Brookfield Energy Trading Analyst Coop Python Assignment

Rules: Complete the following tasks using Python within 24 hours. There is no single right answer—you may use any method you wish to complete the assignment. Feel free to use any online resources during the test. The final deliverable will be .py or .txt file with the code you used to complete the following tasks:

* Question 1 (Data Preparation and Cleaning)
  1. Read in the file “DATA\_SET\_1.csv” as a pandas data frame.
  2. Convert the “Date/Time” column to a DateTime type and set the column to the index.
  3. Find all indexes with any missing data. Return a list of all indexes.
  4. Fill missing values with the midpoint of the value directly preceding and following the missing entry. i.e., 10, NA, 20, would be filled with 15.
  5. Convert the data from wide to long format—i.e., “Date/Time” values become column labels and the pricing points become the index.
  6. Make a line plot of the series “SAFEHARB 13 KV UNIT1 (DALMP) Average” and “FACEROCK 13 KV HOLT11 (DALMP) Average” on the same chart for October 2019. You can use any plotting library you want.
  7. Calculate the “On-Peak” average for “SAFEHARB 13 KV UNIT1 (DALMP) Average” and “FACEROCK 13 KV HOLT11 (DALMP) Average” for each month in the data set. “On-Peak” refers to hours 7 AM to 11 PM inclusive in a day.
* Question 2 (API Connections and Data Manipulation)
  1. Go to the following link <https://www.eia.gov/opendata/qb.php>. Using the API Key: "efc04384b240ca9cce98f1389d32a4ff", download the monthly net generation for Pennsylvania. (Hint: Use the **requests** & **json.loads** packages)
  2. Convert this data to a pandas dataframe.
  3. Convert the Period column to datetimes.
  4. Trim the data so that it only includes dates from 2019.
  5. Convert your code from Question 2 into a function that downloads other states’ net generation based on the **series\_id.**
     + You function will have the form

def code(series\_id):

# some code

return net\_gen\_dataframe

* Challenge Question
  1. Download the data for monthly electric fuel consumption at every plant in Pennsylvania. Return this data as a single data frame with each plant labeled. See the following link: <https://www.eia.gov/opendata/qb.php?category=902969>
     + Example Dataset to download: <https://www.eia.gov/opendata/qb.php?category=2668&sdid=ELEC.PLANT.CONS_EG_BTU.3096-ALL-ALL.M>
     + (Hint: you will need to guard against conditions in which a plant will not have a fuel consumption. This occurs for certain renewables and battery projects.