



# CAE Energy Profile

## *CAE's Mission*

To advance New Zealand's economic growth and social progress through broadening national understanding of emerging technologies and facilitating early adoption of advanced technology solutions.

## *How CAE Operates*

Established as a not-for-profit organisation in 1987, CAE was built on a vision to raise this country's technical knowledge for the benefit of New Zealanders. CAE plays a strong integrating role within New Zealand's engineering and technology sectors, undertaking major projects that seek to build this country's technological capabilities in areas of national importance.

Collaboration and the dissemination of knowledge are the cornerstone to achieving that goal. CAE's organisational strength lies in its ability to facilitate expert groups and provide the knowledge transfer capability to build upon the findings of specific project activity.

A particular focus of CAE activity are industry-led approaches and technical studies relating to energy supply and demand for New Zealand. CAE's strategic imperatives are:

- Broad industry participation with a primary mission of facilitating culture change and innovation in the delivery of energy solutions.
- Independent comment so as to hold credibility in the political environment. Managing conflicts of interest with assignments as necessary.
- Maintaining a broad perspective on the entire energy sector to ensure balance and objectiveness.
- Reinforce technical capability with incorporation of economic analysis via appropriate partnering organisations (especially the Auckland Business School at the University of Auckland).

## *Technologies for Sustainability*

### *Programme Overview*

CAE seeks to advance environmental sustainability in New Zealand by improving best practice and levels of resource stewardship and technology application. Our focus is on stimulating collaborative action on the identified knowledge gaps in sustainable management practice, and through addressing these issues, develop strategies for action to meet sustainability objectives.

### *CAE Contributions*

CAE's study programmes in this field have covered all aspects of our energy infrastructure and the major technical and commercial changes required to deliver a more efficient electricity system. Programme outcomes have been published on a regular basis since the Centre was established. Significant contributions are summarised overpage.



## New Zealand's Energy Future – A Sustainable Energy Supply after Maui

Published 2003.

The information contained in this book is based upon the extensive work undertaken by CAE over many years. It draws on its various studies and reports covering energy supply and demand, risks and vulnerabilities, energy efficiency, distributed generation and renewable energy options for New Zealand.

This publication presents a coherent picture of the current New Zealand primary energy supply situation and the likely influences that will determine outcomes over the near term.



## Distributed Generation: A Study of Opportunities

Published 2003.

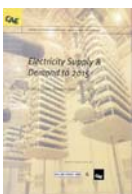
This commentary is the summary of an extensive technical evaluation undertaken by CAE of DG opportunities in New Zealand. The analysis framework uses data from actual case studies of DG projects, some of which have been successfully implemented, others not, to demonstrate the viability of DG under different circumstances. The analysis timeframe is out to the year 2015.



## Distributed Generation Bulletin

Published since February 2002.

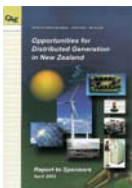
One aspect of an emergent networking organisation around energy technologies, the *DG Bulletin* provides both national and international perspectives on distributed generation, and provides regular updates on the progress of continuing studies in the area by CAE.



## Electricity Supply & Demand to 2015 (6th Edition)

Published 2002.(previous editions 1992, 1994, 1996, 1998, 2000)

Since the major economic reforms of the 1980s, it has been difficult to obtain independent and regularly updated date information on New Zealand's future electricity needs and how these might be met. Since 1992, CAE and Sinclair Knight Merz have jointly published analyses of New Zealand's electricity generating capacity to consider how expected increased demands for electricity could be met.



## Opportunities for Distributed Generation in New Zealand

Report to Sponsors, 2002.

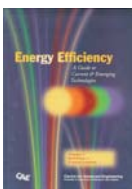
The report is intended as a practical document for use by the New Zealand electricity industry and aimed at providing answers to the question "How can I make DG work for me?" A range of technologies are discussed, with particular emphasis on identifying market conditions under which it becomes viable. Much of the analysis adopted uses data from case studies of DG projects, some successfully implemented, others not, to demonstrate the viability of DG under different circumstances.



## Possible energy Use Trends for New Zealand 2000/2010

Published 2000.

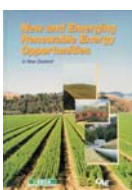
The findings of a preliminary study into New Zealand's energy demand trends and possible energy efficiency measures that might occur in the period 2000 - 2010. The primary purpose was to establish a consistent analytical framework for assessing energy savings potential over four major sectors - the Energy Production sector; the Transport sector; the communities and households sector; and the Commercial and Industrial sector.



## Energy Efficiency - A Guide to Current and Emerging Technologies

Published 1996.

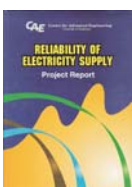
The culmination of a three year project, the outcomes of which were published in two volumes. Volume 1, Buildings and Transportation, deals with domestic, commercial and industrial buildings and transport. Volume 2, Primary Production and Industry, deals with primary production, food processing, forestry processing and manufacturing and minerals. Volume 2 also includes a section on general energy efficiency technologies.



## New and Emerging Renewable Energy Opportunities

Published 1996.

This publication outlined the state of the technology, economic viability and environmental impact of implementing various types of 'non-traditional' renewable energy in New Zealand. The study concentrated on solar energy systems; water energy systems; biomass energy systems; and wind energy systems. The book was jointly published with the energy Efficiency and conservation Authority.



## Reliability of Electricity Supply

Published 1993.

The outcome of a major project carried out in 1992/1993, the study looked at the reliability of electricity supply in New Zealand from three viewpoints: Customer requirements; Delivery requirements; and Generation requirements. The aim of the study was to provide a set of guidelines to simplify the complexities of electricity supply reliability and included the results of domestic and commercial customer surveys of the degree of reliability expected.