BUSINESS CASE: EXECUTIVE SUMMARY

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Reducing heatwave risk and energy consumption in vulnerable households

Report prepared for the City of Kingston as part of the Financial Risk Adaptation Planning project

City of KINGSTON

SECCCA South East Councils Climate Change Alliance

State Government Victoria

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Executive summary

Introduction

This case study presents a business case for a program within the City of Kingston to reduce the vulnerability of high risks households to the impacts of heatwaves, as well as reducing energy consumption within those households. The business case study assesses the costs and benefits of the program relative to a reference case of continuing with existing programs.

Program rationale

Heatwaves are a major cause of illness and premature death in vulnerable community members, especially the elderly. 'Aging in place' is the preferred policy direction of both the Victorian State Government and the City of Kingston. However, current heatwave policy restricts Council staff from visiting homes during heatwaves due to the risks posed to staff. Council must therefore find ways of supporting residents to protect themselves at home during heatwaves. The potential for heatwaves to increase in frequency and severity with climate change in the future adds to this imperative.

An Energy Saver Study (ESS) initiated through SECCCA has identified numerous options for improving the thermal comfort of vulnerable householders and other ways of reducing risks to vulnerable community members during heatwaves. Many of these measures also have the potential to reduce household energy consumption.

Options assessment

Approach

Four options were developed and assessed relative to the base case:

- Option 1. Replace current heating systems with reverse cycle split system air conditioners in elderly, low income households.
- Option 2a. Option 1 plus limited weather proofing and behaviour change education.
- Option 2b. Option 1 plus more extensive weather proofing measures and behaviour change education.
- Option 2c. Option 1 plus complete weather proofing and behaviour change education.

A cost benefit analysis (CBA) was used to assess the economic viability of Options 1, 2a, 2b and 2c. The CBA assessed both market and non-market benefits and costs.

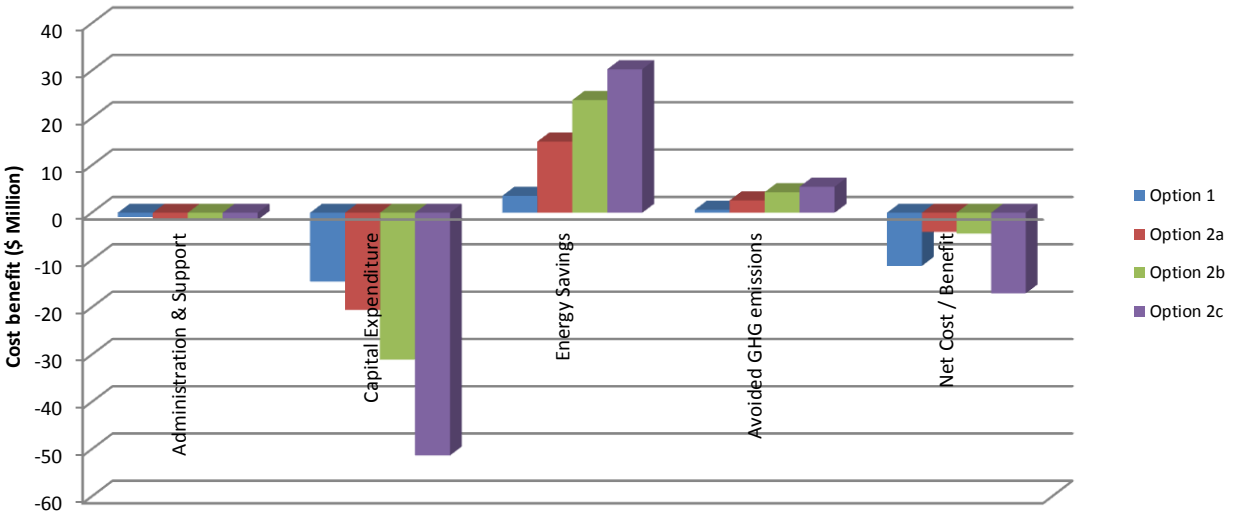
Given the uncertain nature and extent of health benefits, threshold analysis has been used to determine health impacts that would need to be avoided to achieve a positive CBA result[1]. Thus the threshold analysis answers the following question: *By how much will the program need to reduce the health impacts of heatwaves on elderly and low income people in the City of Kingston to consider the program a success?*

Results

[1] Quantified as a positive Net Present Value (NPV), where NPV is the sum of the discounted stream of costs and benefits over time. A positive NPV indicates that an option will deliver net economic (community wide) benefits.

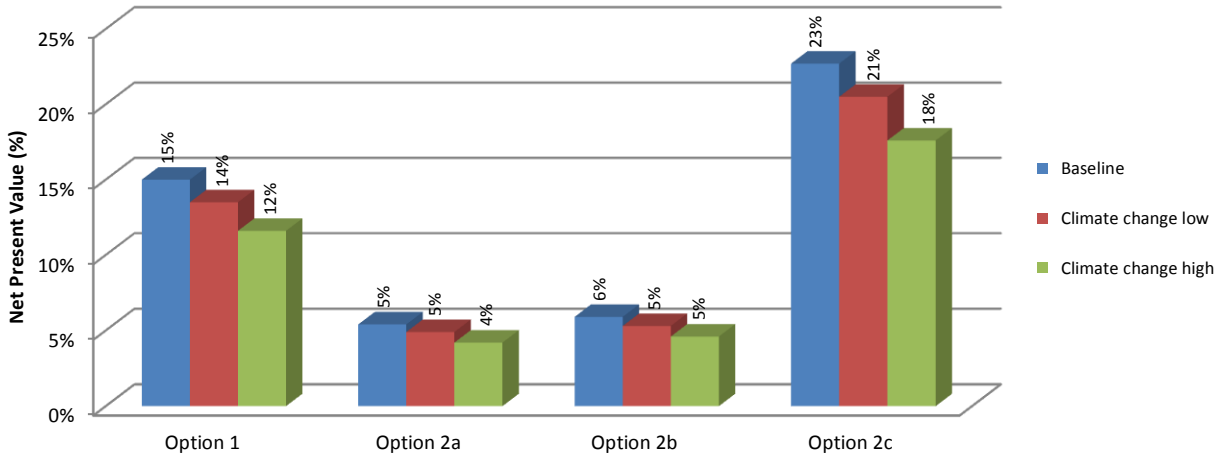
Summary results of the CBA, using a 3% discount rate, are presented in Table ES.1. The results reveal that - excluding the potential health benefits of the options - none of the options achieve a positive NPV. This means that based simply on energy savings and greenhouse gas emission reductions, it would be difficult to justify implementing any of the options. Option 2a achieves the best outcome of all of the options though, marginally better than Option 2b.

Table ES.1: Results of the cost benefit analysis, excluding health benefits, 3% real discount rate (Net Present Value $2015)



A key rationale behind implementing the program however, is the potential for achieving improved health outcomes through the program. Results of the threshold analysis used to reflect these health outcomes are shown in Table ES.2. Applying a 3% real discount rate, the results show that Option 2a (the option with the best Net Present Value) needs only to reduce the annual health impacts of heatwaves on elderly people (over 65s) in Kingston by an estimated 4-5% (depending on the climate scenario) for the program to be considered worthwhile (i.e. to generate a positive Net Present Value). Thus it is reasonable to suggest that implementing Option 2a is likely to achieve a net community benefit overall.

Table ES.2: Results of the threshold analysis, 3% real discount rate (Net Present Value $2015)



Conclusions

Overall, results of the analysis suggest that there is a quite strong case for implementing a program designed to reduce the impacts of heatwaves on vulnerable elderly people in the City of Kingston. Either Option 2a or Option 2b would appear to be the preferred option of the four options assessed. This suggests that the installation of significant weather proofing measures and education of householders on energy use behaviour should be important aspects of a program in addition to the installation of RCACs.

Benefits of heatwave program assessed in this study will mainly be realised by the householders targeted by the program and to some extent by state government and the broader community (reduced health costs and reduced energy assistance payments). Few if any direct benefits of the program will accrue to the Kingston City Council. Nevertheless, implementing a program such as this would be broadly consistent with Council's social policy. This suggests that careful consideration in program design will need to be given to cost sharing and funding arrangements.