



**ENGINEERS  
AUSTRALIA**

## A Word from your President

### Owen Report Spells Big Changes for NSW and the NEM



After the federal election has passed, the focus in NSW will inevitably return to the Owen Report and the future of electricity retail and generation in NSW. It seems that big changes are in the wind and electricity businesses need to position themselves to take advantage of the anticipated changes.

The Owen Report has recommended the divestment from government ownership of the retail arms of EnergyAustralia, Integral Energy and Country Energy plus the divestment of NSW generators Delta Energy, Eraring Energy and Macquarie Energy. If implemented, this will represent one of the largest changes to the electricity industry in recent times.

Confidence from within the electricity industry is high and there are many private entities that will be interested in these strategic businesses. The national implications are that we are likely to head toward a much reduced number of retailers and generators. Similar to the small number of major petrol retailers in Australia, electricity seems to be heading in the same direction.

The other implication of the proposed changes is that the NSW government will lose the "undo" button on past reforms. With generation assets in private hands, the NSW government will be placing great faith in the existing structure of the national electricity market and its ability to attract new generation as demand increases in the years to come. With uncertainty on the future cost of "carbon", future generation comes with new risks for potential investors.

The Owen Report changes could initiate the formation of more combined generator/retail companies known as "gen-tailers". The impact on market competition of the proposed changes including the possible creation of new stronger "gen-tailer" will need to be considered by government. The coming 12 month period will again see continuing changes that will result in more structural long term change to the electricity industry. The changes are bigger than NSW and will have national implications. I suspect that the Owen Report will be a catalyst for many future changes.

To all EESA members and their families, I wish you a happy and safe festive season and a very prosperous 2008.

Dr Robert Barr  
EESA National President

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# The Electric Energy Society of Australia

## News and Issues from around the Industry...

by John Thomson

### Review of Demand Side Participation in the National Electricity Market

On 23 October 2007, the Australian Energy Market Commission (AEMC) wrote to the Ministerial Council on Energy (MCE) to advise of its intention to investigate the potential for amendments to the Rules in order to better facilitate demand side participation in the National Electricity Market (NEM).

In undertaking its functions, the Commission has identified a range of issues relating to the effective participation of the demand side in the energy market. More specifically, the Commission's sequential work program will consist of three stages; the first stage includes reviewing demand side participation in relation to the AEMC's current work program which includes the Congestion Management Review, the Reliability Panel's Comprehensive Review of Reliability, and the National Transmission Planner and related projects.

The Commission intends to publish a Statement of Approach paper before the end of 2007 to provide further detail of its' intended approach to the review.

### Australian Energy Market Operator Developments

On 5th October the MCE Standing Committee of Officials (SCO), via the Market Operator Working Group (MOWG), released a consultation paper relating to the establishment of the Australian Energy Market Operator (AEMO). This consultation paper addresses issues relating to a new national framework for managing the market operation functions of both electricity and gas. In particular, the paper outlines issues and options on different functional, Board selection, governance and ownership structures for the AEMO.

Some submissions have questioned whether the MOWG may be moving outside the bounds set by COAG, for example in considering the scope of AEMO functions despite this having already been set by COAG. The submission by the Energy Networks Association (ENA) has come out strongly in favour of the AEMO Board being industry owned, rather than by governments.

### Network Planning and Connection Arrangements- Paper by NERA/Allen

Many submissions have been made in response to the NERA Economic Consulting/Allen Consulting Group paper "Network Planning and Connection Arrangements – National Frameworks for Distribution Networks", previously released by the MCE's SCO.

One of the chief concerns relates to a lack of prior consultation on issues before reaching recommendations on complex technical and economic issues including network planning, connections, capital contributions and the treatment of network losses. The submission by ENA, for example, is critical of many aspects of the NERA/Allen paper, claiming that its' recommendations have been reached:

- 1 in the context of economic rules that are yet to be formally released;
- 2 in the context of assumed reforms to distributor/retailer obligations which still have not been considered by SCO;
- 3 without any prior industry consultation or stakeholder engagement;
- 4 without the benefit of knowledge of the practical application of many of these frameworks and
- 5 without a full understanding of stakeholder needs.

In the words of the submission, "The recommendations reflect a simplistic view of distribution infrastructure planning and investment, and are dominated by prescriptive and costly obligations that are disproportionate to the expected benefits from regulation."

### 1,000MW Wind Farm Announced for Broken Hill

A giant \$2 billion wind farm proposed for western NSW could double the number of turbines operating in Australia and provide as much electricity as a large coal-fired power plant.

Epuron, a subsidiary of the German renewable energy group Conergy AG, has announced plans to build as many as 500 turbines, generating enough electricity for 400,000 homes. They would be built on the ranges that rise around the Mundi Mundi plains, north-west of Broken Hill. The wind farm would be 10 times bigger than the next largest wind farm approved for NSW.

cont....

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However, subsequent reports in the Australian newspaper have raised questions on the feasibility and cost of associated transmission links. Questions have also arisen over the choice of location, and the timing of the announcement in the light of very recent State government initiatives for renewable energy targets.

## National Transmission Planner Status

The AEMC has recently released two consultancy reports as reference material for the National Transmission Planning Arrangements Review.

One is a report prepared by the Brattle Group titled, "International Review of Transmission Planning Arrangements". This study provides a factual description of transmission planning arrangements in international markets with similar characteristics to Australia. The second, a report prepared by Firecone titled, "The Evolution of Transmission Planning Arrangements in Australia", is said to contain "... a detailed, factual description of the development of transmission planning arrangements for the National Electricity Market."

Both reports can be accessed from the AEMC website.

## Regulatory Impact Statement on Separation of Generation and Transmission

Comments closed on 9 November 2007 on proposals circulated by the MCE's SCO to amend the National Electricity Law to formally limit the ability of electricity generation businesses to own or control transmission businesses, and vice versa. The proposals reflect concerns over the adequacy of the Trade Practices Act to preserve this fundamental element of electricity market reform into the future.

## Regional Boundary Change Process Increases Focus on Transmission Solutions to Manage Congestion

Comments also closed on 9 November on the Draft Determination by the AEMC on the MCE's October 2005 Rule Change proposal to reform the criteria and process for region change in the NEM. Overall the AEMC seems to have proposed a more stringent approach to further NEM boundary changes. Some key points of interest include:

- A boundary change should only occur where: (a) there is material and enduring transmission congestion; (b) a clear case for a change will improve the economic efficiency of the NEM, and (c) the change must be an "appropriate and timely course of action in all circumstances ... consistent with ... system security".
- The AEMC, rather than NEMMCO, will now evaluate and determine region boundary change proposals.

## Solar Challenge

A selection of photos of the Solar Car and Solar Boat Challenge that was sponsored by Engineers Australia Electrical College Branch and supported by EESA VICTAS Chapter, at ScienceWorks, 21st October 2007.



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## EESA National Conference 2007

This year's National Conference, 'Electricity 2007 - Bringing Power to the People', was held in Melbourne between 15-17th August and was yet again another success with fascinating site visits, inspiring keynote speakers, an outstanding technical program, ghostly dinner function and a memorable closing panel debate.

The site visits included a tour of Snowy Hydro's 320MW Laverton North Power Station by Warwick Aldham. The tour started at the incoming Brooklyn-Lara natural gas pipeline and backup diesel fuel tank, then onto one of the two open cycle gas turbines, the protection and control rooms and 220kV step up transformers and finally the local SCADA control room. Following lunch in Williamstown, the tour group moved onto the Australian Synchrotron which had only been officially opened 2 weeks prior. Neil Meadowcroft and Richard Farnsworth gave a brief overview of the operation of the Synchrotron before splitting the group in two and taking everyone for a thorough tour including the incoming power supply and substation, air conditioning and power supply cooling, linear accelerator, booster ring, storage ring, RF booster, beamlines and control room.

The conference was officially opened by Hon. Peter Batchelor, Victorian Minister for Energy and Resources and Minister for Victorian Communities followed by keynote addresses from Else Shepherd and Neville Nicholls. Else inspired us all discussing her career and the need to continue to make changes in the workplace to improve flexibility and opportunities for both men and women to both encourage and retain skilled workers in our industry for the benefit of employees, the community and business. Neville addressed one of the most important issues our industry and society more generally faces, climate change and reviewed what the latest science is revealing and the outlook is indeed poor. Neville gave particular attention to the health implications of climate change and the relationship between high overnight temperatures and heat related deaths and believes that society, including our industry will not act quickly enough to avoid many of the climate change impacts. Both keynote presentations gave us all plenty to think about.

The technical presentations covered a wide range of topics with speakers from right across Australia and New Zealand. Generation covered renewable energy such as wind, solar, hydro and biofuels, nuclear energy and low emission coal technology as well as asset management, generator upgrades and generator modelling. Transmission and distribution topics included asset management, protection and control, reliability, power quality, design and drafting and reviews of recent blackouts. Sustainability, society and customer related topics included energy efficiency, water supply and climate change. Safety, business, regulation, and advanced meter infrastructure were also covered. With so many interesting topics it was difficult to decide which stream to attend and even harder for the judges to select the best paper and presentation! The winner of the Conway prize for the best paper from an EESA member was Felicity Galluzzo for her paper titled 'emergency modular zone substation development and implementation'. The Creswell prize was awarded to Martin Sevier for his paper titled 'nuclear power as an option for future electricity generation in Australia.



Conway Prize Winner, Felicity Galluzzo



The dinner was the social highlight of the conference with Siemens sponsoring the candlelight dinner at the old Melbourne Gaol. Over 150 delegates and partners attended the function and absorbed the atmosphere of stepping back in time and experiencing what it was like in the gallows of a 19th Century Prison. Luckily the food was not in keeping with the theme with the caterers preparing some exquisite fine dining. Overall a wonderful night with plenty of new relationships forged and old ones reacquainted under the watchful eye of Ned Kelly's ghost.

The conference was closed with presentations and a panel debate on the skills shortage and women in engineering hosted by the energetic Andrea Horvath, better known as Dr. Andi. The panel presenters gave personal accounts of their experience which highlighted a number of very important issues that need to be openly discussed to ensure men and women have equal opportunities and more is done to improve the profile of electrical engineering in the general community. The audience participation was

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Women in Power Engineering



Andrea Horvath aka Dr Andi

encouraged by Dr Andi playing devils advocate, probing and challenging the audience and panel presenters to get to the heart of the issues. The debate was a highlight and a great way to close the conference. Since then several people have even enquired if the session was video recorded so they can see it again.

Many thanks go to the sponsors and exhibitors with special thanks to the gold sponsor SP AusNet and silver sponsors ADAPT Australia, CitiPower/PowerCor, Hatch Energy and WorleyParsons. The organising committee also deserve a pat on the back for their hard work putting the conference together.

We now look forward to next year's conference: Electricity 2008 - Stepping up to the Challenge, in Brisbane 21st-22nd August 2008.

## EESA Victorian Chapter News

### EESA Site Visit to Rowville Terminal Station

Written by Nyssa Muir.

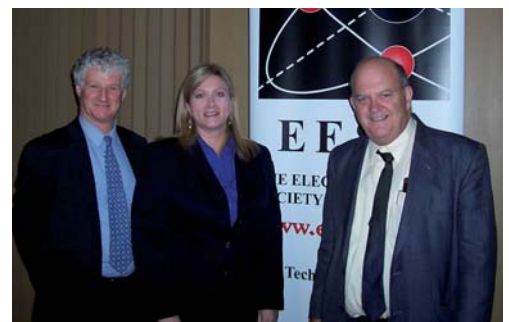
Rowville Terminal Station (ROTS) is owned by SP-AusNet and forms an integral part of Melbourne's electricity network. On the 20th of September, the Electric Energy Society of Australia (EESA) organised a site visit to this station which was fully attended by a variety of engineers. Our SP-AusNet guides were Russell Wheatland and Ian Simmonds who showed us around the control room, the relay house, the 220kV switchyard, the 500kV switchyard and the step down transformers. Due to the complexity of the HV overhead lines at ROTs, the station also features SF6 insulated 500kV pipe lines which pass under the 200kV overhead lines. ROTs is a large site and contains a mixture of old and new plant in the 220kV switchyard. Some of the old plant first installed by the State Electricity Commission of Victoria (SECV) is still in use, and works concurrently with the newer technology. By being able to actually walk around the site we gained a better understanding of the working of a large Terminal Station and obtained a feel for how important stations like ROTs are to maintaining the Victorian electricity network.



Tenix Engineers (from Left), Terry Williamson, Dilogen Emmanuel and Kieran Robson-Garth standing in front of one of the 500kV SF6 line terminations

An evening seminar on HVV Plant and Equipment was attended by 74 people at SKM's Theatre, Armadale.

Presentations included "Energy transfers within arcing faults in electrical equipment" by David Sweeting, Director, Sweeting Consulting and "Power Electronic Solutions for Wind Applications" by Suzanne Escudier, Director, Manager, S&C Electric Company & Bob Coulter.



Bob Coulter, Suzanne Escudier and David Sweeting

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## EESA NSW/ACT Chapter News

### NSW State Conference, Energy 2007: Balancing the New Energy Equation, 12-14 September 2007

The one constant in the energy sector seems to be change and the electricity supply industry in NSW is no exception. There are ongoing weekly rumours and statements in the popular press discussing the sale of NSW retail businesses, how private energy companies are gearing up for major acquisitions, rises and falls in company fortunes, further changes to regulatory structures and demands for improved infrastructure through spending on major projects.

The EESA NSW State 2007 conference participants were no longer "in the dark" when some of these issues were addressed at the recently held conference on the 13,14 September at the Novotel Brighton Beach, Brighton le Sands.

A highlight was the opening panel session of major industry CEOs who discussed "The Energy Supply to NSW - History, Challenges and the Future". This was very well attended by the hundred or so delegates at the conference and the level and depth of presentations satisfied the newer members of EESA as well as the industry veterans. This was accompanied by an IEEE sponsored presentation on Energy Efficiency and DSM by a Canadian speaker.

Then in the company of fellow utility members there were two days of industry training to be enjoyed as knowledge of current energy concerns was expanded and clarified. Industry experts provided timely papers and discussion on topics such as distributed generation, substation battery sizing and management, smart meters, intelligent grids, asset management and power quality.

The finale was a panel discussion on the real effects of an emission trading scheme for distribution businesses, which invoked some penetrating questions and discussion

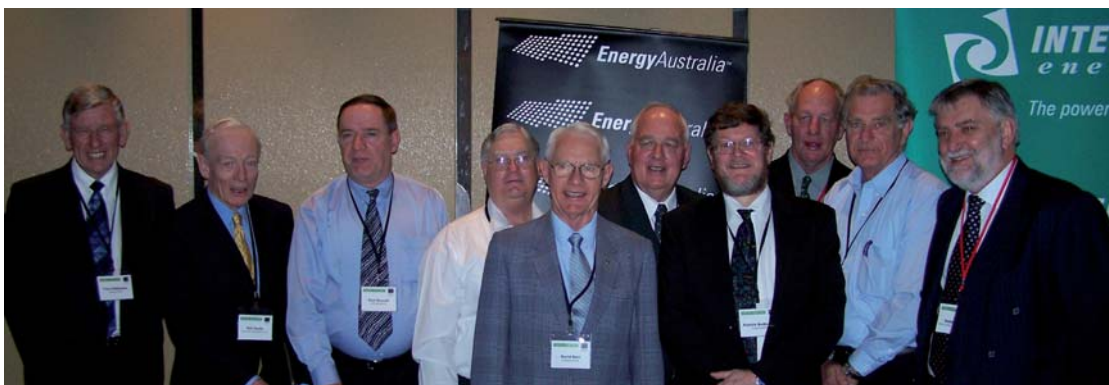
A further value add feature of this conference was the opportunity to attend a complementary seminar on Practical Power Quality presented by Alex McEachern, who is a notable international expert on the subject. The seminar was organised by Dr. Robert Barr and was held on the Monday following the conference. Some 20 participants attended and each received a comprehensive set of notes and CD-ROM of useful material.

An award was presented as the "Best Paper at this conference", and it was presented to Graham Burgess from Integral Energy (a non-member of EESA) for his paper titled "On the use of Partial Discharge Monitoring as a Commissioning Tool". The Judging panel also decided to award a "Highly Commended" to Leith Elder from Country Energy (another non-member of EESA) for his paper titled "A Probabilistic Approach to Power system Performance".

Once again the conference was strongly supported by industry and utilities alike and so there is a special thanks to our sponsors, with EnergyAustralia, Integral Energy and Country Energy all taking up Gold Sponsorship, TransGrid and ActewAGL taking up Bronze Sponsorship and AREVA T&D sponsoring the Welcome Reception. The exhibitors, who are a major feature of these conferences excelled in their trade displays of equipment and software and promotional items and a happy throng of members were usually to be found amongst the exhibitors as opportunities presented themselves.

A minor talking point at the conference was the combination pen, USB drive, torch and laser light unit which provided some happy moments for the technically inclined. This was provided by the EESA NSW Chapter and will take some beating at future conferences.

by Patrick McMullan



NSW Chapter Committee: Tony Patterson, Bob Smith, Paul Russell, Bob Parkinson, David Barr, Ray Thorn, Patrick McMullan, Peter Dulhunty, Larry Meng and Robert Barr

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## Energy Sources and the Electricity Market, 24 October 2007

A seminar titled 'Energy Sources and the Electricity Market' was hosted by EA's Newcastle Electrical Division and EESA NSW Chapter on 24 October 2007. It was a great seminar with 36 people attending including 4 speakers, and plenty of good questions by the audience.

Garth Gum Gee (NEMMCO, Principal Engineer Power System Planning & Development) presented on Renewable Energy Sources in the Australian Energy Market Place. Garth's talk detailed the technical requirements for connection, registration and commissioning of generators to the NEM. The talk highlighted some of the key issues associated with technical assessment and NEMMCO's role in this process. The technical challenges for new generators and some of the common pitfalls for applicants was addressed. In particular, the talk touched on Renewable Energy Sources and their associated unique issues.

Regular EESA seminar speaker Col Hackney, presented his paper on 'Dealing with Renewable Energy in NSW'. Col is Country Energy's Sub Transmission Planning Manager, South. With the increasing interest in the development and connection of "green" energy sources as part of the response to greenhouse gas concerns, comes an increasing need to better understand the characteristics of this generation and the networks to which it will connect. This presentation focused on a number of basic issues which need to be better understood and addressed by the public, generators and network operators alike to successfully add this diverse and dispersed range of generation to the load-supply mix.

'Needle Peaks and Price Spikes' was the title of the presentation by Leith Elder, Country Energy's Network Analyst. Leith's talk indicated that there are complaints all around the world about extreme price spikes in competitive electricity markets. Leith's presentation showed that price spikes are not only inevitable but necessary for energy markets to function at all. A cost model was developed for the various forms of generation: coal, gas, hydro, wind etc., which can be overlaid on historical pricing data to predict the economic viability of each form of generation in the first instance and then used to determine pricing strategies to ensure economic despatch.

The locally recruited speaker Glenn Platt from the CSIRO Energy Centre presented on the topic "The next Big Thing - an Intelligent Demand Side" - first giving background of various sorts of demand management / price signalling and direct load control - then introduced the use of software "agents" that control individual loads and work in communities/ groups together controlling load in response to external signals. It was a fascinating topic.

The above seminar was EESA NSW Chapter's last one for 2007. Details of our seminar program for 2008 will be available on our website in February 2008.

### CD's for Sale

If you missed the NSW State Conference or seminars this year we do have proceedings available on CD for the following:

#### **EESA NSW Chapter Conference: Energy NSW 2007, Balancing the New Energy Equation 13/14 September 2007**

\$165 for members \$220 for non members

#### **EESA NSW Chapter Seminar - Thriving in the New Electricity Regulatory Environment 12 October 2007**

\$77 for members \$99 for non members

To order a copy please contact The Meetings Manager Pty Ltd on [eesa@tmm.com.au](mailto:eesa@tmm.com.au)

### Bulletin 1, February - March 2008

Please email submissions by 15 February 2008 to the Bulletin Editor, Peter Tapp on [peter.tapp@gmail.com](mailto:peter.tapp@gmail.com)