

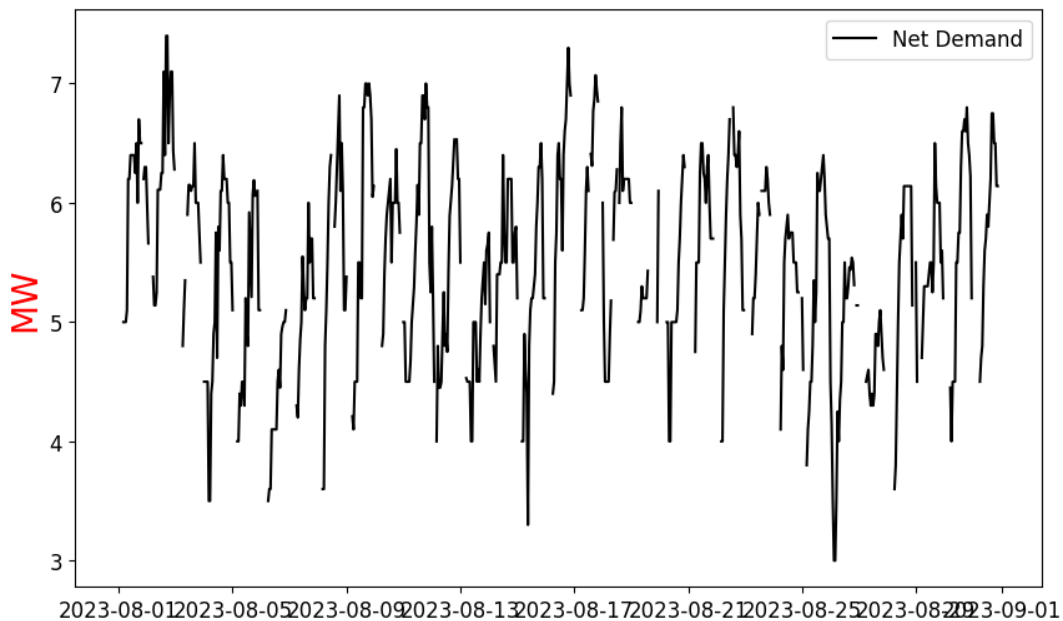
# Homework #2

Student name: *Susanna Joseph*

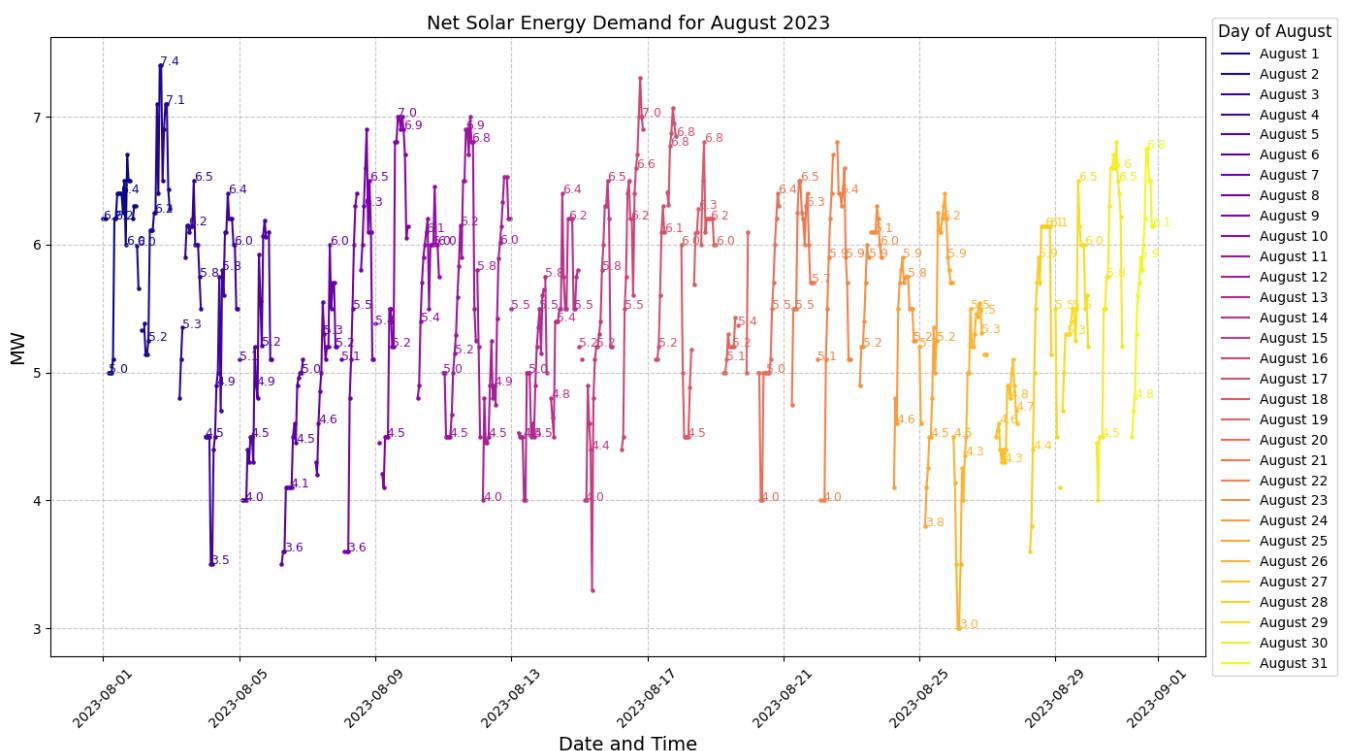
Due date: *October 22, 2025*

## Problem 1

The data is digitized for the month of August 2023 (1st August to 31st August). The graph generated from the Python script *plotIITGNetDemandData.py* is given below:



A better visualization of the net demand is given below: The code for this can be found in the python script given at *plotIITGNetDemandData\_2.py*.



## Problem 4

The article "**You Can't Sell Trees No One Cuts Down**" explores the problematic nature of carbon credit markets, particularly highlighting how the concept of net zero carbon emissions, while well-intentioned, is susceptible to significant abuse and malpractice. Through an example of a carbon offset project in Zimbabwe, it becomes clear that there are systemic flaws in how these markets function, leading to the **sale of fake carbon credits**. The key issue is the way carbon credits are calculated and verified, which opens the door for companies to inflate their environmental impact and profit from misleading claims.

At the heart of the problem is the way carbon credits are generated. In theory, a carbon credit represents a reduction in carbon emissions, achieved through reforestation. However, as seen in the Zimbabwean project, the system is often manipulated. In this case, a company named **South Pole** promised to preserve a vast forest, selling credits based on predictions of how much deforestation would have occurred without intervention. Yet, when the project was audited, it was found that the reference forest had not experienced the predicted level of deforestation. As a result, South Pole had sold far more carbon credits than it should have, leading to a situation where **companies buying these credits believed they were offsetting emissions**, when in reality, the environmental impact was negligible.

This case illustrates a major flaw in the carbon credit system, i.e it is based on hypothetical scenarios. The fact that carbon credits can be generated from theoretical predictions creates a big incentive for companies to exaggerate the environmental benefits of their projects. Instead of directly reducing emissions, companies and individuals can simply purchase these credits to claim they are carbon neutral, often without any meaningful reduction in overall carbon output. This leads to what is commonly referred to as "**greenwashing**"— a practice where companies make misleading claims about their environmental impact to boost their image or meet regulatory requirements.

One way to address this issue is to strengthen the **verification and monitoring processes within the carbon credit market**. Currently, organizations like Verra, which certify carbon offset projects, rely on periodic audits that are often based on incomplete or outdated information. Incorporating more robust, real-time monitoring technologies, such as satellite imagery and artificial intelligence, could provide a clearer picture of what is happening on the ground.

Another critical factor is the need for greater transparency and accountability in how carbon credits are bought and sold. Many carbon offset projects operate in regions where oversight is minimal. In the case of the Zimbabwean project, much of the money intended for community development and anti-deforestation efforts simply disappeared. To combat this, carbon credit markets should require **more detailed reporting on how funds are used** and what impact they have on the environment and local communities. This could involve regular, independent audits and public disclosures that allow stakeholders to verify the legitimacy of the claims being made. Furthermore, it is essential to address the conflict of interest that exists in the current carbon credit market. Companies that both verify and sell carbon credits have a financial incentive to certify as many credits as possible, even if they are not truly backed by real emissions reductions. To avoid this, the roles of auditors and financial beneficiaries must be separated, with independent **third-party organizations responsible for verifying the environmental impact of projects**.

However, even with these reforms, the question remains whether the carbon credit system can truly achieve the goals of net zero emissions. For instance, implementing a direct **carbon tax** could provide a more straightforward and reliable way to reduce emissions. By taxing companies based on their actual carbon output, rather than allowing them to offset emissions through dubious credits, governments could create a strong financial incentive for industries to invest in cleaner technologies and reduce their carbon footprint directly.

In conclusion, while the concept of net zero carbon emissions is a critical goal in the fight against climate change, the current reliance on carbon credits is fraught with challenges. To avoid the malpractice described in the article, we must reform the system by strengthening verification

processes, increasing transparency, and separating financial interests from environmental oversight. If these measures prove insufficient, alternative policies like carbon taxes may offer a more effective solution for balancing economic growth with the urgent need to reduce global emissions.