



**ROHAN HARRIS**  
**PRINCIPAL CONSULTANT**

Bachelor of Commerce  
(Accounting and Finance)

Honours in Economics  
Monash University

## PRIOR PROFESSIONAL HISTORY

2010 - current	Principal Consultant, Oakley Greenwood Pty Ltd
2009 - 2010	Principal Economist, SP AusNet Pty Ltd
2006 - 2009	Associate Director, SAHA International
1999 - 2006	Manager - Economic Regulation, South East Water

## OVERVIEW

Rohan Harris is an economist who has worked in the energy, water and consulting industries for more than 17 years. Rohan has significant experience in the areas of: tariff design; regulatory strategy and analysis; cost benefit analysis; energy and water policy; metering policy and regulatory issues; and gas, electricity and water demand forecasting.

Rohan has worked at Oakley Greenwood for the last 6 years. In that time, he has advised numerous regulated electricity, gas and water businesses, policymakers and industry associations, including, but not limited to: SP AusNet (Electricity and Gas), United Energy, Multinet, Jemena (Electricity and Gas), Citipower, Powercor, the Victorian Electricity Distribution Businesses collectively, ActewAGL, esaa, Energy Networks Association, Department of Sustainability and Environment, South East Water, Yarra Valley Water, IPART, Southern Rural Water, ElectraNet, Queensland Urban Utilities, Department of State Development Business and Innovation, Ausgrid, China Light and Power (Hong Kong), Australian Energy Council, Sarawak Energy Berhad, (Malaysia), Tenaga Nasional Berhad (Malaysia), Sabah Energy Berhad (Malaysia), Energy Australia, Origin Energy and AGL.

Prior to working at Oakley Greenwood, Rohan was the Principal Economist at SP AusNet. There, Rohan's primary role was to lead the development of numerous aspects of SP AusNet's 2011-2015 Electricity Distribution Pricing Submission, including the sections on Operating Expenditure Forecasts, Cost Pass Through Events, Efficiency Benefit Sharing Scheme, Demand, Energy and Customer Number Forecasting, Tariffs for Standard Control Services and Tariffs for Alternative Control Services.

Prior to joining SP AusNet, Rohan was an Associate Director at consulting firm SAHA International. At SAHA, Rohan provided regulatory, commercial, policy, strategic and risk management advice to a range of customers from the Electricity, Gas, and Water industries.

Before joining SAHA, Rohan worked at South East Water for 7 years, including as Manager, Economic Regulation. Here, Rohan led both the strategic development, writing and modelling of South East Water's first regulatory submission. Extensive regulatory work and detailed economic analysis, and leadership of teams of regulatory economists and specialists - gas, water and electricity transmission and distribution networks;

## RELEVANT PROJECT EXPERIENCE

### **Regulatory Strategy and Analysis**

#### ***SP AusNet (Electricity) – Regulatory Submission***

Whilst working at SP AusNet, Rohan played a key role in the development of the Company's 2011 Electricity Distribution Pricing Submission. In addition to providing strategic regulatory advice to senior management and liaising with the Australian Energy Regulator (AER), he developed and wrote the sections on Operating Expenditure Forecasts, Cost Pass Through Events, Efficiency Benefit Sharing Scheme, Demand, Energy and Customer Number Forecasting, Tariffs for Standard Control Services and Tariffs for Alternative Control Services.

#### ***Multinet - Prudency and Efficiency Assessment of Multinet's Actual Capex***

Multinet engaged OGW to provide an independent opinion as to the prudency and efficiency of Multinet's actual capital expenditure for mains replacement capex and connections capex, in the context of the requirements of the National Gas Rules (Rule 79 in particular). Rohan led the project.

#### ***Jemena (Gas) – Regulatory Assistance***

Rohan provided up-front assistance to Jemena Gas Networks with regards to its development of its 2015 Gas Access Arrangement Submission. This involved developing a project plan for the commercial stream (which was charged with, amongst other things, developing tariffs; demand forecasts; cost pass through provisions; and the non-economic terms and conditions in relation to the Access Arrangement), as well as providing specific input in other selected areas such as developing their customer engagement strategy.

#### ***AGL, Origin and Energy Australia ('the Retailers')***

Rohan was the lead author on a report for the Retailers critiquing the regulatory proposals submitted by the NSW distribution businesses to the AER in relation to their proposed exit fees, and their proposed operating expenditure forecasts. Each Retailer attached OGW's report to the individual submission that they made to the AER on the NSW distribution businesses regulatory proposals.

#### ***SP AusNet (Gas) – Regulatory Submission***

Rohan assisted SP AusNet in the preparation of its 2013 Gas Access Arrangement for submission to the AER. This included providing strategic advice, modelling and drafting the chapters relating to: SP AusNet's proposed tariffs, price control mechanisms and demand forecasting. It also included justifying SP AusNet's position against the requirements of the National Gas Law and National Gas Rules.

Rohan was also engaged to review parts of SP AusNet's response to the AER's Draft Decision.

#### ***Multinet (Gas) – Regulatory Submission***

Rohan developed certain components of Multinet's response to of the AER's recent Draft Decision relating to Multinet's gas distribution business in Victoria.

### ***United Energy (Electricity) – Submission to the AER on Expenditure Forecast Assessment Guidelines***

Rohan drafted United Energy's response to the AER's Issues paper - "*Expenditure forecast assessment guidelines for electricity distribution and transmission*". The purpose of the Issues Paper was to describe the techniques and associated data requirements that will underpin the AER's approach to determining efficient capital spending (capex) and operating expenditure (opex) allowances in accordance with the objectives, criteria and factors in the National Electricity Rules (NERs).

### ***United Energy (Electricity) and Multinet (Gas) – Price Control Mechanisms***

Rohan was engaged by United Energy / Multinet to undertake a report into the issues/benefits surrounding the choice between a Weighted Average Price Cap and a Revenue Cap form or price control. This included outlining a work program that should be undertaken by the Companies to inform their future decisions as to whether or not to support the retention of the WAPC form or price control, or to move to a Revenue Cap.

### ***Tenaga Nasional Berhad (Malaysia) – Incentive Based Regulation***

Rohan was part of a small OGW team that provided strategic regulatory advice to Tenaga (the vertically integrated electricity business covering Malaysia) in relation to their first regulatory submission under the newly created incentive based regulatory framework. This involved developing and delivering a number of workshops on the fundamental aspects of economic regulation, as well providing granular advice in relation to the development of their regulatory submission.

### ***Sabah Electricity Berhad (Malaysia) – Development of Regulatory Submission***

Rohan was a key member of a small OGW team that provided advice to Sabah Electricity Berhad in relation to the development of its first regulatory submission. This covered the full spectrum from regulatory strategy through to detailed modelling advice.

### ***Ausgrid – Case Studies in support of the retention of the WAPC***

Rohan was part of a small OGW team that completed a project for AusGrid that entailed it developing a number of case studies demonstrating the practical benefits associated with the adoption of the Weighted Average Price Cap form of price control, including on the development of cost reflective tariffs for network businesses in Australia. It also involved undertaking an empirical review of a number of the perverse outcomes - in terms of tariff design and tariff volatility - that have ensued under a Revenue Cap form of price control.

### ***Energy Developments Limited - Regulatory Advice in relation to Embedded Generation***

EDL required advice outlining the benefits and liabilities of embedded generation at a number of their existing and potentially new embedded generation sites. The project specifically focused on the commercial and regulatory structures that were currently in place in relation to embedded generation, as well as any changes that might be recommended to enhance the economics of providing embedded generation services. This included, but was not limited to, assessing:

- The treatment and avoidance/reduction in DuOS and TuOS charges;
- The regulatory framework around economic by-pass and the requirements to achieve an economic by-pass;

- Whether embedded generators are liable for environmental charges (e.g., REC liabilities); and
- Whether a multi-site embedded generation solution gives rise to different regulatory outcomes, and therefore different commercial outcomes (if there is a difference in the embedded generators ability to retain and pass through embedded benefits).

### ***IPART – Review of water businesses capital and operating expenditure forecasts***

Rohan project managed a detailed review of Gosford City Council and Wyong Shire Council's proposed capital and operating expenditure forecasts for their respective water businesses. This project was undertaken for the economic regulator, IPART, and involved a detailed assessment of the prudence and efficiency of those forecasts. In addition to managing the overall project, Rohan led the review of operating expenditure forecasts.

### ***IPART – Review of WaterNSW's operating expenditure forecasts***

Rohan (as a sub-contractor to Aither) managed a detailed review of WaterNSW's Greater Sydney business' proposed operating expenditure forecasts for the 2016-2020 regulatory period. This project was undertaken for the economic regulator, IPART, and involved a detailed assessment of the prudence and efficiency of those forecasts.

Following on from this, Rohan undertook a similar role in relation to the review of WaterNSW's Rural water business' proposed operating expenditure forecasts for the 2017-2021 regulatory period.

### ***IPART – Advice on the application of benchmarking to future water reviews in NSW***

Rohan (as a sub-contractor to Aither) managed a small OGW team that provided advice to IPART on the likely effectiveness of using benchmarking as a regulatory tool to assess the capital and operating expenditure forecasts of water businesses in NSW.

### ***Southern Rural Water – Regulatory Strategy***

Rohan was tasked with undertaking a strategic review of Southern Rural Water's (SRW) draft regulatory submission (Water Plan). This involved assessing the key strategic and regulatory issues proposed by SRW in the Water Plan against the broader regulatory requirements such as the Essential Services Commission's (ESC) Guidance Plan and the Statement of Obligations. It also involved providing detailed drafting advice, and having specific regard for the likely preferences and expectations of the ESC and its consultants when assessing SRW's Water Plan, and also the risks in acceptance and support of SRW's Water Plan.

### ***Yarra Valley Water – Review of Incentive Mechanism Design***

Rohan was asked to provide a thorough critique of a 'Risk and Performance' (R&P) incentive scheme that was proposed by the ESC in their Guidance Paper to water businesses. This critique was designed to address the theoretical merits of the proposed scheme, in terms of its ability to enhance, productive, allocative and dynamic efficiency, and to address some of the practicalities associated with its introduction, and finally, to outline the attributes of a well-designed R&P scheme applicable to the water industry.

### *Tasmanian Water Companies – Building Block Modelling*

As part of a small OGW team, Rohan advised Southern Water, Cradle Mountain Water and Ben Lomond Water on pricing and tariff rationalisation. In particular, Rohan developed a comprehensive building block model (regulatory model) to establish the target tariffs. Full financial statements were also prepared to evaluate the impact of various tariff and financial strategies on the viability of the businesses.

### *Barwon Water – Regulatory Submission*

Rohan had primary responsibility within a project team to provide Barwon Water with strategic advice in relation to the development of its 2008 Water Plan (pricing submission) to Victoria's independent economic regulator, the Essential Services Commission. This included providing advice on: the appropriate form of price control; service incentive schemes; efficiency carry-over mechanisms; the WACC; demand forecasting; tariff design; and strategic drafting advice.

### *Powerco (NZ) – Develop Building Block Model*

Rohan assisted in the development of a building block model used by Powerco. The model required the flexibility of varying timing assumptions for existing/new assets and operating expenditure, the inclusion of asset revaluations and customer contributions, variations in the WACC and tax assumptions, and the percentage of indirect costs that are avoidable.

### *South East Water – Regulatory Submission*

Whilst working at South East Water, Rohan's primary role was to project manage the planning, modeling, and writing of South East Water's first Water Plan (Pricing Submission). In particular, the tasks that Rohan contributed to in relation to this regulatory submission were to:

- Write the majority of South East Water's Water Plan;
- Develop South East Water's position on a range of regulatory issues, including: tariff structures and tariff levels; efficiency carryover mechanisms; price control mechanisms; and operating expenditure forecasts.
- Provide modeling and analytical support, by developing the: internal financial (building block) model; customer impact model supporting South East Water's proposed tariffs; and demand forecasting model; and
- Advocating South East Water's positions with staff from the Essential Services Commission in relation to a multitude of regulatory issues.

## **Policy Advice**

### *Victorian Department of Economic Development, Jobs, Transport and Resources - Potential Policy and Regulatory Implications for Increased Uptake of Energy Storage Technologies*

Rohan was part of an OGW team that looked potential policy and regulatory implications for increased uptake of energy storage technologies. Rohan's primary role was to review of the National Electricity Rules and relevant aspects of the National Electricity Market and Victorian regulatory frameworks to identify potential barriers to the efficient take-up of energy storage technologies, as well as undertake stakeholder interviews to ascertain their views as to potential barriers to the take-up.

### ***Energy Networks Association (ENA) – Value of Grid***

Rohan Harris, in conjunction with another OGW colleague, completed a project for the ENA that assessed the value provided by a grid connection to users of small-scale decentralised renewable electricity generation technologies.

### ***Energy Supply Association of Australia (esaa) – Connection Trends***

Rohan Harris, in conjunction with another OGW colleague, developed a report for the esaa, the aim of which was to examine the drivers behind recent changes in connection trends (to electricity and gas businesses) and how those changes may impact connection (and potentially disconnection) trends for both gas and electricity into the future. Given these trends, we also investigated the implications for policymakers to ensure equitable outcomes for industry and all consumers.

### ***Australian Energy Market Commission (AEMC) – Drivers of Future Residential Electricity Prices***

Rohan co-authored a report for the AEMC outlining information on the trends and drivers that could be expected to affect distribution and transmission network costs over the period out to 2016, and therefore to also affect residential retail electricity prices over that same period. More specifically, this involved OGW assessing input costs, including the cost of capital; the cost of labour; the cost of key materials; and the influence of macroeconomic conditions. It also involved OGW assessing the extent of likely future augmentation and the impact of the age profile of network assets, and changes in the level of residential demand, and possible changes in the structure of network pricing.

### ***City of Sydney, Total Environment Centre – Local Generation Network Credit Rule Change***

Rohan co-authored a report advising the Total Environment Centre (TEC) on its application to change the National Electricity Rules to require electricity distribution business to introduce a Local Generation Credit. This included, amongst other things, a detailed assessment of the various tariff options against the National Electricity Objective.

Subsequent to this, Rohan co-authored a Rule change request on the same issue.

### ***Australian Energy Council – Review of the Classification of Services in the National Electricity Rules***

Rohan co-authored a report for the Australian Energy Council (AEC) for use in its consideration of issues associated with the AER's Electricity Ring-Fencing Guideline Preliminary Position paper and the possible need for a rule change request regarding the classification of services in the National Electricity Rules.

### ***Victorian Department of State Development, Business and Innovation – Regulatory Impact Statement***

Rohan worked as part of a small OGW project team forecasting the distributional and economic impacts of continuing with the Victorian Energy Efficiency Target (VEET) scheme. The impact of the scheme on wholesale prices, network prices and retail prices was modelled, with the distributional impacts of the scheme to participants and non-participants calculated.

Prior to the completing the above project, Rohan worked as part of a small OGW project team quantifying the impacts of the Victorian Energy Efficiency Target (VEET) scheme. This involved using multiple methods (bottom up; top down and econometric) to quantify the impact of the scheme on energy consumption. The impact of the scheme on wholesale prices and retail prices was modelled, with the distributional impacts of the scheme to participants and non-participants to be calculated.

### ***South East Water – Best Practice Institutional Arrangements to Support the Mandated Roll out of Decentralised Integrated Water Management Solutions***

Rohan led a small OGW team that provided advice to South East Water as to ‘institutional, regulatory and governance’ arrangements that would be required to facilitate the efficient and effective delivery of a mandated integrated water management solutions (in particular, rainwater tanks) in certain geographic regions within South East Water’s service territory. A subset of this advice was to also outline what South East Water’s role should be within those arrangements, having regard to the overarching objective, as well as supporting objectives such as the impact that those arrangements would have on South East Water’s commercial position.

### ***Department of Sustainability and Environment (VIC) - Pricing Regulation options for Private Water Service Providers***

Rohan completed a project for DSE that required him to:

- Research, assess and document the approach to pricing regulation applied in similar licensing frameworks operating in NSW, SA and potentially WA, as well as in the National Gas Law and Ports Act;
- Develop options, for discussion with project team members, around the application of those pricing approaches in the context of a new licensing framework for private service providers in Victoria, including consideration of whether and the extent to which pricing approaches should vary on the basis of geographic location, type of customer, type of market or type of service being provided; and
- Assess and document the implications of those options for various stakeholders including private providers, government owned water corporations and customers and identify a preferred approach for the proposed new licensing framework, as agreed with the project team.

### ***Ministerial Advisory Council, for the Department of Sustainability and Environment (VIC) – Achieving resilience in security of supply: the value of customer reliability and real options analysis***

Rohan led a small OGW team that developed a report for the Ministerial Advisory Council on water valuing restrictions, and how placing a value on water restrictions within a real options analytical framework, would allow the derivation of efficient security of supply levels. More specifically, the objective of this project was two-fold:

- To understand how the Value of Customer Reliability (VCR), translated into the water industry environment, might help to set a minimum level of supply security, and

- To understand how real options and insurance values could be practically applied in the water industry, to maximise the net community benefits of a diversified portfolio of supply and demand options, whilst delivering a resilient and secure water system that values uncertainty.

### *Department of Sustainability and Environment (VIC) – Private Sector Participation and implications for Licensing Arrangements*

Rohan assisted the Department of Sustainability and Environment (DSE) in understanding the extent to which private sector participation is currently occurring in the Victorian Water Industry, and further, the implications that this may have for the development of a Licensing regime pertaining to Customer Protection issues.

### **Metering related projects**

#### *Jemena (Advanced Metering Infrastructure) – Expert Opinion on their Expenditure Excess application to the AER*

Rohan was the lead author on an Expert Witness report (which must be to a standard that can be submitted to the Federal Court) with regards to Jemena's AMI expenditure excess application. In particular, Rohan critiqued the primary report relied upon by the AER (a report from Energeia) to make its decision to disallow around \$5m of Jemena's expenditure excess application. The AER's reversed this disallowance in its final decision.

#### *TasNetworks - Advanced Metering Network Benefits Assessment*

Rohan co-authored a report for TasNetworks on the potential value of the data available from advanced metering to the distribution business rather than the potential value of TasNetworks playing one or more of the three competitive roles established by the Rule change. More specifically, the purpose of this project is to:

- provide a framework that TasNetworks can use in developing its willingness to pay for specific metering data items, and
- identify key factors that will need further investigation in order to calculate those values with regard to specific metering data item.

#### *Jemena – Response to the AER's 2016-2020 Preliminary Decision*

Rohan assisted Jemena in developing its response to the AER's Preliminary Decision on Jemena's proposed metering alternative control services.

#### *Jemena (Electricity) – Advanced Metering Infrastructure*

Rohan developed a report for submission to the AER, substantiating Jemena's expenditure excess (over-expenditure, relative to budget) in 2013 on its rollout of Advanced Metering Infrastructure. In particular, this document sought to describe what drove Jemena's expenditure excess, and whether it was caused by matters (issues) that are relevant issues to be considered by the AER under the Advanced Metering Infrastructure Order-in-Council.

Rohan developed a similar report substantiating Jemena's 2014 expenditure excess.

### ***Jemena (Advanced Metering Infrastructure) – Best Endeavours documentation***

Rohan developed an evidentiary report that sought to demonstrate how one of the Victorian Electricity Distribution Networks' has sought to comply with its legal obligations under the Advanced Metering Infrastructure Order-in-Council. In particular, this documentation sought to demonstrate how that business used its "best endeavours to the extent practicable" to complete the roll out of AMI metering in its distribution area by the 31<sup>st</sup> December, 2013. The audience for this report is the Essential Services Commission.

### ***Victorian Department of Economic Development – Advice on Competition in Metering Draft Rule Change***

Rohan co-authored a report for the Victorian Government regarding the potential policy implications stemming from the AEMC's recent Competition in Metering Draft Rule Determination. This report recommended that the Government *not* adopt metering competition, in conjunction with the broader timeframes applicable to the remainder of the NEM - a position that was adopted by the Government.

### ***Western Australian Public Utilities Office – Advice on the introduction of National Competition in metering arrangements in Western Australia***

Rohan was part of a small OGW team that advised the Western Australian Public Utilities Office regarding the potential policy and regulatory implications stemming from the possible introduction of the AEMC's recent Competition in Metering Draft Rule Determination in Western Australia.

### ***Jemena, United Energy and AusNet Services - Exit Fee Model***

Rohan developed an Exit Fee model that supported the exit fees that Jemena, United Energy and AusNet Services proposed as part of their 2016 electricity distribution pricing submissions. The model reflected the requirements of the Cost Recovery Order-in-Council.

### ***The Victorian Distribution Businesses (Electricity) – Enhancing Competition in Metering Rule Change***

Rohan drafted a submission on behalf of the Victorian Distribution business regarding the AEMC's recent consultation paper into Expanding Competition in Metering and Related Services. This covered issues such as Exit Fees, the monopoly status of the proposed Metering Coordinator role, and the default arrangements for the appointment of a metering coordinator.

### ***Jemena (Electricity) – Cost Benefit analysis of continuing the rollout of Advanced Metering Infrastructure***

Rohan led a small OGW team tasked with undertaking a cost benefit analysis related to the completion of the AMI roll out in Victoria, as compared to the cessation of the roll out at a level less than 100% as at 31<sup>st</sup> December, 2013.

## Tariff Design

### *ActewAGL – Tariff Strategy and Modelling*

Rohan developed all of the models that ActewAGL used to develop its future network tariff structures under the National Electricity Rules, as well as providing advice on their strategy in relation to their future tariff structures.

### *Citipower and Powercor – LRMC, Stand alone cost and Avoidable Cost*

Rohan developed Citipower and Powercor's LRMC, Stand Alone cost and Avoidable Cost models, to support the development of their first Tariff Structure Statement in compliance with the requirements of the National Electricity Rules.

### *AusNet Services (Electricity) – Tariff Design for 2016-2020 Regulatory Period and Tariff Structure Statement*

Rohan advised AusNet Services on its development of a new suite of network tariffs that comply with the Distribution Pricing Rule change, which requires businesses to, amongst other things, develop tariffs that reflect the Long Run Marginal Cost of supply.

Rohan also assisted AusNet Services' in drafting its Tariff Structure Statement.

### *SP AusNet (Electricity) – Tariff Design for 2011-2015 Regulatory Period*

As part of the development of SP AusNet's 2011 Electricity Distribution Pricing Submission, Rohan managed the development of SP AusNet's:

- Proposed Time of Use tariffs, which were to apply to its Residential and Small Commercial customers, which in turn leveraged off the roll out of AMI metering;
- Critical Peak Demand Price, which was to apply to its large Non Residential customers (which is currently the only dynamic peak price operated by a network business in Australia);
- Long Run Marginal Cost model, which was used to support the marginal price levels at which both of the aforementioned tariffs were set; and
- Alternative Control Services prices and underlying justifications.

### *China Light and Power (Hong Kong) – Grid Connection Policy for Embedded Generation*

Rohan was the lead economist in a small OGW team currently undertaking a complete review of CLP's Grid Connection Policy, particularly as to how Embedded Generators are charged for connecting into CLP's network.

### *Sarawak Energy Berhad (Malaysia) – Customer Connections Charging Methodology*

Rohan was key member of a small OGW advising the Sarawak Energy Berhad (SEB) on the complete re-development of the methodology that it uses to develop charges for new customers who connect into its electricity network. This also included reviewing and redeveloping the policies, procedures and technical standards that complement the connection of new customers. Rohan led the pricing component of this work.

### ***United Energy (Electricity) – LRMC Model***

Rohan was engaged to build United Energy's LRMC model. The model not only calculated the LRMC (per kVa), but also, converted that LRMC into the different kWh tariff component (e.g., peak energy, off peak energy) that United Energy currently uses to charge its different customer types.

Separately, Rohan was engaged to develop a report that explained the economic theory and the practical implications of using LRMC for setting distribution prices.

### ***Queensland Urban Utilities – Review of Pricing Philosophy Paper***

Rohan led a small OGW team that assisted Queensland Urban Utilities (QUU) with the drafting of the pricing philosophy paper in preparation for the Finance and Pricing Committee. In particular, OGW's role was peer review the factual content of the paper, and to ensure that the messages contained within the paper were clear and concise, and that the paper was presented in a manner that will ensure meaningful discussion and a conclusion at the end of the discussion.

### ***SP AusNet (Gas) – Tariff Strategy***

Rohan completed a tariff strategy paper for SP AusNet's gas distribution business, with particular reference to the consistency of SP AusNet's tariffs with the requirements and principles set out in the National Gas Rules.

### ***Multinet (Gas) – Tariff Modelling***

Rohan completed a project managing the development of the stand-alone and LRMC cost models for Multinet (and SP AusNet) in support of their submission to the Australian Energy Regulator.

### ***SP AusNet and United Energy (Electricity) - Customer Connection Pricing***

Rohan advised SP AusNet with regards to the prices that it can charge new customer connections under Guideline 14. This involved revising both SP AusNet's charging policy (e.g., what is included in the charge, what is excluded from the charge, on what basis are those components included/excluded), and revising SP AusNet's Customer Connections charging model to accommodate the charged pricing policy, as well as refining it to ensure a more logical, transparent and theoretically robust charging approach.

Rohan also advised SP AusNet (and United Energy) on their responses to the AER's Preliminary Position Paper and Draft Guideline on its Customer Connections Charging Framework.

### ***Victorian Distribution Businesses – Drivers of Retail Price Increases***

Rohan was part of a small Oakley Greenwood (OGW) team that quantified the contribution of each of the components of the electricity value chain to retail price changes in Victoria since 2001. This included analysing, and auditing data and models provided by the distribution businesses, to support their calculations of the average DUoS, average TUoS and average retail component of the average bill. This project has been undertaken for the Victorian electricity distribution businesses for each of the last 5 years.

### ***Trends in Residential Retail Electricity Prices – Electricity Supply Association Australia***

Rohan was involved in a project investigating the trends in residential electricity prices in the five years to 2011. The specific aims of the project were to:

- track residential electricity prices over the last five years in major Australian capital cities;
- understand trends in the cost components of residential electricity prices and their contribution to total prices;
- estimate the impact of government climate change and energy efficiency policies on the price of electricity for residential consumers;
- understand changes in average levels of residential electricity consumption;
- understand the relative impact of price and quantity effects on increases in the average household electricity bill; and
- compare regulated retail prices with the best available market offer.

### ***South East Water – Retail Tariff Design***

Whilst working for South East Water, Rohan led the development, design and modelling of South East Water's increasing block tariff, which in turn formed the basis for the increasing block tariff that was subsequently imposed by Victorian Government on the customers of all metropolitan Melbourne water authorities.

As a consultant, Rohan undertook a qualitative assessment of a number of alternative non-residential tariff structures against a set of agreed objectives for South East Water.

### ***Gladstone Area Water Board – Bulk Water Tariffs***

Rohan advised the Gladstone Area Water Board (a large water industry bulk supplier in Queensland) in relation to the tariff structures that they should adopt for the provision of their bulk water services. In particular, the advice focused on the allocative efficiency benefits and costs of adopting more granular, zonal based tariffs, as opposed to the more common postage stamp pricing. It also assessed the advantages and disadvantages of adopting an instantaneous peak demand tariff for network usage, as opposed to volumetric based prices.

## **Demand and Energy Forecasting**

### ***Energy Australia – Energy forecasts for small to medium enterprise customers***

In 2017, Rohan led the development of an energy forecast for small to medium enterprise customers in the NEM for Energy Australia. The primary driver for undertaking this analysis was the recent large increase in wholesale electricity and gas prices, and Energy Australia's concern that this will lead to a significant number of business failures.

### ***NSW Electricity Privatisation – Forecasting the impact of disruptive technologies***

Rohan led the development of a set of long-term forecasts of the impact of increased PV, battery, and electric vehicle on TransGrid and the NSW electricity distribution businesses demand forecasts for a prospective bidder on the NSW electricity transmission and distribution businesses.

Rohan undertook a similar role in relation for a prospective bidder on Endeavour Energy, a NSW electricity distribution business.

### *Jemena – Economics of micro generation*

Rohan was part of a small OGW team that modelled the economics of various micro generation and storage solutions for Jemena's Victorian electricity network. As part of this, Rohan (amongst other things) built a comprehensive model that allowed Jemena to understand the economics to its small commercial customers of taking up battery storage in response to their proposed demand charge.

### *ElectraNet – Expert Opinion on their Revised Demand Forecasts to the AER*

Rohan co-authored an Expert Witness report (which must be to a standard that can be submitted to the Federal Court) with regards to ElectraNet's (the South Australian electricity transmission company) methodology for calculating its revised demand forecasts for submission to the Australian Energy Regulator.

### *Energy Australia – Mass Market Gas Demand Forecasts*

Rohan was part of a project team that developed gas demand forecasts for mass market customers located in NSW, ACT, VIC and SA. This project was undertaken for Energy Australia, and reflected various factors that would impact on future gas consumption, including relative electricity and gas price scenarios, and the extent to which this drove economic switching from gas usage to electricity consumption.

### *Citipower/Powercor – Transmission Connection Point forecasts*

Rohan worked with the Centre for International Economics (CIE) to provide Citipower and Powercor with transmission connection point forecasts for the 2016-2020 regulatory control period. Subsequent to this, Rohan (and CIE) were engaged to thoroughly critique AEMO's National Electricity Forecasting Report (NEFR) and Transmission Connection Point forecasts. Rohan's particular role was to review AEMO's forecast PV installation numbers and the consequent impact that this would have on peak demand, as well their forecast of the impact of energy efficiency on peak demand.

### *Citipower/Powercor – Scenario Development and Modelling*

Rohan was part of a small OGW team that assisted Citipower and Powercor develop a number of feasible future scenarios that may impact upon those businesses between 2013 and 2025. This involved the consideration of the impact of the penetration of various new and emerging technologies (e.g., rooftop PV systems; electric vehicles; fuel cells; demand response and interruptibility; energy efficiency), as well as the impact that various other factors such as changes in wholesale gas prices and the price structure of network tariffs, on the operating context of their businesses.

Rohan led the development of the main output of the project, that being the development of a detailed model, quantifying the potential impacts of those variable on overall consumption and peak demand, at a feeder level, and by Local Government Area.

### *SP AusNet (Electricity) – Energy Forecasting and Analysis*

Rohan project managed and provided strategic advice in relation to, the complete reconstruction of SP AusNet's internal energy forecasting model.

Prior to the above project, Rohan led a small Oakley Greenwood team that was tasked with undertaking a detailed review of the drivers of energy consumption for SP AusNet with the objective of understanding and quantifying the relative impacts of weather, solar penetration, roof insulation, macro-economic variables, and the price elasticity effects driving a material reduction in energy consumption 2011 relative to 2010.

### *SP AusNet (Electricity) – Time of Use Tariff Modelling*

At SP AusNet, Rohan managed the development of Tariff Impact model, which allowed the energy and demand impacts of SP AusNet's proposed Time of Use tariffs and Critical Peak Demand tariffs to be estimated and included in its pricing submission. More specifically, this included modelling the estimated own-price and cross price elasticity of demand impacts of its Time of Use tariff structure. The model methodology, detailed algorithms, and outputs were accepted by the Australian Energy Regulator as part of its Final Decision.

### *South East Water – Water Demand Forecasting*

Rohan developed South East Water's original demand forecasting model that was used in support of its 2005 Water Plan. This involved a detailed, bottom up assessment of the drivers of water and wastewater consumption, including: the penetration rate of different types of water efficient appliances; customer number forecasts by area; the impact of recycled water on potable water demand and wastewater flows; the impact of on-site storage (eg: rainwater tanks) on potable water demand and wastewater flows; and the impact of South East Water's proposed tariff structure on water and wastewater consumption.

## **Cost benefit analysis**

### *Electricity Authority (NZ) – Cost Benefit analysis of changing how transmission services are priced in NZ*

Rohan led a OGW team that undertook a detailed cost benefit analysis of two transmission pricing options that the NZ Electricity Authority developed. These options were: a Deeper Connection Charge option; and an Area-of-Benefit option. The analysis focused on the allocative and dynamic efficiency benefits (and costs) stemming from sending more cost-reflective price signals.

### *Department of Infrastructure – Cost Benefit analysis of the Demand Response Mechanism*

Rohan was part of a small OGW team that undertook a cost benefit analysis of the introduction of a Demand Response Mechanism (DRM) into the National Electricity Market (NEM). Rohan's role was to model the benefits to network businesses in the NEM stemming from the introduction of the DRM. Rohan also undertook all of the distributional analysis, as well as assisting in conceptualising and analysis regarding the counterfactual that would underpin all of the modelling.

### *Coliban Water – Real Options Modelling*

Rohan led a small OGW team for Coliban Water, which was focused on demonstrating the benefits of utilising a real options approach to water supply planning. In particular, we developed a simple model demonstrating in a transparent manner, the practical application of a real options analytical framework for one of Coliban Water's water supply catchments (Loddon).

We also provided a written report critiquing their existing approach to water supply / demand planning against a real options analytical framework.

### ***South East Water – Business-as-Usual case for a Centralised Potable Water Solution***

In 2011, Rohan costed the provision of a centralised potable water solution to South East Water's (SEW) geographic region (a business-as-usual case). SEW used this BAU case to underpin the economic evaluation of its Integrated Water Management Strategy. This BAU case involved the construction of a stochastic model of Melbourne's annual water supply/demand balance, utilizing a large number of simulations (1000 to be exact). The model then calculated the: amount of surface water used to meet demand in each year; amount of desalinated water used to meet demand in each year; level of restrictions that would have to be imposed in a year to balance supply with demand in that simulation; level of storages at the end of each year; and the timing of new augmentations required in that simulation. Further, the model costed (from an economic perspective) each of these supply sources for SEW, including the value of the raw water input into surface water storages, the economic cost of restrictions, and the cost of new augmentations, which in turn allowed the overall economic cost of the centralized potable water supply to be determined.

### ***VicRoads – IT Cost Benefit Analysis***

Rohan project managed an economic appraisal that supported the implementation of a large (~\$300m) IT infrastructure project for VicRoads. More specifically, this involved identifying and clearly articulating possible options (including the base case) for meeting their overarching objectives, qualitatively identifying the benefits associated with those options, outlining in detail the methodology that would be used to robustly quantify those options, and the data required and assumptions underpinning that quantification.

### ***SP AusNet (Electricity) – Cost Benefit Analysis***

Rohan advised on numerous cost benefits studies whilst working at SP AusNet, including: the benefits and costs to consumers of reducing PSAIDI; the benefits and costs to society of increasing its hazardous tree removal program; and the quantification of the societal costs associated with network asset failures during extreme weather conditions.

### ***Integral Energy – Cost Benefit Analysis***

Rohan project managed a Cost Benefit Analysis for the then Integral Energy's possible vegetation management options. In particular, the project assessed the relative benefits and costs associated with the following three options: Base case (its current regime); Full compliance to 'clear to the sky' guidelines; and A 'Visual Tree Inspection' approach.

## **Due Diligence and Strategy Related Issues**

### ***Trility – Cost Due Dilligence***

Rohan led a small OGW team that is tasked with providing cost due diligence advice to a prospective bidder on the Trility water business. This was predominately focused on assessing the extent to which latent efficiency improvements could be made to the business' operating structure, as well as assessing the impact that any subsequent partial sale of certain assets might have on the Corporate costs required to support what would be a business of very different scale and scope to how it is currently constituted.

### ***Confidential (Water) – Institutional Reforms***

Rohan led a small OGW team that was engaged to advise a large Victorian urban water utility on how the Victorian water industry might be reformed over the next 15 years. This involved detailed analysis as to the regulatory, policy and institutional reforms that might be adopted to progress the efficient development of the industry.

### ***Confidential (Water) – Preparing for Third Party Access***

Rohan led a small OGW team that was engaged to advise a large Victorian urban water utility on the:

- Possible impact that a third-party access regime would have on its business;
- Key features that it should seek from a licensing regime applicable to private sector providers; and
- The impact that competition, more broadly, might have on the business - noting that even in the absence of a third-party access regime, a licensing regime provides the opportunity for private sector participants to enter the market for water/wastewater provision, via the adoption of 'infrastructure based competition'.

### ***Confidential (Water) – Commercialisation of 150ML of Distilled Water***

Rohan led a small team that provided financial and commercial advice to a company in support of the possible commercialisation of the water product that would be produced as a by-product of that firm's process for dewatering brown coal for use in electricity generation facilities. The process was expected to produce around 150,000 kl of distilled water per annum.

### ***Confidential (Water) – Potential Retail Water Service Provider***

Rohan was part of a small team that advised an Australian electricity retailer on the potential benefits, costs and risks associated with entering into the market for the provision of water retail services. This also involved facilitating a workshop with senior management within the organisation.

### ***Marubeni (Electricity) – Regulatory Due Diligence***

Rohan was part of the project team that provided regulatory due diligence advice to Marubeni - a Japanese multinational - with regards to a potential future investment into the Australian energy industry. In particular, this involved identifying and analysing the potential upside and downside regulatory risks stemming from the National Electricity Rules.

### ***SP AusNet (Electricity) – Regulatory Due Diligence***

Whilst at SP AusNet, Rohan undertook a similar piece of regulatory and commercial due diligence work (as outlined above) into the potential purchase of another regulated network business in Australia.