

# Graphical Displays in Eco-Feedback: A Cognitive Approach

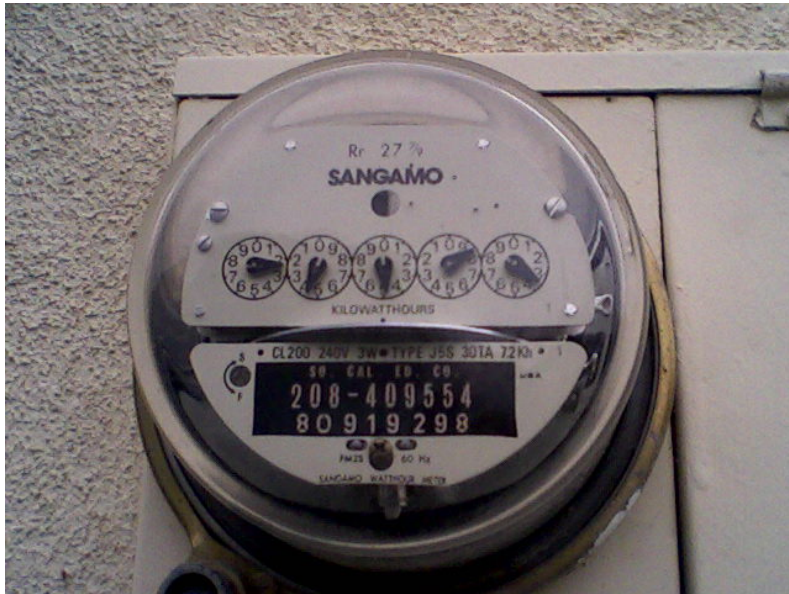
**Beth Karlin**

Transformational Media Lab  
University of California, Irvine  
bkarlin@uci.edu

**Rebecca Ford**

Engineering Department  
Victoria University, Wellington  
becky@email.uk.com

# Eco-Feedback



27

Please request changes on the back. Notes on the front will not be detected.

The amount enclosed includes the following donation:  
FPL Care To Share \$ \_\_\_\_\_

B 2,3,4,7,8 4118 6  
#0188843BQ485818# AUTO #\*CO 4501 116049 Z  
DELRAY BEACH FL 33445-3504

Make check payable to FPL in U.S. for and mail along with this coupon to:  
FPL GENERAL MAIL FACILITY  
MIAMI FL 33188-0001

Account number	Total amount you owe	New charges due by	Amount enclosed
	\$295.43	Jul 16 2008	\$

**Your electric statement**  
for: May 27 2008 to Jun 25 2008 (28 days)  
Customer name:  
Service address:

Statement date: Jun 25 2008  
Next meter reading: Jul 28 2008

Amount of your last bill	Payments (-)	Additional activity (+ or -)	Balance before new charges (=)	New charges (+)	Total amount you own (=)	Now-charges due by
328.10	328.10 CR	0.00	0.00	295.43	\$295.43	Jul 16 2008

Meter reading - Meter 7C18171  
Current reading 52489  
Previous reading - 50153  
Wh used 2336

Amount of your last bill  
Payment received - Thank you  
Balance before new charges 328.10

Energy usage	Last Year	This Year	New charges (Rate: RS-1 RESIDENTIAL SERVICE)
Wh this month	3375	2336	Electric service amount 2.89
Service days	32	29	Storm charge 6.51
Wh per day	105	81	Gross receipts tax 251.15**
			Franchise charge 6.51
			Utility tax 15.75
			Late payment charge 14.51
			<b>Total new charges 4.92</b>

**Total amount you owe \$295.43**

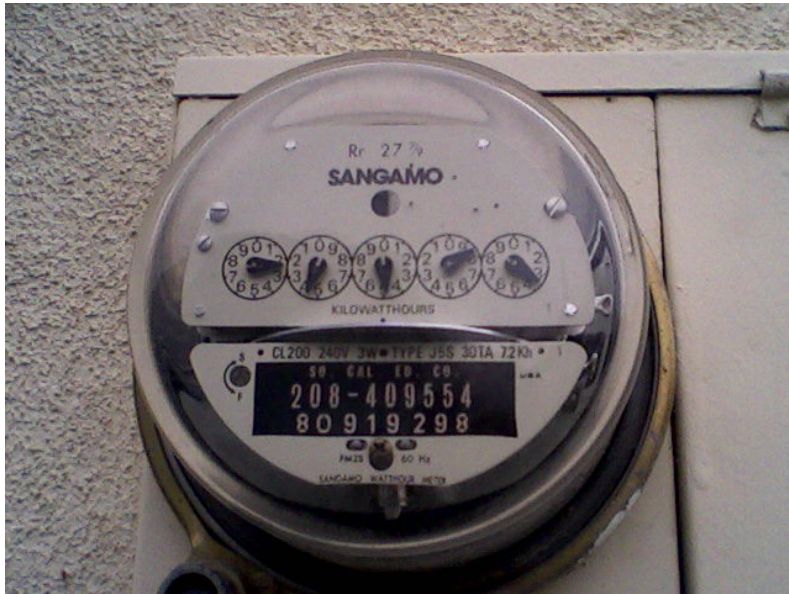
\*The electric service amount includes the following charges:  
Customer charge: \$5.34  
Fuel: (Over 1000 kWh at \$0.052270) \$135.48  
Fuel: (Over 1000 kWh at \$0.041340) \$110.35  
Fuel: (Over 1000 kWh at \$0.051650)

- A late payment charge of 1.50% will apply if not paid by July 16, 2008, and your account may be subject to being billed an additional deposit.  
- Would you like one less bill to think about & help the environment too? Enroll in FPL Automatic Bill Pay & your bill is always paid on time. Save time, postage, check writing & paper. Plus, our fuel consumption of cars & trucks that transpo checks. Enroll at FPL.com or see authorization form in this bill.

Florida Power & Light Company  
P.O. Box 025576  
Miami, FL 33102

Please have your account number ready when contacting FPL.  
Customer service: (561) 984-8227  
Outside Florida: 1-800-226-3545  
To report power outages: 1-800-4OUTAGE (468-8243)  
Hearing/speech impaired: 711 (Relay Service)

# Eco-Feedback

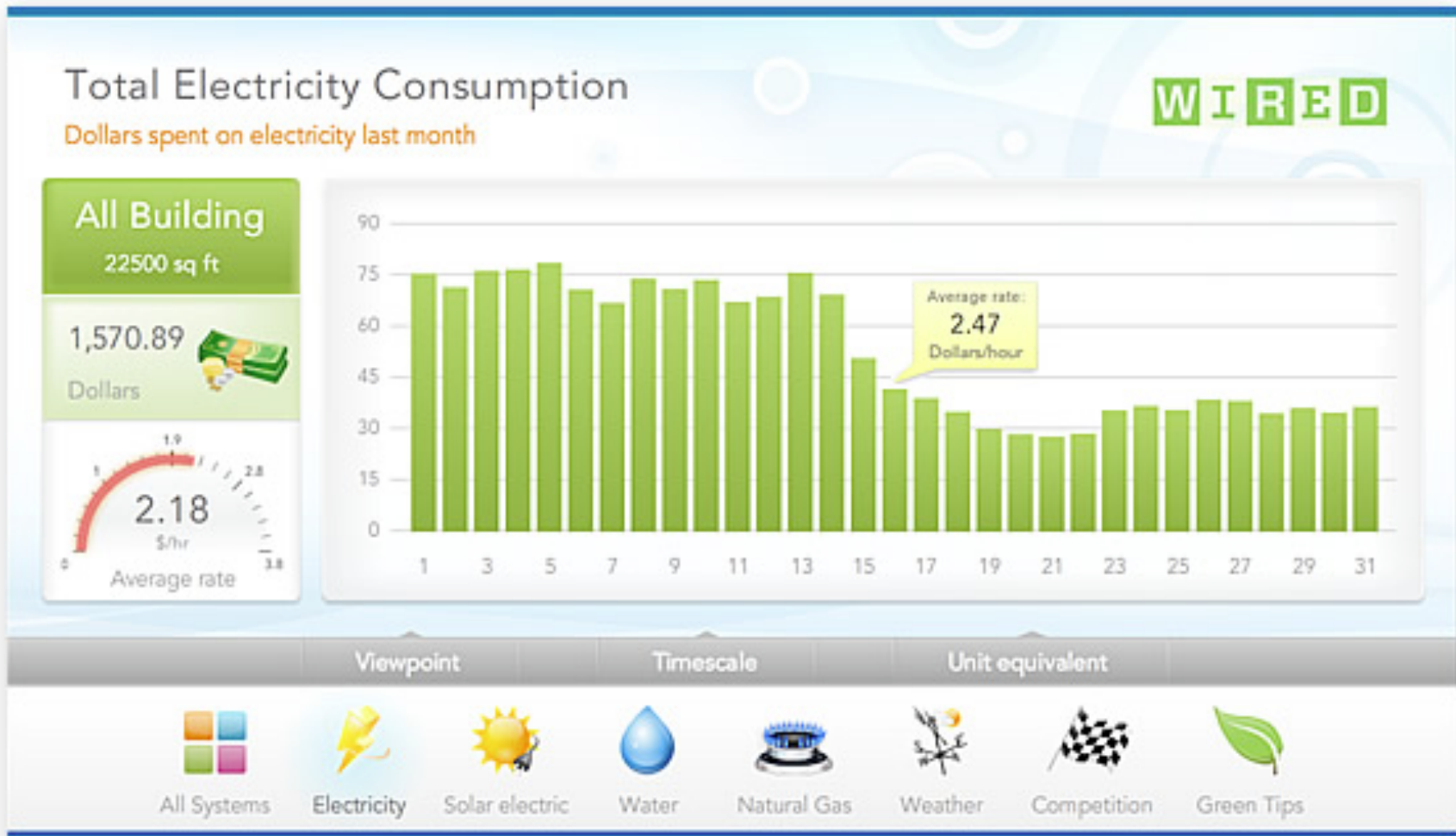


# Data Granularity

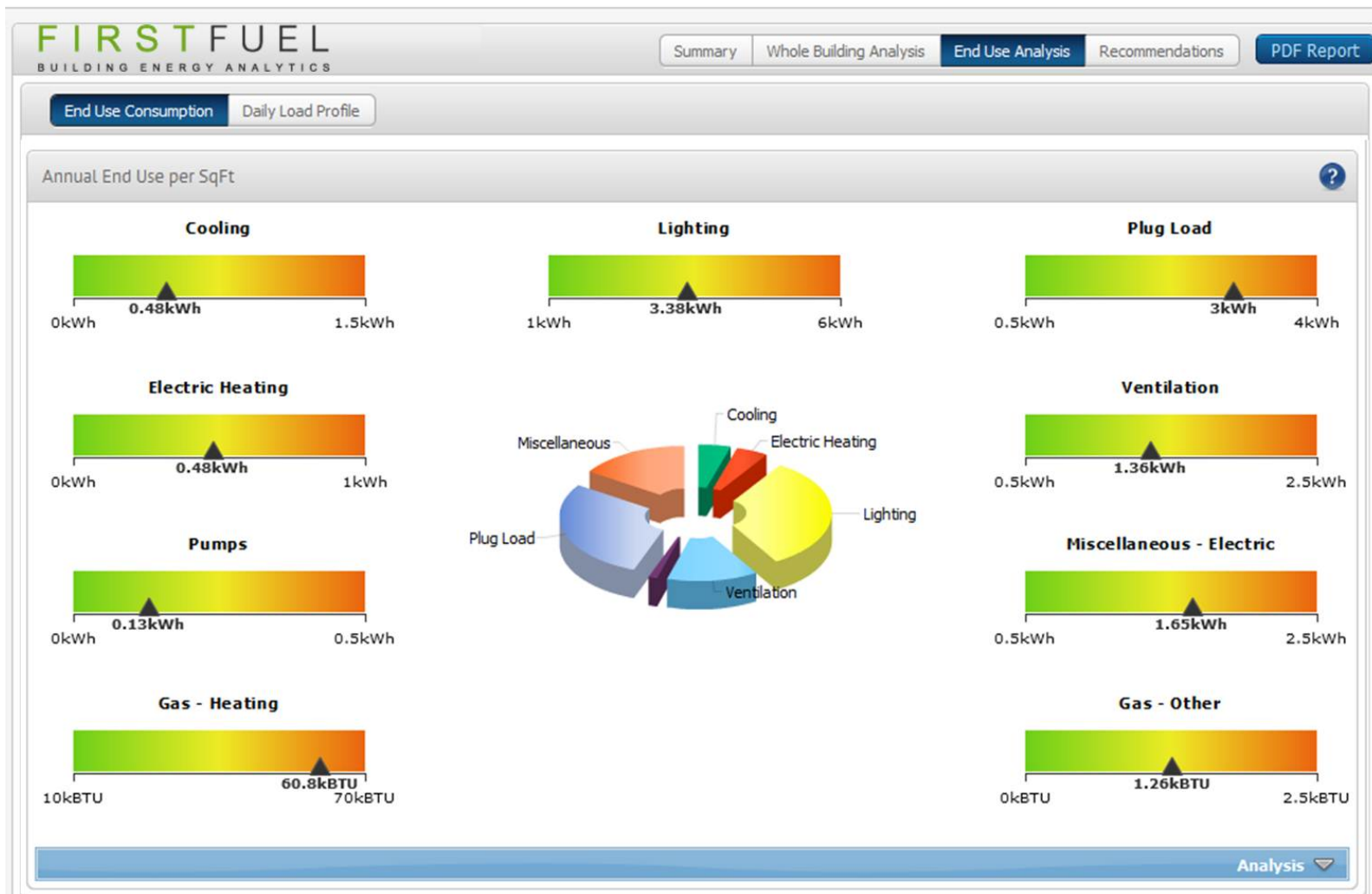


- Monthly 12
- Daily 365
- Hourly 8,760
- Continuous 31,536,000
- Appliance 1.5 billion

# Eco-feedback displays



# Eco-feedback displays



# Eco-feedback displays

## Last Month Neighbor Comparison | You used 48% more than your efficient neighbors.



\* kWh: A 100-Watt bulb burning for 10 hours uses 1 kilowatt-hour.

### HOW YOU'RE DOING:

GREAT 😊😊

▶ **GOOD** 😊

MORE THAN AVERAGE

### WHO ARE YOUR "NEIGHBORS"?

#### ALL NEIGHBORS

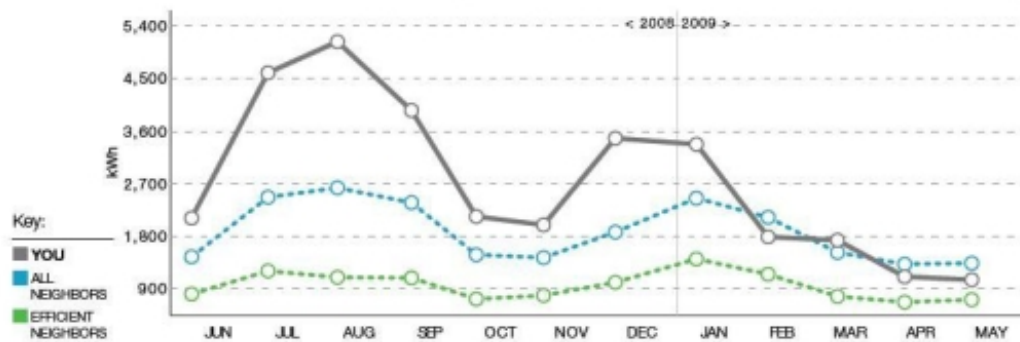
Approximately 60 occupied, nearby homes that are similar in size to yours (avg 5,379 sq ft)

#### EFFICIENT NEIGHBORS

The most efficient 20 percent from the "All Neighbors" group

## Last 12 Months Neighbor Comparison

You used 45% more electricity than your neighbors. This costs you about \$1,029 extra per year.



### Personalized Action Steps

Set your thermostat for comfort and savings

Choose efficient light bulbs

Look for the ENERGY STAR® label

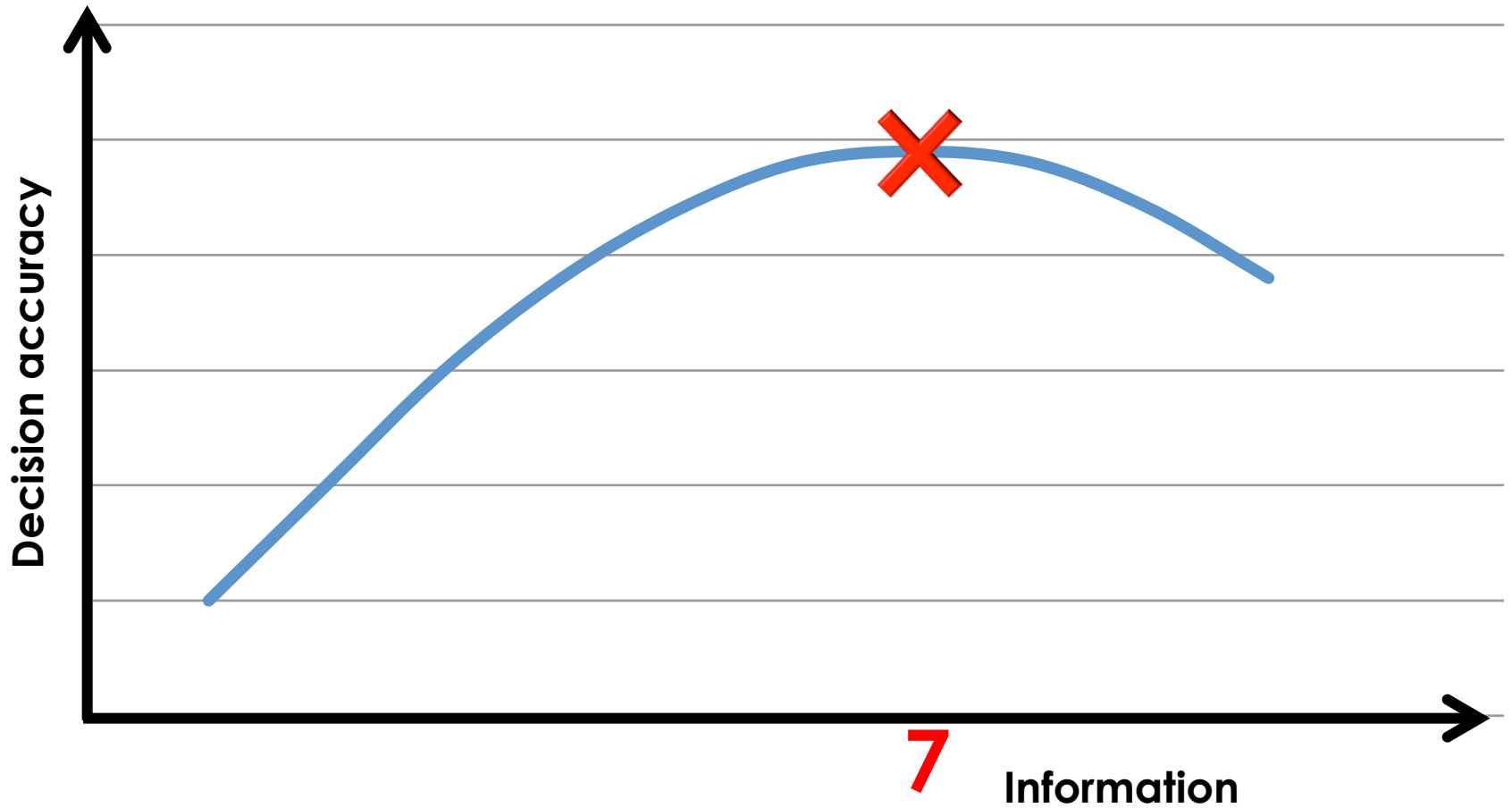
TURN OVER TO LEARN MORE ➡

# Eco-feedback displays



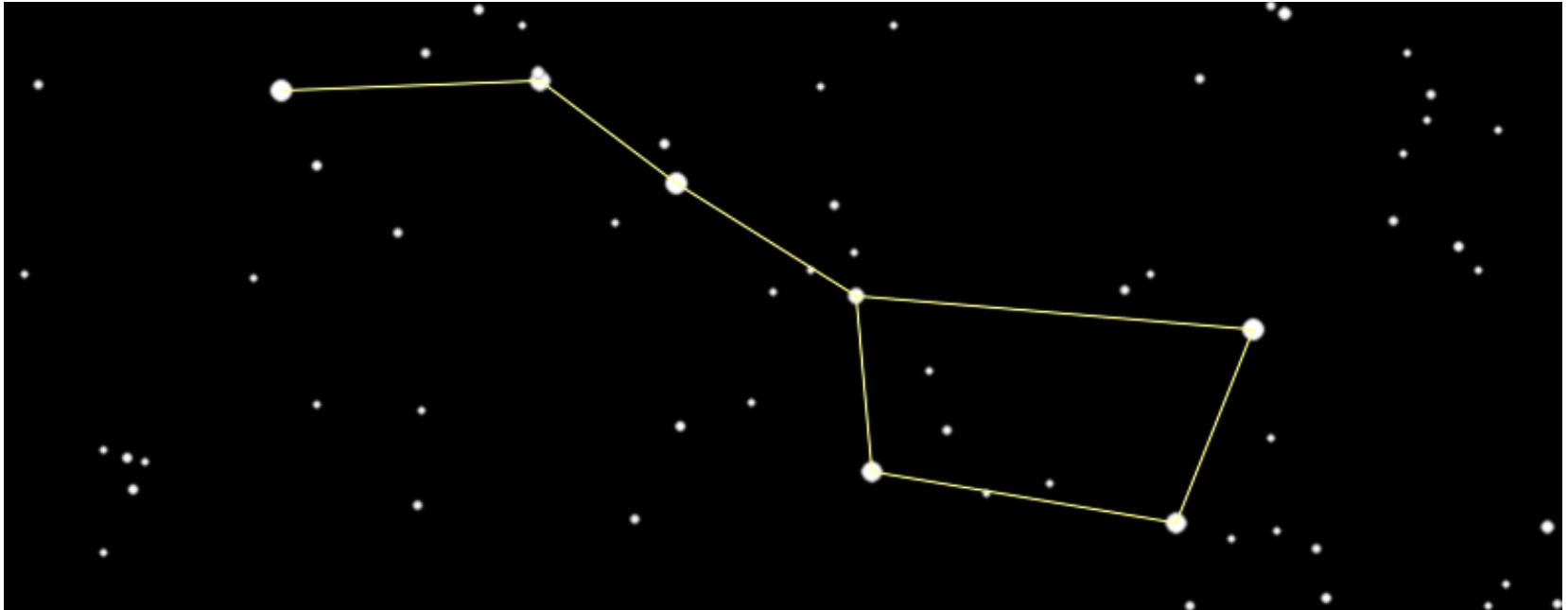


# Information Density



Eppler & Mengis (2004), Miller (1956)

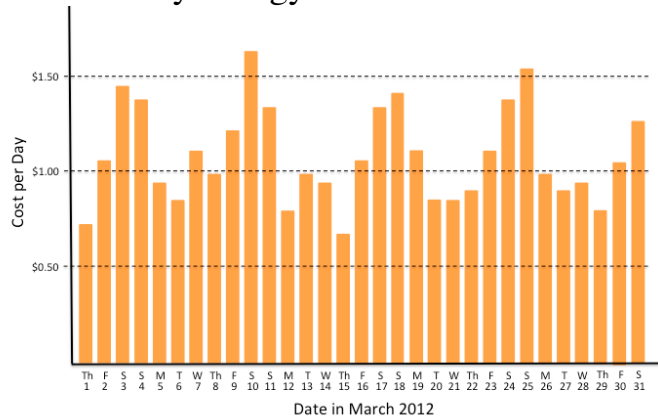
# Perceptual Assistance



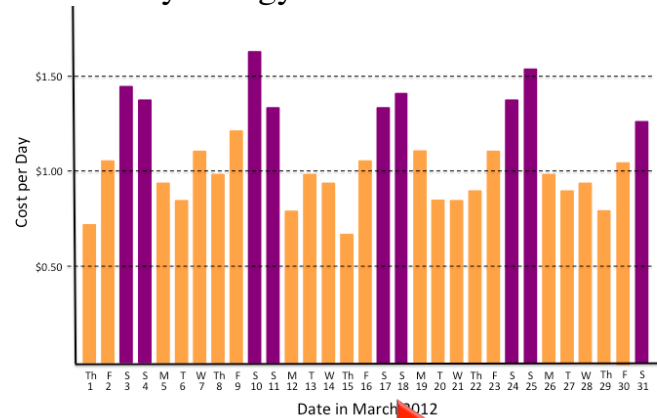
Pictures help us to make links between the image we see and our background knowledge.

# Eco-feedback by time

My Energy Use Last Month



My Energy Use Last Month

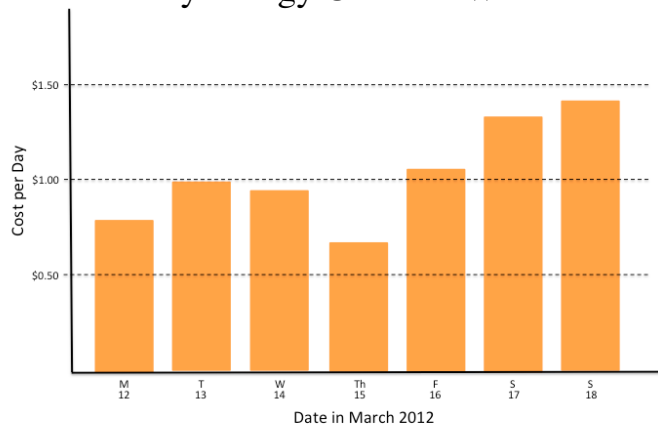


a) 31 data

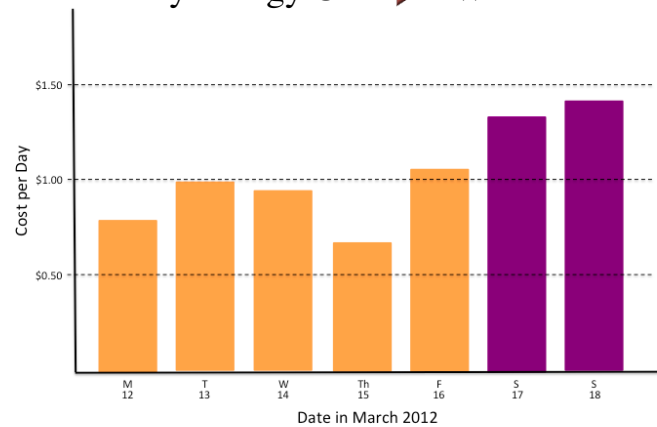
1 assistance



My Energy Use Last Week



My Energy Use Last Week

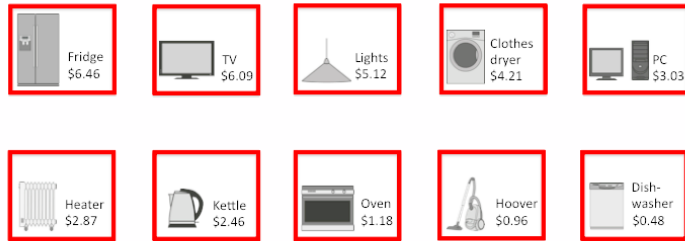


c) 7 data points, no perceptual assistance

d) 7 data points, perceptual assistance

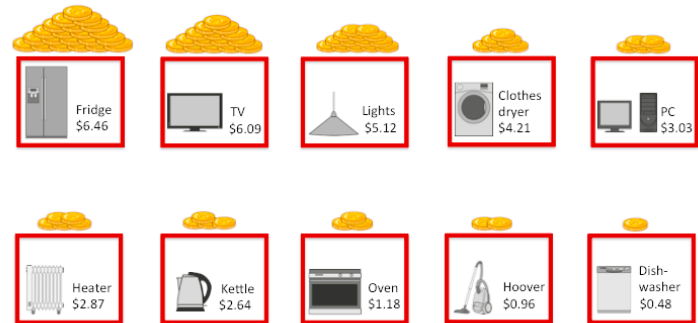
# Eco-feedback by appliance

Top Energy Consuming Appliances Last Week



a) 10 data points, no perceptual assistance

Top Energy Consuming Appliances Last Week



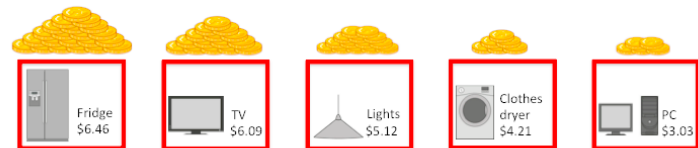
b) 10 data points, perceptual assistance

Top Energy Consuming Appliances Last Week



c) 5 data points, no perceptual assistance

Top Energy Consuming Appliances Last Week



d) 5 data points, perceptual assistance

# Measures

- Perceived ease of use (4 Questions)
- Ability to interpret (3 Questions)

**Read data**

**Read between data**

**Read beyond data**

# Results

**Number of data points**



**Perceived ease of use**



**Ability to interpret**



# Results

**Data chunking**



**Interpretation ( $n > 7$ )**

**Interpretation ( $n < 7$ )**



# Results

**Addition of pictures**



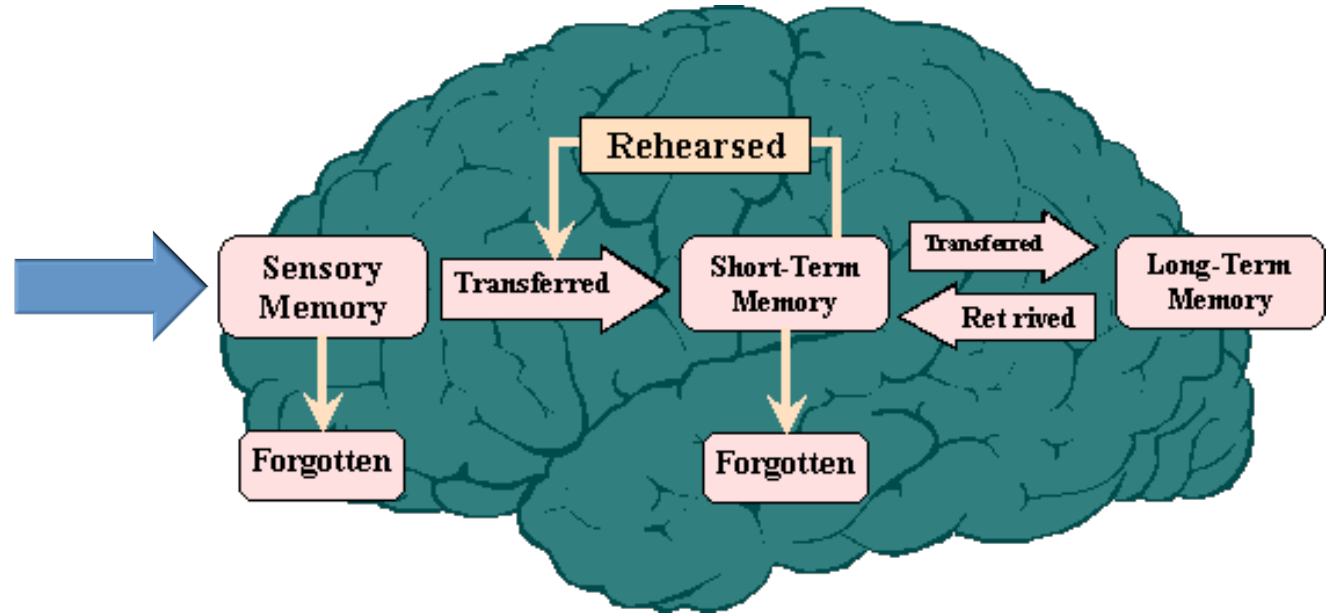
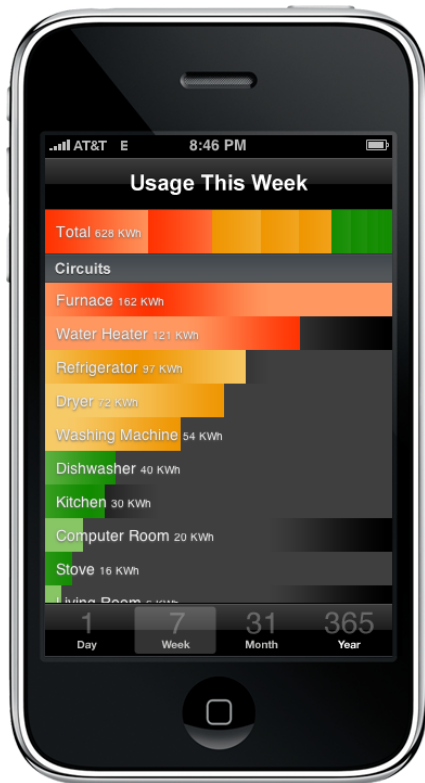
**Ease of use**

**Interpretation (n<7)**





# Implications for eco-feedback



Small changes could  
have significant impacts

**Thank you!**

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