



# Case Study: New Zealand Year-on-Year Load Growth from 2015 to 2021

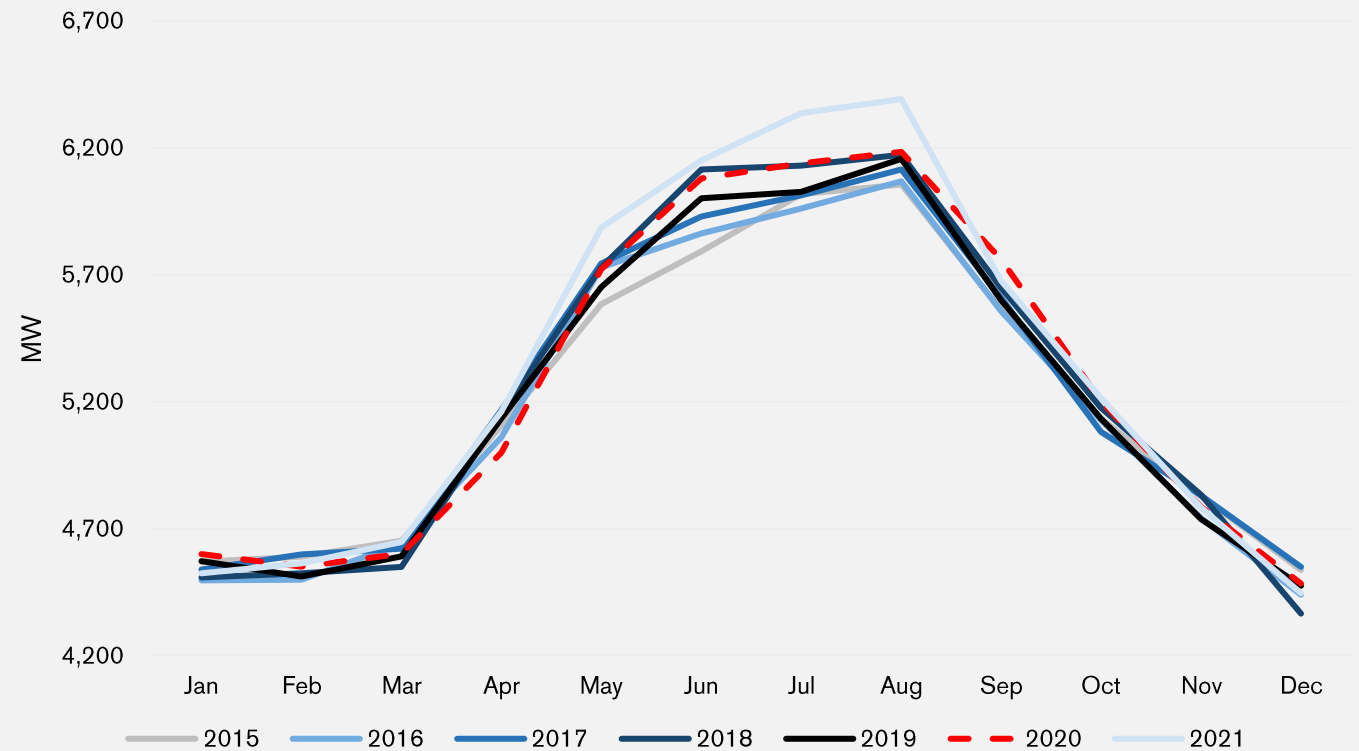
# Overview

- New Zealand's power system continues to grow steadily, the total conforming electricity demand has increased 2.1% since 2015 and reached an all-time peak in 2021.
- The purpose of this case study is to illustrate the Year-on-Year (YoY) load growth in New Zealand and COVID's impact on load.
- We use TESLA's Weather Risk tool to analyze load growth changes under both mild and extreme weather.
- To calculate the 50<sup>th</sup> and 99<sup>th</sup> Weather Risk percentiles, weather data from 2010 – 2021 was used. This means that each day was solved to 180 strips (15 per year) of weather data, resulting in 180 solutions for each day. Of these 180 solutions, half fall below the 50<sup>th</sup> and 99% below the 99<sup>th</sup> percentile.

# Peak Demand Growth

- New Zealand is a winter peaking system. Most of the YoY peak load growth occurs in the colder May to August months.
- The 2020 March-April Level 4 lockdown lowered peak load below 2015 levels. Recovery was sharp and swift returning back to 2018 levels by the winter.
- The resurgence carried forward into 2021 with extremely strong growth during the winter. However, growth stagnated as New Zealand entered Level 4 lockdown again in August.

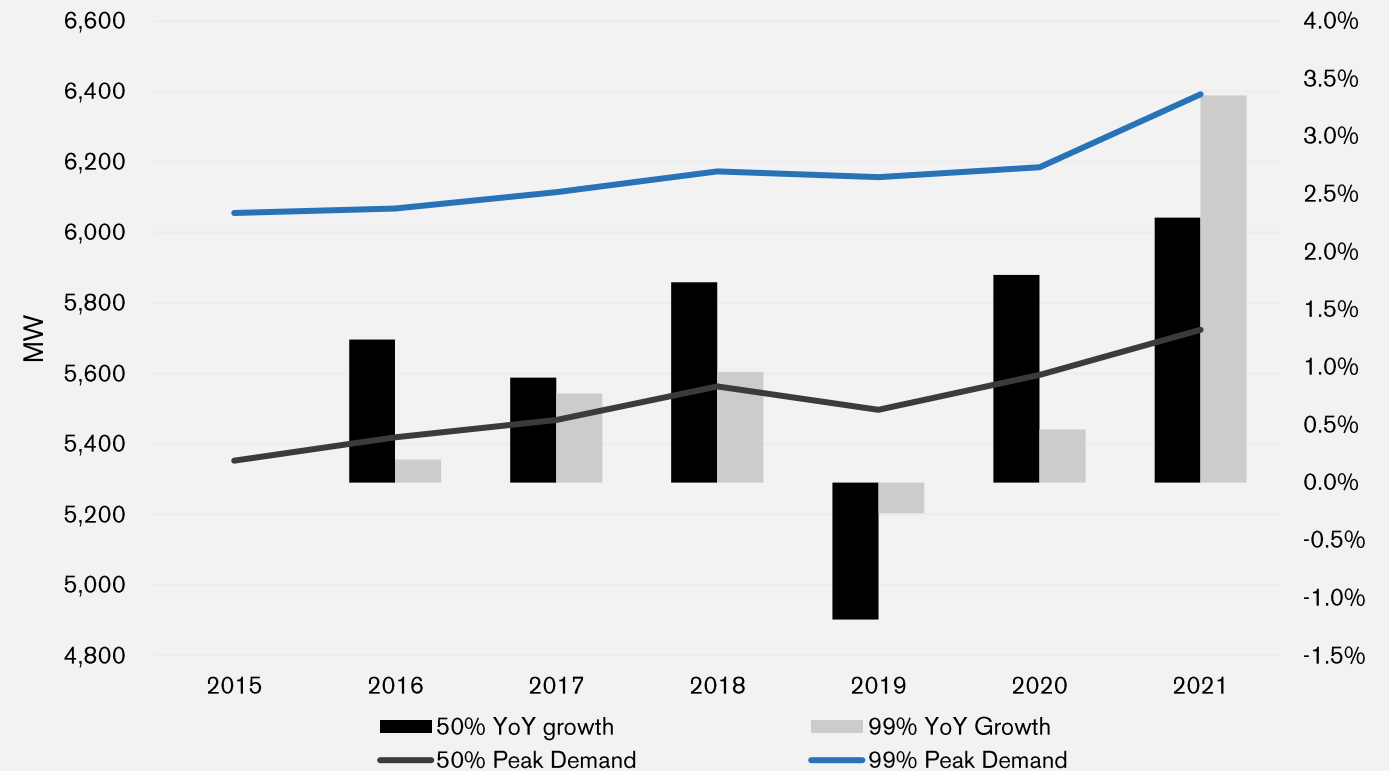
## New Zealand – Monthly Peak Demand Growth



# YoY Peak Demand Growth

- Since 2015, New Zealand's peak demand grew by 5.6%.
- The 99<sup>th</sup> Weather Risk percentile shows peak demand growth during extreme weather. The 50<sup>th</sup> Weather Risk percentile shows peak demand growth under median weather.
- Both the 50<sup>th</sup> and 99<sup>th</sup> percentiles were plotted to see if there was a growing gap between them. Peak demand flex is greater in 2021 which indicates a greater sensitivity to cold weather in 2021. This may be due to the dual effect of more people working from home: heaters running in both homes and offices.

## New Zealand Weather Risk Growth



# ■ Summary

- Since 2015, New Zealand's total conforming electricity demand grew by 2.1%, while peak demand grew by 5.6%.
- There is minimal peak demand growth during the summer months over the past half-decade.
- Although peak demand has grown, there is evidence of a growing asymmetry in weather responsiveness on peak demand. The colder months have greater peak demand growth.

# ■ Questions?

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