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to the Electricity Industry

PSC NEWS

News and Views from the team at PSC

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Market Evolution Program (MEP) for the Wholesale Electricity Market (WEM) in Western Australia

Special projects live long in the memory and this is certainly the case for the PSC team who worked tirelessly alongside Western Australia's Independent Market Operator (IMO) to evolve and improve the WEM and its associated market systems through the implementation of the MEP project.

MEP first commenced in 2009, following consultation with industry and development of a work plan to address a lack of competition in certain aspects of Western Australia's WEM.

Two of the most significant aspects of the MEP work plan were the implementation of new competitive markets for Balancing and Load Following Ancillary Services (or LFAS for short – also known as Frequency Keeping), which commenced successfully on 1 July 2012.

PSC's contribution to the project included reviewing the market design for the new Balancing and LFAS markets, project managing the technical implementation, designing and developing custom market systems solutions, and leading the testing program of work.

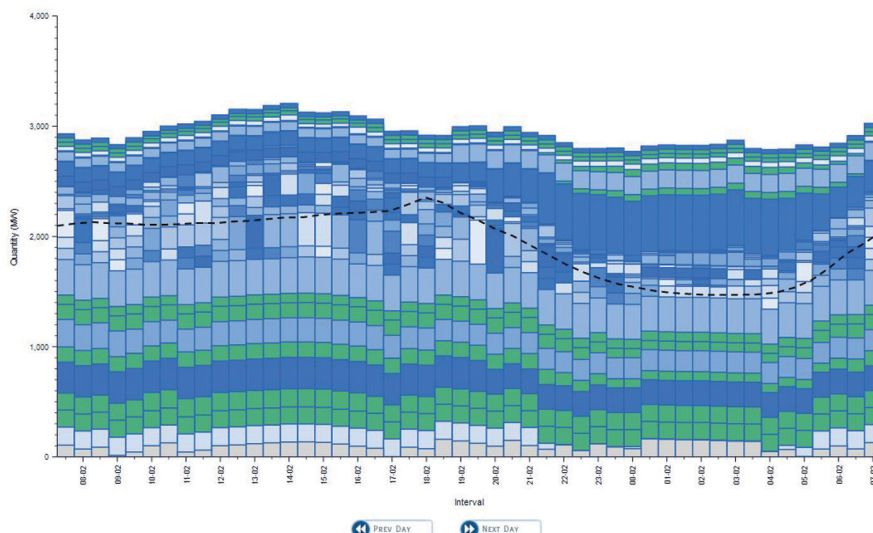
To meet tight project deadlines, the market design, procedures and rule drafting processes for the two new markets needed to take place in parallel to the market systems development. While not ideal, the approach proved to be the most efficient and effective means of delivering the IMO's market systems in time for market start.

PSC's contribution to this very significant project has been widely recognised in Australia, enhancing PSC's reputation as a leading market systems provider in the Asia Pacific region.

Allan Dawson, CEO of the IMO said "PSC's involvement in the MEP project has significantly contributed to its success. The PSC team has professionally applied its expertise and knowledge to this project - gained from PSC's roles in other electricity jurisdictions - and has worked seamlessly alongside IMO staff to ensure the best possible outcomes."

PSC would like to congratulate participants of Western Australia's WEM for their collective achievements in this market evolution process and, in particular, the IMO for their leadership and support over the past 18 months.

Balancing Merit Order (Forecast for 16/04/2012)



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System Dynamics Studies for PJM Interconnection

Operating the largest electric power grid in North America, PJM Interconnection supplies a region serving more than 60 million people from a supply of 185,600 megawatts of installed generation capacity.

For proposed generation connections to the PJM system, PSC has been pleased to assist PJM's dynamics studies team, by carrying out simulations to analyze system stability. Since commencing our system studies with PJM in mid-2011, we have examined a number of proposed generator connections in the PJM footprint, both conventional and wind.

To carry out the dynamic simulations, our team has used Siemens' PSS/E software simulation packages, used extensively in large-scale transmission network studies, for all PJM dynamics work. PSC engineers have demonstrated extensive experience in analyzing and making sense of the steady-state and dynamic

behaviour of large transmission systems worldwide.

Rather than just set up a contract and execute the work, the PSC philosophy is to take the time to build a relationship with our clients, enabling us to understand, meet and exceed their needs. For example, these studies are carried out on tight timeframes and, furthermore, have follow-on effects on generation developers and transmission utilities within the PJM territory. So in addition to meeting PJM's important requirements for timing and technical excellence, we focus on ensuring clarity in our reports so they can easily be understood and passed on to external parties.

The Power of a Global Perspective
Spread across three countries and two continents, the PSC delivery team for this work includes commercial specialists in our PSC USA Seattle headquarters and system studies experts in Wellington and Brisbane. Led by Brisbane-based

Principal Engineer Andrew Robbie, Senior Engineer Dr Tim Browne, and Wellington-based Director of System Studies, Dr Ranil de Silva, PSC's team for these studies collectively possess several decades of direct experience in dynamic simulations and completion of generator connection studies. Possessing a global perspective means that PSC can devote the right resources at the right time to meet PJM's needs.

For further information on PSC's system studies capability, please contact Les Brand, PSC Australia CEO (les.brand@pscconsulting.com) or Peter Hogan, PSC Australia Electrical Engineering Manager (peter.hogan@pscconsulting.com). For further information on our North American operations, please contact Alex Boyd, PSC North America CEO (alex.boyd@pscconsulting.com).

New Zealand EEA Annual Conference & Trade Exhibition 2012

PSC New Zealand was pleased to be the major sponsor of the 2012 Electricity Engineers' Association (EEA) Conference & Trade Exhibition which was held at the SkyCity Convention Centre in Auckland from the 20th – 22nd June 2012.

This conference is the premier power engineering event for the New Zealand electricity supply industry and was officially opened this year by the Minister of Energy Hon Phil Heatley. It provides a national forum for key industry participants to discuss the challenges faced by the New Zealand electricity supply industry and feedback from the conference has been very positive with over 900 delegates, exhibitors, guests and visitors attending the event.

The sponsorship of this conference is a reflection of PSC's ongoing commitment to the New Zealand electricity industry and PSC looks forward to working with the Electricity Engineers' Association for future events.



The Minister of Energy Hon Phil Heatley and PSC New Zealand's Electrical Engineering Manager Barry Ireland at the EEA Conference

PSC Brisbane completes the Oxfam Trailwalker Challenge

During June four members of PSC's Brisbane based team, Les Brand, Andrew Robbie, Kieran Murray and Gary Jennings participated in the Oxfam Trailwalker through the D'Aguilar National Park to help raise money for Oxfam.

353 teams of four people each were given 48 hours to complete this gruelling 100 km walking event. The walk consisted of 7 sections each between 12 and 17 km long through terrain ranging from steep bush fire trails in the National Park to sealed roads through suburbia.

For the PSC team, preparation for the event began in February with regular training walks after work and during weekends to condition everyone for the long walk, usually one or two sections at a time, but culminating in a 52 km training walk 3 weeks before the main event. The training walks were not only necessary for the physical fitness but necessary to ensure that footwear was going to go the distance without causing blisters. The training walks were also a great opportunity to meet some of the local Queensland wildlife – two memorable incidents during the training walks include having to sidle past a large orange and black python of some indeterminate length, and during several of the night walks trying to avoid stepping on the many toads (the ground was literally heaving with them).

On the day of the event the team started at 08:30 am along with approximately 500 other walkers as part of the 2nd group. After walking all day everyone was looking forward to a steak dinner at the 3rd checkpoint at the 44 km mark.



Team photo. Back, walkers Gary, Andrew, Les, and Kieran. Front, support crew Frances, Rebecca, and Merrin.



Les, Andrew, Kieran, and Gary crossing the finish line.

During the main event each team was able to stop and rest at the 6 checkpoints, three of which the team are allowed to meet with their support crew [at the 44, 75, and 89 km points]. The next two stages were during the night, and by dawn the team had reached the 75 km mark and were looking forward to a cooked breakfast.

After some major repair work and bandaging of feet for two of the team members the final 25 km began, and with a short break at the last checkpoint to recharge on chocolate biscuits, shortly after midday on Saturday the end was in sight.

The preparation paid off and Les, Andrew, Kieran and Gary despite looking as if they had spent a couple weeks in the bush all crossed the finish line after walking 100 km, in a time of 30 hours and 50 minutes. Finishing with all four team members was a big achievement as of the 315 teams who finished only 138 teams finished with four team members.

A big thank you goes to our fantastic support crew of Frances Jennings, Rebecca Marsh, and Merrin Botha.

In all the PSC team raised over \$3600 for Oxfam.

PSC Welcomes New Staff

Peter Gao

Peter Gao has joined PSC New Zealand as an Electrical Engineer and has experience in secondary systems and protection design for the New Zealand high voltage electricity network. His most recent qualification has been completing a Master of Engineering (Electrical & Electronic) at the University of Auckland. His thesis was based on smart automation and protection schemes enabled through IEC 61850 which included modelling studies for electricity distribution networks. Peter will be based in the PSC Electrical Engineering team in Wellington.



Ian Gough

Ian Gough recently joined PSC New Zealand as an Electrical Engineer. He has experience in hydroelectric generation control system management, upgrades, refurbishments and testing including governor performance. His qualifications include a Bachelor of Electrical and Electronic Engineering degree with honours from the University of Canterbury in New Zealand. Ian will be working on control system development in the PSC HVDC team based in Ludvika, Sweden.



Christopher Spencer

Christopher Spencer has joined PSC Australia as a Power Systems Engineer and is experienced in transmission network planning and modelling for electrical power systems which includes load flow, fault analysis and harmonic studies. His qualifications include a Bachelor of Electrical Engineering from the University of Central Queensland. He was a member of the power system design team for Hay Point Expansion Stage 3 during the coal terminal expansion project in Mackay, Queensland. Christopher will be based in the PSC System Studies team in Brisbane.



Peter Hogan - Engineering Manager PSC Australia

PSC Australia is pleased to welcome Peter Hogan as Electrical Engineering Manager. His experience in the high voltage electricity industry has encompassed a broad range of roles ranging from electrical engineering design, management, installation, maintenance and commissioning within the power systems industry throughout Australia. Peter has a Bachelor of Engineering (Electrical) degree and started his career in the transformer manufacturing industry in

Queensland. He then spent several years in engineering and management roles with distribution and transmission utilities, and one year with the United Nations in Iraq during the Oil-For-Food programme. Between 2002 and 2012, Peter held engineering and management positions with ABB in their Power Systems group, working closely with utility and mining clients on substation projects throughout Australia. In joining PSC, Peter will work closely



with our clients to assist them with their engineering projects. Peter can be contacted at:
peter.hogan@pscconsulting.com

Ross Jones celebrates 10 years of Excellent Service with PSC

Ross Jones is the IT & Telecommunications Manager for PSC New Zealand and recently completed 10 years of service with the company. Since joining PSC, Ross has been involved in a large number of project management and technical roles covering power systems telecommunications for clients in Australia and New Zealand. He is currently assisting Transpower New Zealand with delivery of

their telecommunications & networking programme. Ross also leads a team of specialists in power systems telecommunications design, project management, fibre optics, and IP networking and security based in our Wellington office. The management team would like to thank Ross for his commitment and excellent service over the past 10 years with PSC.



PSC Group CEO Warwick Glendenning and Ross Jones