

## A Word from your President

### Wind Power Integration – Where are the Limits?

Over the last few months I have heard a number of very well prepared and presented papers on wind power integration into power systems. Some of these papers were presented at the EEA conference in New Zealand, at the IEEE PES general meeting in Tampa, Florida, USA and some in Australia. The common theme is that as wind power becomes a significant part of the total generation mix, integration and control becomes more difficult. The variability and uncontrolled nature of wind power ultimately limits the amount of wind power that can successfully be included in the generation mix.

Denmark is reported to now have 3 GW of wind power representing 18% of installed generation capacity. Predictions are that installed wind power capacity will reach 50% of Denmark's total generation capacity. Wind integration at these levels raises major control and stability issues. Wind is a growth industry and many countries are ramping up their wind generator capacity. Successfully dealing with large blocks of "uncontrolled" wind generation is one of power engineering's new big challenges.

The main power system issues that I see are power system stability, efficiency impacts on conventional generation and the need for stronger transmission and distribution networks. Wind farms produce green kWhs but they can't produce kW or KVARs on demand when you need them.

The green imperative is upon us and the challenge for us is to address these issues in an economic way. Customers and governments want green power. What is now clear is that the cost of wind power is significantly more than building the wind farms and making a network connection. The flow on costs are significant and are part of being green.

Also, "Balancing the new Energy Equation" is the theme for the NSW EESA Sydney conference. Put this in your diary for 12-14 September 2007.

Dr Robert Barr, EESA National President

#### NSW State Conference

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

In an everchanging electrical world where we are seeing the emergence of a national investment body to coordinate public and private spending on energy infrastructure, six state based emission trading schemes, the rollout of smart metering and the tentative emergence of microgrids - an industry based conference looking at the "state of play" in NSW and the rest of the world has never been more welcome.

The EESA NSW State conference will be held in Brighton le Sands, Sydney from the 12<sup>th</sup> to 14<sup>th</sup> September 2007. The program will include:

**Energy Supply to NSW - history, present and future challenges:** Plenary session of CEOs including **George Maltabarow**, EnergyAustralia, **Jim Henness**, Delta Electricity, **Richard Powis**, Integral Energy, **Peter McIntyre** GM/Network Development & Regulatory Affairs, TransGrid and **Mark Miller**, General Manager/Operations, NEMMCO

**International Developments in the Electricity Supply Industry**  
**Scott Rouse**, Managing Partner, Energy @ Work, Canada (Patron IEEE)

It will also have a solid and timely series of presentations from industry experts on •integrating distributed generation •advanced diagnostic monitoring •asset management of distribution systems •substation battery management •customer supply and power quality •smart meters •intelligent grids and asset management •education & training

The conference will conclude with a panel session on the real effect of an emissions trading scheme for the electricity supply network businesses. A comprehensive trade display with equipment and hardware utilised in the industry will as usual also be available during the two days of the conference.

The EESA continues to pursue its mission to train and educate industry professionals at all levels and this conference promises to be an exciting addition to a well regarded series of professional industry conferences provided by the power industry at a modest cost. We would like to thank our sponsors **Country Energy, EnergyAustralia, Integral Energy, TransGrid, ActewAGL** and **AREVA T&D** for their continued support.

For more information contact The Meetings Manager on eesa@tmm.com.au or 02 9810 7322



# The Electric Energy Society of Australia

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

by John Thomson

### Second Exposure Draft of National Electricity Law Amendments

On 9 August the Ministerial Council on Energy's (MCE) Standing Committee of Officials (SCO) released two documents:

- the second exposure draft of the National Electricity Law (NEL) Amendments, and
- explanatory material on the NEL Amendments.

These documents refer to matters raised in the first round of public consultation on the NEL and represent the SCO's response to these.

The SCO will be meeting shortly with industry associations, peak bodies and regulators for intensive consultation on the technical drafting aspects of the electricity specific issues. Organisations to be consulted include the Electricity Supply Association of Australia, Energy Networks Australia, National Generators Forum, Electricity Transmission Network Owners Forum, Energy Retailers Association of Australia, Major Energy Users, Energy Users Association of Australia, Consumer Utilities Advocacy Centre, Consumer Action Law Centre, Public Interest Advocacy Centre, Australian Energy Regulator, Australian Energy Market Commission, National Competition Council, and Vencorp.

The documents themselves can be found on the MCE website <http://www.mce.gov.au>

### US House Approves Democrats' 'Energy Independence' Plan

In overseas news from the USA, the House of Representatives has recently passed an energy Bill that requires utilities to produce 15 per cent of their power from renewable energy sources by 2020. The passing of the Bill, made despite fervent opposition from big oil and gas companies, and the White House, is an unprecedented step towards cutting greenhouse gas emissions. According to congressional officials it could result in a reduction of carbon dioxide emissions, by 500 million tonnes. Officials claim that the new emphasis on renewable energy would lower natural gas and electricity prices, and save more than \$US100 billion (\$A117 billion) for consumers.

Although the Bill passed the House on a 241-172 vote – with 26 Republicans controversially crossing party lines to vote in support of the initiative - US President George Bush has vowed to use his Executive powers and veto the Bill, saying it does nothing to encourage increased domestic production of oil and gas.

### AEMC Releases National Transmission Planning Scoping Paper

On 3 August the Australian Energy Market Commission (AEMC) issued a Scoping Paper on the proposed National Transmission Planning Function. The AEMC's review will focus on three principal tasks as follows:

- 1 the development of an implementation plan for the national transmission planning function;
- 2 consideration of simultaneous TNSP revenue cap determinations; and
- 3 a revised network planning and consultation process (to replace the current Regulatory Test) that would integrate reliability and market benefits criteria of the current 'test', with a more national perspective.

As endorsed by the Council of Australian Government's, a new National Energy Market Operator (NEMO) is to be created, replacing the Inter-regional Planning Committee. The national transmission planning function will be added to the responsibilities of the NEMO, which include the development of a National Transmission Network Development Plan that will replace the Annual National Transmission Statement currently prepared by NEMMCO.

The AEMC's review process will also take into account the outcomes of other ongoing reviews, including the Congestion Management Review, and the incentive framework for TNSP's. Submissions in response to the scoping paper are due 7 September 2007. The AEMC is to publish an Issues Paper by 31 October, and plans to hold a public forum, possibly in November.

### Ministerial Council on Energy Officials Back Transmission Rules Approach to Network Regulation

On 1 August 2007 the MCE's Standing Committee of Officials, in response to submissions on the latest draft of the National Electricity Rules (NER) covering electricity distribution, has confirmed that:

- 1 a 'limited merits' review process will apply to key AER decisions, including transmission revenue cap decisions;
- 2 a 'propose-respond' framework for some aspects of revenue cap decisions will be permitted when the AEMC deems that such an approach is 'fit for the purpose'.
- 3 while there will be an ex ante capex assessment framework for electricity distributors, there will be no contingency project arrangements for this sector (unlike the transmission sector).
- 4 The final decision on regulated WACC (weighted average cost of capital) will be part of each distribution regulatory determination. Linking the WACC to the regulatory determination means that the AER's consideration on this matter will be merits reviewable for electricity distributors.

cont....

### Bulletin 5, October - November 2007

Please email submissions by 12 October 2007 to the Bulletin Editor, Peter Tapp on peter.tapp@gmail.com

# The Electric Energy Society of Australia

## ACCC won't oppose Alinta takeover

As reported in the Sydney Morning Herald on August 13, the Australian Competition and Consumer Commission (ACCC) will not oppose an \$8 billion takeover of energy utility Alinta by Singapore Power and Babcock & Brown.

Under the proposed scheme of arrangement, assets including Alinta's gas and electricity assets, a 35 per cent interest in the Australian Pipeline Trust and shares in Australian Pipeline Ltd (APL), will be split between Singapore Power and Babcock & Brown.

Competition concerns arose in relation to the proposed acquisition by the consortium of Alinta's 35 per cent interest in the Australian Pipeline Trust together with a number of Alinta's assets. The competition watchdog was particularly concerned over the likely integration of electricity generation and retail assets with upstream gas pipeline interests in Western Australia.

ACCC Chairman Graeme Samuel said the parties will be required to sell the 35 per cent interest in APT, as well as the operating and maintenance contracts for the Moomba to Sydney and Parmelia pipelines and the APL shares, adding that these assets would be ring-fenced from the consortium parties' respective businesses until they are divested.

## EESA Seminars

### Regulation - constraints, incentives and the future?

**Friday 12 October 2007** *Please note new date*

Sydney Mechanics School of Arts, 9.30am - 1.30pm

Regulation of the electricity supply businesses is now a fact of life. Regulation encompasses the economic, technical and safety sides of the industry and an ongoing concern of the industry has been the harmonisation of the two sides of regulation. For this to occur regulators need to understand the business they are regulating while keeping pace with major changes in utility and regulatory structures. Several developments in overall industry regulation are underway and these will be reported upon. This seminar draws together experts from federal and state regulatory bodies both economic and technical whilst allowing the industry a chance to put forward its views.

### EESA/Engineers Australia Newcastle Seminar

**Wednesday 24 October 2007, 3-6pm**

A seminar will be held at EA's auditorium in 122 Parry St Newcastle West on Wednesday 24 October, 2007 from 3pm to 6pm. Speakers will be from NEMMCO, Country Energy and the CSIRO Energy Centre. Information regarding topics will be available in our advertising flyer due for release in the next few weeks. Contact Paul Russell (ph.02 49519379) for further information.

## EESA NSW/ACT Chapter News

### EESA/ActewAGL Seminar, Canberra

Twenty five members and guests attended the Canberra seminar, held in the Sir John Butters Auditorium at Engineers Australia's National Office on 12 July 2007.

This is the third such seminar jointly organised between ActewAGL and EESA NSW. The main topic addressed Renewable Energy Sources and their impact on the Transmission & Distribution system in regional NSW. In his presentation on this topic, Col Hackney (Subtransmission Planning Manager, South - Country Energy) provided the audience with a detailed approach to the real costs of integrating renewables into the existing distribution system and advised that such an exercise is fraught with many hurdles, one of which is the unidirectional design of the existing system in regard to power flow and protection.

David Glavas (Technical Business Manager, ActewAGL) provided an overview of the latest advances taking place at ActewAGL in regard to Business Process Re-engineering for pole data collection using field computers and wireless communications. David demonstrated the improved end-to-end processes for pole inspection and the benefits compared to the paper based system which has now been replaced.

Paul Sanguineti (Metering Manager ActewAGL) spoke on ActewAGL's introduction of Interval Meters and the associated integration of up to three metering services (electricity, gas & water) to display on an in-house display so customers can view real-time consumption of these services. David also gave us an up-date on the roll-out of smart meters and developments pertaining to the progress of COAG's decision for a national roll-out.

Following the above presentations, delegates were able to network and enjoy the variety of hot finger foods and tea/coffee provided by EESA NSW Chapter.

## EESA VIC/TAS Chapter News

On a chilly day in June, the EESA organised a site visit to the LaTrobe Valley. The bus (full of engineers of all ages) left Engineers Australia in Bedford St and the first stop was the Loy Yang Power Station (owned by Loy Yang Power). The lead guide for the morning was Mr Rob Siggers and the group was shown the boilers, the turbine floor, the cooling towers, the step-up transformers the control room and the fantastic view from the top of the main building. After a quick lunch in Traralgon, the group was shown around the Basslink converter station (owned by National Grid). The Basslink converter station, commissioned in 2006, converts high voltage AC to DC (and vice versa) for the undersea cable that connects Tasmania and Victoria. The group was shown around by the very knowledgeable Mr Colin Uhe and Mr Greg Wiggins. The group were lead around the 500kV switchyard, the transformers, the converter facilities, the control room and the DC aerial line.

This ended a very interesting day out in the La Trobe Valley. The EESA Vic/Tas chapter would like to thank all those who gave up their time to show us around and increase the awareness of the facilities and processes that keep our lights bright and our homes switched on.



# The Electric Energy Society of Australia

***A slice of history from the past. The following was a message to members in 1965, from Theo E Flynn, Life Member, read at the 40th Annual Conference in 1965 by H K Crisp***

As this year's Conference will be the Fortieth Annual Conference of the Association, and being one of the foundation members who attended the first Conference held at the Institution of Engineers of Australia rooms in College Street on April 15, 1925, when our first office-bearers were elected, it behoves me to offer my sincere congratulations to all officers and members of the Association, and I trust that you will have a happy, informative and successful Conference.

The Association over the 40 years has accomplished a great deal in the dissemination of technical information, standardisation of distribution and line construction, etc. It brought about the certification of electrical engineers in charge of electrical undertakings, and accordingly alterations were made in the Local Government Acts and Ordinances which raised the status of and stabilized the duties of electrical engineers. It also has played a big part in the co-ordination of electricity supply.

During that time great strides have been made in the distribution of electricity, notably in the country and rural areas on New South Wales. Super generating stations have been and are being built to cope with the demand, and no doubt members of the Association will be called upon to oversight the distribution and utilisation of this power, which will undoubtedly improve the conditions for both primary and secondary industries being established in country areas. However, I would like to recall some of the early history of electricity undertakings which come to my mind. Tamworth was my home town, and this was undoubtedly the first town or city in Australia (and probably in the Southern Hemisphere) to adopt electricity for street lighting.

The Borough of Tamworth established a powerhouse in 1888 which consisted of two 25 kW bi-polar Manchester-type 240 volt dynamos, which were belt-driven by Fowler steam engines. The boilers were firetube-type fired with wood. The Voltmeter and Ammeter were electrostatic types with cases about 15 in. in diameter built up with mahogany staves (like a cask), and these were mounted on a table with adjusting screws for leveling. The main street was lighted with Crompton Arc lamps and all other streets with carbon filament lamps. This plant was put into operation on November 11, 1888. Incidentally, I had in my possession an original invitation, issued to my father, to attend a banquet to celebrate the "switching-on" ceremony on the above date. I recently forwarded this card to the Tamworth Historical Society as an historical exhibit. I might here mention that the Mayor of Tamworth, James Piper, who performed the switching-on, was Bill Kemp's grandfather. O. W. Brain (Vivian Brain's father) was the first electrical engineer – he later became Chief Electrical Engineer for the NSW Government Railways and Tramways.

About 1907, Tamworth Council modernized the powerhouse, added new plant and made public supply available. I was appointed electrical engineer to the Municipality of Tamworth in 1911, and a few years later Bill Kemp was appointed as electrical engineer at Manilla (about 28 miles from Tamworth). I used to see him quite frequently. I remember at about that time quite a number of towns were installing electric power plants, and Bill and I discussed the idea of forming an association of engineers. Probably this was the conception for the creation of the association to bring the engineers together. At that time any person, whether trained or not, could be appointed electrical engineer in charge of an undertaking. I had known Bill Kemp since boyhood. He and I were Student Members of the Electrical Association in 1908, and later we became Associate Members. In about 1921 the several Engineering Associations amalgamated to form the Institute of Engineers of Australia, so Bill and I became Foundation Associate Members of the Institute.

In 1923 I was appointed electrical engineer to the Municipality of Murwillumbah where I relieved Bill, who had been appointed to Warringah. During a conversation with him before he left, I remarked that he would now have a good opportunity of calling the engineers together, and he certainly did. He circularised the engineers to a preliminary meeting at the Sydney Town Hall during April, 1924. Only about seven or eight engineers attended that meeting, but it was decided to call a general meeting the following year to form the association. This meeting was held in April, 1925, when 23 engineers attended, formed the Association and elected officers. A. M. Conway was elected as President and Bill Kemp as Honorary Secretary. Bill acted as Honorary Secretary until 1929. A. J. Bradshaw was President for three years, then Bill became President and was again elected President in 1943. After his first term he was followed by R. H. Dunstan, A. J. Cresswell, E. P. Thompson, H. K. Crisp and others.

To all these Presidents of the Association must be given the credit of having done an excellent job, with the result that the Association prospered accordingly. In my opinion, it is today an influential and highly regarded institution, and its members are doing an important job in the distribution and maintenance of electricity in New South Wales. From the above it will be noted that W. J. Kemp was the original convener in the formation of the Association and, with the Presidents, did a wonderful amount of work for the betterment of all engineers in charge of electricity undertakings. However, any of our members cannot overlook the wonderful work carried out by George Stewart, who was our Secretary for many years. He was a tower of strength to the Association and contributed many papers to Conferences. He was most approachable and was always ready to help any individual member with any problem.

Personally, I am proud of the Association and the work it has accomplished over the 40 years of its existence. I have always enjoyed attending the Conferences, where I made many good and valuable friends. Apart from the serious considerations, we had our jokes and ragged together as good friends – particularly at dinners and parties, etc. It is sad to note that 15 of our Past Presidents have "passed on", which I am sure we all sincerely regret, and with apologies to Omar Khayyam I quote:

Lo, some that we loved, the noblest and best,  
That Time and Fate of all their vintage pressed,  
Who did their work a round or two before,  
Then one by one crept silently to rest.

We will not forget them.