

Energy Update

September 2011

Welcome to the latest issue of the Energy Update, a monthly sampling of books, articles, standards, reports and other resources available from the Energy Library collection.

This month our special topic is: [Carbon Capture and Storage](#). We welcome your input, so if you have a suggestion for a future special topic, please [email](#) it to us.

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Kat McAra, Information Advisor

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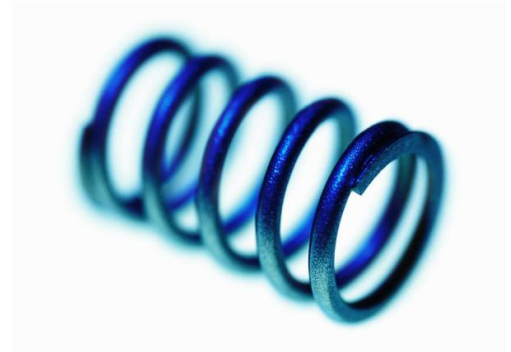
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New Items for Loan

The powers that be: Global energy for the twenty-first century and beyond.

Montgomery, Scott L. Chicago; University of Chicago Press, 2010

(To borrow this book email library@energylibrary.org.nz Ref: **0911-Loan1**)

Solar energy integration. The May/June 2011 special issue of *IEEE Power and Energy Magazine* contains 5 articles on solar energy integration.

(To borrow this whole journal issue email library@energylibrary.org.nz Ref: **0911-Loan2**)

NZS 4512:2010 Fire detection and alarm systems in buildings.

(To borrow this standard email library@energylibrary.org.nz Ref: **0911-Loan3**)

IEEE: 1815: 2010. IEEE Standard for Electric Power Systems Communications -- Distributed Network Protocol (DNP3).

(To borrow this standard email library@energylibrary.org.nz Ref: **0911-Loan4**)

NZS 5266 (Int): 2011: Safety of gas appliances.

(To borrow this standard email library@energylibrary.org.nz Ref: **0911-Loan5**)

Oil supply security: Emergency response potential of IEA countries in 2007.

International Energy Agency. Paris, France: OECD/IEA, 2007

This report is available [online](#) or you can borrow our copy.

(To borrow this report email library@energylibrary.org.nz Ref: **0911-Loan6**)

The executive and the elephant: A leader's guide to building inner excellence. Daft, Richard L. San Francisco, C.A.: Jossey Bass, 2010

Through real-life examples and recent studies in psychology, management and Eastern spirituality the author provides guidance to those of us who struggle in finding our own balance and cultivating the behaviour of others.

(To borrow this book email library@energylibrary.org.nz Ref: **0911-Loan7**)

New Management, Marketing and HR Articles

Integrated strategic partnerships between business and not-for-profit organisations: A case study from New Zealand. Palakshappa, Nitha et al. *Journal of Marketing Communications*; Sep 2010, Vol. 16 (4), p.255-268

This paper examines strategic partnerships between businesses and a not-for-profit organisation using an Integrated Marketing Communication (IMC) theoretical lens. The case study method is used to generate insights into a successful partnership between an internationally branded B2B organisation and a not-for-profit community service organisation. In-depth insights from the case suggest that such a partnership operates at an integrative and strategic level for both organisations. Rather than being conceptualised as a tactical sponsorship arrangement we suggest that such partnerships are worthy of more research to understand their role in generating competitive advantage and brand value within an overarching IMC programme.

(To request: email library@energylibrary.org.nz Ref: **0911-Business**)

Reinventing marketing to manage the environmental imperative. Kotler, Philip. *Journal of Marketing*; Jul 2011, Vol. 75 (4), p.132-135

(To request: email library@energylibrary.org.nz Ref: **0911-Marketing**)

Improving online surveys. Puleston, Jon. *International Journal of Market Research*; 2011, Vol. 53 (4), p.557-560

(To request: email library@energylibrary.org.nz Ref: **0911-Surveys**)

How Gap Inc. engaged with its stakeholders. Smith, N. Craig et al. *MIT Sloan Management Review*; Summer 2011, Vol. 52 (4), p.69-76

Back when protesters were targeting the company, Gap realized that it needed to overhaul the way it interacted with its critics. So the company launched a strategy of stakeholder engagement.

(To request: email library@energylibrary.org.nz Ref: **0911-Protest**)

This pear is a rhetorical tool: Food imagery in energy company advertising. Cozen, Brian. *Environmental Communication*; Sep 2010, Vol. 4 (3), p.355-370

This essay examines the food imagery in three energy company advertising campaigns—Shell's "Real Energy," Chevron's "Human Energy™," and Waste Management's "Think Green®" - arguing that food images help essentialize the energy product. The advertising discourse relies on the historical context that ties food to energy through a growth model. This discourse likens each to the point of exchange from "raw" nature to "cooked" culture: food fills bodies as energy fills societies. The advertisements naturalize the companies' essential role in supplying substance to bodies. By examining the connotations of energy as it relates to food, we not only can further identify the rhetorical strength of the "energy" product, but this paper also hopes to further critical inquiry into the general ties between food production and power supply production, particularly in relation to water use.



(To request: email library@energylibrary.org.nz Ref: **0911-Ads**)

The sustainability professional: 2010 competency survey report. Willard, Marsha et al. *Environmental Quality Management*; Autumn 2010, Vol. 20 (1), p.49-83

(To request: email library@energylibrary.org.nz Ref: **0911-Professionals**)

Environmental assessment & remediation: What an SH&E manager should expect. Aaron Getchell et al. *Professional Safety*; Sep 2011, Vol. 56 (9), p.50-57

When contamination is identified at a facility or property, an SH&E professional will likely be responsible for managing the ensuing environmental assessment and remediation project. Managing such a project may not be a daily part of the job, and coordinating environmental assessment and remediation may seem daunting. This article provides an outline for managing the project. It discusses selecting a qualified consultant; characteristics and safety and health considerations associated with different contamination; managing generated waste streams; and reviewing and approving final deliverables. For the purposes of this article, contamination refers to chemical impacts to soil or groundwater that exceed regulatory cleanup criteria. At some point, most SH&E professionals will be tasked to manage an environmental assessment or remediation project to address contamination identified at a facility or property. As a stakeholder in and manager of the project, the SH&E professional must be heavily involved with the up-front decision making and guiding the project toward successful completion.

(To request: email library@energylibrary.org.nz Ref: **0911-Safety**)

Why project networks beat project teams. Cummings, Jonathon; Pletcher, Carol. *MIT Sloan Management Review*; Spring 2011 Vol. 52 (3), p.75-80

Finding the expertise to handle complex, knowledge-intensive team projects is challenging. That's where a project network comes in.

(To request: email library@energylibrary.org.nz Ref: **0911-Project**)

Innovation in natural resource-based industrial clusters: A study of the Brazilian oil and gas sector. Silvestre, Bruno dos Santos; Dalcol, Paulo Roberto Tavares. *International Journal of Management*; Dec 2010, Vol. 27, p.713-727
(To request: email library@energylibrary.org.nz Ref: **0911-Innovation**)

Innovation impacts of using social bookmarking systems. Gray, Peter H. et al. *MIS Quarterly*; Sep 2011, Vol. 35 (3), p.629-643
(To request: email library@energylibrary.org.nz Ref: **0911-Social**)

The higher ambition leader. Foote, Nathaniel et al. *Harvard Business Review*; Sep/Oct 2011, Vol. 89 (9/10), p.94-102
The article discusses what the authors term "high ambition leaders" who create long-term value for their companies while at the same time benefiting their communities and generating high levels of social capital within their firms. Examples include chief executives Peter Sands of banking company Standard Chartered, Doug Conant of soup maker Campbell Soup, and Leif Johansson of automobile manufacturer Volvo. Such leaders are said to have penetrating strategic visions and the temperament to commit themselves and their companies to them.
(To request: email library@energylibrary.org.nz Ref: **0911-Leader**)

How to recruit people who fit. Weyland, Anita. *Training Journal*; Jul 2011, p.41-45
(To request: email library@energylibrary.org.nz Ref: **0911-Recruit**)

Use your "dream team" to advance your career. Jay, Joelle K. *Supervision*; May 2011, Vol. 72 (5), p.7-9
(To request: email library@energylibrary.org.nz Ref: **0911-Career**)

New Energy Articles and Environment Articles

Energy in New Zealand houses: Comfort, physics and consumption. Isaacs, Nigel et al. *Building Research & Information*; Sep/Oct 2010, Vol. 38 (5), p.470-480
The Household Energy End-use Study (HEEP) quantified how, where, when, and why energy was used in New Zealand houses based on the monitoring of energy and end-uses in a national sample of 400 houses. Based on these data, space heating was found to average 34% of total household energy use. Three issues are highlighted in relation to space heating: firstly, the extent to which low indoor temperatures are associated with persistent under-heating; secondly, whether some space-heating sources tend to be associated with higher (or lower) winter indoor temperatures than others; and thirdly, what the drivers of under-heating might be. An overview of the HEEP research and its complex data set is provided. The range of winter indoor temperatures are then compared with international benchmarks and established healthy temperature ranges. Occupants' perceptions of winter indoor temperature conditions are presented and explored in relation to heating patterns and household energy consumption. The impacts of this research have assisted in changing public policy, moving from a narrow focus on energy efficiency toward an integrated energy, environmental, and health policy for the building stock and future interventions.
(To request: email library@energylibrary.org.nz Ref: **0911-HEEP**)

Big numbers and high hopes. Bishop, John. *Engineering Insight (IPENZ)*; Sep/Oct 2011 Vol. 12 (5), p.8-13

Government Ministers have been emphasising that the National Infrastructure Plan (NIP) is a key part of their medium term growth strategy. John Key says it's "Unclogging the arteries of the economy".

(To request: email library@energylibrary.org.nz Ref: **0911-Big**)

Joint effort to rescue Christchurch. *Electrolink*; (84) May-June 2011, p.14-16

Orion, Tyco Electronics and TransNet worked together to restore electricity in the aftermath of the February 22nd earthquake in Christchurch.

(To request: email library@energylibrary.org.nz Ref: **0911-Orion**)

Hot water cylinder restraints. Beattie, Graeme. *Build (BRANZ)*; Jun/July 2011, p.18-19

It is important that hot water cylinders are restrained. After an earthquake they may become a crucial source of water when the usual supplies are cut off. This short article (with diagrams) outlines the options.

(To request: email library@energylibrary.org.nz Ref: **0911-Hot**)



Public policy towards the sale of state assets in troubled times: Lessons from the Irish experience. Paul K. Gorecki et al. *Utilities Policy*; Vol. 19 (3), Sept 2011, p.193-201

The sale of state assets, both tangible (e.g. commercial firms) and intangible (e.g. radio spectrum), can address budgetary shortfalls. However, drawing on the Irish experience to inform this important issue, it becomes clear that much more is involved in selling state assets in electricity, gas, and transport than ranking such assets by value. Wider public policy considerations need to be taken into account in deciding what to sell and under what conditions. The paper outlines how these wider issues, relating to competition and regulation, can be dealt with so that the sale of state assets will enhance societal welfare.

(To request: email library@energylibrary.org.nz Ref: **0911-Assets**)

Exploring new energy alternatives. David J. LePoire. *The Futurist*; Sep/Oct 2011, Vol. 45 (5), p.34-38

(To request: email library@energylibrary.org.nz Ref: **0911-New**)

Profitable solutions to climate, oil, and proliferation. Amory B. Lovins. *Ambio*; May 2010, Vol. 39 (3), p.236-248

(To request: email library@energylibrary.org.nz Ref: **0911-Climate**)

Review of photovoltaic technologies. L. El Chaar et al. *Renewable and Sustainable Energy Reviews*; Vol. 15 (5), June 2011, p.2165-2175

This paper is a full review on the development of existing photovoltaic (PV) technology. It highlights the four major current types of PV: crystalline, thin film, compound and nanotechnology. The aim of continuous development of PV technology is not only to improve the efficiency of the cells but also to reduce production cost of the modules, hence make it more feasible for various applications. Moreover, such variety in technology is needed to

enhance the deployment of solar energy for a greener and cleaner environment. Devices such as space PV cell technology were also described and the progress in this field is expanding. In addition, a quick overview of the application of PV installations is described.

(To request: email library@energylibrary.org.nz Ref: **0911-PV**)

Development of the first pumped-storage scheme with an underground lower reservoir. Turgeon, M. et al. *International Journal on Hydropower & Dams*; Vol. 18 (4) 2011, p.45-48

(To request: email library@energylibrary.org.nz Ref: **0911-Pumped**)

Predictability of heavy precipitation in the Waikato River Basin of New Zealand.

Dravitzki, S.; McGregor, J. *Monthly Weather Review*; Jul 2011, Vol. 139 (7), p.2184-2197

(To request: email library@energylibrary.org.nz Ref: **0911-Hydro**)

Imaging hydraulic fractures in a geothermal reservoir. Julian, Bruce R. et al. *Geophysical Research Letters*; 2010, Vol. 37 (7), p.1-5

(To request: email library@energylibrary.org.nz Ref: **0911-Geothermal**)

LCA of eucalyptus wood charcoal briquettes. Patrick Rousset et al. *Journal of Cleaner Production*; Vol. 19 (14), Sept 2011, p.1647-1653

This paper sets out to describe the environmental impact assessment for wood charcoal briquettes produced from eucalyptus wood in Brazil, with specific reference to those impacts associated with Global Warming Potential. To achieve that objective, the work was undertaken in accordance with ISO 14040 "Environmental management – Life cycle assessment – Principles and framework" which describes essential LCA characteristics and good practices. Charcoal briquettes are produced from two basic raw materials, charcoal fines and starch. The fines result from the production of charcoal from sustainably managed eucalyptus plantations. Starch is extracted from babaçu pulp in the Amazon region. Multi-output processes were allocated based on income from the different by-products. The results showed that more than 90% of incoming CO₂ was due to biomass production for charcoal, and the remainder to starch biomass production. Based on Brazilian data, as well as information provided by the GaBi4.3 database, it turned out that supplying the energy content of 1 kg of briquettes resulted in the sequestration of 3.9690 kg of CO₂, i.e. around 4 kg of CO₂ per kg of briquettes produced. CO₂ emissions throughout the briquette production process are totally compensated for by the environmental quality of the raw materials used.

(To request: email library@energylibrary.org.nz Ref: **0911-Wood**)

New insights in the ash melting behavior and improvement of biomass energy pellets using flour bond. van Soest, J. et al. *Journal of Energy & Power Engineering*; Aug 2011, Vol. 5 (8), p.685-691

(To request: email library@energylibrary.org.nz Ref: **0911-Pellets**)

The efficiency of Ireland's Renewable Energy Feed-In Tariff (REFIT) for wind generation. R. Doherty; M. O'Malley. *Energy Policy*; Vol. 39 (9), Sep 2011, p.4911-4919

(To request: email library@energylibrary.org.nz Ref: **0911-FIT**)

Wind turbine siting, system design and integration. Chapter in: Wind Energy Explained; 2002 1st Edition, p.369-426

(To request: email library@energylibrary.org.nz Ref: **0911-Siting**)

Contrasting the core beliefs regarding the effective implementation of wind power: An international study of stakeholder perspectives.

Wolsink, M.; Breukers, S. *Journal of Environmental Planning & Management*, Jul 2010, Vol. 53 (5), p.535-558

(To request: email library@energylibrary.org.nz Ref: **0911-Core**)



Online monitoring of a power slip-ring on the shaft of a wind power generator. Soua, S. et al. *Insight: Non-Destructive Testing & Condition Monitoring*; Jun 2011, Vol. 53 (6), p.321-329

The experimental results obtained from an online monitoring study of out-of-round defects in the slip-rings of wind turbine generators are presented.

(To request: email library@energylibrary.org.nz Ref: **0911-Wind**)

Fuel and CO2 emissions savings calculation methodology for combined heat and power (CHP) systems. Bruce A. Hedman; Anne C. Hampson. *ASHRAE Transactions*; 2011, Vol. 117, p.961-973

Combined heat and power (CHP) is an efficient and clean method of providing energy services at the point of use. Instead of purchasing electricity from the local utility and burning fuel in an on-site furnace or boiler to produce needed thermal energy, an industrial or commercial user can use CHP to provide both energy services in one energy-efficient step. Consequently, CHP can provide significant energy efficiency and environmental advantages over separate heat and power. It is becoming increasingly critical that a common approach be established to estimate the fuel and CO2 emissions savings of CHP. This approach will need to recognize both outputs of the CHP system, and be able to compare the fuel use and emissions of the CHP system to the fuel use and emissions that would have normally occurred in providing energy services to the site through separate heat and power. A key factor in estimating the energy and CO2 emissions savings for CHP is determining the nature of the avoided central station generation. Should the calculation of the displaced energy and CO2 emissions be based on the all-generation average of the region the facility is located in, the all-fossil average, the average for some specific fuel type, an estimate of marginal generation, or a projection of future installed generation? This paper provides a suggested methodology for calculating fuel and CO2 emissions savings from CHP, and develops recommendations on the appropriate nature of avoided central station generation and the level of regional aggregation for accurate estimates of energy and emissions savings. The methodology for calculating fuel savings is consistent with and equivalent to the calculation of primary energy savings (PES) included in the European Union Cogeneration Directive (EU 2004). ©American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. www.ashrae.org.

(To request: email library@energylibrary.org.nz Ref: **0911-CHP**)

Get fracking real. *Energy NZ*; Vol. 5 (5), Sep/Oct 2011, p.34-35

Energy associations Papanz and Straterra, along with state collier Solid Energy have stepped up to answer anti-fracking concerns that have washed down from the United States, where low-depth gas drilling in the eastern states near residences has come under scrutiny.

(To request: email library@energylibrary.org.nz Ref: **0911-Gas**)

Scope-dependent modelling of electricity supply in life cycle assessments. Rolf Frischknecht; Matthias Stucki. *The International Journal of Life Cycle Assessment*; Sep 2010, Vol. 15 (8), p.806-816
(To request: email library@energylibrary.org.nz Ref: **0911-LCA**)

General equilibrium, electricity generation technologies and the cost of carbon abatement: A structural sensitivity analysis. Bruno Lanz; Sebastian Rausch. *Energy Economics*; Vol. 33 (5), Sept 2011, p.1035-1047
(To request: email library@energylibrary.org.nz Ref: **0911-Carbon**)

Road lighting quality, energy efficiency, and mesopic design - LED street lighting case study. Anne-Mari Ylinen et al. *Leukos*; Jul 2011, Vol. 8 (1); p.9-24
(To request: email library@energylibrary.org.nz Ref: **0911-LED**)

Auckland Council LED lighting and controls trial delivers major savings. *Electrical Technology*; Sep/Oct 2011, p.14 (1 page).
(To request: email library@energylibrary.org.nz Ref: **0911-Savings**)

Reducing costs and achieving superior plant energy performance using real-time information and best practices in energy management. Shiva Subramanya. *Energy Engineering*; 2011, Vol. 108 (5), p.63-66,69-77

After years of attempting to streamline operations in an effort to reduce operational costs, many industrial manufacturers are turning to strategic energy management as a potential money-saving strategy. In their efforts, managers face a number of significant barriers such as low awareness and expertise, elevated financial hurdle rate, lack of capital allocation, and procurement constraints. In addition, energy efficiency efforts may be hampered by traditional single-point energy reduction methods such as reviewing utility bills, getting equipment upgrade suggestions from vendors, or one-time energy audits. Research demonstrates that these techniques have neither the visibility nor continuity to achieve energy reductions that are consistent and persistent. With the right best practices, however, using new methodologies and technologies unavailable only a few years ago, enterprises can achieve dramatic energy reductions and the resulting cost savings. These best practices are founded on (1) application of a systematic methodology for understanding where energy is used and how to reduce it, (2) achieving visibility of sufficiently granular real-time information on key performance indicators, and (3) integrating new technology into overall corporate strategy and processes to change behavior.

(To request: email library@energylibrary.org.nz Ref: **0911-Best**)

A case study of energy auditing: A tool for energy conservation in industry. Khatib, I.; Qasrawi, A.; Yasin, T. *Journal of Energy & Power Engineering*; Mar 2011, Vol. 5 (3), p.209-214
(To request: email library@energylibrary.org.nz Ref: **0911-Audit**)

An approach for evaluating the market effects of energy efficiency programs. Edward Vine et al. *Energy Efficiency*; Sep 2010, Vol. 3 (3), p.257-266
(To request: email library@energylibrary.org.nz Ref: **0911-Market**)



Is real-time pricing right for solar PV? Perlman, Jeffrey; McNamara, Andrew. *Natural Gas & Electricity*; Apr 2010, Vol. 26 (9), p.16-21
(To request: email library@energylibrary.org.nz Ref: **0911-Pricing**)

Determinants of price mark-up tolerance for green electricity – lessons for environmental marketing strategies from a study of residential electricity customers in Germany. Gerpott, T. J.; Mahmudova, I. *Business Strategy & the Environment*; Jul 2010, Vol. 19 Issue 5, p304-318
(To request: email library@energylibrary.org.nz Ref: **0911-Green**)

Development of a methodology for clustering electricity-price series to improve customer response initiatives. Gabaldón, A. et al. *IET Generation, Transmission & Distribution*; Jun 2010, Vol. 4 (6), p.706-715
(To request: email library@energylibrary.org.nz Ref: **0911-Reponse**)

Using available information for efficient evaluation of demand-side management programs. Mary M. Straub; Sheldon Switzer. *The Electricity Journal*; Vol. 24 (7), Aug-Sep 2011, p.83-96
Given the large financial investments required for DSM initiatives, it is important to have reliable and verifiable estimates of energy and demand impacts. Effective evaluation is critical to determine if programs are meeting their objectives, to determine the costs and savings associated with the programs, and to suggest improvements in program design and delivery, especially as markets and technology change.
(To request: email library@energylibrary.org.nz Ref: **0911-DSM**)

Power supply optimization: Procurement flexibility would help maximise efficiency. Robertson, Angus. *Energy World*; Jun 2011 (394), p.18-19
Traditional procurement principles must be flexible to ensure the right technologies lead the fight against climate change, including equipment that reduces or optimises the power supply voltage, writes powerPerceptor CEO Angus Robertson.
(To request: email library@energylibrary.org.nz Ref: **0911-Supply**)

Tools for analysis and design of distributed resources—Part IV: Future trends. Martinez, J. A. et al. *IEEE Transactions on Power Delivery*; July 2011, Vol. 26 (3), p.1671 – 1680
Real-time testing of new and more sophisticated distributed resource interfaces during transients, representing the different physical parts (mechanical, thermal, hydraulic, chemical, electrical, electronics) of a nonconventional generator in a single platform, or analyzing the interactions of distribution systems with distributed generators, energy markets, and customer behaviors are scenarios that cannot be studied with current software packages. This paper analyzes the present status and discusses the future development of tools that could cope with these simulation challenges. This paper includes test cases that will illustrate the scope of some of these simulation tools. © 2011 IEEE. Reprinted with permission of the IEEE
(To request: email library@energylibrary.org.nz Ref: **0911-Tools**)

Smart meters for power grid: Challenges, issues, advantages and status. Soma Shekara Sreenadh Reddy Depuru et al. *Renewable and Sustainable Energy Reviews*; Vol. 15 (6), Aug 2011, p.2736-2742
(To request: email library@energylibrary.org.nz Ref: **0911-Meters**)

Monitoring the first frequency derivative to improve adaptive underfrequency load-shedding schemes. U. Rudez; R. Mihalic. *IEEE Transactions on Power Systems*; May 2011 Vol. 26 (2), p.839 - 846
(To request: email library@energylibrary.org.nz Ref: **0911-Load**)

Renewable energy sources and frequency regulation: Survey and new perspectives. Bevrani, H. et al. *IET Renewable Power Generation*; Sep 2010, Vol. 4 (5), p.438-457
As the use of renewable energy sources (RESs) increases worldwide, there is a rising interest on their impacts on power system operation and control. An overview of the key issues and new challenges on frequency regulation concerning the integration of renewable energy units into the power systems is presented. Following a brief survey on the existing challenges and recent developments, the impact of power fluctuation produced by variable renewable sources (such as wind and solar units) on system frequency performance is also presented. An updated LFC model is introduced, and power system frequency response in the presence of RESs and associated issues is analysed. The need for the revising of frequency performance standards is emphasised. [Abstract abbreviated].
(To request: email library@energylibrary.org.nz Ref: **0911-RES**)

Age-dependent maintenance strategies of medium-voltage circuit-breakers and transformers. X. Zhang; E. Gockenbach. *Electric Power Systems Research*; Vol. 81 (8), Aug 2011, p.1709-1714
(To request: email library@energylibrary.org.nz Ref: **0911-Age**)

Real-time coordination of plug-in electric vehicle charging in smart grids to minimize power losses and improve voltage profile. Deilami, S. et al. *IEEE Transactions on Smart Grid*; Sept 2011, Vol. 2 (3), p.456 - 467
(To request: email library@energylibrary.org.nz Ref: **0911-EV**)

Wind-structure interaction in conductor bundles in transmission lines. Riera, J. D.; Oliveira, T. T. *Structure & Infrastructure Engineering: Maintenance, Life-Cycle Design & Performance*; Aug 2010, Vol. 6 (4), p.435-446
(To request: email library@energylibrary.org.nz Ref: **0911-Lines**)

High-current lightning discharges in winter. Ishii, M. et al. *Electrical Engineering in Japan*; Jan 2010, Vol. 170 (1), p.8-15
(To request: email library@energylibrary.org.nz Ref: **0911-Winter**)

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Special Topic: Carbon Capture and Storage

Opportunities for underground geological storage of CO₂ in New Zealand. Report CCS-08/9. Technical reviews on carbon, capture, transport and injection technologies. McCurdy, M. Lower Hutt: GNS Science, 2009.

(To borrow this report email library@energylibrary.org.nz Ref: **0911-Topic1**)



Opportunities for underground geological storage of CO₂ in New Zealand. Report CCS-08/10. Risk assessment methodologies. Gerstenberger, M. Lower Hutt: GNS Science, 2009

(To borrow this report email library@energylibrary.org.nz Ref: **0911-Topic2**)

Opportunities for underground geological storage of CO₂ in New Zealand. Report CCS-08/11. Monitoring and verification methodologies. Bannister, S. Lower Hutt: GNS Science, 2009

(To borrow this report email library@energylibrary.org.nz Ref: **0911-Topic3**)

Assessment of carbon capture and sequestration liability regimes. Elizabeth Lokey Aldrich; Cassandra Koerner. *The Electricity Journal*; Vol. 24 (7), Aug-Sept 2011, p.35-48
Liability coverage for CCS is of paramount importance if the industry is going to mature and develop in a way that will allow it to make a significant contribution to mitigating climate change. Very few of the liability schemes that have thus far been implemented, with the exception of the schemes in Alberta, North Dakota, and Montana, cover post-closure, long-term liability in a comprehensive way. As a result, these incomplete liability schemes are likely to cause confusion, misunderstandings, and litigation as they are implemented.

(To request: email library@energylibrary.org.nz Ref: **0911-Topic5**)

Expert assessments of retrofitting coal-fired power plants with carbon dioxide capture technologies. T. S. Chung et al. *Energy Policy*; Vol. 39 (9), Sept 2011, p.5609-5620

(To request: email library@energylibrary.org.nz Ref: **0911-Topic4**)

Conditional inevitability: Expert perceptions of carbon capture and storage uncertainties in the UK context. B. Evar. *Energy Policy*; Vol. 39 (6), Jun 2011, p.3414-3424

This paper presents findings on expert perceptions of uncertainty in carbon capture and storage (CCS) technology and policy in the UK, through survey data and semi-structured interviews with 19 individual participants. Experts were interviewed in industry, research, and non-governmental organisations (NGOs) in the summer of 2009 and were asked to comment on a range of technical processes as well as policy concerns. The survey revealed that perceptions of the technology conform to a 'certainty trough' with users expressing the lowest level of uncertainty, and outsiders expressing the highest level of uncertainty. The interviews revealed that experts express certitude in the prospects for deploying large-scale CCS technology in the UK, all the while questioning several underlying technical and policy premises that are necessary to ensure this goal.

(To request: email library@energylibrary.org.nz Ref: **0911-Topic6**)

Chemical looping combustion for high efficiency and carbon capture. Childs, Peter. *Gas Turbine World*; May - Jun 2011. Vol. 41 (3), p.24-27
(To request: email library@energylibrary.org.nz Ref: **0911-Topic7**)

Decarbonization of fossil fuels as a strategy to control global warming. T. Abbasi; S. A. Abbasi. *Renewable and Sustainable Energy Reviews*; Vol. 15 (4), May 2011, p.1828-1834
(To request: email library@energylibrary.org.nz Ref: **0911-Topic8**)

Techno-economic evaluation of coal-to-liquids (CTL) plants with carbon capture and sequestration. H. C. Mantripragada; E. S. Rubin. *Energy Policy*, Vol. 39 (5), May 2011, p.2808-2816
(To request: email library@energylibrary.org.nz Ref: **0911-Topic9**)

Utilizing solar thermal energy for post-combustion CO2 capture. Cohen, Stuart M. et al. *Journal of Energy & Power Engineering*; Mar 2011, Vol. 5 (3), p.195-208
(To request: email library@energylibrary.org.nz Ref: **0911-Topic10**)

Risk assessment of CO2 geological storage and the calculation of storage capacity. D. Qi et al. *Petroleum Science & Technology*; Jul 2010, Vol. 28 (10), p.979-986
Greenhouse gas emission is becoming serious, and attention has been paid to CO2 geological storage which will not only help to achieve CO2 reduction in air but improve oil recovery. This article provides risk assessment of CO2 geological storage and calculation of storage capacity, which was validated in an oilfield.
(To request: email library@energylibrary.org.nz Ref: **0911-Topic11**)

Analytical and numerical modeling of CO2 sequestration in deep saline aquifers. Ozgur, E.; Gumrah, F. *Energy Sources Part A: Recovery, Utilization & Environmental Effects*; May 2010, Vol. 32 (7), p.674-687
(To request: email library@energylibrary.org.nz Ref: **0911-Topic12**)

A comprehensive techno-economic analysis method for power generation systems with CO2 capture. Gang Xu et al. *International Journal of Energy Research*; Mar 2010, Vol. 34 (4), p.321-332
(To request: email library@energylibrary.org.nz Ref: **0911-Topic13**)

Integration of carbon sequestration into curing process of precast concrete. Monkman, S.; Shao, Y. *Canadian Journal of Civil Engineering*; Feb 2010 Vol. 37 (2), p.302-310
(To request: email library@energylibrary.org.nz Ref: **0911-Topic14**)

Equivalent carbon dioxide capture and storage processes in offshore petroleum production facilities. Maia, J. L. P.; De Barros, M. T. L. *Energy Sources Part A: Recovery, Utilization & Environmental Effects*; Jan 2010, Vol. 32 (2), p.180-188
(To request: email library@energylibrary.org.nz Ref: **0911-Topic15**)

Carbon capture and storage law for New Zealand: A comparative study. Barton, Barry. *New Zealand Journal of Environmental Law*; 2009 Vol. 13, p.1-36

Carbon capture and storage, or geosequestration, is an emerging technique to address climate change by reducing emissions of carbon dioxide. New Zealand law does not presently provide for carbon capture and storage. The Crown Minerals Act 1991 and the Resource Management Act 1991 do not make it possible. Canada and Australia offer useful comparisons, as, to a lesser extent, do the European Union and the United States. The comparisons assist in an analysis of the main issues involved in creating a legal regime for New Zealand: rights to real property, title or permits, relationship with oil and gas operations, regulation, liability, and relationships with other legislation.

(To request: email library@energylibrary.org.nz Ref: **0911-Topic16**)

Carbon capture and storage: Fundamental thermodynamics and current technology. S. C. Page et al. *Energy Policy*; Vol. 37 (9), New Zealand Energy Strategy, Sept 2009, p.3314-3324

(To request: email library@energylibrary.org.nz Ref: **0911-Topic17**)



Pinch analysis approach to carbon-constrained planning for sustainable power generation. R. R. Tan et al. *Journal of Cleaner Production*; Vol. 17 (10), July 2009, p.940-944

A graphical pinch-based methodology for planning retrofits for carbon capture and storage (CCS) in the power generation sector is presented in this work. CCS is widely seen as one of the essential interim technologies to mitigate greenhouse gas emissions, while still being able to utilize fossil fuels, which are relatively inexpensive and reliable in comparison to inherently low-carbon renewable resources. However, retrofitting power plants for CCS entails major capital costs as well as a reduction of thermal efficiency and power output. Thus, it is essential for planning purposes to implement the minimal extent of CCS retrofit that meets the sectoral carbon footprint targets. At the same time, it is necessary to plan for additional power generation capacity or efficiency enhancements to compensate for energy losses resulting from CCS retrofits. The simple graphical approach used in this paper is designed to determine such targets, and shares the same intuitive, insight-driven characteristics of pinch analysis techniques. A case study is shown to illustrate the methodology.

(To request: email library@energylibrary.org.nz Ref: **0911-Topic18**)

The CCP's 2010 Annual Report providing an overview of the group's work to develop next generation technologies is now available at www.co2captureproject.com

Featured Energy Event

Lunchtime Seminar with Hon. Hekia Parata, Acting Minister of Energy & Resources. EFNZ lunch seminar Mon 7th November, Wellington. Registration form will be available on EFNZ [website](#) soon (this week).

Please [email](#) us if you would like your event to be featured in the Energy Update.

Energy on the Web

New Zealand



Resource Management Act: Two-yearly Survey of Local Authorities 2010/2011 – MFE [report](#).

Auditor-General's overview: Managing freshwater quality: Challenges for regional councils - Office of the Auditor-General [report](#).

Fuel efficiency impacts of Fonterra's Crawford St dairy freight hub – EECA / Waikato Regional Council [report](#).

Shaken but not Stirred: A University's Resilience in the Face of Adversity – The 4th September 2010 Earthquake – University of Canterbury [report](#).

Standards and Regulation for Building Construction in New Zealand - IPENZ [report](#) for the Canterbury Earthquakes Royal Commission.

New Zealand Energy Quarterly - June Quarter 2011 – MED [publication](#).

Thank you from Orion: A year of working together to power Canterbury – Orion [publication](#) with good overview of power situation in Christchurch over the past year.

Energy Management Association of New Zealand submission on Christchurch Draft Central City Plan – EMANZ [document](#).

Industry and market monitoring: competition - Electricity Authority [information paper](#).

Implementation of an inter-island financial transmission right - Additional [information](#) for the FTR Manager Request for Proposals has been published by the Electricity Authority.

After the earthquake: Department of Labour advice to employers and employees – Department of Labour [publication](#).

Consultation on Proposed Regulations Restricting the Use of HFC-23 and N2O CERs in the NZ ETS – NZ Government consultation [document](#).

Green Growth Issues for New Zealand: Feedback to the Green Growth Advisory Group - Parliamentary Commissioner for the Environment [submission](#).

The Agriculture ETS Advisory Committee's report to Ministers – Agriculture Emissions Trading Scheme Advisory Committee first [report](#).

Panel to Government on ETS: Stay the course, but let's not rush – Chapman Tripp [Brief Counsel](#)

International

What Have We Learned from Energy Efficiency Financing Programs? - ACEEE [report](#).

National Greenhouse and Energy Reporting—Greenhouse and Energy Information—2009–10 - Australian Government [report](#).

Unlocking Barriers to Cogeneration: Project Outcomes – ClimateWorks / Seed Advisory [report](#).

Climate Risk Disclosure by Insurers: Evaluating Insurer Responses to the NAIC Climate Disclosure Survey – CERES [report](#).

Statistical Review of World Energy 2011 – BP [report](#).

CDP S&P 500 report 2011: Strategic advantage through climate change action – Carbon Disclosure Project [report](#).

Using electric vehicles to meet balancing requirements associated with wind power - PNNL [report](#).

National Electricity Market Modelling - ACIL Tasman [report](#).

Environmental assessment of Ogoniland - UN [report](#) on oil pollution in Nigeria's Ogoniland.

Influences on the low carbon car market from 2020–2030 - Element Energy [report](#) for Low Carbon Vehicle Partnership.

2050 Pathways analysis – UK Government [publication](#).

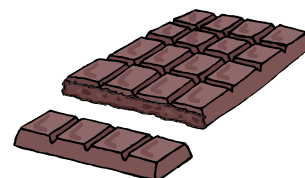
4 Risks Facing Energy Companies Today - This recent *Risk Management* article is [online](#).

Twitter users: To see more web resources we spot throughout the month click [here](#).

Fuel for Thought (Energy chocolate competition)

In August the American Institute of Architects [announced the winners](#) of a competition that challenged designers to create a dream house for a famous "person". To be in to win this month's block of Energy chocolate just [email us](#) the answer to this question: Who was the famous person?

Draw closes 4pm Fri 21st October. Congratulations to Neil, who won last month's draw.



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