Graphical Displays in Eco-Feedback: A Cognitive Approach

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Eco-Feedback
Eco-Feedback
Data Granularity

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

Total Electricity Consumption
Dollars spent on electricity last month

All Building
22500 sq ft

1,570.89
Dollars

Average rate:
2.18
$/hr

Average rate:
2.47
Dollars/hour
Eco-feedback displays
Eco-feedback displays

**Last Month Neighbor Comparison**
- You used 48% more than your efficient neighbors.
- **Efficient Neighbors:** 707 kWh*
- **You:** 1,049 kWh
- **Neighbors:** 1,333 kWh

**How You’re Doing:**
- **Great**: 707 kWh
- **Good**: 1,049 kWh
- **More than Average**: 1,333 kWh

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

**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 Week

a) 31 data points, no perceptual assistance

My Energy Use Last Month

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

b) 10 data points, perceptual assistance

c) 5 data points, no perceptual assistance

d) 5 data points, perceptual assistance
Measures

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