

# Enhanced DR and EE Discovery and Recovery

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# Who is APOGEE?



- A leading provider of online energy education and analysis solutions for the Energy Industry
- Founded in 1993, Headquarters in Atlanta
- Clients include more than **600** utilities:
  - The larger cooperatives and leading municipals,
  - Essentially all of the Investor Owned Utilities,
  - And their associations: **EEI, EPRI, APPA, NRECA**
- The Demand Exchange® traded over 300,000 MWh/year
  - AESP Innovation Award 2001 & NYMEX commendation
- Launched Peak Load Management Alliance in 2000
- Wrote three landmark documents for EPRI on DR trading
- A certified woman-owned business



# Major Clients Include



# Deep Reach: Indiana Clients

## Hoosier Energy

Bartholomew County REMC  
Clark County REMC  
Daviess-Martin County REMC  
Decatur County REMC  
Dubois REC, Inc.  
Harrison REMC  
Henry County REMC  
Hoosier Energy REC  
Jackson County REMC  
Johnson County REMC  
Orange County REMC  
Rush Shelby Energy  
South Central Indiana REMC  
Southeastern Indiana REMC  
Southern Indiana Power  
Utilities District of Western Indiana  
Whitewater Valley REMC  
WIN Energy REMC

## Parke County REMC

## Kankakee Valley REMC

## South Central Indiana REMC

## Bartholomew County REMC

## Harrison REMC

## Indianapolis Power & Light

## Central Indiana Power

## Whitewater Valley REMC

## Indiana Michigan Power (AEP)

## Wabash Valley Power Association

Boone REMC  
Carroll County REMC  
Central Indiana Power  
Fulton County REMC  
Hendricks Power Cooperative  
Jasper County REMC  
Jay County REMC  
Kankakee Valley REMC  
Kosciusko REMC  
LaGrange County REMC  
Marshall County REMC  
Miami-Cass REMC  
Newton County REMC  
Noble REMC  
Northeastern REMC  
Parke County REMC  
Paulding-Putnam EC  
Steuben County REMC  
Tipmont REMC  
United REMC  
Wabash County REMC  
Warren County REMC  
White County REMC

## Indiana Municipal Power Agency

Advance	Kingsfords Heights
Argos	Knights Town
Bainbridge	Ladoga
Bargersville	Lawrenceburg
Bremen	Lebanon
Brooklyn	Lewisville
Brookston	Linton
Centerville	Middletown
Chalmers	Paoli
Columbia City	Pendleton
Covington	Peru
Crawfordsville	Pittsboro
Darlington	Rensselaer
Dublin	Richmond
Dunreith	Rising Sun
Edinburgh	Rockville
Etna Green	Scottsburg
Flora	Spiceland
Frankfort	Tell City
Frankton	Thorne Town
Gas City	Tipton
Greendale	Walkerton
Greenfield	Washington
Huntingburg	Waynetown
Jamestown	Winamac
Jasper	

# It ain't bragging if you can do it

- Remember: EE is a price signal each and every day
- Therefore, build your value proposition on EE
- DR layers value **upon that** when the \$/kWh change
- The analysis engine of choice in the EE business
  - Highest rating in RESNET accreditation (can rate homes)
  - Highest accuracy in the BESTEST EX by DOE/EPA/NREL
- The engagement engine of choice in EE business
  - Highest customer completion stats (typically 70%)
  - Highest customer satisfaction stats (typically 93-96%)
- The influence engine of choice in EE business
  - Measured 4-5% impacts on EE – education ... not guilt
  - No "regressing" for lean customers – education ... not guilt

# Table Topics: Customers and the Smart Grid



**We must change the paradigm: interest and engage them (for their own reasons) and then to inform, inspire, and help them succeed at their agenda.**

# My Basic Premises Today:

## Help customers understand value

- But may not know the real value
- May have overstated expectations
- Need to find the right buyers

## Help customers capture that value

- People intrinsically love auctions
- But, odd lots may not sell well
- Some of you are natural aggregators

## Make it fun for them to participate

- Have to interest and engage
- Have to strike when iron is hot



# Smart Grid Analytics: How it works



**SEP Meter**



**Thermostat**

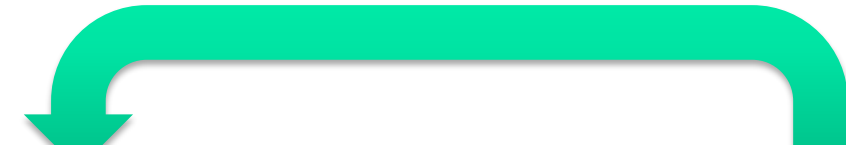


**Weather**



## Energy Analytics

- Monitors input devices for changes
- Produces raw logs and 5 min consumption, cost and temp logs
- Produces database from APOGEE AMES Engine output



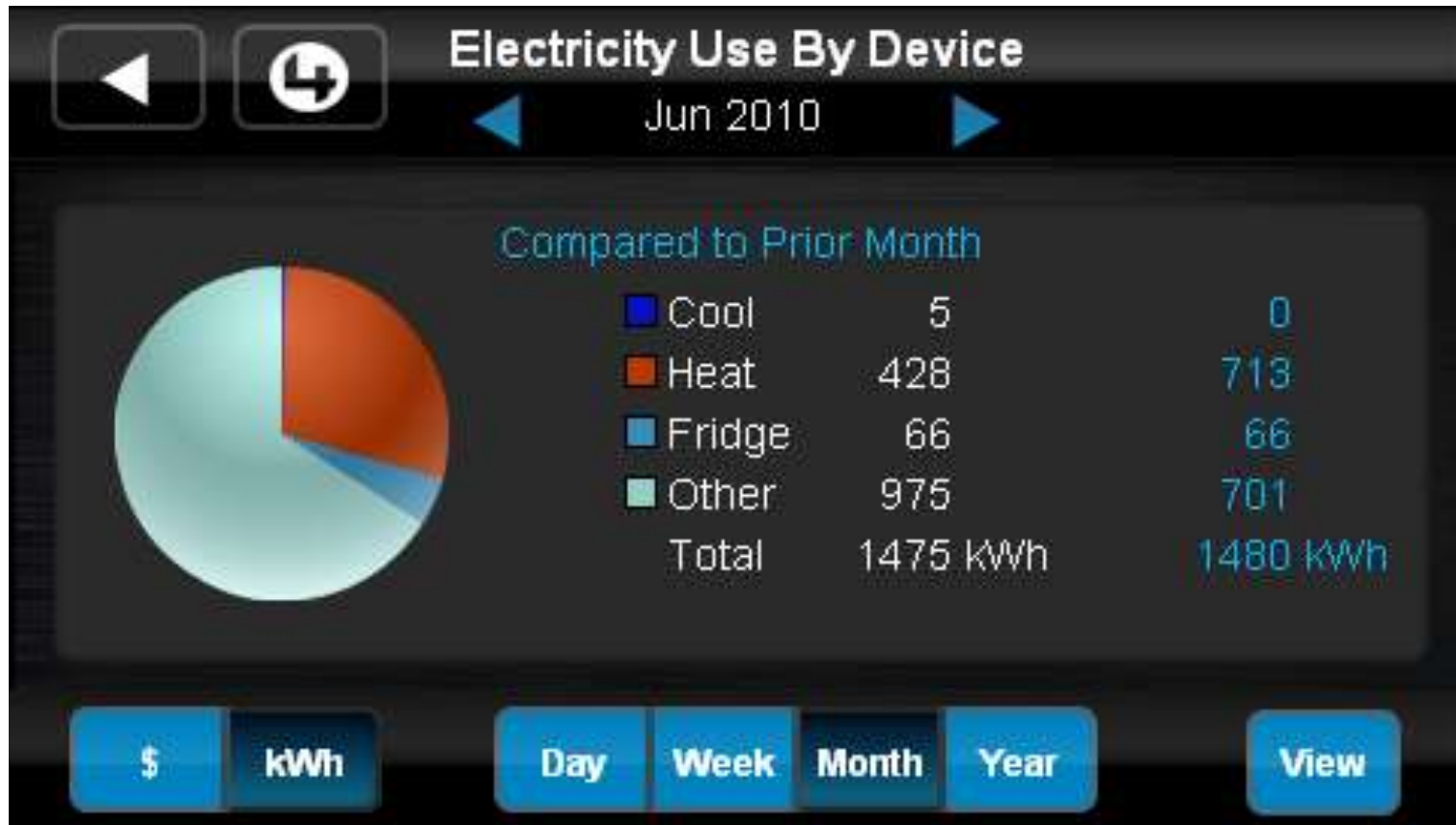
## Apogee Engine

- Processes the logs each night
- Produces hourly consumption logs that include:  
disaggregated usage,  
homes like mine and  
billing forecasts



## Energy Analytics Database

- **Stored in non-volatile memory**
- **Room for up to five years of data**

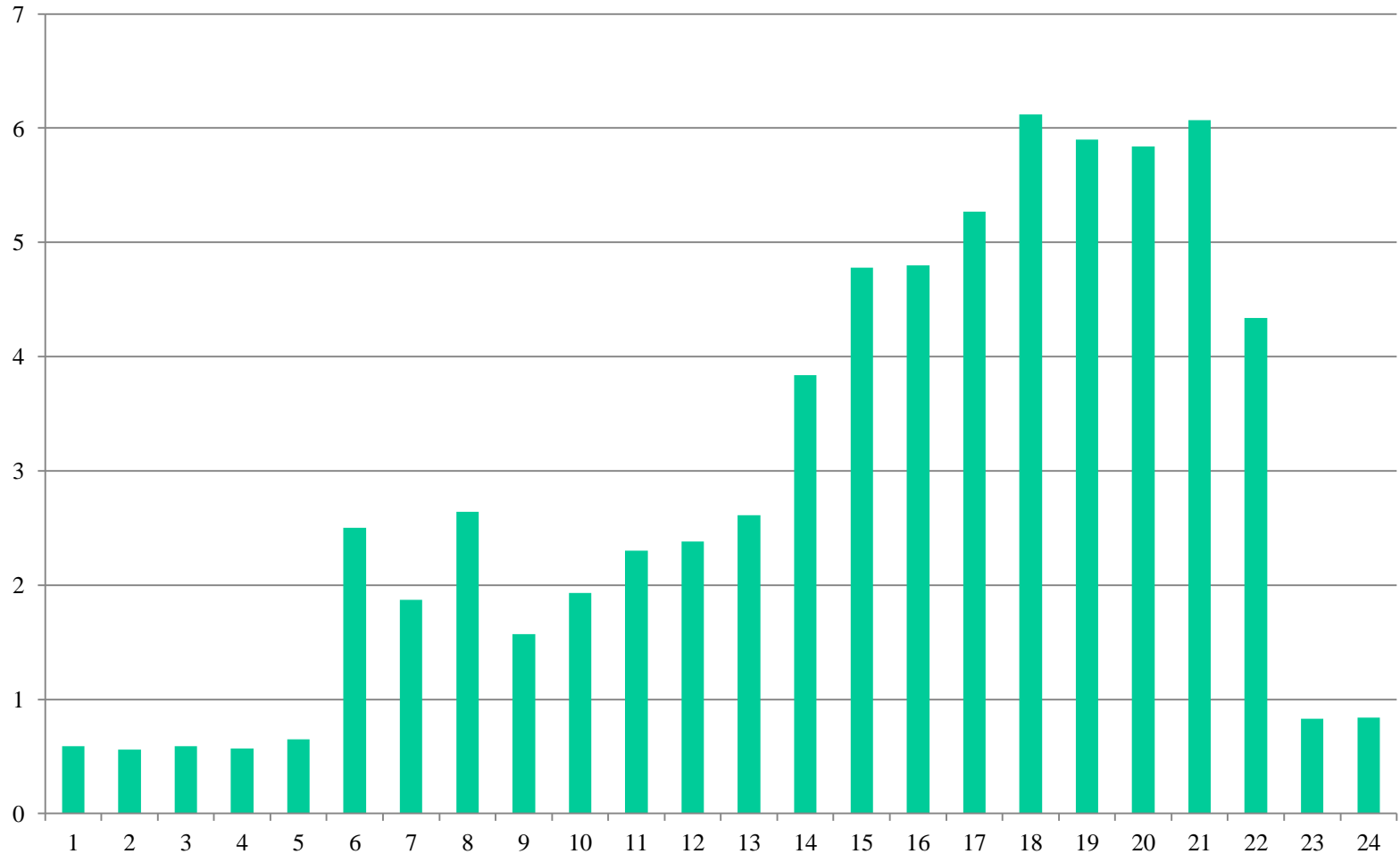


- **Estimates disaggregated usage by major categories: Cool, Heat, Fridge and Pool.**
- **Ability to compare your consumption to homes like yours..**

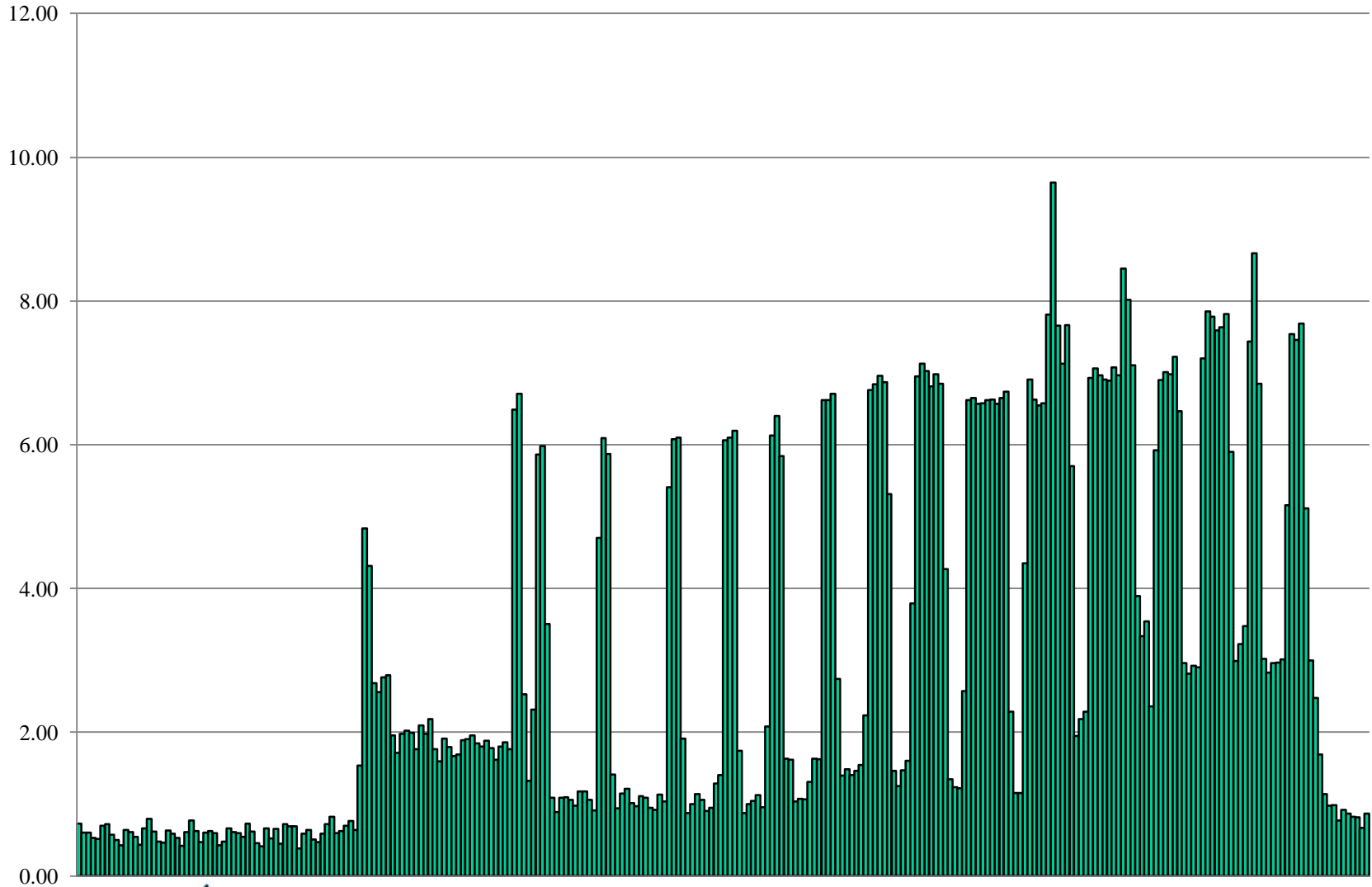
# Analytics Accuracy/Cost Tradeoffs

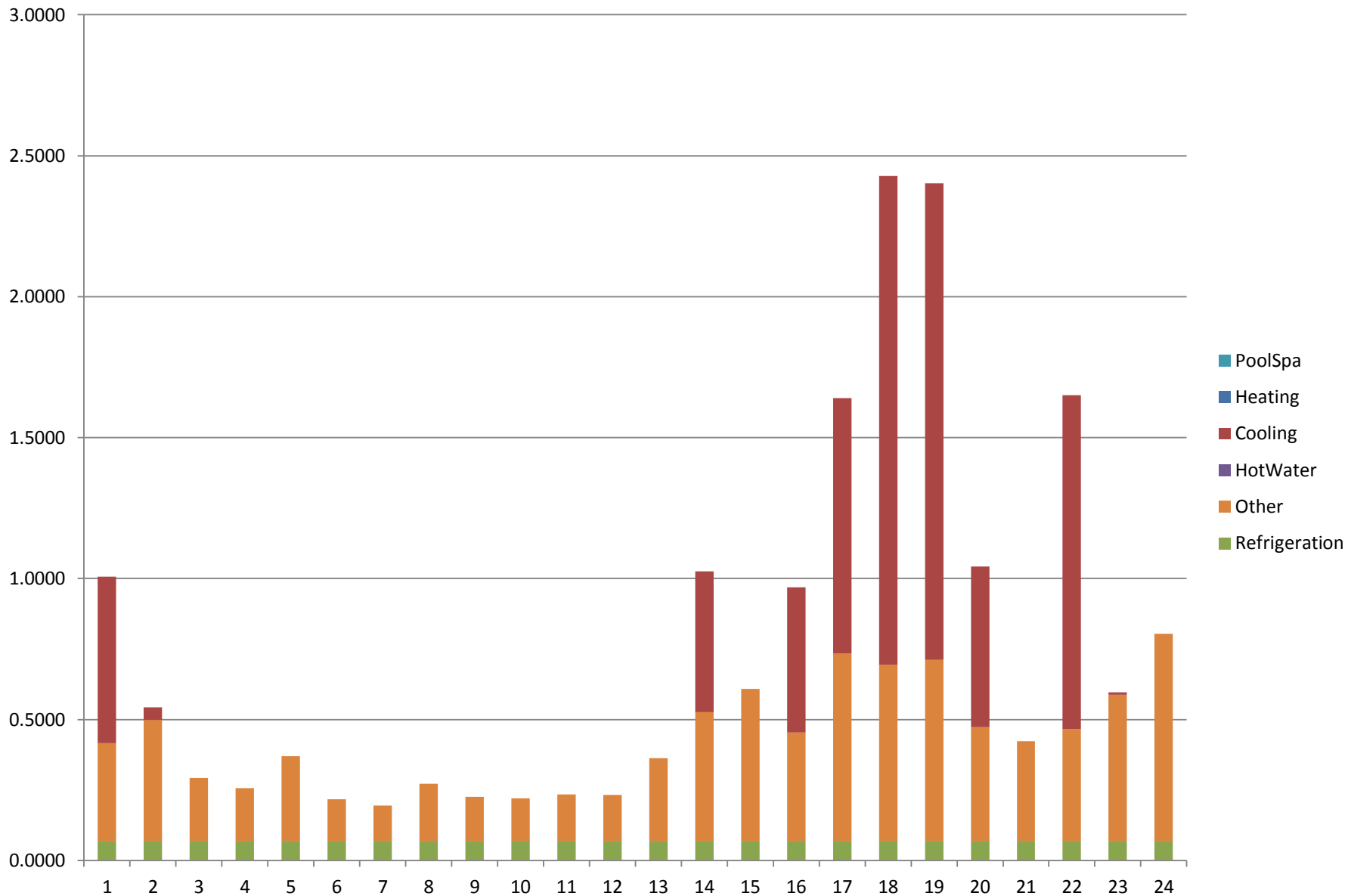
System Configuration	Apogee AMES Engine Operation	Cost	Accuracy
<b>EC-100, Home Profile (user entered) and Weather</b>	<ul style="list-style-type: none"> <li>• Engine runs in "Estimator Mode."</li> <li>• Provides expected home performance based on profile and weather inputs.</li> </ul>	\$	Good
Add Home Profile (installer entered)	<ul style="list-style-type: none"> <li>• Engine runs in "Estimator Mode."</li> <li>• Improved home performance analysis using more detailed home profile data.</li> </ul>	\$	Better
Add WT-100	<ul style="list-style-type: none"> <li>• Engine runs in "Analytical Mode."</li> <li>• Heating and cooling disaggregation highly accurate.</li> <li>• Actual home behavior learned in about one week and refined in one month providing better predictions.</li> </ul>	\$\$	Even Better
<b>Available in Late 2010</b>			
Add Utility Bills	<ul style="list-style-type: none"> <li>• Engine runs in "Expert Mode."</li> <li>• Billing data is the key input to achieve best cost predictions.</li> </ul>	\$\$	Excellent
Add Load Controllers	<ul style="list-style-type: none"> <li>• Engine runs in "Actual Mode."</li> <li>• Measurements from actual appliances provides highest precision of electricity usage.</li> </ul>	\$\$\$	Highest

# Hourly Interval Meter Data (Denver Home)

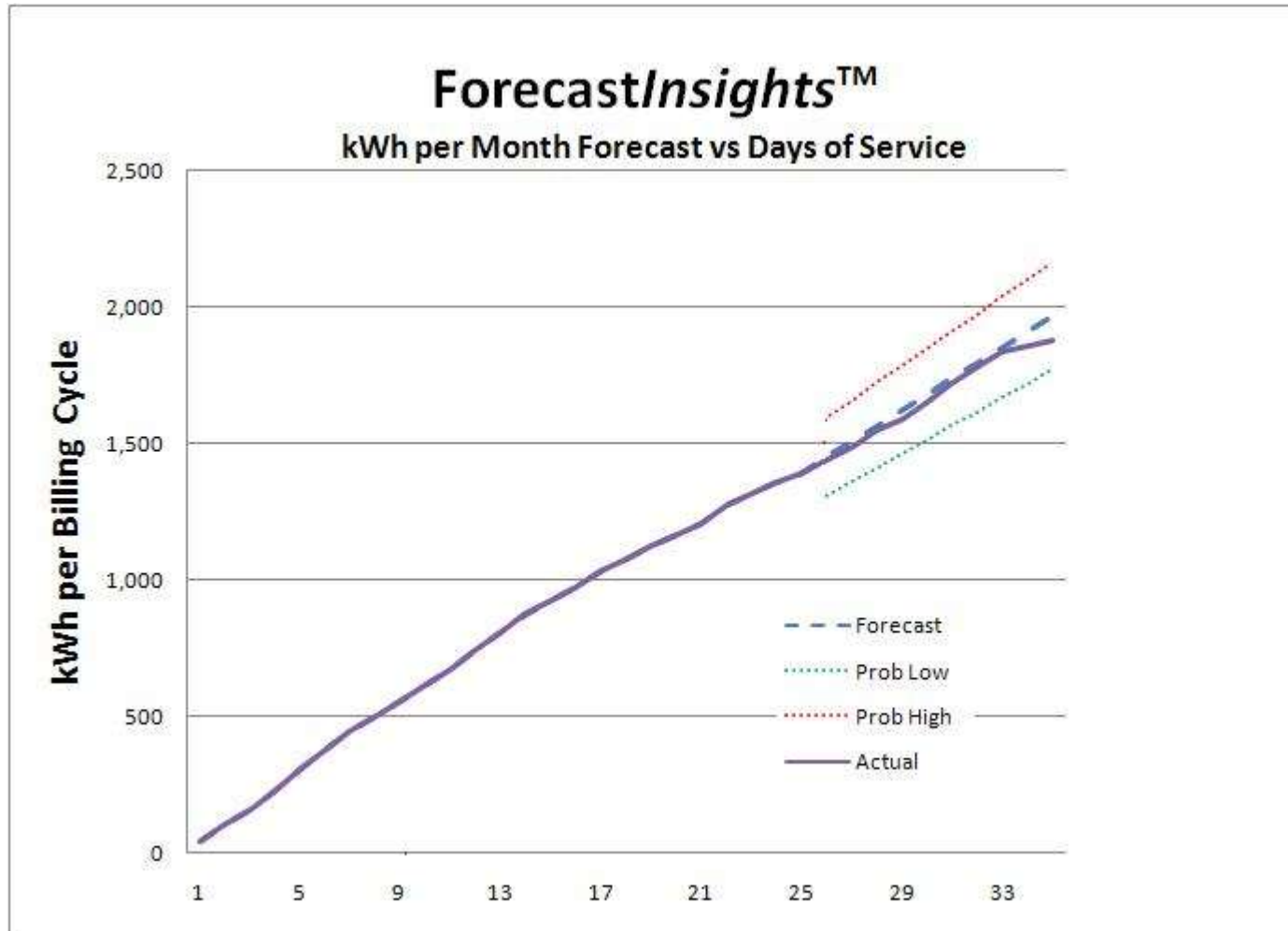


# 5 Minute Interval Meter Data (Same Home and Day)





# Accurate forecast plus what they can do



**Number of Days since last bill**

# Bills and Smart Grid Data can be disaggregated

Electric Cost Chart

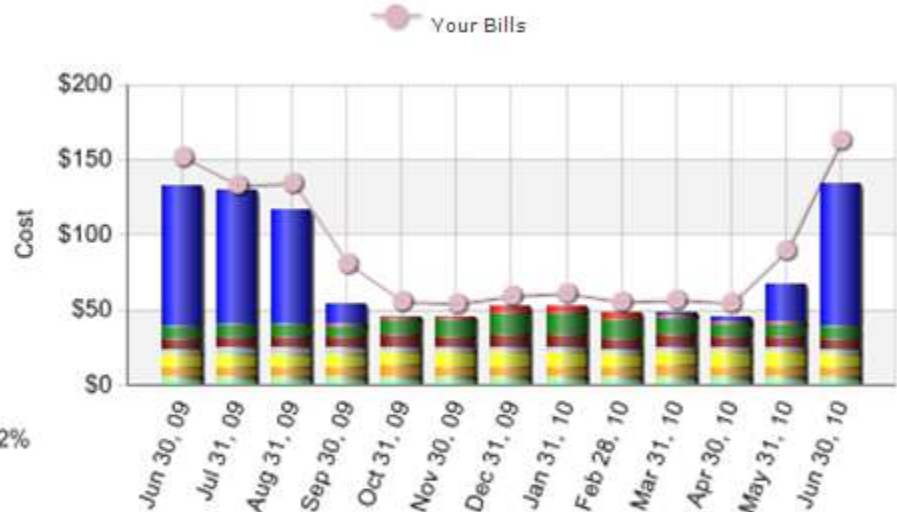
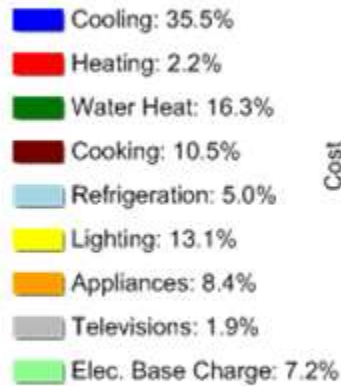
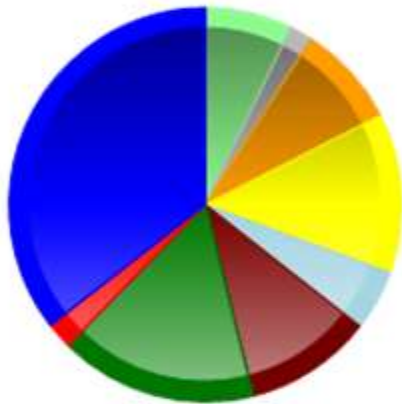
Electric Cost Table

Electric Use Chart

Electric Use Table

## Annual Electric Cost

## Monthly Electric Cost



Electric

Fuel

Total

# Gas bills can be also be disaggregated

Fuel Cost Chart | Fuel Cost Table | Fuel Use Chart | Fuel Use Table

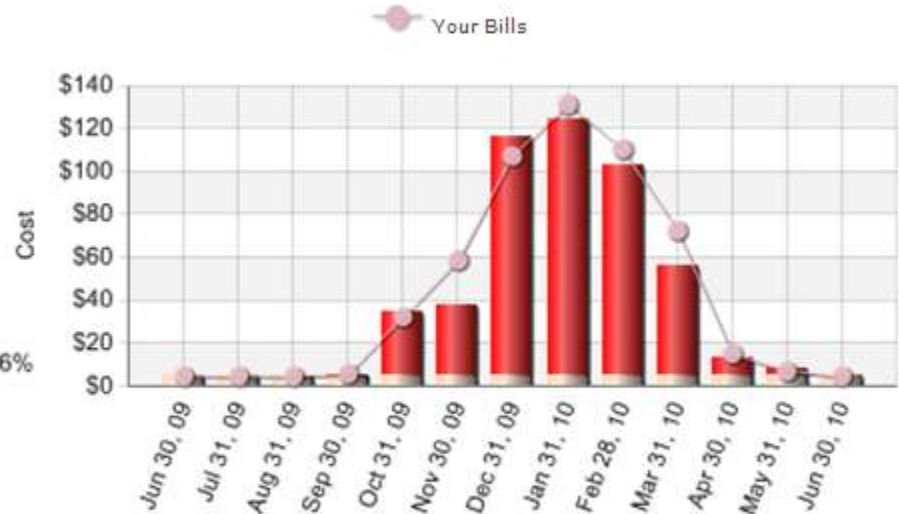
## Annual Fuel Cost



Heating: 88.4%

Gas Base Charge: 11.6%

## Monthly Fuel Cost



Electric

Fuel

Total

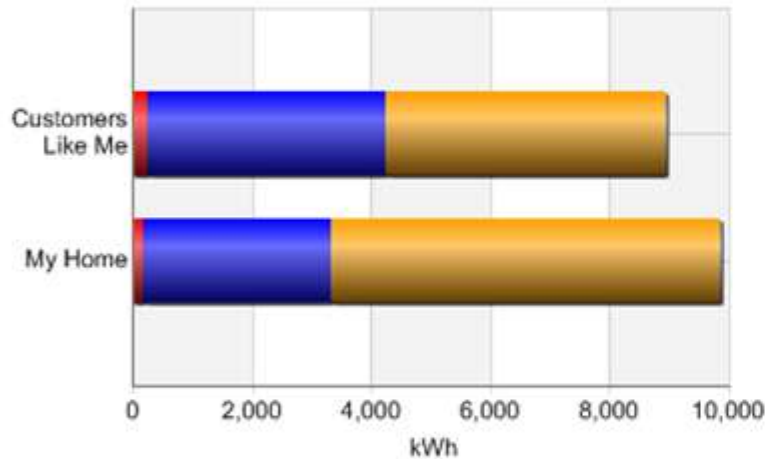
# Comparisons on end use focus attention

Thank you for performing an online home audit!

Based upon your billing history and other homes like yours the estimated energy use and cost is:

Electric Chart **Electric Table**

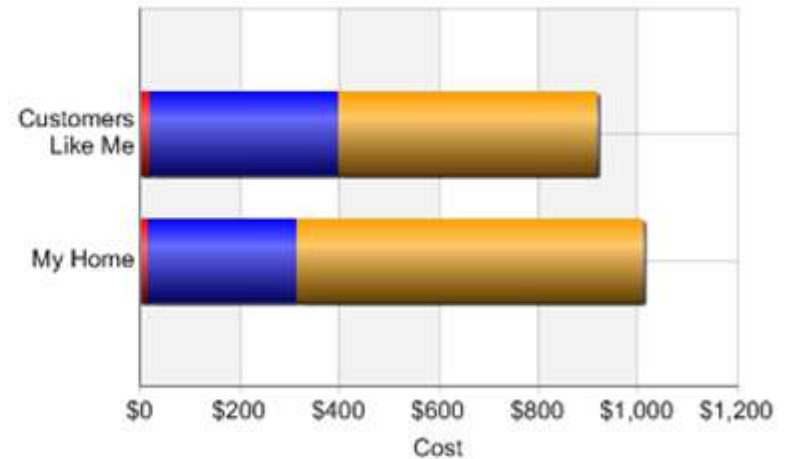
## Electric Use Comparison



Heating Cooling Everything Else

You use 923 kWh more than other homes similar to yours.

## Electric Cost Comparison



Heating Cooling Everything Else

You spend \$151 more than other homes similar to yours.

Electric

Fuel

Total



View Results

My Plan

View History

## Track My Progress

- Sign up to receive monthly progress emails on your energy usage

Email Address:

Email Format:

- Text  HTML

## Email Preferences

Select as many of the following options you would like included in your personalized emails.

- Usage & Cost Summary**  
Energy usage and cost changes compare to last month and last year
- Price Summary**  
Changes in price compared to last month and last year
- Weather Summary & Impact**  
Changes and impact of weather on your energy consumption and cost compared to last month and last year
- Other Factors**  
Factors in addition to weather impacting your consumption
- Maintenance Tips**  
Tips on improving energy efficiency
- Customers Like Me**  
Compare me to others with similar homes and behavior
- Energy Efficient Home**  
Compare me to energy efficient home like mine

# My Plan Summary



An Exelon Company

SELECT QUESTION

COMPLETE HOME PROFILE

VIEW RESULTS



## My Final Plan Summary

Congratulations! Thank you for pledging.

		Raise cooling setting from 76 to 78 degrees.	<b>Save Up To</b> <b>\$210</b> per year
		Lower heating setting from 72 to 68 degrees.	<b>Save Up To</b> <b>\$159</b> per year
		Replace 50% of light bulbs with compact fluorescent lamps.	<b>Save Up To</b> <b>\$37</b> per year
		Lower water heater setting from medium to low.	<b>Save Up To</b> <b>\$10</b> per year
		Replace older major appliances with ENERGY STAR models. (Water Heater, Refrigerator/Freezer, Clothes Washer, Dishwasher)	<b>Save Up To</b> <b>\$47</b> per year

NOTE: Your Final Plan reflects interdependencies between measures and will be different than your estimated plan. For example, changing your thermostat setting will affect the possible savings for insulation and weatherization.

**Estimated Energy Cost: \$1,902**

**Final Plan Percentage**

**Final Plan Savings: \$451**

**23.7%**

REVISE

START OVER

The HomeEnergyCalculator uses your local Weather and Energy Rates. This is only an estimate of your actual energy use.

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**The Power of Customer Choice®**

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## Your Question: How does my home's energy use compare to others?

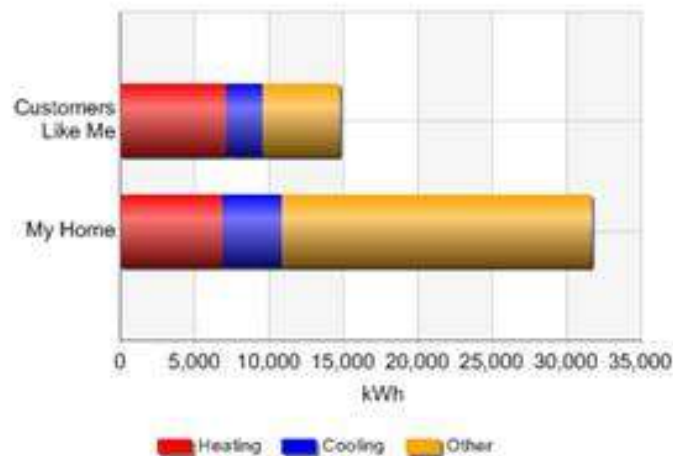
### How do I compare to other customers like me?

Based upon your billing history and other homes like yours the estimated energy use and cost is:

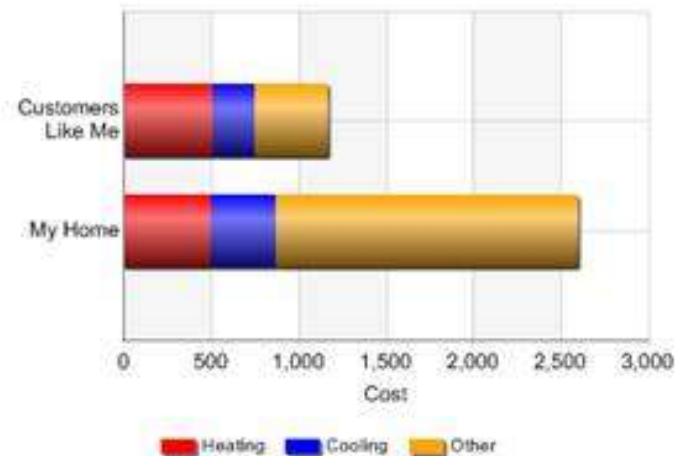
Electric Table

Electric Chart

#### Electric Use Comparison



#### Electric Cost Comparison



### Select Another Question

SELECT

I want to view a comprehensive report of my energy usage!

SELECT

Why are my energy costs different from last month or last year?

SELECT

Where are my energy dollars going?

SELECT

What are some no-cost or low-cost recommendations for my home to lower my energy costs?

SELECT

What are some long-term investments I can make in my home to lower my energy costs?

### Send Feedback

Did this answer your question?

Yes  No

What other information would be helpful?

If you would like us to contact you, please enter your email address.

ENTER EMAIL

SUBMIT

# Apogee's tools help your DR pickers



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*"In the end, our society will be defined not only by what we create, but by what we refuse to destroy."*

- John C. Sawhill

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## Get Involved!

Are you passionate about the environment? Are you a student, a teacher, a utility or a sponsor looking for a cause? Do you want to make a difference? So, what are you doing about it?

How about joining a growing number of teens to become energy ambassadors called Eco-Stewards™? Eco-Stewards are trained high school students who are actually accredited to perform in-home Lifestyle Analyses for their own homes as well as those of friends and neighbors through their local utility companies. The in-home Lifestyle Analysis allows an Eco-Steward to help residents find places where energy loss is occurring. They then recommend steps to improve energy use through the residents' Lifestyle Analysis and Eco-Score, powered by Apogee Interactive. Eco-Stewards are awarded points for each analysis they complete and are then eligible to apply for a \$5000 scholarship from their sponsor.



# We can help your business thrive!

