

Ronald R McNamara

RESUME

WORK EXPERIENCE:

First Principles Economics (USA)
Economic & Strategy Consulting
2009 – Present, Managing Director

Synergies Economic Consulting (AUS)
Economic Consulting
2020 – Present, Affiliate

Saracen Energy Advisors, LP (USA)
Commodity Trading Advisor Fund, Managing Director

Bear Energy (USA)
Energy Trading and Asset Management, Director

Midwest ISO (USA)
Vice President Market Management & Chief Economist

American Electric Power (USA)

Enron (USA)

Duke Energy International (AUS)

Queensland Competition Auth. (AUS)

Putnam, Hayes & Bartlett Asia-Pacific (New Zealand)

Electricity Market Company, Ltd. (New Zealand)

ACADEMIC SECTOR EXPERIENCE:

Queensland Univ. of Technology (AUS)

University of Auckland (New Zealand)

Northeastern University (USA)

Bentley College (USA)

California State University (USA)

Colorado State University (USA)

EDUCATION:

PhD & MA, University of California, Davis

MA, University of Rhode Island

BA, University of California, Irvine

CONTACT:

Tel: 01.281.222.4574

Email: ron@fpeconomics.com

OVERVIEW:

To the best of my knowledge, I am the only person in the world to have successfully designed, implemented, operated, monitored, and regulated two separate wholesale electricity markets (New Zealand and the Midwest ISO). Have successfully traded all the organized electricity markets in the US. Direct experience working with, and for, electricity market operators, electricity system operators, vertically integrated regulated utilities, government agencies including regulatory bodies, international financial institutions, government-owned corporations, state-owned enterprises, electric co-operatives, independent power producers, power marketers, investment banks, proprietary traders and hedge funds. Have been involved in energy sector projects in 30+ countries (North America, Central America, Asia, Asia/Pacific, Africa and Europe) at all stages of economic development. Experience spans physical energy market design, implementation, operation, regulation and financial contracting, hedging, trading and risk management. Creative, multi-disciplinary, collaborative, global experience and perspective, C-level management experience, Board reporting, Board Committee responsibilities, commercial and regulatory strategist.

CAREER HIGHLIGHTS:

- Founder/owner of First Principles Economics a boutique economics and strategy consulting firm specializing in energy and commodity markets.
- Successfully represented clients in contract disputes of over \$100 million.
- Responsible for (1) separating fundamental analysis from risk management and then (2) creating, staffing and managing a fundamentals group to support power (forward and cash), financial transmission rights, natural gas, crude oil, refined products, emissions, and coal trading strategies for a \$500 million Commodity Trading Advisor fund.
- Officer responsible for the design of the Midwest ISO electricity market. With 131,000 MW of generating capacity, 116,000 MW of peak load and 97,000 miles of transmission lines covering 15 Midwestern States and the Province of Manitoba, the Midwest Electricity Market, upon startup on April 1, 2005, was the largest geographical electricity market in the world.
- Developed an entirely new business unit to operate the electricity market within the Midwest ISO. Created the organizational structure, staffed the unit in 14 months, and then managed the 59-FTE department responsible for:
 - Energy, ancillary services and transmission service settlements of approximately \$US2 billion per month with an accuracy of greater than 99%; running the monthly and yearly financial transmission rights market, operating the day-ahead market, Day Ahead and Real Time Market pricing, market design, analysis, regulatory policy related to the electricity markets, and strategic planning.
- Co-designed, implemented and operated the first wholesale electricity market in the world (New Zealand) and then restructured the methodology by which electricity reliability standards are developed and implemented (New Zealand).
- Successfully predicted the results of the implementation of new market rules causing a profitable delay in investment in the electricity market (Australia).
- Completely changed corporate regulatory strategy - with a successful outcome for the company - for a \$A450 million pipeline (765 km) linking the Bass Strait gas field to Sydney, Australia.
- Changed corporate commercial and regulatory strategy regarding power markets for two Fortune 100 companies (Australia and the United States).
- Led a team that completed the first analysis and subsequent investigation of monopoly activities for all thirteen ports in Queensland, Australia.
- Developed models for a wholesale water market, a global timber exchange, a national fish quota market, and a national emissions market. (New Zealand)
- Provided expert witness testimony on electricity market design/operation in US Federal and State proceedings as well as in New Zealand and Australia.

SKILLS/EXPERTISE:

- Electricity, Energy, and Emissions Markets,
- Expert Witness Testimony,
- Corporate Strategy, Regulatory Strategy, and Management of Regulatory Proceedings,
- Electricity Transmission Pricing,
- Economic and Financial Analysis.

FIRST PRINCIPLES ECONOMICS, LLC**MANAGING DIRECTOR**

2009 - PRESENT

Clients have included: ACN, Active Power Investments, Alliant Energy, Ampjack, Asian Development Bank, Aspire Commodities, Barnes & Thornburg LLP, California ISO, DC Energy, CRIE/CDMER, Deutsche Bank, Dynege, Economic Regulation Authority of Western Australia. Électricité de France, EnergyWallet, Eolian, First Energy, Frost Brown Todd LLC, Indianapolis Power & Light, Invenergy, Manitoba Hydro International, MinterEllison (Australia), Modern Energy, National Electric Power Regulatory Authority (Pakistan), Skadden Arps Slate Meagher & Flom, Stanwell Corporation (Australia), Tether Energy, Transmission Corporation of Nigeria, USAID, US Dept. of State, Vitol, Volta River Authority, World Bank, Western Electricity Coordinating Council, Xcel Energy.

Projects have included: testifying before the Federal Energy Regulatory Commission on matters in PJM and the Midwest ISO, developing the energy strategy for an integrated (natural gas, wind, and biomass) generation project, integration of building intelligence into wholesale electricity markets, review of the Ghana Electricity Market Rules, development of a Power Purchase Agreement for the Volta River Authority, review of the West African Power Pool Market Rules, review and analysis of proposed Nigerian electricity market rules, development of pricing strategy for information on ship movements, evaluation of New Zealand and Australian natural gas and electricity markets for possible entry by a retail provider, intelligence on operation of MISO, CAISO, ERCOT, ISO-NE, NYISO, PJM and Ontario electricity markets, development of a cost/benefit strategy for implementation of a new wholesale market, estimating the variable operations and maintenance costs for all generators in an RTO footprint, analysis of potential market/price manipulation for ERCOT futures contracts traded on the Intercontinental Exchange, litigation support for lawsuit seeking damages against market manipulation under the Commodities Enforcement Act, counterparty support and expert witness testimony in a multi million dollar dispute of a 20-year power purchase agreement for wind generation in MISO that went to arbitration, arbitration support for dispute involving wind generation in SPP, estimating the implicit value of generation capacity for integrated utilities. Developed/implemented strategic plan for a company using newly patented technology to raise electric transmission towers. Assisted a startup company that is based on minimizing the cost of retail electricity to consumers. Development of a strategic roadmap to guide corporate development and product/service offerings for a North American RTO/ISO. Provided expert witness testimony regarding the proper functioning of the CAISO market pursuant to FERC investigation and penalty. Developed course material and presented a week-long course on the design, implementation and operation of regional electricity markets. Evaluated the efficacy of draft electricity market reforms in Georgia (country) and whether they met the requirements of the European Union's 3rd Energy Package and the Energy Community Treaty. Evaluated how the implementation of those reforms would impact existing: (1) power purchase agreements with Turkey, Armenia and Azerbaijan, and (2) operational agreements with Russia. Advised the electricity regulatory authority in Pakistan on the appropriate determination of the wheeling fee. Developed the strategy for determining the Wheeling Fee for the Ethiopia-Kenya-Tanzania (EKT) transmission highway. Assisted with the development of an algorithmic-based trade process for transacting virtuals in CAISO, PJM, NYISO and ISO-NE.

SARACEN ENERGY ADVISORS, LP**MANAGING DIRECTOR, FUNDAMENTALS**

2008 – 2009

Responsible for creating, staffing and managing a small team of analysts that supported trading across all energy related commodities - forward and cash power, financial transmission rights, natural gas, emissions (NO_x and SO_x), coal, and some crude oil and refined products – for a \$500 million Commodity Trading Advisor fund. Separated fundamental analysis in support of trading from risk analytics. Team produced: (1) daily natural gas supply/demand and storage report; (2) daily and 7-day supply/demand and price forecasts for all RTO/ISO power markets in the Eastern Interconnect; (3) periodic reports on coal and emissions market fundamentals. Provided fundamentals support (entry, exit and duration) for trading hypotheses and on going positions. Provided macroeconomic, regulatory and legislative analysis related to trade hypotheses and existing positions. Member of the Risk Committee. Direct report to the CEO.

BEAR ENERGY**DIRECTOR**

2007

Provided strategic advice pertaining to the power assets Bear Energy acquired with the \$512 million purchase of tolling capacity and full requirements power supply contracts. Assets were spread across the country and were located in organized markets (CAISO, MISO, PJM and NYISO) as well as in non-RTO regions. With over 4,500 MW of capacity in the CAISO, Bear Energy was one of the largest

non-utility generators in the state and I was involved in developing a strategy for disposing of the assets. Led effort to become a partner in the Big Stone II coal project in South Dakota following the departure of some initial participants. Analyzed and submitted bids for transmission capacity in the Canadian Maritimes.

RON MCNAMARA CONSULTING**OWNER**

2006 – 2007

Provided consulting services, including expert witness testimony to the Federal Energy Regulatory Commission, on matters related to electricity market design, operation, implementation, regulation, and oversight. Clients included Indianapolis Power & Light, Constellation Energy, Cleveland Cliffs, Site Controls and the World Bank (where I advised the Energy Regulatory Commission of the Philippines on market monitoring/manipulation mechanisms).

MIDWEST ISO**VICE PRESIDENT AND CHIEF ECONOMIST**

2003 – 2006

Initially I was the Officer responsible for the conceptual design and regulatory approval of the Midwest ISO electricity market. Additionally, I was responsible for the regulatory strategy, including the initial filing and all subsequent related filings with the Federal Energy Regulatory Commission, which culminated with an approved tariff allowing market implementation and operation. This included providing direct testimony in FERC Dockets ER04-691-000 and EL04-104-000. Initially the Midwest Energy Market had several unique characteristics, including a large number of Grandfathered Agreements (contracts that pre-dated the existing Open Access Transmission Tariff that went into effect in September 1998), multiple Control Areas, and areas of high congestion combined with oversold transmission capacity, that required difficult and innovative solutions in order to gain acceptance from stakeholders and regulators. With 131,000 MW of generating capacity, 116,000 MW of peak load and 97,000 miles of transmission lines covering 15 Midwestern States and the Province of Manitoba, the Midwest Electricity Market upon startup on April 1, 2005, was the largest centrally dispatched electricity market in the world.

During the market design and implementation phase, I was also responsible for defining and then creating, staffing, training and, after market start, managing the Midwest ISO Market Management business unit. This was a 50+ person department with responsibility for all the financial market services and activities provided by the Midwest ISO, including:

- Settling the Day Ahead and Real Time Energy Markets, the Financial Transmission Rights Market and Transmission Service Market.
- Running the Day Ahead Energy Market which involved creating “as bid/offered” demand and supply curves and establishing a clearing price and quantity.
- Running the Financial Transmission Rights market in which nearly 85,000 MWs of financial transmission rights were either allocated (including those for Grandfathered Agreements) or auctioned to Market Participants.
- The creation of market prices, i.e. the calculation, validation, and posting of nearly 1,400 day ahead and real time locational marginal prices.

While I managed the unit, the headcount and total budget to provide these services was the lowest of any RTO/ISO in North America. Furthermore, the unit met or exceeded every KPI established by the Board. As the Chief Economist I was responsible for:

- Market analysis,
- Market evolution,
- Being the liaison with the Independent Market Monitor,
- Market regulatory policy,
- Testifying at FERC as well as State regulatory and legislative hearings on market design and performance.

I reported to the CEO and was responsible for managing both the Market Committee and the Strategic Planning Committee of the Board of Directors.

AMERICAN ELECTRIC POWER**DIRECTOR, ENERGY MARKETS**

2001 – 2003

My activities ranged across almost all aspects of the business, e.g. regulatory, marketing/origination, and trading. Accomplishments included:

- Providing traders, originators, and developers with market and regulatory intelligence on issues affecting trading positions, bilateral energy sales/purchases, asset acquisitions, and asset management.
 - Advising senior management and the Office of the Chair on wholesale market design and operation issues.
 - Serving as AEP's representative on the ISO-NE Participants Committee, NYISO Management Committee, and PJM Members Committee.
 - Serving as an elected representative from the power marketing sector on the MISO Advisory Committee and the SeTrans Stakeholder Advisory Committee.
 - Drafting term sheets and contracts for the provision of management services for assets in NYISO and PJM.
 - Testifying before the Texas PUC on the wholesale market requirements for implementing retail choice in non-ERCOT Texas.
 - Drafting corporate positions on: standard electricity market design, financial transmission rights allocation mechanisms, the appropriate structure for establishing/changing electricity reliability standards, California market redesign, RTO West market design, and changing the wholesale market design in ERCOT.
 - Working with customers to explain market design and regulatory changes relevant to both existing and new business/contracts.
-

ENRON**DIRECTOR**

2000 – 2001

While at Enron my primary responsibilities were focused on the commercial aspects of wholesale and retail market design and implementation in the Texas (ERCOT) and Southwest Power Pool (SPP) electricity markets. This included:

- Providing risk assessment on regulatory/market design issues for commercial contracts and trading positions.
 - Serving as a voting representative of the power marketing sector on the SPP Board of Directors.
 - Serving as Enron's representative on SPP working groups including the Engineering and Operations Committee, Commercial Practices Committee, Market Settlement Working Group, and Congestion Management Working Group.
 - Serving as an elected representative from the competitive retail supplier sector on the ERCOT TAC.
 - Serving as Enron's representative on ERCOT working groups including the Wholesale Market Subcommittee and the Protocol Review Subcommittee.
 - Working closely with the East Power Desk to develop trading and origination strategies.
 - Co-developing/drafting the white paper and the rules for a real time market in SPP.
 - Preparing regulatory responses on wholesale and retail issues to state and federal regulatory authorities.
 - Providing testimony to state regulatory authorities.
 - Developing Enron's position on interconnection issues between electricity pools.
-

DUKE ENERGY INT'L (AUSTRALIA)**GM REGULATORY AFFAIRS**

1999 – 2000 (CONTRACT)

I joined Duke Energy International on a fixed term contract soon after they acquired natural gas assets in Australia. They were in the process of organizing their operations as well as trying to establish a commercial foothold in the energy industry and I contracted to provide leadership on several significant commercial and regulatory projects. Accomplishments included:

- Project managing Duke's response to the National Competition Council on an application for regulatory coverage of the US\$300 million Eastern Gas Pipeline under the National Gas Access Code. The ultimate decision was to leave access to the pipeline unregulated and represented a complete change in Duke's initial strategy.
- Providing an assessment of commercial opportunities within the wholesale electricity market in Australia and New Zealand, including an evaluation of regulatory and market design risk for energy assets.
- Preparation of submissions on changes to the market rules to the National Electricity Code Administrator, National Electricity Market Management Company, and the National Gas Pipelines Advisory Committee.
- Preparation of submissions on regulatory and legislative issues related to gas and electricity to State and Federal government agencies or regulators.
- Providing testimony at regulatory hearings and proceedings.
- Providing assistance/advice on bilateral contracts related to the Eastern Gas Pipeline.
- Worked with staff in the Premier of Tasmania's Office, to ensure that the legislative and regulatory infrastructure was in place to support the introduction of gas to Tasmania. The US\$250 million undersea pipeline (the first in Australia) was completed in 2002 and linked the island state (with no thermal resources) to the rest of Australia.
- Advised senior government officials on regulatory and/or electricity and gas market issues on behalf of Duke.

Reported to the Managing Director for Duke Energy Australia.

QLD COMPETITION AUTH. DIRECTOR - ELECTRICITY, GAS AND PORTS

1998 – 1999

The Queensland Competition Authority is the regulatory body for the State of Queensland, Australia. When I joined the Authority it had been operational less than 3 months and was in startup mode. My first responsibility was to staff a small team capable of meeting the legislative requirements regarding electricity (local distribution and retail), natural gas (local reticulation systems and retail) and ports. Within gas, my responsibilities/accomplishments included:

- Project managing the initial phase of the regulatory regime for third party access to gas pipeline distribution networks in Queensland as required by the *National Third Party Access Code for Natural Gas Pipeline Systems*.
- Developing the Authority's service definition policy, i.e. defining what constitutes access, for gas pipeline systems.
- Managing initial work on an asset valuation exercise (DAC, ODRC, DCF and ODV) for natural gas pipeline systems.
- Making recommendations to the Board regarding appropriate cost allocations and the cost of capital in the gas distribution network.
- Developing and implementing a ring-fencing regime for combined gas retailers and reticulators.
- Chairing an industry working group reviewing the relevant issues in the regulatory exercise.

Responsibilities/accomplishments within electricity included:

- Investigating the need for conduct rules governing behavior and information flows in the retail electricity market in Queensland.

-
- Initial work developing the ring-fencing regime for companies who are both electricity distributors and retailers.
 - Initiating the Authority's first-ever review of Distribution Use of System Charges (i.e. access charges) for electricity distribution networks in Queensland.

With respect to Ports I was responsible for:

- Managing investigations of the activities of the Ports of Brisbane, Gladstone, Townsville, Rockhampton, Bundaberg, Lucinda, Karumba, Hay Point, Abbot Point, Weipa, Thursday Island, Cape Flattery, and Mourilyan with respect to the Government's criteria for monopoly service provision. The analysis, rather than treating the Port as an integrated provider, identified and separated all services each Port was responsible for and then identified whether or not it had undue market power and, if so, what the source of the monopoly power was (e.g. government legislation, natural amenity, etc.). This was the only investigation by the Authority that was initiated and completed during my tenure at the QCA.
- Conducting an investigation of the extent to which these Ports exploited monopoly positions.

I was an Officer of the Company and reported to the Chief Executive Officer and the Board.

ELECTRICITY MKT COMPANY (NZ) MANAGER RESEARCH & DEVELOPMENT**1997 – 1998**

The electricity reform process in New Zealand stands in contrast to that of the United States. In particular, at the time of most of the reforms there was no industry specific legislation (e.g. the Federal Power Act) nor was there an industry specific regulator (e.g. FERC), rather the industry was managed by State Ownership and the Commerce Act (e.g. antitrust legislation). Additionally, New Zealand deregulated the retail market prior to the wholesale market. EMCO was a vehicle created by the industry to develop and administer metering and reconciliation standards (to allow retail switching) and a wholesale electricity market. The EMCO designed wholesale market was the first nodal based centrally dispatched market in the world. Following completion of the market design, EMCO was responsible for developing and implementing the market information/trading software and communication protocols. The company was awarded the initial contracts for market administration, the clearing and settlement operation, the pricing function, and the information software. Following completion of the design and implementation phase, EMCO used its position as the administrator of the metering and reconciliation rules to initiate further reform in the retail sector including the introduction of profiling. It was also instrumental in helping Transpower New Zealand (the high voltage wires company) to implement a change in their Statement of Corporate Intent by developing a governance structure that allows Grid Users to determine the grid security policy (i.e. reliability standards). At EMCO I:

- Coordinated all aspects of the rule making process for the wholesale electricity market.
- Wrote or managed the production of technical reports on issues related to grid security and dispatch as well as matters relating to pricing, bid and offer strategy by market participants, governance matters, clearing and settlement, reconciliation, demand-side management, and the allocation of pool fees.
- Reformed the decision making structure for the retail electricity market including the rules concerning governance as well as those for metering and reconciliation.
- Provided the economic analysis for a standard use of system agreement for distribution companies.
- Provided technical assistance in further enhancing the market information software.
- Was a member of the Reactive Support Working Group tasked with making recommendations to the Transpower Board regarding the quantity, pricing mechanism and procurement of reactive support to the Auckland region.
- Was a member of the Instantaneous Reserves Working Group instituted to make recommendations about an efficient cost allocation and procurement methodology for instantaneous reserves.

-
- Provided economic advice on various issues related to the setting of grid security standards during the industry review process initiated by the Transpower New Zealand Ltd. Board.
 - Prepared an analysis of the effect of the instantaneous reserve market on the price of energy in the wholesale electricity market.
 - Testified in front of various Government agencies and commissions.
 - Prepared and delivered a report on the relationship between ancillary services and the energy market to the Market Surveillance Committee (the Market Monitor).
 - Reviewed generator bidding behavior as well as the dispatch instructions of the grid operator where there was payment made for being constrained on.
 - Advised the CEO and Board of Directors on strategic issues, including the preparation of annual Strategic Reviews.
 - Developed the model for a worldwide Timber (Lumber) Exchange, i.e. a global exchange for wood products.
 - Developed models for a local wholesale water market (Auckland).
 - Developed a model for a fish quota exchange.
 - Advised the New Zealand government on how market mechanisms could be implemented to facilitate the Kyoto Accord.
 - Performed special projects for the Chairman of the Board.
 - Met regularly with senior officials in the Prime Minister's Office, the New Zealand Treasury, the Ministry of Commerce, the Ministry for the Environment and the Ministry of Consumer Affairs.

I was an Officer of the Company and reported to the Chief Executive Officer and the Board.

PHB ASIA-PACIFIC**SENIOR ADVISOR**

1996 – 1997

While EMCO was my primary client, I provided economic consulting services to several other companies, including:

- TransAlta,
- BHP (Australia),
- Electricity Corporation of New Zealand (ECNZ), and
- Transpower New Zealand Ltd.

Among the projects I completed were:

- The development of a wholesale electricity price path for the Australian National Electricity Market over the short to medium term. The results showed a declining price and led TransAlta to profitably delay/forgo investment in Australia.
 - The provision of economic/commercial advice on the dispatch rules and price setting algorithm for the wholesale electricity market in New Zealand.
 - A report that reviewed and commented on decisions made by the Australian Competition and Consumer Commission (ACCC) on the joint marketing of gas.
 - The development of economic logic for the assignment of ancillary service costs in the New Zealand electricity market.
 - Providing assistance in the development of a charging regime for ancillary services provided by Transpower New Zealand.
-

ELECTRICITY MARKET COMPANY (NZ)**SENIOR ANALYST**

1995

Commonly misunderstood by industry observers in other countries, EMCO was a company whose product, as articulated in the Shareholders Agreement, was the creation of markets - not just electricity markets. We used other exchanges (i.e. NYSE, CBOT, NYMEX, etc.) as our model and adopted a "build, own, operate and transfer" strategy. Within electricity, our objective was to create the market, extract the inefficiencies inherent in the old system and then transfer the function to an operator. I was the 6th person to join the company. Given its small size EMCO required people to be multi-faceted and each of us was involved in many diverse projects.

- The first revenue generating function for EMCO was to produce the weekly wholesale electricity prices. Under the previous regime the monopoly State-owned electricity provider (Electricity Corporation of New Zealand) not only provided financial hedges but also produced the wholesale prices against which those hedges settled - an obvious conflict of interest. EMCO, under contract to the market participants, successfully took over this function with a resulting increase in liquidity in the market. I was the person responsible for ensuring the delivery of wholesale electricity prices for every half hour of the day (prior to the start of a real time market, prices were established before the fact on a weekly basis).
- EMCO established the governance structure for the New Zealand Electricity Market.
- EMCO wrote the rules for the New Zealand Electricity Market - including those pertaining to dispatch, bidding/offering, pricing, and clearing and settlement. I was involved in all aspects of this exercise.
- EMCO developed the first web-based electricity trading portal in the world.
- EMCO worked with Telecom NZ to develop an operational framework for creating a wholesale market for telecommunication bandwidth.
- EMCO advised the governments of Malaysia, China, Singapore, Indonesia, and South Africa on implementing market mechanisms in energy.

Reported to the Chief Executive Officer.

ACADEMIC POSITIONS:**ADJUNCT LECTURER, BUSINESS SCHOOL, QUEENSLAND UNIVERSITY OF TECHNOLOGY (1999 ACADEMIC YEAR), BRISBANE, QUEENSLAND, AUSTRALIA.**

Taught the Economics of Strategy (2 Semesters) in the Graduate Business School (MBA Programme).

ADJUNCT LECTURER, DEPARTMENT OF ECONOMICS, UNIVERSITY OF AUCKLAND (1995, 1996 & 1997 ACADEMIC YEARS), AUCKLAND, NEW ZEALAND.

Taught two papers in the Graduate Division: Monetary Economics, Special Topics in Microeconomics – Regulation and Strategy

LECTURER, DEPARTMENT OF ECONOMICS, UNIVERSITY OF AUCKLAND (1993 & 1994 ACADEMIC YEARS).

Papers taught: Stages I, III, and IV (Graduate) Macroeconomics, Stage IV Environmental Economics, Stage IV Monetary Economics, Stage III Industrial Organization, and Stage II Environmental Science. Other activities: Ph.D. dissertation and research essay supervisor, course coordinator Stage I Macroeconomics (with over 1,400 students this was one of the largest single classes in the world) and Stage IV Monetary Economics. Supervised graduate research on electricity pricing, asset valuation and investment decisions, economic aspects of embedded generation, macroeconomic implications of LBO's, rules vs. discretion in monetary policy.

Member of the Reserve Bank of New Zealand Advisory Committee.

VISITING ASSISTANT PROFESSOR, DEPARTMENT OF ECONOMICS, UNIVERSITY OF CALIFORNIA, DAVIS, DAVIS, CALIFORNIA (FALL QUARTER 1994).