



CIGRE Australia

Presentation and Information pack

AGM

11 November 2016



ANNUAL GENERAL MEETING of CIGRE Australia Ltd

MINUTES (DRAFT)

Friday 11 November 2016

0945 – 1100 AEDT

Aurecon Centre, 850 Collins St., Docklands, Melbourne

1. MEETING ARRANGEMENTS

a) Apologies

A list of apologies for the meeting are shown in Appendix 1.

b) Quorum & Other Business Items

There were sufficient attendees to make a quorum.

There were no items of other business proposed.

c) Minutes of previous meeting

The minutes of the previous meeting as circulated were accepted.

d) Remembrances

The Chairman gave a eulogy for Mr Matt Zema, former Managing Director of AEMO, and long-term member, past director and supporter of CIGRE Australia.

2. OFFICE-HOLDER REPORTS

a) Chairman's Report

The Chairman spoke to his report. His message was the need to acknowledge the changing landscape of the electricity industry and ensure the strategic priorities of CIGRE Australia remain relevant and sustainable. A key aspect of that will be developing people and skills for the future. The full presentation and report will be available to members.

b) Executive Manager's Report

The Executive Manager gave a presentation on the progress of some key measurables of CIGRE Australia. All parameters such as membership, website activity, social media activity and Next Generation Network membership have been progressively increasing over the last three years. He noted that the two main financial challenges have been a significant reduction in in-kind and financial support from large utilities and corporate members due to their own financial pressures and reducing interest rates, which have meant lower returns from cash reserves.

The presentation and a written report will be available to members.

a) Finance & Audit Reports

The Treasurer spoke to the finance and audit report. He noted that approximately 60% of our member fees go to Paris and that while increasing membership is positive and welcome, it will not contribute significantly to income. The bottom line is very dependent on the success of conferences. Given those things, the financial performance is still on track to achieve a consistent surplus by 2018, or earlier if SEAPAC 2017 is very successful. Administration and operational costs were being monitored, but are at quite low levels and continue to fall on a per member basis. There will be a small increase in fees, mainly due to Paris increasing its fees, and invoices for 2017 membership are expected to be issued shortly. He noted cash reserves of about \$2 million which was well more than the estimated funds (worse case) needed to wind up the company of about \$500,000.

Mr Bevan noted there was \$2 million cash in the bank and that conservatively \$500,000 would be required to wind up CIGRE Australia. He asked if there was any plan to make more efficient use of that money to further CIGRE's goals than being in the bank earning a low rate of interest.

The Treasurer explained that there was nothing that had been identified that those funds could be used for, but the Board would be open to it if something came along. The Executive Manager pointed out that even at a low interest rate, the annual interest earned is equivalent to the member fees for several Collective members.

The presentation and finance report will be available to members.

b) Appointment of Auditors

An ordinary resolution for the appointment of the current auditors, RSM Australia, was approved by a show of hands by members present.

c) Directors' Report

The Directors' Report as circulated was taken as read. There were no questions.

3. ELECTION OF DIRECTORS

a) Election of Treasurer

There was only one nomination for the Treasurer position from the incumbent, Mr Trevor Armstrong, and he was therefore elected unopposed.

b) Election of General Director

Dr Stephen Jay was the only nomination for the position of general director and he was therefore elected unopposed.

4. OTHER BUSINESS

There was no other business.

5. NEXT MEETING

The Chairman proposed the 2017 AGM be held in Adelaide, subject to confirming a venue. There were no objections.

CLOSE

The meeting closed at 1115.

Signed as a true and correct record.

.....

CHAIRMAN

/ /

Dated



empowering
networking
global know-how

Chairman's Report 2016 AGM

Industry continues to present challenges..

- Board and Secretariats work focused on following through on commitment from last year and further developing the profile of CIGRE
 - Clarify our value proposition
 - Refresh brand and image and get our message out to a wider audience
 - Improve our governance and processes
 - Work toward delivering maximum value for members and stakeholders



The Background

- 2013 - carried out a survey of members and other senior members within the industry:
 - Many senior executives of our member base not aware of membership or the benefits/work which CIGRE delivers.
 - Organisations are placing greater scrutiny on expenditure and membership of associations.
 - Determined that CIGRE and the work it does was a best kept secret often only known to the 'inner sanctum' of people who were involved in carrying out the work.
- Developed an integrated marketing and information program aiming to reveal this 'best kept secret' – have been delivering on that program



Value Proposition

- Forum for the development and free exchange of industry expertise
- National, regional and international level
- Technically excellent and Practically applicable.
- Creates a unique opportunity for development of technical competencies and
- Provision of authoritative, unbiased technical advice



Strategic Themes

- **Sustainable Contribution**
 - Influence and contribute internationally
 - Engage in significant dialogue across region
- **Vibrant & Inclusive**
 - Vibrant, inclusive, enviable reputation for building bridges and source of knowledge
- **Utilisation of New Media & Technology**
 - Utilise the New media Dynamic to disseminate information
- **Electricity Supply System of the future**
 - Drive transformational thinking within the industry
- **People & Skills of the future**
 - Ensure appropriate diversity, champion the next generation of engineers and technicians



Conclusion

- Need to acknowledge the changing landscape and global strategic priorities of CIGRE.
- Look to the future and future proofing and remain relevant and sustainable
- Developing People & Skills for the future



Finance summary

CIGRE Australia financial position 2015/16

Trevor Armstrong - Treasurer

Financial Report – Summary 2014



<i>Year</i>	2015	2016
<i>Total Revenue</i>	\$716,357	\$511,062
<i>Total Expenses</i>	\$940,754	\$595,328
<i>Surplus</i>	(\$224,394)	(\$84,266)



FINANCIAL REPORT 2014

Sources of Income



	2015	2016
<i>Fees</i>	\$ 307,893	\$ 404,834
<i>Seminars, Workshops, conf</i>	\$ 347,852	\$ 58,253
<i>Interest</i>	\$ 60,612	\$ 47,975
<i>Total Income</i>	<u>\$716,355</u>	<u>\$511,062</u>



FINANCIAL REPORT 2014

Expense Areas



	2015	2016
<i>Admin/Office/Occupancy/legal insurance</i>	\$ 357,879	\$ 321,817
<i>Board/Marketing and Branding/Paris Support</i>	\$ 70,341	\$ 42,569
<i>NGN/STELR/ Scholarships</i>	\$ 12,748	\$ 17,955
<i>Seminars and Workshops</i>	\$ 228,243	\$ 39,160
<i>Finance and Regulatory</i>	\$ 31 130	\$ 30,957
<i>WG/SC Panels Accommodation travel etc.</i>	\$ 240 413	\$ 142,870
TOTAL Expenses	\$ 940 754	\$ 595,328



FINANCIAL REPORT 2014

Balance Sheet



	2016	2015	2014
<i>Equity as at 30 June</i>	\$1,920,551	\$2,004,645	\$2,229,212



Indicative Financial Forecast



Income	2017	2018	2019
<i>Fees</i>	\$ 254,752	\$ 265,566	\$ 276,924
<i>Panel Fees</i>	\$ 249,763	\$ 272,785	\$ 289,690
<i>Interest</i>	\$ 51,000	\$ 51,000	\$ 51,500
<i>Seminars and Workshops</i>	\$ 210 000	\$ 76,500	\$ 214,200
Total Income	\$ 844 515	\$ 666 354	\$ 911 864



Indicative Financial Forecast



Expense	2017	2018	2019
<i>Admin/Office/Occupancy</i>	\$ 314 368	\$ 318 316	\$ 322 337
<i>Board/Marketing and Branding/Paris Support</i>	\$ 39 000	\$ 39 780	\$ 68 091
<i>NGN/STELR/Scholarships</i>	\$ 32 000	\$ 22 000	\$ 40 600
<i>Seminars and Workshops</i>	\$ 100 000	\$ 41 000	\$ 105 000
<i>Finance and Regulatory</i>	\$ 25 140	\$ 23 620	\$ 26 023
<i>WG/SC Panels Accommodation travel etc.</i>	\$ 313 892	\$ 242 818	\$ 335 900
<i>Total Expenses</i>	\$ 824 400	\$ 687 533	\$ 897 951
POTENTIAL SURPLUS	\$ 20 115	(\$ 21 179)	\$ 13 913



Financial Considerations

- Currently over 60% of members fees collected goes to CIGRE in Paris.
- We seeing member growth but as we only keep approx. half of any new member fee, it alone is unlikely to create a lot of income.
- Our Bottom line is very dependent on the success of our conferences – Currently SEAPAC, CIDER & CIGRE Tutorials. We would like to look at least one other conference
- Falling interest rates have greatly reduced our income and currency movements also effect our bottom line as we pay the Paris fee in fixed Euro.
- We need to keep a certain amount of invested funds to ensure we can wrap up the association if needed. Conservatively estimated at \$ 500K.



Conclusion

- Board believe need to be financially responsible – aim for positive bottom line by 2018 – given a good SEAPAC outcome we could achieve this earlier.
Keep in mind that the discount to Convenors for Panel fees and Retirees cost about \$ 14000 pa.
- Administrative Operational costs continue to be monitored, but realistically are now at quite low levels.
- Fees have been increased for 2017 by the Paris component increase and 1% CPI of the Australian component.
- Invoices for membership will be issued by the end of November 2015, with payment for the 2017 member calendar year due by 31 Dec 2016.





Financial Statements

Australian National Committee of CIGRE Limited

ABN 43 109 792 672

For the year ended 30 June 2016

Prepared by Change Accountants & Advisors

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Directors' Report

Australian National Committee of CIGRE Limited for the year ended 30 June 2016

The directors present their report on Australian National Committee of CIGRE Ltd for the financial year ended 30 June 2016.

Information on Directors

The names of each person who has been a director during the year and to the date of this report are:

Member	Position	Date Started	Experience	Qualification
Prof. Simon Bartlett (AM)	<ul style="list-style-type: none"> Director 	<ul style="list-style-type: none"> November 2007 	<ul style="list-style-type: none"> API/Powerlink Chair in Electricity Transmission, University of Queensland 	<ul style="list-style-type: none"> BEng(Hons) Bsc MEngSc FIE Aust FTSE FAICD CPEng RPEQ MIEEE
Mr. Steven Jones	<ul style="list-style-type: none"> Director Chairman Australian Technical Committee 	<ul style="list-style-type: none"> November 2009 November 2013 – Term ended November 2015 	<ul style="list-style-type: none"> Manager Projects, TransGrid (Retired) 	<ul style="list-style-type: none"> BEng(Hons) ME MBA FIE Aust CPEng
Mr. Trevor Armstrong	<ul style="list-style-type: none"> Director Treasurer 	<ul style="list-style-type: none"> November 2011 November 2011 	<ul style="list-style-type: none"> A/Chief Executive Officer, Ausgrid 	<ul style="list-style-type: none"> BEng(Elect) Advanced Management Program (INSEAD) FIE Aust GAICD
Mr. Nino Ficca	<ul style="list-style-type: none"> Director Deputy Chairman Chairman 	<ul style="list-style-type: none"> June 2004 November 2013 November 2015 	<ul style="list-style-type: none"> Managing Director AusNet Services 	<ul style="list-style-type: none"> BEng(Elec)(Hons) Grad. Dip. Management Adv. Man. Prog. Harvard Business School USA MAICD
Dr. Chandra Kumble	<ul style="list-style-type: none"> Director 	<ul style="list-style-type: none"> November 2011 - Term ended November 2015 	<ul style="list-style-type: none"> Executive Engineer, Power System Analysis and Planning 	<ul style="list-style-type: none"> PhD Electrical & Computer Eng. M Tech - Power Systems MBA BEng(Elect)

Directors' Report

Member	Position	Date Started	Experience	Qualification
Mr. Edward Wilson	<ul style="list-style-type: none"> • Director • Deputy Chairman 	<ul style="list-style-type: none"> • November 2013 - Term ended November 2015 • November 2015 	<ul style="list-style-type: none"> • Managing Director, Wilson Transformer Co P/L • Director Australian Power Institute 	<ul style="list-style-type: none"> • BEng(Hons)
Dr. Stephen Jay	<ul style="list-style-type: none"> • Director 	<ul style="list-style-type: none"> • November 2014 	<ul style="list-style-type: none"> • General Manager Grid Development 	<ul style="list-style-type: none"> • BEng(Hons) • MBA • PhD • FIET • MIPENZ • CPEng • CEng
Mr. Anthony Armstrong	<ul style="list-style-type: none"> • Director 	<ul style="list-style-type: none"> • February 2015 	<ul style="list-style-type: none"> • Chairman and Co-founder, PSC Group of Companies 	<ul style="list-style-type: none"> • REA • NZCE • Cert. Company Direction 2013
Mr. Kenneth Barber	<ul style="list-style-type: none"> • Director 	<ul style="list-style-type: none"> • November 2015 	<ul style="list-style-type: none"> • Technical Director NAN Electrical Cable Australia • Director Istana Park (Consulting) 	<ul style="list-style-type: none"> • MIET • LMIEEE
Mr. Stephen Clark	<ul style="list-style-type: none"> • Director 	<ul style="list-style-type: none"> • November 2015 	<ul style="list-style-type: none"> • Executive General Manager - Project Services 	<ul style="list-style-type: none"> • BEng(Hons) • MAICD
Mr. David Bones	<ul style="list-style-type: none"> • Chairman Australian Technical Committee 	<ul style="list-style-type: none"> • November 2015 	<ul style="list-style-type: none"> • Executive Manager Regulation & Risk 	<ul style="list-style-type: none"> • BEng(Elec)
Mr. Philip Southwell	<ul style="list-style-type: none"> • Director 	<ul style="list-style-type: none"> • November 2015 	<ul style="list-style-type: none"> • Consultant • CIGRE Honorary Member • CIGRE Fellow 	<ul style="list-style-type: none"> • BEng(Elec) • Grad Dip Mgmt • FIE Aust • Grad AICD
Mr Douglas Aberle	<ul style="list-style-type: none"> • Director • Chairman • Immediate Past Chairman 	<ul style="list-style-type: none"> • Jun 2004 • Nov 2011 • Nov 2015 	<ul style="list-style-type: none"> • Chairman CELM WA 	<ul style="list-style-type: none"> •BEng(Hons) •MEngSC •FIE Aust •AARC(Mst Clinician) •CGANZ •PACFA Reg •FAICD

Directors have been in office since the start of the financial year to the date of this report unless otherwise stated.

Principal Activities

The principal activities of the Company during the financial year were the identification and the development of solutions to technical challenges facing the electric power systems in Australia and New Zealand, and the sharing of technical knowledge and power industry experience between member organisations for the benefit of stakeholders.

At the board level a major focus has been the ongoing implementation of the strategic plan that was adopted in 2013 (and further endorsed at the 2015 AGM) to deliver increased value to members, to promote and refresh the CIGRE Australia brand, and encourage broader industry participation and ultimately membership.

No significant changes in the nature of the Company's activity occurred during the financial year.

Directors' Report

Chairman's Report 2016

Our industry and the environment we operate in continues to present challenges as the fundamental shift to the energy landscape we have experienced over the last few years continues. The focus on moving to a lower carbon emission environment continues globally, and whilst a notable goal, presents its own list of challenges and issues to be solved. Our Industry must continue to innovate and adapt to enable the successful integration of renewable energy sources. Customers are demanding more flexibility and ability to better manage their energy use. We need to be more customer aware and be more transparent in what will inevitably be an even more challenging future. Managers, engineers, and technicians across our industry must adapt and lead the innovation in this technically challenging and, customer sensitive future.

I think CIGRE has a real role in assisting in this change and innovation. Accordingly, responses to these challenges have been encompassed in the CIGRE Australia strategic plan, and many of our members are addressing key issues through the Australian panels and international working groups and Study Committees that they belong to.

Similar to last year, much of the Board's and Secretariat's energy this year has been focused on following through on the commitment, given at last year's AGM, to ensure that key features of the 3-year strategic plan and actions arising from it were demonstrably delivered during the period and laying the foundation for growth of CIGRE, both in numbers and reputation.

Specifically, in 2015-16, CIGRE Australia has continued to focus its efforts on implementing initiatives designed to clarify our value proposition, refresh the CIGRE brand and image, and improve our governance, resourcing, and processes to enable us to deliver maximum value to our members and our client organisations.

As my first year in the chairman role, I would like to take the opportunity to reflect on what has been, for me, a most interesting and informative year.

I believe that we have made some significant advancements in revealing 'the secret that is CIGRE' and promoting our activities and value across the broader industry and region.

Throughout the course of the year, not only have we increased our membership, but have developed or strengthened ties across the region, and internationally. I will comment on some of this work later in my report, but there is no doubt we continue to 'punch above our weight' on a global basis which has further enhanced the reputation and standing that the Australian National Committee has within CIGRE.

In fact, CIGRE Australia members and employees in our secretariat are involved in such a vast array of work and projects, that if I were to comment on everything that we have been involved in during the year, this report would run to many pages.

Strategic Plan Refresh and Organisational Enhancements

Members would be aware that under my predecessor, Doug Aberle, the board developed and set a path on a long-term strategic plan. At the core of which, was what was seen by some as a fairly radical move, was for the ANC to develop a clearer marketing and promotional plan. This plan involved among other things establishing an internet and social media presence and a secretariat to better promote the work that CIGRE was involved in and to appeal to the younger members and student community.

I am pleased to say that this initiative has been successful to date, and has resulted in achievements on several fronts. There are a few of these areas of our operation over the last year which I would like to comment on which may be of interest.

Brand and Marketing Initiatives

One of the key initiatives that we have continued to develop in my term as Chairman is the rebranding of CIGRE Australia to enable us to better publicise and promote our expertise and the value that we add to individuals, their companies and to the broader industry.

As we have often said CIGRE and the work it does is often the industry's 'best kept secret'. Part of our plan is to work to change this so that CIGRE can develop its role and become a trusted source of shared wisdom and creativity in the global electricity space.

We have over the last year continued to put a lot of effort into revealing that secret through implementation of such things as:

- Our public website which has seen over 70,000 page views and 30,000 users since inception in May of 2014
- Our Quarterly "In The Loop" industry newsletter which now has near to 700 subscribers
- More recently more active use of our LinkedIn site which already has grown to nearly 400 followers.
- Our newly created twitter account which is in its infancy but proving to be an excellent medium in which to inform people and help attract the interest of younger members.

Directors' Report

Brand and Marketing Initiatives – Continued

The ground-breaking nature of our initiatives within the global CIGRE community has continued to draw a great deal of interest from our international colleagues. Our Secretariat has been consulted by other National Committees seeking some insight to how we have implemented the changes and our new secretariat systems. At the Paris session this year we chaired and established a working group consisting of the Secretariat members from the UK, Ireland, Canada and New Zealand with a view to discussion and co-operation on structural and administrative issues such as membership, conference organisation, the attraction of new members.

I believe even the number of attendees we had at the Paris session this year (95 Australian/New Zealand attendees) is virtually unprecedented and, to some degree, shows an increase in awareness of our profile and the valuable work our members are carrying out.

NGN

The board and I have been particularly pleased to witness the interest and growth in our young engineers' network, the NGN (Next Generation Network). This has grown from being basically non-existent five years ago, to now having over 280 members. Many of these members are now becoming involved with our Australian Panels and even international Working Groups. The NGN committee is continuing to offer a series of webinar presentations from experts which are made available to members.

These young people are the future leaders of our industry of CIGRE. We need to recognise this and foster their development. To this end, both NGN co-chairs remain as invited members of the CIGRE Australia board and fully participate in board meetings and discussions.

Membership

Maintaining membership of any industry association is difficult in tough economic times as corporates, and indeed individuals, look to where they can cut costs.

It is inevitable that we will, as with all organisations, see some resignations and retirements. However, I have been particularly pleased to see the Net membership in all categories increase over the last year. This, in part, reflects the work that our Executive Manager, Terry Killen has been doing in getting out to talk to prospective members and targeting likely interest. In this vein, Terry has established relationships with the Pacific Power Association, Engineers Australia and has delivered several sessions to university students which have driven our student numbers to around the 140 mark. This time last year, we had 15 Student members.

In 2012-13 membership had fallen to 176, and 315 panel members, due in the main to a restriction of funds and winding back across the economic environment in which we operate. Now as we stand in November 2016, we have 224 members and some 340 Panel members as well as the 280 NGN members previously mentioned. On an equivalent membership basis, Australia is ranked 9th globally which given our base population is an extremely good result.

CIGRE Australia remains one of the few international councils to have representation on each of the CIGRE International study groups and I am keen to ensure this remains the case as it provides our members with the opportunity to contribute, but also to keep abreast of what is happening at a global level. This is a great achievement for our members and reflects on their commitment and general high regard in which our Australian Engineering community is held.

The affiliation with the Pacific Power Association (an association of power utilities in the pacific region), is already providing benefits with one of their members joining our C6 Panel, and other power companies in the region expressing interest in joining. This will provide long-term benefit to members of both organisations and aid in promoting technology and engineering achievement in the pacific region.

Scholarship and Support

CIGRE Australia continues to support science and engineering in schools through support for Australian Academy of Technology Sciences and Engineering (ATSE) – Science and Technology Education Leveraging Relevance (STERL) program with \$10,000 sponsorship of power system education in secondary schools in Australia and New Zealand. The Sponsorship enabled the supply of renewable energy kits to a number of schools in Australian and New Zealand to provide hands on learning experiences for year 9 and 10 secondary students with the aim of encouraging the take-up of science and mathematics, and pursuit of careers in the engineering and science fields.

Arising from this sponsorship, Angela Rozali from AECOM (an NGN member) was selected by ATSE to attend an engineering leadership seminar in London to represent all Australian Young Engineers.

Directors' Report

Scholarship and Support – Continued

This year I am pleased to say that not only did we continue to support two NGN members through a scholarship to the Biennial Paris session, but part sponsored a further four young members to also attend the session. CIGRE Australia also this year presented an award for the best poster at the AUPEC (Australian University Power Engineering Conference) held in Brisbane at the end of September. I am personally very pleased with these initiatives as our future depends on us engaging the next generations and we need to be encouraging them and promoting the skills and work that we do as much as possible.

Australian Technical Committee (ATC)

David Bones took over the Australian Technical Chair role last year. His team of Australian Panel (AP) Conveners have continued to be at the heart of the ongoing growth in vibrant, highly regarded technical input as you can appreciate from his separate report and the reports of the AP's.

I thank David and his team for their tireless work and contributions. As Doug commented last year, "the work of the technical groups is our core business, our raison d'être, and the work and contributions are recognised globally". In fact, this year we again had a significant number of 17 papers accepted to the Paris Session and have 12 conveners of Working Groups from CIGRE Australia.

Directors and Secretariat

I should like to take this opportunity to thank personally the Board and Secretariat for their dedicated efforts in support of me and CIGRE Australia over the last year. In particular, I would like to acknowledge the ongoing support of Doug Aberle as the immediate past Chairman and for continuing to represent us on the global Administrative Council and Steering Committee.

International

Over the past five years, CIGRE Australia has contributed to CIGRE internationally via its support for Richard Bevan as Treasurer of the global organisation. Richard has now finished his term as Treasurer but I would like to acknowledge the work he has carried out for CIGRE globally and within the region in his roles as Treasurer, Chairman and Director. Richard has made a major impact for the better on CIGRE and his contribution, input and support will be sorely missed. I wish him, and his wife Moira, all the best in his non-CIGRE ventures.

As mentioned, we continue to contribute to the Global organisation through Terry Krieg as Chairman of SCB3, Peter Wiehe, Secretary of SCA1, and our other members who have taken on the roles of conveners of working groups.

Our Executive Manager, Terry Killen, has also added to our international reputation through initiating international co-operation between the UK, Ireland, Canada and New Zealand, looking at member and secretariat practices and CIGRE promotion.

Conclusion

Last year the then Chairman, Doug Aberle, commented on the change that we were seeing and the need to embrace the opportunity to evolve our offering to our members and stakeholders. This change continues, and we in CIGRE need to ensure that we continue to adapt where necessary and be able to embrace change to equip ourselves and the industry to take on the challenges that we continue to face.

I would like to see us continue to take on these challenges and continue to 'shine the light' and reveal the 'best kept secret' whilst ensuring that we preserve our traditional core strengths and raison d'être.

As I said in the beginning, I have greatly enjoyed my first year in the Chair, and look forward to working with you all to further develop the reputation and standing of CIGRE Australia in our region and globally, continuing to develop our Young Engineer network, support gender, social and cultural diversity in our technical groups, and continuing to support our members with unbiased opinion and information.

I thank you all for your ongoing support of CIGRE and wish you well as we move into the end of the year and the festive season.

Directors' Report

Members Guarantee

Australian National Committee of CIGRE Ltd is a company limited by guarantee. In the event of, and for the purpose of winding up the Company, the amount capable of being called up from each member and any person or association who ceased to be a member in the year prior to winding up is limited to \$10. At 30 June 2016, the total amount that members of the Company are liable to contribute if the company wound up is \$2,230 (2015: \$2,020).

Meetings of Directors

During the financial year, six meetings of directors were held. Attendances by each director during the year were as follows:

Director's Name	Number Eligible to Attend	Number Attended
Mr Douglas Aberle	6	5
Prof. Simon Bartlett (AM)	6	6
Mr Steven Jones	3	3
Mr Trevor Armstrong	6	6
Mr Nino Ficca	6	3
Dr Chandra Kumble	3	1
Mr Edward Wilson	6	5
Mr Stephen Jay	6	5
Mr Anthony Armstrong	6	4
Mr David Bones	3	3
Mr Philip Southwell	3	3
Mr Stephen Clark	3	3
Mr Kenneth Barber	3	1

Directors' Report

Meetings of CIGRE Australia - Finance, Risk & Audit Committee

During the financial year, five meetings of the Finance, Risk and Audit sub-committee were held. Attendances by each sub-committee member during the year were as follows:

Finance, Risk & Audit Committee Meetings

Member's Name	Number eligible To attend	Number attended
Mr Trevor Armstrong	5	5
Mr Nino Ficca	3	1
Prof. Simon Bartlett	5	5
Mr Edward Wilson	5	4

Auditor's Independence Declaration

The lead auditor's independence declaration in accordance with section 307C of the *Corporations Act 2001*, the year ended 30 June 2016 has been received and can be found on page 10 of the financial report.

Signed in accordance with a resolution of the Board of Directors:



Nino Ficca
Chairman 26 October 2016

RSM Australia Partners

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AUDITOR'S INDEPENDENCE DECLARATION

As lead auditor for the audit of the financial report of Australian National Committee of CIGRE Limited for the year ended 30 June 2016, I declare that, to the best of my knowledge and belief, there have been no contraventions of:

- (i) the auditor independence requirements of the *Corporations Act 2001* in relation to the audit; and
- (ii) any applicable code of professional conduct in relation to the audit.

RSM

RSM AUSTRALIA PARTNERS



Albert Loots
Partner

Brisbane, Queensland
Dated: 26 October 2016

THE POWER OF BEING UNDERSTOOD
AUDIT | TAX | CONSULTING

RSM Australia Partners is a member of the RSM network and trades as RSM. RSM is the trading name used by the members of the RSM network. Each member of the RSM network is an independent accounting and consulting firm which practices in its own right. The RSM network is not itself a separate legal entity in any jurisdiction.

RSM Australia Partners ABN 36 965 185 036

Liability limited by a scheme approved under Professional Standards Legislation

Statement of Profit or Loss and Other Comprehensive Income

Australian National Committee of CIGRE Limited
for the year ended 30 June 2016

	2016	2015
	\$	\$
Revenue		
Conferences - Paris	-	101,604
Conferences - Other	58,253	246,247
Interest Income	47,975	60,612
Member Fees/Panel Fees	404,834	307,894
Total Revenue	511,062	716,357
Expenses		
Administration Expenses	22,759	62,869
Board, Marketing and AGM	42,570	70,341
Finance and Regulatory	30,579	30,958
IT, Internet and Hosting Services	6,183	28,650
Occupancy Expenses	20,114	25,895
Paris Conference Expenses	-	133,201
Payroll Expenses	279,317	269,283
Scholarship Expenses	17,955	12,748
Seminars and Workshops	39,161	95,043
Working Groups and Panels	136,690	211,763
Total Expenses	595,328	940,751
Loss Before Income Tax	(84,266)	(224,394)
Income Tax Expense		
Income Tax Expense	-	-
Loss for the Year After Income Tax	(84,266)	(224,394)
Other Comprehensive Income for the Year, net of Income Tax		
Other Comprehensive Income	-	-
Total Comprehensive Loss for the Year	(84,266)	(224,394)

The above Statement of Profit or Loss and Other Comprehensive Income should be read in conjunction with the accompanying notes

Statement of Financial Position

Australian National Committee of CIGRE Limited As at 30 June 2016

	NOTES	2016	2015
		\$	\$
Assets			
Current Assets			
Cash & Cash Equivalents	2	306,795	768,362
Term Deposits		1,700,000	1,428,659
Trade and Other Receivables	3	6,961	13,972
Other Current Assets	6	182,458	24,833
Total Current Assets		2,196,214	2,235,826
Non-Current Assets			
Property, Plant and Equipment	4	1,420	2,446
Intangible Assets	5	6,712	22,776
Total Non-Current Assets		8,132	25,222
Total Assets		2,204,346	2,261,048
Liabilities			
Current Liabilities			
Trade and Other Payables	7	24,687	76,447
Employee Benefits	8	23,027	4,805
Other Financial Liabilities	9	236,080	174,979
Total Current Liabilities		283,794	256,231
Total Liabilities		283,794	256,231
Net Assets		1,920,552	2,004,817
Equity			
Retained Earnings		1,920,552	2,004,817
Total Equity		1,920,552	2,004,817

The above Statement of Financial Position should be read in conjunction with the accompanying notes

Statement of Changes in Equity

Australian National Committee of CIGRE Limited
for the year ended 30 June 2016

	Retained Surpluses \$	Total Equity \$
Balance at 1 July 2014	2,229,211	2,229,211
Loss after Income Tax Expense for the Year	(224,394)	(224,394)
Other Comprehensive Income for the Year, Net of Tax	-	-
Total Comprehensive Income for the Year	(224,394)	(224,394)
Balance at 30 June 2015	<u>2,004,817</u>	<u>2,004,817</u>
	Retained Surpluses \$	Total Equity \$
Balance at 1 July 2015	2,004,817	2,004,817
Loss after Income Tax Expense for the Year	(84,266)	(84,266)
Other Comprehensive Income for the Year, Net of Tax	-	-
Total Comprehensive Income for the Year	(84,266)	(84,266)
Balance at 30 June 2016	<u>1,920,552</u>	<u>1,920,552</u>

The above Statement of Changes in Equity should be read in conjunction with the accompanying notes

Statement of Cash Flows

Australian National Committee of CIGRE Limited for the year ended 30 June 2016

	Notes	2016 \$	2015 \$
Cash flows from Operating Activities			
Receipts from Customers		651,338	576,968
Payments to Suppliers and Employees		(886,627)	(713,353)
Interest Received		45,063	86,976
Total Cash flows from Operating Activities	14	(190,226)	(49,409)
Cash flows from Investing Activities			
Withdrawal from / (Investment in) Term Deposits		(271,341)	292,935
Payments for Property, Plant and Equipment		-	(543)
Net Cash Provided by (used in) Investment Activities		(271,341)	292,392
Cash Flows from Financing Activities			
Total Cash Flows from Financing Activities			
Net Increase / (Decrease) in Cash and Cash Equivalents Held		(461,567)	242,983
Cash and Cash Equivalents at Beginning of Financial Year		768,362	525,379
Cash and Cash Equivalents at End of Financial Year	2	306,795	768,362

The above Statement of Cash Flows should be read in conjunction with the accompanying notes

Notes to the Financial Statements

Australian National Committee of CIGRE Limited for the year ended 30 June 2016

1. Summary of Significant Accounting Policies

(a) Basis of Preparation

The directors have prepared the financial statements on the basis that the not-for-profit company is a non-reporting entity because there are no users dependent on general purpose financial statements. These financial statements are therefore Special Purpose Financial Statements that have been prepared in order to meet the requirements of the *Corporations Act 2001*.

These financial statements have been prepared in accordance with the recognition and measurement requirements specified by the Australian Accounting Standards and Interpretations issued by the Australian Accounting Standards Board ('AASB') and the disclosure requirements of AASB 101 'Presentation of Financial Statements', AASB 107 'Statement of Cash Flows', AASB 108 'Accounting Policies, Changes in Accounting Estimates and Errors', AASB 1031 'Materiality', AASB 1048 'Interpretation of Standards', and AASB 1054 'Australian Additional Disclosures', as appropriate for not-for-profit oriented entities.

The significant accounting policies disclosed below are those which the directors have determined are appropriate to meet the needs of members. Such accounting policies are consistent with the previous unless otherwise stated.

The financial statements have been prepared on an accrual basis and are based on historical cost unless otherwise stated in the notes.

(b) Comparative Amounts

When required by Accounting Standards, comparative figures have been adjusted to conform to changes in presentation for the current financial year.

(c) Property, Plant, and Equipment

Software

Software is recorded at cost. Software has a finite life and is carried at cost less accumulated amortisation and any impairment losses. It has an estimated useful life of between one and four years. It is assessed annually for impairment.

Plant and Equipment

Plant and equipment is carried at its cost less any accumulated depreciation and any impairment loss. Costs include purchase price, other directly attributable costs and the initial estimate of costs of dismantling and restoring the asset, where applicable.

Depreciation

The depreciable amount of all property, plant and equipment, except for freehold land is depreciated on a straight-line method from the date that management determine that the asset is available for use.

The depreciation rates used for each class of depreciable asset are shown below:

Fixed Asset Class	Depreciation Rate
Computer Equipment	50-66.67%
Computer Software	40%

At the end of each annual reporting period, the depreciation method, useful life and residual value of each asset is reviewed. Any revisions are accounted for prospectively as a change in estimate.

When an asset is disposed of, the gain or loss is calculated by comparing proceeds received with its carrying amount and is taken to profit or loss.

Notes to the Financial Statements

1. Statement of Significant Accounting Policies - Continued

(d) Financial Instruments

Financial instruments are recognised initially using trade date accounting, i.e. on the date that the company becomes a party to the contractual provisions of the instrument.

On initial recognition, all financial instruments are measured at fair value plus transaction costs (except for instruments measured at fair value through profit or loss where transaction costs are expensed as incurred).

Financial Assets

Financial assets are divided into the following categories which are described in detail below:

- loans and receivables;
- financial assets at fair value through profit or loss;
- available-for-sale financial assets; and
- held-to-maturity investments.

Financial assets are assigned to the different categories on initial recognition, depending on the characteristics of the instrument and its purpose. A financial instruments' category is relevant to the way it is measured and whether any resulting income and expenses are recognised in profit or loss or in other comprehensive income.

All income and expenses relating to financial assets are recognised in the statement of profit or loss and other comprehensive income in the 'finance income' or 'finance costs' line item respectively.

Loans and Receivables

Loans and receivables are non-derivative financial assets with fixed or determinable payments that are not quoted in an active market. They arise principally through the provision of goods and services to customers but also incorporate other types of contractual monetary assets.

After initial recognition, these are measured at amortised cost using the effective interest method, less provision for impairment. Any change in their value is recognised in profit or loss.

The Company's trade and most other receivables fall into this category of financial instruments.

Discounting is omitted where the effect of discounting is considered immaterial.

Significant receivables are considered for impairment on an individual asset basis where they are past due at the reporting date or when objective evidence is received that a specific counterparty will default.

The amount of the impairment is the difference between the net carrying amount and the present value of the future expected cash flows associated with the impaired receivable.

For trade receivables, impairment provisions are recorded in a separate allowance account with the loss being recognised in profit or loss. When confirmation has been received that the amount is not collectable, the gross carrying value of the asset is written off against the associated impairment provision.

Subsequent recoveries of amounts previously written off are credited against other expenses in profit or loss.

In some circumstances, the Company renegotiates repayment terms with customers which may lead to changes in the timing of the payments, the Company does not necessarily consider the balance to be impaired, however, assessment is made on a case-by-case basis.

Financial Assets at Fair Value through Profit or Loss

Financial assets at fair value through profit or loss include financial assets:

- acquired principally for the purpose of selling in the near future;
- designated by the entity to be carried at fair value through profit or loss upon initial recognition; or
- which are derivatives not qualifying for hedge accounting.

Assets included within this category are carried in the statement of financial position at fair value with changes in fair value recognised in finance income or expenses in the profit or loss.

Notes to the Financial Statements

1. Statement of Significant Accounting Policies - Continued

(d) Financial Instruments - Continued

Any gain or loss arising from derivative financial instruments is based on changes in fair value, which is determined by direct reference to active market transactions or using a valuation technique where no active market exists.

Held-to-Maturity Investments

Held-to-maturity investments are non-derivative financial assets with fixed or determinable payments and fixed maturity. Investments are classified as held-to-maturity if it is the intention of the Company's management to hold them until maturity.

Held-to-maturity investments are subsequently measured at amortised cost using the effective interest method, with revenue recognised on an effective yield basis. In addition, if there is objective evidence that the investment has been impaired, the financial asset is measured at the present value of estimated cash flows. Any changes to the carrying amount of the investment are recognised in profit or loss.

Available-for-sale Financial Assets

Available-for-sale financial assets are non-derivative financial assets that do not qualify for inclusion in any of the other categories of financial assets.

Purchases and sales of available-for-sale investments are recognised on the settlement date.

All other available-for-sale financial assets are measured at fair value, with subsequent changes in value recognised in other comprehensive income.

Gains and losses arising from financial instruments classified as available-for-sale are only recognised in profit or loss when they are sold or when the investment is impaired.

In the case of impairment or sale, any gain or loss previously recognised in equity is transferred to profit or loss.

Financial Liabilities

Financial liabilities are recognised when the Company becomes a party to the contractual agreements of the instrument. All interest related charges and if applicable, changes in an instrument's fair value that are reported in profit or loss are included in the income statement items "finance costs" or "finance income".

Financial liabilities are classified as either financial liabilities 'at fair value through profit or loss' or 'other financial liabilities' depending on the purpose for which the liability was acquired.

The Company's financial liabilities include trade and other payables and income received in advance.

Impairment of Financial Assets

At the end of the reporting period, the Company assesses whether there is any objective evidence that a financial asset or group of financial assets is impaired.

Financial Assets at Amortised Cost

If there is objective evidence that an impairment loss on financial assets carried at amortised cost has been incurred, the amount of the loss is measured as the difference between the asset's carrying amount and the present value of the estimated future cash flows discounted at the financial asset's original effective interest rate.

Impairment on loans and receivables is reduced through the use of an allowance account, all other impairment losses on financial assets at amortised cost are taken directly to the asset.

Available-for-Sale Financial Assets

A Significant or prolonged decline in value of an available-for-sale asset below its cost is objective evidence of impairment, in this case, the cumulative loss that has been recognised in other comparative income is reclassified from equity to profit or loss as a reclassification adjustment. Any subsequent increase in the value of the asset is taken directly to other comprehensive income.

Notes to the Financial Statements

1. Statement of Significant Accounting Policies - Continued

(e) Cash and Cash Equivalents

Cash and cash equivalents comprise of cash on hand, demand deposits and short-term investments which are readily convertible to known amounts of cash and which are subject to an insignificant risk of change in value.

Bank overdrafts also form part of cash equivalents for the purpose of the statement of cash flows and are presented within current liabilities on the statement of financial position.

(f) Employee Benefits

Provision is made for the Company's liability for employee benefits arising from services rendered by employees to the end of the reporting period. Employee benefits that are expected to be settled within one year have been measured at the amounts expected to be paid when the liability is settled.

(g) Income Tax

No provision for income tax has been raised as the company is exempt from income tax under *Division 50 of the Income Tax Assessment Act of 1997*.

(h) Goods and Services Tax (GST)

Revenue, expenses, and assets are recognised net of the amount of Goods and Services Tax (GST), except where the amount of GST incurred is not recoverable from the Australian Taxation Office (ATO).

Receivables and payables are stated inclusive of GST.

The net amount of GST recoverable from, or payable to, the ATO is included as part of receivables or payables in the statement of financial position.

Cash flows are presented in the statement of cash flows on a gross basis, except for the GST components of investing and financing activities, which are disclosed as operating cash flows.

(i) Critical Accounting Estimates and Judgements

The directors make estimates and judgements during the preparation of these financial statements regarding assumptions about current and future events affecting transactions and balances.

These estimates and judgements are based on the best information available at the time of preparing the financial statements, however, as additional information is known then the actual results may differ from the estimates.

The significant estimates and judgements made have been described below.

Key Estimates - Provisions

As described in the accounting policies, provisions are measured at management's best estimate of the expenditure required to settle the obligation at the end of the reporting period. These estimates are made taking into account a range of possible outcomes.

Key Judgements - Revenue

Revenue is only recognised when, in management's judgement, the significant risks and rewards of ownership have been transferred and when the Company does not retain continuing management involvement or effective control over the goods or services sold, or when the obligation has been fulfilled. For some transactions, this can result in cash receipts being initially recognised as deferred income (unearned revenue) and then released to income over subsequent periods on the basis of the performance of conditions specified in the agreements.

Notes to the Financial Statements

1. Statement of Significant Accounting Policies - Continued

(j) Adoption of New and Revised Accounting Standards

The company has adopted all of the new, revised or amending Accounting Standards and Interpretations issued by the Australian Accounting Standards Board ('AASB') that are mandatory for the current reporting period.

Any new, revised or amending Accounting Standards or Interpretations that are not yet mandatory have not been early adopted.

(k) New Accounting Standards and Interpretations

Australian Accounting Standards and Interpretations that have recently been issued or amended but are not yet mandatory, have not been early adopted by the Company for the annual reporting period ended 30 June 2016. The Company has not yet assessed the impact of these new amended Accounting Standards and Interpretations.

2. Cash and Cash Equivalents

Cash and cash equivalents reported in the Statement of Cash Flows are reconciled to the equivalent items in the Statement of Financial Position as follows:

	30-Jun-16	30-Jun-15
	\$	\$
Cash at Bank and in Hand	21,653	91,142
Short-term Bank Deposits	285,142	677,220
Total Cash and Cash Equivalents	306,795	768,362

3. Trade and Other Receivables

Trade and Other Receivables	6,961	13,972
Total Trade and Other Receivables	6,961	13,972

The carrying value of trade receivables is considered a reasonable approximation of fair value due to the short-term nature of the balances. The maximum exposure to credit risk at the reporting date is the fair value of each class of receivable in the financial statements.

4. Property, Plant and Equipment

Computer Equipment at Cost	6,085	6,085
less: Accumulated Depreciation	(4,665)	(3,639)
Total Computer Equipment	1,420	2,446

5. Intangible Assets

Computer Software at Cost	69,959	69,959
less: Accumulated Amortisation	(63,247)	(47,183)
Total Intangible Assets	6,712	22,776

Notes to the Financial Statements

	30-Jun-16	30-Jun-15
	\$	\$
6. Other Current Assets		
Prepayments – Conferences	105,473	-
Prepayments – Other	61,976	12,435
Accrued Interest Income	15,009	11,246
Total Other Current Assets	182,458	23,681

7. Trade and Other Payables

Bank Overdraft and Other Credit Card Facility	3,482	-
Accrued Expenses	5,991	40,330
PAYG Withholdings	15,214	23,946
GST Payable	-	12,171
Other Payables	24,687	76,447

All amounts are short term and the carrying values are considered to be a reasonable approximation of fair value.

8. Employee Benefits

Provision for Annual Leave	13,475	2,242
Provision for Long Service Leave	9,552	2,562
Total Employee Benefits	23,027	4,804

9. Other Financial Liabilities

Unearned Revenues	236,080	174,979
Total Other Current Assets	236,080	174,979

10. Equity Funds

In past years it was the Company's policy to attribute revenues and expenses to specific funds for the purpose of identifying the separate contributions of each revenue source. It has been decided by the board to simplify this to a retained earnings method because there was no longer a reliance upon tracing the different revenue sources.

11. Members' Guarantee

The Company is incorporated under the Incorporations Act of 2001 and is a company limited by guarantee. If the Company is wound up, the constitution states that each member is required to contribute a maximum of \$10 each towards meeting any outstanding's and obligations of the Company. At 30 June 2016 the number of members was 224 (2015: 202).

12. Contingencies

In the opinion of the Directors, the Company did not have any contingencies at 30 June 2016 (30 June 2015: None).

Notes to the Financial Statements

13. Events after the Reporting Period

No matter or circumstances has arisen since 30 June 2016 that has significantly affected, or may significantly affect the company's operations, the results of those operations, or the company's state of affairs in future financial years.

	30-Jun-16	30-Jun-15
	\$	\$

14. Cash Flow Information

Reconciliation of Result for the Year to Cash Flows from Operating Activities

Reconciliation of net income to net cash provided by operating activities:

Profit / (Loss) for the year	(84,266)	(224,394)
Cash flows excluded from profit attributable to operating activities		
Non-cash flows in profit:		
- Amortisation and depreciation	17,090	21,002
Changes in assets and liabilities, net of the effects of purchase and disposal of subsidiaries:		
- (increase)/decrease in trade and other receivables	7,290	(13,972)
- (increase)/decrease in other assets	(157,624)	211,070
- increase/(decrease) of income in advance	61,101	(71,052)
- increase/(decrease) in trade and other payables	(52,040)	40,039
- increase/(decrease) in provisions	18,223	(12,102)
Cash flow from operations	(190,226)	(49,409)

15. Company Details

The registered office of the Company is:

Australian National Committee of CIGRE
Limited Suite 516, Level 5 Toowong Towers
TOOWONG, Queensland, 4066

Director's Declaration

Australian National Committee of CIGRE Limited for the year ended 30 June 2016

The directors have determined that the company is not a reporting entity and that this special purpose financial report should be prepared in accordance with the accounting policies outlined in Note 1 to the financial statements.

The directors of the company declare that:

1. The financial statements and notes, as set out on pages 11 to 21, are in accordance with the *Corporations Act 2001*, and;
 - (a) comply with Australian Accounting Standards as stated in Note 1; and
 - (b) give a true and fair view of the financial position as at 30 June 2016 and of the performance for the year ended on that date and is in accordance with the accounting policy described in Note 1 of the financial statements.
2. In the directors' opinion, there are reasonable grounds to believe that the company will be able to pay its debts as and when they become due and payable.

This declaration is made in accordance with a resolution of the Board of Directors.



Trevor Armstrong
Director 26 October 2016



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**INDEPENDENT AUDITOR'S REPORT
TO THE MEMBERS OF
AUSTRALIAN NATIONAL COMMITTEE OF CIGRE LIMITED**

Report on the Financial Report

We have audited the accompanying financial report, being a special purpose financial report, of Australian National Committee of CIGRE Limited ("the company"), which comprises the statement of financial position as at 30 June 2016, the statement of profit or loss and other comprehensive income, statement of changes in equity and statement of cash flows for the year then ended, notes comprising a summary of significant accounting policies and other explanatory notes and the directors' declaration.

Directors' Responsibility for the Financial Report

The directors of the company are responsible for the preparation of the financial report and have determined that the basis of preparation described in Note 1 to the financial report is appropriate to meet the requirements of the *Corporations Act 2001* and is appropriate to meet the needs of the members.

The directors' responsibility also includes such internal control as the directors determine is necessary to enable the preparation of a financial report that is free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on the financial report based on our audit. We conducted our audit in accordance with Australian Auditing Standards. Those standards require that we comply with relevant ethical requirements relating to audit engagements and plan and perform the audit to obtain reasonable assurance whether the financial report is free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial report. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the financial report, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation of the financial report that gives a true and fair view in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by the directors, as well as evaluating the overall presentation of the financial report.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

**THE POWER OF BEING UNDERSTOOD
AUDIT | TAX | CONSULTING**

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RSM Australia Partners ABN 36 965 185 036

Liability limited by a scheme approved under Professional Standards Legislation

Independence

In conducting our audit, we have complied with the independence requirements of the *Corporations Act 2001*. We confirm that the independence declaration required by the *Corporations Act 2001*, which has been given to the directors of Australian National Committee of CIGRE Limited, would be in the same terms if given to the directors as at the time of this auditor's report.

Opinion

In our opinion the financial report of Australian National Committee of CIGRE Limited is in accordance with the *Corporations Act 2001*, including:

- (a) giving a true and fair view of the company's financial position as at 30 June 2016 and of its performance for the year ended on that date; and
- (b) complying with Australian Accounting Standards to the extent described in Note 1 and the *Corporations Regulations 2001*.

Basis of Accounting

Without modifying our opinion, we draw attention to Note 1 to the financial report, which describes the basis of accounting. The financial report has been prepared for the purpose of fulfilling the directors' financial reporting responsibilities under the *Corporations Act 2001*. As a result, the financial report may not be suitable for another purpose.



RSM AUSTRALIA PARTNERS



Albert Loots
Partner

Brisbane, Queensland
Dated: 26 October 2016



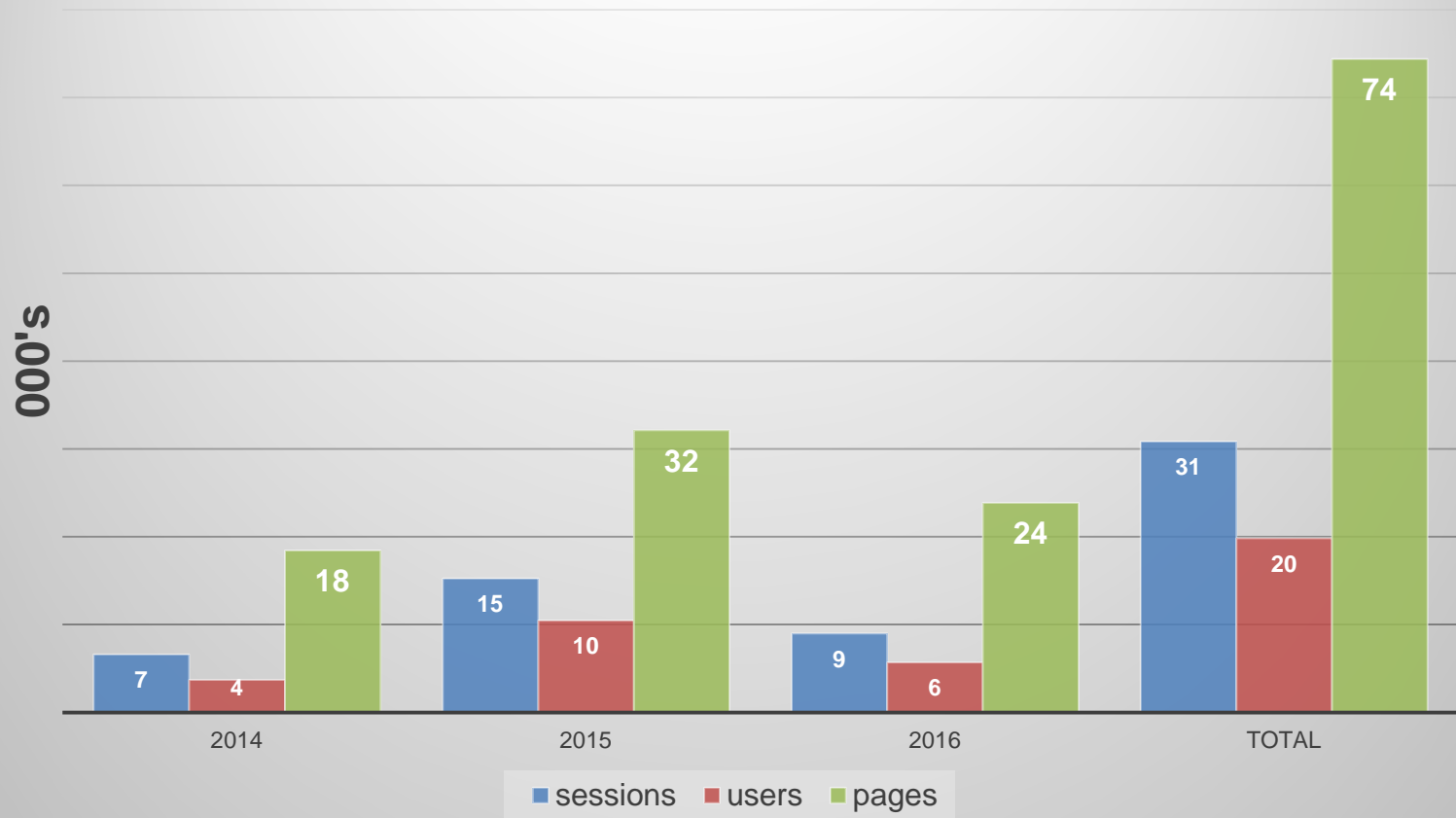
empowering
networking
global know-how

Executive Managers Report AGM 2016

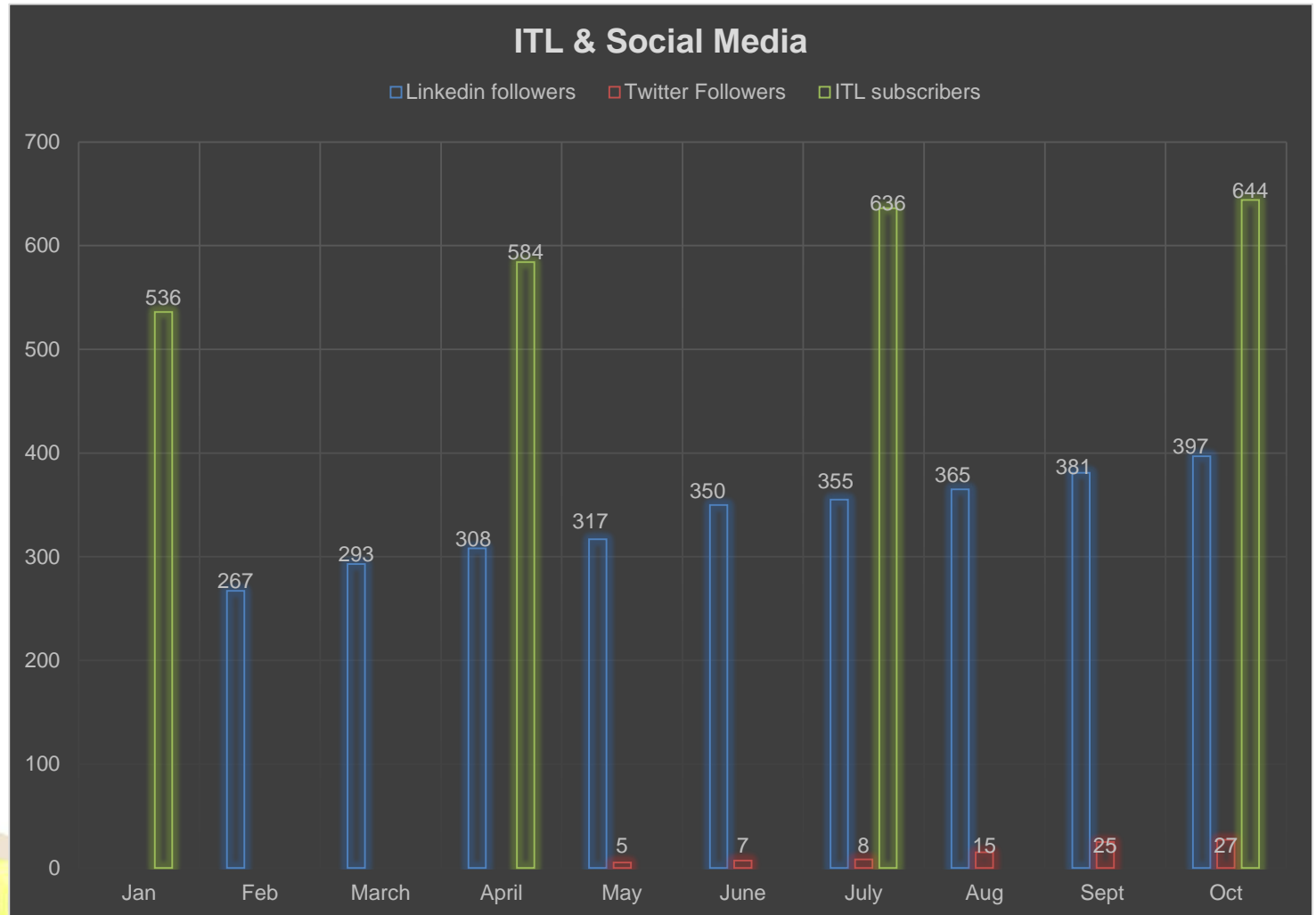
Terry Killen
Executive Manager
CIGRE Australia

Website

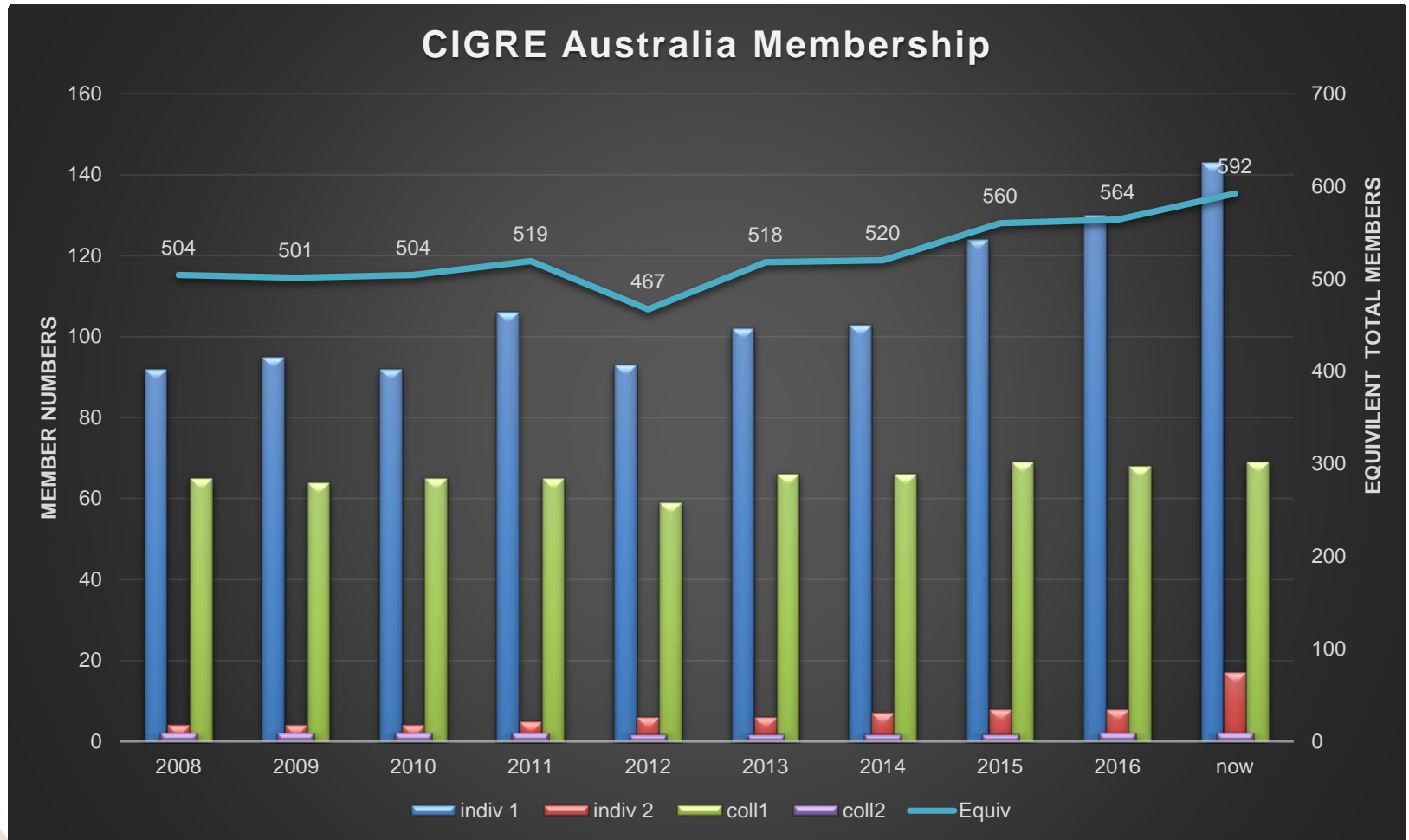
CIGRE Australia Web Usage 2014 - 1016



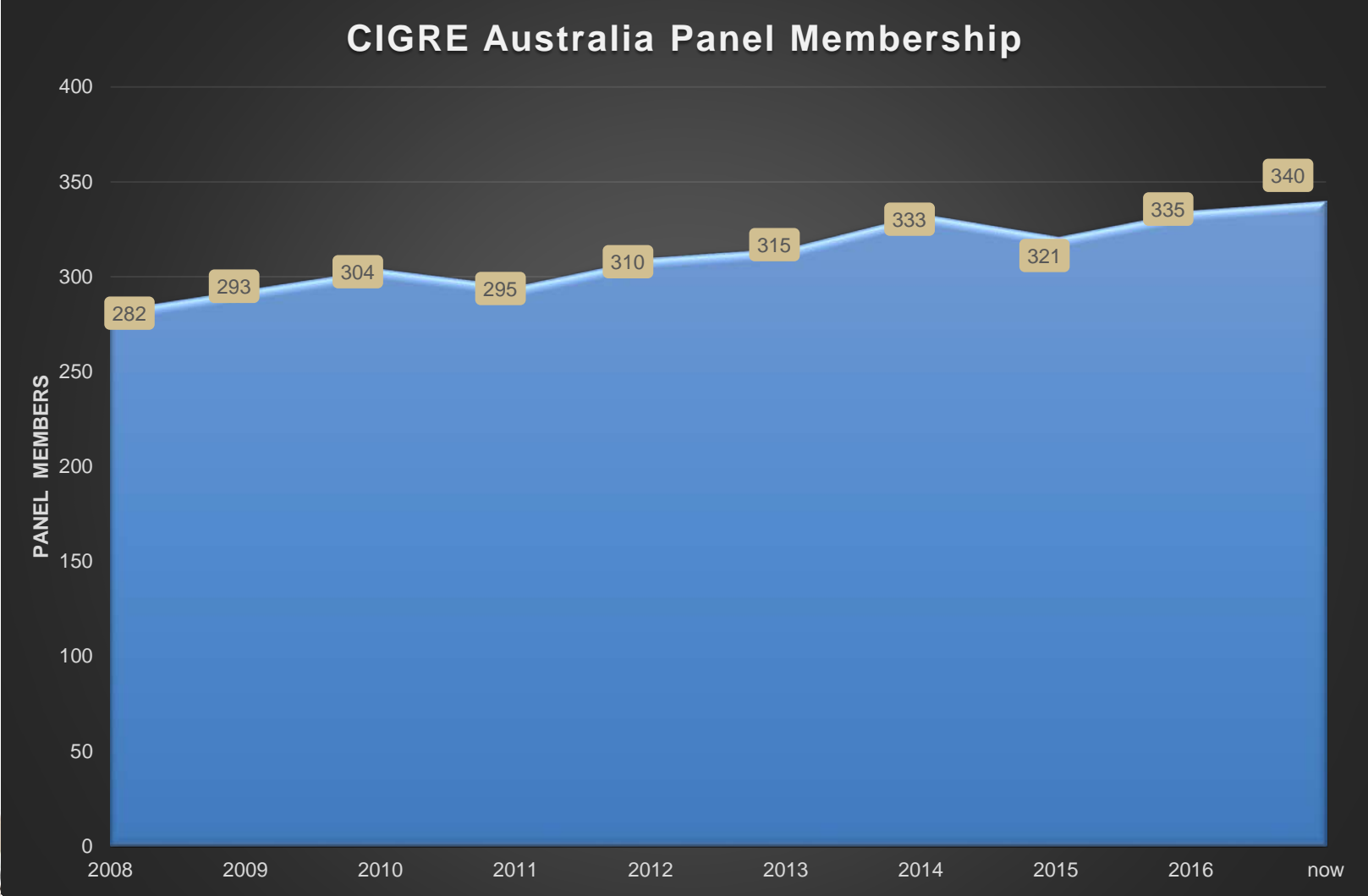
ITL & Social Media



Membership

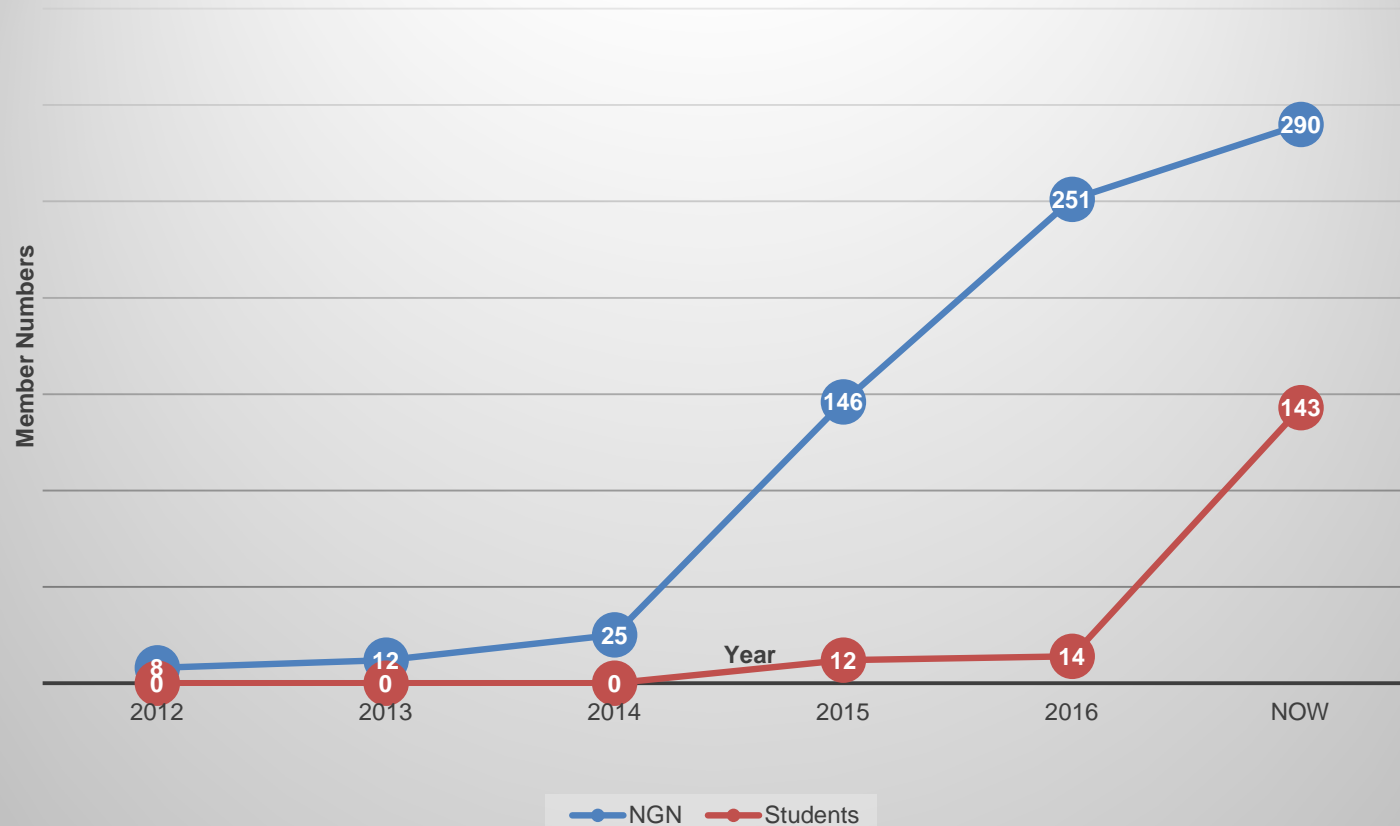


Panels



NGN & Students

CIGRE Australia NGN and Student Membership

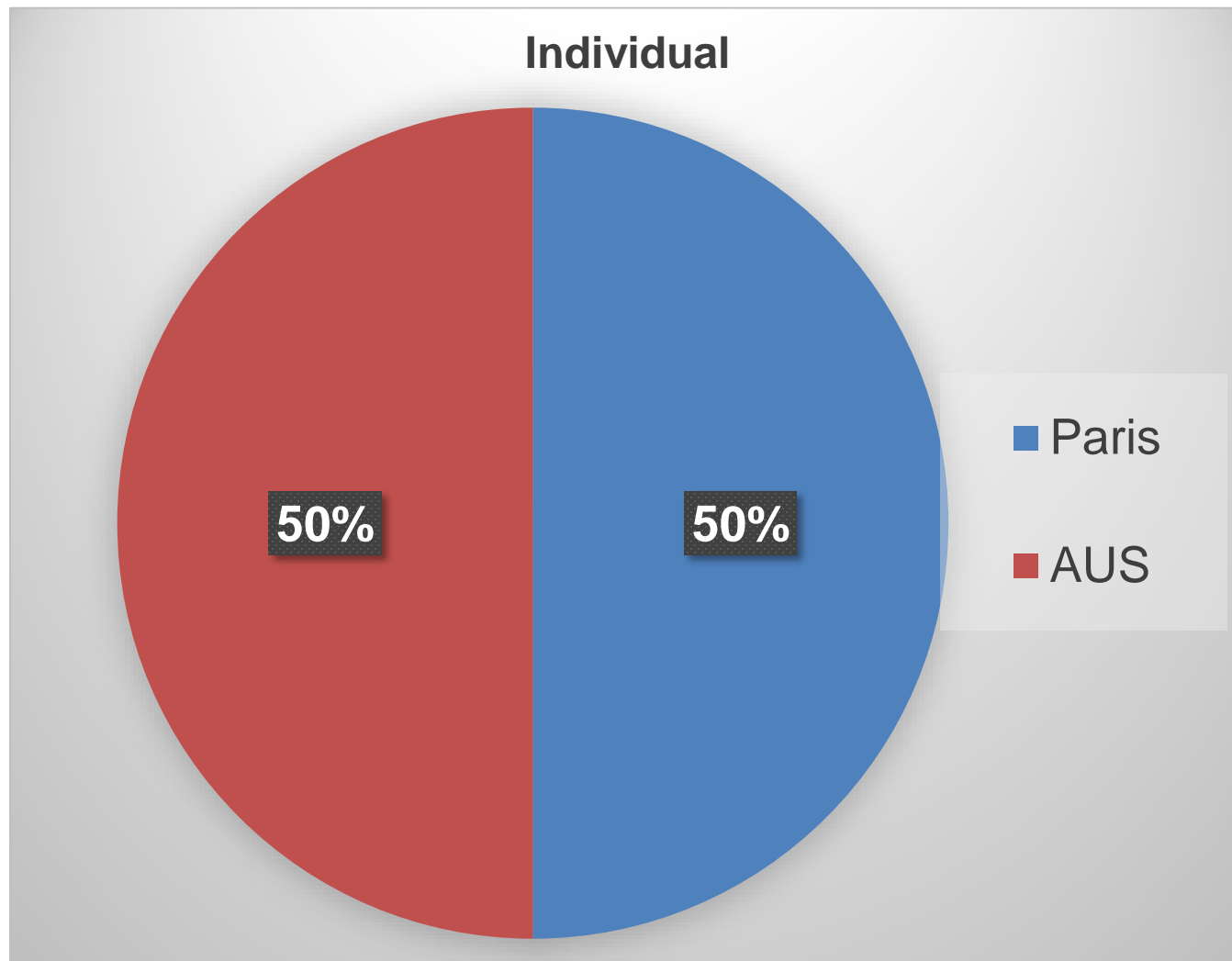


CIGRE Australia - 2017 Fees

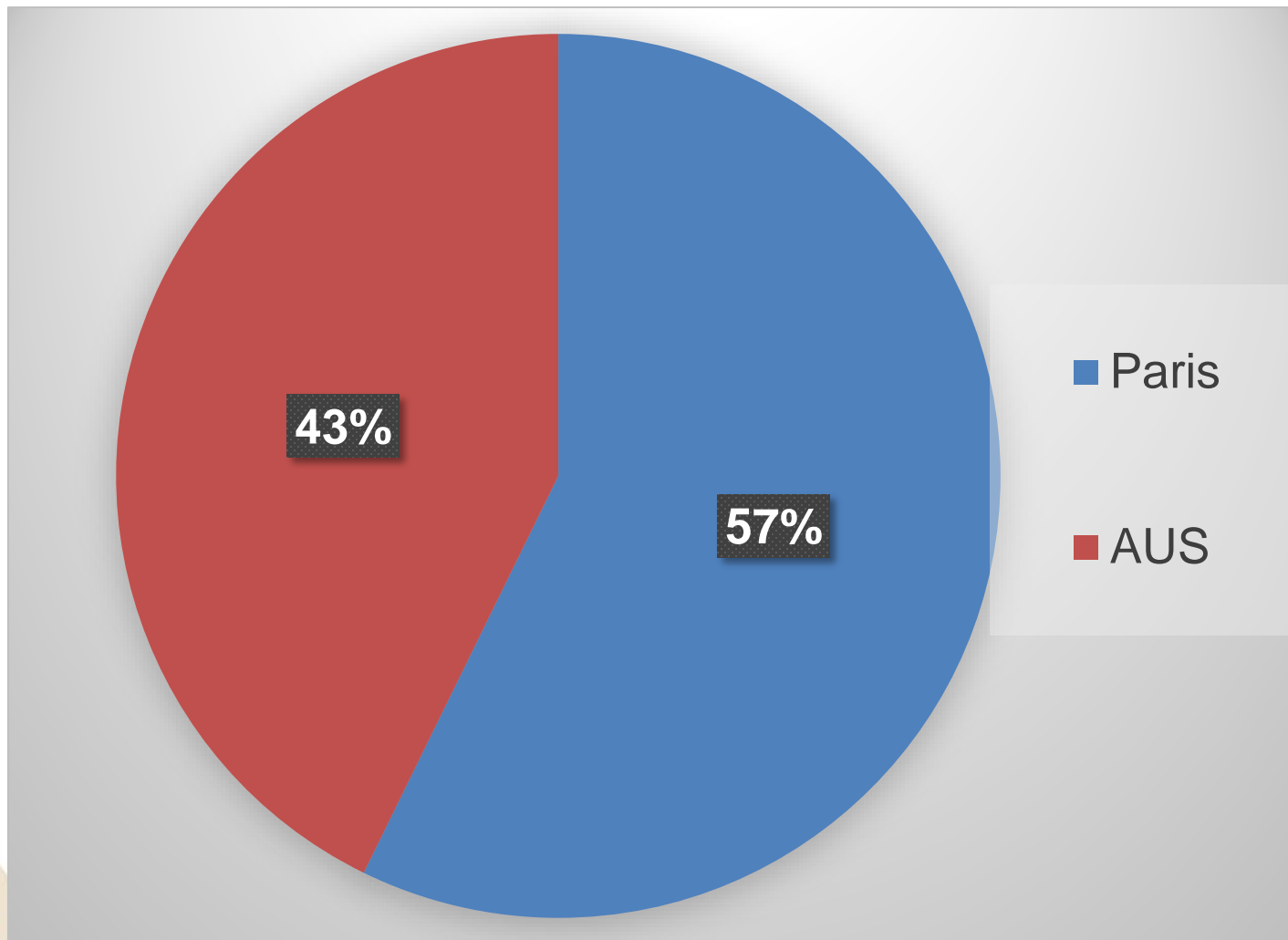
	Aust	Paris	Total
Collective 1 T&D	\$ 6,146	\$ 1,034	\$ 7,180
Collective 1 T&D	\$ 772	\$ 1,034	\$ 1,806
Collective II	\$ 386	\$ 517	\$ 903
Individual I	\$ 158	\$ 158	\$ 316
Individual II	\$ 79	\$ 79	\$ 158
Retiree	\$ -	\$ 158	\$ 158
Panel	\$ 869	\$ -	\$ 869



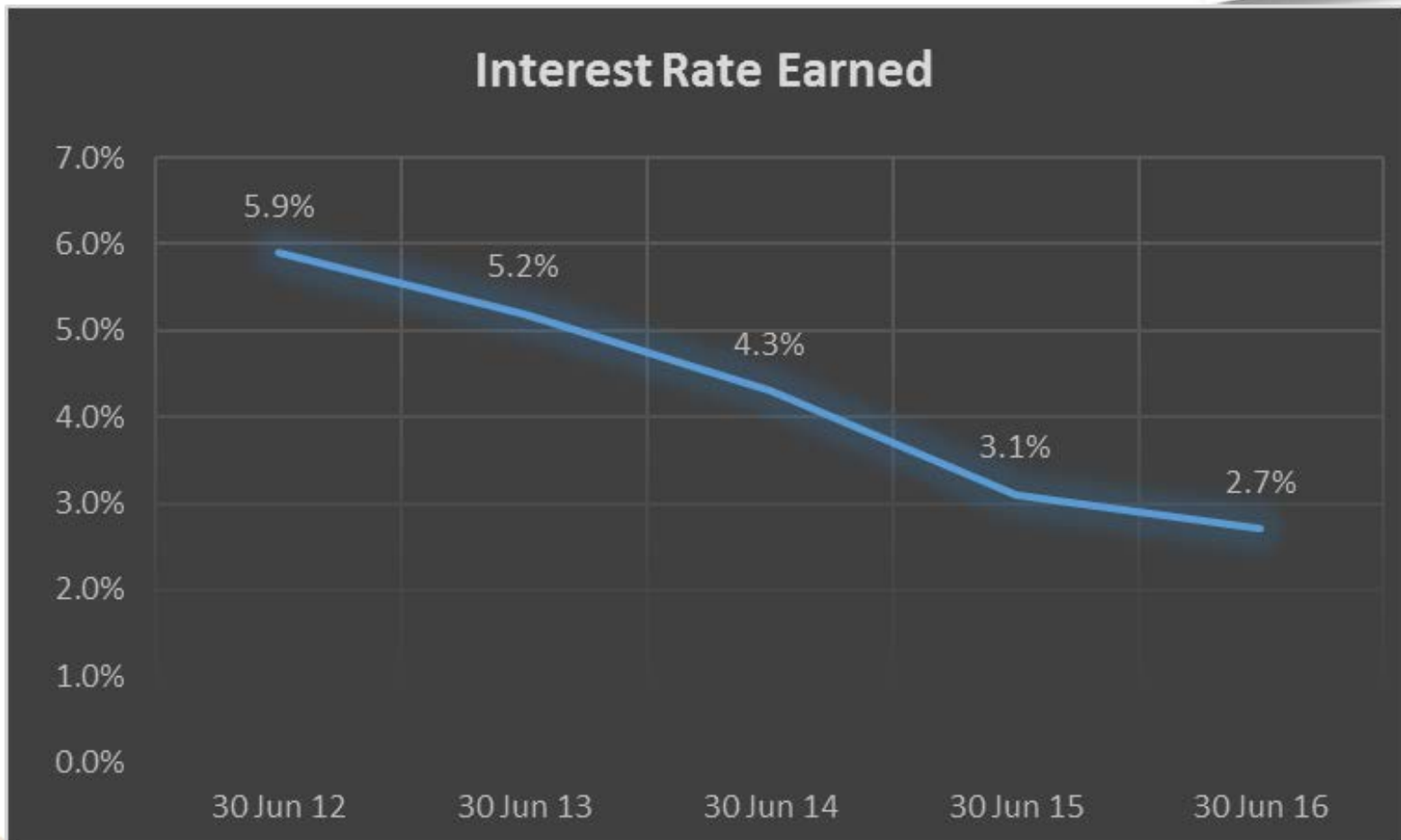
Individual 1 Fee



Collective 1 Fee



Interest Rate Income



Challenges

- Larger Utilities and corporates not sponsoring meetings and AGMs
- Falling interest rates



Events



SEAPAC 17

South East Asia Protection, Automation and Control Conference
14th & 15th March 2017 , Melbourne, Victoria, Australia

The Cigré AUSTRALIA logo is positioned in the top right corner of the banner.

Melb 14th 15th March 2017



Sydney 14th -15th August 2017



Member Drive

Member numbers are growing but aiming for for.

Details of end of yr member drive

- Individual Member - \$50 gift Voucher
- Collective Member \$100
- To the end of December
- Details will be mailed out shortly



CIGRE Australia Strategic Plan 2016 – 2019

Context

The broader electricity industry environment in which CIGRE Australia is operating continues to be in the midst of a major paradigm shift. Whilst some amalgamation is apparent, the thrust of this paradigm shift is characterized by a transition away from large vertically integrated electricity utilities to smaller more commercially focused entities driven by business and market imperatives. The emerging entities are increasingly demanding a demonstrable return on expenditure and time invested by employees. Many of these Transmission and Distribution companies under new management structures are downsizing their operations and sub-contacting much of the project work, procurement and non-core activities to local specialized contractors.

These changes pose significant challenges to CIGRE in Australia. In particular, CIGRE Australia needs to clearly demonstrate value for money to its traditional members and their organizations or risk losing their support. At the same time positive action is required to make CIGRE much more inclusive of these new organisations and service providers many of whom may already have links to CIGRE through their overseas operations

These changes are adding to limit the capacity of members in Australia to continue to support the work of CIGRE on a voluntary basis.

In this context it is essential that the unique value proposition of CIGRE Australia is clearly articulated so that the Strategic Plan is focused on enhancing CIGRE's presence and recognition in this transforming marketplace in such a way that it is seen to be adding value to key stakeholders and the industry in general.

Additionally, CIGRE needs to ensure the development and engagement of its young engineers to ensure their interest and involvement into the future and the sustainability of CIGRE and the service/value that it provides.

The value proposition of CIGRE Australia can be summarized as:

'The provision of a forum for the development and open exchange of electricity industry expertise, knowledge and information at a national and international level which is both technically excellent and practically applicable. This creates a unique opportunity for the development of technical competencies and the provision of authoritative, unbiased technical information.'

Further, the Board of CIGRE Australia is keen to foster the development of local electricity networks and systems throughout the South East Asia and Pacific regions. The Board recognises some of the unique challenges being faced by utilities in these regions in terms of very rapid development in the major industrial areas and the development of isolated systems where there was previously little or no access to electricity. Utilities and organisations in these regions are able to draw on the global knowledge of CIGRE as well as add their own experience and knowledge to the global database.

CIGRE Australia Strategic Plan 2016 – 2019

The Strategic Plan that follows is aimed at delivering this proposition and ensuring that this is recognised and valued by CIGRE Australia members, stakeholders and the wider marketplace.

CIGRE Australia Strategic Plan 2016 – 2019

TOP 10 ISSUES

Through comments in the earlier 2013 survey and ongoing discussions with stakeholders from across the industry, the board has further refined the top ten issues to aid in providing a framework for the focus of CIGRE activity.

- Managing ageing assets
- Impacts of the substantial structural evolution of the power industry including issues regarding efficiency, cost reflective pricing and market economics.
- Challenges associated with changing patterns of generation and demand including the impact of climate change and newer technologies
- An increasing need for keeping all stakeholders engaged and informed during the development of the electricity supply system of the future
- Encouraging enterprise and embracing new ideas through supporting innovative and responsive workplaces and not being afraid to challenge the status quo,
- Operational and network issues associated with managing the integration of renewables and new emerging technologies such as wind, PV, storage and how to manage associated supply intermittency, reduced generation inertia and peak demand issues.
- Supporting where appropriate the maintenance of an appropriate age/experience/business profile of industry technical staff to ensure that technical expertise is not lost in each organisation nor across the industry and hence broadening the CIGRE membership to include the new service suppliers, contractors and investors in the industry.
- Ensuring stakeholders are informed on the best international practice so that they are able to ensure commercially viable and technically viable solutions.
- Encouraging the development of the younger age group and aiding in the acquisition of appropriate experience and technical knowledge and the development of a knowledge and network base.
- Ensuring that CIGRE remains to be seen as a non-partisan source of expert information on issues related to the Electricity Supply System.

Value proposition of CIGRE Australia



'The provision of a forum for the development and open exchange of electricity industry expertise, knowledge and information at a national and international level which is both technically excellent and practically applicable. This creates a unique opportunity for the development of technical competencies and the provision of authoritative, unbiased technical information.'



Mission

To support our members in leveraging global experience to develop enhanced solutions for Australian organisations and the community.

CIGRE is committed to empowering teams with the latest, most relevant know-how and innovations. CIGRE supports this know-how with access to a worldwide pool of experts and peers.

Core Values

- Actively build a community of Australian experts promoting engineering excellence;
- Facilitate effective knowledge sharing;
- Foster and mentor the next generation of engineers;
- Deliver value for our member organisations through supporting the creation of enhanced solutions optimised for Regional conditions and our market environment.
- Contribute to the industry by helping to facilitate engagement during the development of the network electricity supply system and through promoting safety.

Vibrant & inclusive

Be a vibrant, inclusive, transparent and sustainable organization which has an enviable reputation for building bridges between technocrats and decision makers on industry issues and challenges - internally and externally, locally and globally.



Electricity Supply System of the Future

Drive transformational thinking within the electricity industry to support being more organic, responsive, forward looking, innovative and value focussed.

Utilisation of New Media and technology

Ensure that relevant, modern and effective means of communication (New Media Dynamic) are used to aid in disseminating the CIGRE message and value that is provided to the industry and members

People & skills of the future

Ensure appropriate diversity across the whole of CIGRE and be one of the major champions for developing the next generation of engineers, technicians and managers of the electricity industry (Networking for the Future)

Sustainable Contribution:

Influence and contribute to CIGRE Internationally through Australian panels, Working Groups, Study Committees, Secretariat practices.

Engage in significant dialogue across all industry stakeholders in the region so they are aware of the critical issues and solutions available within the electricity industry and how CIGRE can contribute to the debate and possible solutions.



CIGRE Australia Strategic Plan 2016 – 2019

Strategic Theme	Action	Accountability	When	Measure	Target
1.Sustainable Contribution	<p>1.1. Participate vigorously in international and local debate and exploration of critical issues and aim to lead this debate where appropriate. (Note: - CIGRE rules are that once a person is appointed as an SC member then they are expected to join at least one working group during their tenure as a SC member. We must encourage more WG meetings in this region)</p> <p>Progress – to November 2016 <i>CIGRE Australia members continue to be involved in International and regional activities.</i> <i>16 Study Committee members</i> <i>SEAPAC, 2013/15; CIDER 2015, NGN seminar 2015; CIGRE tutorials 2014, 15, 16; AUPEC 2016</i> <i>7 international Working Groups convened by CIGRE Australia members</i></p>	Board/Exec Mgr	Ongoing	1.1.1 # SC members 1.1.2 # Conferences held 1.1.3 # WG Members	16 5 every 2 yrs. 10
	<p>1.3. Promote the value of innovation to governments and policy makers in shaping the industry to deliver on customer needs and benefits and the independent role the CIGRE global network can play in this innovation</p> <p>Progress – to November 2016 <i>Discussions with representatives from Asia Development Bank, ENA policy advisor, Qld Govt officials (QLD govt rep attended CIDER)</i></p> <p><i>More needs to be done in this area as CIGRE is in a unique position to be an impartial source of information.</i></p>	Exec Mgr		1.3.1 # visits/discussions to Policy /Regulators	4 p.a.

CIGRE Australia Strategic Plan 2016 – 2019

	<p>1.4 Promote the value of CIGRE membership to other regions, in particular in the Pacific Rim and investigate ways to assist them with accessing CIGRE Technical Brochures and information and exchanging information between entities and members. This will require many of the Australian Panels to focus on Distribution aspects rather than solely on Transmission</p> <p>Progress – to November 2016 <i>Established a reciprocal membership arrangement with the Pacific Power Association. Executive Manager attended the PPA 2016 Conference.</i> <i>Have one panel member from the PPA on C6.</i> <i>PPA Executive Director attended CIDER and AGM</i></p>	Exec MGR		<p>1.4.1 Establish link/member to the Pacific Rim.</p> <p>1.4.2 Have Pacific Rim speaker at CIGRE Conferences</p>	<p>June 2016</p> <p>At least 1 speaker in 2016</p>
	<p>1.5 Ensure that sound commercial practice is implemented in the Governance and Administration of CIGRE Australia</p> <p>Progress – to November 2016</p> <ul style="list-style-type: none"> • <i>Corporate member travel policy established</i> • <i>D&O insurances in place</i> • <i>Directors have direct web access to the accounting system and reports. Monthly statements being made available to board.</i> • <i>Cost to serve Oct 16 \$ 106 per equivalent member</i> • <i>Still operating on a small deficit – working to a breakeven point for 2017.</i> • <i>Investment schedule has been developed and provided to the board and Finance Subcommittee.</i> 	Exec Mgr	April 2016	<p>1.5.1 D&O insurances</p> <p>1.5.2 Finance reporting accurate and available to board</p> <p>1.5.3 Membership cost to serve achieved</p> <p>1.5.4 Break even or better fin yr actual result</p> <p>1.5.5 Investment plan for 'surplus' funds developed and implemented.</p>	<p>Polices and systems in place by Dec 2016</p> <p>Less than \$110/equiv member</p> <p>Achieved by Jun 2018</p> <p>Achieved by June 2016</p>

CIGRE Australia Strategic Plan 2016 – 2019

Strategic Theme	Action	Accountability	When	Measure	Target
2. Vibrant & Inclusive	2.1. Develop a sustainable membership base which includes a representative cross section of the diverse membership of the electricity industry, and associated sectors and participants and reflects gender and age diversity Progress – to November 2016 <i>A board endorsed diversity policy has been developed and available for viewing on the CIGRE Australia website with other policies</i>	Exec Mgr	June 2016	Completion	CIGRE Australia policy in place.
	2.2. Meet members needs for support and information provision Progress – to November 2016 <i>Stakeholder Survey to be issued in 2016/17</i>	Secretary	Ongoing	Members feedback and commentary	90% plus satisfaction rate in survey
	2.3. Establish the relevance and value of CIGRE, particularly its international resources, to key industry and jurisdictional decision makers (Boards, CEOs ,Execs) Progress – to November 2016 <i>ITL - 656 subscribers</i> <i>Edition 8 issued in October</i> <i>Website – traffic is increasing</i> <i>Since May 2014</i> <i>Sessions 31,000; Users 19 584 ; Page views 75 018 ; viewed in 159 countries</i> <i>398 followers on LinkedIn; 28 Twitter followers</i> <i>Updates to news and feature items being made, but need more.</i>	Exec MGR	June 2016 Ongoing	2.3.1. In The Loop newsletter developed and continued 2.3.2 Continue development of website improve public and membership accessibility and information 2.3.2 Ongoing development of LinkedIn site 2.3.3 Regular monthly news and feature updates on the website	500 + subscription Website Traffic increasing 300+ followers by Dec 2016 At least 1 item per week. At least 1 new item per month

CIGRE Australia Strategic Plan 2016 – 2019

	<p>2.4 Review and revise the list of top 10 challenges faced by electricity industry participants. These will influence how CIGRE uses its resources and how it reports to its stakeholders. It will also influence which working groups receive strong support from Australia</p> <p>Progress – to November 2016</p> <p><i>Completed- available on Website and in KMS</i></p>	Board	May 2016	Issues relevant and in line with stakeholder expectations.	Completion July 2016
	<p>2.5. Establish positive engagement with key industry CEOs around contribution of CIGRE to addressing key challenges</p> <p>Progress – to November 2016</p> <p><i>Survey postponed to after AGM.</i></p> <p><i>Exec Manager met with five CEO's for 2016 to date. 4 Senior Managers</i></p>	Exec Mgr	Dates – surveys 2016	<p>Complete stakeholder and member survey September 2016</p> <p>Exec Mgr to meet with all Collective member CEO's in the course of a calendar year.</p>	<p>Top quartile performance results in all categories. Better performance than the 2013 survey where results can be compared.</p> <p>Discussions with at least 10 CEO /Senior Managers at member coys.</p>

CIGRE Australia Strategic Plan 2016 – 2019

Strategic Theme	Action	Accountability	When	Measure	Target
3. Utilisation of New Media and technology	3.1 Establishment and use of appropriate media and marketing media. ITL LinkedIn Webinars Etc. Progress – to November 2016 <i>Draft plan underway and is being progressively implemented</i>	Exec Mgr	Dec 2016	As for 2.3 above Review appropriate media to be used and develop a plan for each medias use including a publication schedule	As for 2.3 Plan written and implemented by end of 2016.

CIGRE Australia Strategic Plan 2016 – 2019

Strategic Theme	Action	Accountability	When	Measure	Target
4. Electricity Supply System of the Future	<p>4.1. Foster understanding and development of new technology and thinking, and new uses for existing technology, to support future needs</p> <p>Progress – to November 2016 <i>International speakers at CIGRE Tutorial 2014 - 4</i> <i>International speakers at CIGRE Tutorial 2016 - 2</i></p>	ATC Chair	ongoing	No. of visits by key international Experts	> 6 international speakers/visitors at CIGRE conferences or meetings over 2 yr cycle
	<p>4.2 Provide forums and opportunity for Technocrats and policy/decision makers to meet and discuss industry issues.</p> <p>SEAPAC – 2015; 135 delegates CIDER – 2015 – 80 delegates CIGRE Tutorials – 47 Delegates</p> <p>Progress to November 2016 SEAPAC 15 made a good financial return. CIDER 15 broken even which was acceptable for the first year of the event. CIGRE Tutorials was marginal on a financial basis due to lower attendance.</p>	Exec MGR		Conferences continue to be held with good attendances SEAPAC CIDER CIGRE tutorials	Good attendance and sponsorship which at least covers cost of the event
	<p>4.3. Engage with members, the broader community and industry stakeholders to raise levels of awareness of changes needed and impact across the energy value chain.</p> <p>Progress to November 2016 <i>One meeting held in Hobart</i></p>		Ongoing	At least one seminar/stakeholder/member meeting in each state during the year	Positive feedback and interaction.

CIGRE Australia Strategic Plan 2016 – 2019

Strategic Theme	Action	Accountability	When	Measure	Target
5. People & skills of the future	5.1. Complete review of structure and resourcing of CIGRE Australia secretariat, board and panel membership to ensure appropriate diversity and representation of members and stakeholders. The Collective members should be represented on the board by senior representative (preferably CEO's) drawn from the collective member base. Progress to November 2016 <i>Review completed, detail not yet documented – aiming for Jan 2017</i>	Board Chair/Exec Mgr	Sept 2016	A written plan outlining structure and roles as well as succession planning is completed.	Plan and document available.
	5.2. Complete review of membership profile (e.g. age, gender, state, country) <i>Detail not completed – high level member number information provided.</i>	Secretary	July 2016	Data Circulated	Available for Paris Session Admin Council meeting
	5.3 Continue to support and foster the development of the NGN (Next Generation Network) to ensure that CIGRE has an experienced and enthusiastic base of talent for the future. Progress to November 2016 <i>NGN page on website and KMS developed NGN at 290 members Involved in Panels Ran 4 webinars to date</i>	Exec Mgr/NGN co Chairs	June 2016 and ongoing	-New website developed . Growing NGN numbers . Increase in NGN activities	.> 300 by August 2016
	5.4 Mentoring program for NGN members Progress to November 2016 One mentoree program in place as at August 2016	Exec Mgr	Dec 2016	Develop mentoring Program for NGN committee members initially	At least one program/mentor in place by Dec 2016

CIGRE Australia Strategic Plan 2016 – 2019

	<p>5.5 Promote the access and availability of CIGRE to the student member category</p> <p>Progress to November 2016 <i>135 Student members Sessions delivered at University of Queensland, QUT and in Hobart to University of Tasmania students and colleagues.</i></p>	Secretary	Ongoing	Number of student members and over time those that become involved in NGN or members.	50 Students by August 2016 100 by June 2017
Strategic Theme	Action	Accountability	When	Measure	Target
	<p>5.6 Create and launch NGN Mentoring Program with API Students</p> <p>Progress to November 2016 <i>There are currently 3 API students being mentored by NGN members and the aim is to increase this over the next 12 months</i></p>	NGN Co-chair	August 2016	Mentors and Protégés in place	At least 5 mentors established August 2016
	<p>5.8 Support power engineering ambassador programs in schools and career exhibitions in conjunction with others (e.g. API/STELR project, Engineers Australia)</p> <p>Progress to November 2016 <i>Continued support of STELR Schools program Through this support, NGN member Angela Rozali of AECOM was selected by ATSE to represent all young Australian Engineers at an international Leadership seminar in London – UK.</i></p>	Exec Mgr.	ongoing	Support the STELR program	Funded for 2016

CIGRE Australia Strategic Plan 2016 – 2019

AGM Update.

Attached is a summary document covering the scope of the CIGRE Australia Strategic Plan as modified from the previous 2013-2016 Plan.

Many of the features and key result areas of focus remain similar as we are working on initiating a medium to long term plan to ensure the sustainability, viability and relevance of CIGRE Australia.

At the AGM, the Executive Manager spoke of some of the results in terms of membership growth, relationship building, and the development of our branding and media platforms.

This presentation forms part of the AGM pack.

Progress on each of the Strategic Themes is summarised within the attached table, however some further commentary is provided below.

1.Sustainable Contribution

Influence and contribute to CIGRE Internationally through Australian panels, Working Groups, Study Committees, Secretariat practices.

Engage in significant dialogue across all industry stakeholders in the region so they are aware of the critical issues and solutions available within the electricity industry and how CIGRE can contribute to the debate and possible solutions.

CIGRE Australia continues to actively encourage and support our members participating in international activities including Working Groups and Study Committees. We are one of the few National Committees to have full representation on each Study Committee through our Australian Panel Convenors. We also currently have seven representatives on international working groups and are aiming to increase this to at least ten over the coming year.

We have established a reciprocal member arrangement with the Pacific Power Association (PPA) from which we already have two panel members and one of their power companies – Public Utilities Board of Kiribati joining as a Collective 1 member. The PPA members are particularly interested in the C6 study area (Distribution Systems and Dispersed Generation) as the topics that C6 consider are very relevant to many of the PPA's member islands. The executive director of the PPA Mr Andrew Daka attended our CIDER conference last year and the AGM in Melbourne this year. The PPA will work with us in marketing and promoting the 2017 CIDER conference and is keen to have participants at that conference.

We plan to actively promote CIGRE and in particular the enormous amount of technical information that it has to policy makers and governments during the coming months, as we believe that CIGRE does have a valid role to play as an impartial source of technical know-how.

CIGRE Australia Strategic Plan 2016 – 2019

Of course whilst the core of CIGRE is about technical collaboration and know-how we also need to ensure that we have the appropriate administrative, financial and support structures to support our people carrying out this work and to get the CIGRE message to our various stakeholders.

To this end, we have successfully ported or newly developed our core administration and financial systems to the 'cloud'. This allows for more efficient and cost effective operation of the organisation. An obvious change and flow on from adoption of these systems that members have seen over the last couple of years is the receipt of members' invoices and the ability to pay directly online. This alone has saved a lot of time and through our finance system provides much better tracking of costs and payments.

We have also introduced a member's corporate travel policy, covering all CIGRE members on official CIGRE business globally, ensured that Directors and officers have the appropriate legal cover. We have implemented a medium-term investment portfolio (in Term Deposits) which seeks to ensure that we have a rolling maturity of funds and always enough cash on hand to fund the day to day business.

2. Vibrant & Inclusive

Be a vibrant, inclusive, transparent and sustainable organization which has an enviable reputation for building bridges between technocrats and decision makers on industry issues and challenges - internally and externally, locally and globally.

CIGRE Australia has sought to ensure its relevancy through revealing 'the best kept secret' of CIGRE's existence and what it is we do.

To help get this message out, we have implemented a public webpage which incorporates social media in the form of LinkedIn and a Twitter account to that web presence.

The website is now receiving a thousand page views per month and has now been viewed in over 156 countries. We have over 400 LinkedIn followers which is growing as we aim to offer more content and postings.

The In the Loop (ITL) quarterly industry newsletter has just seen its eighth edition and now has over 650 subscribers and is proving a valuable method of distributing information on CIGRE regional and global activities.

We have also presented sessions at QUT, UQ and University of Tasmania to aim to increase our student and NGN membership.

The Board has reviewed the top ten issues arising from the earlier stakeholder surveys and will again update this following the survey to be conducted in 2016/17. The top ten issues are detailed in the attached and influence how CIGRE uses its resources and how it reports to its stakeholders. It will also influence which working groups receive strong support from Australia.

CIGRE Australia Strategic Plan 2016 – 2019

3.0 Utilisation of New Media and Technology

Ensure that relevant, modern and effective means of communication (New Media Dynamic) are used to aid in disseminating the CIGRE message and value that is provided to the industry and members.

CIGRE Australia has over the last three years established an internationally recognised website and marketing and branding material. Several other National Committees have or are discussing with us how we developed our various platforms and are seeking advice or assistance in doing something similar.

As discussed earlier, the CIGRE Australia website is receiving a growing hit rate and visitors to our pages and our LinkedIn and social media presence is growing.

We are further developing the marketing and branding plan to include better promotional material for our conferences and resources for members to use in discussing the benefits of CIGRE with colleagues and potential members.

4.0 Electricity Supply System of the Future

Drive transformational thinking within the electricity industry to support being more organic, responsive, forward looking, innovative and value focussed.

CIGRE Australia is keen to ensure that the value and knowledge base of CIGRE is recognised within the industry to aid in fostering an understanding and development of new technology and thinking, and new uses for existing technology.

We are doing this through providing and supporting technical forums to allow the dissemination of technical thinking from around the world. Several of the conferences and seminars that we support have international speakers who are able to bring some new insight and understanding to the content being discussed.

CIGRE Australia has also been active in visiting universities and member workplaces to discuss CIGRE and the work that is done. We are planning to increase the number of visits to members and Academia over the coming year, as getting the message out is an important aspect of our marketing plan.

We will also be focusing on publishing papers and work that is being carried out by CIGRE globally and will aim to have an involvement in the Electricity Network Transformation Roadmap recently announced by Energy Networks Australia and CSIRO.

5.0 People & skills of the future

Ensure appropriate diversity across the whole of CIGRE and be one of the major champions for developing the next generation of engineers, technicians and managers of the electricity industry (Networking for the Future).

CIGRE Australia recognises that we need to support and encourage our younger members in order to secure the longer-term relevance and viability of CIGRE.

CIGRE Australia Strategic Plan 2016 – 2019

We have grown our young member group (NGN) to over 290 members and also have a student base of 135 members. We continue to support and encourage our young people to be involved in our technical panels and the co-chairs of the NGN continue to have invited status to our Board meetings. Our aim is to continue to investigate options to remain attractive to our young members and to keep them engaged and aid in their professional development.

Throughout the year, we have continued to establish our relationship with the API (Australian Power Institute) and now have nine of our NGN members providing some mentoring and assistance to bursary holders.

In ensuring that we are providing the appropriate structure for the ongoing development of the organisations, we have completed review of structure and resourcing of CIGRE Australia secretariat, board and panel membership to aim to ensure appropriate diversity and representation of members and stakeholders.



CIGRE Australia

PRESENTATIONS at the AGM

11 November 2016

ACCIONA and Renewables

Topics

- ACCIONA and its energy division.
- Global business drivers for renewables.
- Australian renewables market.
- Current and future activities.

Interesting Times



15% drop in Vestas share price



- Pre-electionVestas upgrade guidance and report record profit margins.
- Post Election contemplating removal of Clean Power Act, re-negotiating Paris agreements and increasing support for fossil fuel sector.
- Direct renewables policy perhaps more difficult to unravel due to jobs impact.



ACCIONA Introduction



Worlds largest wastewater treatment plant (Mexico)



Largest wind farm in Latin America (Mexico,250MW)



Sustainable design excellence, 500 bed hospital, Canada



Safety award, high speed rail project, Madrid->French border



Innovative construction, Acu super port, Brasil



Large scale solar thermal (64MW), Nevada desert.

- HQ in Spain, global operations.
- 30,000+ people, € 6 bn revenue
- Construction history, renewables focus in early 90s => sustainable infrastructure.
- Four main business lines: energy, infrastructure, water, service.
- Challenging projects in varied environments.
- Common themes of design, construct, manage.
- Diversified business model lowers risk.

ACCIONA Energy

Only in Renewables

Sustainable Focus

Global Presence

20+ countries

Wind power

20 years

Photovoltaic

18 years

Biomass

13 years

CSP

8 years

Present in Full Value Chain

Multiple offerings and customers

20 year Experience

Industry Leading



Key Figures

Sales	EBITDA	Owned capacity
€2 719m	€897m	8 676 MW
Production	International presence	Workforce
20.9 TWh	20+ countries	1 806



Wind



Photovoltaic



CSP



Hydro



Biomass

Total

Company owned	7 167	246	314	888	61	8 676
Customers	1 875	98	1			1 974
Total	9 042	344	315	888	61	10 650

Data at 06.30.2016.

Own projects under construction or awarded

El Romero Solar PV Plant 246 MWp. Atacama (Chile)

San Roman Wind Farm 93 MW. Texas (USA)

Bannur Wind Farm 78 MW. Karnataka (India)

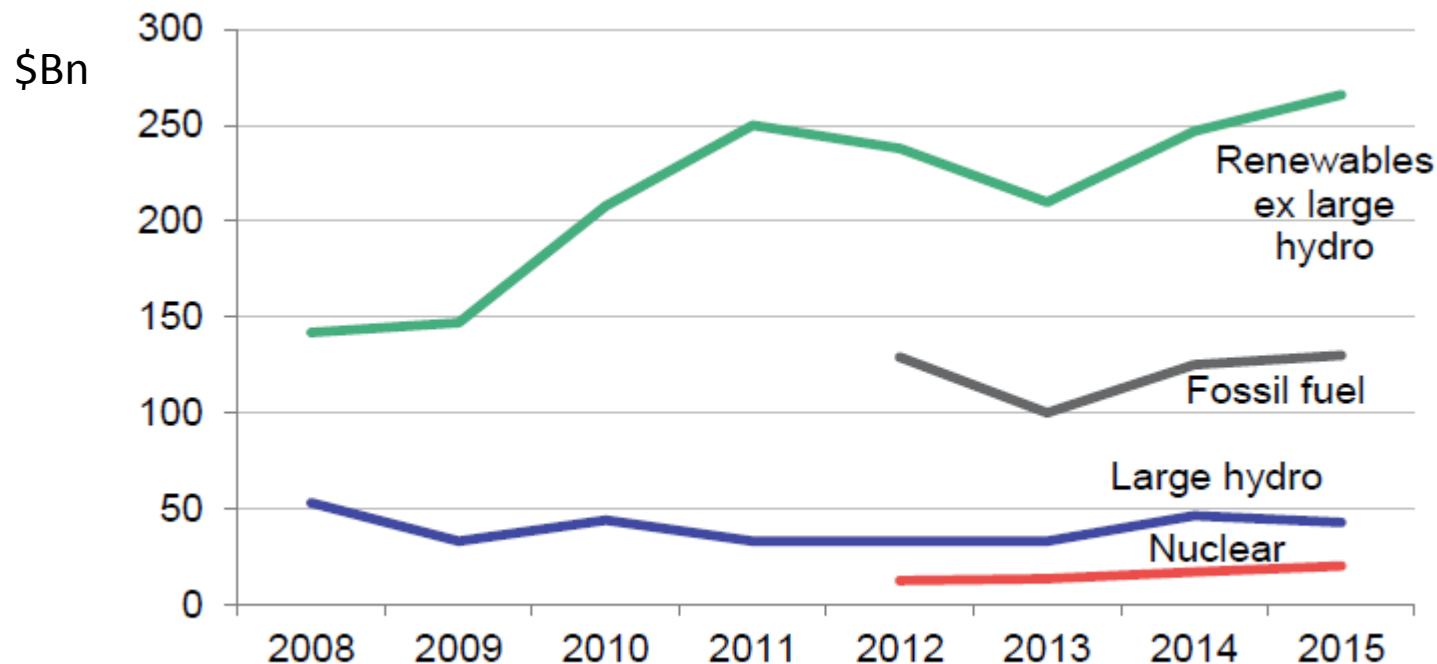
El Cortijo Wind Farm 168 MW. Tamaulipas (México)

Mt. Gellibrand Wind Farm 66 MW. Victoria (Australia)

San Gabriel Wind Farm 183 MW. Araucanía (Chile)

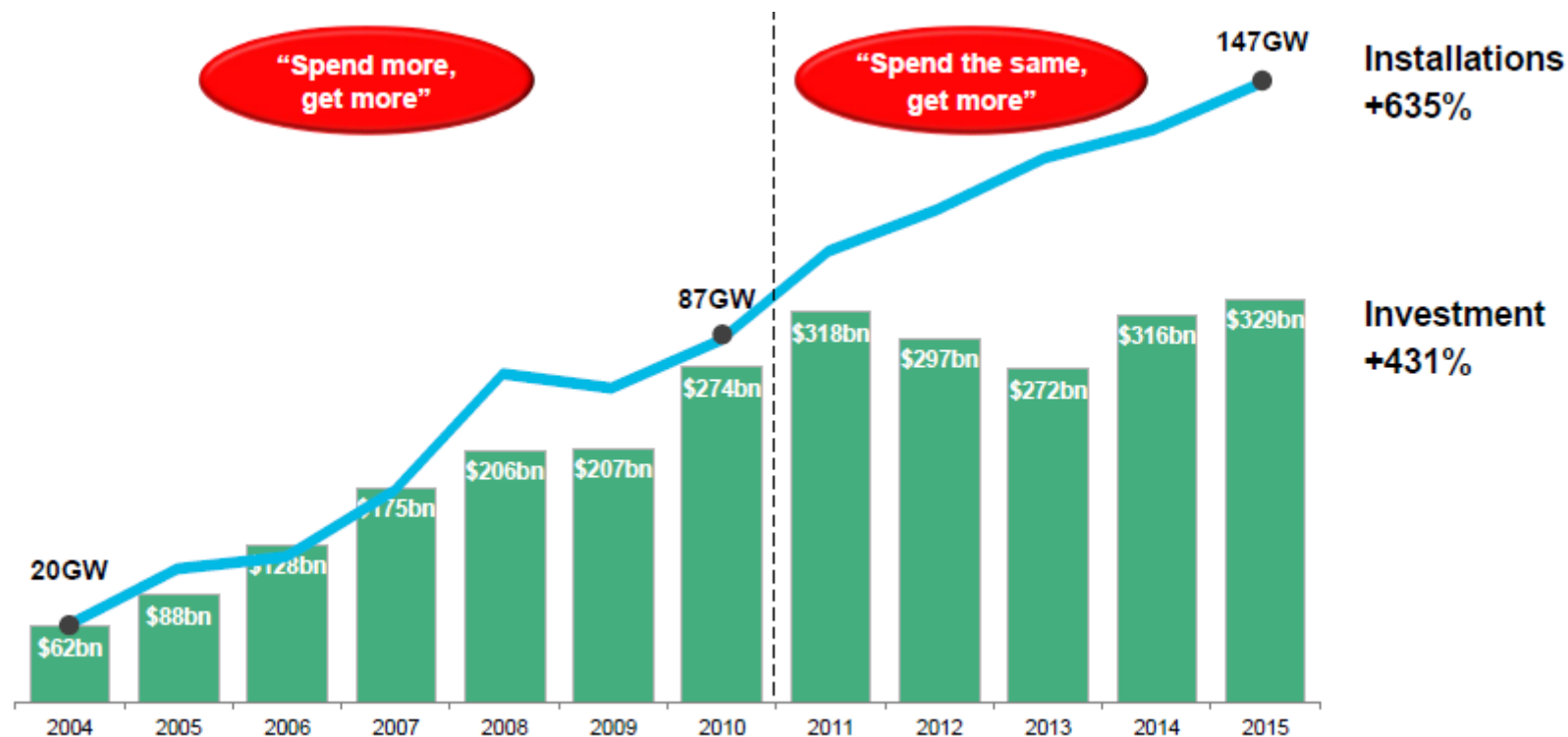
834 MW

Global Trends – Investment in New Generation



- Renewable investment resetting to growth pattern.
- Significantly more \$ invested than fossils/nuclear/hydro.
- Global investment in traditional T&D \$100->150bn ??

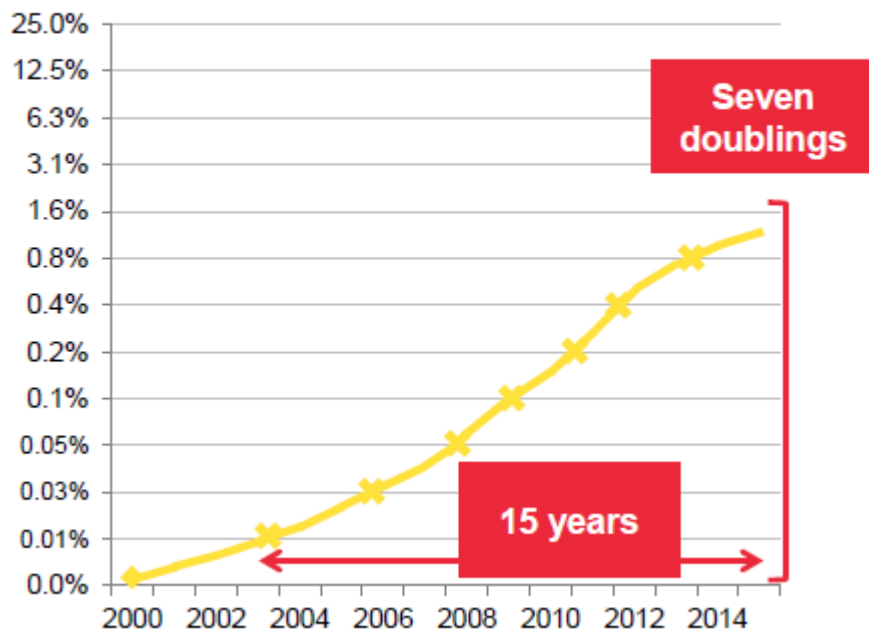
Global Trends – Capacity installation



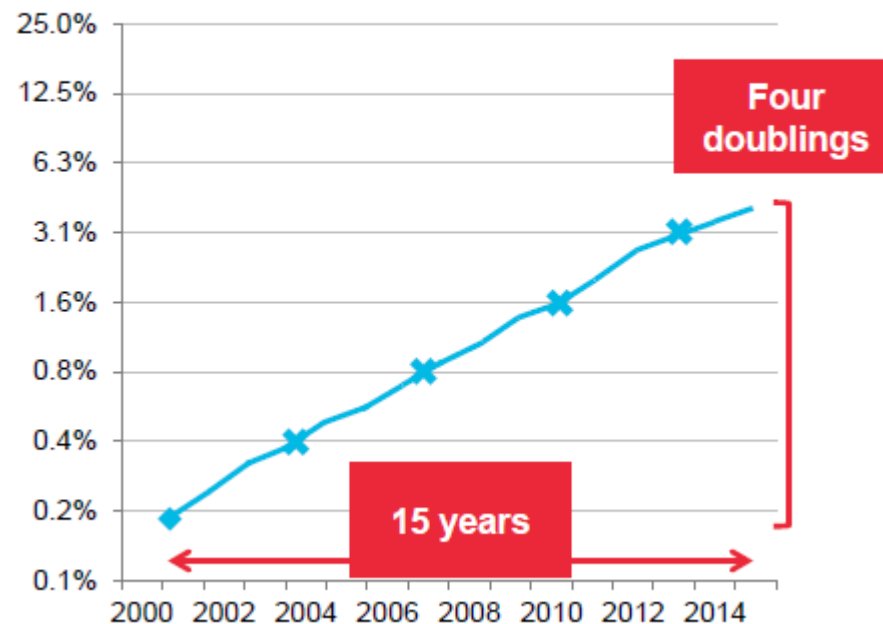
- Spend rate has stabilised, capacity rate continues to increase.
- Each year a new capacity record.
- In 2015 solar PV = 47GW, wind = 66GW
- Total global installed capacity 1,985 GW

Share of total generation

SOLAR



WIND



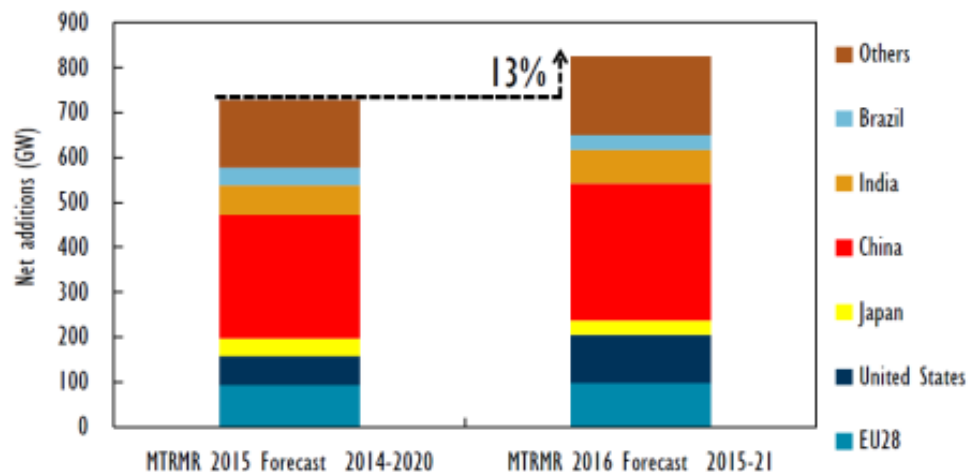
- Still relatively small proportion of total electricity generation mix.
- Significant capacity to grow further.

Growth Drivers

- Global Factors
 - Carbon Emissions Reduction – Global agreements (Paris, Marrakech).
 - Reduction in capital cost.
 - Increased technology efficiency.
 - New policy encouraging competition.
 - Relatively attractive risk/return matrix.

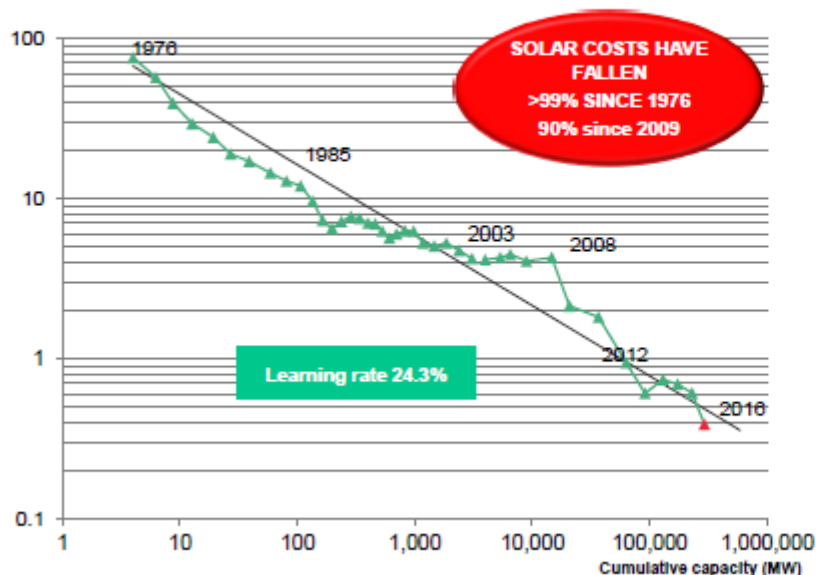
- Country Specific Factors
 - China, India, USA are primary investors.
 - Specific country policy objectives.
 - Specific country environmental factors.

Renewable electricity capacity growth (GW) in MTRMR's main case

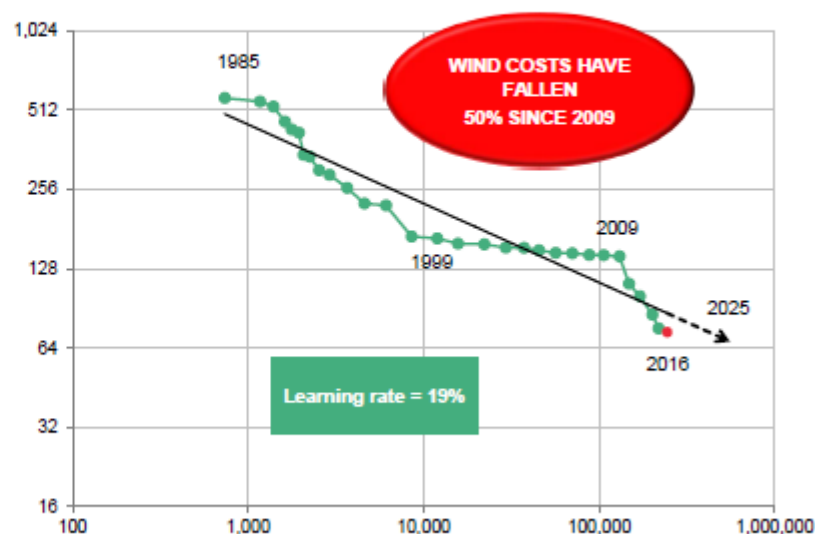


Cost Driver

SOLAR PV MODULE COST (\$/W)



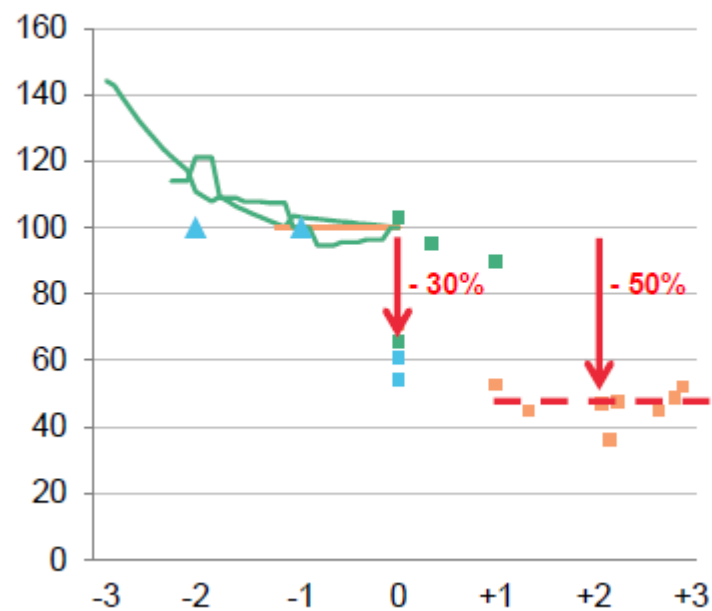
NORTHERN EUROPE ONSHORE WIND LEVELISED COST (\$/MWH)



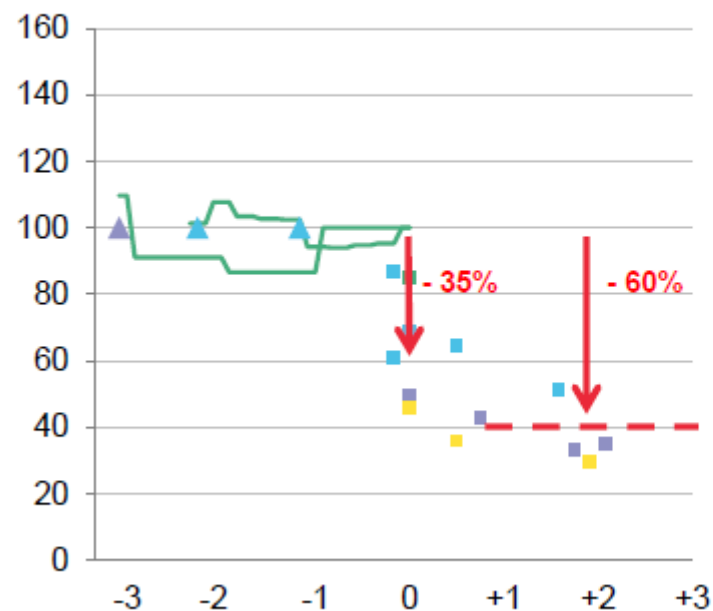
- Recent pricing for solar and wind ~ \$USD 30 per MWh.
- Solar trend supported by reductions in module pricing.
- Wind pricing a function of CAPEX + larger blades + taller towers
- Lower cost of capital benefits all projects.

Auction Effect

Solar PV
(unit price normalised to 100 at date of first auction)



Onshore Wind
(unit price normalised to 100 at date of first auction)



KEY

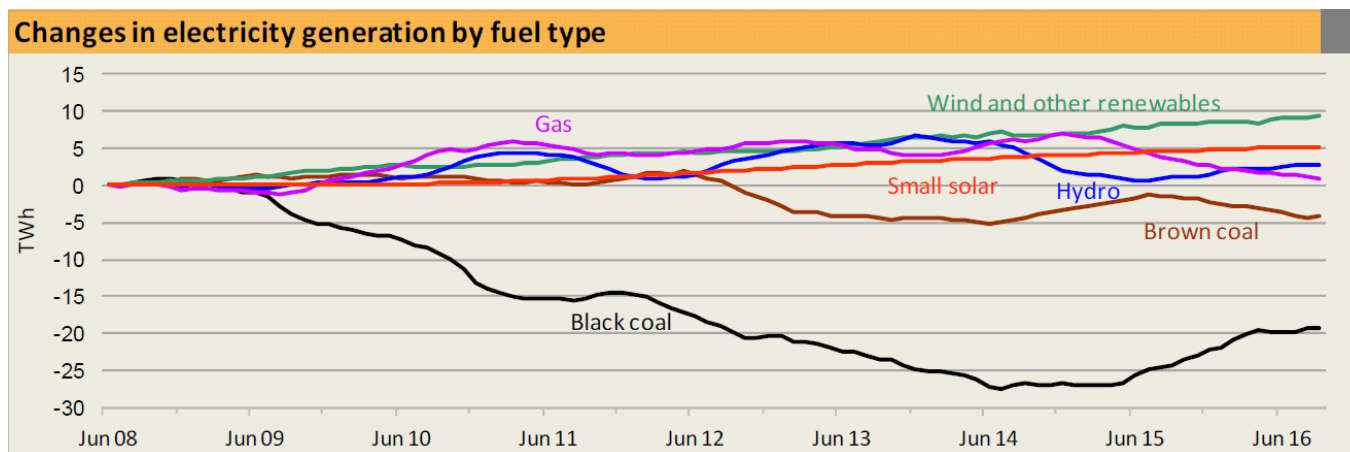
- : tariffs
- : non-tariff price signals
- : auctions

Legend:

- EMEA
- Other LatAm
- Brazil
- India
- South Africa

- Historically renewables were often supported by Feed-In-Tariffs. No competition, guaranteed return
- More recently, auctions are used to allocated subsidies. Drives competition and lowers price.

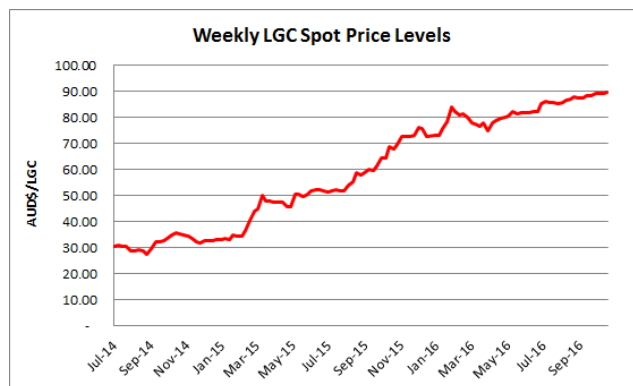
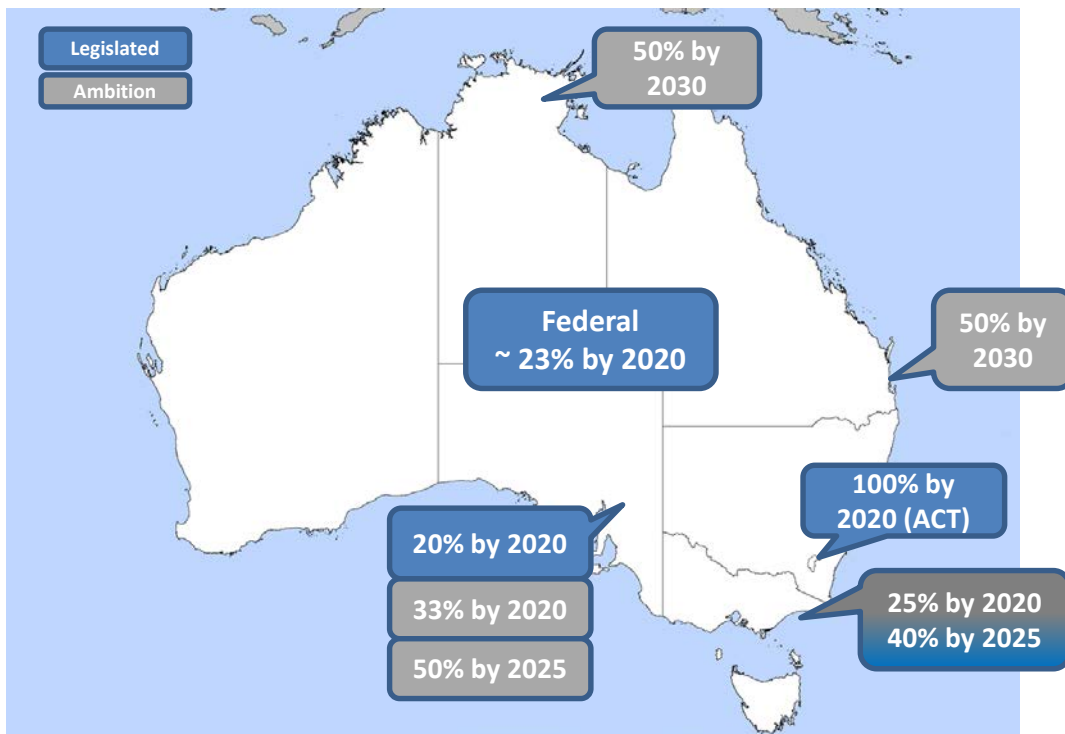
Australian Market



- Relatively slower growth in local renewables sector.
- Current generation composition : black coal 53.6%, brown coal 22.3%, gas 10%, renewables 14%.
- Over 4 GW of large scale wind. Total development pipeline ~10GW.
- Just under 5GW of small scale solar.
- Around 250MW of large scale solar.

Australian Market Potential

Renewable Energy Targets - National and State Targets



- Federal policy is Renewable Energy Target.
- Forecast to require 5-6GW by 2020.
- New state targets and policy are driving optimism. EY places Australia in top ten countries to invest.
- Currently over 1,200MW of large scale wind/solar investment is committed or in construction.

System/Market Complexities

Structural Oversupply	Around 7GW of excess capacity – particularly in Vic
Environmental Constraints	Emission intensity of generation fleet and regulatory response
Move towards decentralised energy	Aging coal fleet competing with decentralised generation
Greater penetration of renewable energy	Impact of non-synchronous generation and regulatory reform requirements. Strong focus on system security, stability and retail cost impacts
Demand side participation	Impact of real time metering, increasing attractiveness of roof top PV, future for consumers going ‘off-grid’
Impact of the ‘Prosumer’	The traditional energy retail model under pressure - increased customer churn and profitability/retail margin impacts
Disruptive Technologies	Storage, smart grid technologies, micro-grids
Cost of Gas	No longer the transitional or mid-merit fuel
RET	Supply to 2020. Targets post 2020? State targets
Emission reduction targets	26-28% reductions below 2005 levels by 2030

ACCIONA Australia Project Activities

Stage	Project	State
Operations	Gunning Wind 46.5MW	NSW
	Waubra Wind 192MW	VIC
	Cathedral Rocks Wind 66MW	SA
Construction	Mt Gellibrand Wind 132MW	VIC
Development	Mortlake Wind 100MW	VIC
	New Wind	Australia
	New Solar	Australia



NGN

Next Generation Network

*“Australia's next
generation of power
engineers”*



CIGRE Australia NGN 2016 in Review

CIGRE Australia AGM, Nov 2016

Alexandra Price, NGN Co-Chair

NGN Events

- Three webinars
 - *Alternative Refurbishment Strategies – Steel Towers*
 - *The challenges and opportunities of rooftop PV uptake*
 - *Anti-islanding Protection and Its Requirements in the Australian Context*
- Two day seminar with IEEE on *Wind Generation and its Grid Connection*
- Q&A panel session at the Australian Universities Power Engineering Conference (AUPEC)



Paris Session Involvement

- Organised Young Members' Booth, Young Members' Forum, site visit and social event
- Scholarship winners presented in discussion meeting and poster session
- NGN Co-Chair presented in Young Members' Forum on our engagement strategies



Individual Involvement

- 4 NGN members are full Australia Panel members
- 14 NGN members attended the 2016 meetings for six Australia Panels
- 4 NGN members are active participants on working groups
- NGN members increased the profile of CIGRE by discussing the benefits at events including:
 - API Summer School
 - TechCon
 - QUT Electrical Engineering Student Society



NGN

Next Generation Network

*“Australia's next
generation of power
engineers”*



CIGRE Australia NGN Paris Scholarship Recipient 2016

CIGRE Australia AGM, Nov 2016

Emma Rogers

CIGRE Structure

- Better understanding of the CIGRE structure
- Context of the Knowledge and driving force
- Where does the distribution network sit within CIGRE - C6

English Language

- WG-C1.27 – Discussion on definition of security and adequacy
- Challenges of different cultures preferring different approaches to definitions.

- Lengthy v Short and Common Sense.



Young Engineer Forum & Women In Engineering Forum & Stand

- International Webinar Strategy
- Russian Technical challenge – University engagement, building fundamentals.
- Assisting National Committees to consider establishing an NGN group – Gulf Nations
- Women In Engineering Forum – Mixed feelings
 - Progressing the development of a diversity strategy



Poster Sessions & Group Discussions

- Ability to have one on one discussion with authors and gain a better understanding of projects and findings
- Inclusive nature
 - Overcomes the intimidating nature of SC
- Interoperability and Interpretation of standards seems to be a common theme across the SC sessions
- Challenges of increases in embedded generation at the distribution level, its affect on generation stability and transmission flows down to the fundamentals.





empowering
networking
global know-how

Australian Technical Committee Report to the ANC CIGRÉ

David Bones

Melbourne, November 2016

Introduction

- ATC membership
- CIGRE Australia events in 2016
- Working Groups supported by the CIGRE Australia
- International publications
- Paris 2016
- Reports by the ATC



ATC Membership

- There are no retiring ATC members today
- Australia retained representation on all 16 Study Committees
- 5 new Australian Panel Conveners successfully took on their roles as Study Committee Members at the Paris Session
- Succession planning is underway to identify appropriate candidates to succeed the Panel Conveners retiring in 2017

All ATC members are listed in Attachment 1 of the ATC Report



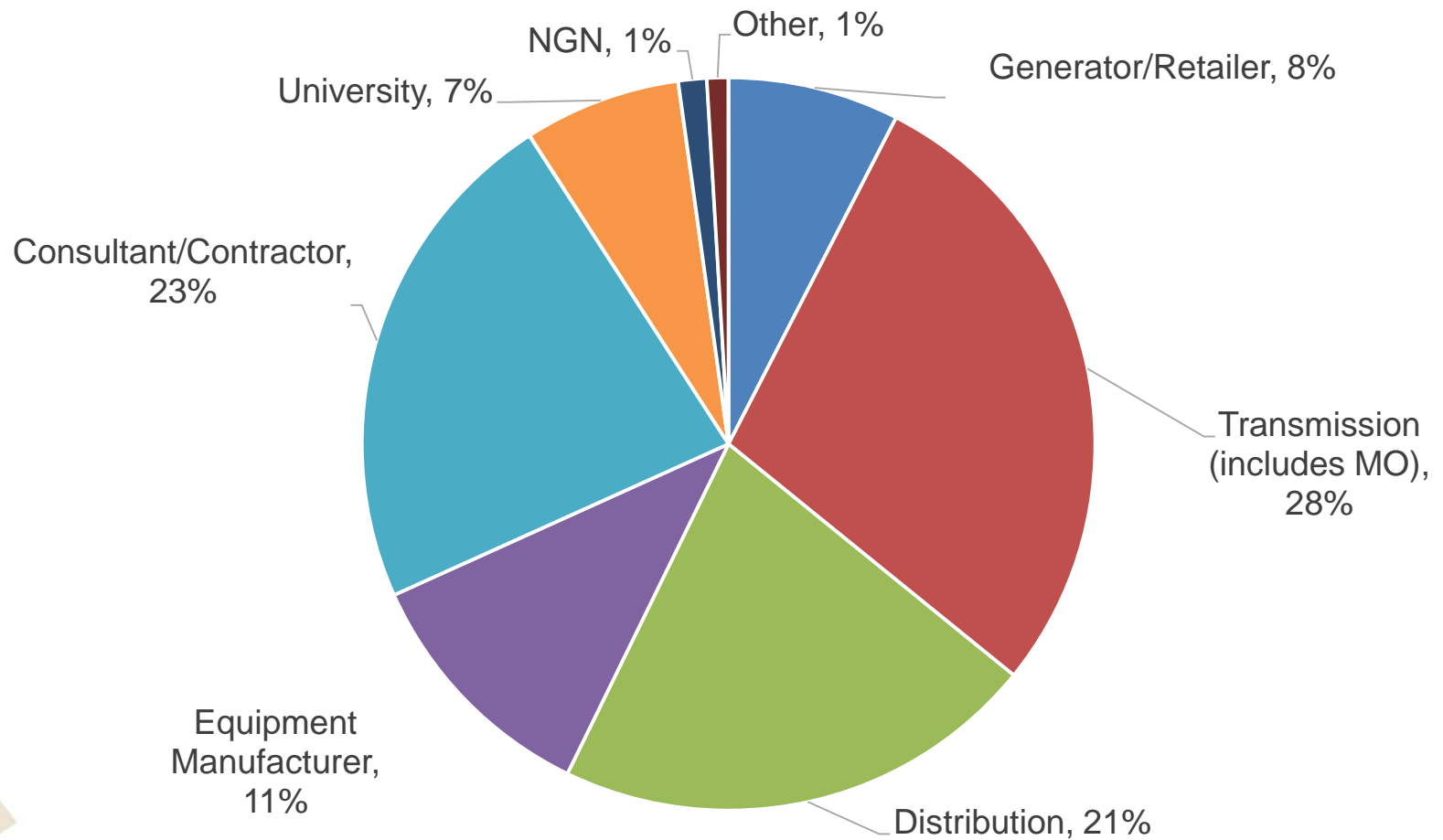
ATC Membership

- Terry Krieg remains Chairman of SC B3, Substations
- Peter Wiehe remains Secretary of SC A1, Rotating Machines



ATC Membership

- Panel membership is up slightly from 2015



Events in 2016

- Cigre Seminar – A Presentation of CIGRE’s Global Work
 - 11th April, Sydney
 - A2, A3, B1, B3 and D1
 - about 98 delegates using CIGRE tutorials and technical papers
 - In conjunction with Techcon
- AUPEC Poster Contest – 27th September
 - CIGRE Australia and GHD sponsorship for best posters by NGN members
 - Focus on innovation
 - Judges Qld Chief Scientist, CIGRE Aust EM and ATC Chair



Thank you to the organising committees and presenters for the seminar



Working Groups supported by the CIGRE Australia



WG No	WG Name	WG Convenor
A2-49	Condition Assessment of Power Transformers	Peter Cole
A3-29	Deterioration of ageing substation equipment & possible mitigation techniques	Ankur Maheshwari
B3-35	Substation earthing system design optimisation through the application of quantified risk analysis	Bill Carman
B3-43	Contemporary Solutions for Substations in Developing Countries	Peregrine Tonking
B4-63	Commissioning of VSC HVDC Systems	Les Brand
C1-32	Establishing best practice approaches for developing credible electricity demand & energy forecasts for network planning	Graeme Ancell
C5-20	Drivers for Major Changes in Electricity Markets	Greg Thorpe

Also supported travel for Sarath Perera from University of Wollongong to attend meeting of WG C4-40 – reviewing IEC standards concerning emission limits



Working Groups supported by the CIGRE Australia



- Published in 2016

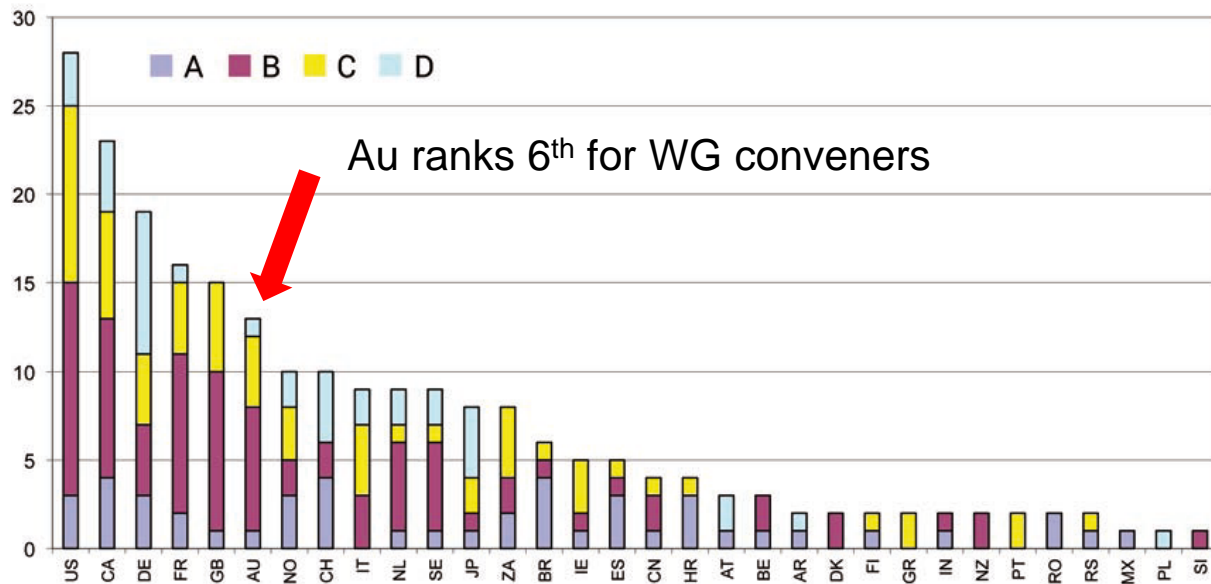
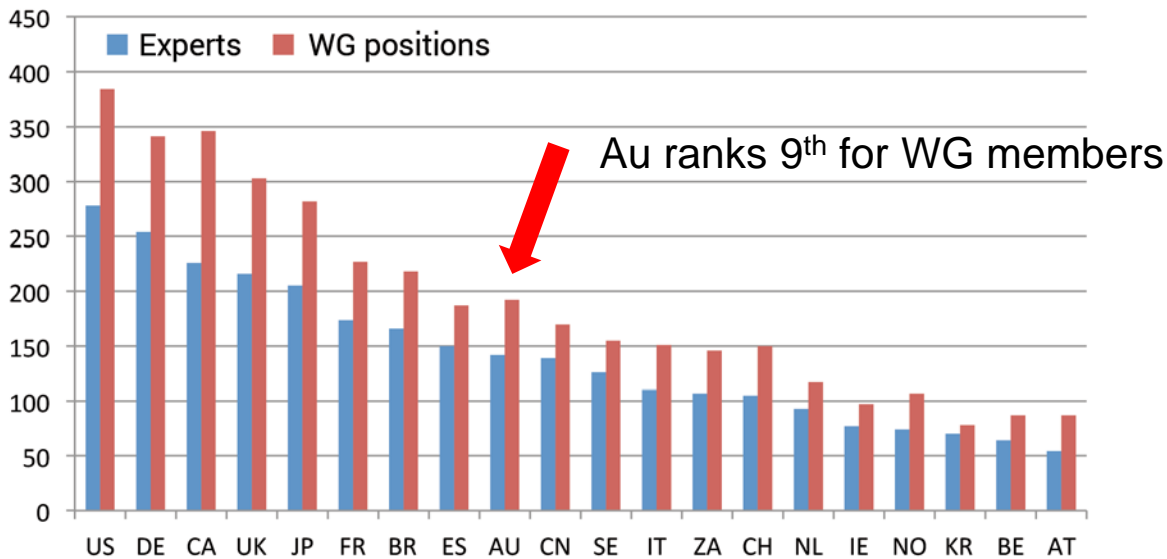
B1-37	Guide to the operation of fluid filled cable systems	Colin Peacock
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- Approved for publication

C3-09	Corridor Management	Stephen Martin
B2-40	Calculations of the electric distances between live parts and obstacles for ohl external clearances	Robert Lake
B4-62	Connection of Wind Farms to Weak AC Networks	Nalin Pahalawaththa



ANC involvement in international Working Groups



International publication summary

- In 2016 CIGRE published 21 technical brochures and one green book.

663 – Guidelines for the procurement and testing of STATCOMS

660 – Saving though optimised maintenance in Air Insulated Substations

658 – Default management in electricity markets

657 -- Guidelines for the preparation of "connection agreements" or "Grid Codes" for multi-terminal schemes and DC Grids

656 -- Review of LV and MV compatibility levels for voltage fluctuations

324 -- Sag-Tension calculation methods for overhead lines

652 -- Guide for the operation of self contained fluid filled cable systems

651 -- Report on regulatory aspects of the demand response within electricity markets

648 -- Analytical techniques and tools for power balancing assessments

647 -- Capacity mechanisms: needs, solutions and state of affairs

GB 3 -- CIGRE Green Books - Utility Communication Networks and Services

Full list is in Attachment 3 of the ATC Report



General Session 2016

- 17 papers were submitted by the Cigre Australia
 - Compared to 15 in 2012 and 2014
 - Another record number of papers
- Several ATC members had key roles at the Session



Reports by the ATC

- ATC Chairman's Report
- Australian Panel Convener Reports
- Australian Panel Convener Reports on the 2016 Paris Session
- Reports on Working Groups supported by the ANC



AP A1 Rotating Electrical Machines

1. Study Committee Scope

The Study Committee is responsible for the field of Rotating Electrical Machines and includes in its scope all such machines for power generation, and large motors for power stations. It also includes a brief to cover the application of materials technology relevant to machines.

2. Specific Activities of the Study Committee

Study Committee A1 has four active advisory groups, focussing on particular issues as follows:

A1-01 Turbine (Turbo) generators.

Most activity is focussed through working groups as described below. Through this activity, A1-01 continues to aim to develop a set of guidelines to give background to generator owners in dealing with identified issues in the maintenance and monitoring of such plant. The convener is Bob Fenton (USA); who is to retire as the convener of this group this year with Juergen Weidner (Germany) to take over as the convener.

A1-02 Hydro generators

Activity is focussed through working groups as described below. A1-02 continues to aim to develop a set of guidelines to give background to generator owners in dealing with identified issues in the maintenance and monitoring of such plant. The convener is Remi Tremblay (Canada).

A1-05 Non-conventional rotating machines

The focus of the group is wind turbine generators and superconducting machine developments. There are two working groups currently working in this area on aspects of operation, monitoring, reliability and availability of wind generators. The convener is Luis Rouco (Spain).

A1-06 Power station motors and drives.

The scope of this group is power station motors >1kV and >800kW. Activity is focussed through working groups as described below. Erli Figueiredo (Brazil) is the convener of this advisory group. A number of working groups have been formed to look into benefits of High Efficiency Motor, the effects of VSD (Variable Speed Drive) on motors and impact of flexible operation on motors.

Thank you

- All our meeting hosts across Australia and New Zealand
- CIGRE Australia management team
- CIGRE Board
- All 16 Panel Conveners





Technical Council

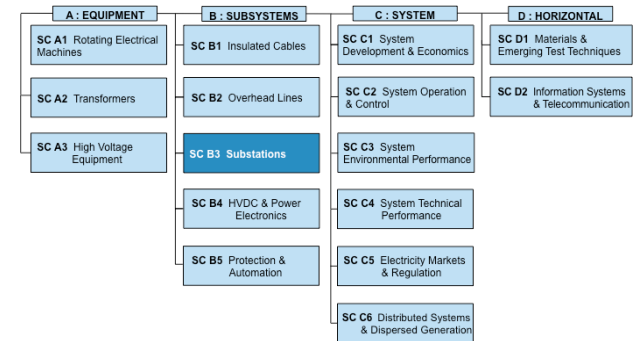
Terry Krieg, Chairman of SC B3 - Substations

11 November 2016

CIGRE Technical Council

Meetings:

- March 2016 – Berlin, Germany
- August 2016 (after Paris)
- November 2016 - Philadelphia, USA
- Membership:
 - Mark Waldron - TC Chairman (now Vice-President – Technical, term ends 2018)
 - All Study Committee Chairmen (16)
 - Yves Maugain - TC Secretary
 - Philippe Adam – Secretary General CIGRE
 - Admin Council delegates



Paris 2016 Reviewed

- Preferential subjects “discussed” and “agreed”
- Paris 2016 review:
 - generally went well
 - Opening session good feedback
 - good attendances and feedback from attendees (93% of attendees indicated they will return)
 - Record number of papers
- Tutorials were first time in 2016 and very successful
 - B3 highest audience responses
 - Some logistical issues reported
- Women in engineering sessions important but need a future direction

Paris 2016 - Statistics - Tutorials

Monday	Name of tutorial	Attendance
Tutorial 1	B2-Overall line design	310
Tutorial 2	B2-Conversion AC to DC	199
Tutorial 3	B4-HVDC transmission	298
Tutorial 4	C6-Planning of distribution systems with renewables	221
Tutorial 5	B3-AIS design for severe climate conditions	84
Tutorial 6	B3-Use of SF6, residual life aspects of GIS	72

- Tutorials are a way of presenting a Technical Brochure
- 2016 was the first time in Paris for Tutorials, free to delegates
- Some complaints that rooms were full
- Question for discussion: Should Tutorials be an additional cost for delegates or free?

Paris 2018

- Opening panel possible – Climate change and electrification (TBC)
- Possible high profile key note speaker
- Dates:
 - Call for papers: Dec 2016 Electra
 - Synopsis Received at CO: 30 June 2017
 - Notice to authors: 16 October 2017
 - Full papers by 16 February 2018
- Current paper approval practices discussed (currently we accept abstracts first, then papers)
- Possible that we eliminate Abstract stage and ask for full papers to reduce time scale

CIGRE Strategic Discussion – key points

- Link with new Strategic Plan – Power System of the Future:
 - Making best use of existing assets, new technology
 - Incorporating integration into system
 - Stakeholder engagement
- We need to avoid a “everything for everybody” approach in planning our work
- Some possible gaps in CIGRE work: battery storage, other areas?
- Organisation structure may be limiting – should we consider disruption? – possible structure change to be considered
- We need more collaboration, better engagement, not T&D
- We are good at documenting what we do now rather than future needs
- Do we understand the needs of industry? (e.g. CIRED members)
- Planning will continue with the Admin Council
- TC to possibly establish a smaller Strategic Advisory Group

Future Events

- Future symposium:
- Dublin 29 May – 2 June 2017
 - 150 papers received (84 to be accepted)
 - Tutorials
 - Visit to grid control centre
- Aalborg, Denmark 3-7 June 2019,
- China or India (possible) – B3 meets in China
- April 2019 IEC-CIGRE UHV Conference, Hakodate, Japan – includes B3
- 2021 (100 years of CIGRE) Romania, UK, Spain, Japan, Slovenia?
- Next TC meeting: 28-29 March 2017, Netherlands

Comments on WG Membership

- In SCB3 - average number of new WG's is 3-4 per year
- Working Group support is vital for CIGRE work
- Preference is for ANC to support WG CONVENORS and ACTIVE members
 - greatest contributions to the work of CIGRE
 - currently CONVENORS in B3 – Bill Carman (WG B3.35) and Perry Tonking (WG B3.43)
- Generally not all WG members are active participants (including Australian) – comment refers to not just SC B3
- Suggest ANC consider WG member reporting system to ensure participation is active, not passive!
- Preference is less members supported but with emphasis on ensuring active participation
- Need to ensure we are placing the right members!!

Final Comments from Terry Krieg

- SC B3 successful year in 2016 overall
- Good engagement with NGN, assisting in SC work
 - For example document reviews assisting Chairman
- My term as Chairman ends at the 2018 Paris session
 - Currently considering replacement nominations
- From SC Chairman perspective (not just B3), need to have better support from all members (thanks Angela for good representation from Australia)
- Biggest challenge for SC's:
 - ensuring adequate participation from all countries and members
 - Two way flow of communication



Thank you!

- for support of ANC and ATC





WG C1.32

International best practice in load forecasting

Graeme Ancell Convener



Study Committee C1

- **SC C1 System Development and Economics**
- **Working Group C1.32 established in 2014**

“Establishing best practice approaches for developing credible electricity demand and energy forecasts for network planning”

- **Working Group has 20 members from 16 Countries**



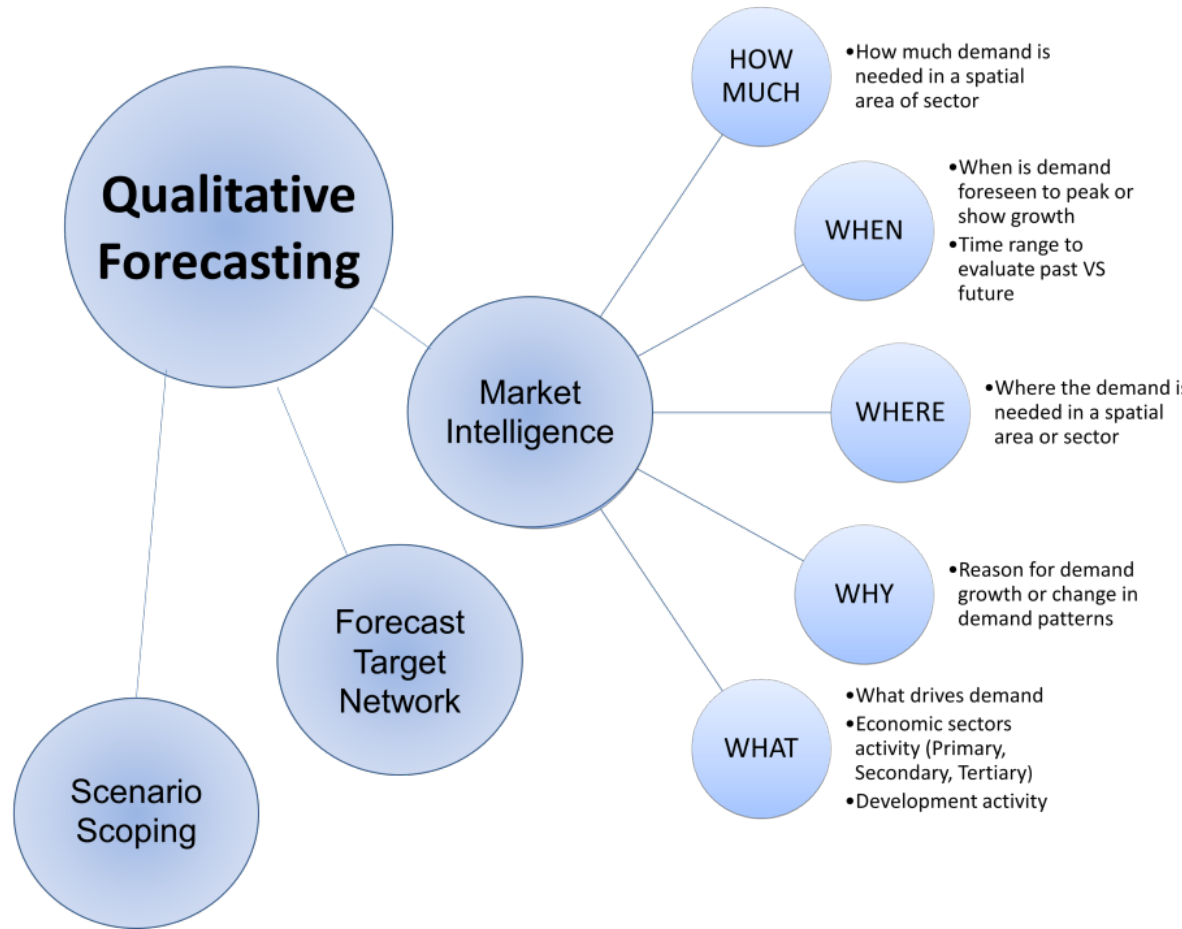
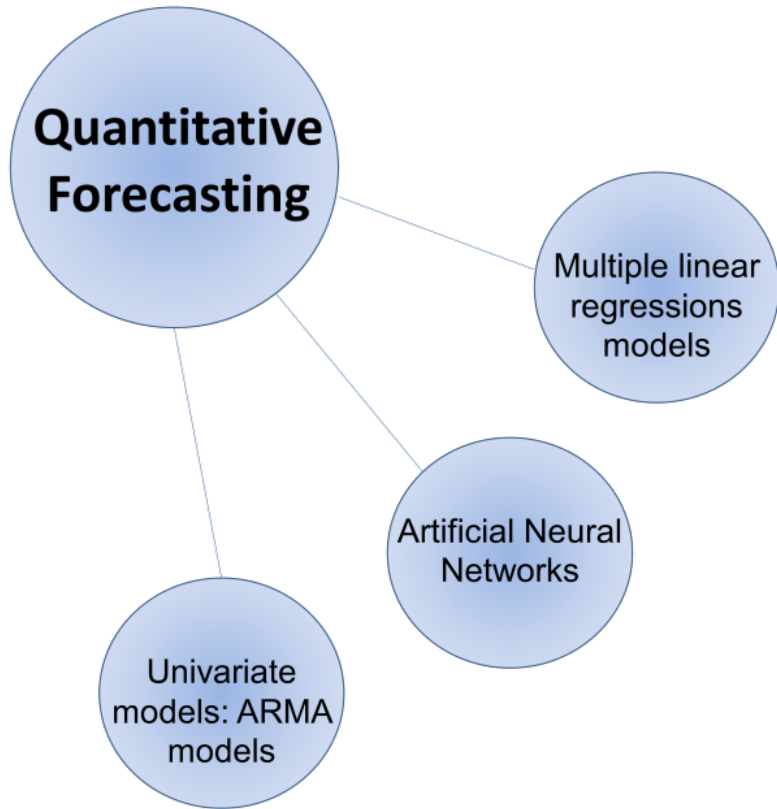
WG C1.32 Establishing best practice approaches for developing credible electricity demand and energy forecasts for network planning

- **Scope:** This working group aims to examine the demand and energy forecasting techniques currently being employed by network companies around the world. The scope will be addressed by developing and executing an electronic survey of network companies to identify current forecasting issues and best practice approaches.
- Terms of reference: <http://www.cigre.org/Diaporama/CIGRE-active-Working-Groups>
- **Deliverables** : Report to be published in Electra or technical brochure with summary in Electra
- **Time Schedule:**
 - Start : July 2014
 - Final report : December 2016



Some areas of investigation

- **Long term vs short term**
- **Top down vs bottom up**
- **Time horizon**
- **How often methodologies are revised**
- **What needs to be improved**



WG C1.32 Survey

- The final survey was sent around to CIGRE members on October 5, 2015, with the request to respond by November 30, 2015.
- By the end of November 27 members had responded. Following a reminder another 7 responses were received in December and January providing a total of 34 fully completed surveys.
- The respondents represent 18 countries

Africa	3%
Asia	28%
Europe	28%
North America	3%
Oceania	34%
South America	3%



Respondents

Distribution	10%
Independent System Operator	17%
Integrated transmission grid owner and system operator	34%
Transmission and distribution network owner	3%
Transmission grid owner	17%
Vertically integrated distribution & transmission network company	3%
Vertically integrated generation and transmission	10%
Vertically integrated generation, transmission and distribution.	3%



On which geographical or client level do you do the forecast?

Answer Options	Response Percent	Response Count
national level	45.5%	15
regional level	48.5%	16
substation level	54.5%	18
client level	18.2%	6
voltage level	6.1%	2
Other (please specify)	18.2%	6
<i>answered question</i>		33
<i>skipped question</i>		1



Short term vs long term forecasts

What is the relationship between forecasting data used for short-term operational planning and long-term grid reinforcement?

Answer Options	Response Percent	Response Count
Use of the same historic transmission measured data	58.1%	18
Use of the same data provided by generation	16.1%	5
Use of the same data provided by connected parties (e.g. distribution company)	19.4%	6
Same level of analysis (number of system nodes, substations, ...)	22.6%	7
Similar forecasting methodology	9.7%	3
No relationship	25.8%	8
Please feel free to provide information in addition or explanation of the answers above		12
<i>answered question</i>		31
<i>skipped question</i>		3

Do you currently take into account the impact of the following issues? If so, please indicate whether you do so on a local level, national level or both, and briefly explain how in the free text box.

Answer Options	yes - local only	yes - national only	yes - local and national	no	Response Count
the impact of temperature	11	4	9	6	30
electric vehicles	3	4	4	14	25
heat pumps	3	2	2	17	24
heating appliances	4	1	3	16	24
air conditioners	6	0	7	10	23
penetration of renewable energy sources (RES)	10	4	10	4	28
storage	3	2	4	14	23
demand side response management	5	3	2	15	25
increased electric efficiency	4	6	5	12	27
Please elaborate					13
<i>answered question</i>					30
<i>skipped question</i>					4

From which external sources do you receive input information for your forecasts?

Answer Options	DSO	Direct client (consumer)	Regulator	Government institution	Private institution	Producer	Other	Response Count
Metering data	14	13	2	0	2	5	2	21
Feedback on the forecast results	7	5	9	5	3	1	5	21
Validation of the accuracy of the source data used	7	2	6	4	3	0	3	16
Client projects (e.g., new client, factory closure or expansion)	7	19	0	1	0	1	2	23
Transfers in the DSO network	14	3	1	0	0	0	1	17
Growth rates on substation or client level	12	7	3	2	0	0	4	19
Sectoral growth rates	2	2	4	10	4	0	5	20
Macro economic growth rates	1	1	2	15	4	0	3	20
Local production	9	4	1	7	2	0	1	15
Population	3	0	1	14	4	0	6	22
External load/energy forecasts	4	7	1	6	4	0	3	18
Weather statistics (historic)	1	0	0	15	3	0	6	22
Weather forecasts	1	0	0	11	4	0	5	19
Other	0	0	0	1	0	0	0	1
Feel free to elaborate								7
<i>answered question</i>								29
<i>skipped question</i>								5



Top down vs Bottom up

Which approach do you follow for the load forecast?

Answer Options	Response Percent	Response Count
Top-down approach only	14.8%	4
Bottom-up approach only	18.5%	5
A mix of top-down and bottom-up (consolidation of information on micro- and macro-level)	66.7%	18
Feel free to elaborate		7
	<i>answered question</i>	27
	<i>skipped question</i>	7



Future Improvements

What do you believe to be the three most important aspects of your forecasts that you will need to change or incorporate in the next 10 years to improve your forecasts?

penetration of renewable energy sources (RES)	67%
demand side response management	47%
electric vehicles	43%
storage	43%
electric efficiency	33%
air conditioners	20%
temperature	20%
heat pumps	3%
Other (please specify)	0%

Key observations

- **Almost all forecasts are required by regulation, yet mostly the methodology is not prescribed.**
- **Most respondents used demand forecasting software that was developed in-house.**
- **Most forecasting teams (66%) consist of a small group up to 5 people.**
- **The forecast methodology is frequently revised.**
 - **53% of respondents revised it in the last 2 years and of this group almost all (88%) are planning to revise methodology again in the next 2 years**
 - **For those who reviewed the methodology more than 2 years ago most also plan to revise again in the next years .**

Key observations

- **The most important current aspects to improve in the forecast method are, according to the respondents:**
 - Input from external sources (such as economic growth, population, etc)
 - Measurement data.
 - Input from DSO level (such as known future developments on demand side)
- **The most important aspects to incorporate in demand forecasts in the coming 10 years**
 - Distributed Renewable Energy Sources (RES)
 - Demand side response management
 - Storage and electric vehicles

- **Survey of the capabilities and performance of in-house demand forecasting tools**
- **Development of methods to incorporate the following into demand forecasting.**
 - **Distributed Renewable Energy Sources (RES)**
 - **Demand side response management**
 - **Storage and electric vehicles**

Conclusions

- **WG C1.32 has carried out an international survey on load forecasting**
- **Best practice is not evident in all aspects of load forecasting**
- **Future load forecasting will need to incorporate RES, storage and DSM**
- **Small distributed RES generation will need to be forecast as generation rather than as negative load.**
- **The methodologies for forecasting and managing interactions between load and RES will likely evolve rapidly over the coming years.**
- **Technical brochure published in December 2016**

WG B4.63 Commissioning of VSC HVDC Schemes

Les Brand, Convenor

Objectives / TOR

- Develop a Technical Brochure which provides guidelines for the commissioning of VSC projects.
- VSC = Voltage Source Converter HVDC technology.
- Identify and develop the stages, sequence and structure for the commissioning of a VSC project.
- Develop each stage of commissioning, including development of test objectives, procedure and acceptance criteria.
- Consider requirements for specific applications.
- Consider treatment of issues not prevalent when earlier HVDC commissioning guidelines were published.
- Excludes the DC line/cables and converter equipment testing.



Membership and Activities

- WG approved 10 February 2013.
- 20 regular members and 12 corresponding members
- 15 countries represented.
- Seven “face to face” meetings completed
 - Boston – June 2013
 - Brasilia – September 2013
 - Paris – August 2014
 - Lund – May 2015
 - Agra – September 2015
 - Oslo – April 2016
 - Paris – August 2016
- Completed Technical Brochure due for 60 day review December 2016



Need for Working Group

- Increased interest and adoption of VSC worldwide.
- Current publications focus on LCC HVDC technology.
- Key differences between LCC and VSC technology and capability.
- Current publications are almost two decades old.
- Specific VSC applications present commissioning challenges.
- Evolution of VSC technology – different manufacturer's, different processes and terminology.
- Need to provide some standardisation and structure to commissioning.
- Technical brochure a useful reference to those not on the OEM's side, e.g. owners, developers, system operators, utilities etc.



Voltage Source Converters (VSC)

Key Characteristics

- The valves utilise IGBTs instead of thyristors.
- There is minimal, or sometimes zero, reactive power compensation or AC filtering required, significantly lowering costs and reducing footprint size of converters.
- The converter transformers for a symmetric monopole VSC system are very similar to normal AC transformers (often referred to as “interface transformers”).
- Can supply power to a passive network or to a network with low SCR making them suitable for connecting areas with little or no synchronous generation, such as remote renewable generation.
- Black start capability.
- Ability to control the output waveshape through switching of IGBTs to reduce lower order harmonics.



Voltage Source Converters (VSC)

Key Characteristics (cont.)

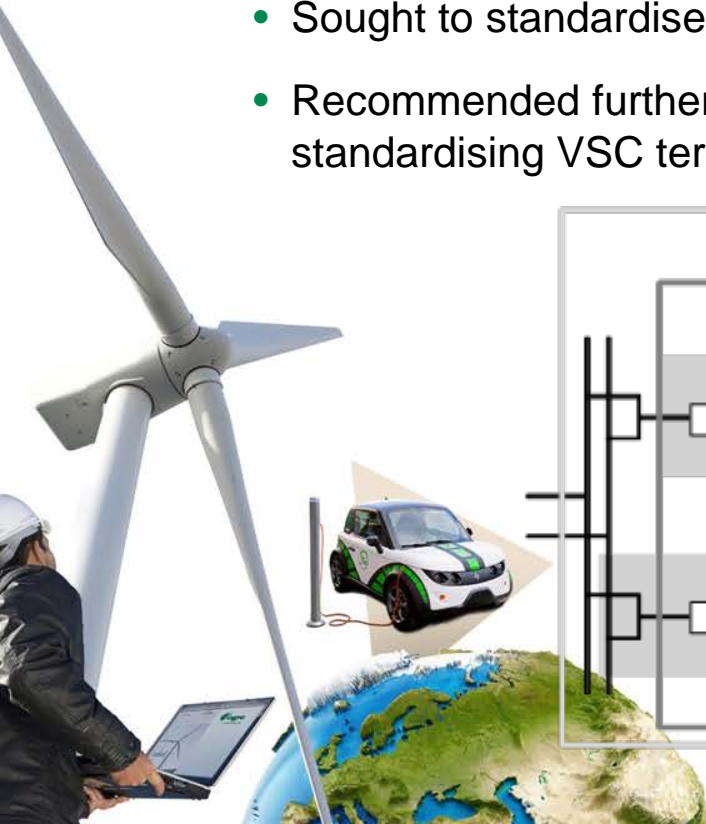
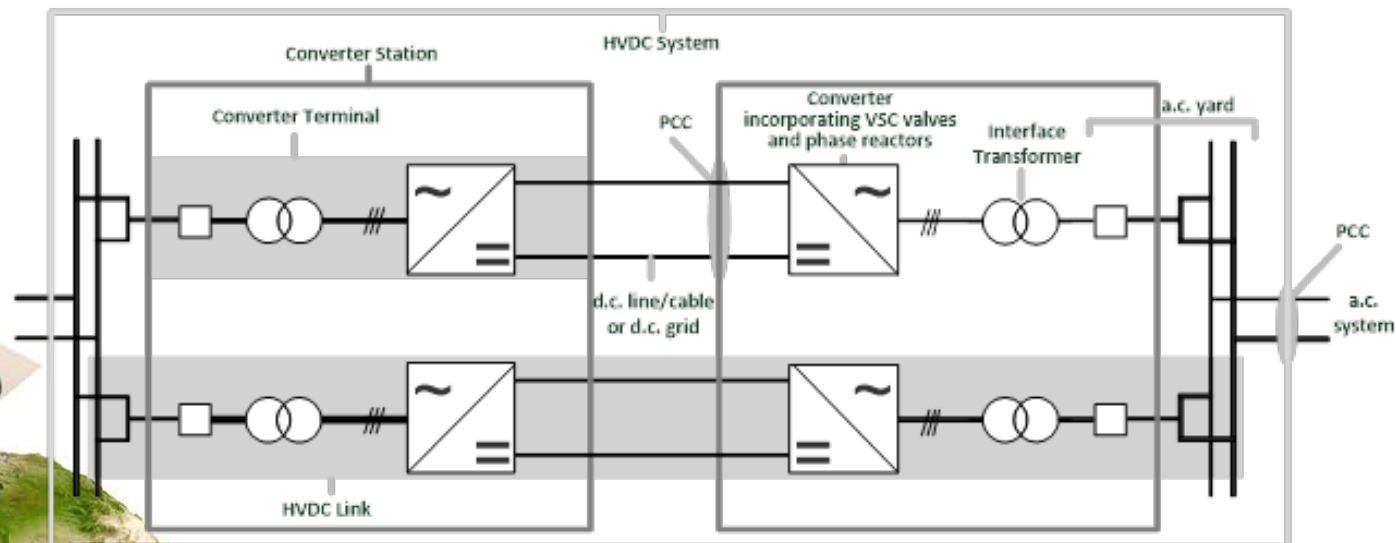
- Controllability of reactive power is independent of active power transfer. Can provide or consume reactive power, at a level directed by the operator.
- Can make use of extruded polymer cables (due to no need to reverse polarity of the DC side), which may be more economical than MI cables.
- very little operational experience with the use of VSC using DC overhead lines due to inability to block fault current.
- Although converter station losses are improving, they are still higher than LCC station losses.
- VSC converter station overload capabilities are limited when compared to that of a LCC converter stations.



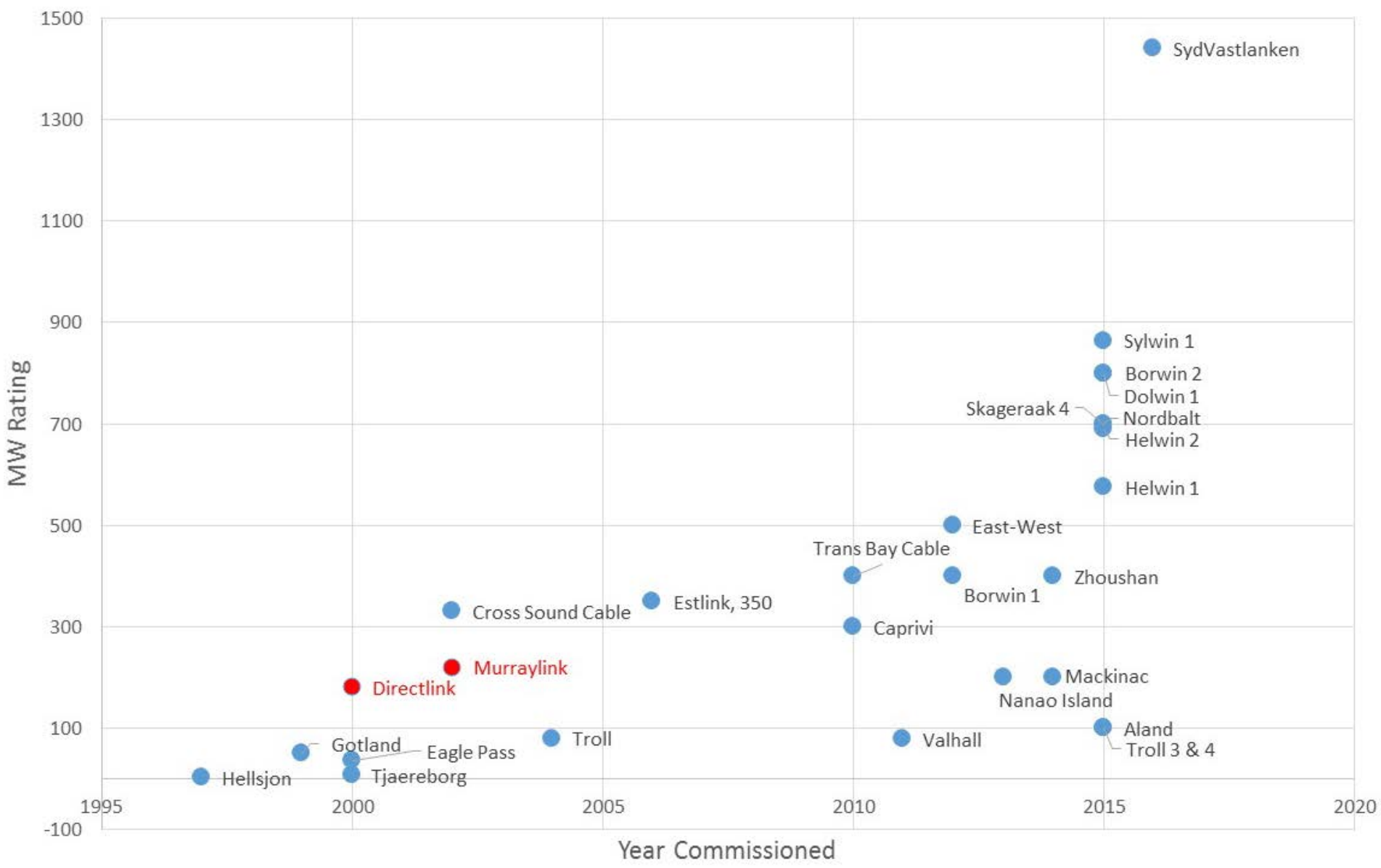
Voltage Source Converters (VSC)

Terminology

- Found different Vendors used different terminology.
- Due to:
 - Evolution of the technology; and
 - Different topologies adopted by the various Vendors.
- Sought to standardise terminology and get all Vendor members to agree.
- Recommended further work, leading to the creation of a new Task Force on standardising VSC terminology in SC B4.



Evolution of VSC Technology



Adoption of VSC

Based on number of projects commissioned

1951-1999

VSC

LCC

2000 - 2010

VSC

LCC

2011 - 2014

VSC

LCC



Existing Publications

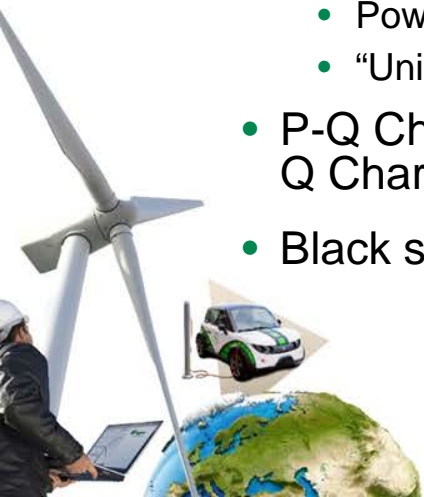
- Cigre TB97 – “SYSTEM TESTS FOR HVDC INSTALLATIONS”
 - Published in 1995
 - Covers only LCC HVDC systems (some areas applicable to VSC)
- IEC 61975 – “High Voltage Direct Current (HVDC) installations – system tests”
 - Published in 2010.
 - Based heavily (in most cases verbatim) on TB97.
- IEEE Std 1378-1997 – “IEEE Guide for Commissioning High-Voltage Direct-Current (HVDC) Converter Stations and Associated Transmission Systems”
 - Published in 1997
 - Covers only LCC HVDC systems



VSC vs LCC

Key Differences - Commissioning

- New “symmetric monopole” topology.
- Capability to operate in “terminal mode” and to commission controls and equipment with only reactive power initially.
- Capability to energise from the DC side (e.g. offshore platforms or wind farms).
- Less focus on AC filter commissioning.
- Additional control modes
 - Reactive Power Control
 - AC Voltage Control
 - Frequency Control
 - Power Factor Control
 - “Unique” Controls
- P-Q Characteristic – Combinations of P and Q to test extremes of P-Q Characteristic.
- Black start capability (if applicable).



New Applications and Commissioning Challenges



- Off shore wind farms / platforms.
 - Staged generation/loading.
 - Commissioning without full power/load.
 - Testing of DC choppers to manage excess energy during trips.
 - Testing of energisation from DC side.
 - Practical / logistical issues associated with off-shore commissioning.
- Multi-terminal schemes
 - Testing flows and control interactions.
 - Testing the DC fault response concept.
- DC protections for overhead line applications.



New Applications and Commissioning Challenges

(Continued)

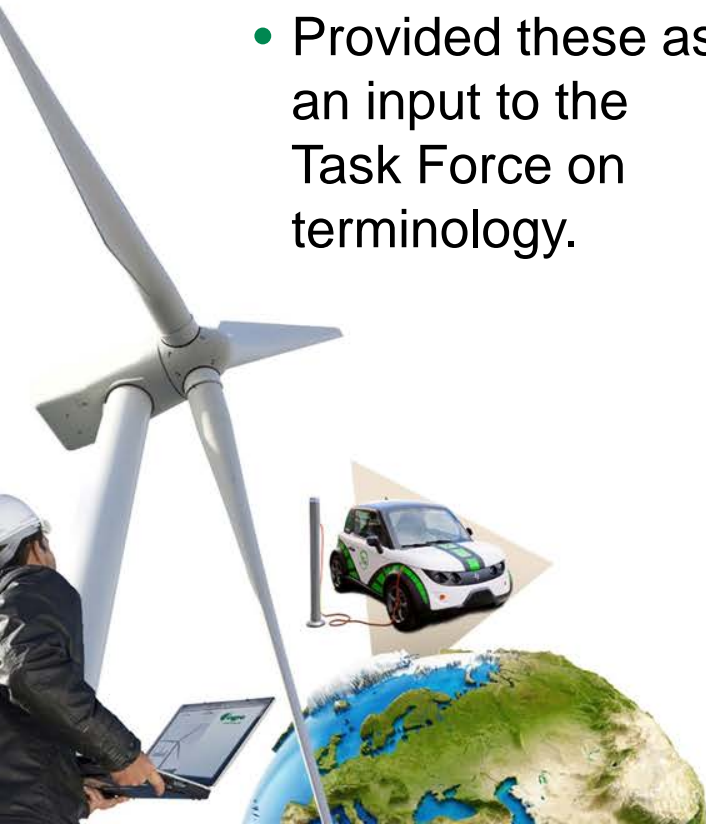
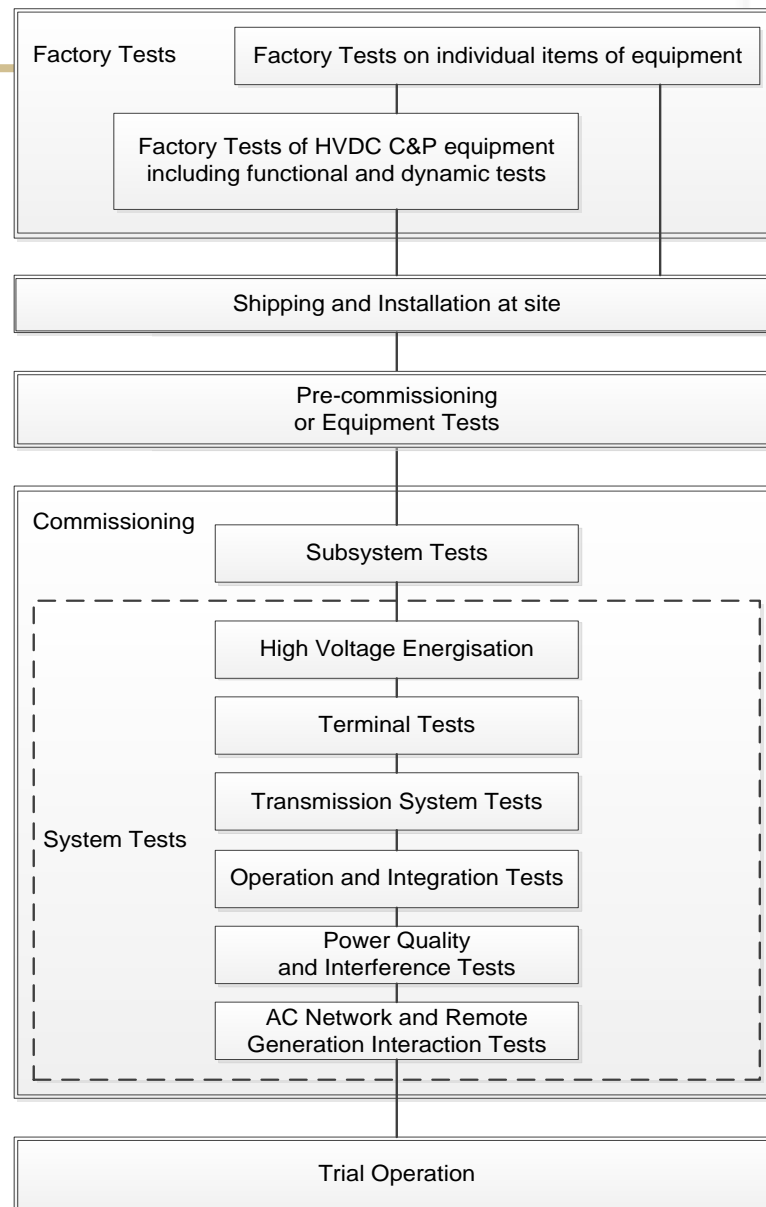


- Commissioning in a constrained and/or market environment
 - Demonstrating compliance when full power flows (P and/or Q) cannot be dispatched due to market or AC network constraints.
 - Coordination of test energy.
- Commissioning Management, Documentation and OH&S during commissioning in the modern world.
- Specific guidelines on off-site testing, in particular:
 - factory testing of control and protection systems; and
 - dynamic performance testing and modelling.



Overall Commissioning Process

- Similar issues with getting Vendors to agree on these terms.
- Provided these as an input to the Task Force on terminology.



Technical Brochure

- Due for submission to 60 day review end of December 2016
- Expected publication – March/April 2017

TESTING AND COMMISSIONING OF VSC HVDC SCHEMES

WG B4.63

Members

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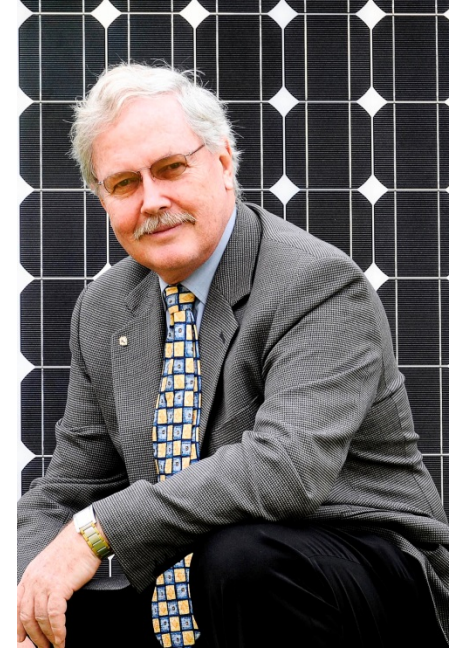


empowering
networking
global know-how

THANK YOU

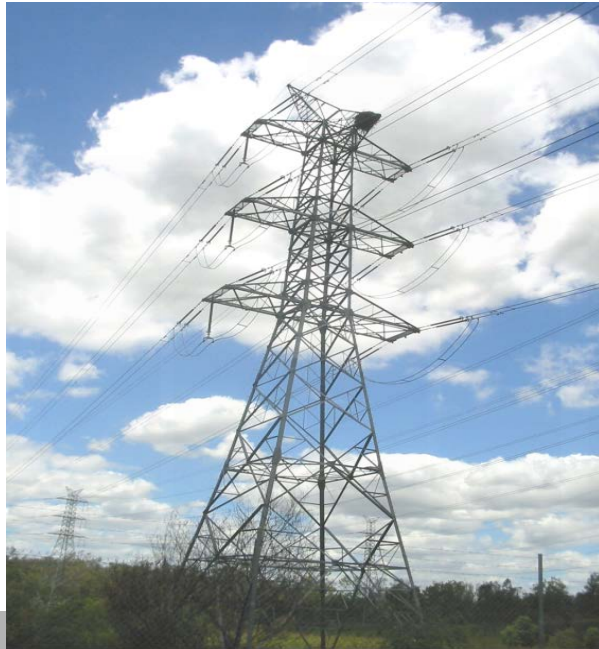
CIGRE – ACPE Outstanding power engineering academic

- CIGRE Australia and ACPE (Australian Committee of Professors in Power Engineering) have initiated and CIGRE will sponsor an annual award for the “Outstanding Australian or New Zealand” power engineering academic.
- This award carries with it a perpetual trophy and up to \$500 in cash assistance to travel to the AGM to receive the award.
- This years inaugural recipient is Professor Gerard Ledwich of QUT.



Risk Managed Distribution Network Planning
Wide area Power System Controls
Power Hardware in the loop
Microgrids
CIGRE and Universities

Prof. Gerard Ledwich, Chair in Power Engineering
Power Engineering Group
Queensland University of Technology
Brisbane, Australia



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Summary : started in control theory then applied to power systems extend to control of power electronics in power systems and development of Phasor measurement systems

- **Distribution Network Investment strategy:** work with Ergon to develop investment based on reliability, capital cost , voltage and loading constraints. Reduce costs by risk management. Working to refine the reliability as function of equipment status and age
- **Wide area Measurement and Control:** in collaboration with transmission companies (developed tools for fast identification of oscillation modes and modelling of large load dynamics. Recent work developed controllers using GPS measured angles to increase transfer capacity though better control of SVC's. This is extended to control of excitation and wind farms (nonlinear-robust-little tuning-superior large disturbance performance)

Summary of recent work (ctd)

- **Power Hardware in the loop (PHIL):** work with defence to develop theory and implementation of testing of real equipment with two-way interaction with simulated loads, current development 150kW but looking for system up to 6MW
- **Microgrid:** 45kW test system for investigation of voltage control market sharing and protection of microgrids. The test system has realistic line impedances 12 inverters and PHIL to model connection of other external loads. Current work on distributed control of storage and on markets for prosumer sharing

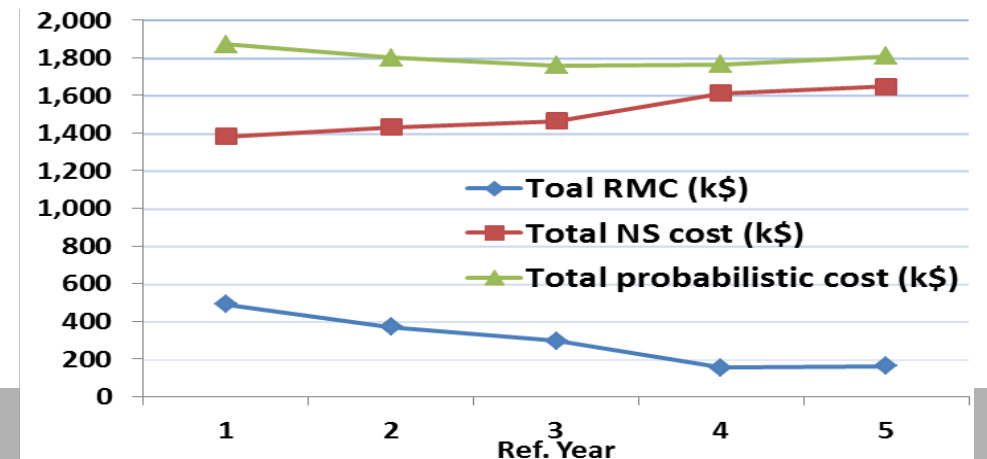
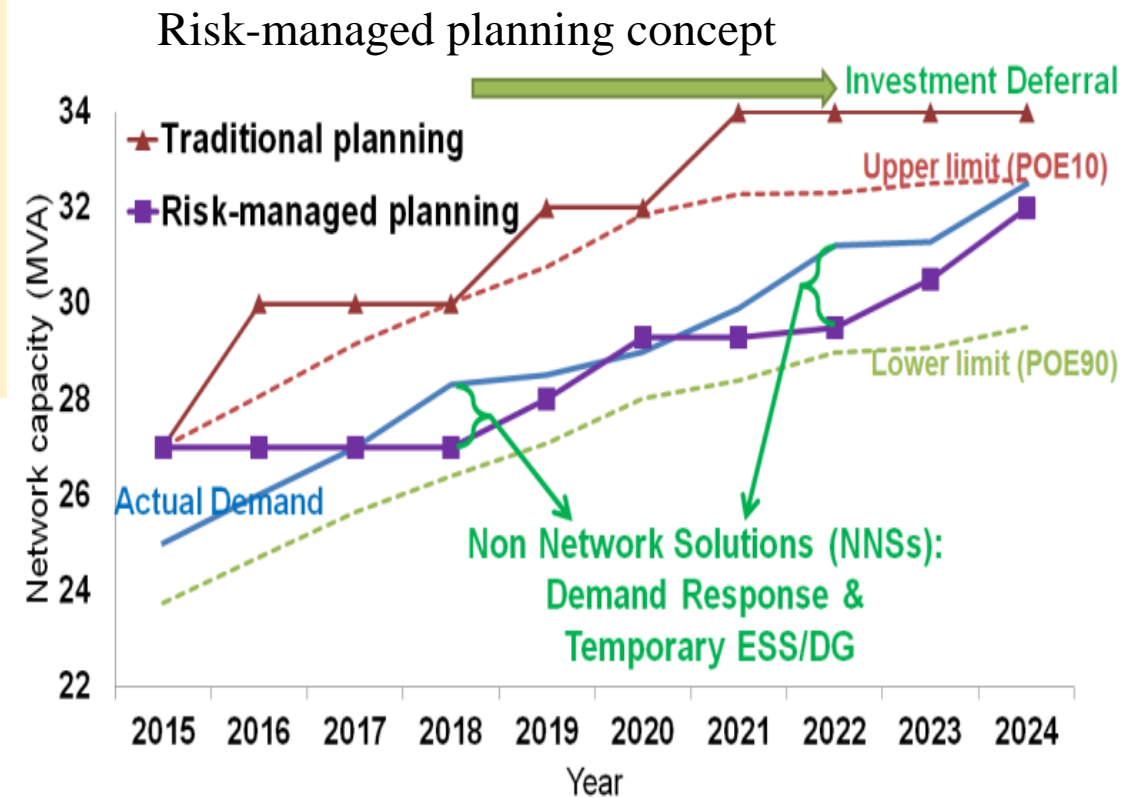
Risk Managed Distribution Network Planning: uncertain load , reliability cost , multi year, aging equipment effect, project with Ergon
 Now does transformers, batteries, line upgrades, cross connects, new substations, demand for 764 bus with uncertain load growth

Existing planning approach:

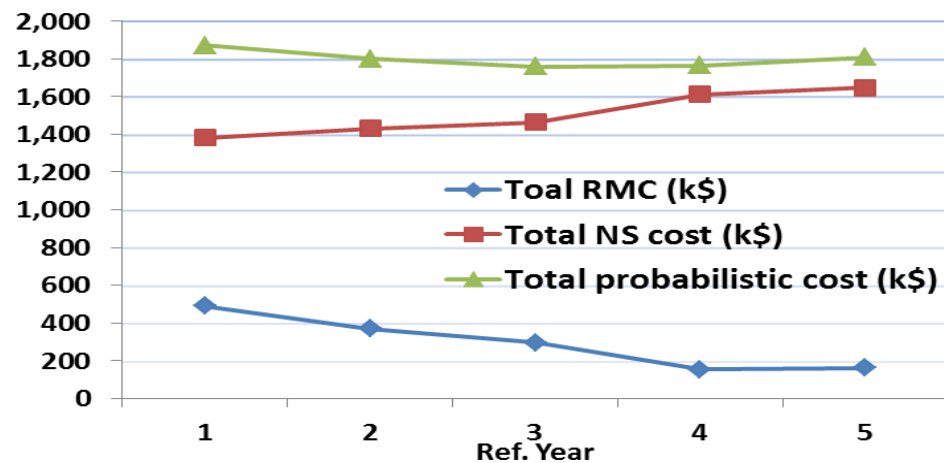
- Designing a network for given demand forecast:
 - Considering a high reserve margin to take into account uncertainties of the forecasts.
 - Results in building extra network capacity to tackle increased uncertainties.

New planning approach:

- Finding optimal level of demand:
 - Using network solutions (NSs)
 - Procuring NNSs to manage the risk of exceeding demand above this level.



- Lowest total network expansion cost ($\sum C_{Prob}^y$):
 - Obtained from forward-backward approach for Ref. Year 3.
 - It is cost-effective to utilize fixed ESSs and capacitors to meet the forecast demand to a certain level and procure temporary NNSs such as DR and ESS to meet the demand rather than investing in costly transformers.

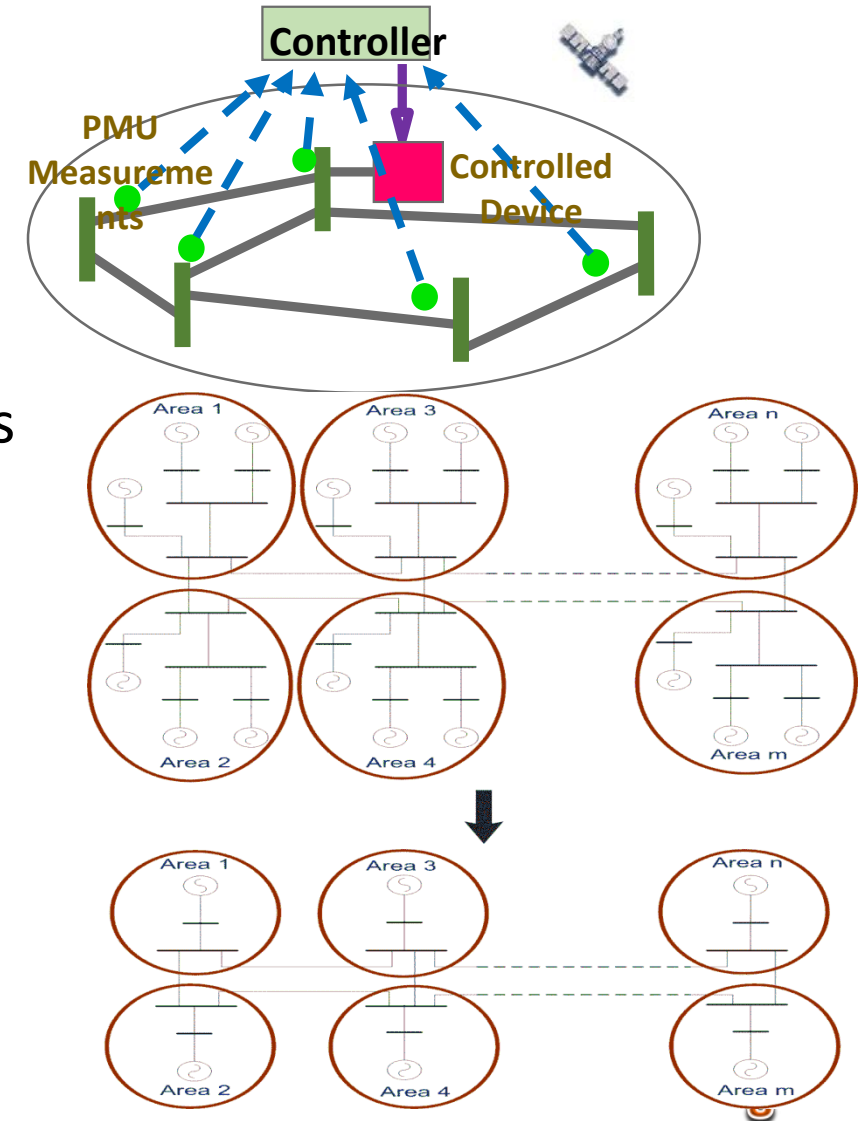


Ref. Year	Upgrades	Planning years					Total
		1	2	3	4	5	
1	Trans.(kVA)	0	0	0	25	0	25
	Fix ESS (kVA)	0	5	5	335	445	789
	Cap.(kVAR)	375	900	0	275	25	1,575
	DSNS ^y	POE10	POE30	POE80	POE50	POE30	-----
	C_{RMC}^y (k\$)	0	7	314	122	46	489
	C_{Prob}^y (k\$)	194	204	439	644	392	1,872
2	Trans.(kVA)	0	0	0	0	0	0
	Fix ESS (kVA)	0	0	20	325	710	1,055
	Cap.(kVAR)	300	750	275	200	0	1,525
	DSNS ^y	POE20	POE30	POE70	POE50	POE30	-----
	C_{RMC}^y (k\$)	0.5	2	192	128	48	369
	C_{Prob}^y (k\$)	191	189	366	553	502	1,800
3	Trans. (kVA)	0	0	0	0	0	0
	Fix ESS (kVA)	0	0	10	335	550	895
	Cap.(kVAR)	300	925	250	50	25	1,550
	DSNS ^y	POE20	POE20	POE80	POE50	POE30	-----
	C_{RMC}^y (k\$)	0.5	0.4	124	123	47	295
	C_{Prob}^y (k\$)	191	283	293	558	434	1,759
4	Trans.(kVA)	0	0	25	0	0	25
	Fix ESS (kVA)	0	0	40	340	520	900
	Cap.(kVAR)	300	750	175	0	350	1,575
	DSNS ^y	POE20	POE30	POE70	POE50	POE20	-----
	C_{RMC}^y (k\$)	0.5	1	76	64	13	154
	C_{Prob}^y (k\$)	191	283	379	514	398	1,765
5	Trans.(kVA)	200	0	0	0	0	200
	Fix ESS (kVA)	0	0	30	345	435	810
	Cap.(kVAR)	300	925	50	0	0	1,275
	DSNS ^y	POE20	POE20	POE70	POE50	POE30	-----
	C_{RMC}^y (k\$)	0.5	0.4	72	63	25	161
	C_{Prob}^y (k\$)	297	188	276	680	368	1,808

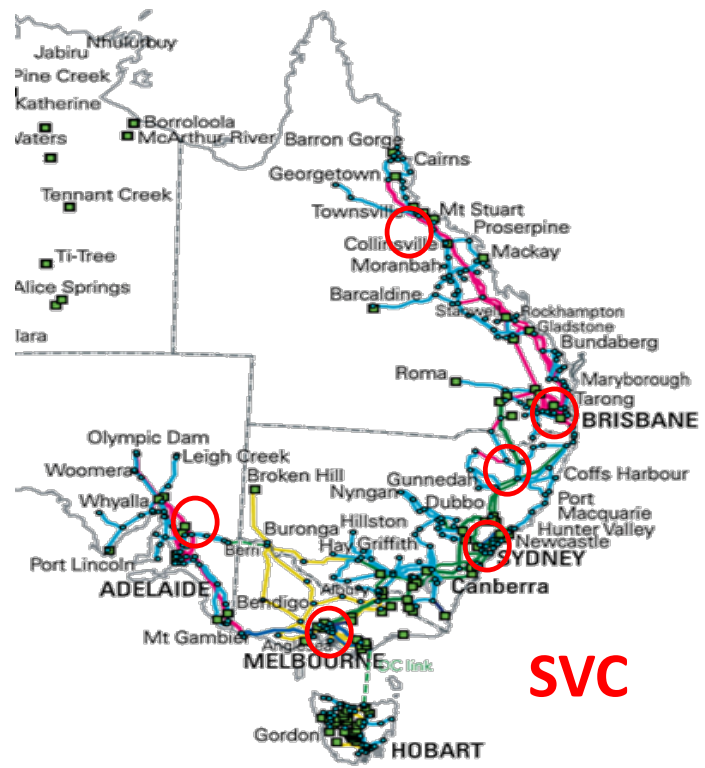
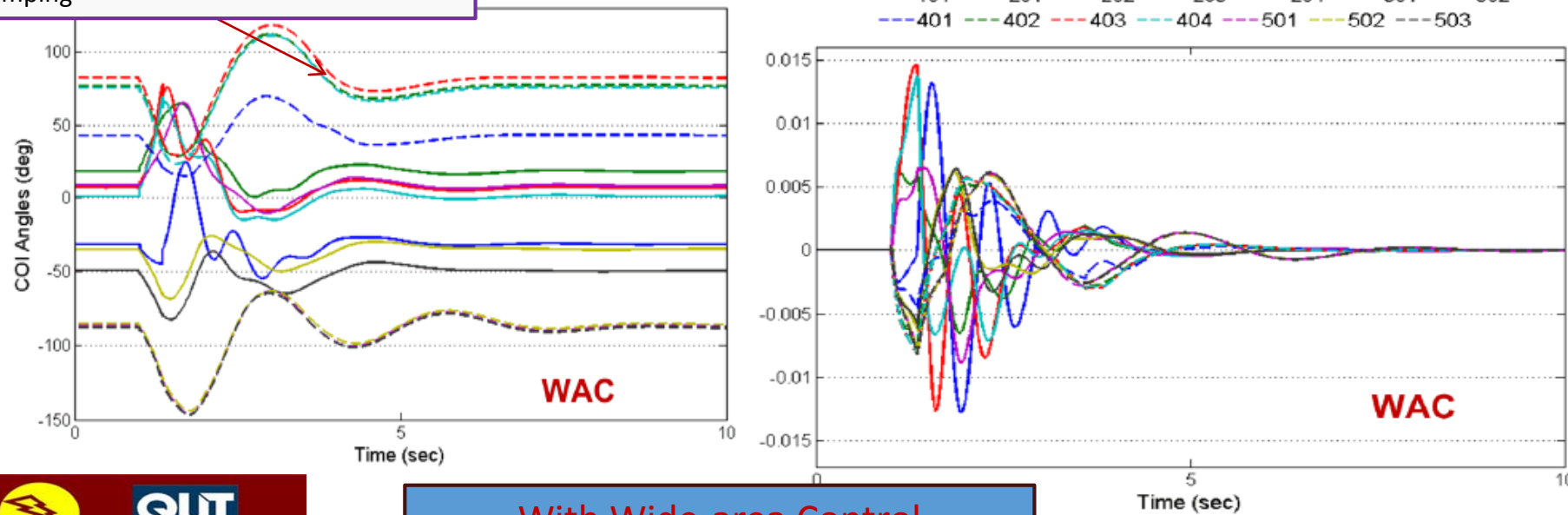
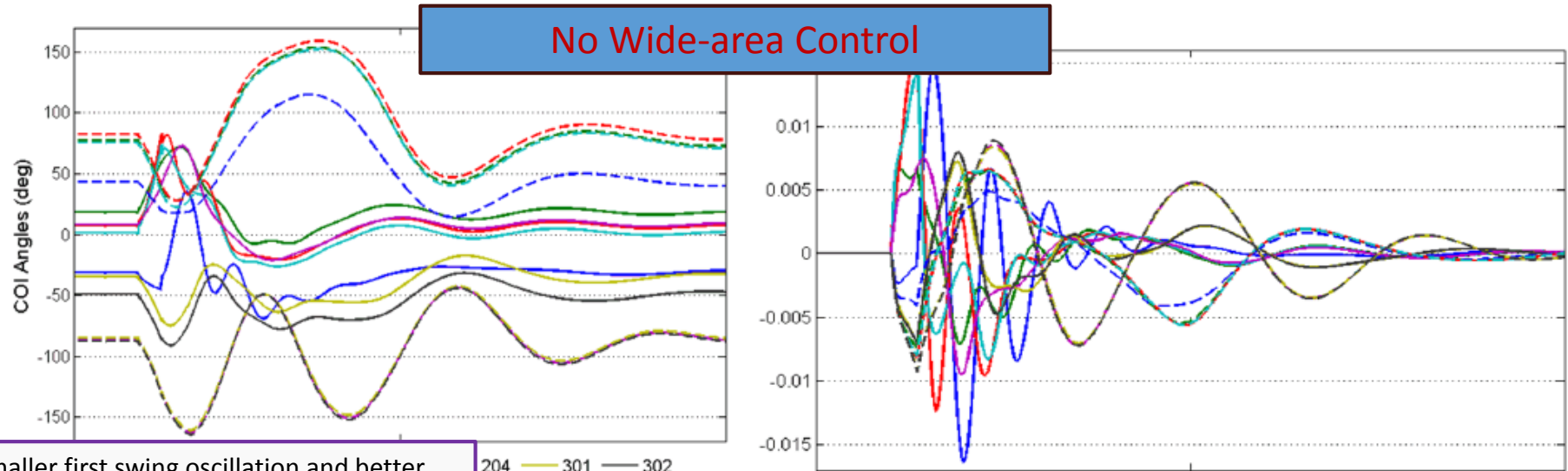
Wide-area Control using PMU to control SVC and Excitation

Project with Utilities started with PMU design in 1994, deployed nationally, working to implementation of controls

- Aggregate into areas
- Identification of the reduced system parameters is performed by online processing of the PMU data
- Filter to infer aggregate state
- Control through Maximum reduction of kinetic energy

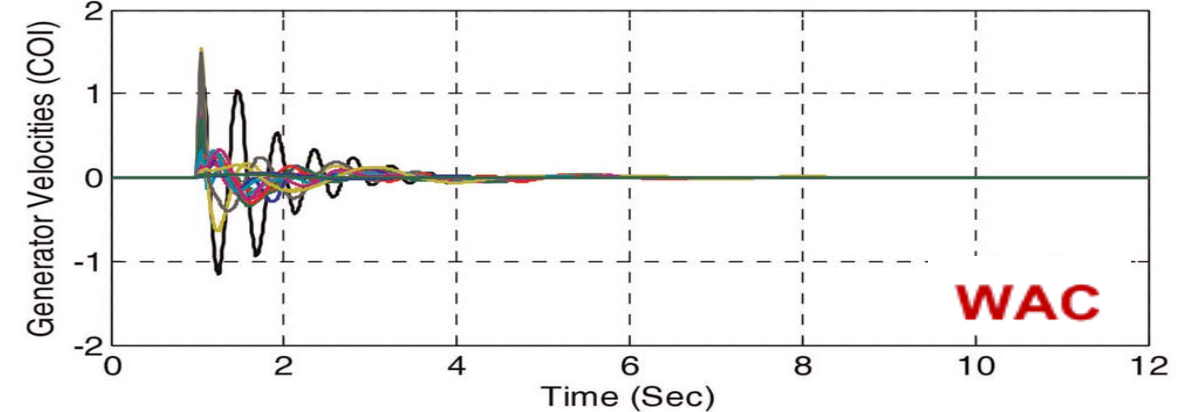
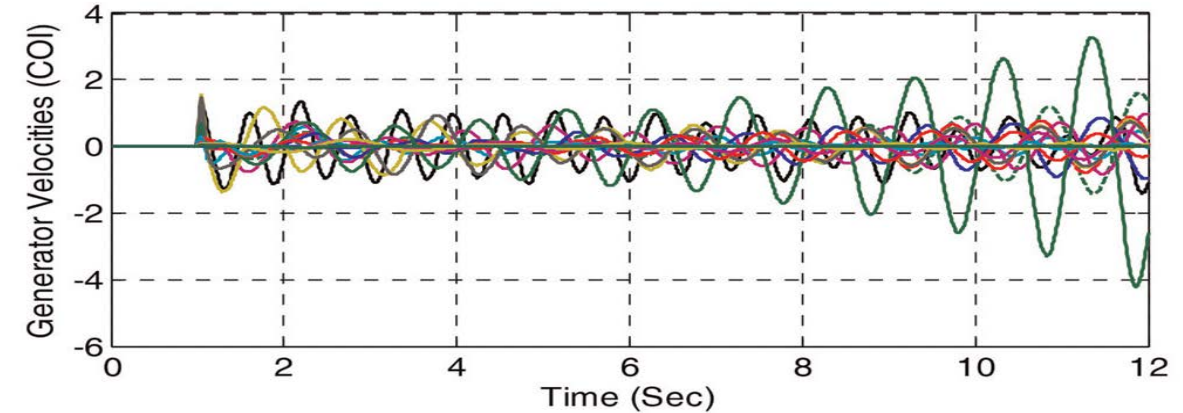
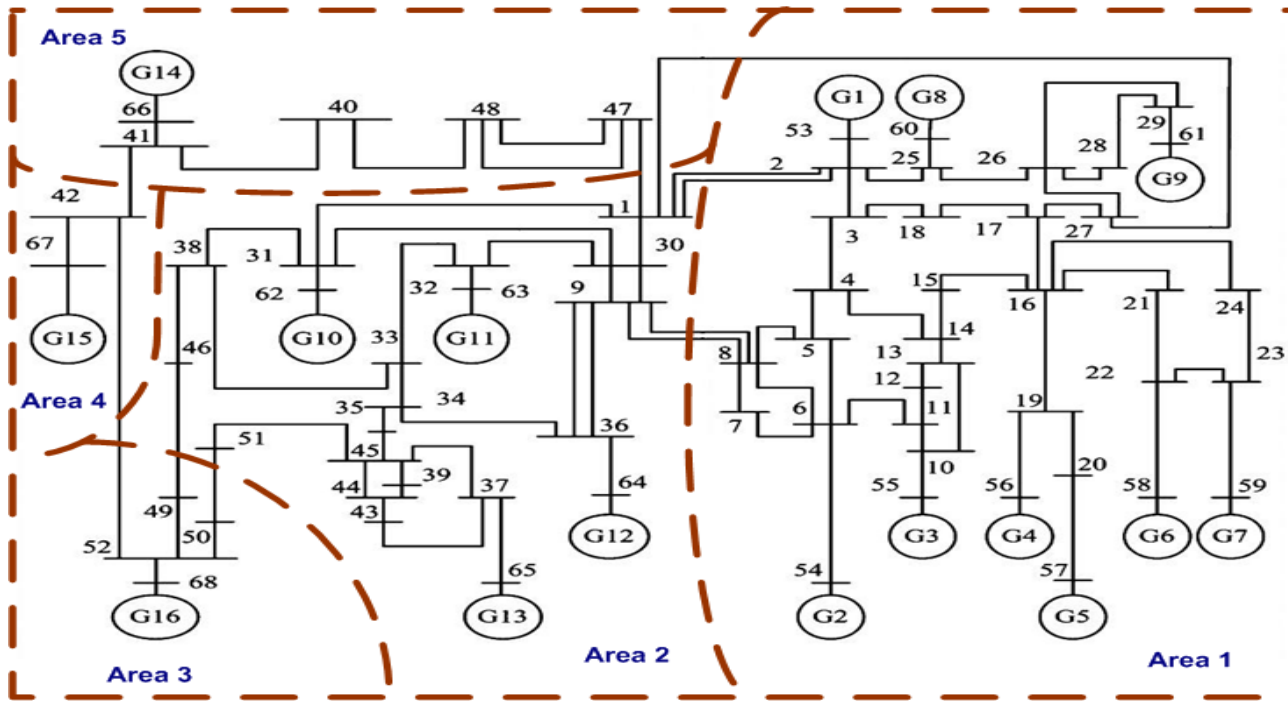


Wide-area Control of SVCs



Application of Wide area control using Excitation systems

Effect of the inverse filtering based wide-area controller on a complex test system:



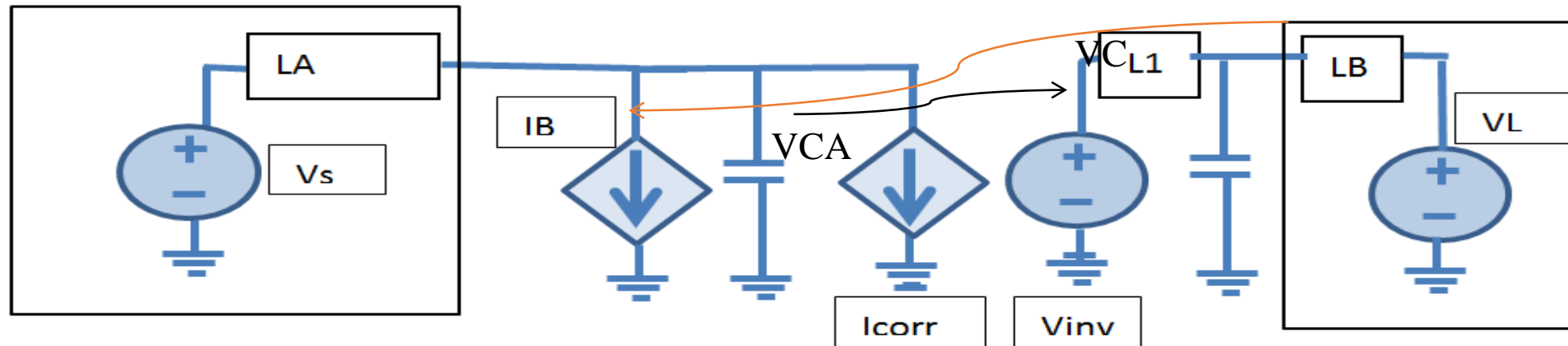
Power hardware in the Loop: 2 way couple simulation to hardware : DSTG+Seimens

PHIL: Test large power equipment with simulated load interfaced with inverters.

Ensure wind systems will respond well in complex load requirements (5MW test in Aachen)

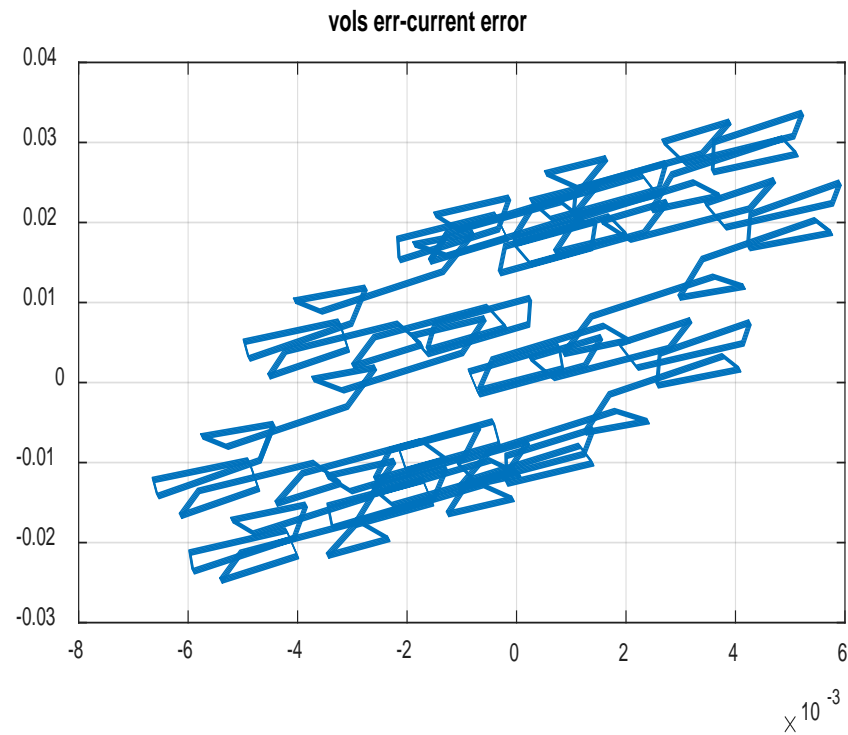
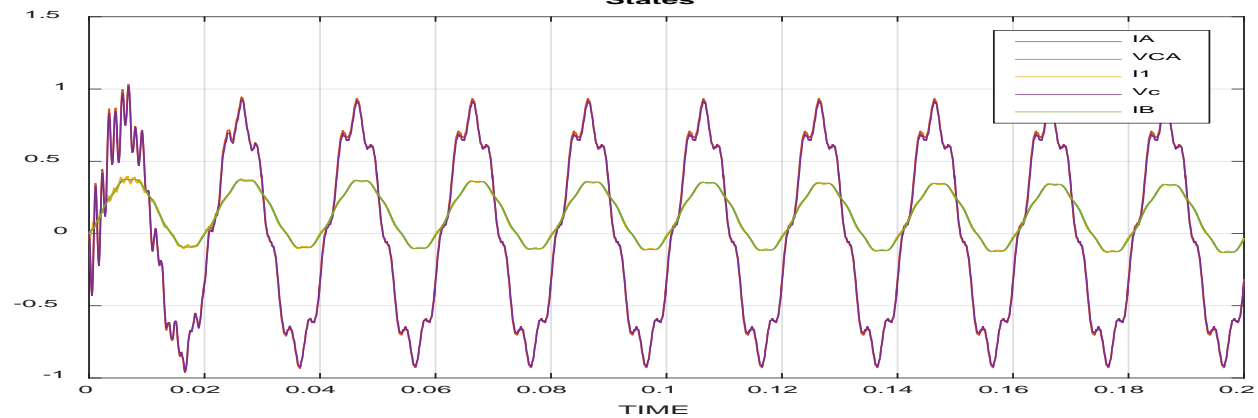
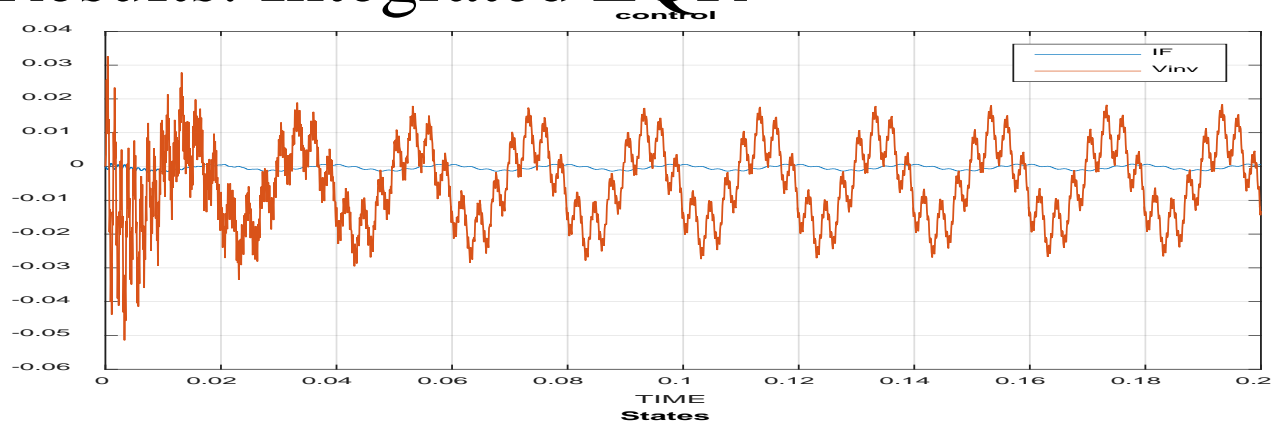
Ship drive system 10MW system in Florida, developing 400kW prototype QUT for 6MW system

To ensure 2 way interaction of test system and simulation, need high bandwidth control of inverter

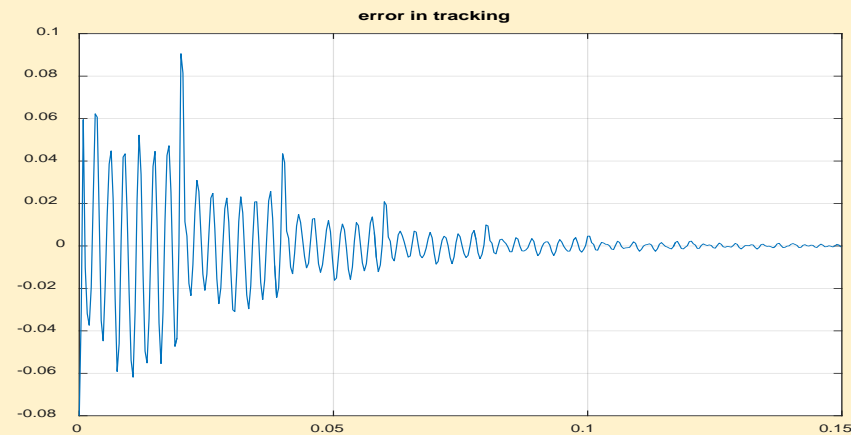
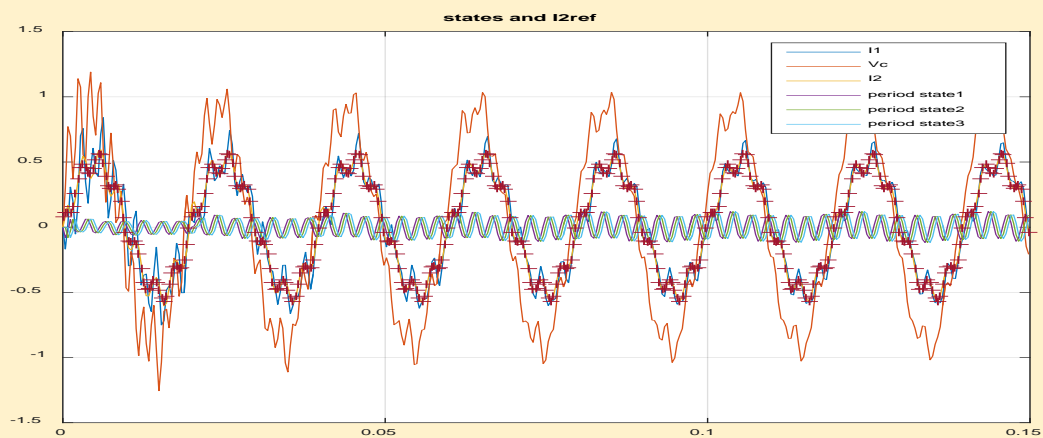


- The LQR solves for the controls to penalize errors in V_c and V_{CA}
- states are I_A , V_{CA} , I_1 , V_c , I_B
- The feedback determines the correction terms added in parallel to I_B and in series with amplifier inverter ($V_{inv} = V_{CA} + V_{corrections}$)

Results: Integrated LQR



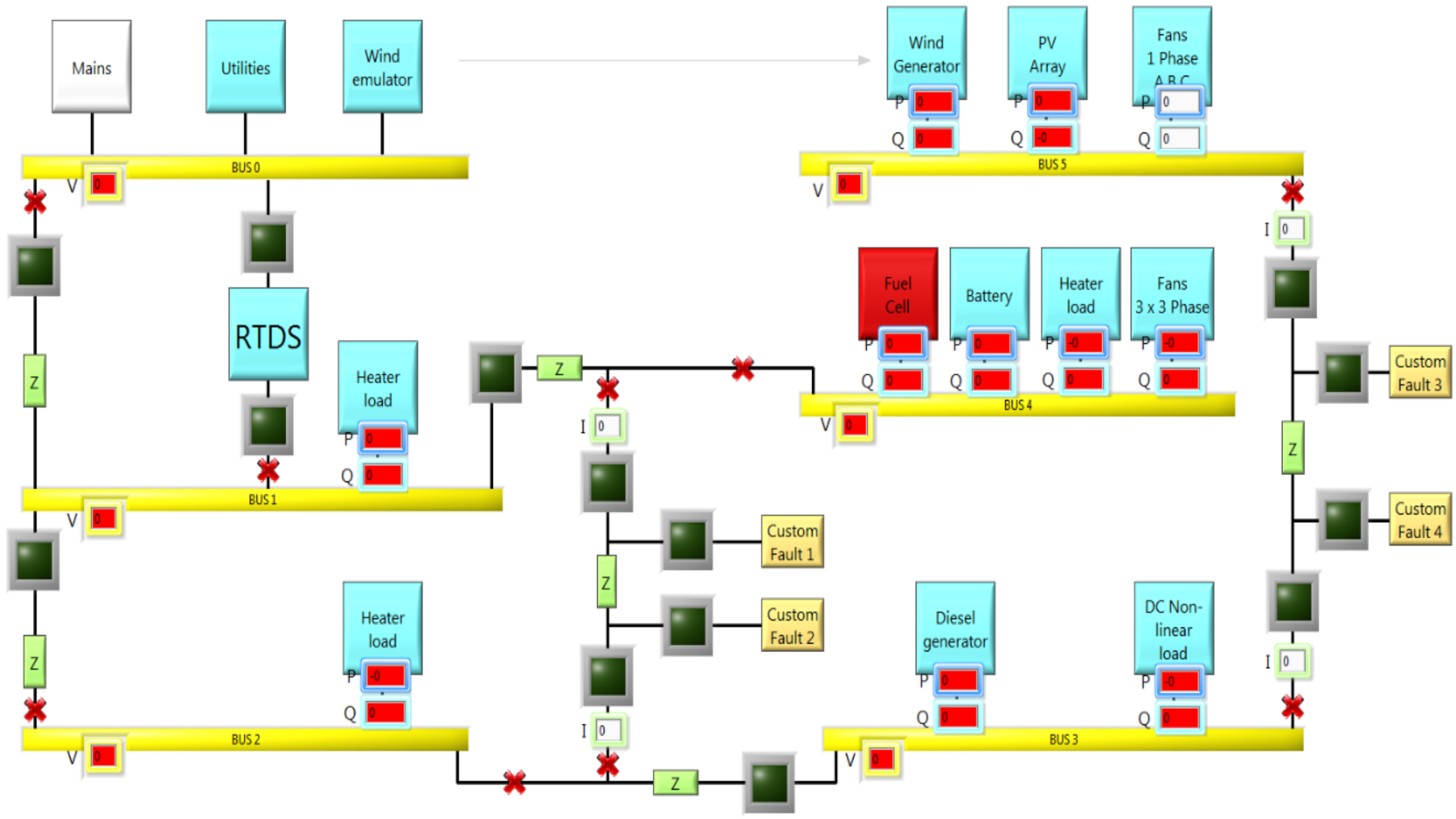
Results: Periodic LQR



Stability in Microgrids

- In isolated power systems where generation may be dispersed the control of voltage and frequency can be more difficult than utility distribution systems
- Microgrid : developing systems for voltage control and protection





Summary of Research Interests

- Risk Managed Distribution Network Planning
Wide area Power System Controls
Power Hardware in the loop
Microgrids
- Other interests in control power electronics and managing assets

CIGRE and Universities

- **Academic plus industry involved in CIGRE committees enables good perception of large systems and real problems,**
- **Good examples of real systems for teaching**
- **Academic solutions can be aired and implementation issues can be raised**
- **Provides a contact network to find industry players with interest in specific research**

A photograph of a modern glass building with a curved facade, viewed through a large stone archway. The building's glass reflects the sky and clouds. The QUT logo is overlaid on the left side of the image.

QUT

CIGRE Australia is pleased to confirm the 2017 schedule for its two signature regional technical events.

SEAPAC 17 The 6th edition of our highly successful South East Asia Protection, Automation and Control conference is scheduled for March. This is the go-to event for engineers from major utilities and vendors seeking to share know-how on the latest trends in protection and automation.

CIDER 17 The 2nd edition of the Conference for the Integration of Distributed Energy Resources in the Asia Pacific region will take place in August. With installed capacity across the global DER market expected to grow from 109.9 GW in 2015 to 335.8 GW in 2024*, CIGRE sees CIDER's role as crucial in our mission of helping to promote discussion on the network of the future.



SEAPAC 17

14th & 15th March 2017
Pullman Hotel
65 Queens Road, Albert Park
Melbourne, Australia



CIDER 17

15th & 16th August 2017
Rydges World Square
389 Pitt Street
Sydney, Australia



If you want to collaborate and network with the thought leaders, mark these dates in your diary.

2017 Regional events key benefits:

- Stay in touch with technical best practice with fellow industry experts
- Collaborate and discuss solutions with colleagues in a neutral, technically orientated setting
- Tap into CIGRE's global know-how
- Network with other interested professionals

SEAPAC 17

CALL FOR PAPERS NOW OPEN !
- See website for information.

South East Asia Protection, Automation and Control conference, 6th edition

The South East Asia Protection, Automation and Control conference (SEAPAC) is hosted by the CIGRE Australia B5 Panel. The conference features a wide range of subjects, from traditional protection issues through to evolving technology deployment. Typically some 30-40 papers are presented, with several opportunities for open forum questions to be put to the authors from the audience.

A successful history

In the past ten years the biennial SEAPAC has come to be known as the go-to event for industry experts seeking the latest technical expertise, collaboration and networking on protection, automation and control practices. This year's conference in Melbourne will continue to deliver on this expectation and feature technical presentations, with utilities, suppliers, consultants and education

organisations all key contributors. We are expecting this popular event to continue to deliver the know-how and lively discussion attendees have become familiar with.

Who should attend

Protection engineers and technicians, telecommunication and network specialists and SCADA system specialists, as well as operations and maintenance staff.

Exhibitors and sponsors

Sponsors and exhibitors have supported this event well, as they have found a high number of leading technical experts in attendance across a wide range of the industry organisations, including the major Australian utilities. A range of sponsorship and exhibition options will be available.

At a glance

- Targeting 150+ delegates
- Typically 30-40 papers presented
- 15 exhibitors and sponsors in 2015
- Networking dinner
- Open forum discussions



CIDER 17

2nd edition of the Conference for the Integration of Distributed Energy Resources in the Asia Pacific region is hosted by the CIGRE Australia C6 Panel.

The challenge

Across the world 1.9 trillion dollars is set to be invested in DER in the next 10 years*.

As a result, power industry organisations across the Asia Pacific region are increasingly facing technical challenges around the integration of distributed energy resources (DER) into existing and future networks.

Get the technical solutions

CIGRE Australia, in its role as a facilitator of technical know-how and best practice, is pleased to introduce CIDER 17, the 2nd edition of the Conference on Integration of DER into our networks.

This forum facilitates practical information sharing between utilities, product manufacturers and communities. It sets out the challenges and opportunities presented by these technologies and will help us all build a road map for workable technical solutions.

Why is CIDER unique?

This event will be run with a view to addressing real world commercial and technical issues in a practical knowledge sharing environment. This means utilities and product suppliers can attend and participate, focusing on technical issues, practical technical conversations and genuine solutions.

Who should attend

- Utility companies
- Distributed energy generators/proponents
- Community/Energy stakeholders/developers
- Industry consultants
- Academics
- Product suppliers



*source: NAVIGANT research

Exhibitors and sponsors

Companies seeking to grow their profiles in this emerging industry will find a high number of utility based engineers and technical leaders at CIDER. A range of sponsorship and exhibition packages for reaching these key audiences will be available.

At a glance

- Targeted 120+ delegates
- 23 papers presented in 2015
- 12 exhibitors and sponsors in 2015
- Networking dinner
- Open forum discussions



For more information on both events

e: enquiries@cigreaustralia.org.au

w: cigreaustralia.org.au/cigre-events/seapac-2017

w: cigreaustralia.org.au/cigre-events/cider-2017



empowering
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