**Subject:** Data Science Internship Coding Challenge - Electricity Demand Forecasting

Dear Candidate,

Welcome to the coding challenge for our Data Science Internship! We're excited to assess your skills and creativity in solving real-world problems. Our company specializes in developing battery systems, and a key aspect of our operations is forecasting electricity demand for different customers users.

This challenge is designed to evaluate your abilities in data handling, forecasting, and problem-solving. You will be working on a task that mirrors the kind of work we do every day - forecasting day-ahead electricity demand.

**The Challenge**

Your task is to develop a model that can forecast the electricity demand for the next 15 minutes based on historical data. We have provided you with a dataset containing historical electricity usage for a commercial property in Germany.

You can use any programming language you like and submit the results in any format preferred. Jupyter notebooks can often be a good approach, but it’s not required.

**What You Need to Do**

1. **Data Exploration and Pre-processing:**
   * Conduct an exploratory data analysis to understand the dataset.
   * Clean and pre-process the data, if required, preparing it for modelling.
2. **Feature Engineering:**
   * Create features that you believe will help in predicting electricity demand.
3. **Model Development:**
   * Select and build forecasting model/s.
   * Justify your choice of model/s and approach.
4. **Model Evaluation:**
   * Evaluate the model using appropriate metrics.
   * Discuss the model's performance and any insights you can derive.
5. **Reporting:**
   * Provide commentary detailing your methodology, findings, and any recommendations or insights.
6. **Code Submission:**
   * Submit your code in a clean, readable, and well-commented format.

**Additional Question**

* **Scaling the Solution:**
  + Imagine we now have 10 additional different load profiles that we need to forecast alongside the original one, as the company is growing. Describe how you would approach this challenge. What factors would influence your decision, and how would you ensure the scalability and efficiency of your solution?

**Submission Guidelines**

* Estimated Time Commitment: This challenge is designed to take 2-3 hours.

We're looking forward to seeing your innovative approaches to this challenge. Best of luck!