

Location	Course	Date	Early Payment Date
Wellington	ELO	Introduction to the Electricity Market	Tue March 13 th
	ELNP1	Nodal Pricing of Electricity	Wed March 14 th
	ELRisk	Hedging Electricity	Thu March 15 th
			9 th March
Auckland	ELO	Introduction to the Electricity Market	Tue May 8 th
	ELNP1	Nodal Pricing of Electricity	Wed May 9 th
	ELRisk	Hedging Electricity	Thu May 10 th
			4 th May
Wellington	ELO	Introduction to the Electricity Market	Tue Jul 17 th
	ELNP1	Nodal Pricing of Electricity	Wed Jul 18 th
	ELRisk	Hedging Electricity	Thu Jul 19 th
			13 th July
Auckland	ELO	Introduction to the Electricity Market	Tue September 4 th
	ELNP1	Nodal Pricing of Electricity	Wed September 5 th
	ELRisk	Hedging Electricity	Thu September 6 th
			31 st August
Wellington	ELO	Introduction to the Electricity Market	Tue November 13 th
	ELNP1	Nodal Pricing of Electricity	Wed November 14 th
	ELRisk	Hedging Electricity	Thu November 15 th
			9 th November

Gas Market course: due to a lack of demand for our GM0 Introduction to the Gas Market course, we have unfortunately decided not to offer it again in 2012. Contributing factors include the relative lack of transparency in the gas market, which makes it difficult to get good data, and the high cost of maintaining the course.

Discounts

- A discount of 10% is available to any person who books all three courses in a session: when registering on our web site, select the 'EL3' product which includes all three courses in a session.
- Early payment discount of 10% is also available for payments received up to and including the Friday before the course.

Registration

Register online (paying by credit card or on invoice) or register by faxing us the attached form.

Intended Audience

These courses are intended to form a comprehensive introduction to the wholesale electricity market, with specific reference to, and examples from New Zealand. The emphasis of the courses is on understanding issues relevant to spot and wholesale trading and hedging, and the associated risks.

At each stage of the courses we will use simple examples designed to help participants understand the material presented. Participants will receive course booklets, including answers to all exercises.

Presenter - Greg Sise, Managing Director, Energy Link

Greg's experience in energy dates back to 1984, when he worked in the Energy Management Unit at the University of Otago developing software for monitoring and controlling energy production and consumption in buildings. He then worked in senior management positions for Univord Energy, a joint venture company arising from the University's energy management program, and its subsidiary Energy Consultants. His activities included tariff optimisation, contract negotiation, energy audits, energy efficiency projects in buildings, risk management and hedging.

“We put the **power** in your hands”

In 1996 Greg set up Energy Link as a joint venture with two small power companies. Energy Link provides advisory and brokering services, forecasting, modelling, training, packaged software and online software for the electricity and gas industries including larger consumers.

Greg has contributed to the development of the electricity market as a member of key industry working groups and as Project Manager for the NZEM's Real-time pricing and Demand-side Participation projects. He was a member of the Board of the Energy Efficiency and Conservation Authority, the Crown entity which develops and delivers quality energy efficiency and renewable energy programs to the benefit of New Zealanders, from 2007 to 2010.

The Investment

We have held our prices for three years now, and offer a new 3-day discount of 10% on all three courses in a session (see “EL3”):

- | | | |
|---|---------|--|
| • EL0 | \$975 | |
| • ELNP1 | \$1,275 | |
| • ELRisk | \$1,275 | |
| • EL3 (EL0 + ELNP1 + ELRisk in one session) | \$3,170 | (10% discount for attending all three) |
- Courses are one day each in length, commencing at 9:00 am and usually finishing between 4:30 and 5:00 pm. **Please be ready to start at 9 am, or let us know in advance if you will be late.**
 - All the prices above are in New Zealand dollars. GST (goods and services tax) will be added to the above amounts on the invoice.
 - Payments received in full by the specified early payment date (up to and including the Friday preceding the course) will qualify for a 10% **discount** on the above rates.
 - Invoices will be issued upon registration and if not paid by the early payment date are otherwise payable 20th of the month following invoice.
 - Discounts may apply for four or more participants from one company. Please contact Greg Sise on 03 477 3572 or greg.sise@energylink.co.nz to arrange a discount for a group booking.
 - Registration, tea and coffee from 8:30 am.
 - Morning and afternoon teas and lunch will be provided. Special dietary requirements can be accommodated.

Terms and Conditions

- Numbers are limited so you need to book early to ensure your place on any particular course.
- Cancellations will be accepted with full refund up until 5 working days before the workshop. Later cancellations will receive a refund less a service charge of 10%.
- Energy Link reserves the right to cancel the course at any time if there is insufficient interest, at its sole discretion. Fees will be refunded in full, or an alternative arranged as appropriate, at Energy Link's discretion, if the course is cancelled for any reason. Energy Link shall not be liable for travel, accommodation or any other costs whatsoever, incurred by people who have registered on courses subsequently cancelled.

- All course materials are copyright of Energy Link and may be used only for your internal business purposes. They may not be distributed or copied outside of your organisation without the written permission of Energy Link.
- Energy Link takes reasonable care to ensure that the material presented in the course is up to date and accurate. Energy Link's liability in respect of any claim for any loss whatsoever by you is strictly limited to the amount that you paid to attend the course. However, Energy Link will not accept liability for any consequential loss or damage which you may claim occurred as a result of attending the course.
- Course participants are advised that it is their responsibility to ensure that they understand their obligations in respect of undertaking their respective functions and using the information presented in these courses.
- Energy Link welcomes feedback and undertakes to correct, add or otherwise put right, at its sole discretion, any material error or omission brought to its notice in respect of course material, and to distribute the same to course participants at its sole discretion.

Venues

Auckland:

The Conference Centre
AUT Technology Park
585 Great South Road
Penrose

Location map: <http://www.conferencecentre.co.nz/location.cfm>

Nearby hotels include the Novotel and Ibis Hotels at Ellerslie.

Wellington:

Terrace Conference Centre
St John House
114 The Terrace

Location map: www.terraceconference.co.nz/location.php

Nearby hotels include the James Cook and Novotel on The Terrace.

What to Bring on the Day

You should bring a calculator and a pen with you so that you can complete the exercises.

Registration and Confirmation

Register on line at our web site www.energylink.co.nz or complete the Participant Information on the attached registration form and return to us by email or by fax. **Please include one or more email addresses where we can contact you to confirm dates closer to the time.** We will confirm your registration by return **email** and will confirm the courses by email prior to course date. If you do not provide us with an email address then we can not guarantee to contact you.

Options

Energy Link's courses are also available in-house and for markets other than the New Zealand electricity market. We also deliver courses customised for particular audiences or companies.

For more information contact Greg Sise, telephone 03 477 3572 or email greg.sise@energylink.co.nz.

Programs

Course outlines are attached.

Reply To: Energy Link Ltd
Ph: 03-479 2475

Trish.Joseph@energylink.co.nz
Fax: 03-477 8424

Energy Industry Courses

To Register: Either print this sheet, complete the details and fax back to us, or email us the details. It is important that you give us the full names of all people registering and an email address we can use to confirm your enrolment(s).

Participant Information:

	1	2	3	4
Name(s):				
Position:				
Company:				
Postal Address:				
City:				
Phone:				
Email:				
Indicate days attending below by filling in the boxes with the appropriate course dates				
EL0 Auckland				
EL0 Wellington				
ELNP1 Auckland				
ELNP1 Wellington				
ELRisk Auckland				
ELRisk Wellington				
EL3 Auckland				
EL3 Wellington				

Order no: (Optional) _____

Any special dietary requirements: _____

Please tick this box if you do not wish to receive Energy Link Ltd training and other services information.

Introduction to the Electricity Market

Code:	EL0
Objective:	To provide an understanding of the essential elements of the NZ Electricity Supply system and the wholesale electricity market.
Prerequisites:	None

The course includes a number of rounds of our spot market **trading game** which simulates the process by which traders submit offers to generate into the market each half hour. It's a lot of fun!

1. Introduction

- Market Overview
- Spot, hedge, retail, frequency keeping and ancillary markets
- Cash flows for generators and retailers
- Generation, retail, transmission, distribution, consumers
- Governing legislation and market rules
- Electricity power flows and concepts
- Energy conversions and units

2. Transmission: The Grid

- AC grid
- The HVDC link and inter-island power flows
- Losses and line limits
- Transmission and line charges

3. Demand

- Total demand for electricity in New Zealand
- Demand growth - history and projections
- Seasonal demand profiles
- Embedded generation and grid off-take
- Metering and reconciliation

4. Supply

- Types of generator and basic characteristics, fuels and renewable sources, generation by fuel type
- Hydro, thermal, geothermal, wind and cogeneration

5. The wholesale spot and ancillary markets

- Role of the System Operator in Dispatch
- Offers & Bids
- Market models
- Reserves and frequency keeping

6. Cost of Supply

- Fuel use and efficiency of thermal generators, heat rate
- Fuel cost calculations
- Long run and short run costs

7. Electricity Price Behaviour

- Understanding historical price patterns and their origin

8. The Retail and hedge Markets

- Retail TOU contracts
- Hedge contracts

NB: Course material may vary from the above on the day.

Nodal Pricing of Electricity

Code:	ELNP1
Objective:	To provide a working knowledge of nodal dispatch and pricing as it applies to the New Zealand electricity spot market, including simple formulae to apply and the ability to recognise the cause of certain nodal pricing effects.
Prerequisites:	EL0. Alternatively, some familiarity with the electricity spot market including an overview knowledge of the SPD and RMT models, and with the processes and timing of publication of final, and other prices.

1. Market Processes and Models for Dispatch and Pricing

- Dispatch and pricing processes
- Marginal pricing
- Dispatch and pricing models – SPD and RMT
- Dispatch cost function
- Constraints in dispatch and pricing models
- Shadow prices
- Nodal energy prices and reserve prices defined
- Losses and constraints surplus
- Scarcity pricing

2. One Node ‘Markets’

- Dispatch and pricing of energy
- Reserves risk offsets
- Dispatch and pricing of reserve
- Dispatch and pricing effects for energy-reserve constrained dispatch
- Dispatch and pricing dominated by reserves

3. Adding Lines and Losses

- Pricing effects of losses in AC and DC lines
- Linear versus quadratic losses
- Contribution of losses to the losses and constraints surplus
- Loss modelling in SPD

4. Congested Networks

- Line limits
- Pricing effects of simple line constraints
- Contribution of constrained lines to the losses and constraints surplus
- “Spring washer effect” due to line constraints in loops in the Grid

Note: Only simple arithmetic is used in this course. Simple examples using a few nodes at most are used to assist learning. Course material may also vary from the above on the day.

Hedging Electricity

An Introduction to Risk Management in the Electricity Market

Code: ELRisk

Objective: To provide a practical introduction to the hedge market, and to techniques and methods for hedging price risk in electricity markets, with an emphasis on developing skills in working with and applying common forms of hedge contract.

Prerequisites: EL0, with ELNP1 also being useful background. Alternatively, familiarity with key elements of the electricity supply system including the Grid, metering and various types of generation. Some familiarity with the behaviour of prices from the spot market is also useful.

The course includes a number of rounds of our hedging simulation which simulates the process by which hedging decisions are made.

1. Introduction

- What is a hedge?
- Common supply arrangements – ‘contracts for differences’, ‘fixed price variable volume’
- Volatility in the electricity spot market
- Attitudes to risk, risk premiums

2. Hedging Electricity

- Securities Markets Act
- Contracts for differences
- Swaps and options
- Futures and swaptions
- Financial transmission rights (FTRs)
- The spot market’s ‘losses and constraints surplus’

3. Hedging Strategy

- Location factor adjustments
- Optimum generation with hedges in place
- Using FTRs
- Timing of hedge transactions
- Building a “hedge book”
- The forward curve
- The role of forecasts
- Pricing and valuing futures, swaps and options
- Modelling hedge strategies
- Stress testing

4. The Hedge Market

- The hedge market in New Zealand
- Hedge market liquidity

5. Miscellaneous

- The ISDA agreement
- Front, middle and back offices
- Fair value and hedge accounting

NB: Course material may vary from the above on the day.