

ARE REAL ESTATE AGENTS ADEQUATELY EQUIPPED TO MARKET ENERGY EFFICIENCY IN HOUSING? A STUDY OF GREATER MELBOURNE

NEVILLE HURST* and DULANI HALVITIGALA

School of Property, Construction and Project Management, RMIT University, Australia

ABSTRACT

Globally, many cities encompass aging housing stock and a large proportion of these were constructed prior to the introduction of energy efficiency building standards and/or energy performance declaration requirements. As housing is a major contributor to greenhouse gas emissions, it is important to take measures towards reducing these adverse emissions.

One element often overlooked in the quest more energy efficient housing is that of the market facilitator, namely the real estate agent. Their unique role places them in a position of influence and information exchange when dealing with house sales. However, little is known about their understanding of and engagement with energy efficient technologies.

Arguably, the real estate agent can play a significant role in imbuing general acceptance of house energy efficient technologies into housing markets, something being aspired to but yet not achieved. This research investigates what information about energy efficient technologies real estate agents advertise and their reasoning for doing so. In particular, it investigates what real estate agents know and understand about house energy efficient technologies. Although elements of this work have already been promulgated, the individual real estate agent perspective has not. This paper presents the results of in-depth semi-structured interviews with real estate agents across suburban Melbourne, Victoria's capital, and further highlights these findings through empirical advertising data.

Findings show real estate agents will highlight different energy efficient technologies across Melbourne's suburban areas and the variance appears to be influenced by household income and retrofitted housing stock. Further, it is found that real estate agents' engagement with house energy efficient technologies is restricted by their limited understanding of these technologies and constrained by their rigorous training regarding consumer laws and their incumbent responsibilities thereof.

Understanding what influences real estate agent language choice when advertising, potentially assists augmenting government objectives for the newly introduced residential efficiency scorecard through further highlighting house energy efficient technologies.

Email contact: neville.hurst@rmit.edu.au

INTRODUCTION

Real estate agents play a significant role in the exchange of real estate in Australia, particularly in the residential property sector. Most people when seeking houses to purchase, whether for occupation or investment, will invariably interact with one or more real estate agents in their search process. Because of this reality, agents are able to exert influence on both house sellers and buyers. Arguably it is their role to do so.

Many professions who interact with the public are formally trained and this training is generally undertaken prior to engaging with clients. Therefore, these people are appropriately qualified to provide the advice and/or services sought. Professions such as medicine, accounting, law etc. all fittingly require high levels of training, yet this level of training is not so for real estate agents, even though they deal with what is normally most extensive

financial commitment a person will make in their life, the purchase of a house. Whilst it is not generally considered appropriate that agents necessarily undertake the extent of training these other professions do, it is nonetheless fitting that training be undertaken. Some do however argue a case for graduatisation for residential sales consultants (Tholen et al 2016). In Australia this is certainly the case. What is being questioned in this paper, is the form of training prescribed, both at the entry level and for licencing, necessary to manage or own a business. The argument underlying this discussion is the increasing need for more energy efficient housing, thus requiring professionals working in the housing sector to be appropriately skilled in working with such housing.

Housing in Australia emits a significant amount of greenhouse gas emissions and is largely considered inefficient in terms of energy efficiency (Wang, Chen & Ren 2011). As a result, many governments globally have introduced a range of regulations, bespoke to their climatic region, to impose or encourage mechanisms that cause people to build or retrofit houses with energy efficient technologies to reduce carbon emissions resulting from in-use behaviours (Boza-Kiss, Moles-Grueso & Urge-Vorsatz 2013). Australia also has introduced numerous strategies to ameliorate effects of carbon emissions.

In Australia, regulations have been introduced to building codes that address construction of new house and extensions to existing. These codes are customised to meet the challenges and stresses of the identified climatic zone within which the building sits (Hurst 2012). In Victoria, a more recent initiative from the Victorian government is the introduction of residential energy efficiency scorecard (DELWP 2018). This scorecard is currently a voluntary system although argument has emerged to prosecute a case that such a scheme should be mandatory (Aliento 2018). This scheme appears to present the house owner with considerable detail about the house's energy performance and options to improve the existing performance. Such initiatives are constructive and ought to be encouraged. Whilst such a scheme is a positive one, the success of voluntary schemes is open to debate as many posit that only those who benefit directly are likely to avail themselves to them (Pears 2018). All this of course is overlooking one important element of the housing landscape and that is, even if the house is considered to be highly energy efficient and is offered for sale, whether the real estate agents are sufficiently skilled and/or qualified to recognise the benefits of such technologies and whether they properly convey their benefits to prospective buyers. Therefore, the main objectives of this paper are:

1. To examine RE agents' current level of understanding of energy efficient features in residential properties
2. To provide recommendations to enhance their understanding

HOUSING WITHIN A CHANGING WORLD

Scientific evidence is indicating that the impact of human activity has had a profound effect upon the environment and therefore the need to arrest further damaging behaviours is essential (Stern and Taylor 2007; Garnaut 2011). Buildings, which include housing, are major contributors to environmental damage (Saman 2013) and therefore justify investigation how to best mitigate their effects upon the ecosystem in which they exist. Throughout the modern world, efforts are being made to design and construct housing that has a reduced impact on the environment (Baek & Park 2012). Designing and building energy efficient houses require specific knowledge and expertise (Marszal et al 2011; Mills & Schleich 2012). One key element for successful design is that energy efficient housing needs to be harmonised to the environment in which it is located in order to attain maximum benefit from the technologies it utilises (Hernandez & Kenny 2010; Li, Yang & Lam 2013).

Throughout the world much of the existing housing stock was built prior to the understanding of the relationship between anthropogenic activity and climate change, although there is evidence of various customisations of housing to adapt to the encompassing climate (Ionescu et al 2015). Whilst many countries have and continue to develop policies and regulations to increase house energy efficiency standards through building codes and other mechanisms, a wide array of energy performance standards exists (OECD/IEA 2008). Uniformity is not a characteristic of the housing market. This means professionals dealing with this housing form, such as real estate agents, need to understand the nuances that exist within them. This in turn raises the question about their ability to engage with these nuanced technologies within varying market types and characteristics.

Housing markets are notable for their localised nature. For example, real estate agents' qualifications, practices, codes of conduct etc. vary across regions (Benjamin, Jud & Sirmans 2000). In many ways this is to be expected. Housing itself is considered by researchers and practitioners alike to reflect society, social expectations and values (Ruonavaara 2018). This anthropological trait will invariably lead to sub-markets displaying distinguishable social and demographic characteristics that influence the way people perceive the region. Thus, a self-perpetuating phenomenon often emerges. In other words, people of similar interests, values, cultural likeness and often socio-economic standing come together and begin to "define" the nature of the sub-market (Perkins, Thorns & Newton 2008; Zinas & Jusan 2012; Van Ham 2012). An economic descriptor of this phenomenon is known as the "Veblen effect", named after Thorstein Veblen who identified the concept of status seeking when making consumption choices, and was first observed in 1899.

This market characteristic is highlighted here to demonstrate the need for real estate agents to be cognisant of very different markets in their service provision to clients. To this, agents must also understand the emergence of energy efficient house technologies and how they are likely to impact transactions and buyer attitudes in order to maximise outcomes for their client, usually the seller. Principal-agent theory suggests agents will act in a way to maximise their personal benefit, even if the action has the potential not to provide maximum beneficial outcome for the principal, in this case the seller (Clauret & Daneshvary 2008). Therefore, when marketing houses, this theory posits that agents are likely to promote those characteristics that are mostly likely to secure a successful outcome. Bevan & Lu (2010) found internal house sales teams did not normally promote energy efficient technologies in the belief they would divert buyer attention from other, more traditional, characteristics. This suggests agents are acting to maximise personal gain and as a result, buyers are potentially receiving minimal information regarding the benefits of house energy technologies. Wong et al (2018) argued that limited information about such technologies was in fact being given to buyers and this was affecting them. The lack of detailed knowledge being provided was not helping buyers to make informed choices about energy efficient house characteristics. In this regard, perhaps agents are behaving as expected. That is, achieving desirable outcomes for the sellers and in doing so, marketing houses outside of traditional practices is deemed both unnecessary and too risky for this objective.

Real estate agents have not enjoyed the most enviable of reputations. They have been described as being part of an 'unmentionable profession' (Rathcliffe 1978 p.313), as the most 'despised people on earth' (Hill 2002) and having a 'severe image' problem (Dietrich & Holmes 1991). Many people reading this article may share similar views. However, what is known, much of the work undertaken by agents is not observed by the public, probably leading to the impression they do little to earn their fees. Notwithstanding these perceptions, the services of real estate agents are sought by the selling and buying public. In many

countries' qualification requirements have been introduced in the belief these will reduce fraudulent and bad behaviours by real estate agents. The theory being potential loss of licence will deter such behaviours (Obeng-Odoom 2011). However, this notion is being challenged in some parts of the world with claims that regulation leads to increased costs to users of agency services and does not necessarily lead to reductions of claims for bad practices (ibid). What is certain is that agents must be capable of properly promoting their client's property to achieve optimum outcomes and current thinking in Australia is such training is necessary to protect public interests.

THE EDUCATIONAL ENVIRONMENT FOR VICTORIAN ESTATE AGENTS

This research was conducted in Victoria, Australia's most densely populated state (ABS 2018). In this state, as with all Australian jurisdictions, real estate agents are required to undertake formal training prior to entering the industry. In Victoria further, formal training is required should they wish to progress to management of proprietorship of a business (Estate Agents Act 1980 s14).

The syllabus delivered to real estate agents is derived from a broader suite of training resources known colloquially as 'Training Packages'. These 'packages' are a set of nationally endorsed standards and qualifications and contain assessment criterion that aim to ensure uniformity of outcomes between training providers (ASQA n.d.). Individual training providers prepare their own learning resources. They can also, within strict guidelines, choose which units of competency (subjects or courses) they wish to 'package' together to form the qualification. In the case of Victoria, these units of competency are determined by Consumer Affairs Victoria, a government agency.

A review of the training packages selected for RE agent qualification suggests there is a significant orientation towards consumer protection within the content. There is no content that discusses house energy efficient technologies. This means unless agents make personal efforts, they are unlikely to be aware of the benefits and/or characteristics of such housing. This research aimed to investigate what real estate agents do know about energy efficient housing and whether or not they felt adequately knowledgeable and confident to discuss the nuances of such houses with prospective buyers.

METHODOLOGY

The research employed a sequential multi-method research approach which consisted of the quantitative approach followed by the qualitative approach (Creswell, 2003). The first stage of data analysis involved the analysis of all real estate advertisements that were used to promote detached residential properties within the Melbourne metropolitan region between July 2008 and March 2015. These advertisements were provided by the Real Estate Institute of Victoria (REIV); The REIV represents 78% of practising real estate agents within Victoria (J. Mitchell, Membership Manager interview 3 August 2015). The 22% who are not members are typically specialist agents whose businesses do not engage in house sales. Given the extensive nature of the dataset, it is therefore considered the dataset represents the population of house sales made by real estate agents in the Melbourne metropolitan area. The dataset used in this study consisted of 155,780 advertisements. The advertisements were audited to examine the amount of energy efficient characteristics stated in each advertisement. Energy efficient characteristics were categorised into four main categories – solar technology, design related, altruistic (intangible), and financial-related characteristics. Table 1 illustrates related keywords and phrases for each main category.

Table 1: Energy efficiency variables examined in advertisements and their descriptors

Variable	Word descriptors (words that SPSS looked for within the advertisement)
Solar technology characteristics	Solar panels, Solar power, Solar hot water, Solar electricity, Solar power, Solar boosted, Solar electric, solar energy, solar enhanced, solar heated hot water, solar heating, solar hot water, solar HWS, solar power, solar system, solar, photovoltaic, water tank, solar boosted, LED light, low volt light
Design characteristics	Eglass, smart glass, double glaze, miglas, grey water, recycled water, insulation, north aspect, energy rated, energy rating, energy passive, sustainable energy, sustainable design, solar design, solar home, solar passive, solar principals, recycled material, hydronic, passive energy, passive design, low energy design
Altruistic characteristics	Eco, green tech, green builder, eco conscious, eco design, eco efficient, eco features, ecofriendly, eco home, eco technologies, eco sustainable, eco waste, environmental, environmentally conscious, environmentally economical, environmentally efficient, environmentally friendly, environmentally green, environmentally minded, environmentally responsible, environmentally sensitive, environmentally sound, environmentally sustainable, greenhouse gas
Financial-related characteristics	Energy report, energy conscious, energy conservation, energy consumption, energy efficiency, energy efficient, energy save, energy saving

The second stage employed in-depth interviews with nine real estate agents in order to further examine their level of understanding of energy efficient characteristics in residential properties and added value of such features to property values and their selling prices. Semi-structured, in-depth interviews with them were regarded as the most effective data collection method as they enabled to collect in-depth information on real estate agents' perceptions, experiences and advertising strategies related to energy efficiency. The number of key informants interviewed was determined by saturation, when the themes emerged became repetitive (Kumar, 2005). Interview participants were selected based on their relevant expertise, experience and the ability to provide the information that was sought. A number of topics were covered in the interview protocol including; their professional background, awareness of energy efficiency features and associated benefits, reasons to promote/ not to promote energy efficiency features, common energy efficiency features advertised and location of energy efficiency features within the advertisement. The use of quantitative and qualitative methods in this research provided more inclusive outputs than may have been obtained by utilising a single method approach.

RESULTS AND DISCUSSION

The research focus was first placed on examining the appearance of previously identified energy efficient keywords and phrases in the advertisements for dwellings for sale. The results are illustrated in Table 2.

**TWENTY FIFTH ANNUAL PACIFIC-RIM REAL ESTATE SOCIETY CONFERENCE
MELBOURNE, AUSTRALIA, 14-16 JANUARY 2019**

Table 2 – Appearance of energy efficient words (all categories)

No. of energy efficient keywords appearing in a single advertisement (all categories)	% of advertisements within data set with one or more keywords appearing in a single advertisement (all categories)
Zero (no keywords)	81.1%
1	15%
2	2.8%
3	0.7%
4	0.2%
5	0.1% (128 advertisements in total)
6	0.00* (32 advertisements in total)
7	0.00* (10 advertisements in total)
8	0.00* (3 advertisements in total)

* Beyond the 2 decimal place limit

The results indicate that the majority of advertisements, 81.1%, do not have any energy efficient keywords appearing within them. Only 15% of the dataset have advertisements with a single keyword appearing while this falls to 2.8% or under for advertisements with two or more keywords appearing within them. This suggests that real estate agents are not selling the environmental message with language that highlights the significance of the technologies.

In the next step of the analysis, the dataset was examined to identify the presence of energy efficient characteristics under the main categories – solar technology, design, altruistic and financial-related characteristics. Table 3 and Figure 1 present categorised outputs of keywords appearing in the dataset over the time frame of the research.

Table 3 – Appearance of keywords in all advertisements (by category)

Sale Year Quarter	% of advert with altruistic words	% advert with design characteristic words	% of advert with technology words	% of advert with Parsimonious words
200803	0.3%	12.1%	4.7%	0.5%
200804	0.3%	10.1%	5.8%	0.3%
200901	0.3%	9.5%	6.8%	0.4%
200902	0.3%	10.5%	7.2%	0.3%
200903	0.3%	9.1%	7.9%	0.3%
200904	0.3%	9.4%	8.4%	0.4%
201001	0.4%	9.1%	8.2%	0.3%
201002	0.3%	9.3%	8.8%	0.4%
201003	0.5%	8.8%	9.7%	0.4%

**TWENTY FIFTH ANNUAL PACIFIC-RIM REAL ESTATE SOCIETY CONFERENCE
MELBOURNE, AUSTRALIA, 14-16 JANUARY 2019**

201004	0.3%	9.6%	9.7%	0.4%
201101	0.5%	8.8%	10.7%	0.5%
201102	0.3%	9.4%	10.6%	0.5%
201103	0.5%	8.4%	9.7%	0.5%
201104	0.3%	10.6%	10.2%	0.5%
201201	0.7%	9.9%	10.5%	0.6%
201202	0.4%	10.4%	9.5%	0.3%
201203	0.6%	9.2%	9.6%	0.5%
201204	0.4%	8.9%	9.5%	0.5%
201301	0.4%	8.3%	11.1%	0.5%
201302	0.3%	9.3%	10.1%	0.5%
201303	0.3%	9.7%	11.2%	0.5%
201304	0.3%	11.2%	11.9%	0.4%
201401	0.3%	10.6%	13.3%	0.6%
201402	0.5%	11.3%	13.0%	0.6%
201403	0.4%	11.4%	12.7%	0.5%
201404	0.2%	12.5%	13.6%	0.5%
201501	0.3%	11.2%	14.5%	0.5%

This suggests a conservative measure by real estate agents towards the inclusion of energy efficient technology lexis within advertising. Real estate agents appear to be seeking to exploit when the opportunities present themselves in the market. For example, with regard to technology keywords, the steady increase in frequency of appearances of solar words suggests an increasing appetite by buyers for this technology.

In order to further examine whether real estate agents sufficiently engage with energy efficient language when advertising, semi-structured, in-depth interviews with them attempted to examine their level of knowledge of housing energy efficient features. This was done by asking open ended questions. The lead question for this was: "What do you understand about the term energy efficient housing?". Their responses were varied in expression and depth, but in all cases the agent's understanding was virtually non-existent or largely limited to solar technologies. In all but one interview, agents had limited knowledge on the added value of energy efficient characteristics to the properties' values and prices. As explained by one interviewee:

"Personally, I don't know enough about it, but I don't think it offers that much, because I'm just a little bit worried about what it costs to install certain things, solar heating, solar hot water, whatever it may be? And probably because of ignorance, I don't know how much it may save in energy costs. But I personally think that maybe the cost of installation might outweigh the energy efficiency." (Interviewee 2)

The only interviewee who demonstrated some knowledge on energy efficient characteristics admitted that it came from a personal interest resulting from meeting an environmentally committed seller. In detailing his understanding, he was able to state the purpose of obvious technologies such as solar and water recycling systems and more obscure elements, such as orientation of design. The lack of knowledge about house energy efficient design and technologies from the agents interviewed was a consistent theme that emerged from corpus of data. In most cases, the agents paused for some time to think about a suitable answer to the question. It was not a spontaneous response. This lack of knowledge and hesitancy in response suggest energy efficient technology language is neither front of their mind, nor a part of common industry dialogue.

The more well-known technology and in nearly all cases first mentioned was solar. This technology has received considerable exposure through merchant advertising and the now obsolete Australian government rebate scheme that ran from 2000 to 2009 (MacIntosh and Wilkinson 2010). When asked where they acquired their knowledge of energy efficient technologies, the real estate agents' responses varied. In two cases, the agent either had installed the technology in their own home or had a family member do so. Other technology forms, such as double-glazed windows systems, insulation for example, were mentioned only as an afterthought. Over half of real estate agents (five cases) admitted they had not paid any attention to house energy efficient technologies until a prospective vendor had made a point of the benefits. As explained by one interviewee:

"I started here about four years ago and one of the first homes I listed was a passive solar home. And when I went out there, I said, can you tell me a bit about the home before I come out? And she'd tell me it had this amount of bedrooms and it is passive solar built. And there was a real strong emphasis in what she was saying. And I thought, OK, I've got an understanding, but I better go do some research because me knowing about this is obviously going to be important to her. And that's when I sort of learned a bit about what it was." (Interviewee 6)

This highlights the reactive nature of agency practice and the commercial motivation of agents to demonstrate to their prospective clients they are up-to-date with all matters relating to housing markets (Levitt and Syverson 2008). Further, this need for self-directed learning regarding such technological developments highlights a weakness in professional development offered by the REIV to its members.

From this it appears agents have little or no incentive to include energy efficient technologies in advertisements, although they do. When asked: “Do you include energy efficient technology in the advertisement if it exists in the house?” The response in each case was ‘yes’, but the motivation was not for expectation that it would appeal to buyers but rather, to please the seller and perhaps highlight a point of difference, either by the agent or the seller. This was confirmed by one interviewee saying he advertises energy efficient characteristics *‘honestly, it’s probably to keep the vendor happy’* (Interviewee 3).

The interviewees were asked in what position of the advertisement they would include energy efficient characteristics if they are going to promote them. Such technologies would be listed within the body of the advertisement without any given prominence. This emphasises the phenomenon of real estate agents tending to include energy efficient technologies in advertisements but without providing emphasis to highlight the benefits. Overall, agents did not see energy efficiency technologies becoming such that it would gain equal or greater relevance to the buyers than location or, more traditional buyer requirements such as, accommodation.

No formal training in regard to energy efficient housing is available to practicing agents either from their employers or professional body. As one real estate agent stated: “.....*it seems to be we are left a little bit behind, especially with the established house*” (Interviewee 1), in reference to how knowledge about energy technologies is attained. This circumstance, therefore, requires agents to be personally motivated to seek and integrate knowledge about house energy efficient systems and how to best promote these into their professional skill set. However, more pragmatic agents may not be as inclined to make such efforts until the appetite for energy efficient technologies is highly visible in housing markets. Overall, the lack of in-depth understanding seems to be restraining agents from use of hyperbole to highlight the benefits to potential buyers.

CONCLUSION AND RECOMMENDATIONS

The objective of this paper was to investigate real estate agents’ understanding of energy efficient characteristics in residential properties and whether they adequately advertised such features within the advertisements. The research analysed all housing advertisements in the Melbourne metropolitan area during the period of 2008 – 2015 followed by nine in-depth interviews with real estate agents.

The findings suggest that real estate agents are advertising housing energy efficiency technologies where they exist, however the agents themselves state they have very little practical or technical understanding of these technologies. Lack of such knowledge would understandably restrict how agents promote these technologies. Without the confidence to highlight benefits and/or performances of energy efficient technologies, it is safer for agents to limit what is said and leave it to the reader to make inferred judgement. Such a situation invariably leads to the agents simply listing these technologies within advertisements without actively promoting them. Possible reason for this is the extensive exposure to consumer law and regulations in their training causing them to be apprehensive in making claims about the technologies’ ability to contribute to housing energy performance. Real estate agents’ lack of

TWENTY FIFTH ANNUAL PACIFIC-RIM REAL ESTATE SOCIETY CONFERENCE
MELBOURNE, AUSTRALIA, 14-16 JANUARY 2019

knowledge on energy efficient characteristics can be attributed to the lack of formal training and/or continuing professional development.

This research highlights the importance of providing formal training to real estate agents on energy efficient housing features and their possible impacts on house prices and values. The creation of new units of competencies for inclusion within the training program of real estate agents is rather lengthy and complex one. This in itself should not prohibit steps being made towards the development of such a unit, however the business case for this may be, at least initially, hard to prosecute. Therefore, consideration should be given to the inclusion of content regarding energy efficient technologies into an existing unit of competency. After reviewing the Certificate IV in Property Services (Real Estate), the mandated qualification for fully licenced RE agent, the unit of competency titled “CPPDSM4018A Prepare and Present Property Reports”, which addresses building styles and techniques, was considered as the appropriate unit to include content discussing house energy efficient technologies. This may require extra delivery hours to the course. In terms of action to carry this proposal forward, regulatory bodies, in this case Consumer Affairs Victoria, should be presented with evidence and recommendations that propose these amendments.

REFERENCES

- Australian Bureau of Statistics (ABS) 2018, *Regional Population Growth, Australia, 2016*, viewed 8th September 2018, <http://www.abs.gov.au/ausstats/abs@.nsf/Previousproducts/3218.0Main%20Features752016?opendocument&tabname=Summary&prodno=3218.0&issue=2016&num=&view=>
- Australian Skills quality Authority, Australian Government n.d., viewed 10th October, 2018 <https://www.asqa.gov.au/>
- Aliento, W. 2018, Victoria's energy efficiency scorecard: Good. Now make it mandatory, *The fifth estate*, viewed 8th September 2018, <https://www.thefifthestate.com.au/innovation/residential-2/victorias-energy-efficiency-mandatory/>
- Baek, C-H & Park, S-H 2012, 'Changes in renovation policies in the era of sustainability', *Energy and Buildings*, vol. 47, pp. 485-96.
- Benjamin, JD, Jud, GD & Sirmans, GS 2000, 'What do we know about Real Estate Brokerage?', *Real Estate Research*, vol. 20, no. 1, pp. 5-30.
- Bevan, W & Lu, S-L 2013, 'Green marketing in housing: reality or rhetoric?', *Management*, vol. 1243, p. 1252.
- Boza-Kiss, B, Moles-Grueso, S & Urge-Vorsatz, D 2013, 'Evaluating policy instruments to foster energy efficiency for the sustainable transformation of buildings', *Current Opinion in Environmental Sustainability*, vol. 5, no. 2, pp. 163-76.
- Clauret, TM & Daneshvary, N 2008, 'Principal-agent conflict and broker effort near listing contract expiration: The case of residential properties', *Journal of Real Estate Finance and Economics*, vol. 37, no. 2, pp. 147-61.
- Clean Energy Regulator, *Australian Government Annual Reports, 2016*, viewed 1st September, 2018, <http://www.cleanenergyregulator.gov.au/About/Accountability-and-reporting/Annual-Reports>
- Creswell, J. 2003, *Research design: Qualitative, quantitative and mixed methods approaches* (2nd ed.). Thousand Oaks, CA: Sage Publications.
- Dietrich, M. and Holmes, P. (1991) Financial institutions and the estate agent's industry in the 1980s, *Service Industries Journal* 11, pp. 481–490.
- Department of Environment, Land, Water and Planning (DELWP) 2018, *Victorian Residential Energy Scorecard*, viewed 8th September 2018, <https://www.energy.vic.gov.au/energy-efficiency/residential-efficiency-scorecard>
- Estate Agents Act 1980 (Vic) s14*
- Garnaut, R. 2011, *The Garnaut Review 2011: Australia in the Global Response to Climate Change* (Vol. 9781107691681). Cambridge: Cambridge University Press.
- Hernandez, P & Kenny, P 2010, 'From net energy to zero energy buildings: Defining life cycle zero energy buildings (LC-ZEB)', *Energy and Buildings*, vol. 42, no. 6, pp. 815-21.
- Hill A. 2002, You'll be one of the most despised people on earth, *The Observer* 7 July 2002, viewed 13th October 2018 <http://www.guardian.co.uk/money/2002/jul/07/firsttimebuyers.property>

**TWENTY FIFTH ANNUAL PACIFIC-RIM REAL ESTATE SOCIETY CONFERENCE
MELBOURNE, AUSTRALIA, 14-16 JANUARY 2019**

- Hurst, N 2012, 'Energy efficiency rating systems for housing: an Australian perspective', *International Journal of Housing Markets and Analysis*, vol. 5, no. 4, pp. 361-76.
- Ionescu, C, Baracu, T, Vlad, G-E, Necula, H & Badea, A 2015, 'The historical evolution of the energy efficient buildings', *Renewable and Sustainable Energy Reviews*, vol. 49, pp. 243-53.
- Kumar, R. 2005, *Research Methodology: a step-by-step guide for beginners* (2nd ed.). New South Wales: Pearson Longman.
- Levitt, SD & Syverson, C 2008, 'Market distortions when agents are better informed: The value of information in real estate transactions', *Review of Economics and Statistics*, vol. 90, no. 4, pp. 599-611.
- Li, DHW, Yang, L & Lam, JC 2013, 'Zero energy buildings and sustainable development implications – A review', *Energy*, vol. 54, pp. 1-10.
- Macintosh, A & Wilkinson, D 2010, 'The Australian Government's solar PV rebate program', *Policy Brief*, no. 21.
- Marszal, AJ, Heiselberg, P, Bourrelle, JS, Musall, E, Voss, K, Sartori, I & Napolitano, A 2011, 'Zero Energy Building – A review of definitions and calculation methodologies', *Energy and Buildings*, vol. 43, no. 4, pp. 971-9.
- Mills, B & Schleich, J 2012, 'Residential energy-efficient technology adoption, energy conservation, knowledge, and attitudes: An analysis of European countries', *Energy Policy*, vol. 49, no. 0, pp. 616-28.
- Obeng-Odoom, F 2011, 'Real Estate Agents in Ghana: A Suitable Case for Regulation?', *Regional Studies*, vol. 45, no. 3, pp. 403-416.
- OECD/IEA 2008, *Energy Efficiency Policy*, International Energy Agency, retrieved 30th June 2012, http://www.iea.org/papers/2008/ee_recommendations_brochure.pdf
- Pears, A. 2018, "Victoria's energy efficiency scorecard: Good. Now make it mandatory", *The fifth estate*, viewed 8th September 2018, <https://www.thefifthestate.com.au/innovation/residential-2/victorias-energy-efficiency-mandatory/>
- Perkins, HC, Thorns, DC & Newton, BM 2008, 'Real estate advertising and intraurban place meaning: real estate sales consultants at work', *Environment and Planning A*, vol. 40, no. 9, pp. 2061-2079.
- Ratcliffe J. 1978, *An Introduction to Urban Land Administration*. The Estates Gazette Ltd, London.
- Ruonavaara, H 2018, 'Theory of Housing, From Housing, About Housing', *Housing, Theory and Society*, vol. 35, no. 2, pp. 178-92.
- Saman, WY 2013, 'Towards zero energy homes down under', *Renewable Energy*, vol. 49, pp. 211-5.
- Scarpa, R & Willis, K 2010, 'Willingness-to-Pay for Renewable Energy: Primary and Discretionary Choice of British Households' for Micro-generation Technologies', *Energy Economics*, vol. 32, no. 1, pp. 129-36.
- Stern, N., & Taylor, C. 2007, Economics. Climate change: Risk, ethics, and the Stern Review. *Science* (New York, N.Y.), 317(5835), 203-4.
- Tholen, G, Relly, SJ, Warhurst, C & Commander, J 2016, 'Higher education, graduate skills and the skills of graduates: the case of graduates as residential sales estate agents', *British Educational Research Journal*, vol. 42, no. 3, pp. 508-23.
- Van Ham, M 2012, 'Economics of Housing Choice', in SJ Smith (ed.), *International Encyclopedia of Housing and Home*, Elsevier, San Diego, pp. 42-6.
- Wang, X, Chen, D & Ren, Z 2011, 'Global warming and its implication to emission reduction strategies for residential buildings', *Building and Environment*, vol. 46, no. 4, pp. 871-83.
- Zinas, BZ & Jusan, MBM 2012, 'Housing Choice and Preference: Theory and Measurement', *Procedia - Social and Behavioral Sciences*, vol. 49, pp. 282-292.