



School of Natural
Built Environments

University of
South Australia

How public and policy could be better engaged in climate change adaptation

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Research objectives

- ❖ Investigating solutions to reduce the disparity between the public's awareness/concern and behavioral changes for a low carbon living
- ❖ developing measurements of behavioral change in the context of social, environmental and economic considerations
- ❖ providing suggestions for carbon emission reducing policy making

3 Preliminary Studies

- ❑ Study 1 analysing residential electronic appliance choices and energy consumption behaviour
- ❑ Study 2 investigating residents' perceptions on domestic energy consumption
- ❑ Study 3 exploring residents' opinions on how to efficiently convert to a low carbon lifestyle

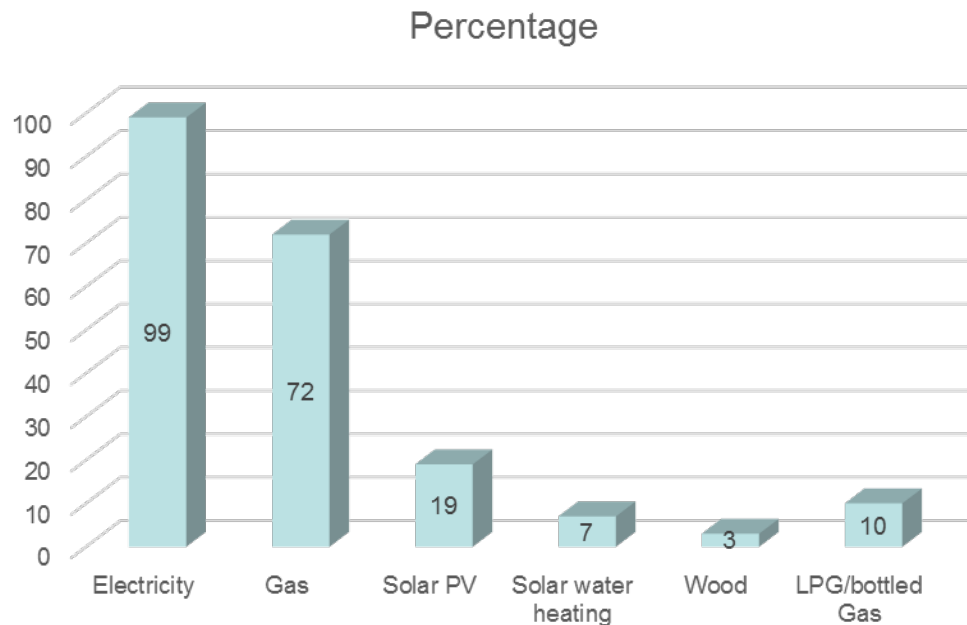


Data and findings

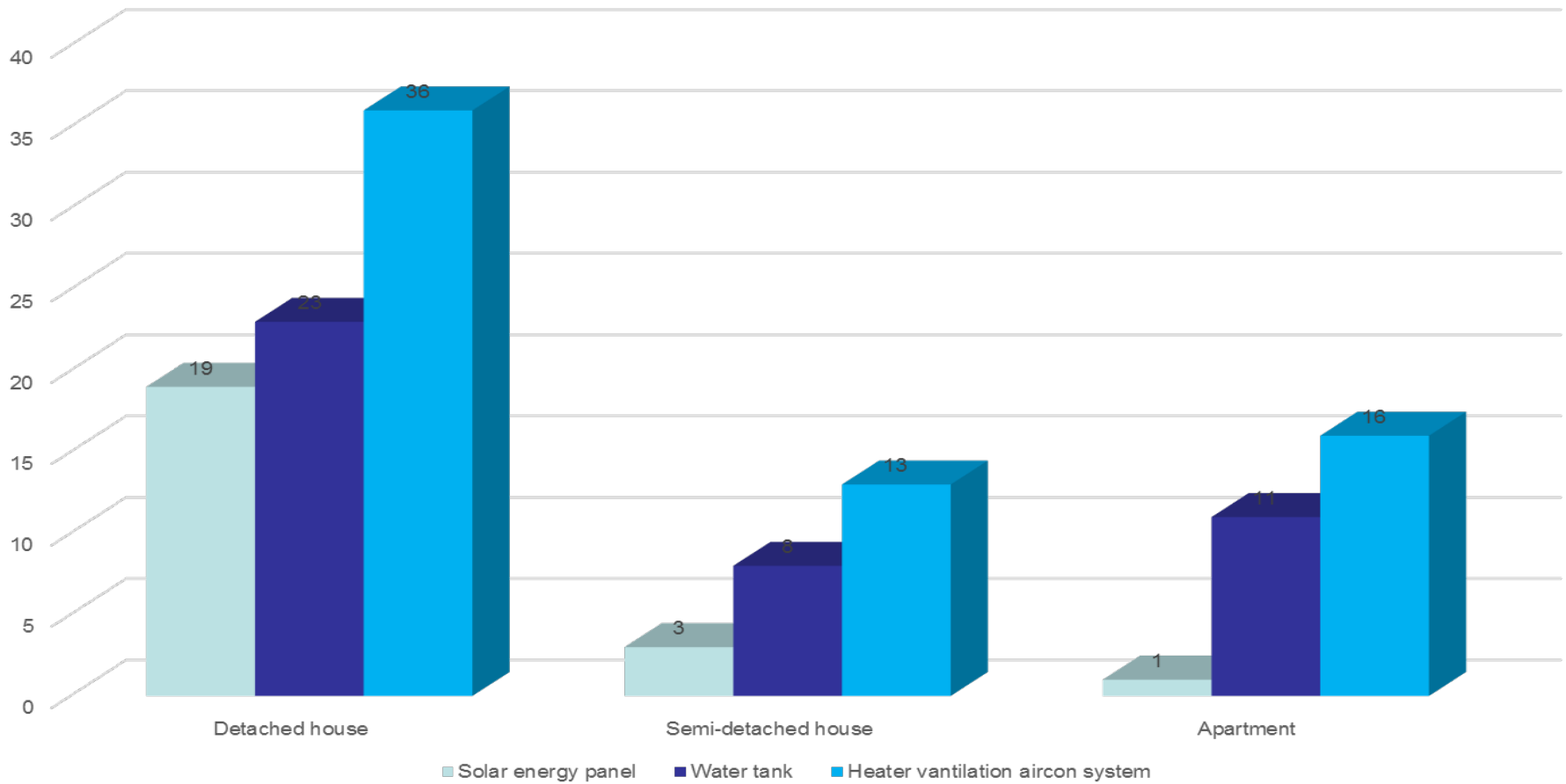
Study 1: Residents' electronic appliance choices and energy consumption behaviour

Data collection method: using an online survey method, there were 100 questionnaires received.

The bar chart shows the energy resources used of the respondents



Some energy saving appliances used in the household



Findings: There was only a limited level of energy saving appliance usage. The study shows that residents' choices and preferences play an important part in domestic energy consumption levels.



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Data and findings

Study 2: Residents' perceptions on electronic appliance choices and energy consumption behaviour. Data collection method: using an online survey method, there were 40 questionnaires received.

	Very important (5)	Percentage (%)	Important (4)	Percentage (%)	Neutral (3)	Percentage (%)	Unimportant (2)	Percentage (%)	Very unimportant (1)	Percentage (%)	Average
Selection of residential location	12	30	13	32.5	13	32.5	3	7.5	0	0	31.4
Renewable energy	13	32.5	15	37.5	9	22.5	3	7.5	0	0	31.6
Natural resources	6	15	15	37.5	10	25	7	17.5	2	5	27.2
Shared car ownership and driving	14	35	17	42.5	5	12.5	3	7.5	1	2.5	32
Energy efficient car	11	27.5	8	20	16	40	5	12.5	0	0	29
Electric car	11	27.5	11	27.5	13	32.5	5	12.5	0	0	29.6
Pre-planned travel route	11	27.5	20	50	9	22.5	0	0	0	0	32.4
Double glazing	6	15	9	22.5	12	30	11	27.5	2	5	25.2
Carbon dioxide monitoring	4	10	13	32.5	10	25	11	27.5	2	5	25.2
Energy efficient lighting	15	37.5	18	45	6	15	1	2.5	0	0	33.4
Sensor controlled air-conditioner	8	20	18	45	10	25	4	10	0	0	30
Rain water hydraulic system	7	17.5	18	45	14	35	1	2.5	0	0	30.2
Solar hot water	7	17.5	17	42.5	8	20	7	17.5	1	2.5	28



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Data and findings

Study 2: Residents' electronic appliances choices and energy consumption behaviour

Data collection method: using online survey method, there were 40 questionnaires received.

Findings: The recognition and awareness of the effects of behavioural change are relatively high, which coincides with some recently well demonstrated behavioural change schemes, such as the smart travel plan and 'GoGet Car'.



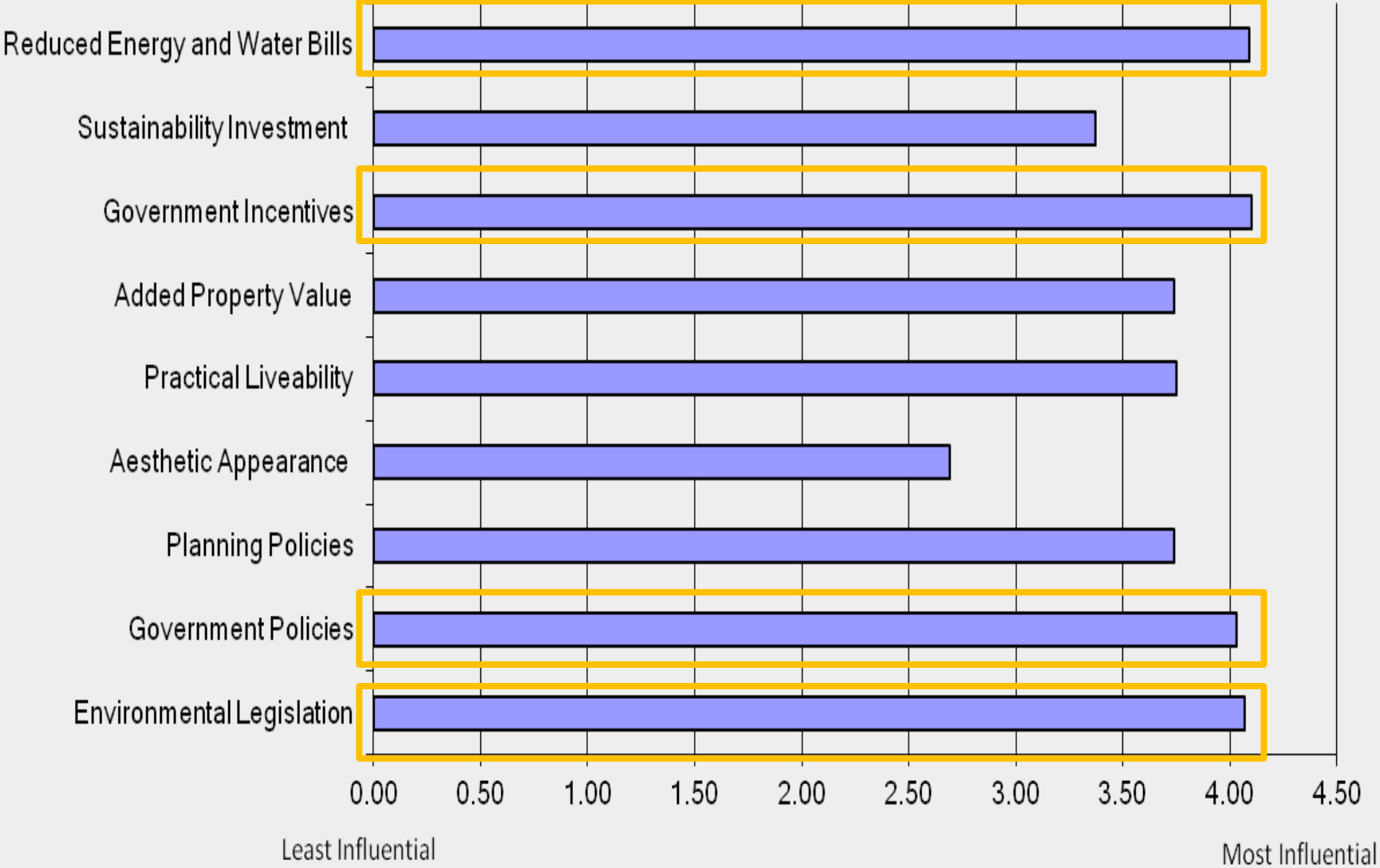
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Data and findings

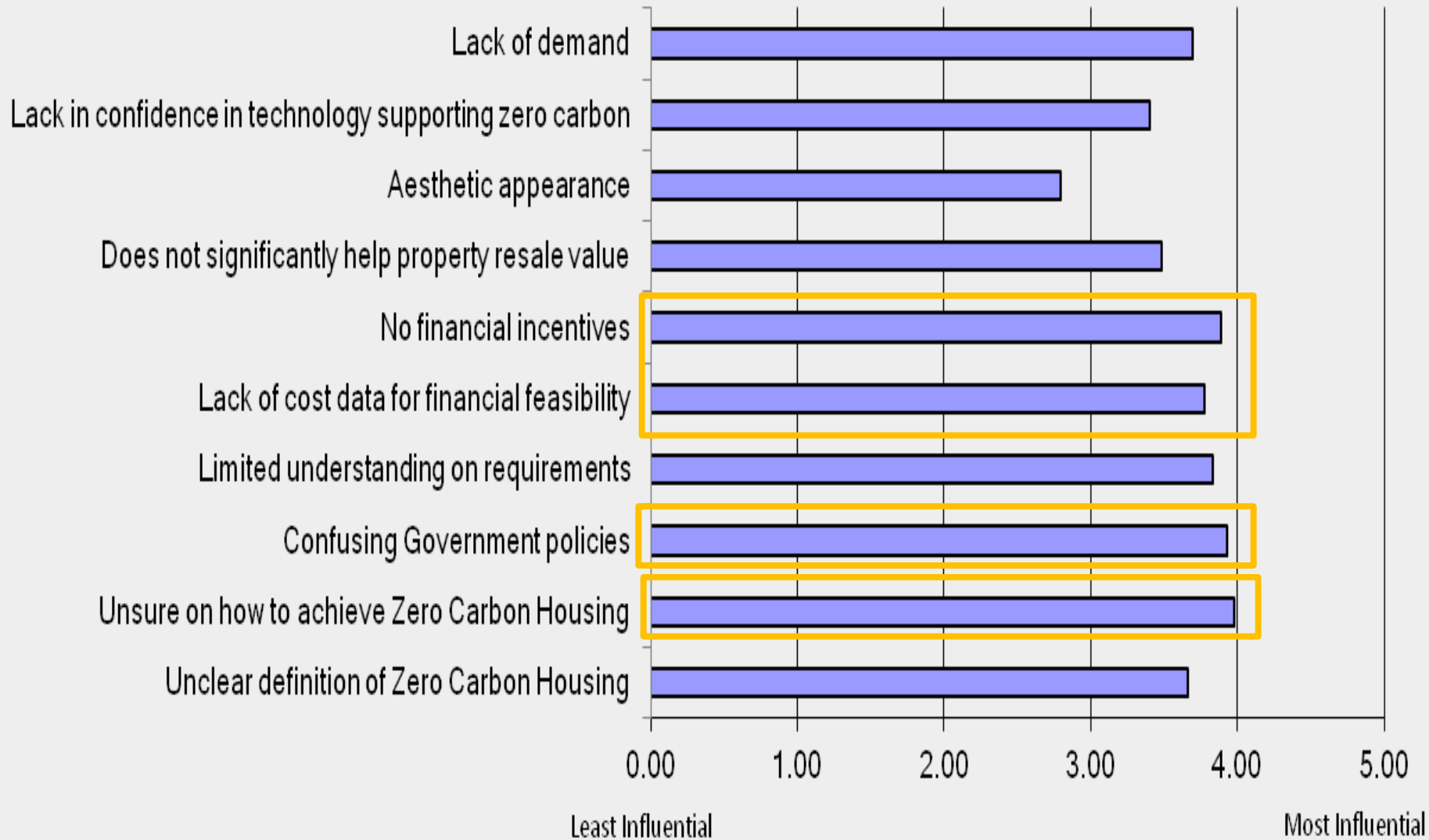
Study 3: Residents' preferences and opinions on behaviour change motivation.

Data collection method: using an online survey method, there were 107 questionnaires received.

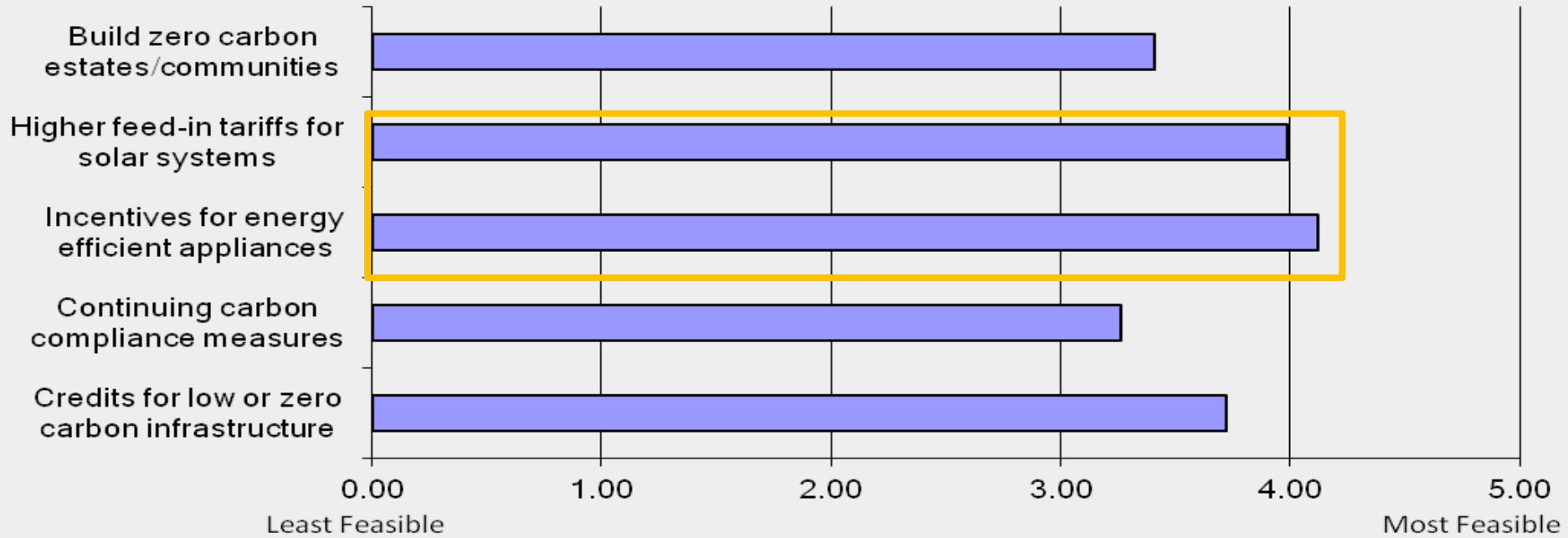
Below are some drivers associated with the uptake of Zero Carbon Housing, please rank accordingly.



The following barriers are associated with the slow uptake of Zero Carbon Housing. Please tick each barrier once with the level of impact the barrier has.



Please rank the feasibility of the below solutions to encourage Zero Carbon Housing .
Please tick each solution once.



Findings: The results of seeking the public's opinions shows that government polices and incentives are vital to encourage low carbon living behaviour change. Education and knowledge transfer are useful tools to help for motion.



Further study: investigating monetary based simulations to help policy makers to develop low carbon related objectives.

Willingness to Pay

estimate willingness to pay from distributions of non-priced attributes. WTP is the ratio of the coefficient of the attribute divided by the price coefficient.

Decision-makers are indexed by n , alternatives by j , and choice situations by t . we specify utility as separable in price, p , and non-price attributes, x

$$U_{jn,s} = -\alpha_n p_{jn,s} + \beta_n' x_{jn,s} + \varepsilon_{jn,s}$$

$$Var(\varepsilon_{jn,s}) = k_n^2 \left(\frac{\pi^2}{6} \right)$$

k_n is the scale parameter for decision maker n

$$U_{jn,s} = -\left(\frac{\alpha_n}{k_n}\right) p_{jn,s} + \left(\frac{\beta_n}{k_n}\right)' x_{jn,s} + \varepsilon_{jn,s}$$

$$\lambda_n = \left(\frac{\alpha_n}{k_n}\right)$$

$$c_n = \left(\frac{\beta_n}{k_n}\right)$$

$$U_{jn,s} = -\lambda_n p_{jn,s} + c_n' x_{jn,s} + \varepsilon_{jn,s}$$

Willingness to pay for an attribute is the ratio of the attribute's coefficient to the price coefficient

$$w_n = \left(\frac{c_n}{\lambda_n}\right)$$

$$U_{jn,s} = -\lambda_n p_{jn,s} + (\lambda_n w_n)' x_{jn,s} + \varepsilon_{jn,s}$$

which is called utility in *WTP* space. Under this parameterization, the variation in *WTP*, which is independent of scale, is distinguished from the variation in the price coefficient, which incorporates scale



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Next step:

Fund application



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Thank you for your comments!