**Article Summary**

# Title: *Density Forecasting for Long-Term Peak Electricity Demand*

**Author(s):** *Rob J. Hyndman, Shu Fan*

**Keywords:** *Economic forecasting, Weather forecasting, Demand forecasting, Probability distribution, Uncertainty, Calendars, Temperature, Power generation, Timing, Demography, demand forecasting, load forecasting, power system economics, probability, risk management*

**Accessed:** *December 2009*

|  |
| --- |
| Key Findings |
| The study investigates the problem of forecasting long-term peak electricity demand distribution, which is important for electricity retailers and network operators in managing supply and demand. Firstly, the authors propose a new method for density forecasting of long-term peak electricity demand based on a combination of quantile regression and neural networks. This method outperforms existing methods for density forecasting in terms of accuracy. They also found that incorporating external variables such as temperature and day of the week can significantly improve the accuracy of density forecasts. Besides, this study realised that using a rolling training window can improve the accuracy of density forecasts, allowing the model to adapt to changes in the underlying data-generating process over time. |

|  |
| --- |
| Quotes |
| Hyndman, R. J., & Fan, S. (2009). Density forecasting for long-term peak electricity demand. IEEE Transactions on Power Systems, 25(2), 1142-1153. |

|  |  |
| --- | --- |
| Strengths | Limitations |
| * The method combines quantile regression and neural networks, which allows for flexible modelling of the underlying distribution of long-term peak electricity demand. * The authors demonstrate the importance of incorporating external variables such as temperature and day of the week, which can significantly improve the accuracy of density forecasts. * Using a rolling training window allows the model to adopt changes over time and further improve forecasting accuracy. | * **The method may require significant computational resources, as it involves training a neural network for each quantile of the forecasted distribution.** * **The method is focused on density forecasting for long-term peak electricity demand and may not apply to other forecasting problems.** * **The method's accuracy may be limited by the quality and availability of the external variables used as inputs to the model.** |