



Oakley Greenwood

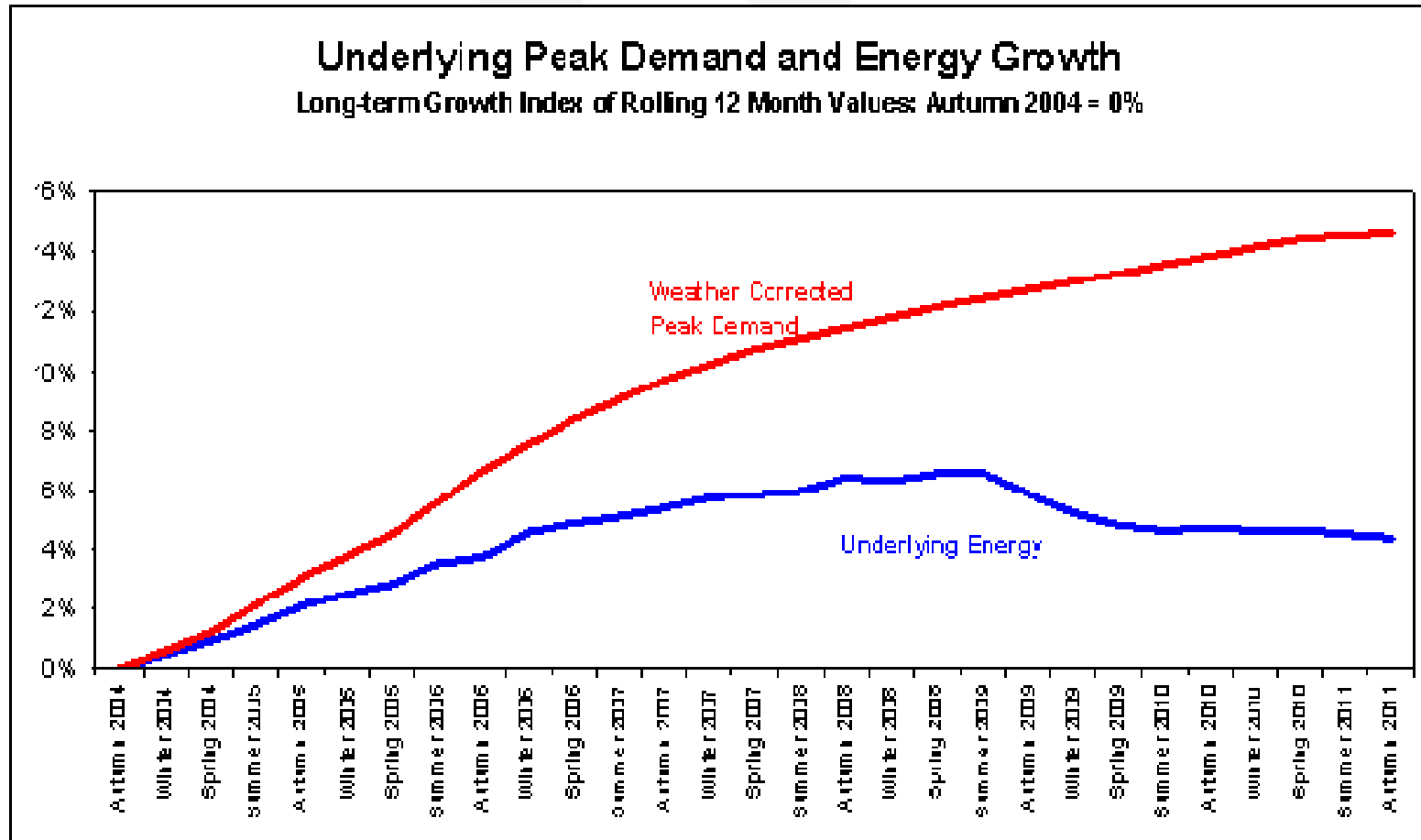
A Case Study in Dynamic Network Pricing

Orion Energy (Southpower) NZ
18 years of experience

Jim Snow, Director

Smart Utilities Conference
November 2011
Sydney

Declining System Load Factors in Australia



Source: Ausgrid ENA Conference May 2011
 July monthly energy & peak demand report

Declining System Load Factors in Australia

- Demand for electricity “energy” dropping/declining while peak demand is still growing - this is driving down the system load factor and driving network prices up (low use of peak assets)
 - Has been a clear trend since early 2000’s - temperature dependent peak demand
 - Initially caused by enormous growth in reverse cycle refrigerated air conditioning use in the networks - now well reported and subject of detailed forecasting in 2003 in NSW Network Price Determination process
 - **BUT now maybe more about price elasticity of demand - strong need for pricing reform**
- **“Demand response” has seen energy use actually now declining – volume response**
- This demand response cycle is often termed a “death spiral” – except where it is an essential service
- This will presumably “exhaust” at some stage but prices will continue to rise and cause other issues such as inequities and energy poverty, commercial rationalisations, State GDP impacts, etc.



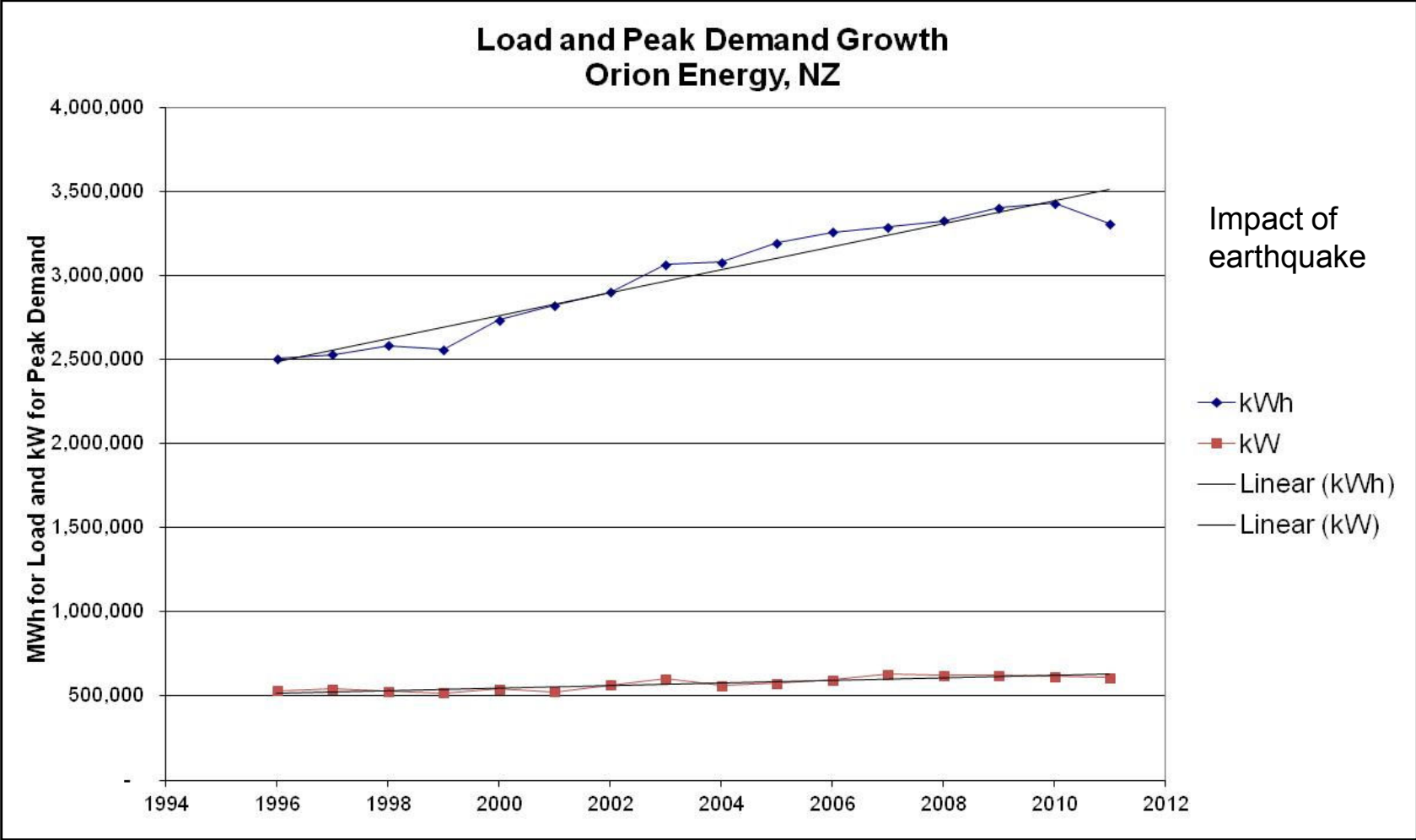
Southpower 1993 (now Orion Energy)

- Christchurch network (and had Retail then as well) - owned by 3 Municipal Councils - only regulated under the Commerce Commission - basically under competition policy type arrangement
- Need to curb capital expenditure in the network by limiting peak demand growth as very low return capital on incremental capital spend “competition for capital”
- Facing a major transmission upgrade that would raise prices to customers for no real return to anyone
- CEO had “unique” DM approach to date, but they were
- Experimenting with a the concept of dynamic pricing to major customers
- Were invited to develop associated customer assistance plan and work with pricing development and implementation as advisor
- Initial advice to base dynamic pricing on the use of Long Run Average Incremental Cost (LRAIC)
- Developed methodology for this, calculated LRAIC and got this signed off by the Board - used ever since

What does it all mean?

- Used the LRAIC to demonstrate decision making on capital investments and other key issues related to cost of peak demand
 - Led to switch to gas heating rather than resistive “blower” heaters
 - Led to urgent upgrade of ripple control system - huge return
- The whole process is based on controlling loads/pricing to achieve a set peak demand target for the network - based on capacity - to flatten the front end of the load duration curve
 - This was and remains a key aspect of the approach - target peak demand level
- Dynamic pricing was set for large users - circa 50% of their annual bill could be incurred/saved based on coincident demand on control days
- Assistance package to advise them how to avoid peaks, how to manage the options and make savings, and an overall energy management review as part of this work so they could become more efficient
 - This was a critical component to the success- what is in it for them, how do they manage it and why was it being done anyway - major support from this approach and great results

How has it performed – Load Factor improved 20%



Load Factor has gone from 53% to 64%
Peak demand has risen 0.8%/year – energy 2.3% - nearly 3 x faster

Pricing to Retailers

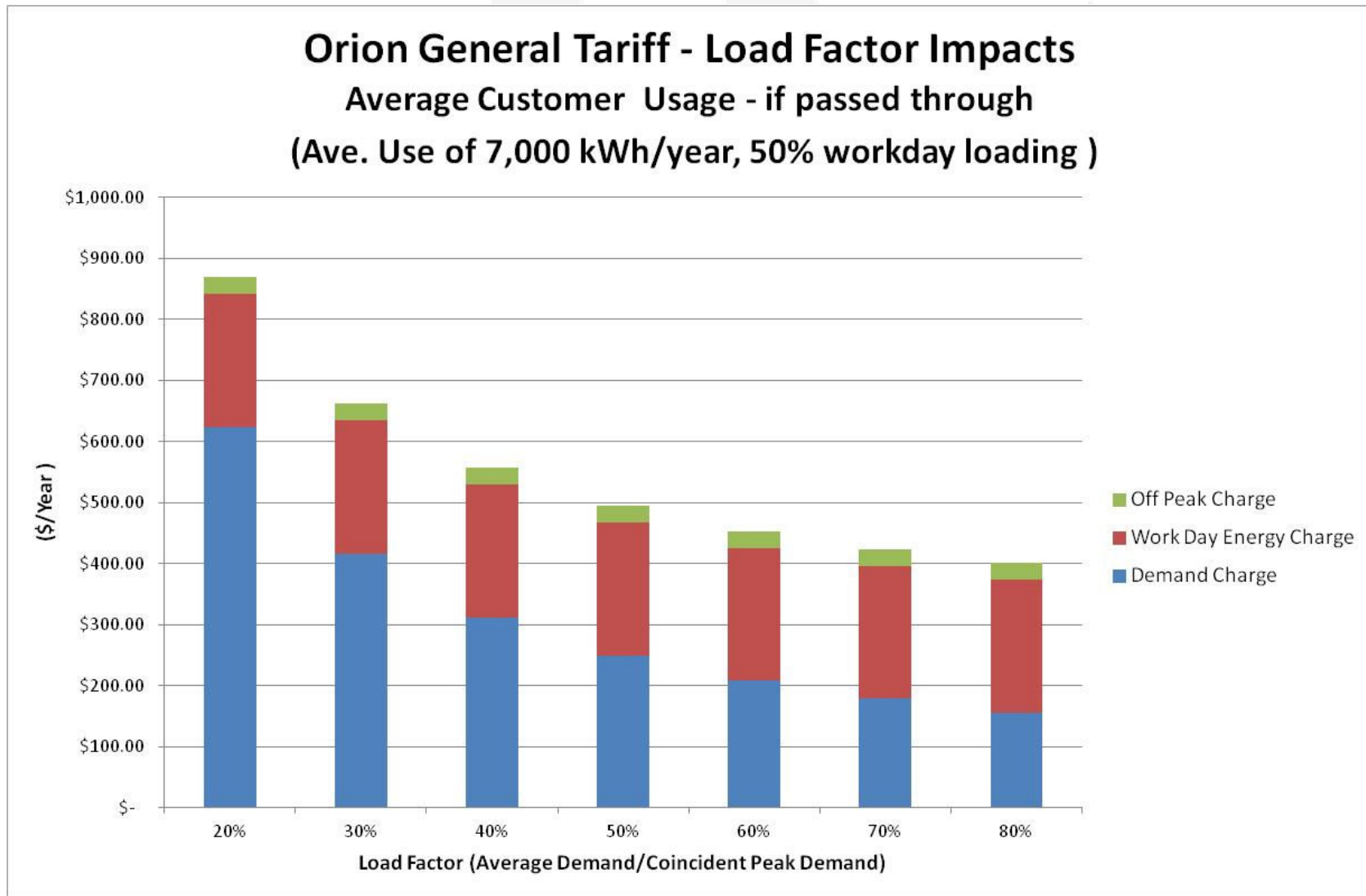
- For the other customers (General Customers) advice from 1993 was **to price to Retailers** as the customers – not to specific customer classes as this is really a hangover from earlier times when the industry was more integrated
 - Retailers always have the right to price how they wish to customers and this approach if cost reflective (as in this case) makes the network indifferent to Retailer/customer behaviour
 - If they use on peak their Retailer pays of this – if not then over the longer term the network avoids investment
- This pricing was therefore able to be settled at Grid Exit Points based on capacity used over time as the metering is available for this at these points, and
 - Retailers pay their “share” based on residual NSLP - large incentive then to consider pricing risks across their portfolio
- Pricing is again based on LRAIC for the peak but modified to avoid major cash flow issues for retailers, customers and network
- They also deploy peak reduction rebates and embedded generation credits using the LRAIC – settled at Grid Exit Points (using NEM type data) – and load control services (next slide)
- All major Retailers voluntarily installed Interval meters in response

“Muted” Dynamic Pricing to Retailers – General Tariff

Tariff Component		
Peak Charge	42.80 cents/kW/day	Charged based on usage recorded on dynamic peak days
Energy Charge Working Week Days	6.215 cents/kWh	7 am to 9 pm
Energy Charge - Other	0.785 cents/kWh	Rest is all Off peak

- The Peak Charge is then amortized and charged on a monthly basis – and is revised annually to reflect the past years measurements – so change can occur
- This is non-trivial as the pricing is based on the whole of the Retailers general tariff load – so they have an incentive to manage this profile - approach mimics NEM
- Orion then offer a range of pro-active management options to retailers such as ripple control services for hot water and other end use systems – and there is widespread optimisation of embedded generation and gas heating on peak, etc.
- Retailers can also influence customer behaviour with pricing and even just their selection of customers, etc.

Impact of load factor on general tariff charged to Retailers



In Conclusion

- Not as hard as it seems
- This pricing approach has been through three CEO's and numerous Board changes and yet is still seen as best approach, and has indeed been optimised over time
- Growing recognition there is a need for pricing reform in Australia at the network level
- Other options now also include (and may even be preferential) - the use of a capacity based charging system - but still based on LRAIC and charged to Retailers
- If this is adopted then maybe WAPC Regulation may not be the right form of regulation
- Rob Jamieson the new CEO of Orion Energy will be here tomorrow and he was their expert in this pricing over the last decade at least - he will expand on the new developments that it has driven such as network system operator role for greater regions than just Christchurch - regional collaboration to reduce peak demand - acting as the "societal" representative in effect
- Lots of great information on their website - all explained in detail - part of the original advice about socialising this approach - great to see
- <http://www.oriongroup.co.nz/>
- Paper on our website now

Thank you

Jim Snow, Director
Oakley Greenwood Pty Ltd

+61 4 1777 5893

jsnow@oakleygreenwood.com.au



www.oakleygreenwood.com.au

Oakley Greenwood – paper on our site now

Melbourne

Alan Rattray

Energy trading and risk management
Strategy advice
Analysis

Lance Hoch

Gas and electricity network and retail regulation and pricing
Demand side expertise including energy efficiency
Climate change impact analysis

Rohan Harris

Gas and electricity network pricing and regulation
Water industry regulatory expertise
Regulator Economic expertise

Brisbane

Jim Snow

Business Strategy
Gas industry experience
Energy project development
Network regulation
Energy Marketing
Demand side
Industry Restructuring

Jim McDonald

Gas industry expert

Wellington, NZ

Andrew Shelley

Regulatory economics
Model development
Competition matters

Adelaide

Greg Thorpe

Market policy, market design and regulation
Market analysis and market modelling
Climate change impact analysis
Transmission / Generation interactions

Sydney

John Wallace

Network development and operational management expert
Senior Utility management Experience
Network Regulation
Network development dispute analysis