Assignment 4 Energy and climate justice

1. Energy and climate justice

Check the launch of NYC Climate Justice Hub, a partnership between the New York City Environmental Justice Alliance (NYC-EJA) and The City University of New York (CUNY) to advance climate solutions led by communities of color on the front lines.

Check also the New York State climate justice programs and resources

What is energy justice? How is it different from climate justice? Use one example to discuss how energy supply/demand or climate impact may affect equity and justice of specific groups or populations. Write a short essay (~400 words) to explain your thoughts. (Total 10pts)

2. Load forecast and EV penetration (Optional, for those who are interested)

Load forecast is very important for power system planning and operation. First visit NYISO website's Custom Reports to explore all sorts of data out there. We will be focusing on day-ahead market (DAM) forcast (1-hour interval), and actual load (5-min interval and 1-hour interval), and comparing them and analyze how to make forecast better. Download one whole year (2022) of Real_Time_Dispatch_Actual_Load and Day Head Market Load Forcast for New York City.

- Draw the load curve and load duration curve of New York City.
- Show the characteristics of average day hourly load curve in New York City
  - All days average
  - Weekday vs. weekend
  - Monthly avearge
  - Seasonal average
- Find the hour(s)/day(s) with the largest forecast error, and try to explain why?
- Now make reasonable assumptions of EV penetration and EV charging in New York City, and try to show how that would change the load curve.
- Should ConEdison worry about it, what policy/incentives should you use to change people's behavior of charging/discharging so to save costs for the utility companies?

Further reading:

Arvind Jaggi, Senior Economist, Demand Forecasting & Analysis, Electric Vehicle Forecast Impacts (Gold Book 2021)

Play around the En-ROADS model, and change some of the parameters and check how assumptions affect modeling results.