28 October 2022

Sarah Gillies
Chief Executive (Acting)
Electricity Authority
Level 7, AON Centre
1 Willis Street
Wellington 6011
New Zealand

Re: **Winter Peak Product to maintain security standards**

Dear Sarah,

The industry CEO Forum and System Operator have commenced work on designing a winter peak product that would address the looming risk of the security standard being breached in winter 2023. We seek the support of the Authority as we design the product, with a view to making it operationalised and available for winter 2023. We appreciate the time frame is short.

The System Operator's 2022 Security of Supply (SOSA) identified the risk explicitly:

> *The full range of sensitivity combinations showed that the NI-WCM could fall below the security standard as early as 2023.*[1]

We have attached an extract from Transpower's Market Operations report of 16 October 2022 that updates the earlier SOSA analysis. It shows the spread of the top 20 daily peak demands per year since 2010. The highest peaks are heavily influenced by extreme weather temperatures and these tend to be well publicised. The System Operator's concern stems from the fact that nationally the lower end of the spread has risen. This increase is against a warming environment, with 2022 the warmest winter on record, pushing 2021 to second, and 2020 to third.

Problem definition:

- The current suite of market mechanisms is no longer delivering the level of security we want in the face of higher peaks and more frequent high peaks.
- The market has no mechanism to deal with the unit commitment problem i.e. the discretion to commit a thermal unit to start is based on each generator's judgement of whether a unit will be dispatched, how long it will run for and the likely commercial outcome. Owners of slow-start thermal generation have suggested that committing their plant to generate has become more challenging in the current environment, especially given increased fuel and carbon prices and the growing proportion of intermittent generation. RTP will deal with one element of the uncertainty but commitment will still have to be made ex ante based on forecast prices.
- The ancillary services in place are doing their job but there is an additional job to be done i.e. there is no product to manage multi-hour shortfalls. It will be some time before market design, investment in generation and aggregation of DER addresses the gap.

[1] Transpower (System Operator), Security of Supply Assessment 2022. (June 2022)

- There is a case for the immediate introduction of a mechanism that attracts firm response over winter peaks to avoid shortfalls occurring. Providers of firm response would include generation or demand curtailment providers and ideally come from resources not currently participating in the market.

The System Operator has long believed there is not a product amongst the current market mechanisms that is attractive to all forms of demand response. This issue was recognised in the context of security of supply in the "Hodgson report", prepared for MBIE following the 9 August 2021 blackout incidence, which included in its recommendations:

> *7. We recommend that the EA and the SO design and implement a new product to manage multi-hour shortfalls.*[2]

We have commissioned Toby Stevenson from Sapere to lead the design work, with a view to having an agreed product available by December 2022 for operationalisation by Winter 2023. Toby has kept key Authority staff abreast of developments in this project. Toby has provided copies of output from the Advisory Group set up to support the product development, and noted where support is needed from the Authority:

1. The Authority must be satisfied that the product will contribute to meeting the long-term interests of consumers.
2. The product must nestle comfortably amongst and be integrated with the current suite of market mechanisms and ancillary service products, and the new products (e.g. dispatch notification) being introduced with real-time pricing early next year.
3. The product is likely to require access to funding from purchasers.
4. Code changes may be required to ensure the System Operator can access the product to be able to meet the security standards and comply with its contractual obligations to the market.
5. The design work is highlighting other process improvements at the margin that the Authority might like to consider.

We very much see the product as having a finite life and propose that to be three years. We believe this is attractive for several reasons:

1. Security of supply would be augmented in the near term.
2. The product could flush out demand response and generation not currently coming to market through the Instantaneous Reserves (IR) market, and which may not be compelled by real-time pricing or the dispatch notification products soon to come into effect.
3. As a beta version of a short notice multi-hour product, this product would offer an opportunity to learn what does and does not work for the ongoing market design process.
4. The sector would be seen as collaborative and innovative around an important issue.

We would like to work formally with the Authority to prove up the product with your support. We are happy to meet you and present progress as we proceed, to include Authority representatives on the advisory panel, and we are happy to take on board your criteria for designing this product. Please advise how you would prefer us to formally engage with you.

[2] Ministry of Business, Innovation and Employment (MBIE), Investigation into electricity supply interruptions of 9 August 2021. (November 2021)

Yours sincerely

David Prentice
Chief Executive
Manawa Energy

Alison Andrew
Chief Executive
Transpower

Vince Hawksworth
Chief Executive
Mercury

Neal Barclay
Chief Executive
Meridian

James Kilty
Chief Executive
Powerco

Simon Mackenzie
Group Chief Executive
Vector

Nigel Barbour
Group Chief Executive
Orion

Tracey Hickman
Interim Chief Executive
Genesis

Mike Fuge
Chief Executive
Contact Energy

Ken Sutherland
Group Chief Executive
Unison Group

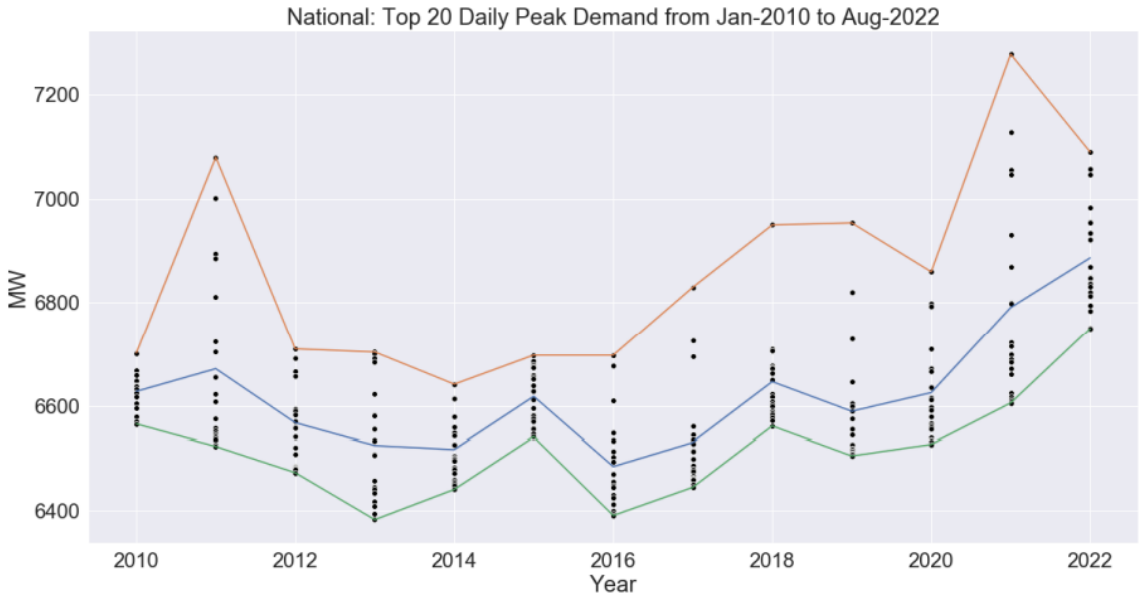
Babu Bahirathan
Chief Executive
Nova Energy

Weekly Market Movements - Week Ended 16 October 2022

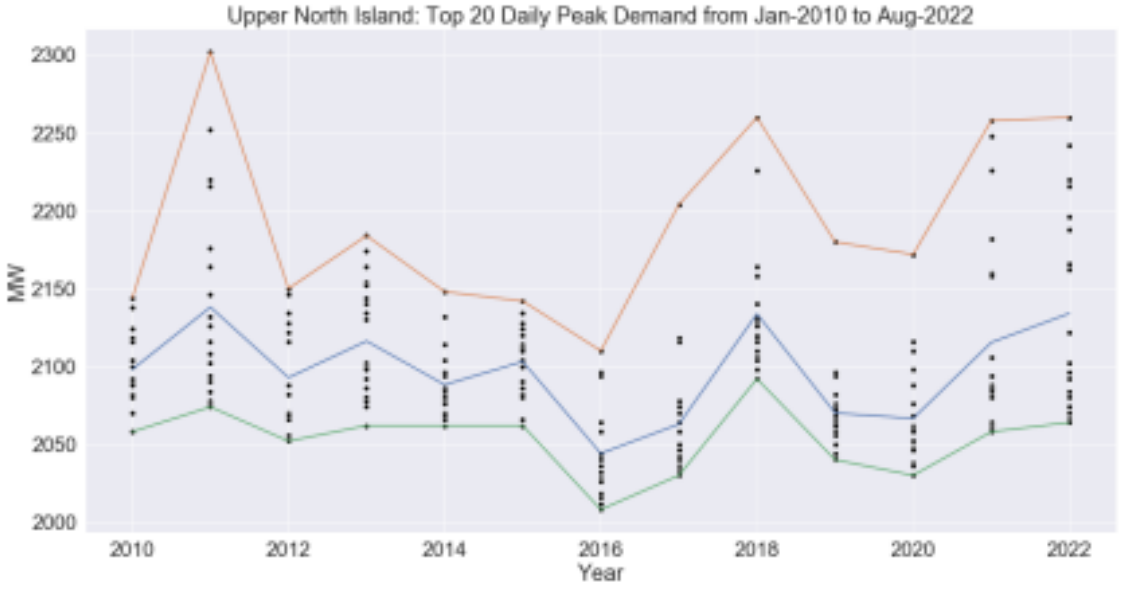
Peak Demand Growth

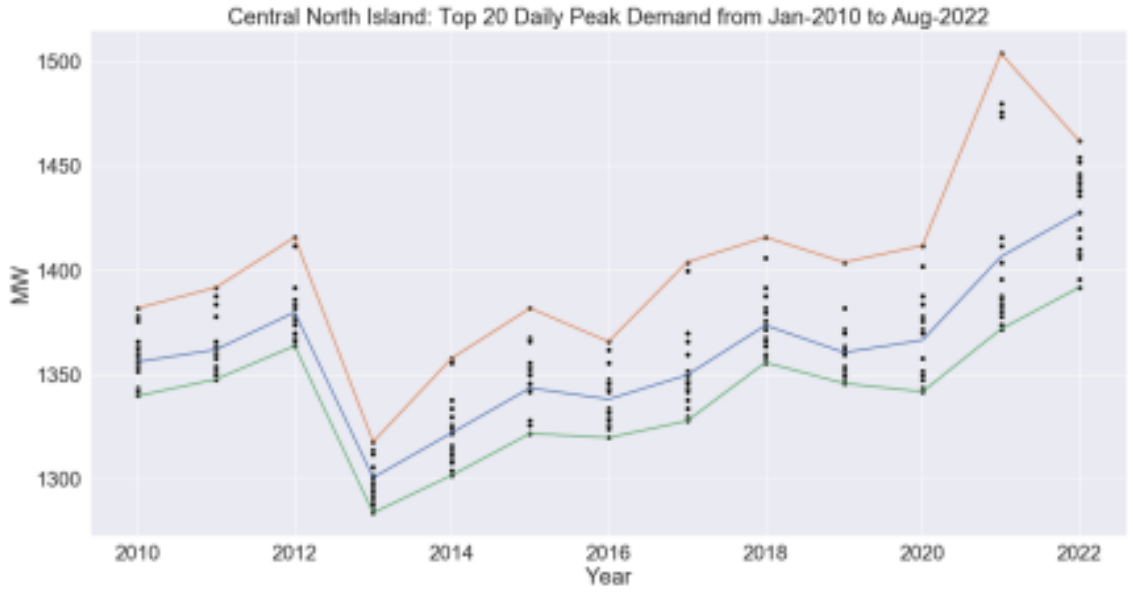
The chart shows the spread of the top 20 daily peak demands per year since 2010. The lower end of the spread is what the System Operator looks at closely as a sign of peak demand growth. This is because the highest peaks are heavily influenced by extreme weather temperatures where it can be several years between comparable weather events. For example, some years it snows in Ohakune and even Taihape, but many years it doesn't, while in 2011 it snowed in Wellington CBD.

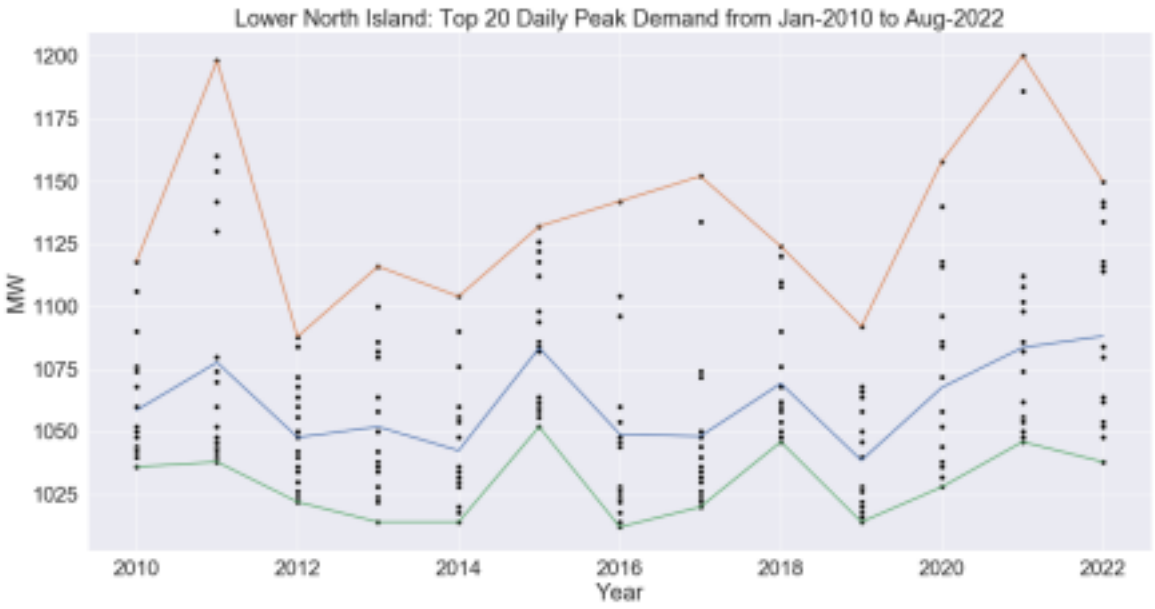
The chart shows that nationally the lower end of the spread has risen. This increase is against a warming environment, with 2022 the warmest winter on record, pushing 2021 to second, and 2020 to third.

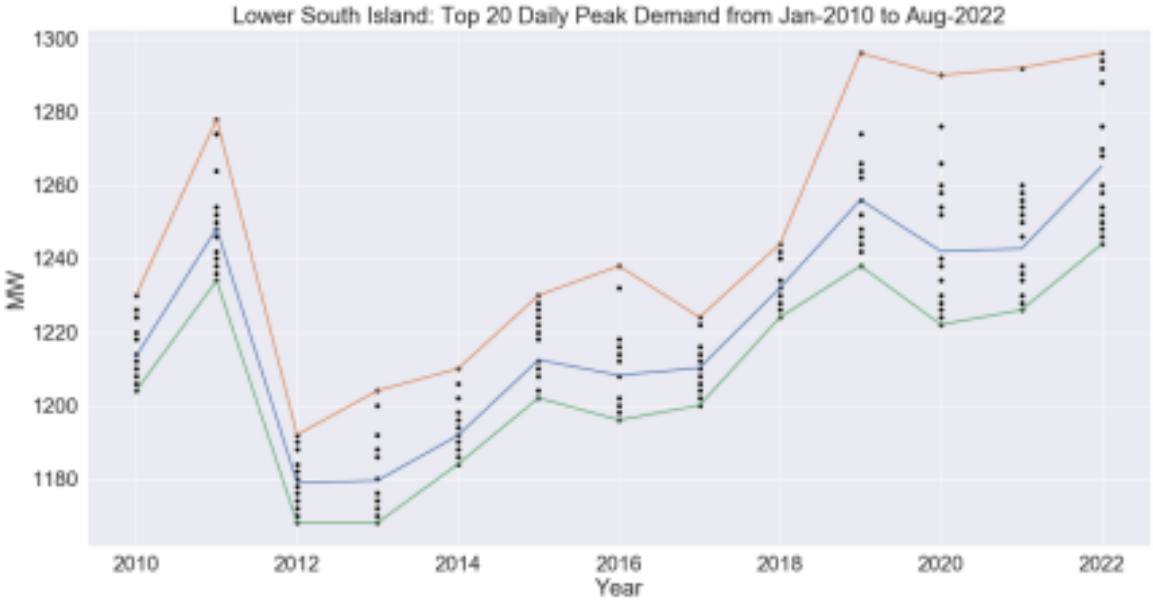


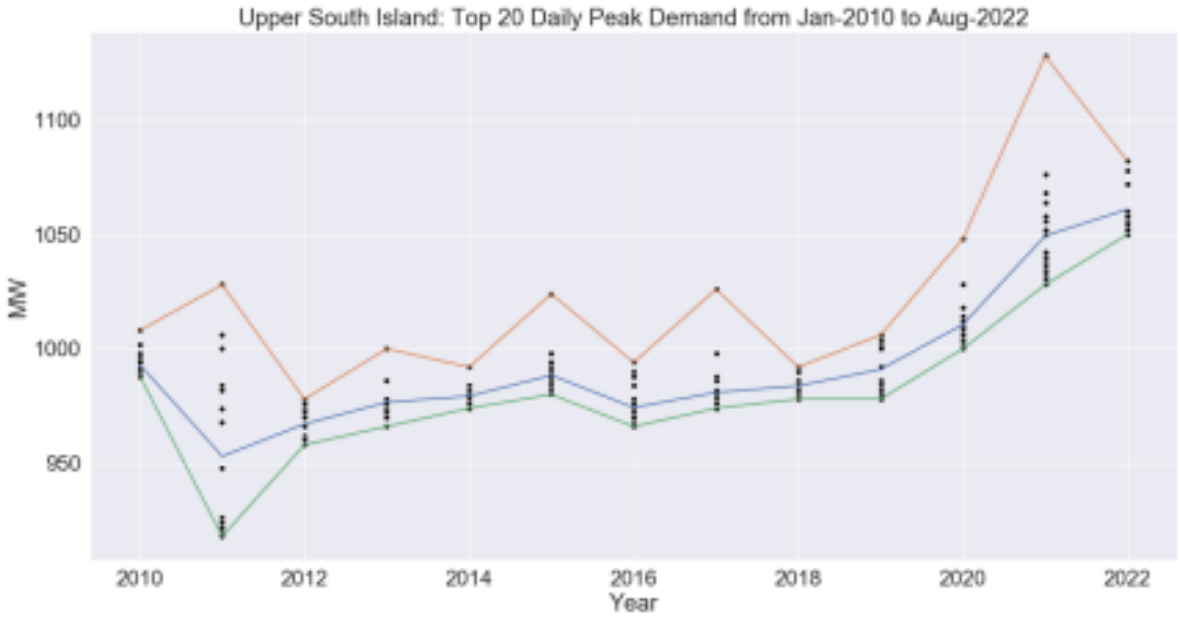
Diving a little further into the regions where growth is coming from, we can see the upper North Island and lower North Island have flat to low movement while demand peaks in the central North Island and South Island have increased. The increase in the central North Island demand peaks is against a declining industrial demand with the closure of Marsden Point refinery (40MW) and Norske Skog (~60MW).


Upper North Island: Top 20 Daily Peak Demand from Jan-2010 to Aug-2022
MW
2300
2250
2200
2150
2100
2050
2000
2010
2012
2014
2016
2018
2020
2022
Year


Central North Island: Top 20 Daily Peak Demand from Jan-2010 to Aug-2022
MW
1500
1450
1400
1350
1300
2010
2012
2014
2016
2018
2020
2022
Year


Lower North Island: Top 20 Daily Peak Demand from Jan-2010 to Aug-2022
MW
Year
1200
1175
1150
1125
1100
1075
1050
1025
2010
2012
2014
2016
2018
2020
2022


Lower South Island: Top 20 Daily Peak Demand from Jan-2010 to Aug-2022
MW
Year
1300
1280
1260
1240
1220
1200
1180
2010
2012
2014
2016
2018
2020
2022



The reason for growth is not entirely clear to the System Operator because we can only see demand at an aggregate level and do not have access to demand at the ICP level (household/business). However, we do see a clear increase in peak demand following the removal of the Regional Coincident Peak Demand (RCPD) charge as a result of changes in the transmission pricing methodology. RCPD previously created an incentive for network companies and direct connect customers to manage peak load.

This change in demand profile is clear in the chart below which shows the average shape of the national demand profile in 2022 compared with 2021 (the last year RCPD was in effect). The 2022 profile has been normalised with the same GWh as 2021 for comparison. This shows the 2022 peak demand is more peaky, meaning it is higher but for a shorter period of time than the 2021 load profile, which is flatter for longer. The System Operator estimates that removing the RCPD incentive has increased peak demand by approximately 100MW.