Promoting Energy Saving Behavior




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CalPlug Workshop

May 2016

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Why?

What?

How?

Why?

- Morals, values, norm activation → do the right thing
- Instrumental, theory of planned behavior → save money
- Social comparison → competition

wingas.com

What?

"Stimulating electricity conservation is a difficult task, because electricity differs in significant ways from other consumer goods.

It is abstract, invisible and untouchable.

It is not consumed directly but indirectly via various energy services. Electricity consumption is therefore not perceived as a coherent field of action."

-- Fischer 2007

- **What is the problem?**
  - **How much energy is being used, and for what?**
  - **What is the user doing or not doing?**

- **Solution: information and feedback**

How?

Investment behavior

Curtailment behavior

Levels of Feedback

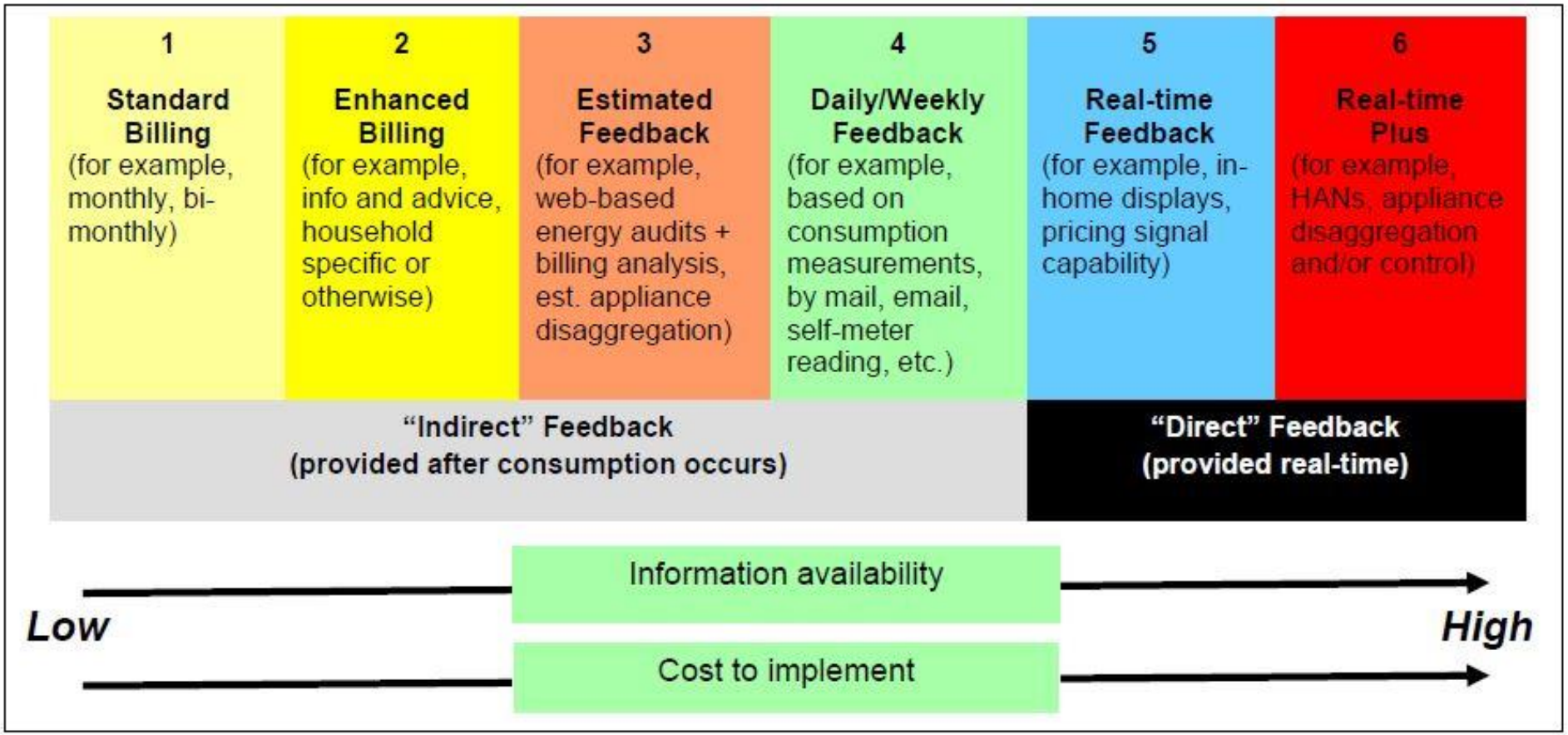

Figure ES-1
Feedback delivery mechanism spectrum

(EPRI 2009)

Does Feedback Work?

- **Past tests of effects of feedback on energy saving show:**

Mostly good, although results vary

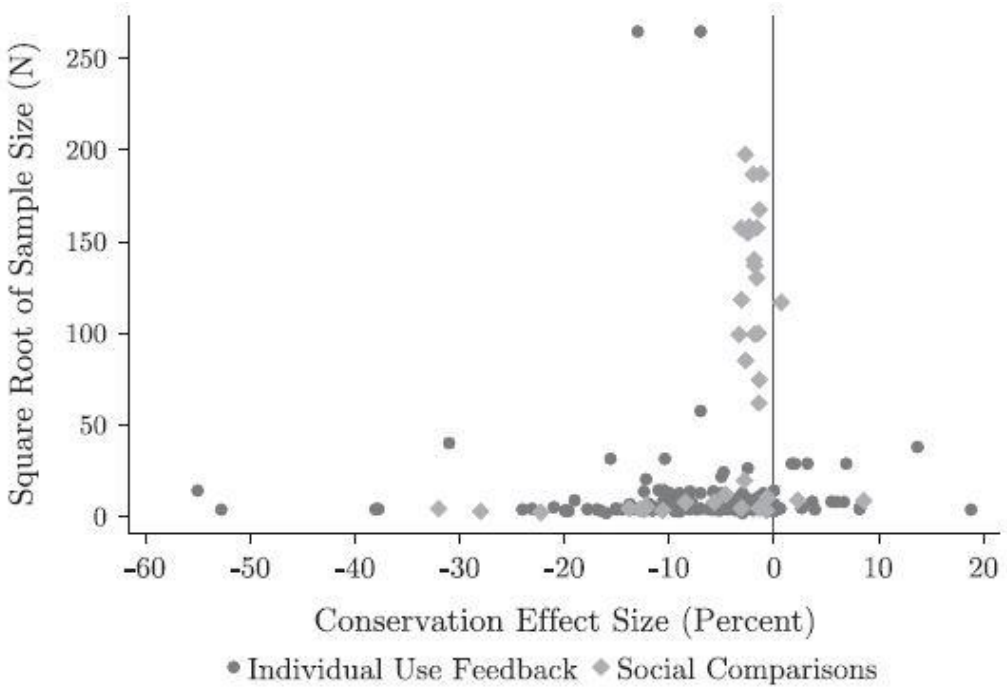

Fig. 1. Funnel plot of conservation effect size vs sample size.

Not clearly improving over time

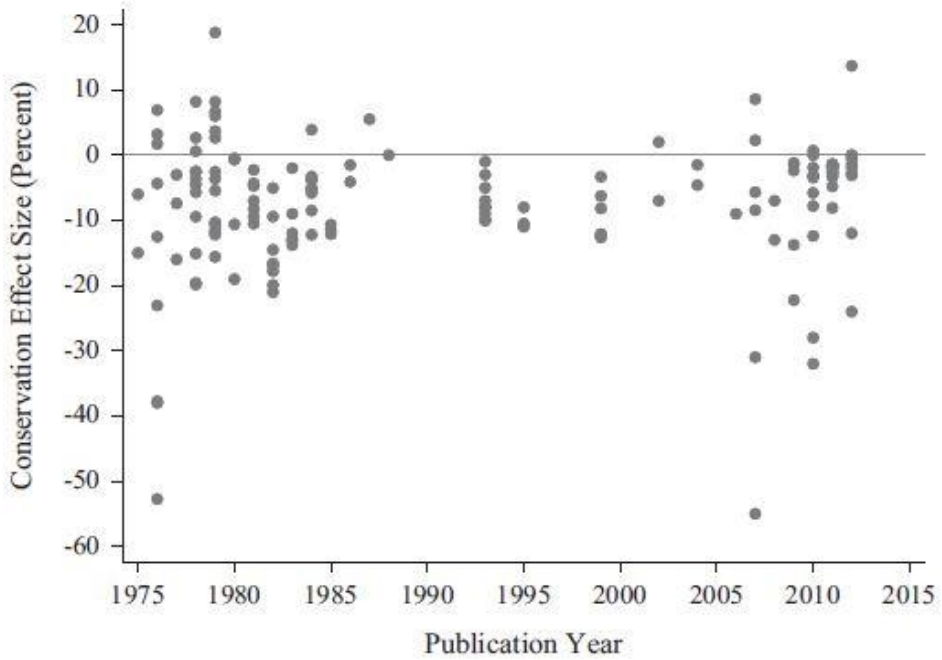

Fig. 2. Effect size by publication year.

Why such varied results? Poss: varied feedback presentations.

(Delmas, Fischlein, and Asensio 2013)

Some Variations

- **What to present?**
  - **kWh, cost, carbon footprint**
  - **comparisons over time**
  - **social comparisons**
- **Numbers and graphs, but what type?**

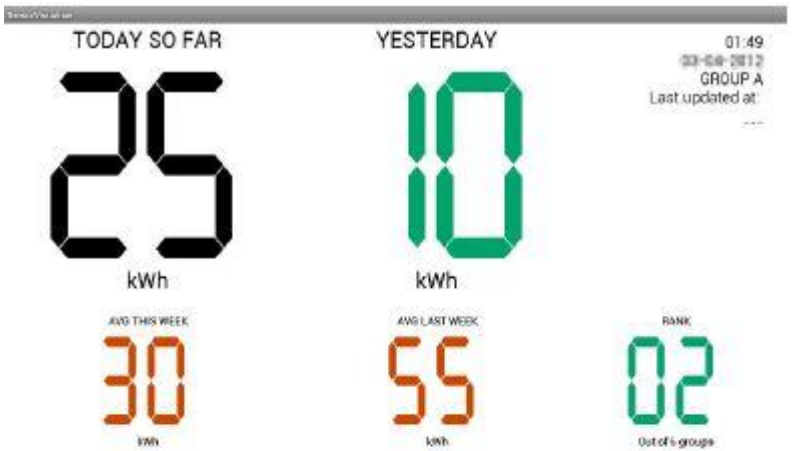

Fig. 4. Numerical design.

Fig. 6. Ambient faces design.

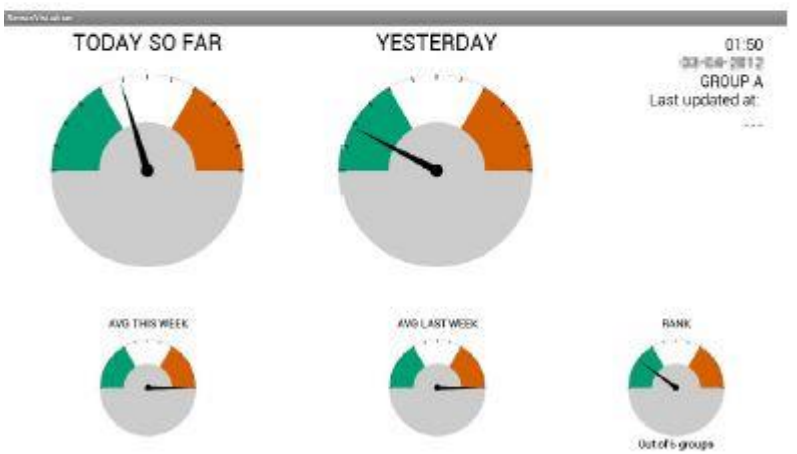

Fig. 5. Analogue dials design.

(Chiang et al 2014)

Some Variations

- **Cultural differences**
  - **e.g., preferences and motivation**
- **Demographic differences**
  - **e.g., low v. high income; homeowners v. renters**

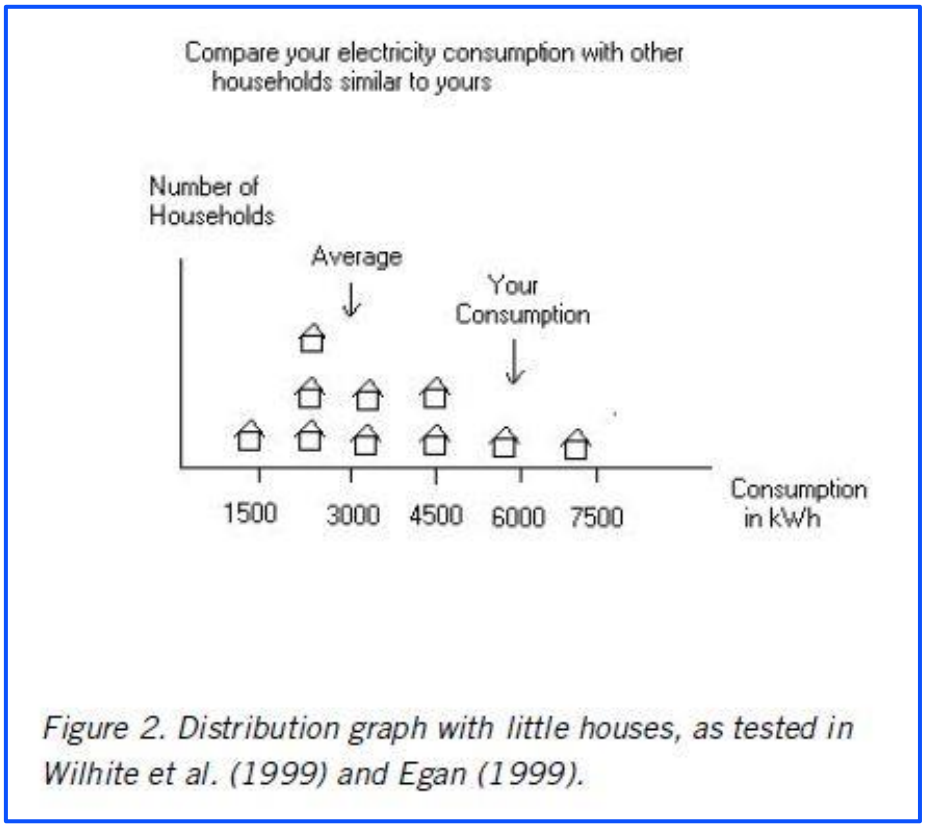

Figure 2. Distribution graph with little houses, as tested in Wilhite et al. (1999) and Egan (1999).

(Fischer 2007)

Aspects of Effective Feedback

- Clearly and simply presented
- Presented in meaningful and motivating terms
- Engaging and interactive
- Provided real-time or as soon after consumption as possible
- Comparisons with previous periods for that user
- Comparisons to similar other people
- Multiple options for feedback types
- Appliance-specific consumption breakdown

Summary

- Users do change their behaviors to save energy, given the right tools.
- Effective feedback
  - engages
  - encourages
  - empowers
- More research and development is needed.

Fig. 1. The monitors (showing, from left to right, the Solo, the Duet, the Trio).

Thank you!

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