



ADAM PEARD

Manager and Principal Consultant

PERSONAL DETAILS:

Name: Adam Peard
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PROFESSIONAL QUALIFICATIONS:

- Bachelor of Engineering (Electrical), The University of Queensland, 2002.
- Advanced Diploma, Electronics Engineering, 1999.

PROFESSIONAL AFFILIATIONS:

AUSTRALIA

- Fellow, Engineers Australia (FIEAust)
- Chartered Professional Engineer, Engineers Australia (CPEng)
- Registered Professional Engineer Queensland (RPEQ)

EMPLOYMENT SUMMARY:

2017 – Present	Manager and Principal Consultant Amplitude Consultants Pty Ltd (Part time in 2017) (Brisbane)
2017 – 2017	Director GridLink Consulting Pty Ltd (Western Australia)
2014 – 2016	System Analysis and Solutions Area Manager (SAS) Western Power Corporation (Western Australia)
2015 – 2016	Network Connections and Access Project Lead Public Utilities Office (Western Australia)
2013 – 2014	Engineering Team Leader Western Power Corporation (Western Australia)
2011 – 2013	Principal Engineer Western Power Corporation (Western Australia)
2010 – 2011	Senior Engineer Western Power Corporation (Western Australia)
2009 – 2010	Principal Engineer Australian Energy Market Operator – AEMO (Queensland)
2005 – 2009	Planning Specialist National Electricity Market Management Company NEMMCO (Queensland)
2003 – 2005	Planning Engineer National Electricity Market Management Company NEMMCO (Queensland)

2002 – 2003	National Product Manager (P&B Engineering Protection Relays) Control Logic (Queensland)
2001 – 2002	Part Time Electrical Engineering Trainee Queensland Nitrates (Queensland)
2001 – 2002	Part Time High Voltage Laboratory Technician Indigo Technologies (Queensland)

EXPERIENCE DETAILS:

POWER SYSTEM ANALYSIS, GENERATOR AND LOAD CONNECTIONS:

- Expert Witness to several Generator arbitration proceedings.
- Technical expert and negotiator for preparation of generator performance standards for:
 - Kidston Pump Storage Hydro (250 MW, 275 kV) project in North Queensland.
 - Solar Farm (146 MW, 275 kV) in South West Queensland.
 - Solar Farm (100 MW, 275 kV) in South West Queensland.
 - Kidston Solar Farm (47 MW, 132 kV) project in North Queensland.
 - Jemalong Solar Farm (50 MW, 66 kV) in Western New South Wales.
 - Large 50 MW Battery Energy Storage System (BESS) in Queensland.
 - Kidston 6 MVA 'behind the fence' pumping load Customer Performance Standards in North Queensland.
 - Numerous connection assessments for new entrant generator and large load facilities in the South West Interconnected System in Western Australia.
- Technical expert and advisor to Network Service Providers for various generator and customer performance standard submissions.
 - Multiple solar farms, some with large battery energy storage systems.
 - Pumped Hydro generating system (250 MW, 275 kV).
 - Load bank (5 MW, 33 kV).
 - Gas turbine (35 MW, 275 kV).
- Technical advisor to various clients on generator PSSE and PSCAD modelling related matters:
 - Solar Farm (95 MW, 132 kV) in South East South Australia.
 - Solar Farm (88 MW, 66 kV) in North West Victoria.
 - Solar Farm (50 MW, 66 kV) in North West Victoria.
 - Solar Farm (100 MW, 132 kV) in South West New South Wales.
- Risk of constraint analysis (congestion) for numerous generator proposals including:
 - Wind Farm (2000 MW, 500 kV) in Victoria.
 - Solar Farm (250 MW, 275 kV) in Central Queensland.
 - Solar Farm (100 MW, 132 kV) in South West New South Wales.

- Solar Farm (100 MW, 132 kV) in South West New South Wales.
 - Pumped Hydro (~400 MW, 275 kV) in South Queensland.
 - Pumped Hydro (~250-500 MW, 275 kV) in South Australia.
 - Multiple solar farm and wind farm sites in the South West Interconnected System in Western Australia.
- Technical advisor to AEMO on various Wholesale Electricity Market (WEM) reform initiatives including:
 - Allocation of Network Access Quantity (NAQ) in a constrained access environment.
 - Introduction of revised generator performance standards.
 - Review of operating standards (e.g frequency control, system security)
- Due diligence of the South West Interconnected System (SWIS) power transfer limit equations.
- Technical support and negotiation of Generator Performance Standards for a 600MW wind farm and associated HVDC grid connection in South Australia.
- System Analysis and Solutions (SAS) Area Manager at Western Power. Responsible for the oversight of all group activity, including:
 - Assessing the existing steady state, dynamic and transient performance of the power system to ensure that it continues to operate within a manageable technical envelope.
 - Evaluating the connection of larger new entrant generation and loads to the network to ensure connection can be accommodated in a safe manner, governed by relevant performance standards and Technical Rule requirements.
 - Developing engineering scopes of work and estimating the capital costs for new entrant connections.
 - Feasibility assessment and concept design for the Generator Interim Access (GIA) tool.
 - Developing power system transfer limit equations for use by the system operator for planned and unplanned system conditions, as well as providing system operator advice regarding emergency management of major incidents.
 - Developing system wide special protection and coordination schemes including high speed generation runback, under voltage load shedding and over / under frequency management systems.
 - Assisting with generator commissioning programs, validation of model parameters, and establishment / monitoring of generation compliance programs.
 - Monitoring system wide power quality through high speed recording devices and investigating sources of unacceptable harmonics and other power quality related issues.
- Provision of subject matter expertise to the Western Power's Regulatory team and Public Utilities Office (PUO) including:
 - Implications of adopting aspects of the National Electricity Rules on the Wholesale Electricity Market and required amendments to suit Western Australia.
 - Development of transitional provisions for connection agreements, including generator performance standards.

- Introduction of new power system security rules for the WEM.
 - Impact of constrained access on existing and new generators in the WEM.
 - Review of power system frequency operating standards for the WEM.
 - Review of the reliability standard for the WEM.
- Seconded into the Electricity Market Review for the Public Utilities Office in WA for a period of 12 months as a Project Lead and subject matter expert on network connections and access policy reform.
- Various Principal Engineer and Planning Specialist roles for Western Power, AEMO and NEMMCO:
 - Numerous generation, load and interconnector power system studies (steady state and dynamic) in support of new entrant connections to the NEM (more than 3 GW).
 - Real time incident investigation into oscillatory, voltage and dynamic alarms in the control room and preparation of control room advice. Development of High Speed Monitor specifications for NEM wide role out in the HSM Project.
 - Delivery of Psymetrix Stage 2 (real time oscillatory stability assessment tool) into NEMMCO control room. Project lead for DSA Stage 2 dynamic stability benchmark tests of PSS/E against Powertech TSAT package, for NEMMCO control room use.
 - Technical review of black start procedures for generators in the WEM and NEM and development of HV line energisation procedures when critical network elements are out of service

MARKET MODELLING:

- Technical advisor to the Western Australia Public Utilities Office for network constrained access market modelling activities.
- Performed the following in various Principal Engineer and Planning Specialist roles for Western Power, NEMMCO and AEMO:
 - Time sequential market modelling of the National Electricity Market including detailed representation of generation and load, interconnectors, loss equations, generator bidding behaviours and constraint equations.
 - Simulation studies in support of the National Transmission Network Development Plan (NTNDP) and the Annual National Transmission Statement (ANTS).
 - Provided subject matter expertise and quality control for time sequential market modelling for the Wholesale Electricity Market.
 - Development of constraint equations for market simulation purposes and review of constraint equation formulation for dispatch and pre-dispatch systems.
 - Development of detailed cascaded hydrological models and other generating systems using Prophet. Benchmarking and back casting studies to validate model performance.
 - National Electricity Market and Wholesale Electricity Market Transmission congestion assessments and cost of congestion analysis. Preparation of reports about network utilisation and incidence of constraint binding, generator profitability, hydro water usage, market pricing and cost of loss.
 - Development of augmentation proposals and creation of representative constraint

equation sets. Net market benefit and value of customer reliability analysis for numerous projects.

- Development of market driven new entrant generation models for a range of economic scenarios. Analysis of generator behaviour in response to market outcomes, constraint equation formulation and fuel source restrictions.
- Reliability investigations including assessment of drought in Eastern Australia on supply reliability to the NEM. Project manager for the 2006 recalculation of NEM Minimum Reserve Levels (MRLs).
- Cost of constraint analysis in support of Regulatory Test assessments and routine assessment of the cost of Victorian constraints in the NEM as part of preparation of the Victorian Annual Planning Report.

TRANSMISSION NETWORK PLANNING AND REGULATORY SUBMISSIONS:

- Leadership and Principal Engineer support to a team of transmission planning engineers in Western Power, responsible for:
 - Preparation of the transmission capital expansion regulatory submissions.
 - Preparation of transmission content for the Annual Planning Report.
 - Development of long term (25 years) network development plans.
 - Detailed justification and business cases for individual projects ranging up to \$250M. involving reinforcement of substations, transmission reinforcements from 22kV to 330kV, installation of static and dynamic reactive plant. Detailed financial analysis including net benefit assessments.
 - Development plans for future stages of the 330 kV Mid West Energy Project including staging options, wood pole retiral, potential market benefits from new generation connections.
 - Risk assessment and development of emergency operating plans following Muja BTT1 490 MVA transformer failure.
 - System operational advice including summer readiness, reactive reserve, system incidents and fault level management. Preparation of control room advice including network emergency mitigation measures in response to extreme demand and bush fires.
 - Providing advice to Asset Managers regarding plant specifications. Assist asset management staff creating strategies for substation primary equipment, wood pole and lattice tower structures.
 - Development of risk based planning methods and guidelines.
 - Preparation of Technical Rules exemption requests for Regulator consideration.

INDUSTRY PARTICIPATION:

- CIGRE - Australian Panel APB4 member (HVDC and Power Electronics) – (2013-2016).
- CIGRE Paper - C2_102_2014, "Experience in the Application of Dynamic Transmission Line Ratings in the Australian and New Zealand Power Systems" (2014).
- CIGRE - Joint Working Group C4.B4.C1.604 member (Influence of Embedded HVDC Transmission on System Security and AC Network Performance) – (2012-2013).