



CAU THAI PRINCIPAL CONSULTANT

Executive MBA
Aust. Graduate School of Management

Postgraduate Cert in Applied Finance
Macquarie Applied Finance Centre

Doctor of Philosophy (Management)
Aust. Graduate School of Management

Master of Engineering
(Electric Power Engineering)
University of NSW

Bachelor of Engineering
(Electric Power Engineering)
University of Technology Ho Chi Minh City

PROFESSIONAL HISTORY

2019 -	Principal Consultant, Oakley Greenwood
2008 - 2019	Manager Portfolio Strategy, Snowy Hydro Ltd
2001 - 2007	Senior Portfolio Strategist, Portfolio Strategy modeller, Snowy Hydro Ltd
1998 - 2003	PhD, ME research candidate, AGSM, UNSW
1995 - 1997	Electrical Power Engineer, Ho Chi Minh Power Company

OVERVIEW

Cau is a senior leader and energy market expert with more than 20 years working in the energy/utilities industry and with solid interdisciplinary expertise in energy market, power system engineering, optimisation, economics, business management and applied finance. He has extensive experience in providing advice on strategic directions, trading and investment opportunities in response to changing market structures, trends and energy policy (renewable energy, carbon emission).

Cau has been approved as an Independent Auditor of the Australian Energy Regulator's Retailer Reliability Obligation Auditor panel since 5 December 2019. Only an approved independent auditor can sign off a bespoke firmness methodology and the way it has been applied to an electricity contract.

Cau is the author of the book (in Vietnamese) titled "**Electricity markets: Fundamentals and special topics on Economics, Commercial Operations and Strategic Management**" and released in early October 2022. The book captures and generalises Cau's 27 plus years of researching and working experience in the electricity industry, most of which have been with the Australian energy markets. The English translation of a brief introduction, table of content and some expert's reviews about the book can be found [here](#).

Career Highlights

- Portfolio strategy and execution - achieved several outstanding performance years in terms of net revenue (EBITDA) and delivered financial KPIs in most other years since 2009

- Senior leadership - headed portfolio strategy, product development and analytics; created and built robust systems and processes for managing portfolio decisions and strategy; mentored and developed many junior professionals and engineers.
- Strategic leadership - initiated and successfully led many special cross-functional teams to provide inputs to corporate strategic plans, reports and presentations to the executive and board.
- Consulting - provided internal advice and strategic directions for changing market structures, trends and energy policy (renewable energy, carbon emission) based on modelling and analyses.
- Product development - led the development and developed many innovative energy products (financial derivatives & structures) and delivered to customers. The value of each of those ranges hundreds of thousands to multiple millions of dollars.
- Strategic planning & investment - involved and provided key portfolio valuation inputs and hedging/value maximising strategies to all potential and successful acquisitions and new investment of power plants and retail businesses at Snowy hydro since 2008.
- Creativity and originality - developed innovative solutions, energy portfolio optimisation model, game theoretical models and least-cost planning models to aid decision making and strategy formulation and saved millions of dollars consulting and software fees.

RELEVANT EXPERIENCE

Oakley Greenwood

Oakey Greenwood Pty Ltd is an energy consulting company that consists of experts for the energy and water industries.

Principal consultant

since July 2019

Responsibilities: providing expert advice in

- Energy market design and regulation;
- Energy portfolio/planning, investment and trading strategies; and
- Advanced energy market modelling and strategic analysis
- Independent Audit, Retailer Reliability Obligation

Clients include Federal and State government departments, Network service providers, Retailers, Investors and Traders.

Typical projects:

- Energy market design and regulation:
 - Reviewed as well as contributed to the design of many market design elements and rule change proposals related to dispatch, capacity/reliability and ancillary services in the context of increased penetration of variable renewable energy and storage.
 - Reviewed the code/rule drafting for those market design elements
 - Participated in stakeholder management and communication, including presentation of market design to stakeholders, questions and answers.
- Energy portfolio/planning, investment and trading strategies:

- Reviewed and developed strategic as well as commercial implications/insights for an investor on investment opportunity of battery storage or gas fired plant
- Analysed market behaviours of some major players and implications on trading strategies
- Contributed to an energy technology policy development via providing expertise in researching storage technologies and costs, calculating the levelised cost of energy of various storage technologies, and developing stretch goals for the utility scale storage technologies.
- Developed a conceptual framework for reformulating portfolio strategies for the energy companies and stakeholders in energy industry to prepare for the transition towards a decarbonised future.
- Advanced energy market modelling and strategic analysis:
 - Reviewed modelling methodologies, inputs assumptions and reasonableness of outcomes (for a RIT-T test) of a major transmission investment project.
 - Developed optimisation models for storage investment analyses and unit commitment models for calculating different types of ancillary service costs.
- Independent Audit, Retailer Reliability Obligation
 - Reviewed firmness methodologies of many complex and non-standard bespoke contracts and their resultant firmness factors

Snowy Hydro Ltd

Snowy Hydro Limited is a major energy company in Australia that owns 5500 MW generation (4100 MW hydro, 1287 MW gas, 136 MW diesel) and serves above 1 million electricity and gas customers.

Manager Portfolio Strategy

Jan 2008 - May 2019

Senior leadership role: head of portfolio strategy, product development and analytics to maximise value of Snowy hydro assets, reporting directly to the Chief Commercial Officer (from March 2018) and to the Executive Officer - Portfolio, Risk Management and Product Development.

Responsibilities:

- Manage the short to medium term energy hedge book and the uncertainties of assets and markets. The book values at roughly \$300 mil EBITDA per annum for 3 years;
- Develop innovative products to match customers' need with asset capabilities as well as to hedge extreme physical risks, and coordinate with Trading team to deliver to customers;
- Provide insights and foresights to Investment and Business Development teams on impacts of potential new strategic assets/products to portfolio values (flexibility, synergy & diversification)
- Make recommendations on the medium to long term portfolio structure and strategic direction based on market changes and active portfolio management to the Executive Officers; and
- Oversee the energy market fundamentals and portfolio analytics team to create and improve strategic models, analytical tools and reports to support portfolio decisions and strategy.

Achievements:

- Performed outstanding portfolio management to achieve exceptional years in terms of EBITDA/net revenue: FY 2017/2018 (highest record), FY2010/2011 and FY2012/2013; delivered above financial KPIs in most other years.
- Created robust processes and built systems for managing portfolio decisions and strategy. These were recognised by Ernst & Young's Utilities Group that "current arrangements already enable an optimised portfolio" after a thorough internal audit of portfolio strategy.
- Initiated and revised asset allocation method/strategy to restructure portfolio of physical assets (hydro, gas generators), products (financial derivatives, structures), spot generation and retail products (residential and C&Is) whenever SHL acquired a new asset or changed large contracts.
- Sold/transacted numerous innovative and customised energy products (financial derivatives, structures), with the support of Risk, Pricing, Trading and C&I Business Development Managers. The value of each of those ranges hundreds of thousands to multiple millions of dollars.
- Produced many complex decisions, considering return vs risk and inputs from both market and assets, on contract types, term (up to 3 years of duration), volume (up to 100 MW) and prices and directed them to contract trading team for transaction. These helped deliver financial KPIs.
- Developed process and controlled the uncertain and limited hydro energy allocation over a financial/water year by setting the marginal value of water. This is the key influence into spot trading decisions at SHL.
- Invented an approach to determine the cost of firming renewable energy using flexible plants (hydro, gas, pumped hydro) so as to select the best renewable projects for SHL portfolio in the 888 MW solar and wind PPA's in 2018. This saved SHL hundreds of thousand \$ of consulting fee.
- Proposed the economic evaluation approach that was applied in the pre-feasibility study and the final investment decision of the Snowy 2.0 project (2000 MW pumped storage) in 2017 & 2018.
- Provided key portfolio valuation inputs to the successful acquisition of Lumo Energy (an energy retailer, \$605 mil) and Colongra Power Station (OCGT, \$234 mil) in 2014.
- Initiated and successfully led various special crossfunctional teams to provide important inputs to corporate strategic plans, reports and presentations to the executive and board. Examples include
 - Road map of future decision support systems for Portfolio & Trading stream in the digital transformation at Snowy hydro, with field trips to software vendors (GE Digital, Dassault Systèmes) and major utilities in US, Canada and France (Jan-April 2017);
 - Impact of oil price shock to energy supply industry and SHL's strategic response (Feb 2015);
 - Strategic recommendations for a possible disruption of energy industry in future (Dec 2014);
 - Strategic positioning in environmental markets (CPRS) from the active portfolio management perspective (2010-2012).

- Founded and moderated two interest groups - **Future energy** about trends, impacts and opportunities of new energy needs, technologies, policies and business models onto the energy supply industry, and **Prescriptive Analytics**, for those who love to turn data into knowledge, insights and decision options. They engaged more than 100 and 20 employees/professionals as members of respective groups to discuss and share information, skills and experience.
- Mentored and developed many junior professionals and engineers via on the job training, teamwork and internal lectures. This promoted trust and productive working environment.

Senior Portfolio Strategist & Portfolio Strategy Modeller

Aug 2001 - Dec 2007

Energy market expert roles: Strategic Market Analysis, development of Portfolio strategic models and strategic advice to the Executive Officer - Portfolio, Risk Management and Product Development to support decisions about short- and long-term value creation from electricity and other related markets.

Responsibilities:

- Analyse and understand the business portfolio of assets and financial contracts and its interactions with the market environment
- Develop, validate and improve models, analytical tools and innovative products;
- Research, model and monitor strategic behaviour of participants in the National Electricity Market
- Provide accurate inputs for other decision support systems
- Seconded to support trading group for 3 months: solid practical experience of how the energy forward contract and spot markets operate

Key Achievements:

- Provided internal advice based on modelling and analyses on important short to long term portfolio and business decisions. These saved at least half a million dollars in consulting and software fees each year.
- Set up and headed the market analytics and strategic modelling functions.
- Created and maintained a **portfolio optimisation model** (applicable to any energy company) and applied to optimally construct overall energy portfolio of physical assets, forward contracts, spot, renewables, different fuels (hydro, gas, etc.).
- Developed **least cost planning models** considering the renewable energy target (MRET) and emission trading (CPRS) and used them to provide scenario-based analyses on new capacity/entrants for the strategic corporate planning tasks.
- Designed and developed **game-theoretical models** (Nash Cournot equilibrium models) for strategy analysis and development, e.g. the impact of capacity, cost and forward contract on the competitive advantage and strategic behaviour of Snowy Hydro and its competitors.
- Devised **Strategic Market Analysis framework** on all aspects of spot, forward contract and investment/capacity markets, e.g. price, volatility, demand, supply, transmission, market structure and strategic behaviours and used it to provide inputs to portfolio decision making and strategy.

EDUCATION

- *Executive MBA*, Australian Graduate School of Management (AGSM), 2010 - 2012
 - Distinction average & Distinction for the Strategic Management Year
- *Postgraduate Certificate in Applied Finance*, Macquarie Applied Finance Center, 2008 - 2010
 - Courses done: Investment, Financial Instruments, Corporate Finance, Applied Portfolio Management, Risk & Portfolio Construction
- *Doctor of Philosophy in management*, AGSM, 2000 - 2003
 - Thesis: "Analysing tacit collusion in oligopolistic electricity markets by a co-evolutionary approach"
 - Focus: Strategic behaviour in electricity markets, Operations Research
 - Minor: industry organization
- *Master of Engineering (by research) in electric power engineering* University of New South Wales, 1998 - 2000
 - Thesis: "A new evolutionary optimisation method for the operations of power systems with multiple storage resources"
 - Focus: power systems optimisation (planning, operations & economics)
 - Minor: risk management for power systems
- Bachelor of Engineering (1st class honours) in electric power engineering, University of Technology Ho Chi Minh city, Vietnam, 1990 - 1995
- Leadership development
 - Snowy Hydro's Senior Leadership Development Pathway, by Octant Foundation
 - Snowy Hydro's Leadership Development Program for senior managers

AWARDS

- AGSM PhD scholarship, 2000-2003
- Runner-up, Best Paper Presentation Award, PhD conference in Economics and Business, Australian National University, 2002
- Australian Development Scholarship for the masters by research degree at UNSW, 1998-2000
- University medal, BE, University of Technology, Ho Chi Minh city, 1995

COMMUNITY CONTRIBUTION

- Guest lectures, invited talks, research co-supervision and industry mentoring to universities, both in Australia (UNSW, University of Sydney) and Vietnam (Ho Chi Minh University of Technology, Ho Chi Minh University of Technology and Education).
- Visiting Fellow, School of Electrical Engineering & Telecommunications, UNSW.