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\*Corresponding author: David Meiklejohn, Global, Urban and Social Studies, RMIT University, Melbourne, Australia  
E-mail: [david.meiklejohn@rmit.edu.au](mailto:david.meiklejohn@rmit.edu.au)

Reviewing editor:  
Alberto Bezama, Helmholtz Center for Environmental Research, Germany

Additional information is available at the end of the article

## ENVIRONMENTAL MANAGEMENT & CONSERVATION | RESEARCH ARTICLE

# Shifting practices: How the rise of rooftop solar PV has changed local government community engagement

David Meiklejohn<sup>1\*</sup>, Sarah Bekessy<sup>1</sup> and Susie Moloney<sup>1</sup>

**Abstract:** Australian local governments develop and deliver a range of community engagement programmes designed to reduce household-based greenhouse gas emissions. This article draws on practice theory to analyse how these programmes have changed over time in response to the rapid deployment of a domestic renewable energy technology: rooftop solar photovoltaic (PV). After outlining the practice “lens” used to analyse these practices, we draw on empirical research to examine traditional forms of climate change community engagement practice including meanings of leadership adopted by local governments. We note how these play out in the form of ambitious community-based greenhouse gas emissions reduction targets that favour technological responses to climate change which in turn has favoured the rise of rooftop solar PV, and how community engagement practices have changed as a result.

We find that Australian local government climate change community engagement practices have experienced three distinct forms of performance. The first, what might be termed “traditional” climate change community engagement practices, rely upon individuals acting out of adherence to pro-social environmental values. The second highlights the technology of rooftop solar PV with its associated pro-individual motivations, such as financial benefit. The third form, which is currently emerging, positions local governments as “disruptors” of centralised energy systems mobilising rooftop solar PV amongst actors currently excluded from the solar revolution, such as renters, low income households and community energy groups. In extending the meanings of rooftop solar PV uptake beyond financial benefits to a shared response to climate change, local governments become active agents in mobilising community energy transitions.

### PUBLIC INTEREST STATEMENT

Australian local governments play an important role in helping households reduce their greenhouse gas emissions. They use community engagement programmes, such as workshops, challenges and information provision, to encourage household to reduce emissions by using the threat of climate change as a motivation for action. At the same time, Australian households have also installed photovoltaic solar on their rooftops at a faster rate than anywhere else in the world. However, the motivation for this has primarily been in the form of financial benefit for the individual. This research explores how local government community engagement programmes have adjusted to the rise of rooftop solar, and how they might go further by promoting forms of community renewable energy. In this way, they can preserve the collective nature of existing programmes while appealing to a broader audience.

**Subjects: Environment & Resources; Environment & Theory; Environmental Policy; Environmental Psychology; Communication Research Methods; Environmental Communication**

**Keywords: Local government; community engagement; social practice theory; rooftop solar photovoltaic; energy transition**

## 1. Introduction

Globally, local governments are important actors responding to climate change, possessing unique strengths that can contribute to greenhouse gas emissions reductions. These include the ability to work collaboratively in partnership over multiple levels of government, close relationships with households, businesses and community stakeholders, the ability to attract investment capital for innovative projects and access to fine-grained land use, community and business data (Storey, 2012). The responses of Australian local governments include reduction of their own corporate emissions through energy efficiency and investment in renewable energy, adaptation measures to protect the communities they serve, the enforcement of regulations, the provision of infrastructure and community engagement programmes to directly decrease household-based emissions (Balston et al., 2013; Bulkeley, 2000; Lindseth, 2004; Serrao-Neumann, Harman, Leitch, Crick, & Low Choy, 2011).

Community engagement techniques typically employed by Australian local governments have tended to the passive end of the public participation spectrum, in which information is provided to the target audience to help them better understand, build personal capacity and act upon the issue at hand (International Association for Public Participation, 2014). Methods include the provision of information and workshops to build participant skills (Fritze, Williamson, & Wiseman, 2009). By contrast, some European and North American local governments have sought to collaborate with and empower their communities often within the context of broader socio-technical transitions taking place in response to climate (Hoppe, Graf, Warbroek, Lammers, & Lepping, 2015; International Association for Public Participation, 2014; Oreizi, 2016).

Australian local governments have sought to encourage reductions in greenhouse gas emissions by individual households using pro-social environmental values as a motivator for action. However, the widespread uptake of rooftop solar PV is characterised by pro-individual rather than pro-social meanings, such as personal financial benefit. This article investigates the impact of this technology upon Australian local government climate change community engagement programmes. We seek to answer three research questions: do the pro-individual meanings associated with rooftop solar PV clash with the pro-social meanings associated with traditional climate change community engagement, how have such programmes adjusted and what new roles might local government play, as a result.

The article begins by establishing how practice theory will be used to analyse climate change community engagement practices performed by Australian local governments (first section: adopting a practice lens). This is followed by a review of local government climate change mitigation strategies to identify key meanings underpinning community engagement practices, such as the importance of local government leadership and the setting of ambitious community-based emissions reduction targets (second section: leadership and targets). We then analyse what might be termed “traditional” local government climate change community engagement practices (third section: understanding local government community engagement practices), followed by consideration of the implications of the rapid growth of residential rooftop solar PV for how these practices are altered in their performance (fourth section: the challenge of residential rooftop solar PV). Finally, we identify new forms of local government practices associated with their emerging roles as “disruptors” of centralised energy systems and “mobilisers” of rooftop solar PV for sectors of the community overlooked by the mainstream market (fifth section: emerging local government community solar practices).

## 2. Methodology

This research employs a mixed-methods approach including textual analysis of 37 local government sustainability and climate change strategies from across Australia and semi-structured interviews with 26 local government officers and managers responsible for the delivery of climate change community engagement practices. Participating local governments were selected through an analysis of local government websites, membership of professional development networks and recommendations of local government officers. This snowball sampling approach allowed for a gradual selection of the final strategies based upon the richness of the information provided (Robson, 2011). The selection of councils is not intended to be representative of the entire local government sector; indeed, the emphasis upon accessing detailed information about the strategies has resulted in a bias towards the selection of local governments in metropolitan areas. The interviews with local government officers were conducted between July and September 2015. Interviews took place either face-to-face at the offices of the participants or by phone and were transcribed verbatim. Interviews were recorded using digital voice capture software either on a smart phone or through desktop computer software. The interview questions captured local government motivations and capacities for the development and implementation of the community engagement programmes, the background of key staff, target audiences, available resources, how programmes were integrated with broader policy, whether the design of the programmes was informed by particular community engagement or behaviour change theories, recruitment and engagement methods employed, the reasoning behind chosen evaluation measures and the effectiveness of the programme against project objectives.

Data from a textual analysis of the strategies and the interviews was entered into qualitative data analysis software (Nvivo) and coded thematically to categorise: (1) climate change community emissions reduction targets and their associated motivations; (2) community engagement methodologies and their associated motivations and (3) local government practitioner responses to and meanings associated with the rise of rooftop solar PV. The four stages of research are set out in Figure 1.

## 3. Adopting a practice lens

Practice theory, with its focus upon the nexus of “doings and sayings” while allowing for individual agency, provides a useful lens to analyse climate change community engagement programmes (Schatzki, Cetina, & Savigny, 2001). This particular form of practice theory as applied to consumption studies (Warde, Cheng, Olsen, & Southerton, 2007) emerges from a looser collection of thinking that seeks to overcome dualisms, such as the opposition between structure and actor, to provide a more coherent analysis of everyday actions and their context (Bourdieu, 1977; Røpke, 2009; Schatzki, 1997; Schatzki et al., 2001).

Figure 1. Stages of research.



Within organisational studies, practice theory has been applied to specific activities that constitute an organisation, including both internal practices as well as outward-facing practices, such as the delivery of services (Nicolini, 2012). The performance of such outward-facing practices engages with separate practices undertaken by external actors, such as customers or other organisations. Local government climate change community engagement practices fall into this category; delivered by practitioners employed by local governments they seek to influence the performance of everyday practices within households, such as space heating and cooling, lighting, cooking and washing, to reduce residential greenhouse gas emissions (Shove & Spurling, 2013).

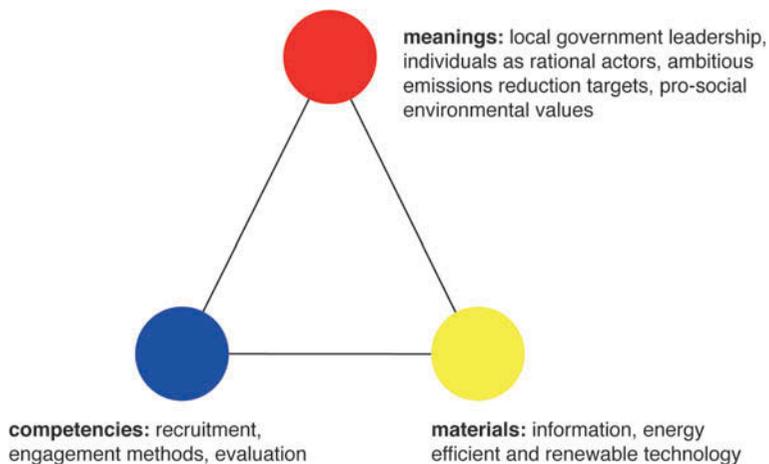
In contrast to the paradigms of behaviour change that dominate traditional climate change community engagement approaches, practice theory posits individuals as undertaking these everyday activities for a range of reasons, with variable abilities and with different tools available to them (Powells, Bulkeley, Bell, & Judson, 2014; Shove, Pantzar, & Watson, 2012; Spotswood, Chatterton, Tapp, & Williams, 2015). We employ Shove et al.'s (2012) model as it has been extensively used in analysing the household-based practices that are the target of these programmes. In this framing, individuals as performers of the practice are comprised of the meanings attributed to the practice, the competencies required to successfully enact the practice and materials that may be used in or supportive of the conduct of the practice (Shove & Spurling, 2013), as set out in Figure 2:

Practices are not static; rather, they shift as their elements change or as the relationship between the elements change or as the relationship with other practices changes (Røpke, 2009; Shove et al., 2012). In the case of household-based practices, local government practitioners seek to reduce their contribution to the production of greenhouse gases. This can take the form of a change of materials, such as replacing existing electric or gas-powered appliances with more energy efficient models, a change in the meanings associated with the practice, such as consideration of environmental impacts, and a change in the competencies of households to build their capacity to undertake new forms of practice performance. While the graphic representation of Shove et al.'s (2012) model suggests equivalence between the different elements, in reality some elements are more influential than others upon how a practice is performed. This is not to suggest that influence all flows one way; in reality, the relationship between different elements is continually contested.

#### 4. Leadership and targets

Community engagement practices to reduce household-based greenhouse gas emissions, as performed by Australian local governments, are strongly influenced by expressions of leadership. This leadership role is a reflection of a genuine desire to act as well as in response to a constrained

Figure 2. Elements of social practices (Shove et al., 2012).



governance space, established through its legislative and financial relationship with higher tiers of government as well as with the community it serves (McNeill, 1997). It is expressed through the strategies and policies in which local governments seek to create a common vision, for both council and households, responding to climate change based upon pro-social environmental values.

The City of Fremantle identifies its role as creating “a supportive framework for our community, who are both our leaders and our champions on the journey” (City of Fremantle, 2014, pp. 7–8). Wollongong City Council’s *Environmental Sustainability Strategy 2014–2022* identifies showing leadership as one of five key focus areas and calls on residents to “demonstrate environmental sustainability leadership in your home” (Wollongong City Council, 2014, p. 36), while the City of Whittlesea’s *Environmental Sustainability Strategy 2012–2022* encourages the “community to take a leadership role in sustainable water management” (City of Whittlesea, 2012, p. 23). Wellington Shire Council states its role as “modelling the way, facilitating further conversations and action, supporting community efforts, and being a conduit for information and education” (Wellington Shire Council, 2015, p. 8).

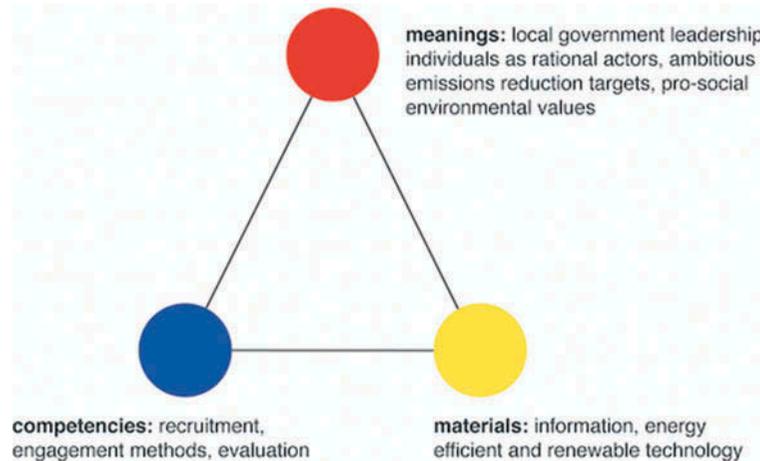
Allied to this leadership role has been the establishment of ambitious community-based greenhouse gas emission reduction targets (Brimbank City Council, 2012; City of Darebin, 2009; City of Moonee Valley, 2010; City of Newcastle, 2011; City of Port Phillip, 2011; City of Whitehorse, 2009; Frankston City Council, 2012; Moreland Energy Foundation, 2014). This approach has been heavily influenced by the participation of Australian local governments in the Cities for Climate Protection (CCP) programme, which contributed to a culture of target-setting amongst local governments (Lindseth, 2004). In addition to internal cultural factors, such as establishing a role as a leader on climate change, local government targets are also influenced by external factors, such as changes in federal and state government policy (City of Moonee Valley, 2010; City of Port Phillip, 2011). In some circumstances, the targets are explicitly stated to be “stretch goals” to drive concerted action on climate change (City of Moreland, 2007; Coffs Harbour City Council, 2002). In the most ambitious circumstances, local governments have set themselves targets of becoming carbon neutral in terms of the emissions produced through both their corporate operations as well as those of their communities (Storey, 2012). Setting ambitious emissions reduction targets has been critiqued for narrowing the focus of local government to actions that will help it achieve these targets, at the expense of fostering deeper public participation in community engagement programmes by individuals (International Association for Public Participation, 2014; Slocum, 2004). Rather, a reliance on targets can generate policies and programmes that favour technological solutions as their emission reductions are more easily measured, as opposed to seeing such problems as the result of social problems that need to be addressed (Vare & Scott, 2007).

### **5. Understanding local government community engagement practices**

The related meanings of leadership of a pro-social environmental response to climate change and ambitious community greenhouse gas emissions reduction targets, strongly influence the competencies and materials that comprise local government climate change community engagement practices. Additional meanings include an understanding of individuals as rational actors, an assumption common to behaviour change programmes (Southerton, McMeekin, & Evans, 2011). Competencies include recruitment and engagement methods, and evaluation techniques that struggle to capture non-technological changes in household practices. The materials available to local government practitioners include information to inform the choices of individuals and the provision of energy efficient and renewable energy technologies that reduce household-based greenhouse gas emissions, as set out in Figure 3:

Australian local government climate change community engagement practices are typically constructed around the need to address an information deficit held by individuals, whether in relation to the issue of climate change or to a specific responsive action, which can be overcome through information and support (Abrahamse, Steg, Vlek, & Rothengatter, 2005; Morris, Marzano,

**Figure 3. Local government climate change community engagement practices (adapted from Shove et al., 2012).**



Dandy, & O'Brien, 2012; Socialdata Australia, 2011; Tilbury, Coleman, Jones, & MacMaster, 2005). Techniques include communications campaigns, training workshops to develop individual skills, home energy assessments to identify potential technical improvements within a house and feedback programmes, which provide information on the amount of energy used by households in comparison to like households to encourage energy conservation behaviours (Department of Transport, 2012; Fritze et al., 2009; Ingle, Moezzi, Lutzenhiser, & Diamond, 2014; Tilbury et al., 2005). Individuals are viewed as responding to climate change in alignment with local government objectives: “motivate, equip, educate and involve individuals and the community to reflect on how they currently live and work to inspire behaviour change to move towards a more sustainable way of life” (City of Canterbury, 2012, p. 16), “... you are an important part of the plan and of protecting our local environment. Find out more about how you can do your bit ...” (City of Charles Sturt, 2014, p. 3), “just as our past actions as individuals and organisations have contributed to the current state of our changing climate, our future response also requires a collective effort. Our activities at the local level are part of worldwide action in reducing carbon from our atmosphere” (Brimbank City Council, 2012, p. 5) and “everyone in Moreland is responsible for climate change ... and everyone must be part of the solution” (City of Moreland, 2014, p. 5)

The most common form of engagement of individuals is through face-to-face workshops, often hosted at local government facilities, which seek to pass on information or skills about different subjects. While workshops have their limitations, local government officers report a value in people learning about a topic with others at the same time, and that different topics result in different styles of workshop engagement:

‘I think the solar panel ones, because the room was absolutely packed, it had a real energy of ‘wow, lots of people are doing this’ so it was kind of exciting, and then those other workshops like backyard chickens...where you get people talking to each other about ‘what do you feed the chickens?’, problem solving and troubleshooting and that sort of thing.’  
(Interviewee M)

Climate change community engagement also draws upon local expertise in programmes that focus on training and supporting leaders within the community not only to act themselves but also to inspire others within their social networks. These programmes typically involve deeper levels of intervention with an associated degree of commitment by the participating individual:

‘There’s usually between 15 and 20 champions who enrol in the program each year and they spend 8 weeks doing the training component. That training touches on some key sustainability issues but it’s also leadership training and project planning training. Then the idea is that some people bring project ideas and those project ideas are formed up into projects and

other champions might join in with one of those project ideas or create a new group and deliver the project.'

(Interviewee F)

Participants in such leadership programmes may emerge from the community, out of an expression of interest in climate change and sustainability issues, or the local government may identify them as leaders within existing social networks with the ability to reach targeted audiences, such as culturally and linguistically diverse communities (City of Darebin, 2009; Sustainability Fund, 2012).

In addition to running workshops, local governments seek to enable the uptake of renewable energy technologies, including bulk buy schemes, in which local governments bring together many households and negotiate a cheaper price for the technology with suppliers than if each household was to buy it individually. Along with enabling the purchase of rooftop solar PV, councils have integrated meanings of energy efficiency into the bulk buy process through an assessment of the benefits likely to be gained from rooftop solar PV by participating households:

'What a lot of people have found is, they want to get solar but once they realise they're using 20 or 30 kilowatt hours a day of electricity they'd need a massive system, whereas if they focused on the energy efficiency first and get their usage down to 10 or 15 kilowatt hours a day, solar is going to be a lot more viable for them.'

(Interviewee C)

The difficulty of evaluating changes in the performance of everyday household practices has resulted in evaluation approaches that default to capturing process measures of participation, such as the number of individuals engaged by a programme, rather than outcomes (UrbanTrans, 2008). By contrast, programmes that focus on the delivery of renewable energy or energy efficiency technology are more easily able to measure emissions reduction (Aydin, Kok, & Brounen, 2015). As a result, local governments can favour interventions reliant upon technological solutions as these are more easily assessed in terms of meeting council's ambitious emissions reduction targets. What is less clear, and recognised as such by practitioners, is how much credit a programme can claim and how much is a decision that may have been taken by the household regardless:

'It is really difficult to tell how much direct influence we're having. We can easily say 'we've got this 600 kilowatts on the rooftop, but how much have'... Someone might have come up to a street stall and we've had a five-minute chat about solar and they've gone off and done some Googling and ended up getting solar. So, we're definitely part of that process but it's really difficult to measure.'

(Interviewee O)

Finally, the materials available to local government community engagement practitioners primarily take the form of supportive energy efficiency and renewable energy technologies. These have included low-emission light bulbs and light-emitting diodes, cavity insulation and products such as televisions, air conditioners and water heaters that have improved in performance as a result of changing regulatory standards and government incentives (Essential Services Commission, 2015; Essential Services Commission of South Australia, 2015; Office of Environment and Heritage, 2015). While local government practitioners seek to influence and ultimately shift the performance of household-based practices, their own community engagement practices can, in turn, be influenced and shifted by changes in household-based practices. In particular, the rise of a dominant material (rooftop solar PV) has shifted the balance between the elements that comprise community engagement practices.

## 6. The challenge of rooftop solar PV

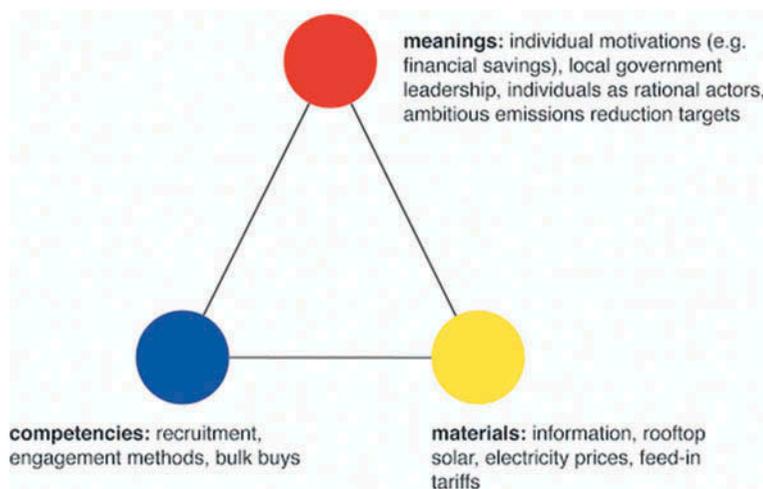
The emergence of rooftop solar PV as a viable form of renewable energy for Australian households has shifted the meanings associated with local government climate change community engagement practices. The uptake of rooftop solar PV climbed dramatically after 2010 due to government

incentives, both for the upfront cost of the technology as well as for the power produced and fed back into the electricity grid, a reduction in unit prices due to over-production in China and a rise in domestic energy prices (Anti-Dumping Commission, 2015; Climate Commission, 2013; Macintosh & Wilkinson, 2011; Zahedi, 2010). The rate of growth was such that by 2017, more than 1.6 million homes have installed small-scale rooftops solar with a combined capacity of 5.92 GW (Australian PV Institute, 2017).

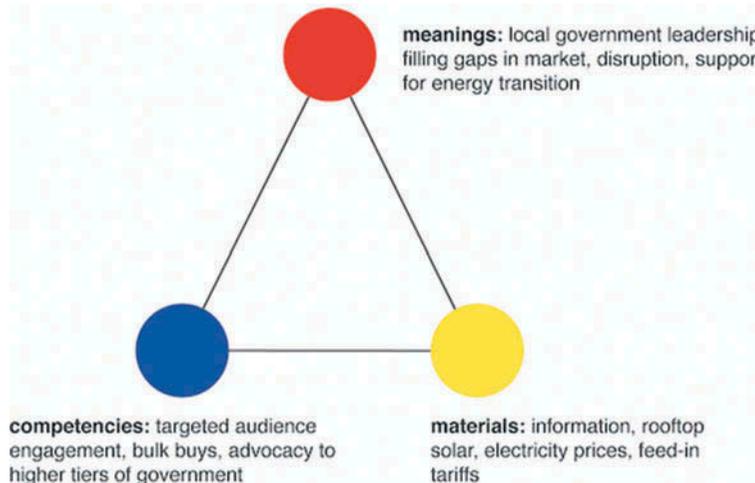
For local governments, the growth of this technology provided an opportunity to achieve their ambitious community greenhouse gas emissions reduction targets but also challenged the meanings traditionally associated with climate change community engagement practices. Targets set out in climate change strategies were often specifically dependent upon action by other actors, particularly higher tiers of government, to support the growth of renewable energy (City of Moonee Valley, 2010; City of Moreland, 2014; City of Port Phillip, 2007); now, at least for households, the effect of these actions as well as other external influences was driving the uptake of rooftop solar PV at such a rate that local government targets that may have formerly been considered aspirational were now achievable. However, the meanings that attracted households to local government interventions that promoted solar had shifted from a pro-environmental social need to respond to climate change to individual motivations, such as saving money. While meanings have shifted, competencies of recruitment and engagement, such as workshops and bulk buys, have generally not changed. The materials available to climate change community engagement practitioners are increasingly restricted to a dominant technology sometimes to the exclusion of other approaches, as set out in Figure 4:

The primary shift from traditional local government climate change community engagement practices is within meanings with a move away from an emphasis upon pro-social environmental motivations to the threat of climate change as a factor driving action, to individualistic motivations such as financial savings from reduced energy bills. These motivations have been associated with the purchase and operation of rooftop solar PV by Australian households more broadly; the rapid uptake of residential rooftop solar PV has been driven by government rebates and incentives, declining costs of the technology and increasing energy prices. As a result, Australian households have grown more receptive to individualistic financial motivations than to collective notions of playing their part of reduce greenhouse gas emissions. Local government practitioners have identified the impact of this shift upon their programmes:

**Figure 4. Rooftop solar PV community engagement practices (adapted from Shove et al., 2012).**



**Figure 5.** Emerging local government community solar practices (adapted from Shove et al., 2012).



‘If we go out with the usual quite earnest green messaging ... we attract a lot of people from (notable environmental suburbs) and when we promote workshops with green or greenie messaging that’s the audience. There’s ... a lot of people we’ve not reached so, who are those people? How do we speak to them? What messages are going to resonate with them? How do we find that hook?’

(Interviewee A)

Consequently, practitioners find that other interventions to reduce emissions, such as installing energy efficient appliances, suffer in popularity even if they are potentially aligned:

‘For the energy efficiency ones, we’ll have a workshop that has twenty spaces but we’ll only get ten bookings or something like that. They just don’t seem to fill up.’

(Interviewee I)

Practitioners face a dilemma between sticking with traditional approaches based upon using climate change as a motivating factor and turning to more individualistic motivations, which have proved successful in increasing solar uptake. Increasingly, practitioners seek to solve this dilemma by deploying the technology first and developing community collective responses later:

‘What we need to do is say, you have to get solar on your roof. It’s actually in your interest and you have to do it. We’d like you to come and do this next bit. I think the expectation that people will go beyond the individual thing is something that I think is... we need this big rapid change but we need to work out which bit we actually need.’

(Interviewee S)

In addition, local government has found that its role has shifted as solar moved from its niche popularity amongst “early adopters” towards a broader uptake. Increasingly, the role of promoting solar has moved away from being the responsibility of actors like local governments, to commercial providers advertising through the mass market. Instead of acting as a promoter, local government practitioners find that their role is more acting as a trusted source of information for individuals negotiating a complex market:

‘Understanding it and what’s involved, what are the pitfalls, what are the things to look for, what are the questions to ask your supplier, that sort of thing. But also helping them understand their own household so they know, one, whether they’re ready for solar but, two, how to size a system correctly, that type of thing. I get quite a lot of calls from people saying ‘okay, so I’ve got these quotes and I’m really confused because both companies say they’ve

got the best product in the world and I don't know what I'm doing' and that sort of thing, I'm a sounding board for them.'

(Interviewee C)

This role of local government as a trusted intermediary for households in the commercial solar market represents a shift away from one of being purely a promoter of a new environmental technology. It also creates an opportunity for local government to reflect upon its future in this space and consider new roles to encourage a broader shift in energy provision.

### **7. Emerging local government community solar practices**

The emergence of residential rooftop solar PV as a mainstream technology capable of delivering community-based greenhouse gas emissions has proved both a boon and a challenge for local governments. While it has helped local governments meet their ambitious targets for emissions reduction it has shifted the focus to the individual benefits associated with taking action rather than within a pro-social environmental framing lead by local government. In addition, the role of local government in promoting rooftop solar PV has shifted from being a supporter of a niche technology for early adopters to a promoter of a mainstream product.

As the commercial market has arguably met the demands of the mainstream market, local government has sought new roles including serving sectors of the community currently excluded from taking up residential rooftop solar PV, such as low-income households and renters, adapting existing forms of community engagement practices and supporting new practices that encourage a transition to a low-carbon society, such as community energy projects. These bundles of practices are summarised in Figure 5:

Already, some local governments have adjusted their community engagement responses to position their work in a broader setting in terms of household energy consumption practices as well as other local government practices. For example, the City of Darebin's *Solar Savers* programme in metropolitan Melbourne draws on local government powers to raise revenue through rates to impose a special rates charge on properties for additional works to provide no-upfront cost rooftop solar PV to low income pensioner households unable to afford to buy a commercially priced unit (Irwin, 2014; State of Victoria, 1989). The council has provided solar units for participating households and allowed them to pay back the cost of the units through the special rates charge over 10 years with each quarterly payment less than the savings from reduced energy bills gained by the households (Mey, Diesendorf, & MacGill, 2016). The project identified a specific audience for whom rooftop solar PV was likely to be financially beneficial: low-income pensioners who owned their own home and were likely to be home during the day using the power produced by the rooftop solar PV unit. The first round of the council's *Solar Savers* programme installed solar on the roofs of 294 low-income pensioner households in 2014 (Irwin, 2014). Following a feasibility study and business case, the project is now being replicated across 21 other local governments in Victoria (EAGA, 2017; Urban EP, 2016).

Others have sought to adapt existing forms of community engagement, such as bulk buys of rooftop solar PV, to reflect and encourage deeper participation in the development and management of a programme:

'They'd each done a bit of research into it for their own houses ... and they figured there were a lot of other people in the community who were having the same problem and they were hoping that, by working with us, that they could demystify that process and reduce the information barrier and the trust barrier. Particularly because a lot of people were having that experience of feeling like they were having something sold to them and they weren't really convinced of the credibility or the integrity or the trustworthiness of a lot of this information. So, they were keen to be the neighbourhood face, like somebody they could trust, but also with having the backing of council... gave it credibility that they weren't just enthusiasts who were do-gooders who didn't know what they were talking about.'

(Interviewee Z)

This notion of local government performing community mobilisation practices could be further extended to include what could be understood as more “disruptive” practices around enabling the broader uptake of renewable energy. This disruption has been fuelled by the rapid growth in household rooftop solar PV and challenges existing market structures, such as a traditional reliance upon centralised energy production transmitted through a near-national grid. Assuming a role as a “disrupter” will also result in changes to the competencies required to perform the practices; as local governments position themselves as a player in a larger social and economic transformation they may be required to play a stronger role in advocating to higher tiers of government to mobilise change.

European local government community energy programmes offer a model, framing their interventions within the context of an energy transition, rather than climate change, and their role as one of “helping you through the transition” (Our Life 21, 2016). In this framing, local government shifts from being a relatively passive supporter of renewable technologies to one that reflects its contribution to a broader disruption taking place within the Australian energy market (Mountain & Szuster, 2015). This more purposive role in driving change in the forms of energy used and produced across communities aligns with the stated role of local governments leading their communities in responding to climate change.

Finally, local government can also support community energy interventions by taking on a role as an active energy producer or retailer, serving the community. While local governments have invested in large-scale renewable power for their own operations (Milman, 2014; Sunshine Coast Council, 2016), they have not yet followed the lead of German local governments in taking back control of the energy system through the process of *remunicipalisation* (Moss, Becker, & Naumann, 2015). Although the energy provision regulatory frameworks differ between Germany and Australia (Kallies, 2016), local governments in Australia do have the ability to act as either a producer of energy, feeding it into the grid, and as a retailer, selling renewable energy directly to consumers. Mobilising community energy practices could not only act to successfully disrupt traditional centralised energy supply systems but could strengthen the role of local government in partnering with their communities to drive this change.

## 8. Conclusion

Australian local governments have played a vital role in developing and implementing local responses to climate change. At the heart of this are community engagement programmes designed to reduce household-based emissions. The use of practice theory to analyse local government climate change community engagement practices that seek to reduce household-based greenhouse gas emissions has proved valuable in gaining a deeper understanding of their constituent elements and how those elements relate to one another. Specifically, we have identified three iterations of bundles of community engagement practices.

The first is a bundle of what might be termed traditional community engagement practices which emerged from local government strategies and policies in which local governments have sought to establish themselves as leaders working with their communities within a pro-social environmental framing. The second form of this bundle of community engagement practices has been shaped by the rapid expansion of rooftop solar PV in the Australian residential sector. While the widespread adoption of this technology has proved helpful in assisting local governments to reach their ambitious emissions reduction targets it has been at the expense of the pro-social environmental values that informed local government strategies and policies. Rather, individualistic motivations, such as financial benefit for the household, have dominated local government climate change community engagement programmes focusing on rooftop solar PV. The final form of climate change community engagement practice bundles reflects emerging approaches that are currently being tested or considered by local governments.

If Australian local governments are keen to sustain their stated leadership role in responding to climate change, they need to be aware of what constitutes climate change community engagement practices, how they are influenced by external forces, such as the rise of rooftop solar PV, and how they must adapt accordingly. These include reaching new audiences not well served by the commercial residential rooftop solar PV market, such as renters and low-income households, testing new forms of mobilisation and even disrupting existing energy provision systems.

Alternatively, they can consider a shift away from a focus on such practices and draw on broader governance skills that can support the spread of rooftop solar PV with awareness that such an approach can be disruptive to other socio-technical structures, such as the electricity grid. While existing forms of community engagement practices may be easily adaptable for mobilising solar to new audiences, the role of disruptor will require re-thinking about how local government climate change community engagement practices are performed. Perhaps inevitably, becoming a disrupting agent will take on a political edge often missing from local government climate change community engagement practices. It may require identifying other actors that stand in the way of achieving an energy transition and consideration of how they may be overcome.

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#### Competing Interest

The authors declare no competing interests.

#### Author details

David Meiklejohn<sup>1</sup>  
E-mail: [david.meiklejohn@rmit.edu.au](mailto:david.meiklejohn@rmit.edu.au)  
ORCID ID: <http://orcid.org/0000-0002-8011-6745>  
Sarah Bekessy<sup>1</sup>  
E-mail: [sarah.bekessy@rmit.edu.au](mailto:sarah.bekessy@rmit.edu.au)  
ORCID ID: <http://orcid.org/0000-0002-0503-1979>  
Susie Moloney<sup>1</sup>  
E-mail: [susie.moloney@rmit.edu.au](mailto:susie.moloney@rmit.edu.au)  
<sup>1</sup> RMIT University, Melbourne, Australia.

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#### References

- Abrahamse, W., Steg, L., Vlek, C., & Rothengatter, T. (2005). A review of intervention studies aimed at household energy conservation. *Journal of Environmental Psychology*, 25, 273–291.
- Anti-Dumping Commission. (2015). *Alleged dumping of certain crystalline silicon photovoltaic modules or panels*. Canberra: Australian Government.
- Australian PV Institute. (2017). *Australian PV market since April 2001*. Retrieved May 5, 2015, from <http://pv-map.apvi.org.au/analyses>
- Aydin, E., Kok, N., & Brounen, D. (2015). Energy efficiency and household behavior: The rebound effect in the residential sector. *The Rand Journal of Economics*, 48 (3): 749–782.
- Balston, J., Kellett, J., Wells, J., Li, G., Gray, A., & Iankov, I. (2013). *Quantifying the costs of climate change on local government assets*. Gold Coast: National Climate Change Adaptation Research Facility.
- Bourdieu, P. (1977). *Outline of a theory of practice* (16th ed.). Cambridge: Cambridge University Press.
- Brimbank City Council. (2012). *Brimbank greenhouse reduction strategy 2013–2023*. Sunshine: Author.
- Bulkeley, H. (2000). Down to Earth: Local government and greenhouse policy in Australia. *Australian Geographer*, 31(3), 289–308. doi:10.1080/713612251
- City of Canterbury. (2012). *Environmental management plan 2012–15*. Campsie: Author.
- City of Charles Sturt. (2014). *Living green to 2020*. Woodville: Author.
- City of Darebin. (2009). *Darebin community climate change action plan*. Preston: Author.
- City of Fremantle. (2014). *One planet fremantle strategy*. Fremantle: Author.
- City of Moonee Valley. (2010). *City of Moonee Valley greenhouse strategy 2010*. Moonee Ponds: Author.
- City of Moreland. (2007). *Climate Action Plan (CAP) 2007–2012*. Coburg: Author.
- City of Moreland. (2014). *Zero carbon evolution*. Coburg: Author.
- City of Newcastle. (2011). *Newcastle 2020 carbon and water management action plan*. Author.
- City of Port Phillip. (2007). *Toward zero*. St. Kilda: Author.
- City of Port Phillip. (2011). *Greenhouse plan*. St. Kilda: Author.
- City of Whitehorse. (2009). *Energy action plan 2009–2014*. Nunawading: Author.
- City of Whittlesea. (2012). *Environmental sustainability strategy 2012–2022*. South Morang: Author.
- Climate Commission. (2013). *The critical decade: Australia's future - Solar energy*. Potts Point: Author.
- Coffs Harbour City Council. (2002). *Greenhouse action strategy*. Coffs Harbour: Author.
- Department of Transport. (2012). *LivingSmart households (Sustainability program) - Monitoring and evaluation (January 2012)*. Perth: Government of Western Australia.
- EAGA. (2017). *Solar savers*. Retrieved September 16, 2017, from <https://eaga.com.au/projects/solar-savers/>
- Essential Services Commission. (2015). *Victorian energy efficiency target scheme: Performance report 2014*. Melbourne: Victorian Government.
- Essential Services Commission of South Australia. (2015). *Residential energy efficiency scheme annual report 2014*. Adelaide: South Australian Government.

- Frankston City Council. (2012). *Carbon neutral action plan 2012–2016*. Frankston: Author.
- Fritze, J., Williamson, L., & Wiseman, J. (2009). *Community engagement and climate change: Benefits, challenges and strategies*. Melbourne: Department of Planning and Community Development.
- Hoppe, T., Graf, A., Warbroek, B., Lammers, I., & Lepping, I. (2015). Local governments supporting local energy initiatives: Lessons from the Best Practices of Saebeck (German) and Lochem (The Netherlands). *Sustainability*, 7, 1900–1931.
- Ingle, A., Moezzi, M., Lutzenhiser, L., & Diamond, R. (2014). Better home energy audit modelling: Incorporating inhabitant behaviours. *Building Research & Information*, 42(4), 409–421.
- International Association for Public Participation. (2014). *Public participation spectrum*. Retrieved December 5, 2015, from <https://www.iap2.org.au/resources/public-participation-spectrum>
- Irwin, J. (2014, September 12). *Darebin council approves special rate for Australian first solar saver scheme for pensioners*. *Northcote Leader*. Melbourne. Retrieved from <http://www.heraldsun.com.au/leader/north/darebin-council-approves-special-rate-for-australian-first-solar-saver-scheme-for-pensioners/story-fngle-nug-1227055309805>
- Kallies, A. (2016). Energy transitions, electricity markets and the law. *Workshop on Regulating the Energy Transition, Issues at the Intersection of Energy and Environmental Law*.
- Lindseth, G. (2004). The Cities for Climate Protection Campaign (CCPC) and the framing of local climate policy. *Local Environment*, 9(4), 325–336. doi:10.1080/1354983042000246252
- Macintosh, A., & Wilkinson, D. (2011). Searching for public benefits in solar subsidies: A case study on the Australian government's residential photovoltaic rebate program. *Energy Policy*, 39(6), 3199–3209. doi:10.1016/j.enpol.2011.03.007
- McNeill, J. (1997). Local government in the Australian federal system. In N. Marshall & B. Dollery (Eds.), *Australian local government: Reform and renewal* (pp. 17–39). Melbourne: Macmillan.
- Mey, F., Diesendorf, M., & MacGill, I. (2016). Can local government play a greater role for community renewable energy? A case study from Australia. *Energy Research & Social Science*, 21, 33–43. doi:10.1016/j.erss.2016.06.019
- Milman, O. (2014). *Melbourne councils band together to buy 100GWh of clean energy direct*. Retrieved from <https://www.theguardian.com/environment/2014/nov/18/melbourne-councils-band-together-to-buy-100gw-of-clean-energy-direct>
- Moreland Energy Foundation. (2014). *Zero carbon evolution*. Melbourne: Author.
- Morris, J., Marzano, M., Dandy, N., & O'Brien, L. (2012). *Lessons learned from interventions and evaluations*. Bristol: Forestry Commission.
- Moss, T., Becker, S., & Naumann, M. (2015). Whose energy transition is it, anyway? Organisation and ownership of the *Energiewende* in villages, cities and regions. *Local Environment*, 20(12), 1547–1563.
- Mountain, B., & Szuster, P. (2015). Solar, solar everywhere: Opportunities and challenges for Australia's rooftop PV systems. *IEEE Power and Energy Magazine*, 13(4), 53–60.
- Nicolini, D. (2012). *Practice theory, work, and organization: An introduction*. Oxford: Oxford University Press.
- Office of Environment and Heritage. (2015). *Government programs and financial assistance*. Retrieved March 11, 2016, from <http://www.environment.nsw.gov.au/households/government-programs.htm>
- Oreizi, D. (2016). Mandatory solar ordinance benefits the homeowner and the community. *Focus*, 12, 1.
- Powells, G., Bulkeley, H., Bell, S., & Judson, E. (2014). Peak electricity demand and the flexibility of everyday life. *Geoforum*, 55, 43–52.
- Robson, C. (2011). *Real world research: A resource for users of social research methods in applied settings* (3rd ed.). West Sussex: Wiley.
- Røpke, I. (2009). Theories of practice — New inspiration for ecological economic studies on consumption. *Ecological Economics*, 68(10), 2490–2497.
- Schatzki, T., Cetina, K. K., & Savigny, E. V. (2001). *The practice turn in contemporary theory*. London: Routledge.
- Schatzki, T. R. (1997). Practices and actions a wittgensteinian critique of Bourdieu and Giddens. *Philosophy of the Social Sciences*, 27(3), 283–308. doi:10.1177/00483931970270030
- Serrao-Neumann, S., Harman, B., Leitch, A., Crick, F., & Low Choy, D. C. (2011). *Planning for climate change adaptation: A review of current initiatives in Australia*. <http://anzaps.net/>. Retrieved from <http://www.98.griffith.edu.au/dspace/handle/10072/40787>
- Shove, E., Pantzar, M., & Watson, M. (2012). *The dynamics of social practice everyday life and how it changes*. London: SAGE Publications.
- Shove, E., & Spurling, N. (2013). *Sustainable practices: Social theory and climate change*. Abingdon: Routledge.
- Slocum, R. (2004). Consumer citizens and the cities for climate protection campaign. *Environment and Planning A*, 36(5), 763–782.
- Socialdata Australia. (2011). *Joondalup living smart households*. Perth: Government of Western Australia.
- Southerton, D., McMeekin, A., & Evans, D. (2011). *International review of behaviour change initiatives: climate change behaviours research programme*. Edinburgh: Scottish Government.
- Spotswood, F., Chatterton, T., Tapp, A., & Williams, D. (2015). Analysing cycling as a social practice: An empirical grounding for behaviour change. *Transportation Research Part F: Traffic Psychology and Behaviour*, 29, 22–33.
- State of Victoria. Local Government Act 1989 . (1989). Australia.
- Storey, H. (2012). *Local action for a low carbon future*. Sydney: Australian Centre of Excellence for Local Government.
- Sunshine Coast Council. (2016). *Sunshine Coast Solar Farm*.
- Sustainability Fund. (2012). *Talking my language final project report*. Melbourne: Victorian Government.
- Tilbury, D., Coleman, V., Jones, A., & MacMaster, K. (2005). *A National review of environmental education and its contribution to sustainability in Australia: Community education*. Canberra: Macquarie University.
- Urban EP (2016). *Solar rates business case phase 2 - Final business case report*. Clifton Hill: Author.
- UrbanTrans. (2008). *Stocktake and analysis of household behaviour change programs in victoria*. Melbourne: Department of Sustainability and Environment.

- Vare, P., & Scott, W. (2007). Learning for a change: Exploring the relationship between education and sustainable development. *Journal of Education for Sustainable Development*, 1(2), 191–198.
- Warde, A., Cheng, S.-L., Olsen, W., & Southerton, D. (2007). Changes in the practice of eating: A comparative analysis of time-use. *Acta Sociologica*, 50(4), 363–385.
- Wellington Shire Council. (2015). *Environmental sustainability 2011–2015 strategy*. Sale: Author.
- Wollongong City Council. (2014). *Environmental sustainability strategy 2014–2022*. Wollongong: Author.
- Zahedi, A. (2010). A review on feed-in tariff in Australia, what it is now and what it should be. *Renewable and Sustainable Energy Reviews*, 14(9), 3252–3255.



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