Using Design and Technology to Effect Behavioural Change in Energy Consumers

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Introduction

- The 1st multi-channel real time display device. Electricity, water, gas, heat, renewables ….

- Data collected via pulse/CT

- Intuitive and simple, easy to understand - minimal effort

- Persistent user engagement, behaviour change and reduced consumption.

- Designed in 2007 – pre-smart phones

- Intuitive, engaging web service for aM&T

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50%

of the world's CO2 emissions reduction will come from end-user efficiency by 2035*

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There are 4.8million SMEs in UK, employing 14 million people – half of those businesses have no energy efficiency methods in place at all.

46% of all business electricity use happens at night.

Lighting a typical office overnight wastes enough energy to heat water for 1,000 cups of tea.

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Non-domestic and domestic properties

Information pushed to occupants

Understood at a glance
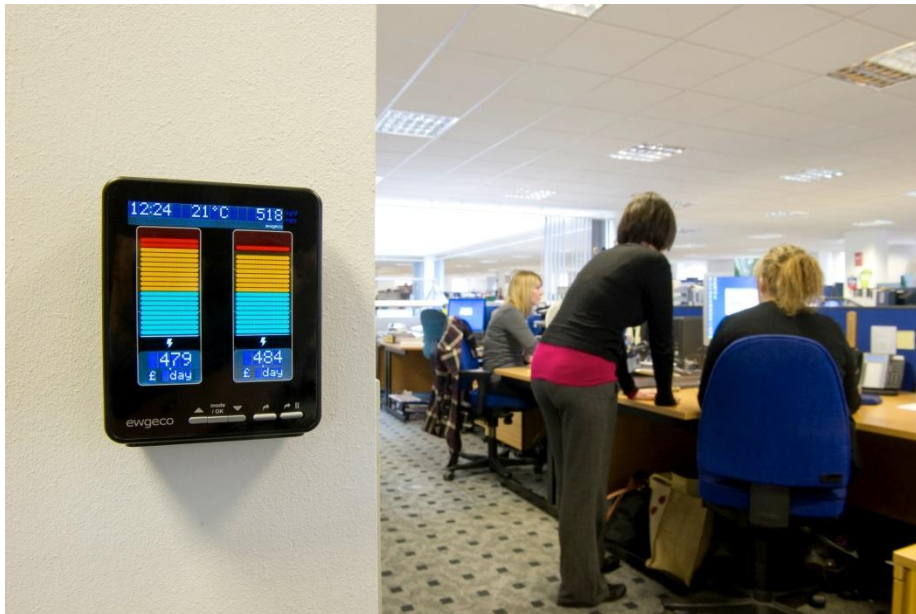
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Small display in large office spaces – staff notice it and understand at a glance

It has to be easy

Most users just want the at a glance information. Some use additional functionality.

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- MyEwgeco polls every hour automatically

- Collects data from multiple zones for centralised viewing & analytics

- Export data to third party data analytics platforms

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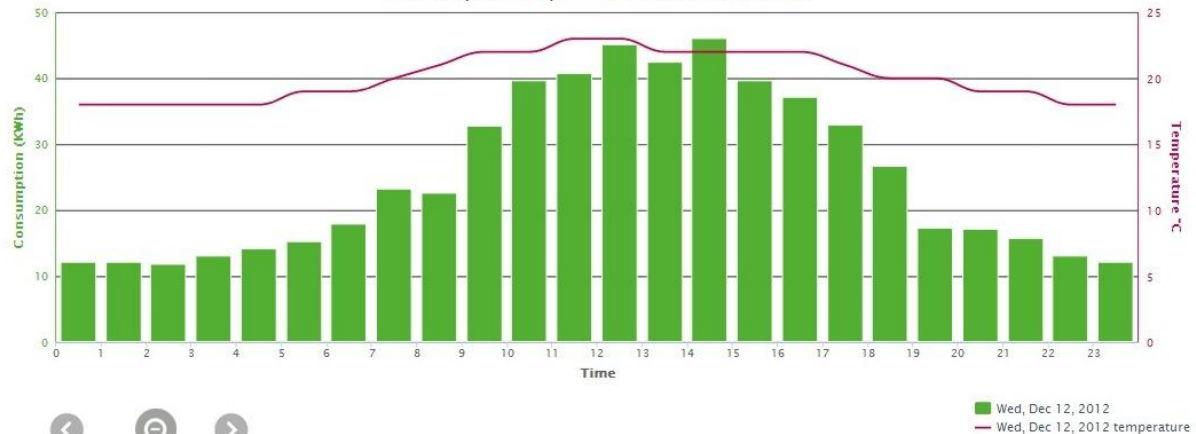
Most people still don't understand how their behaviour impacts energy spend

Its not what you display, it's the way you display it

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£2.34/h
£10.21/day

Blue Zone

People lose interest if its too hard or if its boring

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Well designed displays deliver savings
Domestic

- UK Government CERT scheme rolled out millions of low value energy displays – consumers did not engage well, utilities saw little benefit. <1% savings.

- The CERT displays involved were poorly designed, users don't engage with poor design, so they don't change behaviour

- Smart meter roll-out business case relies upon consumers changing behaviour. User engagement is critical for success.

- Napier University study shows Ewgeco saves householders over **20%** average on energy bills (electricity & gas)

- Vassa ETT global study shows smart meters with IHDs save average **8.7%**

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Well designed displays deliver savings
Non - Domestic

- **Simplicity**

    – Energy management without the need to log in

    – Highly visible – at a glance understanding

    – Instant feedback when behaviour is changed

- **Cost Savings**

    – Immediate results

    – Persistent savings

    – **ROI** for systems is normally **less than 1 year**

- **Behaviour change**

    – Engage and empower all to become actively involved in energy efficiency

    – Energy Champion programmes

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Next Generation Displays

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- Better technology - more affordable

- Enabling more engaging UI design

Usage pattern today so far

Current consumption compared to target

£4.58/h

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ZONE ONE
you need to act now

- Simple, easy to understand, relevant & timely information helps us make good decisions about our energy use

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Consumers expectations are changing

I want information & advice on my preferred interface

The right information at the right time to help me make decisions

Consumers expectations are changing

Web service – user spends more time, sitting down, detail, analysis

Mobile device – seconds, on the move, instant, fast response

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Does **more** data mean **m**ore engagement and **more** behaviour change?

- Know your users – understand what motivates them to change behaviour.

- Timing is important – when are users most receptive to messages. Reminders at the decision point. Feedback at the point of experience.

- Build a relationship for change – trusted partnership, people don't understand how they can influence energy consumption.

- Create a condition for caring and action – design to respond to the motivations different people have for changing behaviour, some want to save money, some want to care for the environment, some are motivated simply by not wanting to waste.

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How does all that help us design better energy management solutions?

Understand what makes people in non-domestic environments change behaviour

Use energy data to deliver targeted and timely messages

Incentivise them to care and take action

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People are busy

Not another gadget

OK, I'm using too much, tell me what to do!

People change behaviour when they're
engaged & incentivised

Reasons people change behaviour:
comfort, convenience, control, money, fun, fear

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Make Energy Information Relevant

- People are influenced by their social network, showing energy usage & behaviour in the context of their peers, neighbours & family helps make it a subject they engage with

- How does my energy use compare with colleagues, other offices, teams?

- Diffusion of behaviours through social networks act as vehicles to encourage the adoption of green behaviours

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Learn from domestic consumer behaviour

Last Month Neighbour Comparison | You used **14% MORE** than your efficient neighbours.

EFFICIENT NEIGHBOURS — 6,519*

YOU — 7,405

ALL NEIGHBOURS — 7,660

HOW YOU'RE DOING:

GREAT 😊😊

▶ **GOOD** 😊

MORE THAN AVERAGE

* This energy index combines electricity (kWh) and natural gas (therms) into a single measurement.
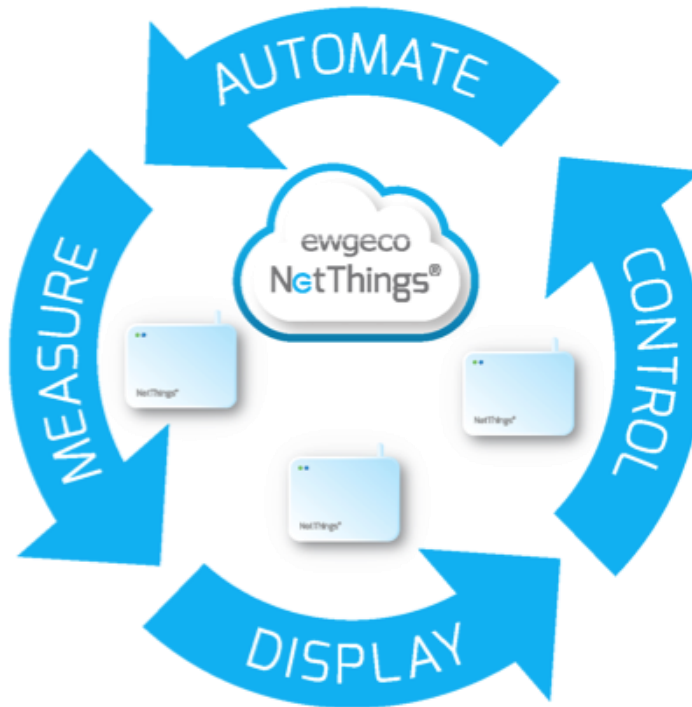
Opower – US Trial
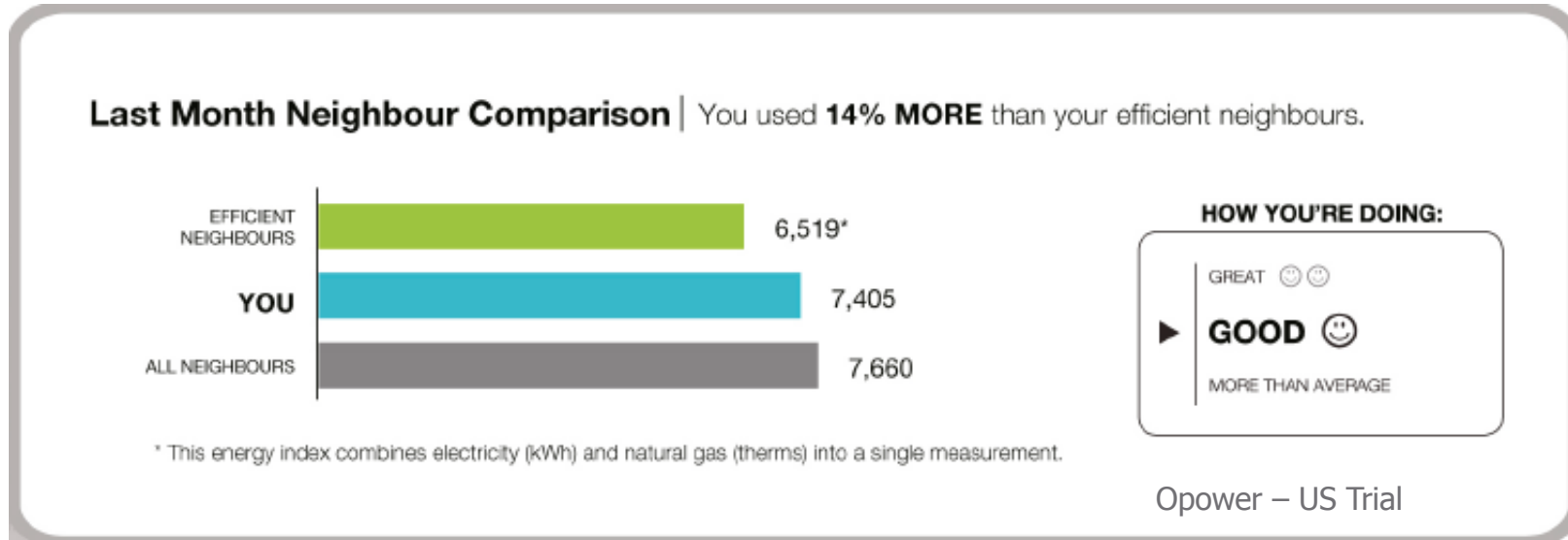
- How we feel we compare with others can strongly influence our behaviour

- Opportunities to share information, create common goals within teams

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What if we could send information to consumers about their behaviour in almost real time?

We'd need a lot of stuff going on in the background……..

- Sensors to collect lots of different data

- A means of sending it all to a central location

- Data analytics to make sense of it

- Algorithms to change the data into meaningful communications to send back to targeted users

- User interfaces to deliver messages in a compelling/engaging way

- Controls to enable user choices to be instantly turned into actions that reduce energy wastage

- Feedback to tell the user that he's made a change and it's had a positive effect

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METERS & SENSORS

AUTOMATE

MEASURE

CONTROL

DISPLAY

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NetThings®

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Working with business customers to change behaviour

Different people in the organisation respond to different sorts of information

👍 Mid-week consumption is down, particularly Tuesday

👎 Consumption in general has increased and significantly in the second half of the week

💡 Reducing heating temperatures by just 1°C can cut fuel consumption by 8% and save enough energy to bake 200 more cakes a month.

Occupied

+ 8.58%
Increase

Unoccupied

- 4.87%
Decrease

THIS WEEK
average daily cost

£27.33

or

18 x 🧁

LAST MONTH
average daily cost

£22.98

or

15 x 🧁

KWh

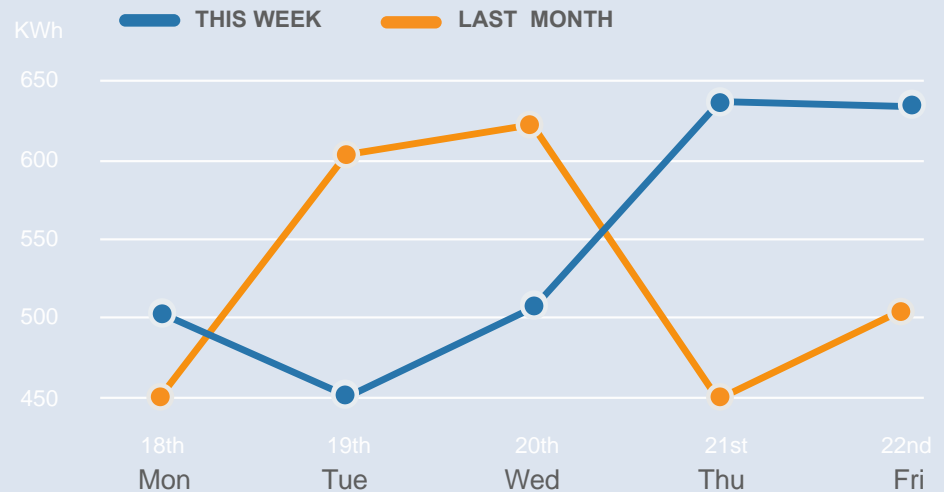— THIS WEEK   — LAST MONTH

650
600
550
500
450

| 18th Mon | 19th Tue | 20th Wed | 21st Thu | 22nd Fri |

Customer communications the way they want

- Targeted messages to staff

- Comparisons to similar stores

- Monetary incentive

- Timing, motivation, trust

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Targeted messages
Easy choices to save energy & money

- Engage youth – Familiar with Facebook & Twitter

- Build communities around energy saving & CO2 reduction

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Engagement & communications
How it should be….

- Big data, business intelligence, next gen analytics will deliver more effective targeted communications to customers

- Personalised value (products and services)

- But its one way communication

- Opportunity to better engage with customers , co-creation, co-innovation

- Energy suppliers can build trust and engagement through openness

- Let customers share in the creation of value and they'll engage better and change behaviour

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