Policy, 'politicking' and organisational culture – barriers to engaging employees in behaviour change initiatives

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Abstract

The energy savings potential within non-domestic buildings/ commercial buildings from behaviour change initiatives is becoming well known. Low-cost interventions centred on simple energy efficiency behaviour changes have been shown to contribute to local, national and EU policy commitments to carbon reduction of between 10–20 %. Yet, research also shows time and again that these straightforward behaviour changes can be anything but simple. Notwithstanding the psychological and social complexities inherent in behaviour, human behaviour in non-domestic buildings is affected by organisational culture, departmental 'politicking' and conflicting internal politics and business goals. No-where is this more evident that in local government where municipalities are expected to lead on carbon reduction initiatives whilst operating in changing political landscapes and juggling decreasing operational budgets with increasing expectations on public services.

This paper presents findings from a UK Research Council funded 'research in the wild' case study exploring the role of digitally enabled engagement in a UK local authority. Innovative methods of combining the digital economy and user-engagement were trialled in an effort to increase user-interaction within their buildings and foster a more collaborative approach to energy management. A qualitative research approach was undertaken and findings are discussed from an analysis of a focus group and a set of semi-structured interviews with members of the user group and key actors within the municipality.

Findings show that whilst there are positive signs with regards to the potential of increased user-engagement and ICT digital tools to facilitate behaviour change, barriers remain with regards to the implementation in 'real world' contexts of innovative approaches. For this particular organisation these included a staff reduction programme amidst financial cuts, a risk-averse culture to new technologies, and fundamental questions around where responsibilities lie with regards to energy management. Future innovations must take account of these wider issues in order to be 'fit for purpose' and achieve the energy reductions required.

Introduction

If ambitious carbon reduction targets are to be met then sooner or later the impact of the world's buildings must be reduced. They currently account for over 30 % of global energy use and 20 % of greenhouse gas emissions (IPCC 2014). The scope of this study is local authorities, and in particular, Leicester City Council, who like many municipalities, is implementing ambitious carbon management strategies in response to a challenging and ever changing policy context, notably the Energy and Performance Buildings Directive (Directive 2010/31/EU) and the UK's Climate Change Act (2008). Leicester City Council has set an ambitious target of 50 % reduction based on 1990 levels by the year 2025. Leicester City has a long history of innovation in delivering energy reductions. It was one of the first authorities to install renewable energy systems in the 1970s, became the U.K.'s first environment city in 1990, and has electricity, gas and water meters data automatically collected every half-hour for its over 400 buildings (Fleming and Webber 2004). Non-domestic buildings have both a significant impact

and vital opportunity for meeting challenging global carbon reduction targets given the levels of waste involved. The literature tells us, for example, that building users can waste up to 30 % of energy in their buildings (Brown, Bull et al. 2012) through simply not turning lights and computers off when not in use. In a recent field trial of individual energy use in offices, Murtagh et al (2013) showed that energy use in office computing contributed approximately 30 % of energy demand in the European service sector over the last decade. Complimentary research by Mulville et al (2014) has found much IT office equipment is under-utilised and left on overnight.

Given these levels of waste and inefficiences, one opportunity has been to explore the role of the building user through the lens of social science and the notion of behaviour change. Many of these initiatives build on research into the potential of digital economy tools such as domestic smart meters, energy visualisation tools and 'dashboards' which provide feedback to the building user (Darby 2010, Hargreaves et al 2013) in the belief that this information will change behaviour. Applying these principles of feedback for behaviour change into a non-domestic context is tricky. First, there is greater complexity in the technical challenges in how to actually meter large-scale buildings and at what granularity information is provided to the building user, for example, now there is the ability to monitor at the individual level, with all of the accompanying social and ethical issues surrounding this (Coleman et al 2013). It is also notwithstanding the operational challenges around who is actually responsible for energy consumption in the workplace, who is paying the bills and the range of different non-domestic buildings under local authority control.

Concluding their research into providing individual energy feedback to University employees, Murtagh et al (2013) conclude with a sobering reflection for behaviour change. Simply put, whilst the potential for significant savings are high, motivation is low. Bauman (1999) notes that modern BEMS and HVAC systems offer little opportunity for users to influence the thermal comfort of their own spaces. So, whilst many of these interventions to change behaviours are noble, well meaning and, sometimes, effective, they are based on a particular 'information-deficit' or rational approach to behaviour change – if 'they' have the right information 'they' will change behaviour. The need for increased user-feedback and engagement is noted but still the prevailing tone of this literature and research errs towards the paternalistic with someone, the 'expert' (or management), influencing other people (residents/staff/non-experts) to stop behaving one way and start behaving another. Underpinning these approaches are often a range of environmental psychology models that attempt to unpick an individual's attitudes (A), behaviour (B) and context (C) in relation to energy (Stern 2000). This 'ABC' approach to behaviour change is criticized by academics (Shove 2010) who argue that behaviour is more complex and the result of deeply engrained social practices, values and institutional and organizational barriers that undermine or limit the impact an individual may have. This is further complicated by the complex interplay of organisational culture and concerns over ethics and trust and their impact on behaviour as earlier research into using the digital economy in buildings for energy behaviour change discovered (Coleman et al, 2013).

Exhorting us to an alternative, more complex approach that sidesteps the polarised debate between the ABC versus Social Practice school of thought, Owens and Driffill (2008) argue for a reframing of the relationships between those responsible for energy management and those using the energy via "a more interactive, deliberative communication between decision-makers, technical experts, other stakeholders and the public" (2208: 4414).

Recent publications have begun to explore this increasing complexity of energy behaviour change in the non-domestic setting. For example, a recent special issue of Architectural Engineering and Design Management was devoted to 'The Impact of the Building Occupant on Energy Consumption' and included several papers exploring behaviour through the lens of organizational behaviour and management practices. Research conducted into energy behaviours in a retail organization found that (1) employees organizational roles and work objectives would also trump the energy efficiency imperative, and (2) employees had minimal control over energy consumption (Christina et al 2014). Janda and Moezzi (2014) have echoed Owens and Driffill's (2008) argument by calling for a move away from mere feedback mechanisms to understanding and recognizing both the community and social potential of workplace cultures through organisations adopting a more participatory approach to energy management. This is easier said than done though. This paper then presents a real-world case study of what happened when a team of researchers, working with the Energy Services team at Leicester City Council, attempted to adopt a more participatory approach to energy management and to utilise the potential of digital technologies for energy management. First, the relevant literature is briefly explored before presenting the research approach and then findings are discussed before, finally, offering some conclusions and recommendations for future research.

The digital economy & public participation

The term digital economy encompasses a range of disciplines and tools all linked by the potential afforded by the revolution in information and communication technology over the last 35 years, notably the personal computer, the Internet and the smartphone. The term Web 2.0 was first used in 2004 to describe the core values underpinning how software developers and ordinary users were using the Internet: decentralisation, user-focused and user-led (O'Neill and Boykoff 2011). Access to this Web [2.0] is now not limited to personal computers but available in the hands of everyone who owns a smartphone, (over 60 % in the UK according to Ofcom, the UK communication regulator)[1]. These web-enabled devices with their cameras, video capability, and access to email and social media connectivity are shifting the boundaries between each other and ourselves.[2] Devised on the principles of Web 2.0, that is, user-generated content and collaboration, social media sites such as Facebook and Twitter have witnessed incredible success and popularity. Shirky (2008) cites numerous examples of social media to connect and mobilize people for collective action

1. http://media.ofcom.org.uk/facts/

2. For a fuller review of the literature see Bull et al's 2013 eceee paper: Bull, R., Irvine, K., Rieser, M. and Fleming, P. (2013). Are people the problem or the solution? A critical look at the rise of the smart/intelligent building and the role of ICT enabled engagement. eceee Summer Study Conference Proceedings 2013, pp. 1135–1145; 5A-079-13.

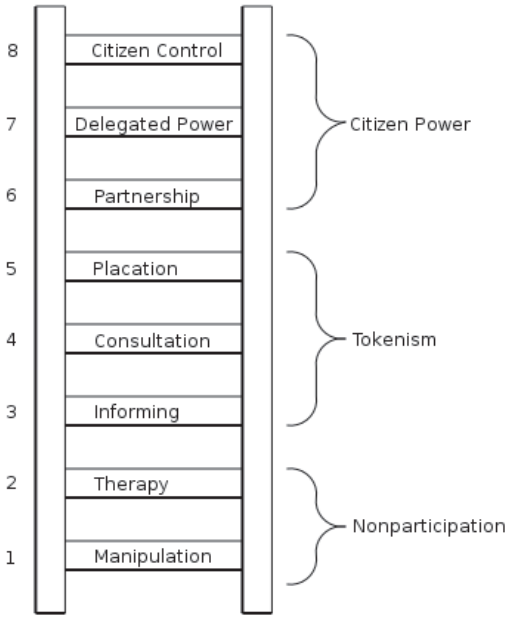

Figure 1. Eight rungs on the ladder of citizen participation (Arnstein, 1969).

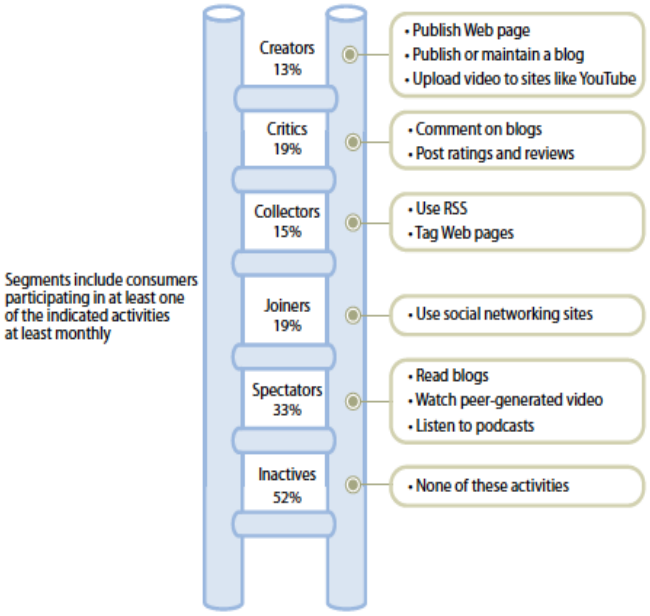

Figure 2. The new e-ladder of participation (cited in Ferro and Molinari (2010).

such as the ability of people to self-organize photographs on Flickr, contribute their knowledge on shared documents such as Wikipedia and engage in social activism.

Most recently, and highly relevant to this case study, are exploratory studies of the potential of social media campaigns being used for behavior change within energy and buildings (Lehrer and Vasudev, 2010, Foster et al 2012, Burrows et al, 2013 and Crowley et al 2014). Differences remain though between research that points to the potential of social media to have an impact (for example Lehrer and Vasudev, 2010) and those that have actually attempted an intervention in the real world (Crowley et al, 2014). Crowley et al (2014) linked up their building management system to Twitter to send building users targeted messages querying consumption. In their study this resulted in a 26 % reduction in energy use. This is not quite living up to the 'social' dimension of social media though which sets out to draw on the wider knowledge of the community. This aspect is explored by Foster et al (2010) in which they explored workforces' perceptions of social media through a series of workshops. They note employees concerns around privacy and trust, two themes to which will be returned to in our real-life attempt to trial social media in the workplace.

Back in 1969 Arnstein (1969) devised a 'ladder of participation' (see Figure 1) that explored steps to increased participation, and ultimately, empowerment. At the bottom was information provision, a predominantly one-way form of communication, and then moving to consultation, a relatively passive process asking for people's opinions but not necessarily engaging them in debate. Participation is normally used to refer to processes which allow people to participate in a decision by putting forward their views verbally whereas engagement goes further, suggesting an innovative and interactive, two-way process of discussion and dialogue (i.e. deliberation) to ensure that people's views inform a decision, alongside those of the expert and/or decision-maker. This is still one-step removed, however, from Arnstein's top step of her ladder that defines empowerment as people taking control of decisions and their implementation. In a parallel (e)ladder (Figure 2), Forrester Research (cited in Ferro and Molinari 2010) have mapped levels of (e)participation within society in the United States. In this new 'e-ladder' of participation, Ferro and Molinari (2010) note the key features of Web 2.0 and social media, notably the idea that people can move from being inactive (at the bottom of the ladder) to be creators (at the top). This maps across to Arnstein's ladder and the theme of increasing control.

The principles of public engagement methods have been tried and tested in the siting of controversial facilities such as waste facilities (Bull, Petts et al. 2010) and transport planning (Bickerstaff and Walker 2005). The basic premise is that by engaging all those involved in the specific issue, the decision-making process is enhanced (Apostolakis and Pickett 1998) and decisions are more legitimate and lead to better results (for example planning decisions being accepted more quickly) (Fioriono 1990). The theoretical underpinnings find their roots in Habermas' theory of communicative competence which was successfully mined in the early 1990s by Thomas Webler (1995). Habermas (1979) argued that any communication between two individuals would fail without cooperation. Webler (1995) built on this concept to explore how language functions to form key foundational principles for the management of deliberative practices within the school of risk communication. Increasingly, links have been made between public engagement and learning, increased environmental citizenship and behaviour change (Bull, Petts et al. 2008).

Interesting parallels exist then between the risk communication/public engagement schools of thought and the social media gurus such as Shirky: both agree that people (lay and expert) talking and working together can generate new forms of knowledge and contribute to more effective governance. In short, lay people can be a valuable source of knowledge and

Table 1. Members of the Gooddeeds user-group.

Role	Type of Building
Senior Library Assistant,	Library
Senior Community Librarian	Library
Duty Officer (in charge of buildings)	Leisure Centre
Admin and Business Support Team Leader	Social Services Administrative Building
Housing Options Officer	Housing Administrative Building
Energy Services – energy officer	Property Services Building
Energy Services – team leader	Property Services Building
Assistant Facilities Manager	Property Services Building

wisdom and, if given the opportunity, capable of handling complex information and resolving problems. Yet, these principles are still under-researched with regards to energy behaviours in an organisational context and questions remain as to how applicable they are. These questions are to be explored, but first, the research context is introduced.

Research context and methodology

In 2013 a team of researchers (the authors) started working with the Energy Services team at Leicester City Council (LCC) in the East Midlands, England to explore a collaborative approach to energy management. De Montfort University (DMU) has had close relationships with the Council for many years, working closely around energy monitoring, DMU and LCC share the same metering systems for example, and have produced joint papers on the benefits of automatic meter readings (Fleming and Webber 2004). As a result of this there was good access to the Energy Services team responsible for energy reduction across the City Council. A proposal was submitted to UK Engineering and Physical Research Council and their Digital Economy programme and a specific 'research in the wild' call with the specified remit of testing innovative approaches and technologies in a real life 'wild' contexts.

The intention was to form a user-group from a sample of buildings representative of non-domestic building stock with the joint aim of exploring a more participatory approach to energy management alongside testing the potential of digital tools such as smartphones and social media. The purpose of the group being firstly to facilitate interactions and knowledge sharing between lay building users and experts and see whether the group interactions would lead to increased awareness of effective energy management. Second, the user-group would work with the research team to provide user-feedback on the development of an IT based application to foster interaction between building users across the city council and test the opportunity for smartphones to help manage energy.

The user group was formed with help from the team leader of the Energy Services team who acted as 'gatekeeper' to the city council. An email was sent to 16 employees from various locations with a range of roles and responsibilities. After a couple of attempts to recruit a suitable group a core of eight was formed. It was not possible to get everyone who was approached, due to organisational complexities and politics, for example, just as the project started Property Services, home to the Energy Services team, began a process of cost-cutting and redundancy)–see Table 1 for the members of the group, which included a mixture of lay and expert people in terms of their awareness and responsibilities for energy management in the buildings, specifically, two members of the energy services team alongside staff members with no specific responsibilities for energy.

The user group met fortnightly for two months between May and July 2013. A series of 'expert' presentations were provided by the research team on the relationship between people and buildings, energy and buildings and social media and iPhones were provided to all members of the group who, during the initial meetings, were guided through the range of functions – texting, social media and the camera. On the fourth meeting participants reported on what form the application should take. The group decided that Twitter and Facebook had useful functionality (Twitter – the ability to share information, Facebook the ability to comment on posts) but that, due to concerns about the public nature of Twitter, would before a prefer a bespoke responsive web application. An interim evaluation of the user-group process was undertaken at the end of through a focus group independently chaired. This was preferred to interviewing the participants individually because focus groups allow for greater exploration of why people feel the way they do about a particular issue (Bryman 2001).[3]

From September onwards the meetings switched from fortnightly to monthly between September 2013 and January 2014 during which time the group provided feedback to the development team on the design and functionality of the web based 'application' This included key features such as being able to view the application on either webpages or smartphones, allow building users to raise an issue with a building and then comment on what needs to happen to resolve the issue (see Figure 3 for screenshots of the app). Crucially, this bespoke application allowed for the app to be only visible by employees of the Council through a secure log-in system.

3. Further details of this interim evaluation can be found in Bull, R., Lemon, M., Fleming, P., Stuart, G., and Everitt, D (2014) Digitally Engaging and Empowering Employees for Energy Demand Reduction: A New Approach for the Next Generation? ACEEE Summer Study Conference Proceedings.

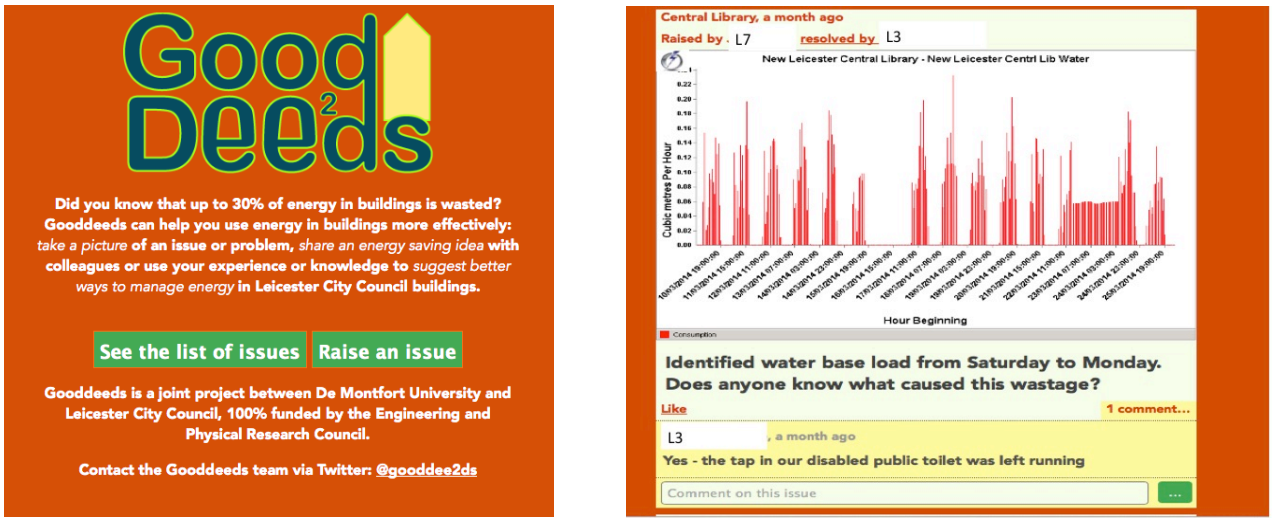

Figure 3. Screenshots of the Gooddeeds application.

Table 2. A list of respondents (members of the focus group and the interviewees).

Code	Role	Building	Focus Group (Y/N)	Interviewed (Y/N) – code
L1	Energy Services – team leader	Property Services Building	Y	Y
L2	Housing Options Officer	Administrative Building	N	Y
L3	Senior Community Librarian	Leicester Central Library	Y	Y
L4	Senior Library Assistant	Leicester Central Library	Y	Y
L5	Admin and Business Support Team Leader	Social Services Administrative Building	Y	Y
L6	Duty Officer (in charge of buildings)	Leisure Centre	Y	N
L7	Energy Services Officer	Property Services Building	Y	Y
L8	Head of Energy Services	N/A	N	Y
L9	Social Media lead	N/A	N	Y
L10	'Channel Shift Lead'	N/A	N	Y

At the end of the process interviews were conducted with members of the user-group as well as key stakeholders within the organisation, notably the Head of Energy Services and staff responsible for communications and social media. A semi-structured format was used and interviews were conducted in a location convenient to the individuals and were digitally recorded and professionally transcribed (see Table 2 for a full list of those interviewed).

For the analysis an approach was selected that would be most suited to a case study such as this. Systematic combining (Dubois and Gadde, 2002) is a relevant approach that refers to the particular process in which the theoretical framework (in this case public participation), empirical fieldwork (the user-group trial in the local authority) and case analysis evolve simultaneously. Using a process known as 'abduction' – as distinct from both induction and deduction – its purpose is to explore the relationship between 'everyday language and concepts' (2002: 555). Coding of the transcripts was performed iteratively, grouping emerging themes around participation and experiences of using social media with themes in literature around the desire to greater participation in buildings amongst users, and the potential barriers to this. Emergent themes focused around how users engaged with the application to exploring the barriers to participation (Figures 3 and 4). This next section focuses on users' experience of the using application, and a consideration of the barriers, both individually and organisationally.

Research Findings

Arnstein's ladder of participation and the e-ladder of participation provided an initial theoretical framework to explore where people were at on the ladders of participation, and what were the barriers to people (and the organization) becoming more engaged. The use of the Gooddeeds application is discussed first, before considering the reasons, and thus barriers, at both the individual and organisational level, to this approach being more successful in this particular context. Finally, lessons learnt and reflections on this approach are discussed in the conclusion.

USING THE GOODDEEDS APPLICATION

This section considers the user-groups experiences of developing and trialling the use of the smart phone application in the City Council and sets the scene for the barriers in fostering engagement in a local authority setting. As previously described, the user-group were issued with iPhones and encouraged to explore using them during the development phase of a bespoke application to help track, log and monitor energy management issues. It is fair to say that from the start of the user-group there was limited interest or take-up with these technologies. As noted earlier, the group were sceptical and concerned about using social media and this was evidenced by none of the group using social media accounts for commenting on energy use and the clear recommendation that the app was to have a secure log-in so that only local authority employees could use it, and that comments made would be unavailable for public view. The group were all encouraged to post issues of energy or wider environmental issues. A member of the energy team (L7) for example posted this chart showing an unusual spike in water usage in the library over a weekend (Figure 5) and below, the response from the librarian (L3).

Members of the energy team were disappointed though by the response of the user-group to posting and responding to issues. One of the team members said:

> I had to actually call the people to say I'd put something on, so I couldn't really depend on them to say that, you know, can you look and reply. And I also sent them an email just to make sure because if there is water leakage somewhere I need them to act quickly. So I had to make sure they were reacting. (L7)

The energy services team leader agreed, "I tried putting various things on at various stages but because there was no two-way communication … It just felt like we were putting things in but nothing was coming back" (L1). But he also went to admit that, "I did use it, not as frequently as I would've hoped to, I guess" (L1). Two members of the group did respond positively to using the tool though. One of the benefits of using a responsive web-app tool instead of a specific smartphone application was that users could use it either on their smartphones or from their personal computers. And it was here where there was actually more take-up of the tool, reflecting the working patterns and culture of the organization. Many participants were desk-bound with access to a computer and less need of smart phone technology. Three users did however note the ability to take photographs and then send and receive via email or social media was beneficial. For example, L3 who, having said he would not use his phone, added, "the only exception would be if I wanted to take a photograph". The two other group members who had used the phone for taking photographs added:

> I must admit I have sent some photographs through Gmail and things like that to contractors. (L6)

> I take a photo on my phone and I'll send it by email to people. The good thing for me with this is that I don't have to go to the site now. (M3)

Another member of the group informed us that he had "put an icon on my desktop for Good Deeds … and I tend to look at [it] about once a week, usually after the weekend, because it's quite often if we're using too much water, someone's left something on over the weekend" (L5). So whilst the user-group saw the potential in the technology, this did not translate into universal acceptance and use of the application. The next section considers the barriers to increasing participation using new technology and social media in the workplace environment before final reflections and discussion on the implications and recommendations for future energy reduction and digital economy activities in the workplace.

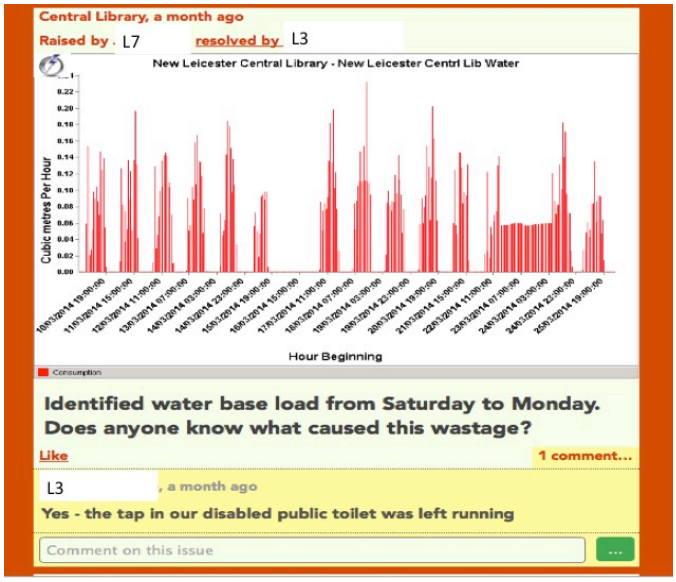

Figure 4. Screenshot of the Gooddeeds application.

BARRIERS TO PARTICIPATION

From the outset of the project a number of barriers emerged to this project, some that we could have foreseen and some we could not have. This is the reality of real-life case study work and it this unpredictability and messiness of 'real world' research that the authors have attempted to convey. First, the fears over the privacy and trust at both the individual and organisational level, for example, the particular culture within the City Council are discussed before considering the wider barriers to participation that include a wider challenge to notions of responsibility towards energy in the workplace.

Perceptions of social media

Whilst the local authority was very supportive of the project, the reality of social media use, and its very public dimension was something of concern both to the user group and those with wider responsibilities and was never fully reconciled. The head of energy services for example acknowledged these fears from the outset when he sought internal approval for the project:

> When I took the report to the directors' board … the comments were all about who's going to deal with all the complaints that will come through as a result of this? Because I think it was perceived by the directors that okay, it might engage people in energy conversation and talking about that. But it's likely, if it does anything, to stimulate complaints about this building's too cold or, you know, the heating system in this building is very poor, it keeps breaking down,

> or we need more control, you know, and all of that kind of negative stuff that might come out of it. (L8)

The membership of the user-group was not pre-selected with any prior aptitude for technology and it was clear that for the majority of participants social media and smartphones were quite novel; only two out of the six members of the focus group owned or had used a smartphone prior to the project, as opposed to the 60 % ownership highlight by the UK communications regulator, Ofcom). Social media also appeared to be something people had limited experience or understanding with Facebook or Twitter being used for social reasons. Members of the group were all aware of social media tools, but none were overly active on it. There was a common thread of people in the group being aware of social media, and of using it to follow special interests but being reluctant to use it that much to post or share issues. These three responses were typical

> I just used Facebook to find out what my family is up to, and Twitter just to keep informed with some things. But I never tweeted until I joined this group. And I very rarely post anything on Facebook. (L3)

> So I like to read up and look at different things but I'm not too much of a 'putting things on to Twitter person'. And that's just because of myself … I don't like myself being advertised too often. (L5)

> I'm not very good with Facebook, I'm now thinking I should have joined up when everybody else did but to me it was invasion of privacy, I wasn't gonna let anyone know what I was doing. (L7)

Common here is the concern around privacy and trust. In this group people seemed unhappy with both 'oversharing' their personal details on-line, preferring instead to follow newsfeeds rather than actually post information themselves. This privacy issues was highlighted though as a real concern by a member of the digital media team in Leicester City Council (who was not a member of the group). She stopped using social media because of an incident involving a colleague of hers from another local authority:

> A colleague of mine used to post completely unprofessional things about her day … I think at some point she was told, because it was communicated to the powers that be that she was doing this, and even though it was personal, in her own free time and those managers hadn't seen it, she was told that it was inappropriate. It's very dangerous isn't it? (L10)

The user-group were also in agreement about the potentially negative affects of posting messages on other buildings and their users and customers (in the case of the library and leisure centre). People are "always trying to find faults or whatever" said L6 from the leisure centre, and the participant from the library echoed the difficulty of getting constructive customer feedback. "We welcome customer feedback as long as it's coherent customer feedback about things that we can actually do something about" (L3). This was noted as particularly evident given the financial situation of local authorities like Leicester who have to make difficult decisions around budget cuts and had in fact gone through a redundancy process whilst this project was ongoing. The energy services team leader (L1) observed that "in an organisation where there's lots of change taking place, you know, cuts and various things, they may say, 'I've seen this problem here. That could have saved four jobs … you don't want the abuse."

At the wider organisational level (Leicester City Council as a whole) too, the project found a cautious approach towards social media. The City Council does use social media as part of its marketing and communications strategy including its own Twitter feed with over ten thousand followers. The main City Council account is managed by the Social Media Lead who was interviewed for this project. He says that "it's very much geared around sort of headline corporate messaging really" (L9). He was very keen to declare himself a fan of Twitter due it being 'instant', especially for news. He goes on to say, "For finding out about breaking news Twitter is the place to be, and we're using that very much. We're even thinking about changing how we move our news provision media relations … to using social as the main output" (L9). The Central Library uses social media in a similar way, that is as a means of informing the public of what its doing, which Arnstein placed low on her ladder of participation under tokenism. The Social Media Lead explained that "it's to promote what they [the City Council] do and to try and sell their services, some of which now are revenue generation based" (L9).

Of course local authorities are all about delivering public services within increasingly constrained financial budgets. This is a factor which will be revisited but here it is suffice to say that the current use of social media by the City Council is determined by this key criterion: "Unless it adds value to us and helps us deliver our services better, or helps people engage with us and those services, it's not going to make it as far as I'm concerned really" (L9).

Whilst there is concern over the use of social media for engaging the public (and certainly staff), the potential of smartphones is not lost on the team. A smartphone app does exist for local residents to download and use it to take photographs of environmental issues such graffiti and litter. The city warden's team then track and resolve the issues. The social media lead said though that it was not just purely for residents, "it's used by staff themselves to actually report stuff and it all goes into a central database, and then depending on the nature of the call, the report gets farmed out to a particular function, into clean up or remove. So we are using it internally and externally" (L9). His colleague suggested one way this can be done is through staff having a wider view of their responsibilities. So, "a traffic warden out there spotting graffiti can take a photo and then it's back in the office within seconds … If we had every member of staff who's out there – graffiti is not their job, but actually let's make it their job to report it" (L10).

There is conflict both internally and externally then. Internally employees are concerned about publicly highlighting areas of malpractice by other colleagues for fear there might be repercussions. Externally, colleagues are worried that if areas of wastefulness are highlighted then the public will seize on this information. One of the energy services team observed that:

> Public funds are always scrutinised a lot more and therefore you have to be careful in terms of how you sort of say something. You know, if you put something like, oh yeah, your site has wasted, you know, £20,000 worth of water in the last six months, you know, that wouldn't go down well on a public domain" (L1).

Arnstein's ladder of participation moves all the way up to partnership and delegating power and control. This poses a challenge to the work place contract and is clearly an issue within a traditional organizational context such as a local authority. The head of energy services (L8) admitted that internal policies have "excluded people from using social media for quite a time", but he believed, "things are changing". There is a perceived difference between the elected members, such as Councillors and the Deputy Major having their own Twitter accounts and the employees within the council controlling the work environment and access to social media and mobile phones. These two examples are representative:

> If you went into a leisure center or library and people were on their phones, members of staff, then the public would sort of say, well hold on, what's going on here? (L1)

> But up till now there has been 'you are provided with a computer to use at work' you know, 'you will only use it for work, you will not look at anything else or do anything else with it.' And that's, you know, very much how your work environment is controlled. (L8)

All those interviewed felt that there was something inherent in the nature of local authorities (not just Leicester) that affects innovation in this area. The head of energy services referred to them being "very conservative about these sort of things but I think a lot of them are seeing the advantages of using it for various things" (L8). This was noted for example with regards to IT policies and infrastructure, be it regarding using smartphones in the workplace, or simply being unable to get the latest web browser on their personal computers to wider approaches to change. A member of the social media team noted that "Stereotypically local authorities are not terribly modern, and not necessarily that forward thinking" *(L10)*. She expanded on this point, observing that it has to do with change management, "a lot of the staff that work here are not that keen on change … actually getting services to consider having an online application is challenging. So if I went to them and said, 'Let's get tweets from your customers,' I think they would just explode" (L10).

Competing workplace priorities

Of course the context of this research is energy behaviours, and it is here, within the workplace that there is a central question, and barrier for energy management in the workplace – who is responsible? Those interviewed exhibited a range of views as to where responsibility lay. "I'm not in a job to do energy management, that's not my role", said a business support manager, but, he went on to acknowledge "… all management at a certain level should have that responsibility and a view to know that we're not wasting resources, energy in any way" (L5). Most though agreed that it should both form part of responsible management and the culture of the organisation, as the head of energy services described,

> The idea is that it is driven at a lower level, that it is something that is part of team briefings and that team leaders will identify if people have left equipment on and deal with them as they would with any other work type of behaviour. Just to ensure that it is in the culture of the organisation. (L8)

However, whilst the Energy Services Team has an aspiration for responsible energy citizenship across the organization, building users have differing perceptions. They often feel they have limited opportunity to really change anything and as is seen below, a wider lack of responsibility for energy spend, and competing priorities in the workplace mean that energy management is not at the top of their 'to-do list'. For many it seems the pressure of simply doing their job well, means that energy is the last thing on their mind. As the admin and business support leader observed, staff have conflicting responsibilities and priorities, "they're more thinking about their day job and what we're doing and it's just tunnel, the vision's tunnelled into and the energy impacts are outside of that tunnel for me" (L5). This lack of engagement with energy may be due to ignorance and general busyness, for some though, members felt that a lack of engagement with energy, and wasting energy may be a result of tensions and 'animosity toward management' whereby leaving your computer on overnight is a way of 'screwing the system'.

> I think it's widely known anyway, across the board, because it's a very stressful environment and it's very pressurised, I think some people just sort of see it as, well, screw the system, really. Again it's not really like, hey, you shoot them by leaving your computer on overnight, but I think it's that sort of childish mentality that affects some people (L2).

If at worst there are active feelings of resentment leading to wasteful energy behaviours, at best it seems that the fundamental disconnect between energy use and financial responsibility is a key barrier. The housing options officer, appealing to notions of environmental citizenship wanted to believe that you can "stimulate people to sort of do the right things, take the right social behaviour into account with regards to, if you won't do this at home, why would you do it in a non-office environment?" He conceded though that, "the bottom line of it comes to the fact that they're not paying for it. If you were paying for it you would be a lot more cautious with regards to how you use various things" (L1).

Many of these issues would be common to a range of both public and private sector organisations. Rarely in organisations, are there devolved energy budgets, and most would accept that they feel (even if they are not), bombarded with conflicting priorities, increased workloads and seemingly limitless email inboxes. The Local Authority context does exhibit interesting features, not least in a current political and economic climate of reduced budgets, salary freezes and increased trade union activity. Fundamentally though, local authorities are about delivering public services and value for money. It is against the backdrop of these competing organisational, institutional and political priorities that energy management sits and that place constraints on how much people will participate in energy reduction, especially those using innovative methods.

Conclusions and recommendations: Lessons learned?

What lessons can be learnt then from this project? It is of course acknowledged that this is a small sample; an exploratory pilot project designed to explore both the potential for greater participation amongst buildings users and see what role social media and smartphone technology might play in behaviour change initiatives. The project, only 18 months in

length encountered challenges that we have outlined, notably around financial cuts within the organisation and this no doubt led to a challenging climate in which to conduct a research project such as this. The authors recognise that more time is needed when launching new initiatives such as this. The particular project was operating to very tight deadlines and the initial 'setting up' of the research problem with the team was too short. This project was actually implementing two significant changes – fostering greater collaboration *and* the smartphone/social media applications – more time was needed for this, given the levels of change implied, and a greater representation of people on the user-group would have helped enormously.

It is clear that attempting to 'climb' Arnstein's ladder of participation, be it a virtual one or not, poses challenges to organisations around notions of control, power and responsibility. Internal and external 'politicking' infiltrates the culture at every level of the organisation and inevitably affects the behaviour of those in the organisation. This is particularly evident in local authorities, where the essence of the operation is public service. Of course all organisations have their primary goals – rarely is an organisations raison d'être energy saving – but there exists a strong sense of duty to spend public money responsibly, and rightly so. Yet this research did uncover a particular conservatism in fully embracing and exploring increasing participation and the digital economy. The authors believe that social media and smartphone technology have the potential to contribute to low-cost solutions to energy management and signs of hope have been highlighted here. Members of the user-group were able to share energy consumption data that showed unusual activity, and to benefit from instant sharing of photos and data across multi-site facilities.

There are barriers to overcome then if progress is to be made. All of our participants recognized the energy savings potential around fostering greater engagement, and yet for now our research supports the findings of Christina et al (2014) into energy behaviours in a retail organisations in which they found that organizational roles will always trump energy efficiency behaviours. For energy research to reach its potential much more research is needed into a wide range of organisation types to explore how different organizational context affects behaviour. That said, we feel there are some lessons to be learnt, some barriers observed that we hope will be explored more thoroughly through future research.

References

Apostolakis, G. and S. Pickett. (1998). "Deliberation: Integrating Analytical Results into Environmental Decision Involving Multiple Stakeholders." Risk Analysis 18 (5): 621–635.

Arnstein, S. (1969). "A ladder of citizen participation." Journal of the American Institute of Planners 35: 216–244.

Bickerstaff, K. and G. Walker. (2005). "Shared Visions, Unholy Alliances: Power, Governance and Deliberative Processes in Local Transport Planning." Urban Studies 42 (12): 2123–2144.

Brown, N., R. Bull, F. Faruk and T. Ekwevugbe. (2012). "Novel Instrumentation for monitoring after-hours electricity consumption of electrical equipment, and some potential savings from a switch-off campaign." Energy and Buildings 47: 74–83.

Bull, R., J. Petts, and J. Evans (2008). "Social Learning from Public Engagement: Dreaming the impossible?" Journal of Environmental Management and Planning 51 (5): 703–718.

Bull, R., J. Petts and J. Evans. (2010). "The Importance of Context for Effective Public Engagement." Journal of Environmental Planning and Management 53 (8): 991–1009.

Bull, R., Irvine, K., Rieser, M. and Fleming, P. (2013). Are people the problem or the solution? A critical look at the rise of the smart/intelligent building and the role of ICT enabled engagement. eceee Summer Study Conference Proceedings 2013, pp. 1135–1145; 5A-079-13.

Burgess, J. and M. Nye (2008). "Re-materialising energy use through transparent monitoring systems." Energy Policy 36: 4454–4459.

Burrows, R., Johnson, H. and Johnson, P. (2013) Influencing values, attitudes and behaviour via interactive and social media technology: The case of energy usage. The Department of Computer Science, University of Bath. Unpublished http://opus.bath.ac.uk/37937/.

Christina, S., Dainty, A., Daniels, K and W. Waterson. (2014). How organisational behaviour and attitudes can impact building energy use in the UK retail environment: a theoretical framework. Architectural Engineering and Design Management, Vol. 10, Nos 1–2, 164–179.

Coleman, M., Irvine, K., Lemon, M., and L. Shao. (2013). Promoting behaviour change through personalized energy feedback in offices. Building Research and Information 41 (6): 637–651.

Crowley, D., Curry, E., and Breslin, J. (2014) Leveraging Social Media and IoT to Bootstrap Smart Environments." Big Data and Internet of Things: A Roadmap for Smart Environments. Springer International Publishing, 2014. 379–399.

Darby, S. (2010) "Smart Metering: What potential for household engagement?" Building Research and Information 38 (5): 442–457.

DECC (2014) 2013 UK Greenhouse Gas Emissions, Provisional Figures and 2012 UK Greenhouse Gas Emissions, Final Figures by Fuel Type and End-User, Statistical Release 27th March 2014. London.

Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the Energy Performance of Buildings (recast), http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:153:0013:0035:EN:PDF.

Dubois, A and L. Gadde. (2002). Systematic combining: an abductive approach to case research. Journal of Business Research. 55, 553–560.

Ferro, E. and F. Molinari (2010). "Framing Web 2.0 in the Process of Public Sector Innovation: Going Down the Participation Ladder." European Journal of ePractice 9.

Fioriono, D. J. (1990). "Citizen Participation and Environmental Risk: A Survey of Institutional Mechanisms." Science and Technology & Human Values 15 (2): 226–243.

Fleming, P., and Webber, P. (2004) Local and regional greenhouse gas management. Energy Policy, 32 (6) 761–771.

Foster, D., Lawson, S., Linehan, C., Wardman, J., and Blythe, M (2012), Watts in it for me? Design Implications for

Implementing Effective Energy Interventions in Organisations. CHI 2012 conference proceedings, Austin Texas.
Habermas, J. (1979). Communication and the Evolution of Society, translated by Thomas McCarthy. Boston, Beacon Press.
Hargreaves T., Nye, M., and Burgess J. (2013) Keeping energy visible? Exploring how householders interact with feedback from smart energy monitors in the longer term. Energy Policy. 52: 126–134.
IPCC (2014) IPCC AR5 Climate Change: Implications for Buildings. Key findings from the Intergovernmental Panel on Climate Change Fifth Assessment Report. Available at http://www.cisl.cam.ac.uk/Resources/Climate-and-Energy/Climate-Change-Implications-for-Buildings.aspx.
Lehrer, D. and J. Vasudev (2010). Visualizing Information to Improve Building Performance: A study of expert users. ACEEE Summer Study on Energy Efficiency in Buildings.
Moezzi, M., and Janda, K. (2014) From 'if only' to 'social potential' in schemes to reduce building energy use. Energy Research and Social Science. 1: 30–40.
Mulville, M., Jones, K., and Huebner, G. (2014). The potential for energy reduction in UK commercial offices through effective management and behaviour change. Architectural Engineering and Design Management, Vol. 10, Nos 1–2, 79–90.
Murtagh, N., Nati, M., Headley, W., Gatersleden, B., Gluhak, A., Imram, A., and Uzzell, D. (2013) Individual energy use and feedback in an office setting: A field trial. Energy Policy. http://dx.doi.org/10.1016/j.enpol.2013.07.090.
O'Neill, S. and M. Boykoff (2011). The Role of New Media in Engaging the Public with Climate Change. Engaging the Public with Climate Change. L. Whitmarsh, S. O'Neill and I. Lorenzoni. London, Earthscan.
Owens, S and L. Driffill. (2008). How to change attitudes and behaviours in the context of energy. Energy Policy 36. 4412–4418.
Shirky, C. (2008). Here Comes Everybody. London, Penguin.
Webler, T. (1995). "Right" Discourse in Citizen Participation: An Evaluative Yardstick. Fairness & Competence in Citizen Participation: Evaluating Models for Environmental Discourse. O. Renn, T. Webler and P. Wiedemann. London, Kluwer Academic Publishers: 35–86.

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