TESLA
Forecasting Solutions

TESLA Asia Pacific Limited
Plaza Level, 41 Shortland Street
Auckland, 1010, New Zealand
+64 (0) 9 551 5039
www.teslaforecast.com
Registered in NZ. No. 3233094

TESLA load forecasts reduce uncertainty by a third compared to the New Zealand System Operator[1]

This report compares both the load forecasts provided by TESLA via EMS' em[6] and the System Operator's load forecast (at 2.5 hours ahead of real-time) against actual load observations. As does the report released by Transpower, this report seeks to separate out the conforming loads for further analysis.[2] EMS provides a detailed load forecasting accuracy analysis to all Load Forecast users on a monthly basis.[3]

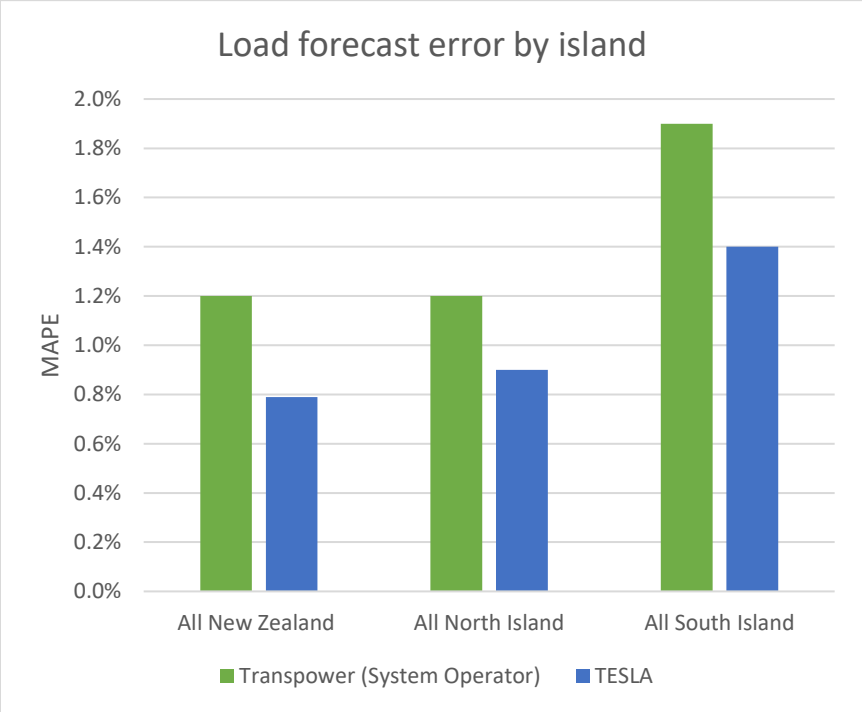
Load Forecast Accuracy

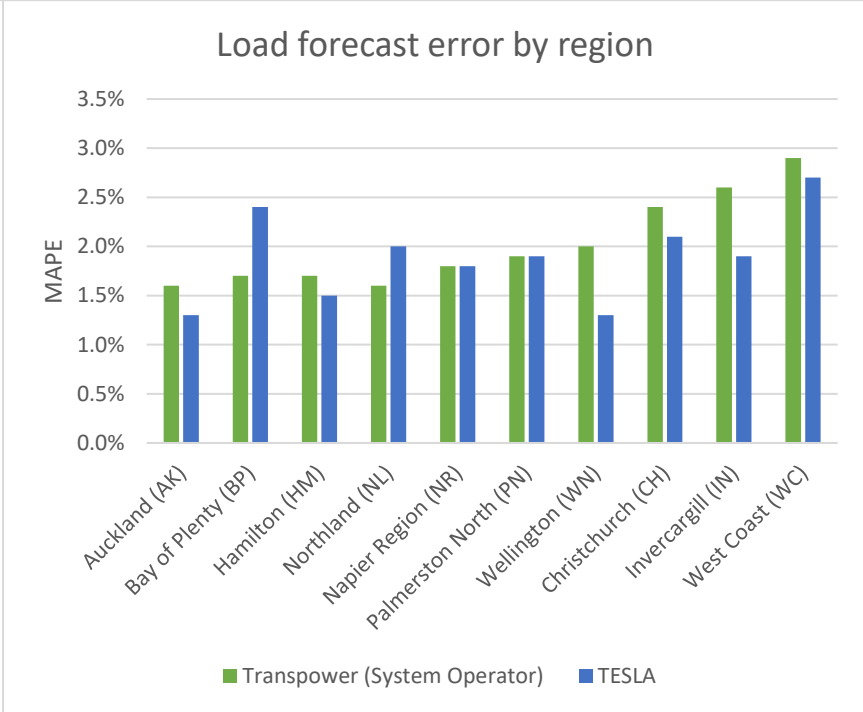
ALL TRADING PERIODS ACCURACY FOR MARCH 2017

	Transpower (System Operator)	TESLA
	MAPE (%)	**MAPE (%)**
All New Zealand	1.2%	0.79%
All North Island	1.2%	0.9%
Auckland (AK)	1.6%	1.3%
Bay of Plenty (BP)	1.7%	2.4%
Hamilton (HM)	1.7%	1.5%
Northland (NL)	1.6%	2.0%
Napier Region (NR)	1.8%	1.8%
Palmerston North (PN)	1.9%	1.9%
Wellington (WN)	2.0%	1.3%
All South Island	1.9%	1.4%
Christchurch (CH)	2.4%	2.1%
Invercargill (IN)	2.6%	1.9%
West Coast (WC)	2.9%	2.7%

[1] TESLA's 2.5 hour ahead MAPE for NZ conforming load was 0.89% while the System Operator's was 1.2%
[2] The System Operator's load forecast accuracy report can be found here: https://www.transpower.co.nz/sites/default/files/bulk-upload/documents/201703%20Load%20Forecast%20Accuracy.pdf
[3] For more information on the em[6] Load Forecast: http://ems.co.nz/portfolio/energy-information/loadforecast

TESLA Asia Pacific Limited
Plaza Level, 41 Shortland Street
Auckland, 1010, New Zealand
+64 (0) 9 551 5039
www.teslaforecast.com
Registered in NZ. No. 3233094





This report confirms that the TESLA load forecasts via em[6] significantly outperform the load forecasts published by the System Operator. As the above charts show, the outperformance of the conforming load forecasts applies to both North and South Islands.

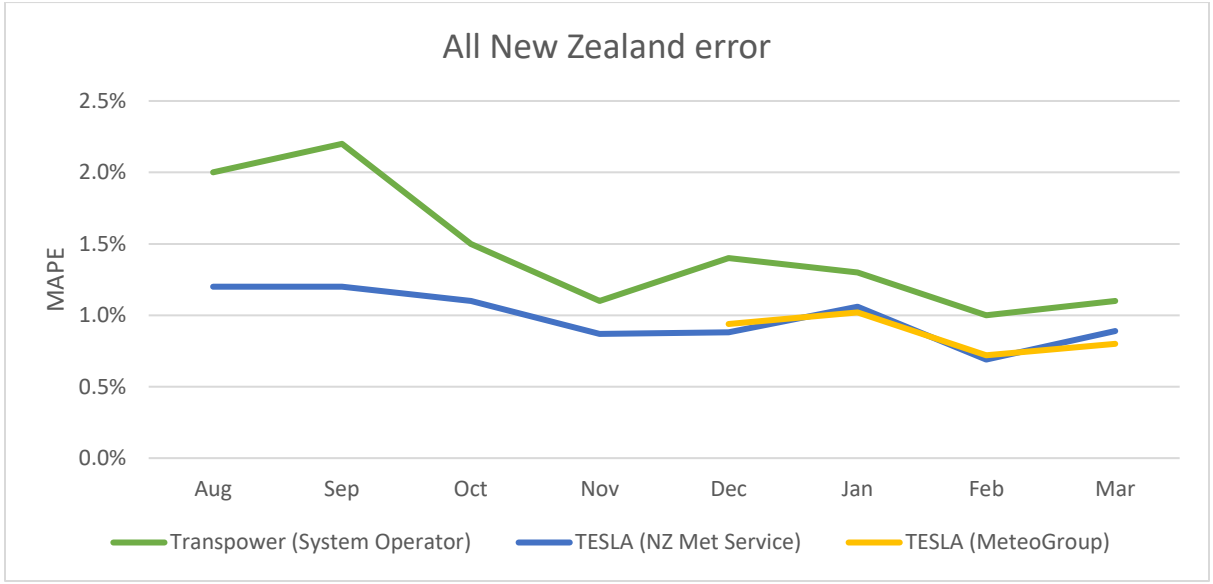
Note that there was a fault at the Paeroa observation station, resulting in missing weather observations from 17 – 28 February 2017. Since the TESLA model's coefficients solve against weather going back over the previous month, seasonally normalized weather was used in place of the missing observed values – resulting in higher error in the Bay of Plenty forecast.

There is potential for further improvement if demand response data become available to the public domain. Although the TESLA model currently uses data mining to learn when demand response events may occur, there is room for improvement if demand response data become an input to the model.

TESLA Asia Pacific Limited
Plaza Level, 41 Shortland Street
Auckland, 1010, New Zealand
+64 (0) 9 551 5039
www.teslaforecast.com
Registered in NZ. No. 3233094

The graph below shows the comparison of the TESLA and System Operator load forecasts since August 2016. The blue curve shows the MAPE of the TESLA forecast 2.5 hours ahead using weather forecasts provided by the NZ Met Service while the yellow curve shows that of weather forecasts provided by MeteoGroup. As the weather forecast is the primary input to the load forecast, it's good practice to observe how the resulting load forecasts vary under different weather vendors. Confidence will be high when the resulting load forecasts line up while further attention will be required when they diverge.

The TESLA forecasts are shown to be stable across all seasons. Historically, the System Operator's forecast tends to be less accurate in the winter than the summer (See Transpower's Benchmark results[4]). As the TESLA forecasts have proven to be stable across all seasons, it's expected that the added value from the TESLA load forecasts will be even greater in the coming months. Note that this chart contains both conforming and non-conforming loads.



A free trial is available for industry participants to assess the added value of the TESLA load forecasts over the System Operator's. Please contact TESLA Asia Pacific for more information: asiapacific@teslaforecast.com +64 (0) 9 551 5039

[4] A link to the Transpower Benchmark report can be found at http://www.teslaforecast.com/casestudy/transpower-mtlf-trial/