COMMUNITY OWNED AND OPERATED RENEWABLE ENERGY SCHEMES IN RURAL NEW ZEALAND

A thesis presented in partial fulfilment of the requirements for the degree of Master of Applied Science in Natural Resource Management at Massey University, Palmerston North, New Zealand.

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Errata

The following references are missing from the reference list:

Frost, W. and Aspliden, C. (1994). Characteristics of the Wind. (in "Wind Turbine Technology", ed Spera, D.A.) *ASME Press*

Gipe, P. (1993). Wind Power for Home and Business : Renewable Energy for the 1990's and Beyond. *Post Mills, VT: Chelsea Green Publishing Co.*

Riordan, C. (1995). Solar Resource Characteristics. (in "Solar Cells and Their Applications", ed Partain LD), *John Wiley & Sons Inc, New York*

Shaw, et.al. (1996). Final Year Research Project, *Massey University*

Woods, A. et. al. (1997) Development and Demonstration of a Protocol for Community Owned and Operated Green Grid Remote Area Power Systems.

ABSTRACT

Due to the introduction of the Electricity Act (1992) and its later amendments, the future security of electricity supply to rural New Zealand is under question. Lines companies are legally obliged to maintain supply to existing customers until April 1st 2013, but can disconnect unprofitable customers after this date.

One option for rural customers is to establish their own community owned and operated renewable energy schemes. This study is the first step in identifying the engineering design, ownership, and environmental issues relating to this type of scheme.

Two case study sites – one in the North Island and one in the South Island – differed in their remoteness, population density and primary income sources.

Solar radiation and wind was measured at both sites. Power consumption data was also obtained from meters installed at the sites by Industrial Research Limited.

A review of legal ownership structures suitable for community owned electricity generation schemes was made and recommendations given from a New Zealand lawyer. Environmental issues associated with the development of electricity generating plants were identified, along with the implications of the Resource Management Act for renewable energy schemes.

A computer model was designed to assist a community in understanding the supply options available. It is based on present day costs of system components, and is designed to give maximum flexibility of design to the model user depending on resource availability.

For each site a number of options were identified and the costs of these options quantified. Comparisons were made between the options to identify the best for the site.

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"Coming together is a beginning
Keeping together is progress
Thinking together is unity
Working together is success"

Anonymous

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