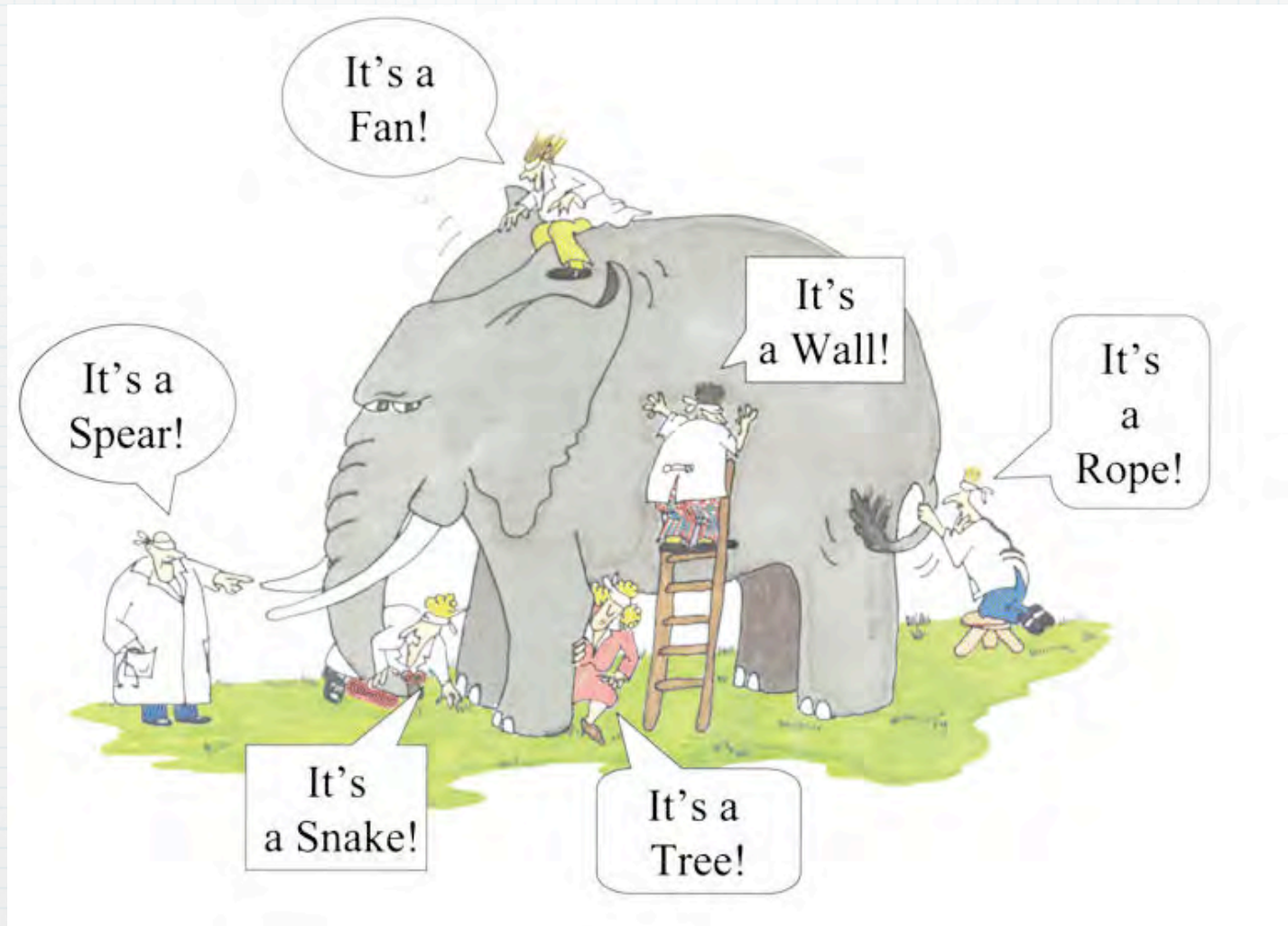


**Technologies
supporting learning
and cultures of participation in
Energy domains**

What is the Smart Grid?

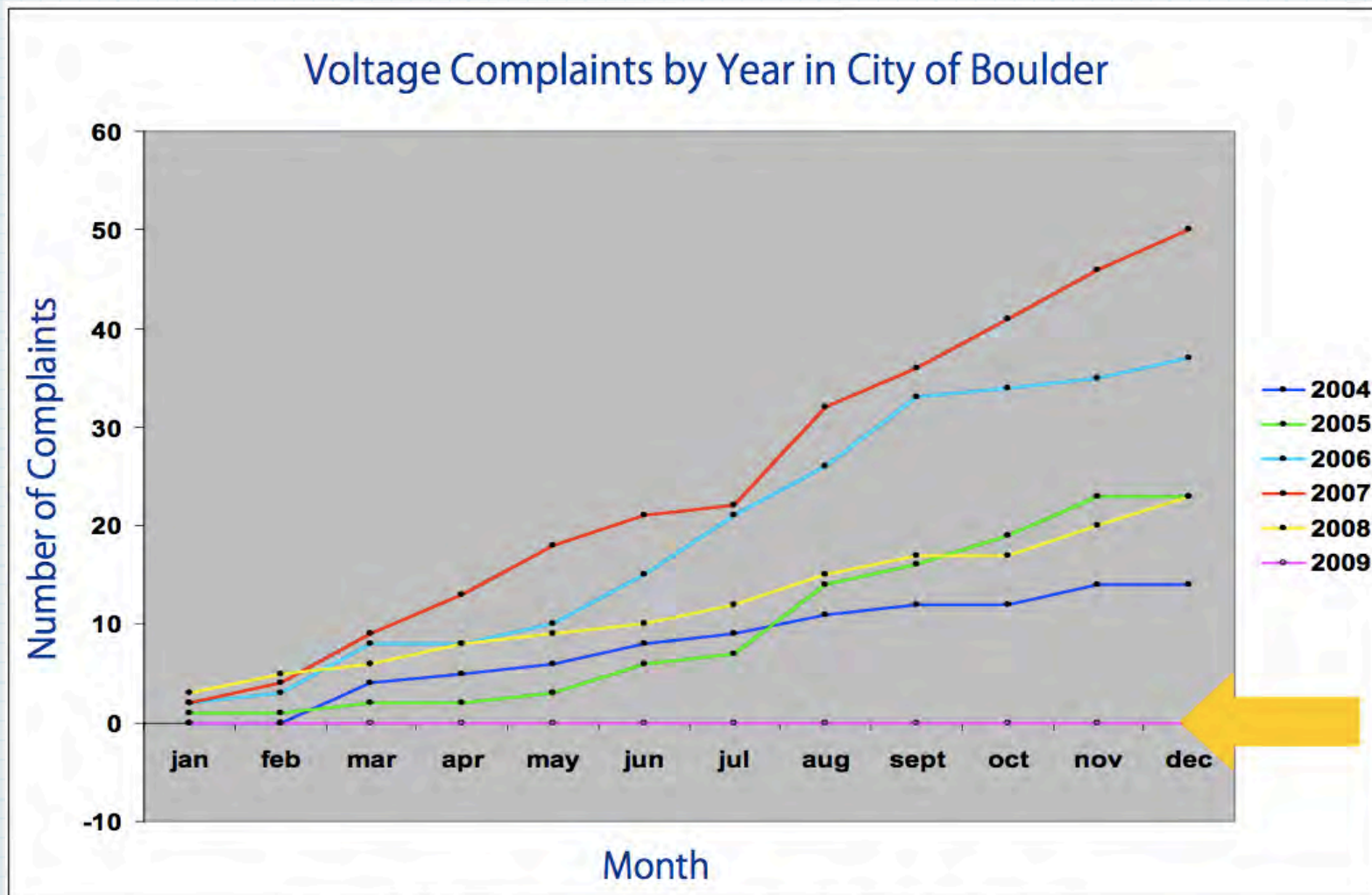


If I Only Had a Brain...


* GE Smart grid Ad



One perspective: Xcel



Source: Xcel Energy, "SmartGridCity™ Update: Project Status and Early Benefits"

A photograph of a man and a woman in a home setting. The woman, on the left, is wearing a brown cardigan and glasses, looking at a digital energy meter. The man, on the right, is wearing a blue button-down shirt and glasses, pointing at the meter. The meter is a small white device with a digital display showing '2.17'. There are four thought bubbles overlaid on the image, each containing a question related to energy use. The background shows a white wall with framed pictures and a bookshelf.

Learning:
Where does our energy come from? Is it sustainable?

Awareness:
Where and when do we use energy? How much do we pay?

Understand Impacts:
What are the real costs? Do small savings really matter?

Motivation:
How can I change to use less than right now or, even better, less than my friends?

Learning & Discovery

- * not just learning about energy
- * but
 - * creating more intuitive understandings
 - * learning how energy choices impact our lives
 - * learning in context of our situation

Tactile Learning: Hand-Crank Generators



Learning: Simulations

[Home](#)>[Rooms](#)>[Devices](#)

[See Real-Time Usage](#)

[Explore Consumption & Saving Opportunities](#)

[Share and Compete with Friends](#)

Selected Device

Your TV is a **Generic Flatscreen** [Change TV](#)
The TV is currently grouped with **Cable Box** and two more devices [View Group](#)

Energy Profile

The TV is using 100 Watt when turned on and 5 Watt in standby mode

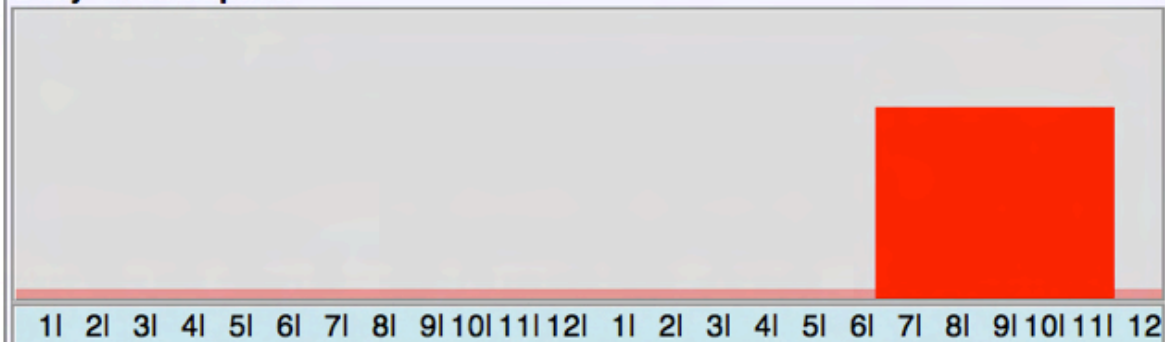
Simulate Schedule

[Unplug When Not in Use](#)
[Leave on Standby When Not in Use](#)
[Use Standard Schedule \(on from 6p to 11p\)](#)
[Use Blank Schedule](#)

Consumption with Selected Schedule

TV Uses: **0.595 kwh/Day**
TV Standby Uses: **34.675 lbs Coal/Year**
Group Standby Uses: **208.05 lbs Coal/Year**
EnergyStar Could Save: **113.3325 lbs Coal/Year**
[Change Units](#)

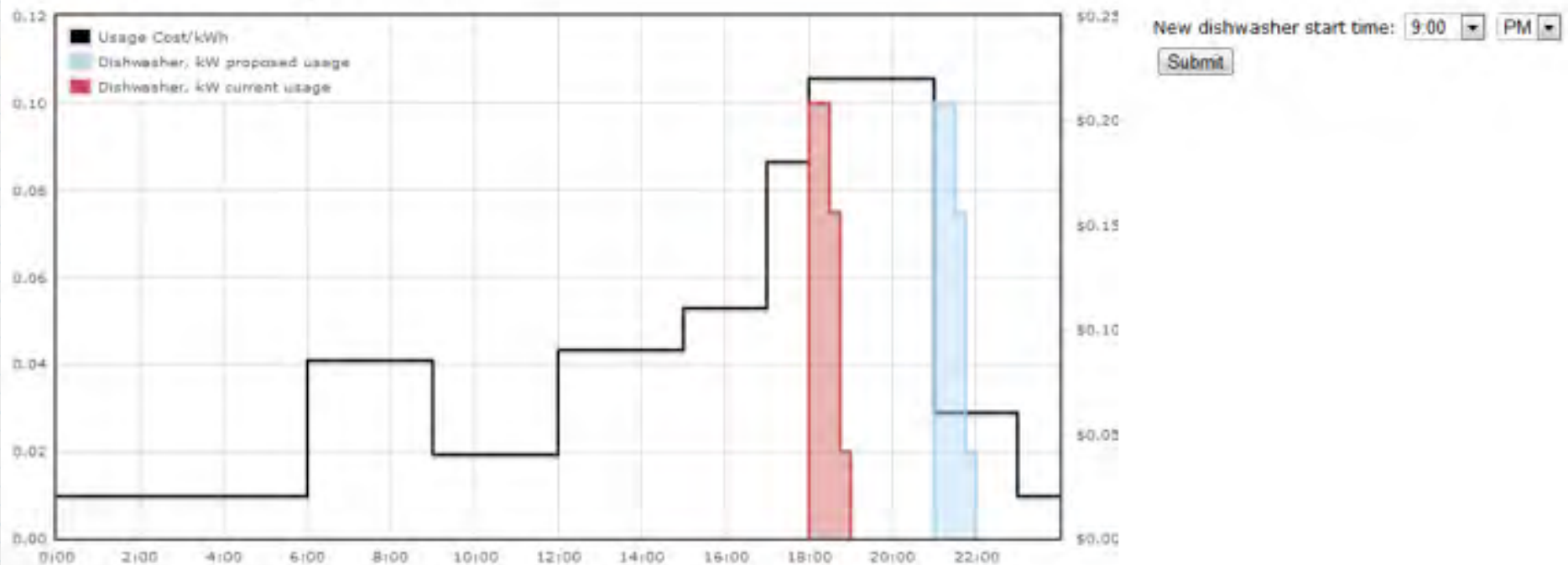
Daily Consumption



[Change Scale](#) | [Change Timeframe](#)

Learning: Simulations

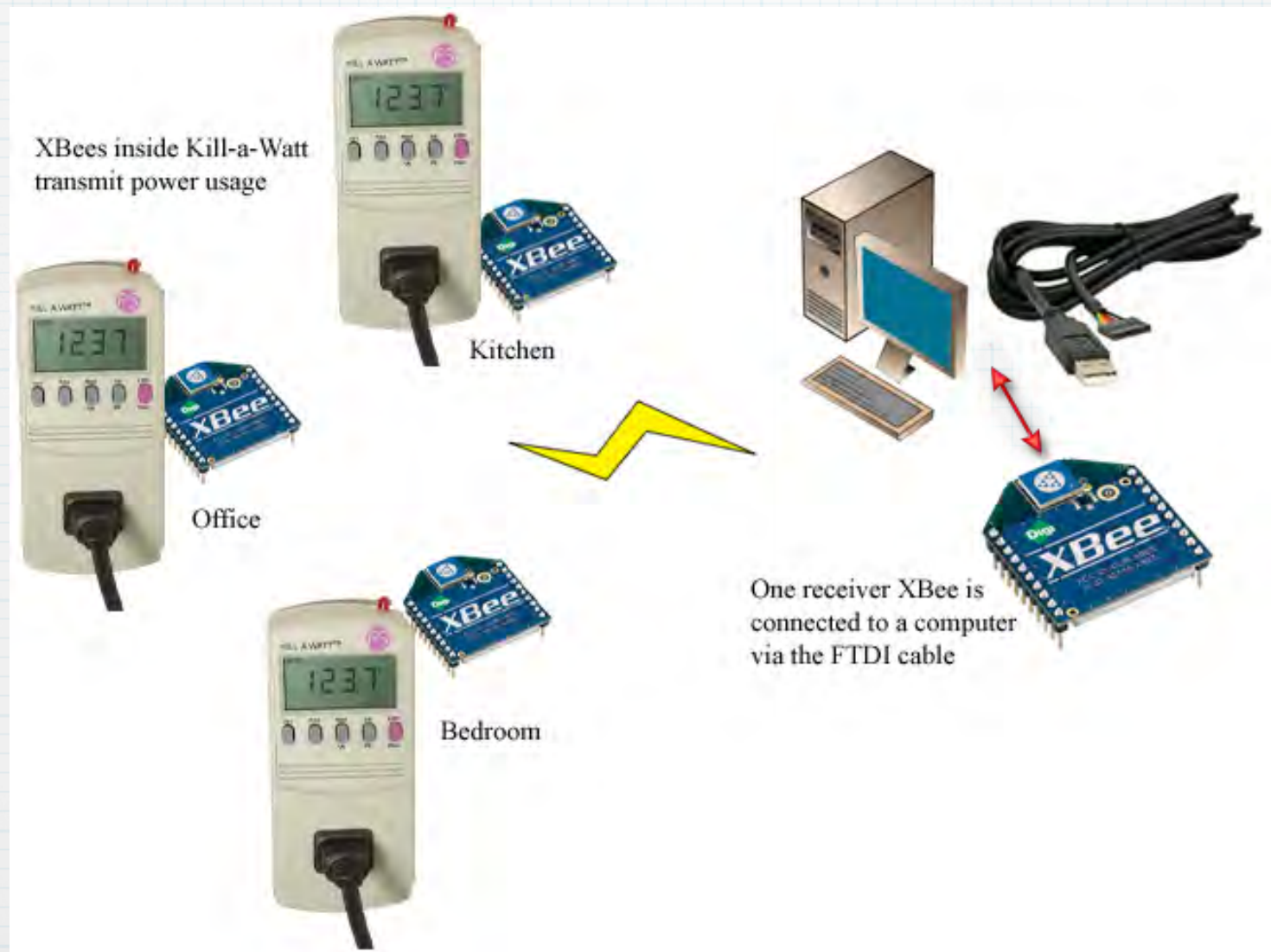
Energy Consumption Demo



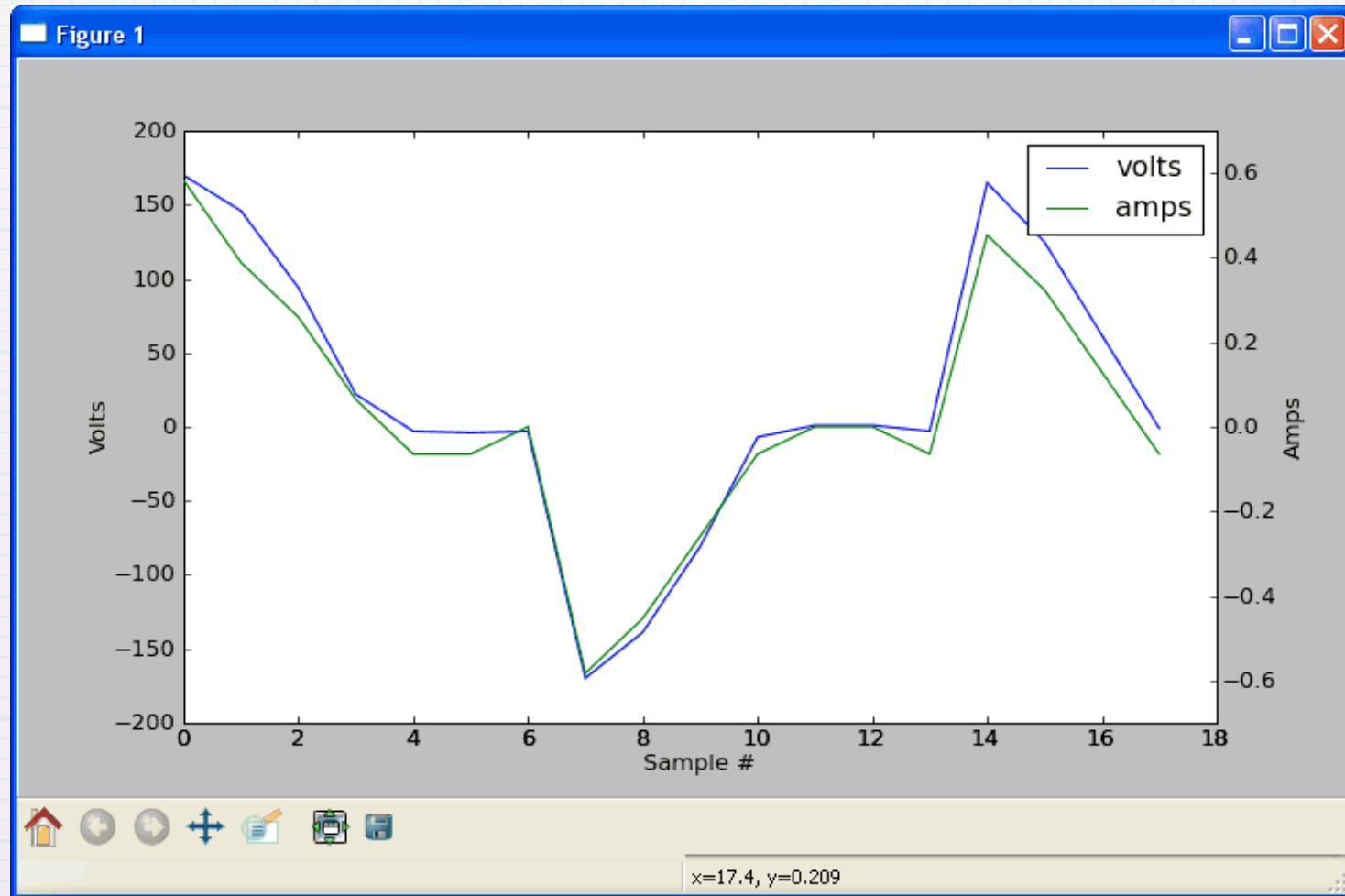
Learning through Awareness

- * from: energy as an invisible quantity
- * to: making the invisible visible
- * to: making the invisible meaningful and actionable
- * to: understanding energy use in the context of community and peers

Awareness: Tweet-a-Watt



Tweet-a-Watt: Tracking Energy



Tweet-a-Watt: Sharing Experiences



Partnering with Tendril



Volt

outlet

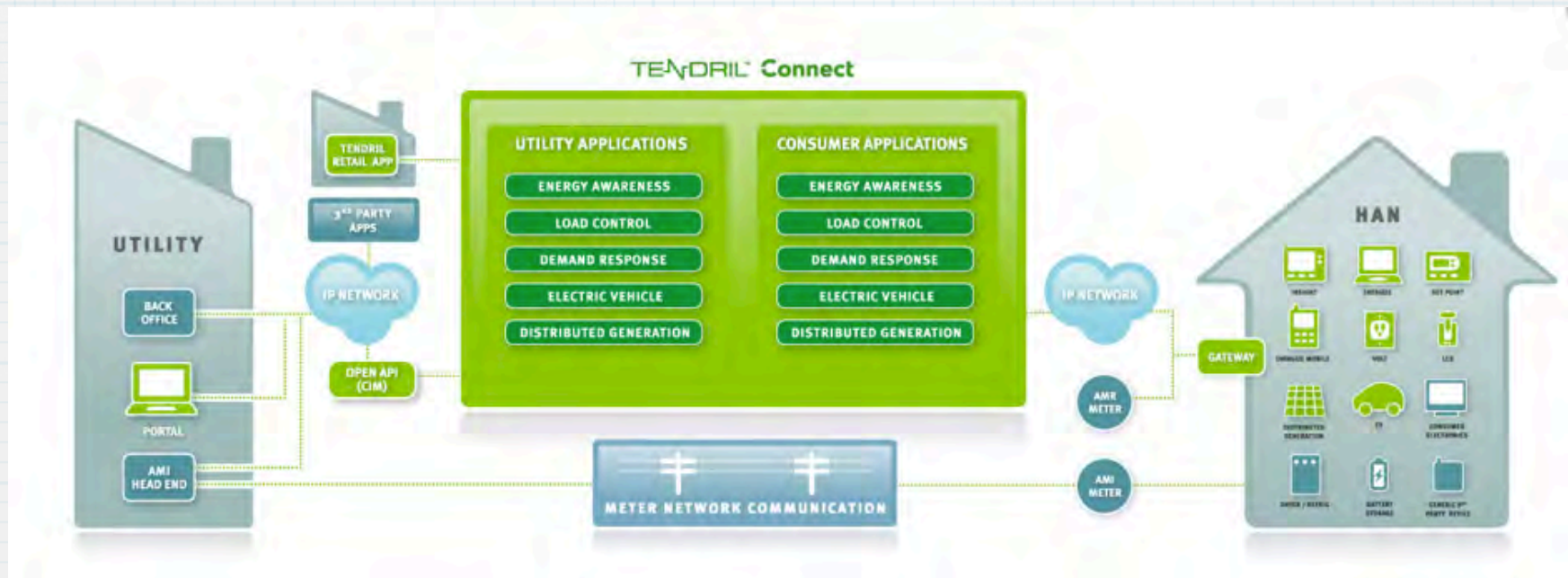


Transport

gateway

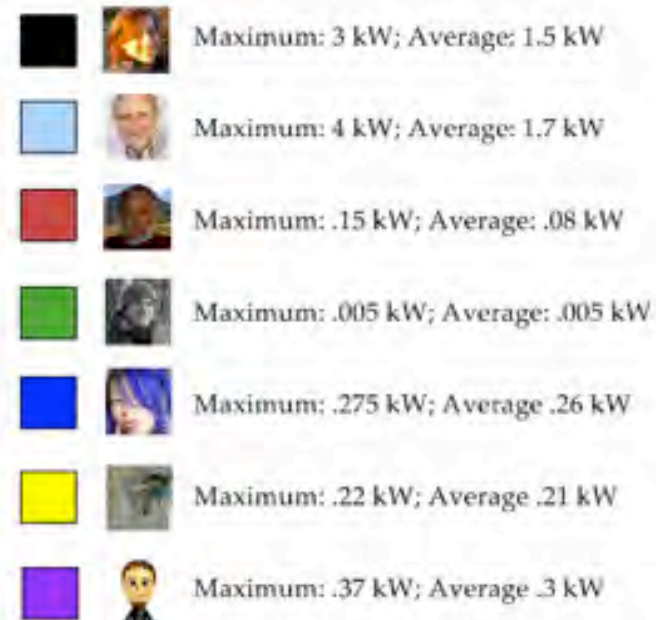


Tendril Platform



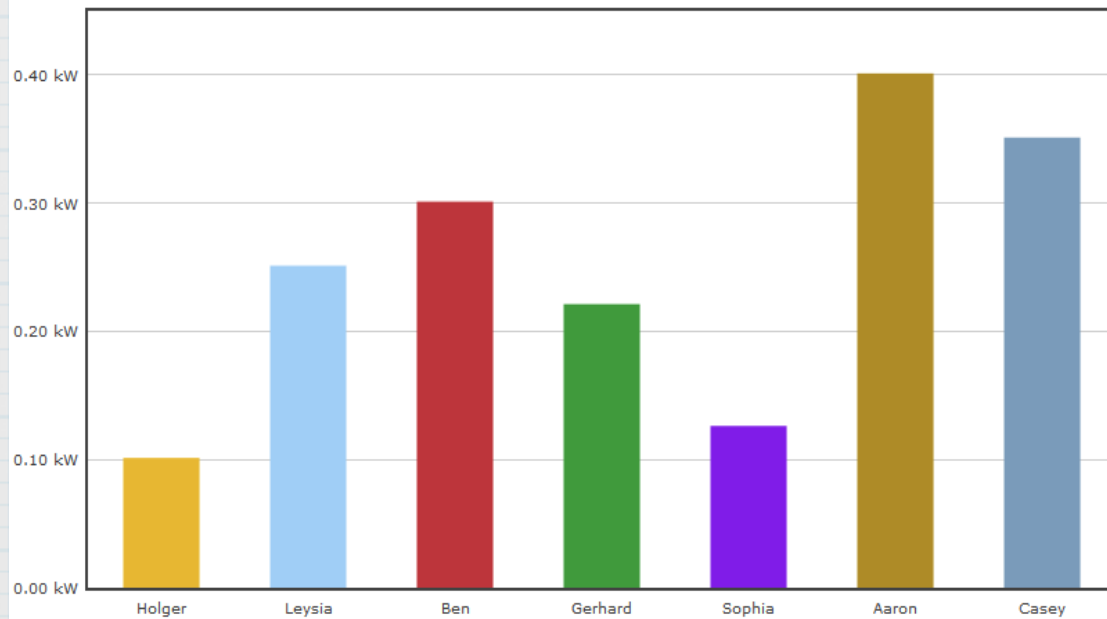
Extending Relationships beyond Consumer/Utility

Electrical Usage (kW), Last 24 Hours



Learning from/being motivated by other's experiences

Maximum Energy Consumption, 5/22/2011



[Casey](#) says: "Nice job, Holger! How do you keep your usage so low?"



[Holger](#) says: "We don't have an air-conditioner, washing machine, or dishwasher and keep lights off in the rooms we're not in."



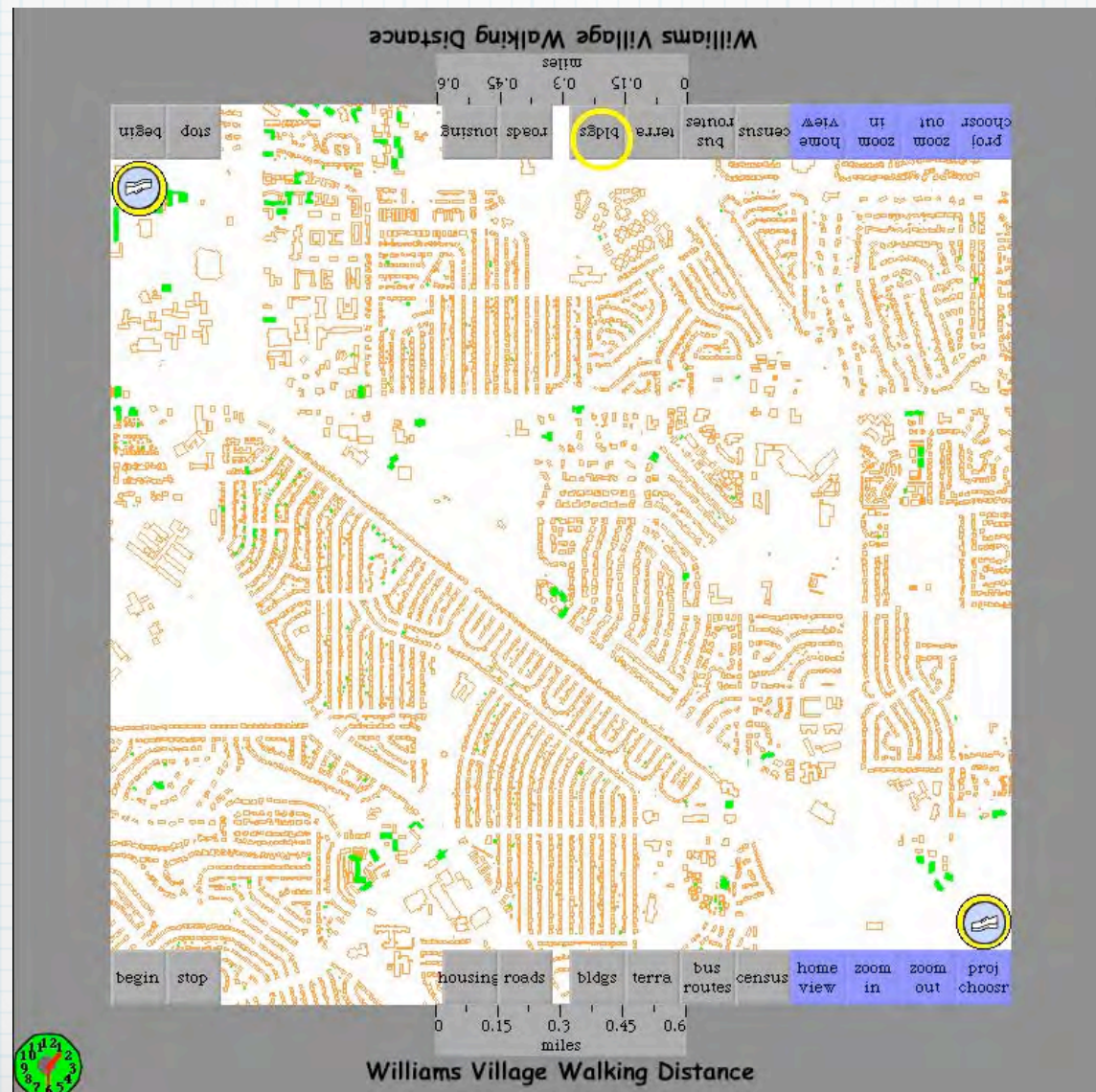
[Aaron](#) says: Wow, I didn't realize that my usage maxed out so high. I'm going to try and be more cognizant of the lights that I leave on.

[Add a Comment](#)

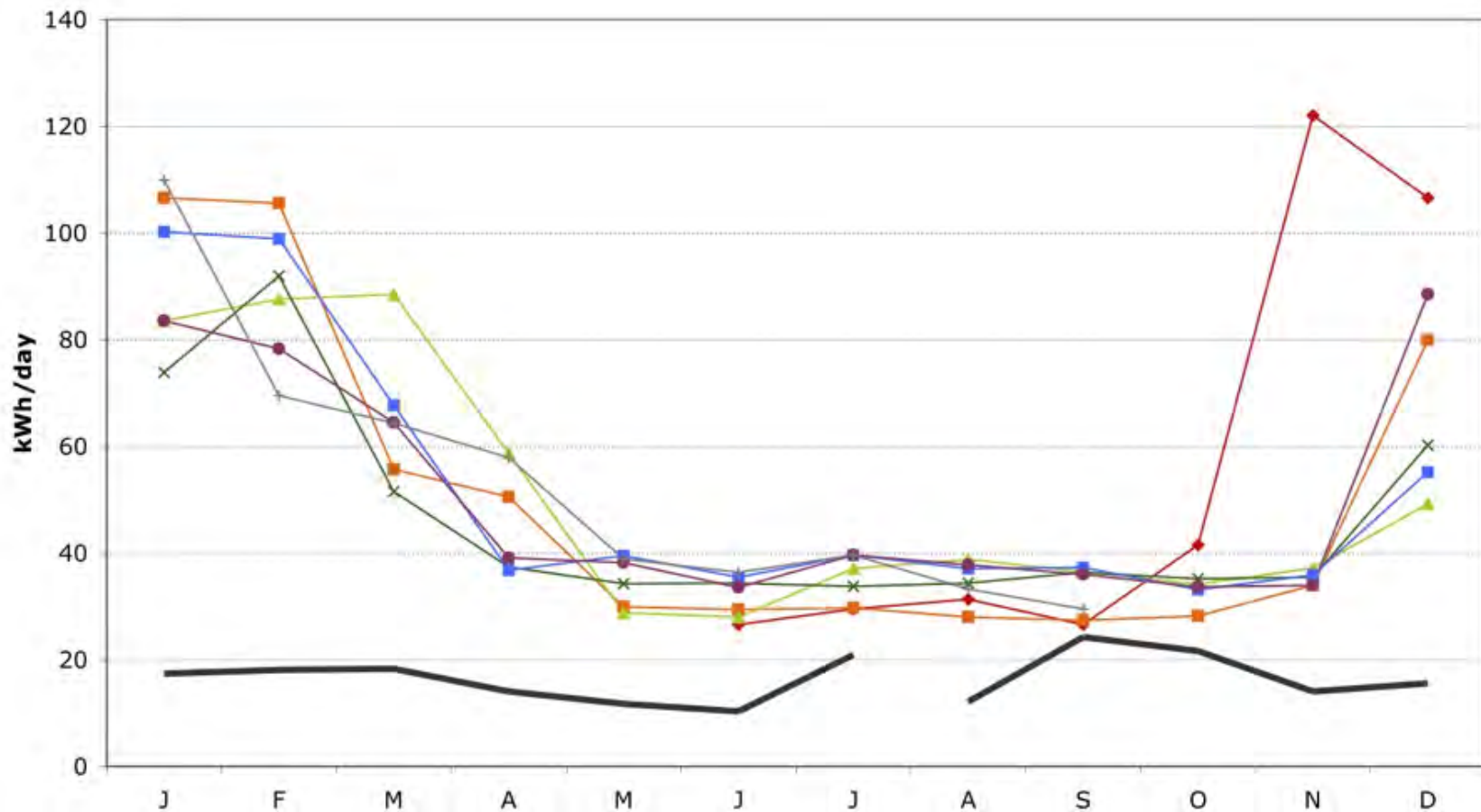
Learning Through Reflective Action and Collaboration



How Many Households Like Mine?



Energy Profile of those Homes



Where Can We Save Energy?

