

Energy Library Update October 2006

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Energy Library has copies of the following publication to give away. These have been kindly donated to us by IPENZ

"Power from Waikaremoana: a history of Waikaremoana hydro-electric power development / G.G. Natusch. Published in 1992.

Note that these have minor water damage (no, they were *not* dropped in a dam).

To request a copy please email kmcara@energylibrary.org.nz and provide your address for postage. **Ref: 10Natusch)**

Featured Energy Library Journals

International Water Power & Dam Construction

A monthly international publication covering the dam construction and hydroelectricity industries. Topics regularly covered in the magazine include: Construction; Flood Management; Upgrading and refurbishment; Small Hydro; Operation and Maintenance; Licensing; Project Finance, Tunnelling and Dam Safety. Find out more [here](#). There is also a useful free email newsletter you can [register](#) for on the website.

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Soundview Executive Book Summaries

These monthly eight-page summaries are designed to reduce information overload for the busy executive who doesn't have time to read numerous new business books. Each summary will help keep you informed of the latest techniques and ideas in business. Find out [more](#).

(To go on our circulation list or borrow a sample issue for evaluation please email kmcara@energylibrary.org.nz **Ref: 10Soundview)**

International Journal of Distributed Energy Resources (potential new Energy Library subscription)

This is a peer-reviewed journal which publishes experimental, theoretical and applied results in both science and engineering for distributed energy resources in electrical grids. Examples of topics covered include: Microgrids, Power Quality, Wind Energy, Fuel Cells, Photovoltaics, Thermal Energy etc. Take a look on the journal [website](#) to find out more and then email kmcara@energylibrary.org.nz if you would be interested in seeing this title on circulation. If enough members are keen we will purchase a subscription and circulate each issue. **Ref: 10IntJouDistributed)**

New Books and Reports

Energy's future beyond carbon: Scientific American Special Issue

Volume 295, Issue 3 (September 2006)

Contents: A climate repair manual; A plan to keep carbon in check; Fueling our transportation future; An efficient solution (buildings and industrial processing); What to do about coal; The nuclear option; The rise of renewable energy; High hopes for hydrogen; Plan B for energy.

(To borrow this special issue email library@energylibrary.org.nz **Ref: 10Energy**)

New Zealand's energy outlook to 2030 /prepared by the Energy Information and Modelling Group. Ministry of Economic Development. Wellington, MED, 2006.

(To borrow this book email library@energylibrary.org.nz **Ref: 10New**)

Energy research investment strategy / prepared by R.S. Whitney and H Trolove. Wellington, Energy Federation of New Zealand, 2006.

(To borrow this book email library@energylibrary.org.nz **Ref: 10Whitney**)

The impact on housing energy efficiency of market prices and regulatory requirements / prepared by Taylor Baines and Associates for Centre for Housing Research, Aotearoa New Zealand (CHRANZ) and Building Research. Wellington, CHRANZ, 2006.

According to the summary bulletin of this research New Zealand is lagging behind other developed countries in improving household energy efficiency due to its relatively mild climate, historically cheap energy, institutional and behavioral inertia and a historical lack of strong government leadership.

(To borrow this book email library@energylibrary.org.nz **Ref: 10Impact**)

Increasing the direct use of natural gas in New Zealand / prepared by Charles Rivers and Associates for Energy Efficiency and Conservation Authority. Wellington, EECA, 2004. (Includes GANZ and EECA comments, 2006.)

"The study sought to determine whether the technical efficiency gains that can be obtained by substituting gas for electricity (particularly in direct heating applications) could provide net public benefits." Source: Executive summary.

(To borrow this book email library@energylibrary.org.nz **Ref: 10Increasing**)

The validity of foodchain miles as an indicator of sustainable development.

Final report / prepared by AEA Technology Environment for Defra. Harwell, AEA Technology, 2005.

Food transport has a significant and growing impact on road congestion, road accidents, climate change, noise and air pollution. You can access this [online](#) and also read the [press release](#).

Stern review on economics of climate change. 2006.

Cambridge: Cambridge University Press.

Described as the most comprehensive review ever carried out on the economics of climate change. You can read the [PDF](#) of the report online.

Oldies from our collection

A history of electrical engineering. Percy Dunsheath. London: Faber and Faber. This is a fascinating look at the development of electrical engineering. There are many photos and diagrams of important people and machines in the history: the high and low pressure cylinders as used at Hackney in 1930; an electric locomotive, City and South London Railway 1890; and a diagram of the 1851 cross-channel cable. Chapters cover The Electric Light, the Turbine Era, and Science in Telecommunication. There's a chapter on the early telephone, with photos and diagrams of early cables and telephones.

(To borrow this book email library@energylibrary.org.nz Ref: **10Dunsheath**)

Coastal structures 79: a specialty conference on the design construction, maintenance and performance of port and coastal structures. March 14-16, 1979, Alexandria, Virginia. A symposium sponsored by the Waterways, Port and Ocean Division of the American Society of Civil Engineers. 2 volumes.

Papers at this conference covered a wide variety of topics, many of which are written about and researched today. Papers cover such areas as: Beach behaviour in the vicinity of groins, two New Jersey field examples, Model testing of structures at a tidal inlet, Beach protection properties of accumulated driftwood, Experimental study of wave forces on a vertical wall, and Restoration of sandy beaches fronting seawalls.

(To borrow this book email library@energylibrary.org.nz Ref: **10Coastalt**)

The Lineman and cableman's handbook. Edwin B. Kurtz, and Thomas M. Shoemaker. 8th edition. New York, McGraw-Hill. 1992.

This is a comprehensive coverage of the topic; the early part is a textbook of electricity, and electrical terms. The rest of the book is a practical guide to the construction and maintenance of overhead and underground distribution and transmission lines, particularly safety aspects. There's a reference chapter on electrical formulas and calculations, and a whole section on knot tying, and there are diagrams on how to climb a wooden pole safely.

(To borrow this book email library@energylibrary.org.nz Ref: **10Kurtz**)

Journal Articles

Service clues and customer assessment of the service experience: lessons from marketing.

Leonard L. Berry and others. Academy of Management Perspectives, (May 2006) Pages 43-57.

Choice of service and evaluation of service can be influenced by a number of factors. Often it's the little things that count. Clues that influence a customer's overall perception are described.

(For a copy of this article email library@energylibrary.org.nz **Ref: 10Berry**)

The use of humor in the workplace

Eric J. Romero and Kevin W. Cruthirds. Academy of Management Perspectives, (May 2006) Pages 58-69.

Humour is an important part of human interaction and can be used by managers to reduce stress, enhance leadership, group cohesiveness, communication, creativity and organizational culture.

(For a copy of this article email library@energylibrary.org.nz **Ref: 10Romero**)

Sleep deficit: The performance killer

Charles A Czeisler. Harvard Business Review, Volume 84 Issue 10 (2006) Pages 53-59, 148.

Long hours and traveling often in multiple time zones, do not lead to high performance. The four neurobiological functions that effect sleep duration and quality and high performance are outlined. Recommendations for corporate sleep policies are discussed.

(For a copy of this article email library@energylibrary.org.nz **Ref: 10Czeisler**)

Innovation: The Classic Traps

Kanter, Rosabeth Moss; Charles A Czeisler. Harvard Business Review, Volume 84 Issue 11 (2006) Pages 72-83.

The importance of innovation fluctuates according to the corporate agenda and growth strategy. This article discusses how companies can avoid repeating mistakes made in the past.

(For a copy of this article email library@energylibrary.org.nz **Ref: 10Kanter**)

A two-way influence between business strategy and project management

Srivannaboon, S., Milosevic, D.Z. International Journal of Project Management, Volume 24 Issue 6 (2006) Pages 493-505.

This article recognizes the strategic importance of project management (PM) in the corporate world through an exploration of PM/business strategy alignment. Using a case-study methodology, it extensively examines eight case studies covering nine projects in seven organizations.

(For a copy of this article email library@energylibrary.org.nz **Ref: 10Srivannaboon**)

Revitalizing Project Controls: A Roadmap to Excellence

Michalak, Christopher F. AACE International Transactions; CSC.02.1(2006), Pages 2.1-2.8.

Describes a company's efforts to establish a leading position in project management performance. The company used for the case study is in the energy industry..

(For a copy of this article email library@energylibrary.org.nz **Ref: 10Michalak**)

Climate policy: Bucket or drainer?

Oikonomou, V., Patel, M., Worrell, E. Energy Policy, Volume 34 Issue 18 (2006)
Pages 3656-3668

Worldwide, industry is responsible for about 40% of greenhouse gas (GHG) emissions, making it an important target for climate policy. Energy-intensive industries may be particularly vulnerable to higher energy costs caused by climate policy. If companies cannot offset rising energy costs and would face increased competition from countries without climate policy, they may decide to relocate their industrial production to the countries without climate policy. The resulting net effect of climate policy on GHG emissions in foreign countries is typically referred to as "carbon leakage". Carbon leakage may lead to higher global GHG emissions due to the use of less advanced technology in less developed countries. Based on a literature review of climate policy, earlier environmental policy and analyses of historical trends, this paper assesses the carbon leakage effects of climate policy for energy-intensive industries.

(For a copy of this article email library@energylibrary.org.nz Ref: 10Oikonomou)

Second best climate agreements and technology policy

Rolf Golombek and Michael Hoel. Advances in Economic Analysis & Policy, Volume. 6 Issue 1 (2006)

Discusses the relationships between climate agreements and technological development and research.

(For a copy of this article email library@energylibrary.org.nz Ref: 10Golombek)

Innovative energy technologies and climate policy in Germany

Schumacher, K. , Sands, R.D.

Energy Policy, Volume 34 Issue 18 (2006) Pages. 3929-3941.

Due to the size and structure of its economy, Germany is one of the largest carbon emitters in the European Union. However, Germany is facing a major renewal and restructuring process in electricity generation. Within the next two decades, up to 50% of current electricity generation capacity may retire because of end-of-plant lifetime and the nuclear phase-out pact of 1998. Substantial opportunities, therefore, exist for deployment of advanced electricity generating technologies in both a projected baseline and in alternative carbon policy scenarios. We simulate the potential role of coal integrated gasification combined cycle (IGCC), natural gas combined cycle (NGCC), carbon dioxide capture and storage (CCS), and wind power within a computable general equilibrium model of Germany from the present through 2050.

(For a copy of this article email library@energylibrary.org.nz Ref: 10Schumacher)

Choice of environmental policy in the presence of learning by doing

N. Rivers and M. Jaccard. Energy Economics, Volume 28, Issue 2 (2006) Pages 223-242.

Many clean energy technologies have experienced rapid cost declines recently as a result of accumulating experience with their production and use. It has been argued that if this relationship between experience and cost continues in the future, then it may make sense to foster market penetration of clean energy technologies on a large scale today, despite their current high costs, in order to drive down their costs in the future. If the magnitude of cost declines is sufficient, then rapid large-scale

diffusion of clean energy technologies could even provide discounted social benefits that exceed discounted social costs. However, private firms may not make these investments so it may make sense for a government to adopt a regulatory approach aimed at forcing diffusion of clean energy technologies. This paper tests this hypothesis using the criteria of economic efficiency and finds that such a conclusion is unwarranted in most circumstances

(For a copy of this article email library@energylibrary.org.nz **Ref: 10Rivers**)

A win-win strategy to energy financing challenges - Performance contracts

Zhao, H., Kolarik, W., Turner, W., Case, K.

Options and details of a performance contract between an energy company and a client organization are discussed. These contracts give the opportunity for the organization to upgrade their existing inefficient equipment and upgrade their energy system. This is achieved through a financial arrangement between the energy company and its client. Fundamentals of the contract and its implementation are discussed. A case study is provided to show financial and economic aspects for both parties.

(For a copy of this article email library@energylibrary.org.nz **Ref: 10Zhao**)

Asset management techniques.

Schneider, J. and others. International Journal of Power and Energy Systems, Volume 28 Issue 9 (November 2006): Pages 643-654.

Deregulation and an increasing competition in electricity markets urge energy suppliers to optimize the utilization of their equipment, focusing on technical and cost effective aspects. As a response to these requirements utilities introduce methods formerly used by investment managers or insurance companies. This article describes the usage of these methods, particularly with regard to asset management and risk management within electrical grids.

(For a copy of this article email library@energylibrary.org.nz **Ref: 10Schneider**)

Transmission Investment: A Primer

McGarvey, J. Electricity Journal, Volume 19 Issue 8(2006), Pages. 71-82.

This primer highlights recent trends in transmission investment, summarizes the division of jurisdictional authority over transmission, and presents four alternative models for transmission ownership.

(For a copy of this article email library@energylibrary.org.nz **Ref: 10McGarvey**)

Valuation and optionality of large energy industry capital investments

Rob Graber. Cost Engineering, Volume 48 Issue 8 (2006) Pages 20-26

Relates to building of a new nuclear power plant.

(For a copy of this article email library@energylibrary.org.nz **Ref: 10Graber**)

Energy efficiency in computer data centers

Doty, S. Energy Engineering, Volume 103 Issue 5 (2006) Pages 50-75.

Computer data centres are large consumers of energy. Article discusses some energy conservation options to save energy and costs.

(For a copy of this article email library@energylibrary.org.nz **Ref: 10Doty**)

Residential energy use and potential conservation through reduced laundering temperatures in the United States and Canada.

Darius Sabaliunas and others. Integrated Environmental Assessment and Management, Volume 2 Issue 2 (April 2006) Pages 142-

A model was developed to estimate energy use in domestic laundering in households in the United States and Canada. Provides useful information to consumers about saving energy in the home and to manufacturers in the design of more energy-efficient laundry formulations and appliances.

(For a copy of this article email library@energylibrary.org.nz Ref: **10Sabaliunas**)

Strategic industrial energy efficiency: reduce expenses, build revenues, and control risk.

Christopher Russell. Energy Engineering, Volume 102 Issue 3 (2005) Pages 7- Building energy efficiency policies are often poorly understood by corporate managers. The author suggests options to make the message clearer.

(For a copy of this article email library@energylibrary.org.nz Ref: **10Russell**)

Energy prices and turning Points: The relationship between income and energy use/carbon emissions.

Richmond, Amy K.; Kaufmann, Robert K. The Energy Journal, Volume 27 Issue 4 (2006) Pages 157-180

(For a copy of this article email library@energylibrary.org.nz Ref: **10Richmond**)

Optimal CO2 abatement with socio-economic inertia and induced technological change Schwoon, Malte and Tol, Richard S.J. The Energy Journal, Volume 27 Issue 4 (2006) Pages 25-59

(For a copy of this article email library@energylibrary.org.nz Ref: **10Schwoon**)

Incorporating carbon capture and storage technologies in integrated assessment models Energy Economics, Volume 28, Issue 5-6 (2006) Pages 632-652.

Low-carbon emitting technologies are a key component of technical change in integrated assessment models. We develop a methodology for incorporating technologies into computable general equilibrium economic models and demonstrate this methodology by implementing carbon capture and storage technologies in the MIT Emissions Prediction and Policy Analysis (EPPA) model.

(For a copy of this article email library@energylibrary.org.nz Ref: **10Incorporating**)

Public perceptions of underground coal gasification in the United Kingdom

Shackley, S. , Mander, S. , Reiche, A. Energy Policy, Volume 34 Issue 18 (2006) Pages 3423-3433.

There is growing interest internationally in the technology of Underground Coal Gasification (UCG) as a means of accessing the energy contained within inaccessible coal reserves. One of the potential obstacles to UCG deployment is adverse public perceptions and reactions, either stopping or delaying proposed applications. This

paper explores the public perceptions of UCG in the UK through a detailed case-study and focus group discussion.

(For a copy of this article email library@energylibrary.org.nz Ref: 10Shackley)

Using solar energy to arrest the increasing rate of fossil-fuel consumption: The southwestern states of the USA as case studies

Faiman, D., Raviv, D., Rosenstreich, R. (2007) Energy Policy, Volume 35 Issue 1 (2007) Pages. 567-576.

The paper first reviews some recently introduced ideas concerning the feasibility of realizing concentrator photovoltaic systems on a very large (state-wide) scale. In particular, energy and cost assumptions are re-discussed, the concepts of double and triple sustainability are recalled and used to perform a sensitivity study of the various assumed parameter values.

(For a copy of this article email library@energylibrary.org.nz Ref: 10Faiman)

Wind power, policy learning and paradigm change

Szarka, J. Energy Policy, Volume 34 Issue 17 (2006) pp. 3041-3048.

The aim of this article is to study how policy learning has led to new understandings of ways to support renewable energies, based on experience in the wind power sector..

(For a copy of this article email library@energylibrary.org.nz Ref: 10Shackley)

Increasing biomass based power generation in the UK

Thornley, Patricia. Energy Policy, Volume 34 Issue 15 (2006) Pages 2087-

As the UK strives to increase its level of renewables based power generation, the contribution that biomass makes and could make in the future is examined. The role of power generation from biomass in reducing greenhouse gas emissions is evaluated, alongside an evaluation of the wider environmental, social and economic impacts of increasing the level of bioenergy in the UK. Progress with implementation of biomass projects is compared to UK national targets and the policy support framework is critically examined, with recommendations regarding future support mechanisms.

(For a copy of this article email library@energylibrary.org.nz Ref: 10Thornley)

The determinants of the changes in car fuel efficiency in Great Britain (1978–2000)

Tae-Hyeong Kwon. Energy Policy, Volume 34 Issue 15 (October 2006) Pages 2405-2412

This paper estimates the trends of fleet car fuel efficiency and new car fuel efficiency in Great Britain and analyses determining factors of the changes in car fuel efficiency.

(For a copy of this article email library@energylibrary.org.nz Ref: 10Kwon)

Idle emissions from heavy-duty diesel vehicles: review and recent data

ABM S Khan and others. . Journal of the Air & Waste Management Association, Volume 56 (October 2006) Pages . 1404-

(For a copy of this article email library@energylibrary.org.nz Ref: 10Khan)

Fuel price determination in transportation sector using predicted energy and transport demand

Haldenbilen, S . Energy Policy, Volume 34 Issue 17 (2006) Pages 3078-3086.

This study determines fuel price based on estimated sectoral energy and transport demand using pumping prices.

(For a copy of this article email library@energylibrary.org.nz **Ref: 10Haldenbilen**)

Evaluating low-temperature fuel cell performance for power generation: fluid dynamics study of phosphoric acid fuel cell systems at the cell level

P L Zervas and others.. Proceedings of the Institution of Mechanical Engineers: Part A : Journal of Power and Energy. Volume 220 Issue A6 (September 2006) Pages 525-: Sep 2006.

(For a copy of this article email library@energylibrary.org.nz **Ref: 10Zervas**)

On network efficiency comparisons: electricity distribution

Utilities Policy, Volume 14 Issue 2 (June 2006) Pages 103-113

Ralph Turvey

Short-run efficiency comparisons for electricity distribution networks, a matter of their operating costs, require a clear concept of the scale of what they do. A measure is proposed. Long-run comparisons require an estimate of the input of capital services which avoids the circularity of concepts which depend upon the productivity that is to be compared. The extremely stringent conditions for using a perpetual inventory approach are set out. A measure of capacity is also proposed, not energy (which is a throughput and not an output).

(For a copy of this article email library@energylibrary.org.nz **Ref: 10Turvey**)

2050: A pricing odyssey

Faruqui, A. Electricity Journal, Volume 19 Issue 8 (2006) Pages 3-11.

The author uses the Rip Van Winkle approach favored by marketers to gaze, clear-eyed, into the future - say, the year 2050 - to visualize alternative demand-response possibilities. Dare we go California Dreamin' of a distant utopia - or is it inevitable that pricing myopia will keep us from attaining the fulfillment of many of our career goals.

(For a copy of this article email library@energylibrary.org.nz **Ref: 10Faruqui**)

From energy wish lists to technological realities

Robert W Fri. Issues in Science and Technology, Volume 23 Issue 1 (Fall 2006) Pages 63-

Discusses the drive for greater use of technologies that help reduce oil use, generation of electricity from clean coal, nuclear power technology advances.

(For a copy of this article email library@energylibrary.org.nz **Ref: 10Fri**)

Design-build failures involving geothermal systems

Lotz, W.A. HPAC Heating, Piping, AirConditioning Engineering, Volume 78 Issue 9 (2006) Pages. 56-60.

Discusses a geothermal heating and cooling building installation that went wrong. (For a copy of this article email library@energylibrary.org.nz **Ref: 10Lotz**)

Hybrid geothermal heat pumps for Beachfront Hotel

Barfield, A. ASHRAE Journal, Volume 48 Issue 9 (2006) Pages 48-52,55 (2006) *ASHRAE Journal*, 48 (9), pp. 48-52+55.

(For a copy of this article email library@energylibrary.org.nz **Ref: 10Barfield**)

PEM Fuel Cells: Status and Challenges for Commercial Stationary Power Applications

Bin Du and others.. JOM, Volume 58 Issue 8 (August 2006) Pages 45- A potential problem is coolant leakage.

(For a copy of this article email library@energylibrary.org.nz **Ref: 10Bin**)

The State-of-the-Art in Sealing Technology for Solid Oxide Fuel Cells

K Scott Weil. JOM, Volume 58 Issue 8 (August 2006) Pages 37-

(For a copy of this article email library@energylibrary.org.nz **Ref: 10KScott**)

Modeling and control of distributed generation systems including PEM fuel cell and gas turbine

Jagaduri, R.T., Radman, G . Electric Power Systems Research, Volume 77 Issue 1(2007), Pages 83-92.

This paper concentrates on the modeling and control of distributed generation systems including fuel cell and gas turbine. The fuel cell is connected to the power system through a dc/ac converter, which is equipped with both voltage- and power-control loops. The gas turbine is also assumed to be equipped with both voltage-control and generation (or frequency)-control loops.

(For a copy of this article email library@energylibrary.org.nz **Ref: 10Jagaduri**)

Islanding detection of grid connected distributed generators using TLS-ESPRIT

Zeineldin, H.H., and others Electric Power Systems Research, Volume 77, Issue 2 (2007) Pages 155-162.

A critical protection requirement for grid connected distributed generators (DG) is anti-islanding protection. In this paper, a new islanding detection method is proposed based on monitoring the generator's frequency.

(For a copy of this article email library@energylibrary.org.nz **Ref: 10Zeineldin**)

Real time measurement of power disturbances: Part 1. survey and a novel complex filter approach •

Tao Lin and Alexander Domijan. Electric Power Systems Research Volume 76, Issue 12, (August 2006) Pages 1027-1032

The accurate and real time measurement of power disturbance is a key element of

protection, control, fault diagnosis, power quality monitoring and power metering in electric power systems. This paper proposes three criteria for selecting or developing an appropriate measurement technique and, based on these criteria, the performance of the measurement techniques in common use or newly developed are analysed.

(For a copy of this article email library@energylibrary.org.nz **Ref: 10Lin**)

In-Field Ambient Fine Particle Monitoring of an Outdoor Wood Boiler: Public Health Concerns

Philip R. S. Johnson. Human and Ecological Risk Assessment, Volume 12 (2006) Pages 1153–1170.

This study identifies some of the potential air pollution health hazards of outdoor wood boilers (used for domestic heating and to heat hot water).

(For a copy of this article email library@energylibrary.org.nz **Ref: 10Johnson**)

October Competition

The concept of Food Miles has been in the news recently. Give us your explanation of a "low carbon diet". The most imaginative/funniest answer will win a high calorie King Size Cadbury Energy bar.

To be in to win a **king-size bar of energy chocolate** [email us](mailto:library@energylibrary.org.nz) the answer to the following question (put "Competition" in the subject line. Draw closes Nov 21st)