

IPENZ ENGINEERING UPDATE May 2008



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Management/Leadership/Strategic Planning/Recruitment/Training and Development/Project Management/Corporate Responsibility

√IPENZ 14/01 How top talent uses networks and where rising stars get trapped.

Cross, R and Thomas R. Organizational Dynamics, Volume 37 no2 (2008) Pages 165-180.
Adapting and cultivating networks helps employees throughout their career. Research has shown that a good network can play a key role in enabling a person to solve problems and adapt to new situations.

√IPENZ 14/02 Are you working too hard?

Harvard Business Review, Volume 83 Issue 11, (November 2005) Pages 53-58.
Stress is an essential response in highly competitive environments. Before a race, before an exam, before an important meeting, your heart rate and blood pressure rise, your focus tightens, you become more alert and more efficient. But beyond a certain level, stress overloads your system, compromising your performance and, eventually, your health. So the question is: When does stress help and when does it hurt? To find out, HBR talked with Harvard Medical School professor Herbert Benson, M.D., founder of the Mind/Body Medical Institute. Having spent more than 35 years conducting worldwide research in the fields of neuroscience and stress, Benson is best known for his 1975 best seller The Relaxation Response, in which he describes how the mind can influence stress levels through such tools as meditation. His most recent research centers on what he calls "the breakout principle," a method by which stress is not simply reduced but carefully controlled so that you reap its benefits while avoiding its dangers.

√IPENZ 14/03 Exceptional implementers.

Porter, T et al. Industrial Management, Volume 49 Issue 5 (September 2007) Pages 14-19.
Discusses the key skills and characteristics displayed by people who are consistently delivering projects on time and within budget.

√IPENZ 14/04 Using the power of Excel in estimating systems.

Kumar, A. AACE International Transactions, (2007) Pages ES20.1 – ES20-14.

√IPENZ 14/05 Technologies for managing E-mail.

Wilkins, J. Information Management Journal, Volume 42 Hot Topic Supplement (March/April 2008) Pages 2-8.

Looks at the management of electronic-mail, including corporate use policies, types of messaging systems, archiving options and organizational procedures for records management.

√IPENZ 14/06 Better strategy through organizational design.

Bryan, L and Joyce, C. McKinsey Quarterly, Issue 2,(2007) Pages 20-29.
Organizational inertia can often hinder innovation and development. The authors suggest that good organizational design can help to create and implement business strategy.

√IPENZ 14/07 **Electric utility achieves business results through organizational development.**
Schifo, R. Organization Development Journal, Volume 25 Issue 4 (Winter 2007) Pages 135-140.

√IPENZ 14/08 **Be a better leader, have a richer life.**

Friedman, S. Harvard Business Review, Volume 86 Issue 4 (April 2008) Pages 112-118.
Work fills most executives' lives to the brim, leaving insufficient time for their families, their communities, and themselves. But Wharton professor Friedman suggests that, rather than view the problem as a set of trade-offs, executives use their leadership talents to benefit all four domains at once. The "Total Leadership" process involves identifying what's important to you, identifying what's important to everyone in your life, using those insights to creatively explore possibilities for experiments, and then selecting and implementing a few at a time. Drawing on decades of experience, Friedman has distilled nine categories of experiments that offer a manageable, systematic approach to the daunting task of conceiving projects with four-way benefits.

√IPENZ 14/09 **Leaderships online labs.**

Reeves, B., Malone, T and O'Driscoll, T. Harvard Business Review, Volume 86 Issue 5 (May 2008) Pages 58-66.

Multiplayer online role-playing games are sprawling cybercommunities that offer a sneak preview of tomorrow's business environment. Players who lead teams in these online worlds hone the skills that they will need as business leaders in the future. Games also provide an environment that makes being an effective leader easier and that today's businesses might try to replicate selectively in their own organizations. Those are the principal findings by Reeves, of Stanford University; Malone, of MIT's Sloan School; and O'Driscoll, of North Carolina State. The authors identified three distinctive characteristics of leadership in online games that, as workplaces and the overall business climate become more dynamic and gamelike, will be essential for tomorrow's leaders: speed, risk taking, and acceptance of leadership roles as temporary. The most important finding, say the authors, is that getting the leadership environment right can be as important as choosing the right leader.

√IPENZ 14/10 **Fun at work.**

Owler, K. New Zealand Management, Volume 55 issue 3 (April 2008) Pages 40-42.

√IPENZ 14/11 **Exit stage right.**

Cuthell, D. Employment Today, Issue 127 (April 2008) Pages.18-20.

How to glean valuable insights into your organisation via employee exit interviews.

√IPENZ 14/12 **Testing times.**

Anyan, S. North & South, Issue 264 (March 2008) Pages.68-73.

Psychometric testing has become an increasingly popular tool in the recruitment process in New Zealand. Just how useful is it?

√IPENZ 14/13 **The five stages of workplace "tribes": Two researchers say that your tribe is more important than anything else at work. Here's how to harness the power of that insight.**

Robison, J. Gallup Management Journal Online (5/8/2008) Pages 1-5

√IPENZ 14/14 **Quality and safety management in construction.**

Loushine, T and Hoonakker, P. Total Quality Management & Business Excellence, Volume 17 Issue 9 (November 2006) Pages 1171-1212,

√IPENZ 14/15 **Vibration in the workplace.**

Walter, S. Occupational Safety and Health (RoSPA), Volume 37 Issue 9 (September 2007) Pages 34-36, 38.

Vibration poses a significant health risk in the workplace. This article discusses the United Kingdom's "Control of Vibration at Work Regulations 2005". Sources of vibration and symptoms resulting from excessive exposure are also examined, along with strategies for assessment and methods for reducing exposure.

√IPENZ 14/16 **Predicting and improving safety performance.**

Bell, K. Industrial Management, Volume 50 Issue 2 (March/April 2008) Pages 12-16.

Studies have shown that companies that have good health and safety programmes are more likely to perform well in all other areas.

√IPENZ 14/17 **Risk allocation in the private provision of public infrastructure.**

Ng, A. and Loosemore, M. International Journal of Project Management, Volume 25, Issue 1 (January 2007) Pages 66-76.

Communities benefit most from the private provision of public infrastructure when project risks are distributed appropriately between private and public sectors. This is not easy given the technical, legal, political and economic complexity of infrastructure projects and the range of constituencies involved. Too often, risks are under estimated and allocated to parties without the knowledge, resources and capabilities to manage them effectively. The result is increased costs, project delays and services which fail to deliver value-for-money to the community. This paper presents a case study of the controversial \$920 million New Southern Railway project in Sydney, Australia. It analyses the rationale behind decisions about risk distributions between public and private sectors and their consequences. It also demonstrates the complexity and obscurity of risks facing such projects and the difficulties in distributing them appropriately. The paper concludes with a series of recommendations to better manage risks in such projects.

√IPENZ 14/18 **Why traditional risk management fails in the oil and gas sector: empirical front-line evidence and effective solutions.**

Schroeder, B and Jackson, J. AACE International Transactions, (2007) Pages RISK 01.1 – RISK 01.6.

√IPENZ ENZ 14/19 **The costs of failure: A preliminary assessment of major energy accidents, 1907–2007.**

Sovacool, B. Energy Policy, Volume 36, Issue 5, (May 2008) Pages 1802-1820.

A combination of technical complexity, tight coupling, speed, and human fallibility contribute to the unexpected failure of large-scale energy technologies. This study offers a preliminary assessment of the social and economic costs of major energy accidents from 1907 to 2007. It documents 279 incidents that have been responsible for \$41 billion in property damage and 182,156 deaths. Such

disasters highlight an often-ignored negative externality to energy production and use, and emphasize the need for further research.

√IPENZ 14/20 **An investigation of management's commitment to construction safety.**

International Journal of Project Management, Volume 24, Issue 2, February 2006, Pages 167-174.
The costs resulting from injuries and equipment damage, combined with the associated financial loss resulting from schedule disruptions, insurance hikes, and workers compensation, impact the profitability of any construction operation. These costs may be minimized or avoided through focused safety efforts on construction job sites. The main purpose of this study is to determine the correlation between management commitment to safety and the frequency of construction-related injuries and illnesses. To achieve this purpose, a survey was developed and sent to a random sample of the top five hundred US construction companies. Survey results point to a clear statistical correlation between management commitment to safety and injury and illness rates.

√IPENZ 14/21 **People and error "Human factor" principles in safety critical industries.**

Anfield, J. Organization Development Journal, Volume 25 Issue 4 (Winter 2007) Pages 39-47.

√IPENZ 14/22 **Opening your board portal.**

Ruck, J. Corporate Board, Volume 29 Issue 170 (May/June 2008) Pages 14-18.
Discusses how technology can help with management of boards. The concept of an online board portal is discussed. The authors suggest this is a safer environment and outline other advantages.

√IPENZ 14/23 **Eight steps for keeping information management and E-discovery on target.**

Kahn, R and Silverberg, D. Information Management Journal, Volume 42 Issue 3, (May/June 2008) Pages 48-54.

√IPENZ 14/24 **Engaging the board in strategy: the next frontier in corporate governance.**

Kerr, J and Werther, W. Organizational Dynamics, Volume 37 no2 (2008) Pages 112-124.

√IPENZ 14/25 **The route to long term success of technology companies.**

Fleck, D. International Journal of Innovation Management, Volume 11 Issue 1, (March 2007) Pages 165-190.

Reviews success factors of technology companies using General Electric and Westinghouse as case studies.

√IPENZ 14/26 **Effect of host country and project conditions in international construction joint ventures.**

Ozorhon, B et al. International Journal of Project Management, Volume 25, Issue 8 (November 2007) Pages 799-806.

Joint ventures (JVs) have become popular because of their importance as a strategic alternative in global competition. International joint ventures (IJVs) are difficult to manage due to their complex structures involving more than two entities having different and competing objectives and strategies.

Since each construction project is unique, project-specific factors are significant for the success of an IJV as well as the risks associated with the host country in which the IJV operates. In this study, the impact of host country conditions and project characteristics on IJV performance is investigated through a questionnaire survey. IJV performance is defined as a three-dimensional construct considering the performance of the project, the IJV partners, and the IJV organization itself. The results of the study suggest that project-related factors have a great impact on IJV performance. But they failed to provide evidence that IJV performance is affected by host country related risks.

Technical Aspects of Engineering – Abstracts for most available upon request



√IPENZ 14/27 **Response of a bridge to a moving vehicle load.**

Lin, J. H. Canadian Journal of Civil Engineering, Volume 33 Issue 1 (January 2006) Pages 49-58.

√IPENZ 14/28 **Serviceability of bridge deck slabs with arching action.**

Taylor, S et al. ACI Structural Journal, Volume 104 Issue 1 (January - February 2007) Pages 39-49.

√ IPENZ 14/29 **Assessment of vibration-based damage detection for an integral abutment bridge.**
Siddique, A., Sparling, B and Wegner, L. Canadian Journal of Civil Engineering, Volume 34 Issue 3 (March 2007) Pages 438-453.

√ IPENZ 14/30 **System risk curves: probabilistic performance scenarios for highway networks subject to earthquake damage.**

Nobuhiko, S et al. Journal of Infrastructure Systems, Volume 13 Issue 1 (March 2007) Pages 43-54.

√ IPENZ 14/31 **Effectiveness of fiber-reinforced polymer in reducing corrosion in marine environment.**

Suh, K et al. ACI Structural Journal, Volume 104 Issue 1 (January - February 2007) Pages 76-84.

√ IPENZ 14/32 **Sustainability auditing and assessment challenges.**

Turner, R. K. Building Research & Information, Volume 34 Issue 3 (May/June 2006) Pages 197-200.

√ IPENZ 14/33 **Reducing energy consumption for seawater desalination.**

Veerapaneni, S et al. American Water Works Association. Journal, Volume 99 Issue 6 (2007) Pages 95-106.

√ IPENZ 14/34 **Impact of solar energy cost on water production cost of seawater desalination plants in Egypt.**

Lamei, A., van der Zaag, P and von Münch, E. Energy Policy, Volume 36 Issue 5 (May 2008) Pages 1748-1756.

√ IPENZ 14/35 **Differential pressure in membrane channel caused by foulant capture onto spacers.**

Guan T and Song, L. Water Environment Research, Volume 79 Issue 7 (2007) Pages 788-794.

√ IPENZ 14/36 **New desalination pump and energy recovery.**

MacHarg, J. American Water Works Association Journal, Volume 99 Issue 6 (2007) Pages 54-58, 60-61.

√ IPENZ 14/37 **An energy conversion system based on deep-sea pressure.**

Wang, F., Gu, L and Chen, Y. Ocean Engineering, Volume 35 Issue 1 (January 2008) Pages 53-62.

√ IPENZ 14/38 **Expanding environmental and economic benefits with distributed generation/combined heat and power.**

Patibandla, N. Environmental Quality Management, Volume 16 Issue 2 (Winter 2006) Pages 99-106.

√ IPENZ 14/39 **Backtracking Auckland? : Technical and communicative reason in metropolitan transport planning.**

Mees, P and Dodson, J. International Planning Studies, Volume 12 Issue 1 (February 2007) Pages 35-53.

√ IPENZ 14/40 **Improving energy efficiency in existing buildings.**

Holness, G. ASHRAE Journal, Volume 50 Issue 1 (January 2008) Pages 12-21.

√ IPENZ 14/41 **Comparing life cycle implications of building retrofit and replacement options.**

Dong, B., Kennedy, C and Pressnail, K. Canadian Journal of Civil Engineering, Volume 32 Issue 6 (December 2005) Pages 1051-1064.

√ IPENZ 14/42 **Hybrid domestic hot water system for efficiency and performance-preliminary design.**

Wiehagen, J et al. Energy Engineering, Volume 104 Issue 6 (2007) Pages 63-74.

√ IPENZ 14/43 **Thermal insulations for hot water cylinders: a review and a conceptual evaluation.**

Omer, S. A., Riffat, S. B and Qiu, G. Building Services Engineering Research & Technology, Volume 28 Issue 3 (August 2007) Pages 275-294.

√ IPENZ 14/44 **Designing a program to reduce GHG emissions and generate renewable energy from landfill sites.**

Quach, K and Robb, G. Energy Engineering, Volume 104 Issue 6 (2007) Pages 39-51.

√ IPENZ 14/45 **Numerical modelling of the environmental impact of landfill leachate on groundwater quality : a field application.**

Papadopoulou, M., Karatzas, G and Bougioukou, G. Environmental Modelling & Assessment, Volume 12 Issue 1 (February 2007) Pages 43-52.

√ IPENZ 14/46 **Knowledge-based condition survey inspection concepts.**

Uzarski, D., Grussing, M and Clayton, J. Journal of Infrastructure Systems, Volume 13 Issue 1 (March 2007) Pages 72-79.

√ IPENZ 14/47 **A load model based on antecedent dry periods for pollutants in stormwater.**

Soonthornnonda, P and Christensen, E. Water Environment Research, Volume 80 Issue 2 (2008) Pages 162-171.

√ IPENZ 14/48 **Modifying sludge treatment at refineries.**

Zhidong, Li et al. Pollution Engineering, Volume 40 Issue 5 (May 2008) Pages 37, 39-43.

√ IPENZ 14/49 **Lighting control strategies for telemanagement of road lighting control systems.**

Leukos, Volume 4 Issue 3 (2008) Pages 157-171.

√ IPENZ 14/50 **Complete streets: we can get there from here.**

Laplante, J and McCann, B. Institute of Transportation Engineers. ITE Journal, Volume 78 Issue 5 (2008) Pages 24-28.

√ IPENZ 14/51 **Analysis of road lighting quantity and quality in varying weather conditions.**

Leukos, Volume 4 Issue 2 (2007) Pages 89-98.

√ IPENZ 14/52 **Sustainable streets: an emerging practice.**

Greenberg, E. Institute of Transportation Engineers. ITE Journal, Volume 78 Issue 5 (2008) Pages 29-32, 37-39.

√ IPENZ 14/53 **The green hydrogen paradigm shift: energy generation for stations to vehicles.**

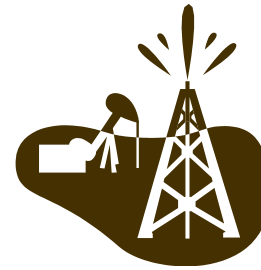
Clark W. Utilities Policy, Volume 16 Issue 2 (2008) Pages 117-129.

√ IPENZ 14/54 **A green hydrogen economy.**

Clark W and Rifkin, J. Energy Policy, Volume 34 Issue 17 (2006) Pages 2630-2639.

Feature Focus

Peak Oil



IPENZ 14/55 Developing indicators for managing tourism in the face of peak oil.

Becken, S. *Tourism Management*, Volume 29 Issue 4 (2008) Pages 695-705.

The tourism industry is currently a large user of oil. How will peak oil impact? New Zealand is used as a case study.

√ IPENZ 14/56 Peak oil in the light of oil formation theories.

Tsatskin, A. and Balaban, O. *Energy Policy*, Volume 36 Issue 6 (2008) Pages 1826-1828.

The peak oil debate is underpinned by a biological paradigm of oil formation that generates a notion of fixed oil and gas reserves in the Earth's crust. However, the potential of the abiogenic theory of oil formation is underestimated. We will demonstrate the value of modern petroleum science based on a thermodynamic understanding of hydrocarbon formation, and both experimental and observational data, which can introduce a change into the debate. Now emotionally charged and contentious, the debate will supposedly develop a balanced and realistic scenario on gradual oil transition and a secure global energy supply.

√ IPENZ 14/57 Modeling peak oil.

Holland, S. *Energy Journal*, Volume 29 Issue 2 (2008) Pages 61-79.

Four economic models are discussed

IPENZ 14/58 Alternatives to conventional crude oil: When, how quickly, and market driven?

Kaufmann, R and ,Shiers, L. *Ecological Economics*, Article in Press.

√ IPENZ 14/59 Mitigation of maximum world oil production: Shortage scenarios

Hirsch, R. *Energy Policy*, Volume 36 Issue 2 (2008) Pages 881-889.

A framework is developed for planning the mitigation of the oil shortages that will be caused by world oil production reaching a maximum and going into decline. To estimate potential economic impacts, a reasonable relationship between percent decline in world oil supply and percent decline in world GDP was determined to be roughly 1:1. As a limiting case for decline rates, giant fields were examined. Actual oil production from Europe and North America indicated significant periods of relatively flat oil production (plateaus). However, before entering its plateau period, North American oil production went through a sharp peak and steep decline. Examination of a number of future world oil production forecasts showed multi-year rollover/roll-down periods, which represent pseudoplateaus. Consideration of resource nationalism posits an Oil Exporter Withholding Scenario, which could potentially overwhelm all other considerations. Three scenarios for mitigation planning resulted from this analysis: (1) A Best Case, where maximum world oil production is followed by a multi-year plateau before the onset of a monotonic decline rate of 2-5% per year; (2) A Middling Case, where world oil production reaches a maximum, after which it drops into a long-term, 2-5% monotonic annual decline; and finally (3) A Worst Case, where the sharp peak of the Middling Case is degraded by

oil exporter withholding, leading to world oil shortages growing potentially more rapidly than 2-5% per year, creating the most dire world economic impacts.

IPENZ 14/60 Beyond peak oil: Will our cities collapse?

Newman, P (2007) *Journal of Urban Technology*, Volume 14 Issue 2 (2007) Pages 15-30.

√ **IPENZ 14/61 Peak oil?**

DiPeso, J. *Environmental Quality Management*, Volume 15 Issue 1 (Autumn 2005) Pages 111-118. Discusses M King Hubbert's theory on the peaking of oil.

√ **IPENZ 14/62 The Commons revisited: The tragedy continues.**

Lloyd, B. *Energy Policy* Volume 35, Issue 11, (November 2007) Pages 5806-5818

Garrett Hardin's classic paper "Tragedy of the Commons" published in *Science* in 1968 struck a chord with scientists and non-scientists alike and has continued to provide a key reference point to how a number of "Commons"-related problems can be viewed. Hardin's paper will be looked at in view of both anthropogenic global warming and peak oil and some of the solutions he posed for the "population problem" applied to the post-peak era. Possible solutions are compared with the Kyoto Protocol for global warming and the Rimini Protocol for peak oil. A carbon-indexed, universal tax on non-renewable energy resources 'Unitax' is mooted as a longer-term possibility to overcoming both global warming and the financing of post-peak oil problems. Alas, the process of dealing with global warming and peak oil seems to be falling into the "no technical solution" category that Hardin identified for population.

√ **IPENZ 14/63 Peaking of world oil production: impacts, mitigation and risk management.**

Hirsch, R., Bezdek, R and Wendling, R. Washington, D.C. National Energy Technology Laboratory, 2005.

√ **IPENZ 14/64 Economic impacts of U.S. liquid fuel mitigation options.**

Bezdek, R., Wendling, R and Hirsch, R. Washington, D.C. National Energy Technology Laboratory, 2006.

The purpose of this study was to analyse the economic and related aspects of a crash program aimed at the rapid reduction of U.S. dependence on imported oil.

√ **IPENZ 14/65 LINK TO THE ORIGINAL PEAK OIL PAPER PRESENTED IN 1956 BY M. KING HUBBERT.**

[Nuclear energy and fossil fuels.](#)

BOOKS ON PEAK OIL HELD IN ENERGY LIBRARY

These can be borrowed directly as part of Energy Library membership or interloaned via your public or company library if you are not a member.

√ IPENZ 14/66 **Twilight in the Desert: The Coming Saudi Oil Shock and the World Economy**
Simmons, Matthew R. (2005) Hoboken: Wiley.

This is a detailed discussion of the extent of Saudi Arabia's oil reserves, on which so much of the Western world depends. Parts 1 and 2 give technical background to understanding the field analysis covered in parts 3 and 4; this analysis is based on papers published by the Society of Petroleum Engineers. The author's conclusion, that Saudi reserves are at or beyond peak production, should make both governments and consumers extremely concerned. An authoritative book on this major issue; the text is supported by substantial appendices providing technical backup for the discussion.

√ IPENZ 14/67 **The End of Oil: On the edge of a perilous new world**
Roberts, Paul (2005) New York: Mariner Books.

We're all aware that oil is hugely important to our modern way of life. We are also aware that supplies are not infinite, and the number of times one hears of "peak oil" shows that many people are concerned about the implications of that.. Paul Roberts explores the current state of the industry - the difficulty of estimating reserves, and the political, economic and environmental considerations driving supply and demand, especially exploration. He also discusses the alternatives, and why so many of those promising ideas have still not developed into viable substitutes for oil.

√ IPENZ 14/68 **Saving Oil in a Hurry** (2005) Paris: International Energy Agency.

This book was published to help countries find ways to improve their ability to cope with oil market instability and the future supply problems which have been predicted. An analysis is given of potential policies and measures as well as the economics of the various options. Possible transport reduction schemes are examined (telecommuting, carpooling etc) along with information that can be used to decide which policies and measures will work in different countries. This book will be of particular interest to those involved in energy policy.

√ IPENZ 14/69 **The last oil shock : a survival guide to the imminent extinction of petroleum man.**
Strahan, David. (2007) London, John Murray.

√ IPENZ 14/70 **The bottomless well : the twilight of fuel, the virtue of waste and why we will never run out of energy.** (2005) Huber, Peter W and Mills, Mark, P. New York : Basic Books.

The authors point out that America consumes 25 percent of the world's natural gas, 23 percent of its hard coal, 25 percent of its crude petroleum, 43 percent of its motor gasoline, and 26 percent of its

electricity. They reveal that our main use of energy isn't lighting, locomotion, or cooling; what we use energy for, mainly, is to extract, refine, process, and purify energy itself. Huber and Mills list what they call the seven energy heresies: the cost of energy as we use it has less and less to do with the cost of fuel; "waste" is virtuous; the more efficient our technology, the more energy we consume; the competitive advantage in manufacturing is now swinging decisively back toward the U.S.; human demand for energy is insatiable; the raw fuels are not running out; and America's relentless pursuit of high-grade energy does not add chaos to the global environment but rather restores its order.

√ IPENZ 14/71 **The Long emergency: Surviving the end of oil, climate change, and other converging catastrophes of the twenty-first century** (2006) Kunstler, James Howard New York: Grove Press.

Kunstler discusses the impending world oil shortage, the environmental crisis, and the economic and social fallout from the huge changes taking place in modern society.

√ IPENZ 14/72 Deffeyes, Kenneth S. **Hubbert's peak : The impending world oil shortage** Princeton University Press, 2001

In 1956 geophysicist M. King Hubbert calculated that the early '70s would see the U.S. reach its highest level of oil production. This prediction was condemned at the time but was proven accurate in 1970. In this book Kenneth Deffeyes applies Hubbert's logic and comes to the conclusion that world oil production will peak by the end of this decade. The ramifications of this are discussed as well as the fact that none of the solutions proposed so far will be enough to stop catastrophe

FUTURE TOPICS FOR IPENZ ENGINEERING UPDATE

Below is the list of topics in previous issues. If you have any suggestions for future topics, please email your ideas to Jackie Park jpark@energylibrary.org.nz

<ul style="list-style-type: none"> ➤ Rail transportation ➤ Planning aspects of wind farms ➤ Water reuse/ greywater /graywater ➤ Disaster and emergency planning management ➤ Financing infrastructure /public private partnerships ➤ Sustainability 	<ul style="list-style-type: none"> ➤ Geothermal energy ➤ E waste (electronic waste) ➤ Floods ➤ Green building ➤ Fuel cells ➤ Airports ➤ Tidal and ocean power
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