GREG H. THORPE
EXECUTIVE DIRECTOR

Bachelor of Engineering (Elec)
Monash University, Melbourne, Australia

Grad Dip Management
Deakin University, Victoria, Australia

Professional Certificate in Arbitration and Mediation
University of Adelaide

PRIOR PROFESSIONAL HISTORY

2008 – current	Foundation Executive Director of Oakley Greenwood Pty Ltd (OGW)
2001 – 2008	Vice President and Australian head of the energy practice of Charles River Associates Incorporated, a NASDAC listed multinational economics and business consulting firm
1997 - 2001	Associate Director for the National Electricity Code Administrator, NECA.
1993 -1997	Manager of Codes and Rules for the Victorian state electricity market
1985 – 1993	Pre-Dispatch Engineer and prior engineering roles within power system operations for State Electricity Commission of Victoria
1976 - 1995	Engineering project roles within System Operation and Transmission Planning
Pre 1995	Graduate engineering project roles for Australian Department of Defence

OVERVIEW

- 40 years experience in electricity and gas network sectors
- Extensive Australian and international strategic and policy advisory experience. Major focus on industry reform, governance and commercial relationships. Deep experience in all three Australian market reform initiatives (National Electricity Market, the Western Australian market and the nascent Northern Territory market).
- Management and engineering roles responsible for technical, regulatory, operational and design functions for the reliable and economic functioning of electrical power systems
- Member:
  - Panels in Australia and Singapore for disputes under electricity and gas market rules
  - Arbitration and Mediation Panels of Kuala Lumpur Regional Centre for Arbitration
  - Australian panel for Electricity Markets and Regulation of CIGRE (Study Group Australian C5)
  - NBN Co Special Access Undertaking arbitration pool
  - South Australian management committee of the Australian Institute of Energy

RELEVANT EXPERIENCE

Policy and Strategy

Mr Thorpe has worked extensively on strategy and policy questions for governments, regulators and commercial players in the energy sector, his focus has been on electricity and he has applied his experience there to the gas sector also. He has developed policy options and facilitated board and executive planning sessions. As an advisor, his clients in Australia have included:

- in the gas sector, he has advised stakeholders and market authorities about alternative directions for detailed market design mechanisms and for expanding short term commercial arrangements to longer term. He has assisted a major player in oil and gas assess opportunities to monetise gas reserves in the electricity sector. He has also developed organisational structures for government agencies as they disaggregate within and across electricity and gas interests;
- for market authorities in New Zealand, a comparison and associated recommendations for possible change to electricity market design in New Zealand;
- the design of a competitive market framework for wholesale trading in Australia's Northern Territory;
- for regulators and government agencies such Australian Energy Market Commission/Standing Council on Energy Resources (previously Ministerial Council on Energy) and the Australian Energy Regulator as they examined NEM region pricing boundaries, treatment of transmission losses, market power, demand side participation, generation reliability standards and tariffs;
- established market participants considering corporate transmission policy, market design sustainability, participation of wind and ancillary services;
- government and businesses in Western Australia (including Minister of Energy, IMO, ERA and market participants). Contributions included review of the conceptual design of initial market proposal, market advisor in relation to financial standing of the then dominant state owned generator, generation planning criteria and revisions to balancing market design; and
- new entrants examining market entry strategies, detailed market design (including market start up and major design He has acted as market advisor to investors on mergers and acquisition prospects, strategic positioning and governance.

Internationally he has acted as industry subject matter expert to Malaysian government authorities assessing approaches to governance and policy making arrangements and advised government authorities in South Africa, Alberta (Canada) and New Zealand. Through a network of associates he has advised businesses on market strategy and valuations. For a major Asian based utility Mr Thorpe reviewed and recommended change to the form and level of generation reliability standards.

Earlier as an executive within regulatory/ market administration authorities he managed and designed governance principles and practices, stakeholder consultation and management policies.

Competitive and Regulated Market Design

Mr Thorpe has made major contributions to design of electricity markets and for gas, in particular for:

- dispatch and pricing to balance economic incentives and reliability/security within net and gross pools based on energy-only principles and day ahead markets with balancing regimes;

- third party access conditions for large and small (embedded generation);
- managing transmission connection and congestion impacting market access;
- interfaces between system operations and market trading;
- supply demand balance forecasts from 10 years to the next few hours;
- emergency operations; and
- governance & rule amendment mechanisms.

He is a member of the Australian panel for markets and regulation of the international industry organisation, CIGRE (www.cirge.org). Within CIGRE he has collaborated with international peers on investigations of drivers for reform, an extensive comparative assessment of capacity remuneration mechanisms, interactions between generation and transmission and the integration of new technologies and policy drivers for major changes to competitive structures (international convenor).

Industrial Reform

Mr Thorpe has direct experience of industry reform from within a near monopoly state-owned and vertically integrated utility as it became part of a fully disaggregated, unbundled and privatised group of companies operating within a competitive market.

The reform evolved over several years and trialled different structures and market designs. Mr Thorpe was a member of a key internal task force designing and managing the transition and was an executive within the initial regulatory regimes of both state and national markets.

Industry Governance

Mr Thorpe has managed and advised on governance and stakeholder consultation processes for formal rule amendments for over 20 years in Australia and internationally.

He has held executive positions in state and national market institutions where he developed the substance of amendments to market and regulatory rules. He has managed the day to day operation of stakeholder forums to consider and make rule amendments and subsequent briefings and submissions to regulators

Network Access

Mr Thorpe has made substantial contributions to the design of access arrangements working closely with economic and legal advisors. His work has included:

- for regulatory bodies, designing and assessing mechanisms to manage and price transmission network congestion in competitive electricity markets;
- assisting a significant Australian business negotiate for a precedent setting connection to a remote location on a major transmission line where the existing rules around confidentiality and cost allocation were leading to inefficient outcomes;
- advising network businesses response to regulatory obligations and policy makers considering enhancement to rules and codes of practice and related technical standards that may form barriers to entry or unnecessarily add cost;
- developing a Code of Practice for embedded generation and development of technical standards for connection of a range of generating technologies.

Valuations and Quantitative analysis

Mr Thorpe has led and been part of teams preparing valuations of assets and forecasts of prices. Analysis is commonly directed to informing decisions and advice about entry/exit and refurbishment of generation facilities, based on costs for fuel and plant and future market revenue. External policy including for carbon pricing, renewable and efficiency objectives diversity of supply are accounted for.

Mr Thorpe oversees OGW's market modelling capability. Our modelling assignments typically involve strategically important projects including for the Australian Energy Market Commission (impact of the RET and market power), Western Australian energy policy and by private investors evaluating future market outcomes. Modelling has also supported state governments considering fuel policy and tariff determinations.

Mr Thorpe has provided independent peer review of modelling analysis for the Australian Energy Market Operator, state government and the Australian Energy Regulator and for government policy bodies.

Dispute Resolution

Mr Thorpe is trained and accredited in Arbitration and in Mediation. He is a member of standing pools in Australia and Singapore available to hear disputes under market rules. He is also a member of the NBN Co arbitration pool available to hear disputes under NBN Co's Special Access Undertaking in the Australian telecommunications sector.

He has sat on the panels hearing disputes in both electricity and gas.

He has also provided expert statements to court and international commercial arbitration. He has assisted businesses in mediation and arbitration.

Monitoring and Surveillance

Mr Thorpe has a long history in monitoring and enforcement activities in competitive energy markets. He led the development and initial operation of monitoring in the Australian NEM – now a function of the Australian Energy Regulator and previously developed nascent arrangements for the Victorian market.

He subsequently provided consulting advice to the Australian Energy Regulator, Western Australian and New Zealand authorities on surveillance and compliance practices and compliance risk assessments of electricity and gas market rules.

He has led surveillance training the Philippines Energy Regulatory Commission, advised the Tasmanian state regulator about the design of monitoring and led a major project for the Alberta (Canada) Market Surveillance Administrator.

In 2000, together with US counterparts, he led the creation of an international association of market monitors, the EISG, which now has around 15 international members.

TECHNICAL

Electricity transmission network planning

Mr Thorpe started his career as a power system engineer and was member of the team responsible for EHV network planning in the state of Victoria.

Power system operations and cross border trading

He later held engineering and management roles within the system operations area of the Victorian state utility. His work covered economic use of fuel, generation and transmission to deliver efficient and reliable state power system and coordination with utilities in adjoining states.

Interconnection trading

Mr Thorpe's roles within system operations included managing engineering and commercial aspects of scheduling and trading of electricity and reserves with adjoining utilities.

He designed several scheduling, pricing and settlement mechanisms, in particular a transitional trading arrangement used as Australian states moved from separate state markets to a single market. Arrangements included features to ensure the benefits of interconnections could be achieved within the confines of different fuel and load legacy contracts and internal pricing within each utility. Cross border trading now occurs as part of the operation of the NEM.

Security, Reliability and Operations

Building on his experience as a power system engineer and market specialist Mr Thorpe was executive officer to the Reliability Panel for the Australian NEM for the first four years its existence. In this role, he drafted many of the proposals and managed analysis to establish the formal reliability settings applied by the market and system operator. As an advisor, he was project director assisting the Reliability Panel in its first Comprehensive Reliability Review and has advised a major Asian utility about its reliability standards. He also led advice to the Western Australian Independent Market Operator on which the market Planning Criterion (reserve margin) for the initial 5 years of the market was set. He was also a co-author of a review of capacity mechanisms around the world for CIGRE.

PROJECT ENGAGEMENT AND STAFF ASSIGNMENTS

2008 – current Executive Director, Oakley Greenwood

- Assistance to a major transmission business in relation to additional responsibilities for managing power system security
- Advisor to state government departments on strategic direction of generation investments
- Advisor to Australian Energy Market Commission on approaches to economic modelling for reliability
- Advisor to Australian Energy Market Commission on compensation regime for frequency control ancillary service
- Joint principal advisor (with Lantau Group) for amendments to the market design and operation of capacity mechanism in Western Australia
- Lead advisor to the (Australian) Northern Territory Department of Treasury and Finance to implement earlier recommendations to introduce competitive arrangements to the newly disaggregated local electricity sector
- For ElectraNet (major transmission network service provider in South Australia) project director for development of a commercial framework for grid connected energy storage in the Australian NEM
- For the New Zealand Electricity Authority: an assessment and opinion on the merits of changes to the NZ wholesale market and in particular options to align with the Australian NEM – see https://www.ea.govt.nz/dmsdocument/19226

- For the Australian Energy Market Commission, external review of impact on generation sector of a proposal to amend the rules of the Australian National Electricity Market to significantly amend the principles for network augmentation and pricing of network congestion (see http://www.aemc.gov.au/Markets-Reviews-Advice/Optional-Firm-Access,-Design-and-Testing)
- For a major market participant, advice on the impact of options for reform of the Wholesale Electricity Market in Western Australia arising from the government's Energy Market Review (see http://www.finance.wa.gov.au/cms/Public_Utilities_Office/Electricity-Market_Review/Electricity_Market_Review.aspx
- Briefing to an international oil and gas business on operation of LNG within the Victorian gas market
- Briefing on vested operation of Australian hedging contracts for South Korean stakeholders (in conjunction with The Lantau Group of Hong Kong)
- For the Energy Supply Association of Australia: analysis of the potential scale and regulatory implications of self-sufficient distributed generation to supply edge of grid communities
- Project director and lead advisor to the (Australian) Northern Territory Utilities Commission on the design of a wholesale electricity market

  see http://www.utilicom.nt.gov.au/Newsroom/Lists/Posts/Post.aspx?ID=174
- For the Energy Supply Association of Australia: analysis of the implications of reduced demand and high renewable investment on generation assets in the NEM and Western Australian WEM published)
- Advice on ancillary services within the Philippines electricity market (in conjunction with The Lantau Group of Hong Kong)
- For a major Asian based oil and gas business: leading the economic and commercial component of a feasibility study for development of a LNG terminal in Asia
- For AER: external review of regulatory test for transmission investment between NEM regions prepared by transmission planning entities
- For Western Australian IMO: assessment of compliance risks and impacts of a major revision of market rules to introduce competition into market balancing and ancillary services
- Quantitative analysis of NEM market forecasts as part of proposals for management of gas resources and mining proposals
- Assessments of likely requirements of gas for power generation as part of Energy Quest Pty Ltd 2013 forecast (www.energyquest.com.au)
- For a major Asian utility, a comprehensive review of international practices in management of generation reliability
- For AEMC: advisor to Power of Choice Review of participation of demand side in the NEM focussing on integration with the spot market and facilitating access of third party service providers
- For a major participant in the Australian NEM: developed a paper on the commercial sustainability of the NEM market design in the presence of changing demand and external policy initiatives. The paper highlighted risk allocation as a key driver of design
- International subject matter expert for options for future governance in the Malaysian electricity sector

- For a major participant in the Australian NEM: developed a paper on the commercial sustainability of the NEM market design in the presence of changing demand and external policy initiatives. The paper highlighted risk allocation as a key driver of design.
- Dispute resolution matters:
  - Testimony and preparation of independent expert reports to:
    - Federal Court in AER case against a generator in relation bidding behaviour see http://www.austlii.edu.au/au/cases/cth/FCA/2011/991.html
    - International commercial arbitrations on issues around power purchase agreements: 2009, 2014, 2015, 2016
    - Dispute under gas market rules in relation to a force majeure claim
    - Commercial arbitration in relation to contract interpretation relating to transmission (report only)
  - Member of (five) panels hearing disputes under National Electricity Rules see http://www.aer.gov.au/content/index.phtml/itemId/672130 and one in gas
  - Member of the arbitration panel for disputes within the electricity market of Singapore
- Assistance to a major vertically integrated market participant to review and amend its corporate position on transmission within the NEM – this participant operates in both generation and retail segments and was keen to establish a credible long term policy position
- Assistance to several investors and potential investors and financial institutions to forecast future commercial outcomes in the NEM
- Advice to the Australian Energy Market Commission in relation to the impact of renewable and carbon policies – investigation under referral from Ministerial Council on Energy
- Assistance to the Australian Energy Market Commission in relation to the high impact "shocks" to the market
- A lead advisor and joint author of the Verve Energy Review – a major review commissioned by the Minister of Energy in Western Australia to understand and recommend measures to correct the substantial adverse impact on the state owned generator Verve Energy. See https://s3-ap-southeast-2.amazonaws.com/wh1.thewebconsole.com/wh/1399/images/VerveEnergyReviewFinalReportAugust2009.pdf
- Assistance to the Independent Market Operator of Western Australia with design of amendments to the market rules to implement recommendations of the Verve Energy Review and aspects of the IMO market evolution plan see Background and MEP Team at http://www.imowa.com.au/mep-overview
- For the Australian Energy Market Operator and the Commonwealth Department of Energy Resources and Tourism appointed to Peer Review development of scenarios, data acquisition and modelling
- For the Australian Energy Market Operator and ElectraNet (Transmission Service Provider in South Australia) appointed to Peer Review quantitative analysis. See http://www.aemo.com.au/planning/0179-0177.pdf
- For the Philippines Energy Regulatory Commission – developed and led a week long training program on electricity market monitoring and surveillance

- Advice to a government agency on the application of scarcity pricing to water for an urban water authority
- Advice to Energy Commission of New Zealand in respect of market pricing at times of low reserve. The New Zealand wholesale market price is uncapped but the Commission had authority to dispatch a peaking station and retailers commonly called for voluntary reductions at times of stress resulting in suppressed prices which failed to fully reflect scarcity. As a result, investment signals were distorted. This project was part of a larger program and has now seen a proposal (by the new Electricity Authority) to introduce series of price floors to ensure scarcity signals are not distorted. See http://www.ea.govt.nz/our-work/consultations/priority-projects/scarcity-pricing-arrangements-proposed-design/
- For Transpower New Zealand, presented to the New Zealand Energy Commission in relation to assessment of the value of network investment in High Impact Low Probability situations. Transpower was seeking regulatory approval to reinforce the network supplying NZ's largest and most commercially sensitive city. The advice reviewed local and international practices for the valuing customer reliability and proposed a mechanism to benchmark the avoidance of regret arising from traditional approaches to setting network standards
- For the Energy Supply Industry Council of South Australia, development of a concept for managing reactive power entitlements and obligations in the NEM. This was a "think piece" that proposed separation of commercial accountability and physical responsibility for reactive obligations across the electricity supply chain to resolve long standing uncertainty and regulatory contention
- Assistance to the AER in interpreting the impact of proposals for climate change on network providers and generators
- Expert testimony in relation to a dispute under the Victorian gas market rules
- Assistance to a major business seeking a derogation to technical provisions of access standards for connection of a new power station
- Strategic and industry assistance on transmission regulatory and industry arrangements for a major greenfield power station investor in Australia seeking to monetise significant gas reserves. The generator was seeking to establish connection to existing infrastructure but well away from existing points of connection and was facing significant costs that could be shared with other proponents
- Review of the suitability of the Grid Code for a middle-eastern power system to accommodate higher levels of wind generation.

2001 – 2008 Vice President, CRA International/Charles River Associates). Head of Australia and New Zealand Energy practice from 2003

Assignments for CRA included business strategy and operational advice to investors, governments, regulators, retailers, generators and network managers within the NEM and internationally.

- Commercial valuation of Australia generation assets for international investors (confidential);
- Managing a benefit-cost analysis of changes to the standards for power system frequency in the Tasmanian region of the Australian market for the Australian Energy Market Commission (the Tasmanian region is connected to the remainder of the NEM by HVDC cable)
- Leading a review of the "top end" of the design of the gas market in Victoria to consider investment and scarcity pricing arrangements (published reports)

- Advice to a major grouping of participants in the Australian market about future transmission network planning arrangements
- Advice to the Energy Regulatory Commission of Philippines about ancillary service market design and related Grid Code provisions – appeared before Commission and mentored staff on-site. In this work, the market operator had proposed a major amendment to the design for ancillary services. Our team recommended amendments to the broader commercial and regulatory environment surrounding the proposal to protect against market power and extreme price outcomes given the then dearth of providers. The recommendations also proposed changes to the Grid Code to ensure consistency between the proposed ancillary services and grid code categories of services
- Advice to a network business about its investment strategy. This business was facing a major investment backlog due to funding restrictions and an ageing asset base and a very conservative regulatory planning standard
- Advice to a network business about impacts of changes to the zonal price boundaries within the Australian energy market. The business needed to understand the impact on revenues from the combination of customer tariffs and inter-regional hedges
- Directing multiple projects advising major energy industry groupings (including National Generators Forum – published report) within Australia about the effect of climate change initiatives
- For the Australian Energy Market Regulator, preparing an impact and risk assessment of market rules to assist the regulator's priorities for compliance monitoring
- Leading advice and undertaking quantitative modelling for the Reliability Panel of the Australian Energy Market Commission in relation to reliability mechanisms in the Australian electricity market. See http://www.aemc.gov.au/Market-Reviews/Completed/Comprehensive-Reliability-Review.html)
- Directing a project to advise the Commonwealth government's Energy Reform Implementation Group (ERIG) in relation to transmission issues (See http://www.ret.gov.au/energy/Documents/erig/Transmission_study_CRAinternational20070413115229.pdf). The ERIG recommended creation of new National Transmission Planner role for the market operator that was consistent with our recommendations
- Advising government authorities about governance and market rules in relation to participation of renewable and distributed generation and the impact on network businesses
- Executive project management support over 6 months to a small listed company specialising in renewable and remote electricity generation from natural gas, LNG, CNG and diesel
- Advising a large industrial customer during mediation of a dispute relating to electricity price in Australia
- Directing a project to implement the start-up prudential requirements for the Western Australia market
- Leading a project to design the (current) planning criterion or reserve margin in the Western Australian market
- Reviewing the business case for partial disaggregation of a state owned generation utility
- For Australian generators, a critique of proposals for the translation of previous market Code into statutory Rules as part of a major revision of governance of the Australian electricity market
- For market participants and market authorities, assessment of investment signalling in the Australian electricity market

- Leading a major review of pricing and management of transmission congestion for the Australian electricity market for the Australian Ministerial Council on Energy. The report included an option (developed by Prof G Read – Senior Consultant to CRA) for a novel congestion management regime that was trialled across one of the regional borders
- For the market surveillance authority of Alberta Canada, leading an investigation of market design and behaviour in connection with alternatives to transmission. The Alberta market had introduced several overlapping arrangements to manage network investment and congestion at the edge of the main network. The review recommended introduction of a network wide contracts designed to manage the market power that had been evident in the past
- Multiple projects relating to barriers to embedded generation for policy makers and industry associations including preparation of a Code of Practice for industry and proponents
- Review and refinement of ancillary service arrangements within the Australian electricity market
- For the then vertically integrated Western Power Corporation in Western Australia, directed a project to design an innovative flexible form of contract for purchase of new generation that accommodated possible, but uncertain market evolution
- A major review and costing of the then proposed market design within Western Australia (in 2003) – the design concept was implemented in 2006. Following that review he led the design and development of the interim Top Up and Spill trading arrangement between independent producers and the existing utility
    - Subsequently Mr Thorpe was a key member of the Verve Energy Review (2009-10) which was engaged to review market outcomes for the state owned generator. The recommended changes to vesting contracts and amendments/enhancement of the market as – implemented. A number of these changes were consistent with changes envisaged by the market operator. Mr Thorpe was subsequently engaged by the market operator to assist with the design of the amendments
- Detailed assistance to the parties to the "first of a kind" standby contract involving an electricity and fuel exchange between a utility and an IPP during market transition
- Leading a team examining the potential for enhancement to the competitive market for gas within Victoria. This review considered the detailed incentives for efficient investment and operations especially at times of low operating reserves
- For a generator association, directing a team assessing the economic impact of regulatory changes to renewable energy policy
- Review of technical requirements for connection for a network operator under a third-party access regime
- Critique of proposals for review of prudential guarantees for a market participant
- Assessment of participation of networks in the market, in particular issues surrounding risk allocation between regulated and competitive elements of the industry for an industry grouping
- Review of governance, including for Code change, policy setting and opportunities for industry self-management for an industry group
- For several potential investors, advice on commercial and technical modelling
- Directing a team advising on wholesale and retail pricing for government authorities in two states

- Advice to authorities in South Africa on market surveillance and grid code (Aus Aid engagement)

1997 – 2001 Associate Director, National Electricity Code Administrator (NECA), Australia

For NECA Mr Thorpe continued his earlier work in the design of the Australian National Electricity Market and operation of a state market when he moved to the National Electricity Code Administrator (NECA) prior to opening of the Australian market, in 1998. He was part of the foundation executive team. NECA was established as a key part of the market governance arrangements and was responsible for: market development and administration of associated Code amendments; monitoring, surveillance and enforcement; Reliability Panel; dispute arrangements; and several specific reviews. Key achievements and roles covered the following:

Market Monitoring and Surveillance

Executive responsibility for design, implementation and operation of market surveillance and Code enforcement. In 2005 this function was transferred to the Australian Energy Regulator.

Leading Australian participation as a foundation member of the international Electricity Inter-Market Surveillance Group (EISG) which now includes surveillance managers of markets in Australia, US, Canada and Asia

Reliability Panel

Mr Thorpe had executive responsibility for the Panel's operation for the first four years of its operation. Responsibility for the Panel was transferred to the Australian Energy Market Commission in 2005. Matters under the auspices of the Panel include the wholesale market price cap (VoLL), reliability standard and the power system frequency operating standard.

Mr Thorpe also led or played a key part in several important changes and developments in the NEM as it matured over the first years of operation including in respect of

- ancillary services – this work was led by the market operator and Mr Thorpe represented the NECA (the then Rules making body) and project managed the introduction of the extensive rule amendments to introduce the current spot markets for ancillary services
- system operator interventions in the market – the NEM design includes a safety net intervention mechanism in the event market mechanisms fail or are distorted and reliability of supply is threatened
- capacity mechanisms – during design of the NEM several reviews of different market designs to ensure sufficient capacity is brought to market have been assessed, for example capacity payments and reliability options – Mr Thorpe played key roles in a number of these
- the NEM Cumulative Price Threshold - this is a mechanism developed by Mr Thorpe to replace force majeure provisions in the initial NEM design that determine the conditions under which the relatively high wholesale market price cap should be temporarily lowered, for example due to extreme natural disasters. The mechanism is similar to one used in ERCOT (US)
- aspects of transmission pricing; and
- demand management

1994 – 1997 Manager Codes and Rules, Victorian Power Exchange

For the Victorian Power Exchange Mr Thorpe established and managed the secretariat function for the VicPool state market on behalf of the CEO – chairman of the representative participant committee charged with rule making. VicPool was the first fully functioning competitive market in Australia (and one of the first in the world) and operated from 1994 to 1998 when it was superseded by the NEM. The exchange operated under regulatory licence. In that capacity Mr Thorpe:

- Managed the detailed drafting of the initial rules and in many cases developed, approximately 40 amendments for major technical, economic and governance changes – note at this time there were very few templates on which to base the development
- Managed the on-going relationship with the state government regulatory for approval of amendments on behalf of the Pool Manager
- Convened the dispatch group for the National Grid Management Council (NGMC), and co-designed mechanisms subsequently adopted in the national market
- Conceived the design for a common operational interface between state utilities for "NEM 1". This was an interim national electricity market that operated between the initial NEM state regions for approximately 18months. He supervised development of the functional specification and test program

1992 – 1994 Manager Pool Rules, National Electricity (the corporation responsible for System Control and Transmission in Victoria, Australia)

Mr Thorpe managed the rule making process for internal utility trials of a range of variations on market designs. He briefed prospective bidders for the privatisation of utility assets on market and power system operations. He was also a key participant in "paper trial" of a market across several states.

Prior to 1992

Prior to 1992 Mr Thorpe held several managerial and engineering positions within the State Electricity Commission of Victoria. Key achievements and roles included.

- For a utility corporate competitive market task force, developing and conducting off-line and live trials of contract and spot market designs. In particular, Mr Thorpe designed key system control interfaces for trials including the bidding, scheduling, dispatch and interconnection agreements. He also developed and managed settlement functions for initial trials
- Contract administration of hydro entitlements (2,000 GWh p.a.), natural gas purchase and transport, interstate interchange (increased to 2000MW capacity) and utility transfer pricing. The function was subject to internal and external audit
- For system control, the design and specification of software for production scheduling and interchange reconciliation (three-state project manager)
- Developing and presenting principal analysis for energy replacement costs for a successful major insurance claim following a catastrophic power plant failure
- Short term technical and economic planning and operating policy setting for state power system including; production schedules, demand forecasts, maintenance schedules, fuel purchases and interchange coordination and settlement reconciliation
- Technical and capital works planning for 500KV – 66KV high voltage network, including energy, fault level, reactive management

- Immediately after graduating, Mr Thorpe was engaged in engineering project work for the Australian Department of Defence.