Community self-reflection:

Public electricity displays motivate conservation and efficiency actions

Eric Rehm, Positive Energy

BECC, 1 Dec 2011
Bainbridge Island
28 square miles
23,000 inhabitants
6,800 single-family homes
Electricity Usage: Our Challenge

- 70% usage is residential
- 66% heat electrically
- 54% built pre-1980
- Average home: 2500 ft²
- Exceeding capacity on two of three substations
Build more?
Use less?
Use Less!

- 4000 Home Energy Assessments
- 2000 energy upgrades
- 2 MW demand reduction (-3.5%)
- 150 new renewable energy systems
- Create 65 jobs

- 1540
- 200+
- < 58 MW limit
- In process
- 21
RePower Bainbridge is a community-wide program dedicated to helping Islanders save energy, reduce costs, make their homes more comfortable, and create a more sustainable Island.

FREE Home Energy Check-Ups Completed

1,556

Total Goal: 4,000

Progress to Date: 39%

Reward Yourself

Join RePower Bainbridge’s effort to reduce our energy use by 15%. MyEnergy is your online resource for tracking and earning rewards at your favorite local and national companies for saving energy. Learn more about MyEnergy or contact RePower Bainbridge to be part of our retail network.

CLICK TO FIND OUT WHAT ENERGY-SAVING OPPORTUNITIES YOU QUALIFY FOR!

2011 RePower Incentive Guide

Questions? Click here to contact the RePower Help Desk and speak with an energy advisor!
Information for Action

- How much energy are we using right now?
- What are our patterns of usage?
  - How do they relate to time of day? Time of year?
  - Can this help us meet our goals?
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How much electricity are we using right now?

NORTH (Port Madison)

33%
9.5 MW

% of capacity

0% 100%

brought to you by:
POSITIVÉNERGY

data supplied by
PUGET SOUND ENERGY

How much electricity are we using right now?

CENTRAL (Murden Cove) 46%
13.3 MW

% of capacity

0% 100%

brought to you by:
POSITIVE ENERGY

How much electricity are we using right now?

SOUTH (Winslow)

58%

16.8 MW

% of capacity

0%

100%

brought to you by:

POSITIVENERGY

EVERY HOME MAKES AN IMPACT

Schedule a FREE Home Energy Check-Up.
1.877.741.4340
RePowerBainbridge.org
Hey Bainbridge! Time to #POWERDOWN. Use less electricity from 6-9am Tu-We Nov 23-24. Make sure water heater is set @ 120 °F. Follow @REPOWERBAIN.

Hey Bainbridge! Great work! You're keeping power < PSE limit. Call for a FREE home energy assessment from RePower Bainbridge: 1-877-741-4340
How much electricity are we using right now?

Port Madison 46%
THE POWER’S IN OUR HANDS

Schedule a FREE Home Energy Check-Up. Call 1.877.741.4340 or visit RePowerBainbridge.org today.
Substation comparison
(the pattern is similar at each substation)

Saturday November 26

Sunday November 27

Monday November 28

BAINBRIDGE
(entire island)

42.0 MW

www.RePowerBainbridge.org
Substation comparison
(the pattern is similar at each substation)

Saturday November 26
Sunday November 27
Monday November 28

SOUTH
(Winslow substation)

42.0 MW

www.RePowerBainbridge.org
Substation comparison
(the pattern is similar at each substation)

CENTRAL
(Murden Cove substation)

Saturday November 26  Sunday November 27  Monday November 28

42.0 MW

www.RePowerBainbridge.org
Substation comparison
(the pattern is similar at each substation)

www.RePowerBainbridge.org
When temperatures fall...

- 80% of substation capacity

Temperature chart showing:
- October
- November

Average temperature: 40.1°F

Get more information at: RePowerBainbridge.org
...we use more electricity

80% of substation capacity

October
November

40.1° F

Go to RePowerBainbridge.org to learn more
Build a team

- Project managers: Eric, Matt
- Data analysts: Eric, Matt
- Information scientist: Marilyn
- Software and Flash development: Eric, Marilyn, Joe
- Support: Tim, Rick, Joe

Our code is Open Source, but implementation specific
Kudos to Puget Sound Energy

- Real-time data available
- Champions
- Transparency
- Trust

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I. Shift resistive heating demand

Figure 1: Eight steps in early-stage persuasive design
(Fogg 2009)
1. Shift resistive heating demand
2. Green Sounders, sense of place, public places

Figure 1: Eight steps in early-stage persuasive design (Fogg 2009)
1. Shift resistive heating demand
2. Green sounders, sense of place, public places
3. Not knowing what to do when

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**Figure 1: Eight steps in early-stage persuasive design**
(Fogg 2009)

**RePowerBI**
RePower Bainbridge
Hey Bainbridge! Time to **POWERDOWN**. Use less electricity from 6-9am Mo-We Nov 22-24. Minimize hot water use: Put off doing laundry / dishes
21 Nov 10
1. Shift resistive heating demand
2. Green sounders, sense of place, public places
3. Not knowing what to do when
4. Low-cost digital signage

Figure 1: Eight steps in early-stage persuasive design (Fogg 2009)
1. Shift resistive heating demand
2. Green sounders, sense of place, public places
3. Not knowing what to do when
4. Digital signage
5. University energy dashboards

(Fogg 2009)

(Pulse Energy, 2011)
1. Shift resistive heating demand
2. Green sounders, sense of place, public places
3. Not knowing what to do when
4. Digital signage
5. Electricity displays in dorms, multi-tenant buildings
6. Fire danger sign

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4. Digital signage
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6. Fire danger sign
7. Quick design reviews; Flash; Linux-Apache-MySQL-PHP
8. Larger displays; other time periods

Figure 1: Eight steps in early-stage persuasive design (Fogg 2009)
Success

- **It’s working:** RePower making good progress towards goals.
- **It’s working:** 70% have seen the display and found it informative.
- **It’s working:** For similar degree-day weather, we have stabilized or reduced peak demand through behavioral and smart grid actions.
Challenges

- Maintaining volunteer concentration
  - Strategy: well-organized team meetings
- Graphic details matter (e.g., day & night, maps)
  - Find a good graphic designer / information scientist
  - Contact us!
- Difficult to tease out effect of the display from other community-based social marketing efforts
- Hard to do quantitative validation in volunteer project.
  - Benchmark community energy efficiency performance with data
Community Energy Baseline
dashboard@positiveenergybi.org

www.positiveenergybi.org/dashboard