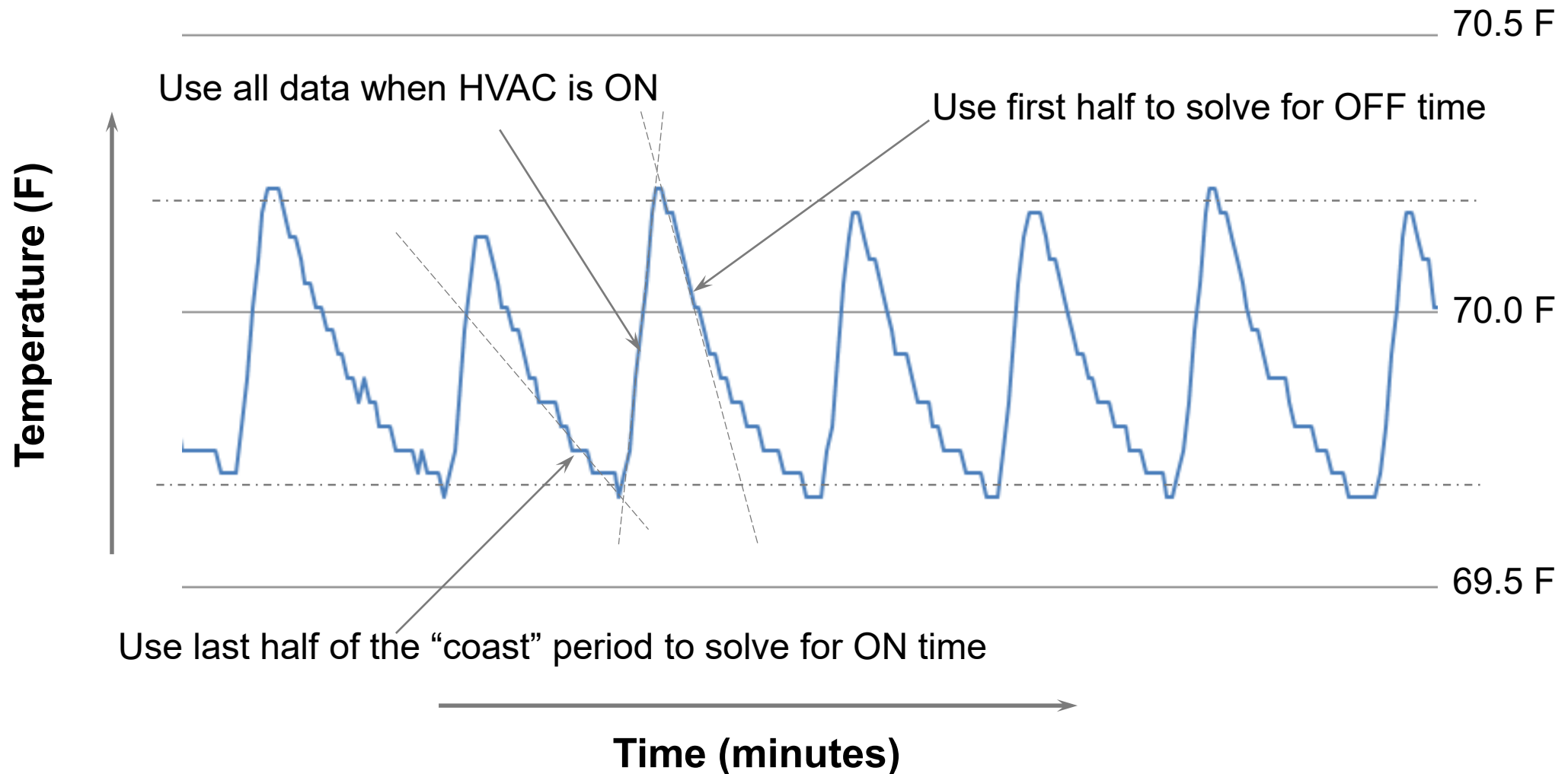
Branded PTM Devices



Inexpensive, high-resolution temperature monitoring device connects to smartphones or Wi-Fi



High Resolution Allows Calculation of On and Off Cycles



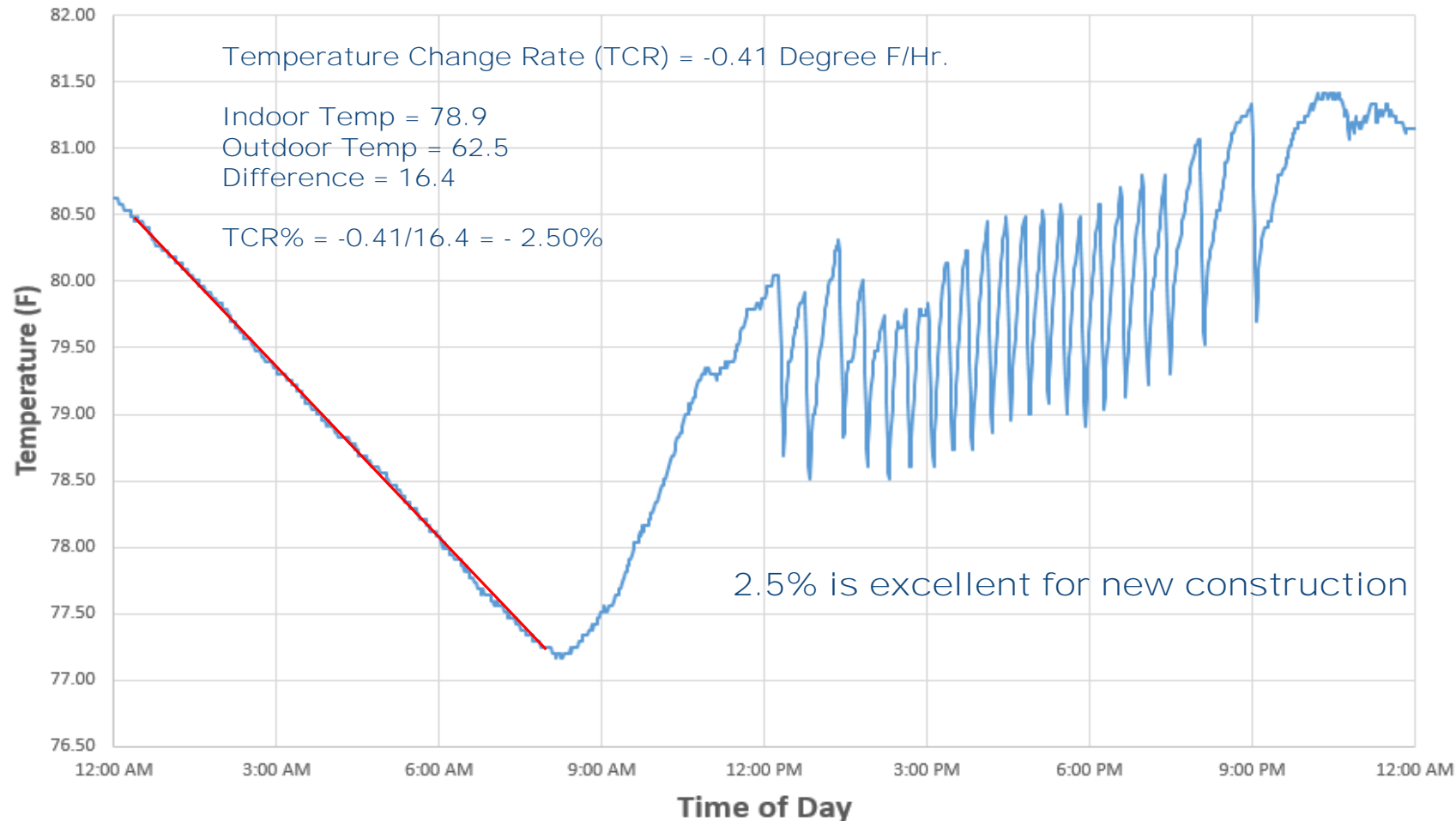
From the First Law of Thermodynamics

$$C_p \frac{dT}{dt} = UA (T_{OAT} - T_{IAT}) + Q_{INT} + Q_{Solar}$$

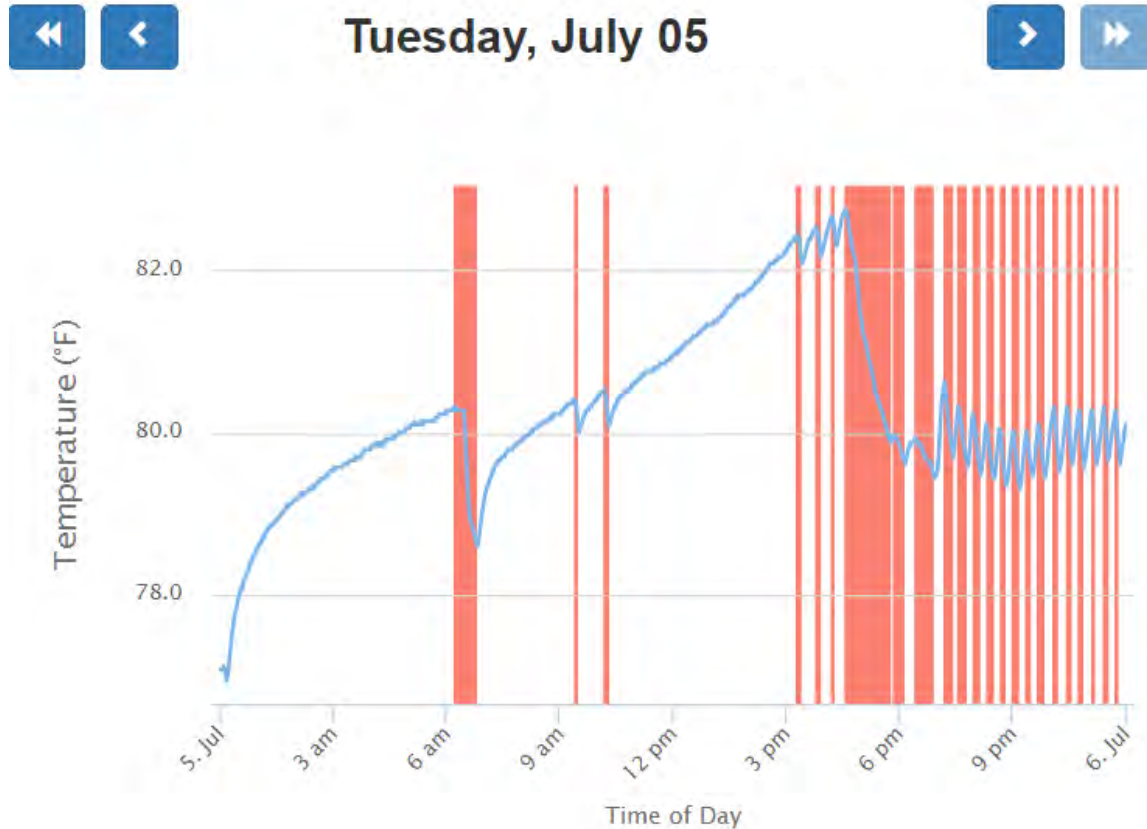
Since the mass of the house C_p doesn't change on weatherization and we are comparing temperature changes at night before and after weatherization:

$$\frac{dT}{dt} = UA (T_{OAT} - T_{IAT})$$

Shell Efficiency Precisely Measured!



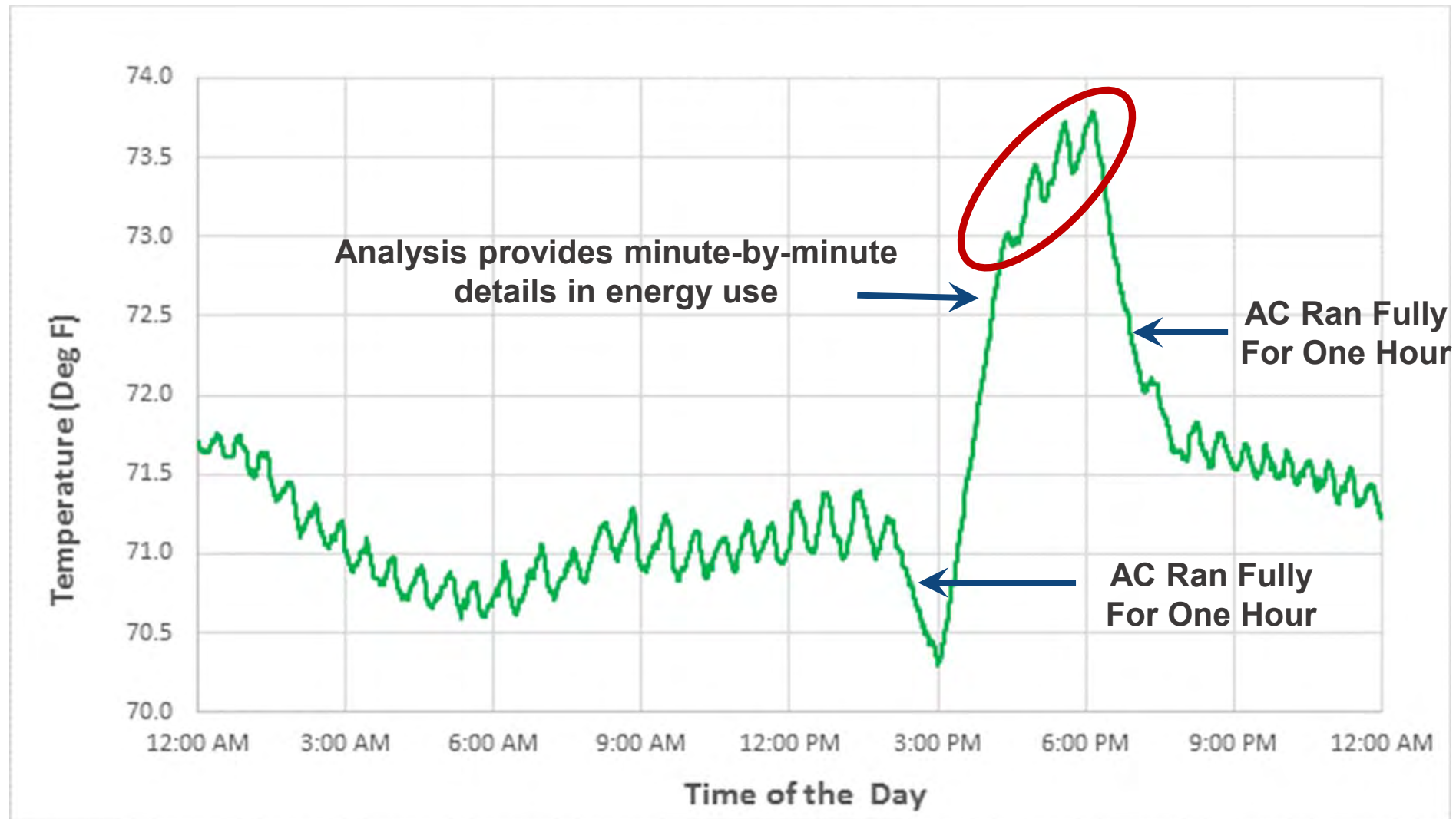
Attic Insulation in Summer



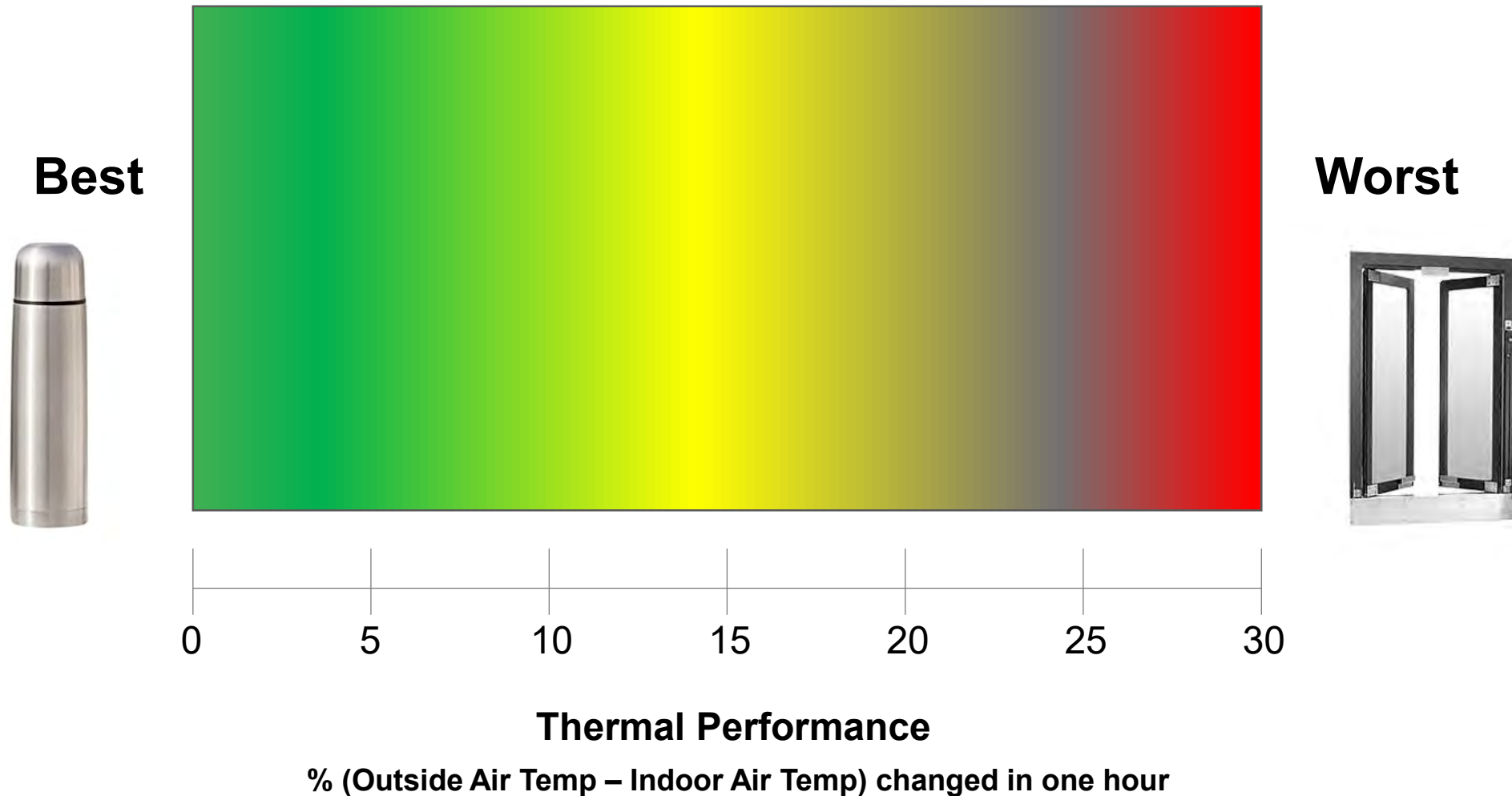
Time	Temp (F)	TCR (F/Hour)	OAT	OAT - IAT	TCR %
12:15 AM	77.29		83	8.7	
1:15 AM	78.82	1.53	82	6.2	24.77%
2:15 AM	79.26	0.44	81	4.7	9.26%
3:15 AM	79.57	0.31	81	4.4	6.94%
4:15 AM	79.83	0.26	82	5.2	5.11%
5:15 AM	80.10	0.26	81	3.9	6.77%
6:15 AM	80.27	0.18	81	3.7	4.73%

Moving from Anecdote to Analytics

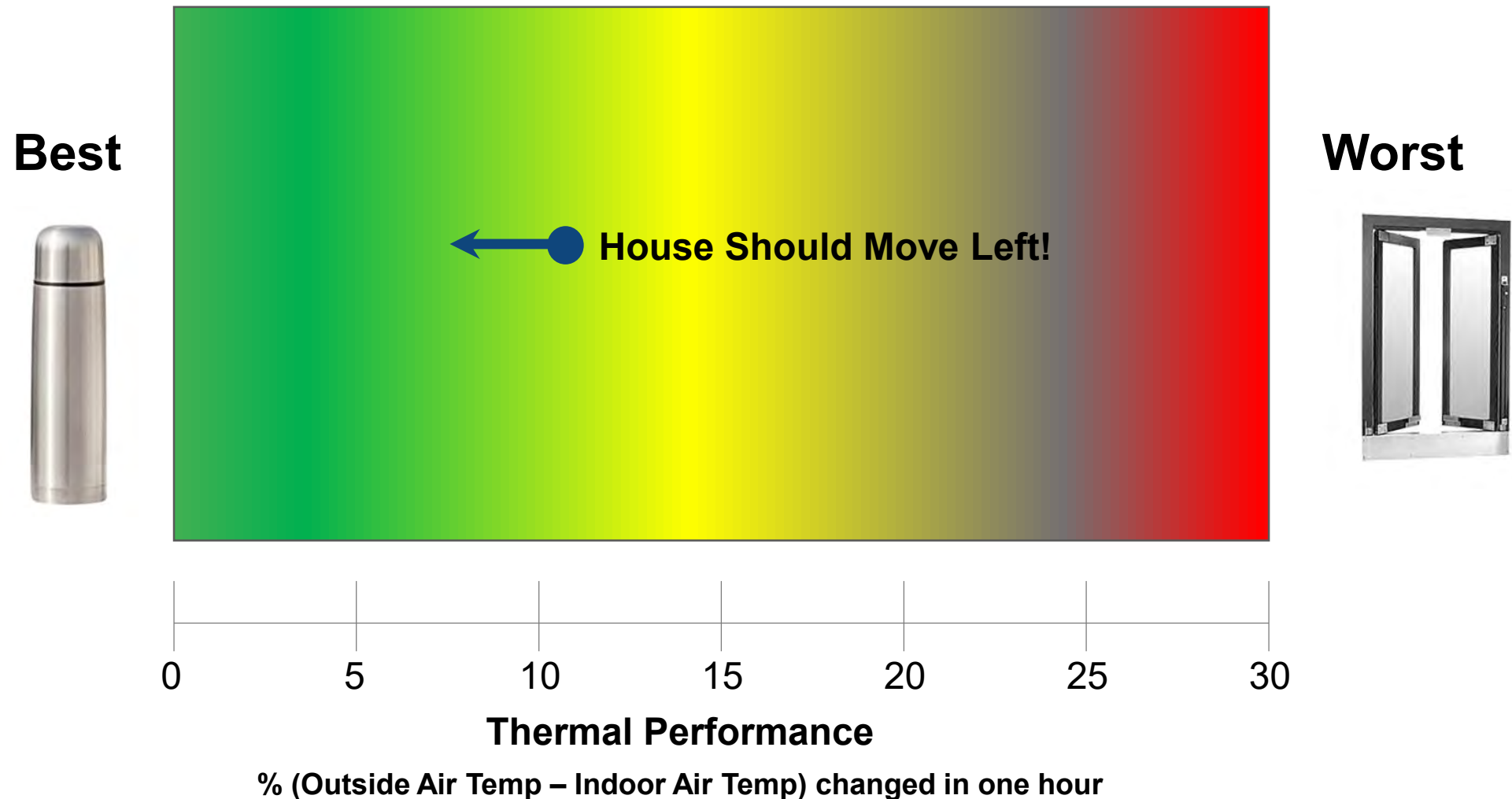
What are Load Control Switches Doing?



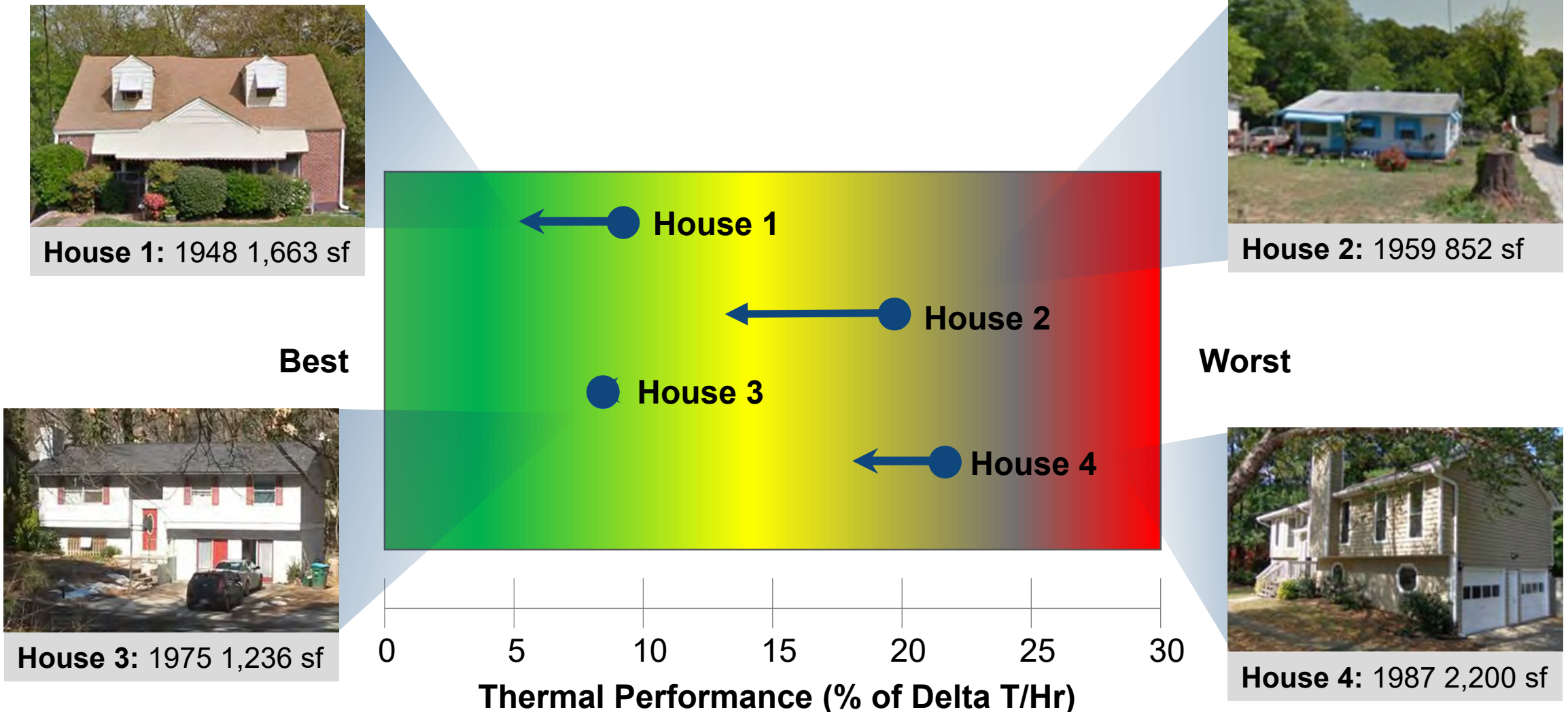
Compare Thermal Performance



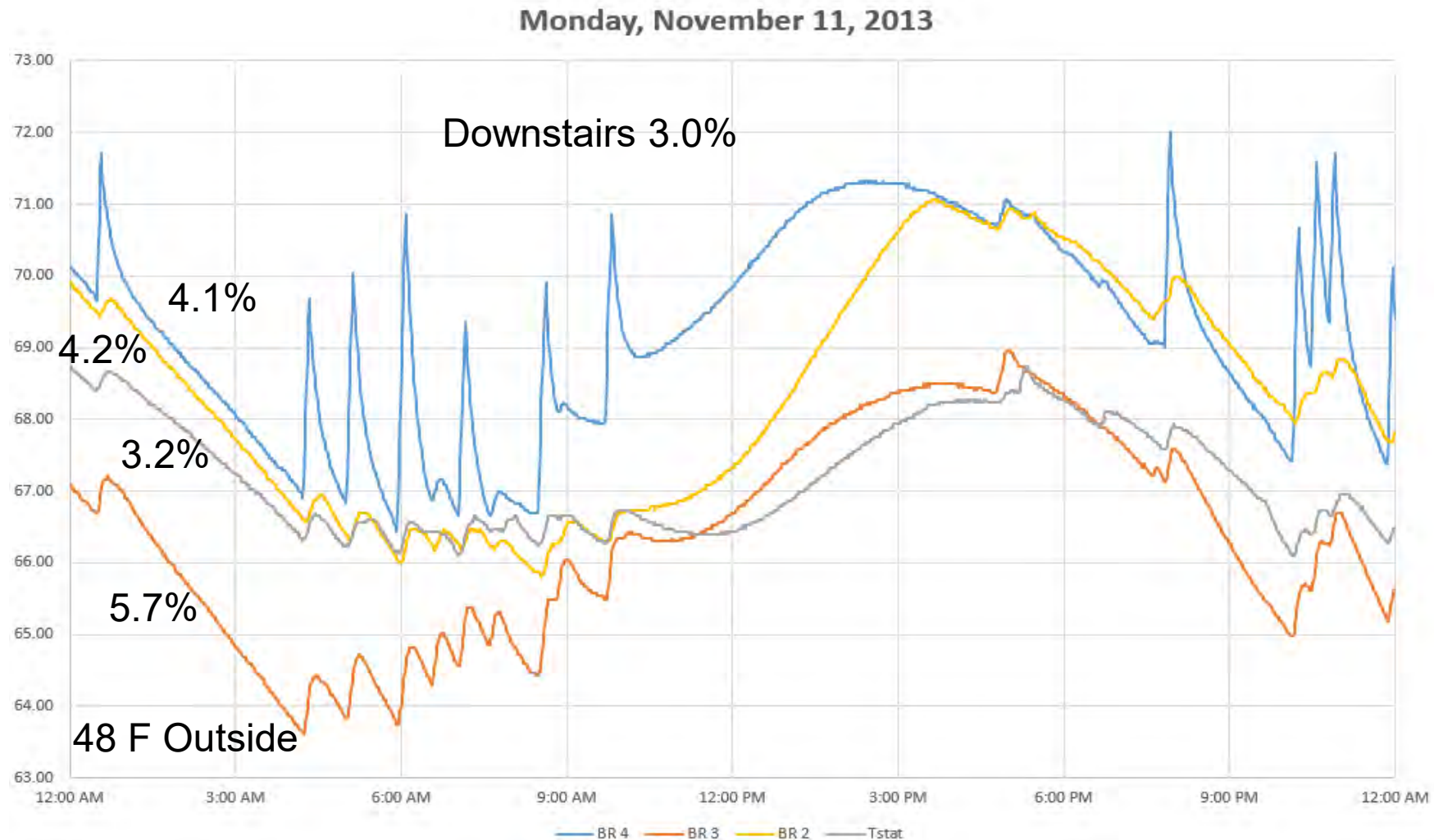
Compare Thermal Improvement








Weatherization: Compare Thermal Performance



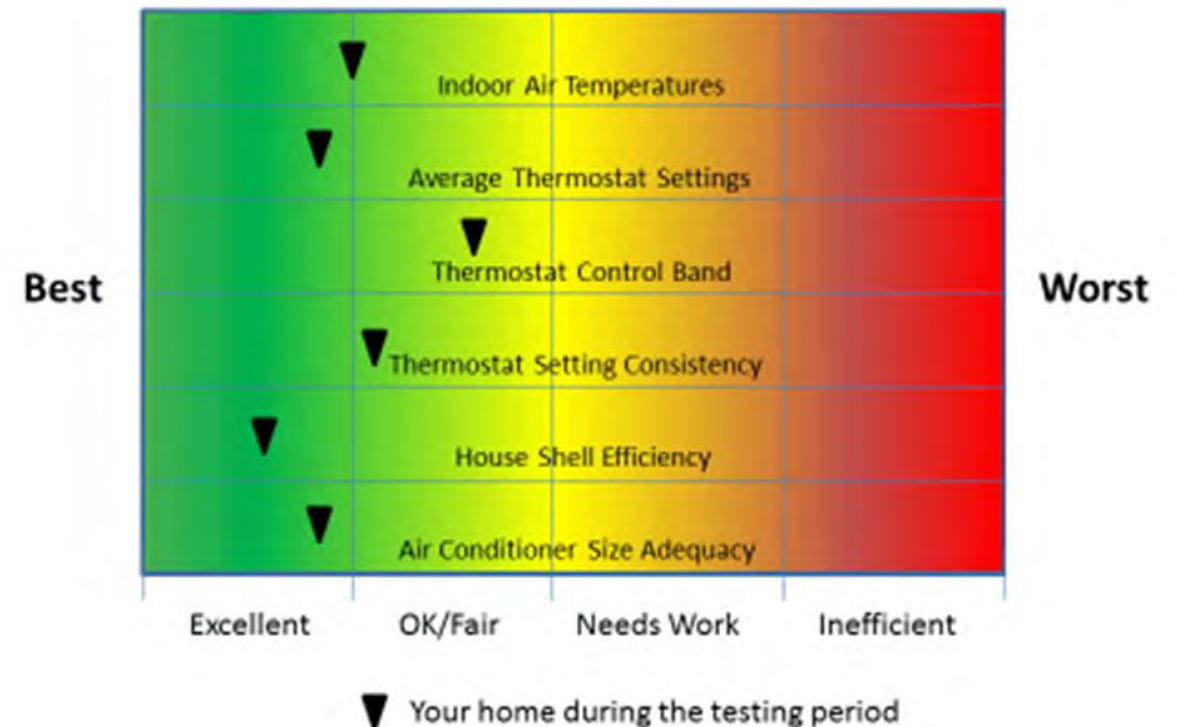
Multiple Loggers in House Show Air Balance Problems



Your Home Energy Opportunity Report

Room for Improvement: Little Much ★★★★★		Explanation	Potential Savings
Thermostat			
	Control Range	★ Upgrading your thermostat can produce substantial savings.	\$150
	Accuracy	★ The thermostat is holding 2 degrees cooler than the actual air temperature which could be costing as much as \$150.	\$75
	Consistency	★★★★ A high performance thermostat will hold a more consistent temperature. Yours is allowing the temperature to vary.	\$224
HVAC Performance			
	Operating SEER	★★ Upgrading to a new, high-efficiency (16 SEER) air conditioner can produce these savings.	\$124
	Size Performance	★★★★ Your HVAC system is over-sized. A properly sized unit will run more frequently for longer periods better humidity control.	\$52
Water Heater			
	Hot Water Use	★★★★ You are using 7% less hot water than your base period, which equates to a savings of about this amount:	\$7
	Temperature Setting	★ Lowering your water heater temperature setting saves money.	\$20
Shell Performance			
	Thermal Efficiency	★★★★ Weatherstrip your doors and windows, close drapes to keep sun out, and add insulation to your attic to save money.	\$205
	Internal Gains	★★★★ Be sure to turn off unneeded lights and electronics.	\$55
Behavior			
	Holding settings	★★★★★ Holding 78F in the summer and 68F in winter can save money.	\$96
	Aggressive DR	★★★★ Savings at full participation estimated at:	\$225
	Hot Water Use	★★★★ Using less hot water saves money on energy bills.	\$39

Compare Thermal Performance



Virtual Audit Report

Auto Generated



Smith Home Energy Evaluation

March 7, 2018
Marian Smith
10345 Pine Garden
West Palm Beach, FL 30891

Dear Ms. Smith,

Thank you for participating in Apogee E&G Home Evaluation Program! We have analyzed data from the four monitors placed in your home from February 1st through February 15th.

During this 14-day period, the monitors have been reporting temperature and humidity information from your home to our cloud-based energy modeling system.

By analyzing how your home heats up and cools off, our energy model evaluates how your home's appliances, HVAC, and structure are performing and looks for ways to save money on your energy bills.

This report, based on your home's data, highlights ways you can improve comfort and save money making some relatively easy changes. If you would like more information, a more in-depth analysis is available upon request.

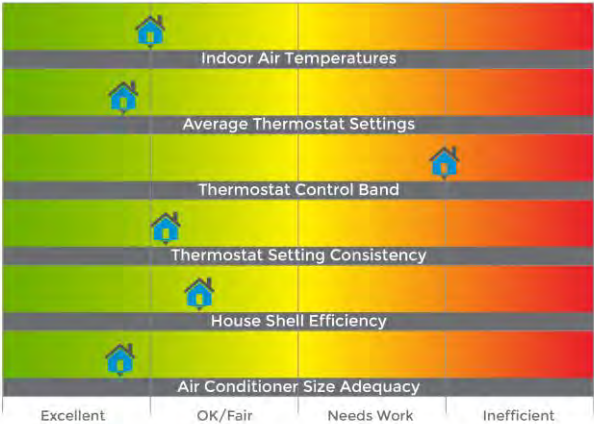
Sincerely,

Susan Gilbert
Susan Gilbert, Apogee E&G



Summary

This chart summarizes how your home and systems rated during our test period when monitors were in your home. The following pages give more descriptive details of each of these metrics. Where improvements are recommended, we have estimated your potential savings and pointed out possible available rebates that can save you money!

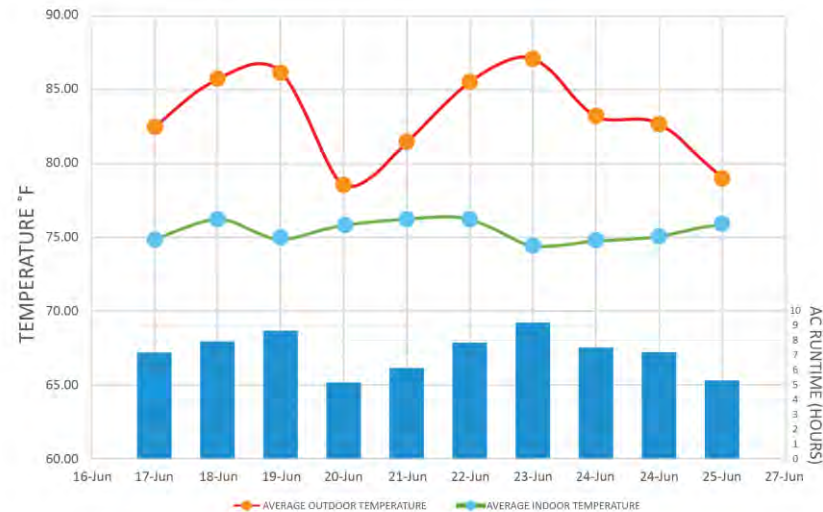


Your home during the testing period.



Thermostat Settings

This chart summarizes the average outdoor air temperatures and your indoor temperatures measured during the period the monitors were recording. The estimated run-time for your air conditioner is also shown as the blue bars in hours each day.



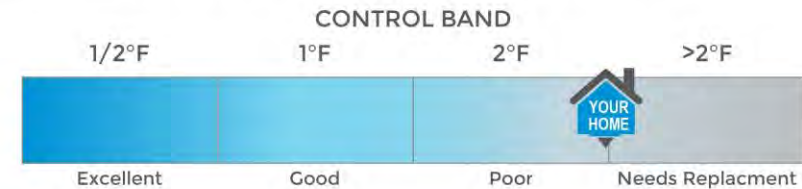
It is not unusual for a home's indoor temperatures to be different from what you are setting on your thermostat. Thermostats are often 2-3 Degrees F off. It looks as if you are doing a great job of consistently setting your thermostat up by several degrees when you are away. We estimate that simple action is saving you \$XX dollars a year.



Thermostat Performance

The thermostat controls when your HVAC system runs. It turns your system on when the temperature in your home drops outside its "control band." And when the temperature setting is achieved, the thermostat turns the system off.

A thermostat's control band can affect your comfort. A tight control band of half-a-degree or less is excellent, but some thermostats have control bands of 2 or 3 degrees, which can make occupants uncomfortable before the thermostat activates and more costly to operate.



While the monitors were in your home, we measured your thermostat's control range and found it is in the poor range, holding a wide band-width of 2.5 F.

Upgrading your thermostat can improve your comfort in the home and save you money on the operating of your heating and air conditioning systems. We estimate you could save as much as \$XX by upgrading your thermostat. Check out our online store where you will also find instant rebates on some devices.



SUMMARY

#2

Targeting enables efficiency *and* cost effectiveness



#1

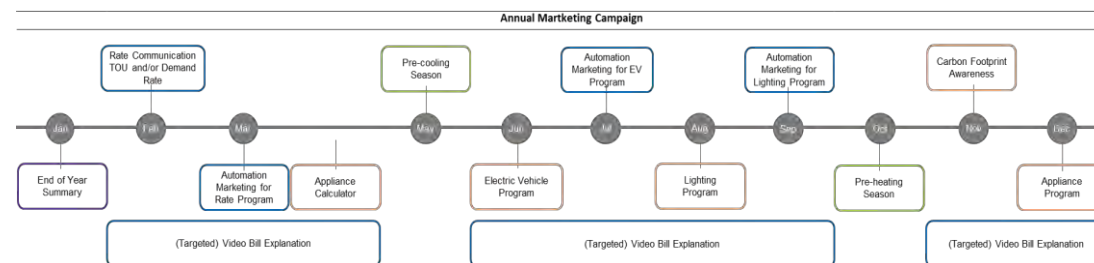
You **CAN** effectively audit **without** visiting homes

#3

Ongoing customer engagement

#4

New frontier of home diagnostics



Any Questions



Upcoming Webinars

APRIL 28th, 2020

“Realistic and Cost Effective Artificial Intelligence”

by:

Sydney Roberts, PhD

Joel Gilbert, President and Chief Software Architect

Apogee Interactive, Inc.

MAY - TBA 2020

“Relating New Rates Using Personalized Videos”

by:

Apogee Interactive, Inc.

Contact Us

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apogee.net

