

Group-BeyondAI-Q1

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1 EE4211 Data Science for IoT Project

1.1 Group Name: BeyondAI

Group Members: Chen Yiming (e0622334@u.nus.edu) Matric No: A0226328E
LIU XINGYU (e0506559@u.nus.edu) Matric No: A0116430W
YEAP CHUN LIK (e0319167@u.nus.edu) Matric No: A0185876H
ZHANG GUYU (e0506558@u.nus.edu) Matric No: A0116427J

2 Instructions:

In this project, you are given a dataset collected by an actual IoT system (see description below) and asked to use the dataset to build a forecasting model. You have to answer a set of questions, as well as propose your own interesting questions. 1. Form teams in groups of 4 students and select a name for your team. Be creative! Please email me your group members and team name. 2. Complete Question 1. Use a Jupyter notebook (ipynb file) to do the analysis and answer all the parts of the Question. Submit (i) PDF file/Print preview of your Jupyter note- book, and (ii) the Jupyter notebook (ipynb file). Zip both files into one zip file named as GroupName Question 1.zip and upload it to the appropriate LumiNUS folder. 3. Do the same for Question 2. Please name your file GroupName Question 2.zip and upload to LumiNUS. 4. Do the same for Question 3. For Question 3, please include a detailed description of your proposed work. Please name your file GroupName Question 3.zip and upload to LumiNUS. 5. The project carries a total of 40 marks: 30 marks for technical contributions (10 marks for each question), and 10 marks for presentation.

3 Data File:

The data file is available in the IVLE workbin under the directory "Project Details".

4 Data Description:

In this project, we will consider natural gas consumption data from residential consumers. The smart gas meter data used for this paper was obtained from the Pecan Street project (<https://www.pecanstreet.org/>). The source of the data are homes in the Mueller neighbor- hood of Austin, Texas, USA. The homes in this neighborhood are primarily newly constructed, and include single-family homes, apartments, and town homes. Itron Centron SR smart gas meters are deployed in these homes and these meters send their information to a gateway inside the home. The gateway uses the home's Internet connection to send the data to the meter data management

system (MDMS) or the processing center. The gas meters measure the cumulative gas consumption at a frequency of 15 seconds. The meters report a reading (in terms of the cumulative consumption) when the last marginal 2 cubic foot (or higher) of natural gas passes through the meter. Data from a six month interval (1 Oct 2015 to 31 Mar 2016) has been provided. The data has the following format: <Timestamp (localtime)> <MeterID (dataid)> <meter reading (meter_value)> The timestamp provides the date as well as the hour and minute values when each reading was taken. Each meter has an unique identifier (MeterID). Recall that the meter readings are cumulative and not generated at periodic intervals.

5 Additional Information about Data Collection:

1. Gas flow meters have a sensor that is used to measure the volume of gas that passes though a pipe. Different meters use different sensors (e.g. ultrasonic sensors, synthetic diaphragm with rotating valve etc.). The meters check on the sensors periodically to get a reading of the current consumption value. This is what is meant in the sentence above: "The gas meters measure the cumulative gas consumption at a frequency of 15 seconds."
2. Now, just because the meter has obtained a reading from the sensors, it does not have to send the reading off to the meter data management system (MDMS). Imagine 1.3 million households in Singapore sending out gas readings every 15 seconds to Singapore Power. The processing and bandwidth requirements may be too high for Singapore Power. So Singapore Power may wish for the meters to report at a lower frequency or when the consumption exceeds a certain threshold. However, the smart meter manufacturer does not know what is the reporting criterion of its users. So it builds meters that can read every 15 seconds because it thinks that this is a frequency that is high enough for all potential customers. The "reporting" frequency to the MDMS (as opposed to the "measuring" frequency) can be determined by the user of the meter such as Singapore Power.
3. So when are the meters supposed to "report" to the MDMS? The documentation that came with the data says "once the marginal consumption exceed 2 cubic meters". As you may observe in the data, this is not necessarily the case in some of the readings. So is that an anomaly? That is for you to decide and justify. If you were Singapore Power, under what circumstances would you think that a meter reading is suspicious and decide to investigate? Remember that there are two sides to the story. If you do not receive a reading from a meter for a really long time, would you think that the meter is defective? So would that justify sending a reading even if the consumption has not increased?

6 Questions:

6.1 1. Exploring the Data (10 marks)

```
[1]: # load necessary library
```

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
from datetime import datetime, date
```

```
[2]: # read original data and take out the seconds and UTC offset

data = pd.read_csv("dataport-export_gas_oct2015-mar2016.csv")
data['localminute'] = data['localminute'].astype(str).str[:19]
data['localminute'] = pd.to_datetime(data['localminute'])
```

```
[3]: #data.to_csv('modifiedData.csv', index = False)
```

```
[4]: # check the first 5 rows in the dataset

data.head()
```

```
[4]:      localminute    dataid  meter_value
0 2015-10-01 00:00:10      739       88858
1 2015-10-01 00:00:13     8890      197164
2 2015-10-01 00:00:20     6910      179118
3 2015-10-01 00:00:22     3635      151318
4 2015-10-01 00:00:22     1507      390354
```

```
[5]: # check the data information of the dataset
```

```
print(data.info())
print('-----')
print(data.describe(include = "all"))
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1584823 entries, 0 to 1584822
Data columns (total 3 columns):
 #   Column           Non-Null Count   Dtype  
--- 
 0   localminute      1584823 non-null   datetime64[ns]
 1   dataid          1584823 non-null   int64   
 2   meter_value     1584823 non-null   int64  
dtypes: datetime64[ns](1), int64(2)
memory usage: 36.3 MB
None
-----
      localminute      dataid  meter_value
count      1584823  1.584823e+06  1.584823e+06
unique     1499587          NaN        NaN
top      2015-12-05 20:57:14          NaN        NaN
freq            6          NaN        NaN
first     2015-10-01 00:00:10          NaN        NaN
last      2016-03-31 23:59:58          NaN        NaN
mean          NaN  4.352815e+03  2.015056e+05
std           NaN  2.941902e+03  1.351182e+05
min          NaN  3.500000e+01  2.829800e+04
```

```

25%           NaN  1.714000e+03  1.145800e+05
50%           NaN  4.031000e+03  1.670940e+05
75%           NaN  7.017000e+03  2.364940e+05
max          NaN  9.982000e+03  8.158240e+05

```

[6]: # check is there any null values in the dataset

```
print("Number of null value is {}".format(data.isnull().sum()))
```

```

Number of null value is localminute      0
dataid            0
meter_value       0
dtype: int64

```

6.2 Question 1.1

How many houses are included in the measurement study? Are there any malfunctioning meters? If so, identify them and the time periods where they were malfunctioning. The information below regarding data collection may be useful.

6.3 Discussion

We define that a meter is malfunctioning if the recorded value decreases in consecutive time. As the meter records natural gas consumption in cumulative manner, it makes sense that the recorded value should only increase as time progresses.

1. Total number of houses in the measurement study: 157
2. Total number of malfunctioning meters: 43
3. Total number of malfunctioning incidents due to a drop in value: 1306.

The following outputs capture the malfunctioning meter's ID and the time periods where the malfunctioning incident took place.

[7]: # Identifying the total number of houses in the dataset based on unique meter id

```
print("Number of houses in the measurement is {}".format(data["dataid"].
    ~nunique()))
lstMeter = data['dataid'].unique()
print('All the unique meter ID is:')
print(lstMeter)
```

Number of houses in the measurement is 157.

All the unique meter ID is:

```
[ 739 8890 6910 3635 1507 5810 484 4352 1718 1714 9849 5131 6412 7429
 871 1086 1589 8156 9631 5403 4447 2034 5275 7794 7287 4296 9639 7017
 252 8829 94 3039 9121 7741 7919 7674 7030 4732 370 9295 3577 222
 2449 35 1697 9134 4767 5785 7739 7117 5193 3367 8467 5972 5439 114
 9474 2335 7460 4998 9278 5129 2018 9052 9956 8155 483 1556 5636 4029
 3544 1791 1801 9729 1283 1792 4031 3893 1185 7682 2638 187 3723 4514
 5814 77 1619 4421 661 3134 6836 1042 4373 5484 2072 2461 744 9982
```

```

1790 1800 2980 2094 5892 7900 8084 3527 3849 4356 2129 2965 2575 8086
1415 2233 6863 2470 3778 2378 6830 9766 4193 8703 6578 4228 2645 6505
5395 8059 7965    44 4671 6685 7989 2945 2818 7016 8967 3310 3918 8386
1103 9620 5658 5545 5317 3036 9160 8244 2755 9600 2946 1403 7566 6673
2814 6101 4874]

```

```

[8]: # create a dictionary that separates all the unique meters data
# 'key' is the meter ID, 'value' is the data that the meter holds
# added two extra columns, one is the meter value consecutive difference, one
→ is the localminute consecutive difference

dictMeter = {c: pd.DataFrame(data[data['dataid']==c]) for c in lstMeter}
for key in dictMeter:
    dictMeter[key]['meter_value_diff'] = dictMeter[key]['meter_value'].diff()
    dictMeter[key]['localminute_diff'] = dictMeter[key]['localminute'].diff()
    dictMeter[key].reset_index(drop=True, inplace=True)

#dictMeter

# identify total number of meters that have malfunctioned and a list of the
→ malfunctioning meter's ID

dictMalfunction = {c: any(dictMeter[c].diff()['meter_value']<0) for c in
→ lstMeter}

i = 0
mallst = []
for key in dictMalfunction:
    if dictMalfunction[key] == True:
        i+=1
        mallst.append(key)
print('Total number of meters that have malfunctioned is: ', i)
print(mallst)

```

```

Total number of meters that have malfunctioned is: 43
[8890, 1507, 5810, 484, 1718, 5131, 1086, 8156, 5403, 7794, 9639, 7017, 94,
7030, 2449, 35, 9134, 7739, 7117, 5193, 2335, 4998, 5129, 483, 1556, 3544, 1801,
4031, 3893, 1185, 4514, 5814, 77, 3134, 6836, 1042, 9982, 1790, 5892, 3527,
2129, 4193, 7989]

```

```

[9]: # generating all malfunctioning incidents and their corresponding meter IDs,
→ start time, end time, initial
# reading and end reading based on the the definition of malfunctioning meter
→ stated above.

numMal = 0
for key in dictMeter:

```

```

if dictMalfunction[key] == True:
    malDictIndex = dictMeter[key][dictMeter[key]['meter_value_diff'] <
→0]['localminute'].index
    for i in malDictIndex:
        numMal += 1
        print('Meter {} is malfunctioning from {} to {} due to value drop,',
→start reading: {}, end reading: {}'\n
            .format(key, dictMeter[key].loc[i-1]['localminute'], \
→dictMeter[key].loc[i]['localminute'], \
            dictMeter[key].loc[i-1]['meter_value'], \
→dictMeter[key].loc[i]['meter_value']))
        print('-----')
    print('******')

```

Meter 8890 is malfunctioning from 2015-10-01 18:59:59 to 2015-10-01 19:07:10 due
to value drop, start reading: 197194, end reading: 197192

Meter 8890 is malfunctioning from 2015-10-02 05:02:25 to 2015-10-02 05:12:56 due
to value drop, start reading: 197210, end reading: 197208

Meter 8890 is malfunctioning from 2015-10-02 17:51:23 to 2015-10-02 17:51:56 due
to value drop, start reading: 197218, end reading: 197216

Meter 8890 is malfunctioning from 2015-10-02 18:08:22 to 2015-10-02 18:08:48 due
to value drop, start reading: 197218, end reading: 197216

Meter 8890 is malfunctioning from 2015-10-02 22:25:23 to 2015-10-02 22:34:48 due
to value drop, start reading: 197220, end reading: 197218

Meter 8890 is malfunctioning from 2015-10-03 17:10:06 to 2015-10-03 17:10:06 due
to value drop, start reading: 197230, end reading: 197228

Meter 8890 is malfunctioning from 2015-10-04 00:09:01 to 2015-10-04 00:24:52 due
to value drop, start reading: 197238, end reading: 197236

Meter 8890 is malfunctioning from 2015-10-04 09:14:40 to 2015-10-04 09:28:03 due
to value drop, start reading: 197260, end reading: 197258

Meter 8890 is malfunctioning from 2015-10-04 14:10:37 to 2015-10-04 14:11:06 due
to value drop, start reading: 197274, end reading: 197272

Meter 8890 is malfunctioning from 2015-10-05 11:05:13 to 2015-10-05 11:09:08 due
to value drop, start reading: 197292, end reading: 197290

Meter 8890 is malfunctioning from 2015-10-05 16:04:12 to 2015-10-05 16:13:04 due
to value drop, start reading: 197294, end reading: 197292

Meter 8890 is malfunctioning from 2015-10-08 15:47:43 to 2015-10-08 15:51:04 due to value drop, start reading: 197348, end reading: 197346

Meter 8890 is malfunctioning from 2015-10-09 03:15:23 to 2015-10-09 03:17:11 due to value drop, start reading: 197362, end reading: 197360

Meter 8890 is malfunctioning from 2015-10-09 13:30:09 to 2015-10-09 13:41:00 due to value drop, start reading: 197366, end reading: 197364

Meter 8890 is malfunctioning from 2015-10-09 18:08:10 to 2015-10-09 18:18:55 due to value drop, start reading: 197374, end reading: 197368

Meter 8890 is malfunctioning from 2015-10-09 19:12:22 to 2015-10-09 19:16:03 due to value drop, start reading: 197392, end reading: 197384

Meter 8890 is malfunctioning from 2015-10-10 03:36:53 to 2015-10-10 03:41:04 due to value drop, start reading: 197396, end reading: 197394

Meter 8890 is malfunctioning from 2015-10-10 06:54:38 to 2015-10-10 07:14:54 due to value drop, start reading: 197410, end reading: 197404

Meter 8890 is malfunctioning from 2015-10-11 09:05:24 to 2015-10-11 09:16:02 due to value drop, start reading: 197434, end reading: 197432

Meter 8890 is malfunctioning from 2015-10-11 18:48:25 to 2015-10-11 18:58:10 due to value drop, start reading: 197458, end reading: 197456

Meter 8890 is malfunctioning from 2015-10-15 14:36:40 to 2015-10-15 14:54:20 due to value drop, start reading: 197548, end reading: 197546

Meter 8890 is malfunctioning from 2015-10-15 18:37:48 to 2015-10-15 18:47:17 due to value drop, start reading: 197550, end reading: 197548

Meter 8890 is malfunctioning from 2015-10-16 18:35:06 to 2015-10-16 18:41:02 due to value drop, start reading: 197572, end reading: 197570

Meter 8890 is malfunctioning from 2015-10-17 04:48:42 to 2015-10-17 05:03:11 due to value drop, start reading: 197576, end reading: 197574

Meter 8890 is malfunctioning from 2015-10-17 10:31:35 to 2015-10-17 10:39:08 due to value drop, start reading: 197588, end reading: 197586

Meter 8890 is malfunctioning from 2015-10-17 14:12:37 to 2015-10-17 14:33:01 due to value drop, start reading: 197592, end reading: 197590

Meter 8890 is malfunctioning from 2015-10-18 06:28:18 to 2015-10-18 06:39:13 due to value drop, start reading: 197614, end reading: 197610

Meter 8890 is malfunctioning from 2015-10-18 12:21:06 to 2015-10-18 12:25:02 due to value drop, start reading: 197626, end reading: 197624

Meter 8890 is malfunctioning from 2015-10-18 12:32:11 to 2015-10-18 12:38:03 due to value drop, start reading: 197626, end reading: 197624

Meter 8890 is malfunctioning from 2015-10-19 07:51:44 to 2015-10-19 08:00:12 due to value drop, start reading: 197650, end reading: 197648

Meter 8890 is malfunctioning from 2015-10-19 19:53:51 to 2015-10-19 19:59:14 due to value drop, start reading: 197662, end reading: 197654

Meter 8890 is malfunctioning from 2015-10-20 00:34:47 to 2015-10-20 00:39:15 due to value drop, start reading: 197664, end reading: 197662

Meter 8890 is malfunctioning from 2016-02-23 22:23:25 to 2016-02-23 22:23:45 due to value drop, start reading: 224144, end reading: 224142

Meter 8890 is malfunctioning from 2016-02-25 06:15:46 to 2016-02-25 06:16:58 due to value drop, start reading: 224644, end reading: 224642

Meter 8890 is malfunctioning from 2016-02-27 03:12:50 to 2016-02-27 03:14:57 due to value drop, start reading: 225060, end reading: 225058

Meter 8890 is malfunctioning from 2016-03-03 21:23:30 to 2016-03-03 21:28:01 due to value drop, start reading: 225474, end reading: 225472

Meter 8890 is malfunctioning from 2016-03-17 23:15:20 to 2016-03-17 23:21:23 due to value drop, start reading: 226268, end reading: 226264

Meter 8890 is malfunctioning from 2016-03-18 14:25:31 to 2016-03-18 14:31:03 due to value drop, start reading: 226276, end reading: 226274

Meter 8890 is malfunctioning from 2016-03-19 23:46:09 to 2016-03-19 23:47:02 due to value drop, start reading: 226394, end reading: 226392

Meter 8890 is malfunctioning from 2016-03-20 00:03:08 to 2016-03-20 00:05:03 due to value drop, start reading: 226396, end reading: 226394

Meter 8890 is malfunctioning from 2016-03-20 00:51:22 to 2016-03-20 00:55:10 due to value drop, start reading: 226400, end reading: 226398

Meter 8890 is malfunctioning from 2016-03-20 20:13:47 to 2016-03-20 20:16:10 due to value drop, start reading: 226508, end reading: 226504

Meter 8890 is malfunctioning from 2016-03-21 13:36:16 to 2016-03-21 13:39:05 due to value drop, start reading: 226676, end reading: 226672

Meter 8890 is malfunctioning from 2016-03-26 14:51:03 to 2016-03-26 15:03:15 due
to value drop, start reading: 227100, end reading: 227098

Meter 1507 is malfunctioning from 2015-11-01 01:35:57 to 2015-11-01 01:39:26 due
to value drop, start reading: 392130, end reading: 392128

Meter 1507 is malfunctioning from 2015-11-01 01:56:42 to 2015-11-01 01:57:27 due
to value drop, start reading: 392130, end reading: 392128

Meter 5810 is malfunctioning from 2015-10-31 00:00:00 to 2015-10-31 00:04:45 due
to value drop, start reading: 98922, end reading: 98920

Meter 5810 is malfunctioning from 2015-11-01 01:02:31 to 2015-11-01 01:09:19 due
to value drop, start reading: 99010, end reading: 99004

Meter 5810 is malfunctioning from 2015-11-01 01:24:09 to 2015-11-01 01:30:49 due
to value drop, start reading: 99010, end reading: 99006

Meter 5810 is malfunctioning from 2015-11-01 01:34:33 to 2015-11-01 01:39:59 due
to value drop, start reading: 99010, end reading: 99006

Meter 5810 is malfunctioning from 2015-11-01 01:49:03 to 2015-11-01 01:50:11 due
to value drop, start reading: 99010, end reading: 99006

Meter 5810 is malfunctioning from 2015-11-28 11:19:51 to 2015-11-28 11:19:59 due
to value drop, start reading: 100920, end reading: 100914

Meter 5810 is malfunctioning from 2015-11-28 11:22:19 to 2015-11-28 11:22:47 due
to value drop, start reading: 100920, end reading: 100914

Meter 5810 is malfunctioning from 2016-02-22 17:19:40 to 2016-02-22 17:25:47 due
to value drop, start reading: 112644, end reading: 112636

Meter 5810 is malfunctioning from 2016-02-22 17:31:45 to 2016-02-22 17:38:40 due
to value drop, start reading: 112644, end reading: 112640

Meter 5810 is malfunctioning from 2016-02-22 17:41:41 to 2016-02-22 17:42:13 due
to value drop, start reading: 112644, end reading: 112642

Meter 484 is malfunctioning from 2015-11-01 01:15:20 to 2015-11-01 01:18:29 due
to value drop, start reading: 100418, end reading: 100416

Meter 484 is malfunctioning from 2015-11-01 01:27:18 to 2015-11-01 01:34:43 due to value drop, start reading: 100418, end reading: 100416

Meter 484 is malfunctioning from 2015-11-01 01:38:15 to 2015-11-01 01:40:00 due to value drop, start reading: 100418, end reading: 100416

Meter 484 is malfunctioning from 2015-11-01 01:42:34 to 2015-11-01 01:44:34 due to value drop, start reading: 100418, end reading: 100416

Meter 484 is malfunctioning from 2015-11-01 01:46:47 to 2015-11-01 01:48:31 due to value drop, start reading: 100418, end reading: 100416

Meter 484 is malfunctioning from 2015-11-01 01:49:06 to 2015-11-01 01:55:28 due to value drop, start reading: 100418, end reading: 100416

Meter 484 is malfunctioning from 2016-03-05 00:00:00 to 2016-03-05 00:01:58 due to value drop, start reading: 112164, end reading: 112158

Meter 484 is malfunctioning from 2016-03-05 01:42:41 to 2016-03-05 01:43:22 due to value drop, start reading: 112160, end reading: 112158

Meter 484 is malfunctioning from 2016-03-05 01:56:57 to 2016-03-05 01:57:57 due to value drop, start reading: 112160, end reading: 112158

Meter 1718 is malfunctioning from 2015-10-20 16:26:59 to 2015-10-20 16:27:02 due to value drop, start reading: 161848, end reading: 161846

Meter 1718 is malfunctioning from 2015-10-20 19:36:08 to 2015-10-20 19:38:11 due to value drop, start reading: 161856, end reading: 161850

Meter 1718 is malfunctioning from 2015-10-20 19:39:12 to 2015-10-20 19:44:07 due to value drop, start reading: 161858, end reading: 161850

Meter 1718 is malfunctioning from 2015-10-20 20:11:04 to 2015-10-20 20:16:07 due to value drop, start reading: 161876, end reading: 161872

Meter 5131 is malfunctioning from 2016-03-31 00:23:48 to 2016-03-31 00:33:36 due to value drop, start reading: 121736, end reading: 121734

Meter 1086 is malfunctioning from 2015-11-01 01:29:24 to 2015-11-01 01:32:25 due to value drop, start reading: 84566, end reading: 84564

Meter 8156 is malfunctioning from 2015-10-17 12:56:09 to 2015-10-17 13:06:23 due to value drop, start reading: 252334, end reading: 252332

Meter 8156 is malfunctioning from 2015-10-17 13:15:08 to 2015-10-17 13:20:22 due to value drop, start reading: 252334, end reading: 252332

Meter 8156 is malfunctioning from 2015-10-17 16:32:09 to 2015-10-17 16:43:22 due to value drop, start reading: 252336, end reading: 252334

Meter 8156 is malfunctioning from 2015-10-17 20:29:09 to 2015-10-17 20:31:21 due to value drop, start reading: 252338, end reading: 252336

Meter 8156 is malfunctioning from 2015-10-17 21:03:08 to 2015-10-17 21:04:22 due to value drop, start reading: 252338, end reading: 252336

Meter 8156 is malfunctioning from 2015-10-18 01:16:08 to 2015-10-18 01:17:21 due to value drop, start reading: 252340, end reading: 252338

Meter 8156 is malfunctioning from 2015-10-20 06:59:22 to 2015-10-20 07:09:19 due to value drop, start reading: 252400, end reading: 252398

Meter 8156 is malfunctioning from 2015-10-20 07:41:22 to 2015-10-20 07:47:19 due to value drop, start reading: 252420, end reading: 252408

Meter 8156 is malfunctioning from 2015-10-20 10:38:22 to 2015-10-20 10:52:20 due to value drop, start reading: 252442, end reading: 252432

Meter 8156 is malfunctioning from 2015-10-20 12:58:36 to 2015-10-20 13:00:19 due to value drop, start reading: 252452, end reading: 252448

Meter 8156 is malfunctioning from 2015-10-20 21:21:21 to 2015-10-20 21:28:19 due to value drop, start reading: 252454, end reading: 252452

Meter 8156 is malfunctioning from 2015-10-20 21:30:21 to 2015-10-20 21:33:19 due to value drop, start reading: 252454, end reading: 252452

Meter 8156 is malfunctioning from 2015-12-07 16:37:39 to 2015-12-07 16:47:45 due to value drop, start reading: 274146, end reading: 256346

Meter 8156 is malfunctioning from 2015-12-07 17:25:39 to 2015-12-07 17:28:45 due to value drop, start reading: 274148, end reading: 256346

Meter 8156 is malfunctioning from 2015-12-07 17:45:40 to 2015-12-07 17:52:45 due to value drop, start reading: 274148, end reading: 256346

Meter 8156 is malfunctioning from 2015-12-07 18:09:40 to 2015-12-07 18:15:44 due to value drop, start reading: 274148, end reading: 256346

Meter 8156 is malfunctioning from 2015-12-07 18:45:39 to 2015-12-07 18:55:45 due to value drop, start reading: 274148, end reading: 256350

Meter 8156 is malfunctioning from 2015-12-07 19:09:39 to 2015-12-07 19:11:45 due to value drop, start reading: 274148, end reading: 256350

Meter 8156 is malfunctioning from 2015-12-07 19:26:40 to 2015-12-07 19:30:45 due to value drop, start reading: 274148, end reading: 256352

Meter 8156 is malfunctioning from 2015-12-07 19:55:39 to 2015-12-07 19:56:45 due to value drop, start reading: 274148, end reading: 256352

Meter 8156 is malfunctioning from 2015-12-07 21:12:40 to 2015-12-07 21:15:45 due to value drop, start reading: 274150, end reading: 256352

Meter 8156 is malfunctioning from 2015-12-07 22:04:39 to 2015-12-07 22:07:45 due to value drop, start reading: 274150, end reading: 256352

Meter 8156 is malfunctioning from 2015-12-07 22:17:40 to 2015-12-07 22:29:45 due to value drop, start reading: 274150, end reading: 256352

Meter 8156 is malfunctioning from 2015-12-07 22:44:39 to 2015-12-07 22:46:45 due to value drop, start reading: 274152, end reading: 256352

Meter 8156 is malfunctioning from 2015-12-07 23:26:39 to 2015-12-07 23:31:45 due to value drop, start reading: 274152, end reading: 256352

Meter 8156 is malfunctioning from 2015-12-08 00:37:39 to 2015-12-08 00:45:44 due to value drop, start reading: 274152, end reading: 256354

Meter 8156 is malfunctioning from 2015-12-08 02:13:39 to 2015-12-08 02:15:44 due to value drop, start reading: 274154, end reading: 256354

Meter 8156 is malfunctioning from 2015-12-08 04:00:39 to 2015-12-08 04:11:45 due to value drop, start reading: 274154, end reading: 256354

Meter 8156 is malfunctioning from 2015-12-08 05:25:40 to 2015-12-08 05:32:45 due to value drop, start reading: 274154, end reading: 256358

Meter 8156 is malfunctioning from 2015-12-08 07:12:40 to 2015-12-08 07:20:44 due to value drop, start reading: 274156, end reading: 256366

Meter 8156 is malfunctioning from 2015-12-08 07:34:39 to 2015-12-08 07:36:44 due to value drop, start reading: 274156, end reading: 256368

Meter 8156 is malfunctioning from 2015-12-08 07:52:39 to 2015-12-08 08:05:45 due to value drop, start reading: 274156, end reading: 256368

Meter 8156 is malfunctioning from 2015-12-08 08:21:39 to 2015-12-08 08:21:45 due to value drop, start reading: 274156, end reading: 256368

Meter 8156 is malfunctioning from 2015-12-08 09:44:39 to 2015-12-08 09:45:45 due to value drop, start reading: 274156, end reading: 256392

Meter 8156 is malfunctioning from 2015-12-08 11:39:39 to 2015-12-08 11:40:45 due to value drop, start reading: 274158, end reading: 256392

Meter 8156 is malfunctioning from 2015-12-08 15:02:39 to 2015-12-08 15:05:44 due to value drop, start reading: 274184, end reading: 256394

Meter 8156 is malfunctioning from 2015-12-08 15:19:40 to 2015-12-08 15:21:45 due to value drop, start reading: 274184, end reading: 256394

Meter 8156 is malfunctioning from 2015-12-08 17:35:40 to 2015-12-08 17:38:44 due to value drop, start reading: 274186, end reading: 256398

Meter 8156 is malfunctioning from 2015-12-08 19:51:39 to 2015-12-08 19:55:44 due to value drop, start reading: 274186, end reading: 256408

Meter 8156 is malfunctioning from 2015-12-08 21:06:39 to 2015-12-08 21:11:45 due to value drop, start reading: 274188, end reading: 256410

Meter 8156 is malfunctioning from 2015-12-08 21:21:40 to 2015-12-08 21:23:45 due to value drop, start reading: 274188, end reading: 256410

Meter 8156 is malfunctioning from 2015-12-08 21:31:40 to 2015-12-08 21:34:44 due to value drop, start reading: 274188, end reading: 256410

Meter 8156 is malfunctioning from 2015-12-08 23:20:39 to 2015-12-08 23:21:44 due to value drop, start reading: 274190, end reading: 256410

Meter 8156 is malfunctioning from 2015-12-09 00:19:40 to 2015-12-09 00:19:44 due to value drop, start reading: 274190, end reading: 256410

Meter 8156 is malfunctioning from 2015-12-09 01:08:39 to 2015-12-09 01:21:44 due to value drop, start reading: 274190, end reading: 256412

Meter 8156 is malfunctioning from 2015-12-09 01:58:39 to 2015-12-09 02:07:44 due to value drop, start reading: 274190, end reading: 256412

Meter 8156 is malfunctioning from 2015-12-09 03:22:40 to 2015-12-09 03:22:45 due to value drop, start reading: 274192, end reading: 256412

Meter 8156 is malfunctioning from 2015-12-09 03:28:39 to 2015-12-09 03:31:44 due to value drop, start reading: 274192, end reading: 256412

Meter 8156 is malfunctioning from 2015-12-09 04:50:40 to 2015-12-09 04:50:45 due to value drop, start reading: 274192, end reading: 256412

Meter 8156 is malfunctioning from 2015-12-09 05:03:39 to 2015-12-09 05:05:44 due to value drop, start reading: 274192, end reading: 256412

Meter 8156 is malfunctioning from 2015-12-09 05:21:40 to 2015-12-09 05:24:44 due to value drop, start reading: 274192, end reading: 256412

Meter 8156 is malfunctioning from 2015-12-09 07:23:39 to 2015-12-09 07:35:45 due to value drop, start reading: 274194, end reading: 256482

Meter 8156 is malfunctioning from 2015-12-09 07:48:39 to 2015-12-09 07:53:45 due to value drop, start reading: 274194, end reading: 256482

Meter 8156 is malfunctioning from 2015-12-09 08:43:39 to 2015-12-09 09:14:44 due to value drop, start reading: 274194, end reading: 256508

Meter 8156 is malfunctioning from 2015-12-09 09:24:40 to 2015-12-09 09:26:45 due to value drop, start reading: 274194, end reading: 256508

Meter 8156 is malfunctioning from 2015-12-09 09:36:39 to 2015-12-09 09:41:44 due to value drop, start reading: 274194, end reading: 256508

Meter 8156 is malfunctioning from 2015-12-09 10:04:39 to 2015-12-09 10:04:44 due to value drop, start reading: 274196, end reading: 256508

Meter 8156 is malfunctioning from 2015-12-09 12:06:40 to 2015-12-09 12:16:43 due to value drop, start reading: 274196, end reading: 256534

Meter 8156 is malfunctioning from 2015-12-09 12:28:40 to 2015-12-09 12:34:44 due to value drop, start reading: 274196, end reading: 256534

Meter 8156 is malfunctioning from 2015-12-09 12:44:39 to 2015-12-09 12:46:43 due to value drop, start reading: 274196, end reading: 256534

Meter 8156 is malfunctioning from 2015-12-09 13:46:39 to 2015-12-09 14:00:43 due to value drop, start reading: 274198, end reading: 256534

Meter 8156 is malfunctioning from 2015-12-09 14:18:39 to 2015-12-09 14:21:44 due to value drop, start reading: 274198, end reading: 256534

Meter 8156 is malfunctioning from 2015-12-09 15:43:39 to 2015-12-09 15:54:43 due to value drop, start reading: 274198, end reading: 256536

Meter 8156 is malfunctioning from 2015-12-09 16:18:40 to 2015-12-09 16:27:44 due to value drop, start reading: 274198, end reading: 256536

Meter 8156 is malfunctioning from 2015-12-09 16:35:40 to 2015-12-09 16:44:43 due to value drop, start reading: 274198, end reading: 256536

Meter 8156 is malfunctioning from 2015-12-09 17:08:39 to 2015-12-09 17:12:43 due to value drop, start reading: 274200, end reading: 256536

Meter 8156 is malfunctioning from 2015-12-09 17:15:40 to 2015-12-09 17:16:44 due to value drop, start reading: 274200, end reading: 256536

Meter 8156 is malfunctioning from 2015-12-09 17:23:39 to 2015-12-09 17:51:43 due to value drop, start reading: 274200, end reading: 256540

Meter 8156 is malfunctioning from 2015-12-09 18:17:39 to 2015-12-09 18:28:44 due to value drop, start reading: 274200, end reading: 256540

Meter 8156 is malfunctioning from 2015-12-09 19:12:39 to 2015-12-09 19:16:44 due to value drop, start reading: 274200, end reading: 256542

Meter 8156 is malfunctioning from 2015-12-09 19:31:40 to 2015-12-09 19:46:44 due to value drop, start reading: 274200, end reading: 256542

Meter 8156 is malfunctioning from 2015-12-09 20:01:40 to 2015-12-09 20:11:43 due to value drop, start reading: 274200, end reading: 256542

Meter 8156 is malfunctioning from 2015-12-09 20:22:39 to 2015-12-09 20:23:44 due to value drop, start reading: 274200, end reading: 256542

Meter 8156 is malfunctioning from 2015-12-09 21:39:39 to 2015-12-09 21:50:43 due to value drop, start reading: 274202, end reading: 256566

Meter 8156 is malfunctioning from 2015-12-09 22:08:40 to 2015-12-09 22:11:44 due to value drop, start reading: 274202, end reading: 256570

Meter 8156 is malfunctioning from 2015-12-09 22:42:39 to 2015-12-09 22:43:43 due to value drop, start reading: 274204, end reading: 256570

Meter 8156 is malfunctioning from 2015-12-09 22:50:39 to 2015-12-09 23:03:43 due to value drop, start reading: 274204, end reading: 256570

Meter 8156 is malfunctioning from 2015-12-09 23:38:40 to 2015-12-09 23:56:43 due to value drop, start reading: 274204, end reading: 256570

Meter 8156 is malfunctioning from 2015-12-10 00:43:40 to 2015-12-10 00:50:43 due to value drop, start reading: 274204, end reading: 256570

Meter 8156 is malfunctioning from 2015-12-10 01:20:40 to 2015-12-10 01:23:43 due to value drop, start reading: 274206, end reading: 256572

Meter 8156 is malfunctioning from 2015-12-10 01:54:40 to 2015-12-10 01:55:43 due to value drop, start reading: 274206, end reading: 256572

Meter 8156 is malfunctioning from 2015-12-10 01:57:39 to 2015-12-10 02:06:44 due to value drop, start reading: 274206, end reading: 256572

Meter 8156 is malfunctioning from 2015-12-10 02:20:40 to 2015-12-10 02:26:44 due to value drop, start reading: 274206, end reading: 256572

Meter 8156 is malfunctioning from 2015-12-10 06:54:40 to 2015-12-10 06:55:43 due to value drop, start reading: 274208, end reading: 256574

Meter 8156 is malfunctioning from 2015-12-10 07:05:39 to 2015-12-10 07:09:44 due to value drop, start reading: 274208, end reading: 256592

Meter 8156 is malfunctioning from 2015-12-10 08:13:40 to 2015-12-10 08:15:44 due to value drop, start reading: 274208, end reading: 256596

Meter 8156 is malfunctioning from 2015-12-10 08:26:40 to 2015-12-10 08:38:44 due to value drop, start reading: 274208, end reading: 256598

Meter 8156 is malfunctioning from 2015-12-10 08:41:39 to 2015-12-10 08:56:43 due to value drop, start reading: 274208, end reading: 256598

Meter 8156 is malfunctioning from 2015-12-10 09:51:39 to 2015-12-10 10:08:43 due to value drop, start reading: 274210, end reading: 256604

Meter 8156 is malfunctioning from 2015-12-10 10:50:40 to 2015-12-10 10:51:43 due to value drop, start reading: 274210, end reading: 256622

Meter 8156 is malfunctioning from 2015-12-10 11:19:39 to 2015-12-10 11:22:44 due to value drop, start reading: 274212, end reading: 256622

Meter 8156 is malfunctioning from 2015-12-10 12:00:40 to 2015-12-10 12:01:44 due to value drop, start reading: 274214, end reading: 256622

Meter 8156 is malfunctioning from 2015-12-10 14:59:40 to 2015-12-10 15:01:43 due to value drop, start reading: 274236, end reading: 256624

Meter 8156 is malfunctioning from 2015-12-10 16:59:40 to 2015-12-10 17:00:42 due to value drop, start reading: 274238, end reading: 256626

Meter 8156 is malfunctioning from 2015-12-10 17:30:40 to 2015-12-10 17:32:43 due to value drop, start reading: 274238, end reading: 256626

Meter 8156 is malfunctioning from 2015-12-10 18:36:40 to 2015-12-10 18:49:43 due to value drop, start reading: 274238, end reading: 256626

Meter 8156 is malfunctioning from 2015-12-10 19:15:39 to 2015-12-10 19:15:43 due to value drop, start reading: 274238, end reading: 256626

Meter 8156 is malfunctioning from 2015-12-10 20:45:39 to 2015-12-10 20:51:43 due to value drop, start reading: 274240, end reading: 256626

Meter 8156 is malfunctioning from 2015-12-10 23:00:39 to 2015-12-10 23:02:43 due to value drop, start reading: 274240, end reading: 256628

Meter 8156 is malfunctioning from 2015-12-11 02:19:39 to 2015-12-11 02:26:43 due to value drop, start reading: 274242, end reading: 256630

Meter 8156 is malfunctioning from 2015-12-11 02:47:39 to 2015-12-11 02:48:43 due to value drop, start reading: 274242, end reading: 256630

Meter 8156 is malfunctioning from 2015-12-11 03:24:40 to 2015-12-11 03:38:43 due to value drop, start reading: 274242, end reading: 256630

Meter 8156 is malfunctioning from 2015-12-11 03:54:40 to 2015-12-11 04:23:43 due to value drop, start reading: 274242, end reading: 256630

Meter 8156 is malfunctioning from 2015-12-11 04:54:39 to 2015-12-11 04:56:43 due to value drop, start reading: 274244, end reading: 256630

Meter 8156 is malfunctioning from 2015-12-11 06:49:39 to 2015-12-11 06:58:42 due to value drop, start reading: 274244, end reading: 256632

Meter 8156 is malfunctioning from 2015-12-11 07:22:40 to 2015-12-11 07:31:42 due to value drop, start reading: 274244, end reading: 256632

Meter 8156 is malfunctioning from 2015-12-11 07:43:40 to 2015-12-11 07:43:42 due to value drop, start reading: 274244, end reading: 256632

Meter 8156 is malfunctioning from 2015-12-11 08:50:40 to 2015-12-11 08:53:43 due to value drop, start reading: 274246, end reading: 256632

Meter 8156 is malfunctioning from 2015-12-11 09:17:39 to 2015-12-11 09:52:42 due to value drop, start reading: 274246, end reading: 256656

Meter 8156 is malfunctioning from 2015-12-11 11:49:40 to 2015-12-11 11:51:43 due to value drop, start reading: 274258, end reading: 256656

Meter 8156 is malfunctioning from 2015-12-11 12:04:39 to 2015-12-11 12:05:42 due to value drop, start reading: 274270, end reading: 256656

Meter 8156 is malfunctioning from 2015-12-11 13:11:40 to 2015-12-11 13:14:43 due to value drop, start reading: 274272, end reading: 256658

Meter 8156 is malfunctioning from 2015-12-11 13:38:39 to 2015-12-11 13:40:42 due to value drop, start reading: 274272, end reading: 256658

Meter 8156 is malfunctioning from 2015-12-11 14:24:40 to 2015-12-11 14:25:42 due to value drop, start reading: 274272, end reading: 256658

Meter 8156 is malfunctioning from 2015-12-11 14:45:40 to 2015-12-11 14:45:43 due to value drop, start reading: 274272, end reading: 256658

Meter 8156 is malfunctioning from 2015-12-11 17:01:40 to 2015-12-11 17:06:43 due to value drop, start reading: 274274, end reading: 256666

Meter 8156 is malfunctioning from 2015-12-11 17:17:40 to 2015-12-11 17:23:43 due to value drop, start reading: 274274, end reading: 256666

Meter 8156 is malfunctioning from 2015-12-11 19:19:40 to 2015-12-11 19:45:42 due to value drop, start reading: 274276, end reading: 256672

Meter 8156 is malfunctioning from 2015-12-11 19:51:40 to 2015-12-11 19:53:42 due to value drop, start reading: 274276, end reading: 256672

Meter 8156 is malfunctioning from 2015-12-11 20:02:40 to 2015-12-11 20:05:41 due to value drop, start reading: 274276, end reading: 256672

Meter 8156 is malfunctioning from 2015-12-11 20:26:39 to 2015-12-11 20:33:41 due to value drop, start reading: 274276, end reading: 256672

Meter 8156 is malfunctioning from 2015-12-12 00:40:40 to 2015-12-12 01:03:42 due to value drop, start reading: 274278, end reading: 256674

Meter 8156 is malfunctioning from 2015-12-12 02:05:39 to 2015-12-12 02:15:42 due to value drop, start reading: 274280, end reading: 256674

Meter 8156 is malfunctioning from 2015-12-12 03:41:39 to 2015-12-12 03:43:41 due to value drop, start reading: 274280, end reading: 256676

Meter 8156 is malfunctioning from 2015-12-12 07:27:40 to 2015-12-12 07:37:42 due to value drop, start reading: 274282, end reading: 256678

Meter 8156 is malfunctioning from 2015-12-12 09:26:40 to 2015-12-12 09:40:41 due to value drop, start reading: 274284, end reading: 256680

Meter 8156 is malfunctioning from 2015-12-12 10:21:40 to 2015-12-12 10:21:41 due to value drop, start reading: 274284, end reading: 256682

Meter 8156 is malfunctioning from 2015-12-12 10:52:39 to 2015-12-12 10:53:41 due to value drop, start reading: 274284, end reading: 256682

Meter 8156 is malfunctioning from 2015-12-12 11:29:40 to 2015-12-12 11:52:41 due to value drop, start reading: 274284, end reading: 256698

Meter 8156 is malfunctioning from 2015-12-12 13:12:40 to 2015-12-12 13:33:41 due to value drop, start reading: 274286, end reading: 256718

Meter 8156 is malfunctioning from 2015-12-12 13:43:40 to 2015-12-12 13:58:42 due to value drop, start reading: 274286, end reading: 256718

Meter 8156 is malfunctioning from 2015-12-12 14:12:40 to 2015-12-12 14:37:42 due to value drop, start reading: 274286, end reading: 256720

Meter 8156 is malfunctioning from 2015-12-12 15:35:40 to 2015-12-12 15:40:41 due to value drop, start reading: 274288, end reading: 256720

Meter 8156 is malfunctioning from 2015-12-12 15:52:40 to 2015-12-12 15:52:41 due to value drop, start reading: 274288, end reading: 256720

Meter 8156 is malfunctioning from 2015-12-12 16:31:40 to 2015-12-12 16:38:41 due to value drop, start reading: 274288, end reading: 256720

Meter 8156 is malfunctioning from 2015-12-12 17:08:40 to 2015-12-12 17:28:41 due to value drop, start reading: 274288, end reading: 256720

Meter 8156 is malfunctioning from 2015-12-12 17:33:40 to 2015-12-12 17:41:42 due to value drop, start reading: 274288, end reading: 256720

Meter 8156 is malfunctioning from 2015-12-12 17:42:40 to 2015-12-12 17:51:41 due to value drop, start reading: 274288, end reading: 256720

Meter 8156 is malfunctioning from 2015-12-12 18:00:40 to 2015-12-12 18:15:41 due to value drop, start reading: 274288, end reading: 256720

Meter 8156 is malfunctioning from 2015-12-12 19:40:40 to 2015-12-12 19:45:41 due to value drop, start reading: 274288, end reading: 256722

Meter 8156 is malfunctioning from 2015-12-12 19:50:40 to 2015-12-12 19:51:41 due to value drop, start reading: 274290, end reading: 256722

Meter 8156 is malfunctioning from 2015-12-12 19:58:40 to 2015-12-12 20:09:41 due to value drop, start reading: 274290, end reading: 256722

Meter 8156 is malfunctioning from 2015-12-12 20:20:39 to 2015-12-12 20:22:41 due to value drop, start reading: 274290, end reading: 256722

Meter 8156 is malfunctioning from 2015-12-12 20:53:40 to 2015-12-12 20:54:40 due to value drop, start reading: 274290, end reading: 256722

Meter 8156 is malfunctioning from 2015-12-12 21:25:40 to 2015-12-12 21:26:41 due to value drop, start reading: 274290, end reading: 256722

Meter 8156 is malfunctioning from 2015-12-12 21:50:40 to 2015-12-12 22:07:41 due to value drop, start reading: 274292, end reading: 256722

Meter 8156 is malfunctioning from 2015-12-12 23:14:40 to 2015-12-12 23:15:41 due to value drop, start reading: 274292, end reading: 256724

Meter 8156 is malfunctioning from 2015-12-12 23:59:40 to 2015-12-13 00:01:41 due to value drop, start reading: 274292, end reading: 256724

Meter 8156 is malfunctioning from 2015-12-13 00:03:39 to 2015-12-13 00:05:41 due to value drop, start reading: 274292, end reading: 256724

Meter 8156 is malfunctioning from 2015-12-13 00:14:39 to 2015-12-13 00:17:40 due to value drop, start reading: 274292, end reading: 256724

Meter 8156 is malfunctioning from 2015-12-13 00:43:39 to 2015-12-13 00:53:41 due to value drop, start reading: 274294, end reading: 256724

Meter 5403 is malfunctioning from 2015-10-17 10:18:16 to 2015-10-17 10:18:23 due to value drop, start reading: 113454, end reading: 113452

Meter 5403 is malfunctioning from 2015-10-17 11:57:19 to 2015-10-17 11:58:33 due to value drop, start reading: 113456, end reading: 113454

Meter 5403 is malfunctioning from 2015-10-17 13:22:08 to 2015-10-17 13:29:24 due to value drop, start reading: 113458, end reading: 113456

Meter 5403 is malfunctioning from 2015-10-17 13:37:07 to 2015-10-17 13:37:17 due to value drop, start reading: 113458, end reading: 113456

Meter 5403 is malfunctioning from 2015-10-17 13:38:07 to 2015-10-17 13:39:18 due to value drop, start reading: 113458, end reading: 113456

Meter 5403 is malfunctioning from 2015-10-17 14:31:17 to 2015-10-17 14:36:26 due to value drop, start reading: 113460, end reading: 113458

Meter 5403 is malfunctioning from 2015-10-17 14:38:23 to 2015-10-17 14:40:25 due to value drop, start reading: 113460, end reading: 113458

Meter 5403 is malfunctioning from 2015-10-17 17:28:05 to 2015-10-17 17:33:25 due

to value drop, start reading: 113464, end reading: 113462

Meter 5403 is malfunctioning from 2015-10-17 20:40:04 to 2015-10-17 20:52:27 due to value drop, start reading: 113468, end reading: 113466

Meter 5403 is malfunctioning from 2015-10-17 20:55:12 to 2015-10-17 20:57:32 due to value drop, start reading: 113468, end reading: 113466

Meter 5403 is malfunctioning from 2015-10-17 21:56:06 to 2015-10-17 22:17:17 due to value drop, start reading: 113470, end reading: 113468

Meter 5403 is malfunctioning from 2015-10-17 23:30:21 to 2015-10-17 23:33:31 due to value drop, start reading: 113472, end reading: 113470

Meter 5403 is malfunctioning from 2015-10-17 23:40:16 to 2015-10-17 23:49:36 due to value drop, start reading: 113472, end reading: 113470

Meter 5403 is malfunctioning from 2015-10-18 01:06:10 to 2015-10-18 01:12:31 due to value drop, start reading: 113474, end reading: 113472

Meter 5403 is malfunctioning from 2015-10-20 15:52:31 to 2015-10-20 15:55:28 due to value drop, start reading: 113566, end reading: 113564

Meter 5403 is malfunctioning from 2015-10-20 17:13:15 to 2015-10-20 17:22:14 due to value drop, start reading: 113568, end reading: 113566

Meter 5403 is malfunctioning from 2015-10-20 23:05:33 to 2015-10-20 23:07:28 due to value drop, start reading: 113576, end reading: 113574

Meter 5403 is malfunctioning from 2015-11-01 01:29:55 to 2015-11-01 01:36:56 due to value drop, start reading: 113976, end reading: 113974

Meter 5403 is malfunctioning from 2015-12-07 17:30:08 to 2015-12-07 17:42:18 due to value drop, start reading: 128678, end reading: 116144

Meter 5403 is malfunctioning from 2015-12-07 18:39:06 to 2015-12-07 18:40:09 due to value drop, start reading: 128680, end reading: 116144

Meter 5403 is malfunctioning from 2015-12-07 19:30:17 to 2015-12-07 19:35:07 due to value drop, start reading: 128682, end reading: 116146

Meter 5403 is malfunctioning from 2015-12-07 19:43:21 to 2015-12-07 19:52:06 due to value drop, start reading: 128682, end reading: 116146

Meter 5403 is malfunctioning from 2015-12-07 21:54:04 to 2015-12-07 21:57:17 due to value drop, start reading: 128686, end reading: 116150

Meter 5403 is malfunctioning from 2015-12-07 22:32:00 to 2015-12-07 22:36:19 due

to value drop, start reading: 128686, end reading: 116150

Meter 5403 is malfunctioning from 2015-12-07 23:10:09 to 2015-12-07 23:14:13 due
to value drop, start reading: 128686, end reading: 116150

Meter 5403 is malfunctioning from 2015-12-07 23:26:14 to 2015-12-07 23:34:08 due
to value drop, start reading: 128688, end reading: 116152

Meter 5403 is malfunctioning from 2015-12-07 23:47:19 to 2015-12-07 23:48:08 due
to value drop, start reading: 128688, end reading: 116152

Meter 5403 is malfunctioning from 2015-12-08 01:25:09 to 2015-12-08 01:28:25 due
to value drop, start reading: 128690, end reading: 116154

Meter 5403 is malfunctioning from 2015-12-08 02:31:58 to 2015-12-08 02:36:20 due
to value drop, start reading: 128692, end reading: 116156

Meter 5403 is malfunctioning from 2015-12-08 03:29:09 to 2015-12-08 03:32:10 due
to value drop, start reading: 128692, end reading: 116158

Meter 5403 is malfunctioning from 2015-12-08 03:38:14 to 2015-12-08 03:42:11 due
to value drop, start reading: 128692, end reading: 116158

Meter 5403 is malfunctioning from 2015-12-08 03:57:18 to 2015-12-08 03:58:04 due
to value drop, start reading: 128694, end reading: 116158

Meter 5403 is malfunctioning from 2015-12-08 05:07:12 to 2015-12-08 05:09:19 due
to value drop, start reading: 128694, end reading: 116160

Meter 5403 is malfunctioning from 2015-12-08 05:19:14 to 2015-12-08 05:28:27 due
to value drop, start reading: 128696, end reading: 116160

Meter 5403 is malfunctioning from 2015-12-08 05:44:03 to 2015-12-08 05:57:23 due
to value drop, start reading: 128696, end reading: 116160

Meter 5403 is malfunctioning from 2015-12-08 06:06:08 to 2015-12-08 06:13:22 due
to value drop, start reading: 128696, end reading: 116160

Meter 5403 is malfunctioning from 2015-12-08 07:30:13 to 2015-12-08 07:38:13 due
to value drop, start reading: 128698, end reading: 116162

Meter 5403 is malfunctioning from 2015-12-08 07:56:13 to 2015-12-08 07:57:08 due
to value drop, start reading: 128698, end reading: 116164

Meter 5403 is malfunctioning from 2015-12-08 08:05:16 to 2015-12-08 08:08:05 due
to value drop, start reading: 128698, end reading: 116164

Meter 5403 is malfunctioning from 2015-12-08 08:15:23 to 2015-12-08 08:24:05 due

to value drop, start reading: 128700, end reading: 116164

Meter 5403 is malfunctioning from 2015-12-08 08:29:23 to 2015-12-08 08:30:09 due
to value drop, start reading: 128700, end reading: 116168

Meter 5403 is malfunctioning from 2015-12-08 08:45:16 to 2015-12-08 09:00:15 due
to value drop, start reading: 128700, end reading: 116182

Meter 5403 is malfunctioning from 2015-12-08 10:54:59 to 2015-12-08 10:56:21 due
to value drop, start reading: 128704, end reading: 116190

Meter 5403 is malfunctioning from 2015-12-08 11:50:11 to 2015-12-08 12:02:07 due
to value drop, start reading: 128704, end reading: 116204

Meter 5403 is malfunctioning from 2015-12-08 12:12:11 to 2015-12-08 12:15:07 due
to value drop, start reading: 128706, end reading: 116204

Meter 5403 is malfunctioning from 2015-12-08 12:42:22 to 2015-12-08 12:48:08 due
to value drop, start reading: 128706, end reading: 116204

Meter 5403 is malfunctioning from 2015-12-08 13:04:09 to 2015-12-08 13:07:16 due
to value drop, start reading: 128706, end reading: 116204

Meter 5403 is malfunctioning from 2015-12-08 13:20:11 to 2015-12-08 13:24:16 due
to value drop, start reading: 128708, end reading: 116206

Meter 5403 is malfunctioning from 2015-12-08 13:35:12 to 2015-12-08 13:44:22 due
to value drop, start reading: 128708, end reading: 116206

Meter 5403 is malfunctioning from 2015-12-08 14:44:03 to 2015-12-08 14:45:16 due
to value drop, start reading: 128708, end reading: 116208

Meter 5403 is malfunctioning from 2015-12-08 17:21:17 to 2015-12-08 17:24:15 due
to value drop, start reading: 128712, end reading: 116212

Meter 5403 is malfunctioning from 2015-12-08 20:00:10 to 2015-12-08 20:00:12 due
to value drop, start reading: 128716, end reading: 116214

Meter 5403 is malfunctioning from 2015-12-08 20:57:19 to 2015-12-08 21:00:04 due
to value drop, start reading: 128718, end reading: 116216

Meter 5403 is malfunctioning from 2015-12-08 21:06:22 to 2015-12-08 21:13:06 due
to value drop, start reading: 128718, end reading: 116216

Meter 5403 is malfunctioning from 2015-12-08 22:24:10 to 2015-12-08 22:29:26 due
to value drop, start reading: 128720, end reading: 116218

Meter 5403 is malfunctioning from 2015-12-09 01:21:25 to 2015-12-09 01:26:08 due

to value drop, start reading: 128724, end reading: 116222

Meter 5403 is malfunctioning from 2015-12-09 02:01:15 to 2015-12-09 02:02:19 due to value drop, start reading: 128724, end reading: 116224

Meter 5403 is malfunctioning from 2015-12-09 02:36:10 to 2015-12-09 02:44:27 due to value drop, start reading: 128726, end reading: 116224

Meter 5403 is malfunctioning from 2015-12-09 03:31:02 to 2015-12-09 03:34:15 due to value drop, start reading: 128726, end reading: 116226

Meter 5403 is malfunctioning from 2015-12-09 03:39:59 to 2015-12-09 03:45:19 due to value drop, start reading: 128726, end reading: 116226

Meter 5403 is malfunctioning from 2015-12-09 04:51:15 to 2015-12-09 05:00:06 due to value drop, start reading: 128728, end reading: 116228

Meter 5403 is malfunctioning from 2015-12-09 07:51:00 to 2015-12-09 07:52:14 due to value drop, start reading: 128732, end reading: 116232

Meter 5403 is malfunctioning from 2015-12-09 08:51:09 to 2015-12-09 08:58:08 due to value drop, start reading: 128734, end reading: 116234

Meter 5403 is malfunctioning from 2015-12-09 09:36:18 to 2015-12-09 09:42:07 due to value drop, start reading: 128734, end reading: 116234

Meter 5403 is malfunctioning from 2015-12-09 11:05:07 to 2015-12-09 11:08:26 due to value drop, start reading: 128736, end reading: 116236

Meter 5403 is malfunctioning from 2015-12-09 11:36:07 to 2015-12-09 11:39:17 due to value drop, start reading: 128738, end reading: 116236

Meter 5403 is malfunctioning from 2015-12-09 11:51:05 to 2015-12-09 11:54:20 due to value drop, start reading: 128738, end reading: 116238

Meter 5403 is malfunctioning from 2015-12-09 12:05:58 to 2015-12-09 12:09:19 due to value drop, start reading: 128738, end reading: 116238

Meter 5403 is malfunctioning from 2015-12-09 12:55:10 to 2015-12-09 13:32:03 due to value drop, start reading: 128738, end reading: 116240

Meter 5403 is malfunctioning from 2015-12-09 13:46:18 to 2015-12-09 14:04:10 due to value drop, start reading: 128740, end reading: 116240

Meter 5403 is malfunctioning from 2015-12-09 15:39:08 to 2015-12-09 15:45:19 due to value drop, start reading: 128742, end reading: 116242

Meter 5403 is malfunctioning from 2015-12-09 17:45:18 to 2015-12-09 17:52:07 due

to value drop, start reading: 128746, end reading: 116246

Meter 5403 is malfunctioning from 2015-12-09 18:11:23 to 2015-12-09 18:19:12 due to value drop, start reading: 128746, end reading: 116246

Meter 5403 is malfunctioning from 2015-12-09 18:19:17 to 2015-12-09 18:25:14 due to value drop, start reading: 128746, end reading: 116246

Meter 5403 is malfunctioning from 2015-12-09 19:01:11 to 2015-12-09 19:04:16 due to value drop, start reading: 128748, end reading: 116248

Meter 5403 is malfunctioning from 2015-12-09 21:12:10 to 2015-12-09 22:12:03 due to value drop, start reading: 128754, end reading: 116252

Meter 5403 is malfunctioning from 2015-12-09 22:39:11 to 2015-12-09 22:52:14 due to value drop, start reading: 128756, end reading: 116252

Meter 5403 is malfunctioning from 2015-12-09 23:24:17 to 2015-12-09 23:30:24 due to value drop, start reading: 128756, end reading: 116254

Meter 5403 is malfunctioning from 2015-12-09 23:41:08 to 2015-12-09 23:48:27 due to value drop, start reading: 128756, end reading: 116254

Meter 5403 is malfunctioning from 2015-12-09 23:59:08 to 2015-12-10 00:09:19 due to value drop, start reading: 128758, end reading: 116254

Meter 5403 is malfunctioning from 2015-12-10 01:03:01 to 2015-12-10 01:06:13 due to value drop, start reading: 128758, end reading: 116256

Meter 5403 is malfunctioning from 2015-12-10 02:03:14 to 2015-12-10 02:04:04 due to value drop, start reading: 128760, end reading: 116258

Meter 5403 is malfunctioning from 2015-12-10 05:53:08 to 2015-12-10 05:54:10 due to value drop, start reading: 128766, end reading: 116262

Meter 5403 is malfunctioning from 2015-12-10 05:55:10 to 2015-12-10 06:26:04 due to value drop, start reading: 128766, end reading: 116264

Meter 5403 is malfunctioning from 2015-12-10 07:03:11 to 2015-12-10 07:04:11 due to value drop, start reading: 128766, end reading: 116264

Meter 5403 is malfunctioning from 2015-12-10 07:38:09 to 2015-12-10 07:46:19 due to value drop, start reading: 128768, end reading: 116266

Meter 5403 is malfunctioning from 2015-12-10 09:03:00 to 2015-12-10 09:03:14 due to value drop, start reading: 128770, end reading: 116268

Meter 5403 is malfunctioning from 2015-12-10 09:43:07 to 2015-12-10 09:50:12 due

to value drop, start reading: 128770, end reading: 116268

Meter 5403 is malfunctioning from 2015-12-10 11:24:13 to 2015-12-10 11:32:14 due to value drop, start reading: 128772, end reading: 116270

Meter 5403 is malfunctioning from 2015-12-10 11:35:12 to 2015-12-10 11:38:17 due to value drop, start reading: 128774, end reading: 116272

Meter 5403 is malfunctioning from 2015-12-10 12:20:03 to 2015-12-10 12:26:24 due to value drop, start reading: 128774, end reading: 116272

Meter 5403 is malfunctioning from 2015-12-10 12:49:07 to 2015-12-10 12:54:14 due to value drop, start reading: 128774, end reading: 116272

Meter 5403 is malfunctioning from 2015-12-10 13:02:03 to 2015-12-10 13:20:18 due to value drop, start reading: 128776, end reading: 116274

Meter 5403 is malfunctioning from 2015-12-10 15:14:18 to 2015-12-10 15:26:12 due to value drop, start reading: 128778, end reading: 116276

Meter 5403 is malfunctioning from 2015-12-10 15:34:15 to 2015-12-10 15:41:12 due to value drop, start reading: 128778, end reading: 116276

Meter 5403 is malfunctioning from 2015-12-10 17:30:59 to 2015-12-10 17:46:16 due to value drop, start reading: 128782, end reading: 116280

Meter 5403 is malfunctioning from 2015-12-10 19:02:21 to 2015-12-10 19:03:05 due to value drop, start reading: 128784, end reading: 116282

Meter 5403 is malfunctioning from 2015-12-10 19:29:17 to 2015-12-10 19:30:10 due to value drop, start reading: 128784, end reading: 116282

Meter 5403 is malfunctioning from 2015-12-10 19:38:13 to 2015-12-10 19:41:12 due to value drop, start reading: 128784, end reading: 116282

Meter 5403 is malfunctioning from 2015-12-10 20:15:12 to 2015-12-10 20:27:23 due to value drop, start reading: 128784, end reading: 116284

Meter 5403 is malfunctioning from 2015-12-10 21:20:03 to 2015-12-10 21:35:13 due to value drop, start reading: 128786, end reading: 116286

Meter 5403 is malfunctioning from 2015-12-10 22:34:09 to 2015-12-10 22:42:09 due to value drop, start reading: 128788, end reading: 116286

Meter 5403 is malfunctioning from 2015-12-10 23:14:21 to 2015-12-10 23:17:03 due to value drop, start reading: 128788, end reading: 116288

Meter 5403 is malfunctioning from 2015-12-11 00:13:15 to 2015-12-11 00:19:18 due

to value drop, start reading: 128790, end reading: 116290

Meter 5403 is malfunctioning from 2015-12-11 00:58:59 to 2015-12-11 01:00:26 due to value drop, start reading: 128792, end reading: 116290

Meter 5403 is malfunctioning from 2015-12-11 01:25:07 to 2015-12-11 01:26:16 due to value drop, start reading: 128792, end reading: 116290

Meter 5403 is malfunctioning from 2015-12-11 02:13:59 to 2015-12-11 02:14:12 due to value drop, start reading: 128792, end reading: 116292

Meter 5403 is malfunctioning from 2015-12-11 02:26:06 to 2015-12-11 02:28:05 due to value drop, start reading: 128794, end reading: 116292

Meter 5403 is malfunctioning from 2015-12-11 02:35:09 to 2015-12-11 02:48:09 due to value drop, start reading: 128794, end reading: 116292

Meter 5403 is malfunctioning from 2015-12-11 02:49:09 to 2015-12-11 03:04:05 due to value drop, start reading: 128794, end reading: 116294

Meter 5403 is malfunctioning from 2015-12-11 04:15:12 to 2015-12-11 04:16:13 due to value drop, start reading: 128796, end reading: 116294

Meter 5403 is malfunctioning from 2015-12-11 05:38:06 to 2015-12-11 05:38:15 due to value drop, start reading: 128798, end reading: 116296

Meter 5403 is malfunctioning from 2015-12-11 05:44:03 to 2015-12-11 05:52:14 due to value drop, start reading: 128798, end reading: 116298

Meter 5403 is malfunctioning from 2015-12-11 10:14:00 to 2015-12-11 10:18:14 due to value drop, start reading: 128804, end reading: 116314

Meter 5403 is malfunctioning from 2015-12-11 11:25:11 to 2015-12-11 11:27:03 due to value drop, start reading: 128806, end reading: 116316

Meter 5403 is malfunctioning from 2015-12-11 11:58:18 to 2015-12-11 12:16:08 due to value drop, start reading: 128806, end reading: 116318

Meter 5403 is malfunctioning from 2015-12-11 12:48:12 to 2015-12-11 12:54:16 due to value drop, start reading: 128808, end reading: 116318

Meter 5403 is malfunctioning from 2015-12-11 14:52:02 to 2015-12-11 15:02:02 due to value drop, start reading: 128810, end reading: 116322

Meter 5403 is malfunctioning from 2015-12-11 15:10:09 to 2015-12-11 15:20:09 due to value drop, start reading: 128810, end reading: 116322

Meter 5403 is malfunctioning from 2015-12-11 15:39:15 to 2015-12-11 15:57:59 due

to value drop, start reading: 128812, end reading: 116322

Meter 5403 is malfunctioning from 2015-12-11 16:22:23 to 2015-12-11 16:36:11 due to value drop, start reading: 128812, end reading: 116324

Meter 5403 is malfunctioning from 2015-12-11 18:12:07 to 2015-12-11 18:32:15 due to value drop, start reading: 128814, end reading: 116334

Meter 5403 is malfunctioning from 2015-12-11 18:41:58 to 2015-12-11 19:08:08 due to value drop, start reading: 128816, end reading: 116336

Meter 5403 is malfunctioning from 2015-12-11 19:32:09 to 2015-12-11 19:36:08 due to value drop, start reading: 128816, end reading: 116336

Meter 5403 is malfunctioning from 2015-12-11 20:43:17 to 2015-12-11 21:15:12 due to value drop, start reading: 128818, end reading: 116338

Meter 5403 is malfunctioning from 2015-12-11 21:50:08 to 2015-12-11 21:52:20 due to value drop, start reading: 128820, end reading: 116340

Meter 5403 is malfunctioning from 2015-12-11 22:17:07 to 2015-12-11 22:17:12 due to value drop, start reading: 128820, end reading: 116340

Meter 5403 is malfunctioning from 2015-12-11 23:59:11 to 2015-12-12 00:13:02 due to value drop, start reading: 128822, end reading: 116342

Meter 5403 is malfunctioning from 2015-12-12 02:00:10 to 2015-12-12 02:05:21 due to value drop, start reading: 128826, end reading: 116346

Meter 5403 is malfunctioning from 2015-12-12 04:02:10 to 2015-12-12 04:11:02 due to value drop, start reading: 128828, end reading: 116348

Meter 5403 is malfunctioning from 2015-12-12 04:14:13 to 2015-12-12 04:19:05 due to value drop, start reading: 128828, end reading: 116348

Meter 5403 is malfunctioning from 2015-12-12 05:09:15 to 2015-12-12 05:14:10 due to value drop, start reading: 128830, end reading: 116350

Meter 5403 is malfunctioning from 2015-12-12 06:18:06 to 2015-12-12 06:34:15 due to value drop, start reading: 128830, end reading: 116352

Meter 5403 is malfunctioning from 2015-12-12 07:22:01 to 2015-12-12 07:26:17 due to value drop, start reading: 128832, end reading: 116354

Meter 5403 is malfunctioning from 2015-12-12 08:04:09 to 2015-12-12 08:18:07 due to value drop, start reading: 128834, end reading: 116364

Meter 5403 is malfunctioning from 2015-12-12 08:59:16 to 2015-12-12 08:59:59 due

to value drop, start reading: 128834, end reading: 116366

Meter 5403 is malfunctioning from 2015-12-12 09:09:24 to 2015-12-12 09:15:04 due to value drop, start reading: 128834, end reading: 116366

Meter 5403 is malfunctioning from 2015-12-12 09:27:11 to 2015-12-12 09:54:14 due to value drop, start reading: 128836, end reading: 116366

Meter 5403 is malfunctioning from 2015-12-12 11:36:01 to 2015-12-12 11:42:16 due to value drop, start reading: 128838, end reading: 116370

Meter 5403 is malfunctioning from 2015-12-12 12:22:08 to 2015-12-12 12:28:06 due to value drop, start reading: 128840, end reading: 116370

Meter 5403 is malfunctioning from 2015-12-12 13:09:18 to 2015-12-12 13:19:03 due to value drop, start reading: 128840, end reading: 116372

Meter 5403 is malfunctioning from 2015-12-12 13:54:12 to 2015-12-12 14:07:15 due to value drop, start reading: 128842, end reading: 116372

Meter 5403 is malfunctioning from 2015-12-12 14:33:11 to 2015-12-12 14:46:23 due to value drop, start reading: 128842, end reading: 116374

Meter 5403 is malfunctioning from 2015-12-12 15:39:00 to 2015-12-12 16:02:10 due to value drop, start reading: 128844, end reading: 116376

Meter 5403 is malfunctioning from 2015-12-12 16:04:02 to 2015-12-12 16:07:07 due to value drop, start reading: 128844, end reading: 116376

Meter 5403 is malfunctioning from 2015-12-12 17:57:16 to 2015-12-12 17:58:09 due to value drop, start reading: 128846, end reading: 116378

Meter 5403 is malfunctioning from 2015-12-12 18:34:14 to 2015-12-12 18:34:16 due to value drop, start reading: 128848, end reading: 116380

Meter 5403 is malfunctioning from 2015-12-12 19:09:05 to 2015-12-12 19:15:14 due to value drop, start reading: 128848, end reading: 116380

Meter 5403 is malfunctioning from 2015-12-12 20:21:03 to 2015-12-12 20:24:00 due to value drop, start reading: 128850, end reading: 116382

Meter 5403 is malfunctioning from 2015-12-12 21:28:20 to 2015-12-12 21:33:59 due to value drop, start reading: 128852, end reading: 116384

Meter 5403 is malfunctioning from 2015-12-12 22:05:11 to 2015-12-12 22:08:12 due to value drop, start reading: 128852, end reading: 116384

Meter 5403 is malfunctioning from 2015-12-12 23:39:06 to 2015-12-12 23:45:10 due

to value drop, start reading: 128854, end reading: 116386

Meter 5403 is malfunctioning from 2015-12-13 00:17:02 to 2015-12-13 00:18:15 due
to value drop, start reading: 128856, end reading: 116388

Meter 5403 is malfunctioning from 2015-12-13 00:35:01 to 2015-12-13 00:38:00 due
to value drop, start reading: 128856, end reading: 116388

Meter 5403 is malfunctioning from 2016-03-30 20:30:09 to 2016-03-30 20:41:55 due
to value drop, start reading: 125028, end reading: 125026

Meter 5403 is malfunctioning from 2016-03-30 22:01:56 to 2016-03-30 22:02:41 due
to value drop, start reading: 125030, end reading: 125028

Meter 7794 is malfunctioning from 2015-11-01 07:40:58 to 2015-11-01 08:01:58 due
to value drop, start reading: 435398, end reading: 435392

Meter 9639 is malfunctioning from 2015-12-22 00:00:00 to 2015-12-22 00:27:07 due
to value drop, start reading: 256814, end reading: 227328

Meter 9639 is malfunctioning from 2015-12-22 11:22:30 to 2015-12-22 11:54:52 due
to value drop, start reading: 256814, end reading: 227548

Meter 7017 is malfunctioning from 2015-10-20 11:54:31 to 2015-10-20 12:05:00 due
to value drop, start reading: 376554, end reading: 376550

Meter 94 is malfunctioning from 2015-11-01 01:10:07 to 2015-11-01 01:11:10 due
to value drop, start reading: 117626, end reading: 117614

Meter 94 is malfunctioning from 2015-11-01 01:13:09 to 2015-11-01 01:17:53 due
to value drop, start reading: 117626, end reading: 117614

Meter 94 is malfunctioning from 2015-11-01 01:19:10 to 2015-11-01 01:23:12 due
to value drop, start reading: 117626, end reading: 117616

Meter 94 is malfunctioning from 2016-01-16 10:23:19 to 2016-01-16 10:23:43 due
to value drop, start reading: 129602, end reading: 129598

Meter 94 is malfunctioning from 2016-01-18 11:19:30 to 2016-01-18 11:19:47 due
to value drop, start reading: 130316, end reading: 130306

Meter 94 is malfunctioning from 2016-01-18 11:26:27 to 2016-01-18 11:26:52 due to value drop, start reading: 130316, end reading: 130310

Meter 7030 is malfunctioning from 2015-10-17 10:19:24 to 2015-10-17 10:25:30 due to value drop, start reading: 142386, end reading: 142384

Meter 7030 is malfunctioning from 2015-10-17 11:48:28 to 2015-10-17 11:56:44 due to value drop, start reading: 142388, end reading: 142386

Meter 7030 is malfunctioning from 2015-10-17 16:04:26 to 2015-10-17 16:11:46 due to value drop, start reading: 142394, end reading: 142392

Meter 7030 is malfunctioning from 2015-10-17 16:17:26 to 2015-10-17 16:21:48 due to value drop, start reading: 142394, end reading: 142392

Meter 7030 is malfunctioning from 2015-10-17 17:51:13 to 2015-10-17 18:17:30 due to value drop, start reading: 142396, end reading: 142394

Meter 7030 is malfunctioning from 2015-10-17 21:00:22 to 2015-10-17 21:03:40 due to value drop, start reading: 142400, end reading: 142398

Meter 7030 is malfunctioning from 2015-10-18 01:30:18 to 2015-10-18 01:30:38 due to value drop, start reading: 142406, end reading: 142404

Meter 7030 is malfunctioning from 2015-10-20 12:35:43 to 2015-10-20 12:40:39 due to value drop, start reading: 142522, end reading: 142514

Meter 7030 is malfunctioning from 2015-10-20 17:27:33 to 2015-10-20 17:29:32 due to value drop, start reading: 142522, end reading: 142520

Meter 7030 is malfunctioning from 2015-11-01 01:10:20 to 2015-11-01 01:16:29 due to value drop, start reading: 143064, end reading: 143062

Meter 7030 is malfunctioning from 2015-11-01 01:56:19 to 2015-11-01 01:58:27 due to value drop, start reading: 143066, end reading: 143064

Meter 7030 is malfunctioning from 2015-12-07 17:49:11 to 2015-12-07 17:54:21 due to value drop, start reading: 166108, end reading: 146466

Meter 7030 is malfunctioning from 2015-12-07 20:21:26 to 2015-12-07 20:30:09 due to value drop, start reading: 166110, end reading: 146470

Meter 7030 is malfunctioning from 2015-12-07 21:31:24 to 2015-12-07 21:35:26 due to value drop, start reading: 166112, end reading: 146470

Meter 7030 is malfunctioning from 2015-12-07 22:55:10 to 2015-12-07 22:59:21 due to value drop, start reading: 166114, end reading: 146492

Meter 7030 is malfunctioning from 2015-12-08 00:21:29 to 2015-12-08 00:26:08 due to value drop, start reading: 166116, end reading: 146494

Meter 7030 is malfunctioning from 2015-12-08 01:09:25 to 2015-12-08 01:26:21 due to value drop, start reading: 166116, end reading: 146496

Meter 7030 is malfunctioning from 2015-12-08 01:39:23 to 2015-12-08 01:53:26 due to value drop, start reading: 166118, end reading: 146496

Meter 7030 is malfunctioning from 2015-12-08 03:03:09 to 2015-12-08 03:07:20 due to value drop, start reading: 166120, end reading: 146498

Meter 7030 is malfunctioning from 2015-12-08 08:25:25 to 2015-12-08 08:27:10 due to value drop, start reading: 166134, end reading: 146504

Meter 7030 is malfunctioning from 2015-12-08 09:23:24 to 2015-12-08 10:17:26 due to value drop, start reading: 166136, end reading: 146506

Meter 7030 is malfunctioning from 2015-12-08 11:27:09 to 2015-12-08 11:31:20 due to value drop, start reading: 166138, end reading: 146508

Meter 7030 is malfunctioning from 2015-12-08 12:20:19 to 2015-12-08 12:44:07 due to value drop, start reading: 166140, end reading: 146510

Meter 7030 is malfunctioning from 2015-12-08 12:55:28 to 2015-12-08 13:37:15 due to value drop, start reading: 166140, end reading: 146510

Meter 7030 is malfunctioning from 2015-12-08 18:38:26 to 2015-12-08 19:03:21 due to value drop, start reading: 166148, end reading: 146518

Meter 7030 is malfunctioning from 2015-12-08 22:15:21 to 2015-12-08 22:20:17 due to value drop, start reading: 166152, end reading: 146522

Meter 7030 is malfunctioning from 2015-12-08 23:05:15 to 2015-12-08 23:07:29 due to value drop, start reading: 166152, end reading: 146524

Meter 7030 is malfunctioning from 2015-12-09 00:54:19 to 2015-12-09 00:58:13 due to value drop, start reading: 166156, end reading: 146526

Meter 7030 is malfunctioning from 2015-12-09 01:25:24 to 2015-12-09 01:29:03 due to value drop, start reading: 166156, end reading: 146526

Meter 7030 is malfunctioning from 2015-12-09 02:31:22 to 2015-12-09 02:34:17 due to value drop, start reading: 166158, end reading: 146528

Meter 7030 is malfunctioning from 2015-12-09 04:53:18 to 2015-12-09 04:55:12 due to value drop, start reading: 166160, end reading: 146532

Meter 7030 is malfunctioning from 2015-12-09 05:33:21 to 2015-12-09 05:50:08 due to value drop, start reading: 166162, end reading: 146532

Meter 7030 is malfunctioning from 2015-12-09 07:12:26 to 2015-12-09 07:14:24 due to value drop, start reading: 166164, end reading: 146534

Meter 7030 is malfunctioning from 2015-12-09 07:40:12 to 2015-12-09 07:57:19 due to value drop, start reading: 166164, end reading: 146536

Meter 7030 is malfunctioning from 2015-12-09 10:41:25 to 2015-12-09 11:13:21 due to value drop, start reading: 166168, end reading: 146540

Meter 7030 is malfunctioning from 2015-12-09 12:27:15 to 2015-12-09 12:35:15 due to value drop, start reading: 166170, end reading: 146542

Meter 7030 is malfunctioning from 2015-12-09 15:05:21 to 2015-12-09 15:25:21 due to value drop, start reading: 166174, end reading: 146544

Meter 7030 is malfunctioning from 2015-12-09 16:38:15 to 2015-12-09 17:27:07 due to value drop, start reading: 166176, end reading: 146548

Meter 7030 is malfunctioning from 2015-12-09 19:50:27 to 2015-12-09 20:04:28 due to value drop, start reading: 166180, end reading: 146568

Meter 7030 is malfunctioning from 2015-12-09 21:18:11 to 2015-12-09 21:36:07 due to value drop, start reading: 166182, end reading: 146570

Meter 7030 is malfunctioning from 2015-12-09 22:35:31 to 2015-12-09 22:45:01 due to value drop, start reading: 166184, end reading: 146570

Meter 7030 is malfunctioning from 2015-12-09 23:43:22 to 2015-12-10 00:01:25 due to value drop, start reading: 166184, end reading: 146572

Meter 7030 is malfunctioning from 2015-12-10 03:51:26 to 2015-12-10 03:55:18 due to value drop, start reading: 166190, end reading: 146578

Meter 7030 is malfunctioning from 2015-12-10 04:41:13 to 2015-12-10 04:58:17 due to value drop, start reading: 166190, end reading: 146578

Meter 7030 is malfunctioning from 2015-12-10 05:37:12 to 2015-12-10 06:04:07 due to value drop, start reading: 166192, end reading: 146580

Meter 7030 is malfunctioning from 2015-12-10 12:55:12 to 2015-12-10 13:03:21 due to value drop, start reading: 166210, end reading: 146590

Meter 7030 is malfunctioning from 2015-12-10 13:32:11 to 2015-12-10 13:34:19 due to value drop, start reading: 166210, end reading: 146590

Meter 7030 is malfunctioning from 2015-12-10 14:10:07 to 2015-12-10 14:17:08 due to value drop, start reading: 166212, end reading: 146592

Meter 7030 is malfunctioning from 2015-12-10 16:17:22 to 2015-12-10 16:24:19 due to value drop, start reading: 166214, end reading: 146594

Meter 7030 is malfunctioning from 2015-12-10 17:20:18 to 2015-12-10 17:26:15 due to value drop, start reading: 166216, end reading: 146596

Meter 7030 is malfunctioning from 2015-12-10 18:47:19 to 2015-12-10 19:03:08 due to value drop, start reading: 166218, end reading: 146598

Meter 7030 is malfunctioning from 2015-12-10 19:41:31 to 2015-12-10 20:04:12 due to value drop, start reading: 166218, end reading: 146600

Meter 7030 is malfunctioning from 2015-12-10 20:18:26 to 2015-12-10 20:25:12 due to value drop, start reading: 166220, end reading: 146600

Meter 7030 is malfunctioning from 2015-12-10 20:44:22 to 2015-12-10 20:49:20 due to value drop, start reading: 166220, end reading: 146600

Meter 7030 is malfunctioning from 2015-12-10 21:31:17 to 2015-12-10 21:39:17 due to value drop, start reading: 166220, end reading: 146602

Meter 7030 is malfunctioning from 2015-12-10 22:07:12 to 2015-12-10 22:17:19 due to value drop, start reading: 166222, end reading: 146602

Meter 7030 is malfunctioning from 2015-12-10 23:41:28 to 2015-12-10 23:45:05 due to value drop, start reading: 166224, end reading: 146604

Meter 7030 is malfunctioning from 2015-12-11 00:15:28 to 2015-12-11 00:20:14 due to value drop, start reading: 166224, end reading: 146604

Meter 7030 is malfunctioning from 2015-12-11 00:34:25 to 2015-12-11 00:44:16 due to value drop, start reading: 166224, end reading: 146606

Meter 7030 is malfunctioning from 2015-12-11 01:41:14 to 2015-12-11 01:44:17 due to value drop, start reading: 166226, end reading: 146606

Meter 7030 is malfunctioning from 2015-12-11 01:45:19 to 2015-12-11 01:46:19 due to value drop, start reading: 166226, end reading: 146606

Meter 7030 is malfunctioning from 2015-12-11 03:19:21 to 2015-12-11 03:39:08 due to value drop, start reading: 166228, end reading: 146610

Meter 7030 is malfunctioning from 2015-12-11 05:56:18 to 2015-12-11 06:01:13 due to value drop, start reading: 166232, end reading: 146612

Meter 7030 is malfunctioning from 2015-12-11 06:25:16 to 2015-12-11 06:46:20 due to value drop, start reading: 166232, end reading: 146614

Meter 7030 is malfunctioning from 2015-12-11 09:36:27 to 2015-12-11 09:49:25 due to value drop, start reading: 166236, end reading: 146618

Meter 7030 is malfunctioning from 2015-12-11 09:55:12 to 2015-12-11 10:07:18 due to value drop, start reading: 166236, end reading: 146618

Meter 7030 is malfunctioning from 2015-12-11 12:22:30 to 2015-12-11 12:23:07 due to value drop, start reading: 166240, end reading: 146620

Meter 7030 is malfunctioning from 2015-12-11 12:36:30 to 2015-12-11 12:44:05 due to value drop, start reading: 166240, end reading: 146622

Meter 7030 is malfunctioning from 2015-12-11 13:37:23 to 2015-12-11 13:41:20 due to value drop, start reading: 166242, end reading: 146622

Meter 7030 is malfunctioning from 2015-12-11 14:38:18 to 2015-12-11 14:49:19 due to value drop, start reading: 166242, end reading: 146624

Meter 7030 is malfunctioning from 2015-12-11 16:47:30 to 2015-12-11 16:48:04 due to value drop, start reading: 166246, end reading: 146626

Meter 7030 is malfunctioning from 2015-12-11 20:36:23 to 2015-12-11 20:37:03 due to value drop, start reading: 166250, end reading: 146632

Meter 7030 is malfunctioning from 2015-12-12 03:11:19 to 2015-12-12 03:27:17 due to value drop, start reading: 166260, end reading: 146678

Meter 7030 is malfunctioning from 2015-12-12 06:05:22 to 2015-12-12 06:06:14 due to value drop, start reading: 166262, end reading: 146680

Meter 7030 is malfunctioning from 2015-12-12 06:09:24 to 2015-12-12 06:13:18 due to value drop, start reading: 166262, end reading: 146682

Meter 7030 is malfunctioning from 2015-12-12 06:59:13 to 2015-12-12 06:59:22 due to value drop, start reading: 166264, end reading: 146682

Meter 7030 is malfunctioning from 2015-12-12 07:24:18 to 2015-12-12 08:07:16 due to value drop, start reading: 166264, end reading: 146684

Meter 7030 is malfunctioning from 2015-12-12 08:29:20 to 2015-12-12 08:33:13 due to value drop, start reading: 166266, end reading: 146684

Meter 7030 is malfunctioning from 2015-12-12 09:15:28 to 2015-12-12 09:23:06 due to value drop, start reading: 166266, end reading: 146686

Meter 7030 is malfunctioning from 2015-12-12 10:45:27 to 2015-12-12 10:47:24 due to value drop, start reading: 166268, end reading: 146688

Meter 7030 is malfunctioning from 2015-12-12 12:17:14 to 2015-12-12 12:29:06 due to value drop, start reading: 166270, end reading: 146690

Meter 7030 is malfunctioning from 2015-12-12 13:39:31 to 2015-12-12 13:47:02 due to value drop, start reading: 166272, end reading: 146692

Meter 7030 is malfunctioning from 2015-12-12 17:07:22 to 2015-12-12 17:37:02 due to value drop, start reading: 166286, end reading: 146696

Meter 7030 is malfunctioning from 2015-12-12 20:23:14 to 2015-12-12 20:38:18 due to value drop, start reading: 166290, end reading: 146700

Meter 7030 is malfunctioning from 2015-12-12 20:47:10 to 2015-12-12 20:47:11 due to value drop, start reading: 166290, end reading: 146702

Meter 7030 is malfunctioning from 2015-12-12 21:16:25 to 2015-12-12 21:45:03 due to value drop, start reading: 166292, end reading: 146702

Meter 7030 is malfunctioning from 2015-12-12 22:10:30 to 2015-12-12 22:13:06 due to value drop, start reading: 166292, end reading: 146704

Meter 7030 is malfunctioning from 2015-12-12 23:11:23 to 2015-12-12 23:23:24 due to value drop, start reading: 166294, end reading: 146704

Meter 7030 is malfunctioning from 2015-12-13 00:07:18 to 2015-12-13 00:21:16 due to value drop, start reading: 166294, end reading: 146706

Meter 7030 is malfunctioning from 2015-12-13 01:11:16 to 2015-12-13 01:20:11 due to value drop, start reading: 166296, end reading: 146708

Meter 2449 is malfunctioning from 2015-10-17 15:37:12 to 2015-10-17 15:44:26 due to value drop, start reading: 171796, end reading: 171794

Meter 2449 is malfunctioning from 2015-10-17 17:50:12 to 2015-10-17 17:58:26 due to value drop, start reading: 171798, end reading: 171796

Meter 2449 is malfunctioning from 2015-12-07 17:02:33 to 2015-12-07 17:07:19 due to value drop, start reading: 191126, end reading: 175248

Meter 2449 is malfunctioning from 2015-12-07 18:04:34 to 2015-12-07 18:09:19 due

to value drop, start reading: 191126, end reading: 175250

Meter 2449 is malfunctioning from 2015-12-07 18:28:34 to 2015-12-07 18:33:20 due to value drop, start reading: 191126, end reading: 175250

Meter 2449 is malfunctioning from 2015-12-07 18:59:34 to 2015-12-07 19:05:20 due to value drop, start reading: 191126, end reading: 175250

Meter 2449 is malfunctioning from 2015-12-07 20:02:35 to 2015-12-07 20:03:20 due to value drop, start reading: 191128, end reading: 175254

Meter 2449 is malfunctioning from 2015-12-07 20:07:34 to 2015-12-07 20:09:20 due to value drop, start reading: 191132, end reading: 175256

Meter 2449 is malfunctioning from 2015-12-07 21:13:34 to 2015-12-07 21:15:20 due to value drop, start reading: 191138, end reading: 175264

Meter 2449 is malfunctioning from 2015-12-07 21:42:34 to 2015-12-07 21:50:20 due to value drop, start reading: 191138, end reading: 175264

Meter 2449 is malfunctioning from 2015-12-07 21:50:34 to 2015-12-07 21:55:20 due to value drop, start reading: 191138, end reading: 175264

Meter 2449 is malfunctioning from 2015-12-07 22:14:34 to 2015-12-07 22:23:20 due to value drop, start reading: 191138, end reading: 175264

Meter 2449 is malfunctioning from 2015-12-07 23:36:34 to 2015-12-07 23:44:20 due to value drop, start reading: 191140, end reading: 175264

Meter 2449 is malfunctioning from 2015-12-08 00:21:34 to 2015-12-08 00:56:20 due to value drop, start reading: 191140, end reading: 175264

Meter 2449 is malfunctioning from 2015-12-08 02:21:34 to 2015-12-08 02:35:19 due to value drop, start reading: 191140, end reading: 175266

Meter 2449 is malfunctioning from 2015-12-08 02:54:34 to 2015-12-08 03:10:21 due to value drop, start reading: 191140, end reading: 175266

Meter 2449 is malfunctioning from 2015-12-08 04:04:34 to 2015-12-08 04:15:20 due to value drop, start reading: 191140, end reading: 175266

Meter 2449 is malfunctioning from 2015-12-08 05:06:34 to 2015-12-08 05:16:20 due to value drop, start reading: 191142, end reading: 175266

Meter 2449 is malfunctioning from 2015-12-08 05:35:34 to 2015-12-08 05:38:20 due to value drop, start reading: 191142, end reading: 175266

Meter 2449 is malfunctioning from 2015-12-08 06:14:34 to 2015-12-08 06:25:20 due

to value drop, start reading: 191142, end reading: 175266

Meter 2449 is malfunctioning from 2015-12-08 06:36:34 to 2015-12-08 06:39:20 due to value drop, start reading: 191142, end reading: 175266

Meter 2449 is malfunctioning from 2015-12-08 07:13:35 to 2015-12-08 07:17:20 due to value drop, start reading: 191142, end reading: 175266

Meter 2449 is malfunctioning from 2015-12-08 08:53:35 to 2015-12-08 08:55:20 due to value drop, start reading: 191142, end reading: 175294

Meter 2449 is malfunctioning from 2015-12-08 08:59:34 to 2015-12-08 09:02:20 due to value drop, start reading: 191142, end reading: 175294

Meter 2449 is malfunctioning from 2015-12-08 10:25:34 to 2015-12-08 10:39:20 due to value drop, start reading: 191144, end reading: 175294

Meter 2449 is malfunctioning from 2015-12-08 11:32:35 to 2015-12-08 11:46:20 due to value drop, start reading: 191156, end reading: 175296

Meter 2449 is malfunctioning from 2015-12-08 12:20:35 to 2015-12-08 12:24:21 due to value drop, start reading: 191156, end reading: 175296

Meter 2449 is malfunctioning from 2015-12-08 12:40:35 to 2015-12-08 12:45:20 due to value drop, start reading: 191156, end reading: 175296

Meter 2449 is malfunctioning from 2015-12-08 13:05:34 to 2015-12-08 13:07:20 due to value drop, start reading: 191156, end reading: 175296

Meter 2449 is malfunctioning from 2015-12-08 13:29:35 to 2015-12-08 13:34:20 due to value drop, start reading: 191156, end reading: 175296

Meter 2449 is malfunctioning from 2015-12-08 14:13:35 to 2015-12-08 14:16:20 due to value drop, start reading: 191156, end reading: 175296

Meter 2449 is malfunctioning from 2015-12-08 15:43:35 to 2015-12-08 16:53:20 due to value drop, start reading: 191158, end reading: 175298

Meter 2449 is malfunctioning from 2015-12-08 18:21:35 to 2015-12-08 18:34:20 due to value drop, start reading: 191158, end reading: 175300

Meter 2449 is malfunctioning from 2015-12-08 18:44:35 to 2015-12-08 19:16:21 due to value drop, start reading: 191158, end reading: 175300

Meter 2449 is malfunctioning from 2015-12-08 20:56:35 to 2015-12-08 21:03:20 due to value drop, start reading: 191160, end reading: 175314

Meter 2449 is malfunctioning from 2015-12-08 21:59:35 to 2015-12-08 22:07:20 due

to value drop, start reading: 191164, end reading: 175314

Meter 2449 is malfunctioning from 2015-12-09 00:17:36 to 2015-12-09 01:03:20 due to value drop, start reading: 191164, end reading: 175316

Meter 2449 is malfunctioning from 2015-12-09 03:21:35 to 2015-12-09 04:00:21 due to value drop, start reading: 191178, end reading: 175316

Meter 2449 is malfunctioning from 2015-12-09 04:08:35 to 2015-12-09 04:12:21 due to value drop, start reading: 191178, end reading: 175316

Meter 2449 is malfunctioning from 2015-12-09 06:16:35 to 2015-12-09 07:13:20 due to value drop, start reading: 191178, end reading: 175318

Meter 2449 is malfunctioning from 2015-12-09 07:20:36 to 2015-12-09 07:45:20 due to value drop, start reading: 191178, end reading: 175318

Meter 2449 is malfunctioning from 2015-12-09 11:00:35 to 2015-12-09 11:05:20 due to value drop, start reading: 191180, end reading: 175348

Meter 2449 is malfunctioning from 2015-12-09 11:26:35 to 2015-12-09 11:27:20 due to value drop, start reading: 191180, end reading: 175348

Meter 2449 is malfunctioning from 2015-12-09 12:19:36 to 2015-12-09 12:43:20 due to value drop, start reading: 191182, end reading: 175350

Meter 2449 is malfunctioning from 2015-12-09 13:29:35 to 2015-12-09 13:35:21 due to value drop, start reading: 191192, end reading: 175352

Meter 2449 is malfunctioning from 2015-12-09 16:43:36 to 2015-12-09 16:55:20 due to value drop, start reading: 191192, end reading: 175354

Meter 2449 is malfunctioning from 2015-12-09 19:11:36 to 2015-12-09 19:57:19 due to value drop, start reading: 191194, end reading: 175360

Meter 2449 is malfunctioning from 2015-12-09 22:05:35 to 2015-12-09 22:36:20 due to value drop, start reading: 191194, end reading: 175394

Meter 2449 is malfunctioning from 2015-12-09 23:05:36 to 2015-12-10 00:25:19 due to value drop, start reading: 191194, end reading: 175396

Meter 2449 is malfunctioning from 2015-12-10 00:50:37 to 2015-12-10 00:58:19 due to value drop, start reading: 191196, end reading: 175396

Meter 2449 is malfunctioning from 2015-12-10 01:26:36 to 2015-12-10 01:48:19 due to value drop, start reading: 191196, end reading: 175396

Meter 2449 is malfunctioning from 2015-12-10 03:01:36 to 2015-12-10 03:24:20 due

to value drop, start reading: 191196, end reading: 175396

Meter 2449 is malfunctioning from 2015-12-10 04:38:36 to 2015-12-10 05:00:20 due to value drop, start reading: 191198, end reading: 175398

Meter 2449 is malfunctioning from 2015-12-10 06:11:37 to 2015-12-10 06:45:20 due to value drop, start reading: 191198, end reading: 175398

Meter 2449 is malfunctioning from 2015-12-10 07:13:36 to 2015-12-10 07:25:19 due to value drop, start reading: 191198, end reading: 175398

Meter 2449 is malfunctioning from 2015-12-10 08:33:37 to 2015-12-10 08:54:20 due to value drop, start reading: 191198, end reading: 175418

Meter 2449 is malfunctioning from 2015-12-10 10:43:36 to 2015-12-10 11:09:19 due to value drop, start reading: 191200, end reading: 175434

Meter 2449 is malfunctioning from 2015-12-10 12:58:36 to 2015-12-10 13:01:20 due to value drop, start reading: 191210, end reading: 175436

Meter 2449 is malfunctioning from 2015-12-10 15:32:37 to 2015-12-10 15:40:20 due to value drop, start reading: 191212, end reading: 175436

Meter 2449 is malfunctioning from 2015-12-10 20:09:37 to 2015-12-10 21:21:20 due to value drop, start reading: 191226, end reading: 175442

Meter 2449 is malfunctioning from 2015-12-10 22:00:36 to 2015-12-10 22:34:20 due to value drop, start reading: 191228, end reading: 175450

Meter 2449 is malfunctioning from 2015-12-10 23:22:37 to 2015-12-10 23:31:20 due to value drop, start reading: 191230, end reading: 175450

Meter 2449 is malfunctioning from 2015-12-11 00:05:37 to 2015-12-11 01:33:20 due to value drop, start reading: 191230, end reading: 175450

Meter 2449 is malfunctioning from 2015-12-11 01:41:37 to 2015-12-11 01:58:19 due to value drop, start reading: 191230, end reading: 175450

Meter 2449 is malfunctioning from 2015-12-11 02:14:36 to 2015-12-11 02:22:20 due to value drop, start reading: 191230, end reading: 175452

Meter 2449 is malfunctioning from 2015-12-11 03:16:37 to 2015-12-11 03:27:20 due to value drop, start reading: 191230, end reading: 175452

Meter 2449 is malfunctioning from 2015-12-11 04:40:36 to 2015-12-11 04:49:20 due to value drop, start reading: 191232, end reading: 175452

Meter 2449 is malfunctioning from 2015-12-11 05:16:37 to 2015-12-11 05:53:20 due

to value drop, start reading: 191232, end reading: 175452

Meter 2449 is malfunctioning from 2015-12-11 06:02:36 to 2015-12-11 06:23:19 due to value drop, start reading: 191232, end reading: 175452

Meter 2449 is malfunctioning from 2015-12-11 06:51:37 to 2015-12-11 07:34:20 due to value drop, start reading: 191232, end reading: 175460

Meter 2449 is malfunctioning from 2015-12-11 08:08:37 to 2015-12-11 08:34:19 due to value drop, start reading: 191232, end reading: 175482

Meter 2449 is malfunctioning from 2015-12-11 09:41:37 to 2015-12-11 10:18:20 due to value drop, start reading: 191234, end reading: 175502

Meter 2449 is malfunctioning from 2015-12-11 10:33:37 to 2015-12-11 10:54:20 due to value drop, start reading: 191234, end reading: 175502

Meter 2449 is malfunctioning from 2015-12-11 10:54:38 to 2015-12-11 11:07:19 due to value drop, start reading: 191238, end reading: 175506

Meter 2449 is malfunctioning from 2015-12-11 11:14:38 to 2015-12-11 11:26:19 due to value drop, start reading: 191250, end reading: 175512

Meter 2449 is malfunctioning from 2015-12-11 12:41:37 to 2015-12-11 13:14:20 due to value drop, start reading: 191252, end reading: 175512

Meter 2449 is malfunctioning from 2015-12-11 14:16:37 to 2015-12-11 14:51:19 due to value drop, start reading: 191252, end reading: 175512

Meter 2449 is malfunctioning from 2015-12-11 15:17:37 to 2015-12-11 15:22:20 due to value drop, start reading: 191252, end reading: 175514

Meter 2449 is malfunctioning from 2015-12-11 17:16:37 to 2015-12-11 17:42:19 due to value drop, start reading: 191254, end reading: 175516

Meter 2449 is malfunctioning from 2015-12-11 18:34:38 to 2015-12-11 18:54:20 due to value drop, start reading: 191254, end reading: 175516

Meter 2449 is malfunctioning from 2015-12-11 20:49:38 to 2015-12-11 21:19:19 due to value drop, start reading: 191254, end reading: 175516

Meter 2449 is malfunctioning from 2015-12-11 22:16:38 to 2015-12-11 22:25:20 due to value drop, start reading: 191262, end reading: 175518

Meter 2449 is malfunctioning from 2015-12-12 01:12:38 to 2015-12-12 01:35:20 due to value drop, start reading: 191270, end reading: 175518

Meter 2449 is malfunctioning from 2015-12-12 06:02:38 to 2015-12-12 06:15:19 due

to value drop, start reading: 191272, end reading: 175520

Meter 2449 is malfunctioning from 2015-12-12 06:57:37 to 2015-12-12 07:11:19 due
to value drop, start reading: 191274, end reading: 175520

Meter 2449 is malfunctioning from 2015-12-12 12:01:38 to 2015-12-12 12:47:19 due
to value drop, start reading: 191284, end reading: 175522

Meter 2449 is malfunctioning from 2015-12-12 12:47:38 to 2015-12-12 13:04:20 due
to value drop, start reading: 191284, end reading: 175528

Meter 2449 is malfunctioning from 2015-12-12 15:09:38 to 2015-12-12 16:17:20 due
to value drop, start reading: 191286, end reading: 175536

Meter 2449 is malfunctioning from 2015-12-12 20:09:38 to 2015-12-12 20:32:20 due
to value drop, start reading: 191288, end reading: 175548

Meter 2449 is malfunctioning from 2015-12-12 20:43:38 to 2015-12-12 21:03:19 due
to value drop, start reading: 191288, end reading: 175548

Meter 2449 is malfunctioning from 2015-12-12 22:38:39 to 2015-12-12 23:01:19 due
to value drop, start reading: 191296, end reading: 175550

Meter 2449 is malfunctioning from 2015-12-12 23:56:39 to 2015-12-13 00:27:19 due
to value drop, start reading: 191306, end reading: 175550

Meter 2449 is malfunctioning from 2015-12-13 01:11:39 to 2015-12-13 01:34:19 due
to value drop, start reading: 191306, end reading: 175550

Meter 35 is malfunctioning from 2015-10-20 08:53:16 to 2015-10-20 09:00:12 due
to value drop, start reading: 94014, end reading: 94012

Meter 9134 is malfunctioning from 2015-10-17 13:11:55 to 2015-10-17 13:27:19 due
to value drop, start reading: 230806, end reading: 230804

Meter 9134 is malfunctioning from 2015-10-17 17:53:59 to 2015-10-17 17:55:08 due
to value drop, start reading: 230808, end reading: 230806

Meter 9134 is malfunctioning from 2015-10-17 20:33:58 to 2015-10-17 20:37:04 due
to value drop, start reading: 230812, end reading: 230808

Meter 9134 is malfunctioning from 2015-10-20 12:38:13 to 2015-10-20 12:44:16 due
to value drop, start reading: 230864, end reading: 230862

Meter 9134 is malfunctioning from 2015-12-07 17:15:57 to 2015-12-07 17:16:58 due to value drop, start reading: 273192, end reading: 239064

Meter 9134 is malfunctioning from 2015-12-07 17:50:58 to 2015-12-07 17:55:05 due to value drop, start reading: 273194, end reading: 239074

Meter 9134 is malfunctioning from 2015-12-07 18:47:57 to 2015-12-07 18:50:16 due to value drop, start reading: 273194, end reading: 239086

Meter 9134 is malfunctioning from 2015-12-07 19:08:43 to 2015-12-07 19:39:10 due to value drop, start reading: 273194, end reading: 239088

Meter 9134 is malfunctioning from 2015-12-07 20:21:40 to 2015-12-07 20:59:01 due to value drop, start reading: 273196, end reading: 239100

Meter 9134 is malfunctioning from 2015-12-07 21:52:05 to 2015-12-07 21:55:03 due to value drop, start reading: 273196, end reading: 239122

Meter 9134 is malfunctioning from 2015-12-07 22:29:54 to 2015-12-07 22:41:08 due to value drop, start reading: 273196, end reading: 239132

Meter 9134 is malfunctioning from 2015-12-07 23:11:50 to 2015-12-07 23:49:08 due to value drop, start reading: 273196, end reading: 239144

Meter 9134 is malfunctioning from 2015-12-08 00:14:40 to 2015-12-08 01:10:03 due to value drop, start reading: 273196, end reading: 239168

Meter 9134 is malfunctioning from 2015-12-08 01:38:58 to 2015-12-08 01:47:02 due to value drop, start reading: 273198, end reading: 239182

Meter 9134 is malfunctioning from 2015-12-08 01:52:01 to 2015-12-08 02:03:00 due to value drop, start reading: 273198, end reading: 239182

Meter 9134 is malfunctioning from 2015-12-08 07:31:52 to 2015-12-08 08:02:14 due to value drop, start reading: 273200, end reading: 239330

Meter 9134 is malfunctioning from 2015-12-08 08:46:43 to 2015-12-08 09:09:02 due to value drop, start reading: 273200, end reading: 239332

Meter 9134 is malfunctioning from 2015-12-08 10:50:57 to 2015-12-08 10:53:05 due to value drop, start reading: 273202, end reading: 239336

Meter 9134 is malfunctioning from 2015-12-08 11:26:56 to 2015-12-08 11:41:16 due to value drop, start reading: 273202, end reading: 239346

Meter 9134 is malfunctioning from 2015-12-08 12:49:40 to 2015-12-08 12:54:14 due to value drop, start reading: 273202, end reading: 239348

Meter 9134 is malfunctioning from 2015-12-08 13:35:51 to 2015-12-08 14:00:59 due to value drop, start reading: 273202, end reading: 239350

Meter 9134 is malfunctioning from 2015-12-08 14:26:00 to 2015-12-08 14:33:00 due to value drop, start reading: 273202, end reading: 239350

Meter 9134 is malfunctioning from 2015-12-08 15:08:54 to 2015-12-08 15:23:12 due to value drop, start reading: 273204, end reading: 239352

Meter 9134 is malfunctioning from 2015-12-08 15:24:57 to 2015-12-08 15:44:20 due to value drop, start reading: 273204, end reading: 239352

Meter 9134 is malfunctioning from 2015-12-08 16:14:44 to 2015-12-08 16:17:11 due to value drop, start reading: 273204, end reading: 239352

Meter 9134 is malfunctioning from 2015-12-08 17:13:46 to 2015-12-08 17:15:10 due to value drop, start reading: 273204, end reading: 239366

Meter 9134 is malfunctioning from 2015-12-08 17:27:46 to 2015-12-08 17:34:01 due to value drop, start reading: 273204, end reading: 239366

Meter 9134 is malfunctioning from 2015-12-08 17:55:50 to 2015-12-08 18:01:59 due to value drop, start reading: 273204, end reading: 239366

Meter 9134 is malfunctioning from 2015-12-08 19:25:55 to 2015-12-08 19:42:08 due to value drop, start reading: 273204, end reading: 239378

Meter 9134 is malfunctioning from 2015-12-08 20:13:49 to 2015-12-08 20:19:16 due to value drop, start reading: 273206, end reading: 239390

Meter 9134 is malfunctioning from 2015-12-08 20:49:46 to 2015-12-08 21:20:12 due to value drop, start reading: 273206, end reading: 239390

Meter 9134 is malfunctioning from 2015-12-08 21:31:38 to 2015-12-08 21:38:59 due to value drop, start reading: 273206, end reading: 239398

Meter 9134 is malfunctioning from 2015-12-09 00:46:50 to 2015-12-09 00:49:12 due to value drop, start reading: 273206, end reading: 239424

Meter 9134 is malfunctioning from 2015-12-09 01:10:48 to 2015-12-09 01:19:07 due to value drop, start reading: 273208, end reading: 239424

Meter 9134 is malfunctioning from 2015-12-09 01:20:44 to 2015-12-09 01:31:13 due to value drop, start reading: 273208, end reading: 239424

Meter 9134 is malfunctioning from 2015-12-09 02:39:55 to 2015-12-09 02:52:59 due to value drop, start reading: 273208, end reading: 239436

Meter 9134 is malfunctioning from 2015-12-09 04:08:53 to 2015-12-09 04:59:11 due to value drop, start reading: 273208, end reading: 239456

Meter 9134 is malfunctioning from 2015-12-09 08:04:54 to 2015-12-09 08:11:12 due to value drop, start reading: 273210, end reading: 239536

Meter 9134 is malfunctioning from 2015-12-09 08:50:48 to 2015-12-09 09:43:07 due to value drop, start reading: 273210, end reading: 239548

Meter 9134 is malfunctioning from 2015-12-09 09:56:45 to 2015-12-09 09:59:11 due to value drop, start reading: 273210, end reading: 239548

Meter 9134 is malfunctioning from 2015-12-09 10:15:47 to 2015-12-09 10:16:58 due to value drop, start reading: 273210, end reading: 239550

Meter 9134 is malfunctioning from 2015-12-09 11:54:55 to 2015-12-09 12:07:08 due to value drop, start reading: 273212, end reading: 239558

Meter 9134 is malfunctioning from 2015-12-09 12:26:55 to 2015-12-09 13:11:14 due to value drop, start reading: 273212, end reading: 239560

Meter 9134 is malfunctioning from 2015-12-09 13:22:51 to 2015-12-09 13:29:11 due to value drop, start reading: 273212, end reading: 239560

Meter 9134 is malfunctioning from 2015-12-09 17:12:51 to 2015-12-09 17:37:12 due to value drop, start reading: 273214, end reading: 239566

Meter 9134 is malfunctioning from 2015-12-09 18:26:45 to 2015-12-09 18:34:05 due to value drop, start reading: 273214, end reading: 239568

Meter 9134 is malfunctioning from 2015-12-09 19:23:57 to 2015-12-09 19:40:59 due to value drop, start reading: 273214, end reading: 239580

Meter 9134 is malfunctioning from 2015-12-09 21:22:52 to 2015-12-09 21:23:19 due to value drop, start reading: 273216, end reading: 239608

Meter 9134 is malfunctioning from 2015-12-09 21:31:44 to 2015-12-09 22:25:12 due to value drop, start reading: 273216, end reading: 239610

Meter 9134 is malfunctioning from 2015-12-09 23:51:01 to 2015-12-10 00:23:05 due to value drop, start reading: 273216, end reading: 239612

Meter 9134 is malfunctioning from 2015-12-10 00:53:56 to 2015-12-10 00:55:11 due to value drop, start reading: 273218, end reading: 239614

Meter 9134 is malfunctioning from 2015-12-10 02:09:50 to 2015-12-10 02:48:11 due to value drop, start reading: 273218, end reading: 239624

Meter 9134 is malfunctioning from 2015-12-10 03:23:53 to 2015-12-10 03:26:03 due to value drop, start reading: 273218, end reading: 239632

Meter 9134 is malfunctioning from 2015-12-10 03:52:58 to 2015-12-10 03:58:56 due to value drop, start reading: 273218, end reading: 239632

Meter 9134 is malfunctioning from 2015-12-10 04:42:56 to 2015-12-10 05:23:14 due to value drop, start reading: 273218, end reading: 239648

Meter 9134 is malfunctioning from 2015-12-10 06:08:53 to 2015-12-10 06:17:11 due to value drop, start reading: 273220, end reading: 239672

Meter 9134 is malfunctioning from 2015-12-10 06:23:50 to 2015-12-10 06:40:09 due to value drop, start reading: 273220, end reading: 239704

Meter 9134 is malfunctioning from 2015-12-10 07:33:51 to 2015-12-10 08:12:56 due to value drop, start reading: 273220, end reading: 239708

Meter 9134 is malfunctioning from 2015-12-10 08:58:55 to 2015-12-10 09:00:08 due to value drop, start reading: 273220, end reading: 239716

Meter 9134 is malfunctioning from 2015-12-10 09:48:00 to 2015-12-10 10:04:20 due to value drop, start reading: 273220, end reading: 239718

Meter 9134 is malfunctioning from 2015-12-10 11:18:42 to 2015-12-10 11:34:01 due to value drop, start reading: 273222, end reading: 239720

Meter 9134 is malfunctioning from 2015-12-10 12:47:04 to 2015-12-10 13:03:07 due to value drop, start reading: 273222, end reading: 239722

Meter 9134 is malfunctioning from 2015-12-10 14:17:45 to 2015-12-10 14:28:10 due to value drop, start reading: 273222, end reading: 239724

Meter 9134 is malfunctioning from 2015-12-10 17:24:55 to 2015-12-10 18:17:16 due to value drop, start reading: 273226, end reading: 239728

Meter 9134 is malfunctioning from 2015-12-10 19:26:43 to 2015-12-10 19:27:12 due to value drop, start reading: 273230, end reading: 239730

Meter 9134 is malfunctioning from 2015-12-10 19:42:42 to 2015-12-10 20:10:05 due to value drop, start reading: 273230, end reading: 239732

Meter 9134 is malfunctioning from 2015-12-10 20:43:55 to 2015-12-10 20:59:02 due to value drop, start reading: 273230, end reading: 239732

Meter 9134 is malfunctioning from 2015-12-10 22:50:47 to 2015-12-10 22:51:11 due to value drop, start reading: 273230, end reading: 239742

Meter 9134 is malfunctioning from 2015-12-10 23:11:51 to 2015-12-10 23:49:11 due to value drop, start reading: 273232, end reading: 239742

Meter 9134 is malfunctioning from 2015-12-11 00:28:54 to 2015-12-11 00:34:04 due to value drop, start reading: 273232, end reading: 239744

Meter 9134 is malfunctioning from 2015-12-11 00:35:53 to 2015-12-11 00:37:01 due to value drop, start reading: 273232, end reading: 239744

Meter 9134 is malfunctioning from 2015-12-11 01:55:00 to 2015-12-11 02:14:12 due to value drop, start reading: 273232, end reading: 239746

Meter 9134 is malfunctioning from 2015-12-11 02:18:56 to 2015-12-11 02:40:14 due to value drop, start reading: 273232, end reading: 239746

Meter 9134 is malfunctioning from 2015-12-11 03:06:52 to 2015-12-11 03:53:14 due to value drop, start reading: 273232, end reading: 239758

Meter 9134 is malfunctioning from 2015-12-11 04:29:54 to 2015-12-11 04:38:03 due to value drop, start reading: 273234, end reading: 239768

Meter 9134 is malfunctioning from 2015-12-11 05:05:58 to 2015-12-11 05:39:00 due to value drop, start reading: 273234, end reading: 239770

Meter 9134 is malfunctioning from 2015-12-11 06:14:55 to 2015-12-11 06:21:12 due to value drop, start reading: 273234, end reading: 239796

Meter 9134 is malfunctioning from 2015-12-11 06:36:58 to 2015-12-11 06:44:20 due to value drop, start reading: 273234, end reading: 239796

Meter 9134 is malfunctioning from 2015-12-11 06:53:57 to 2015-12-11 07:13:13 due to value drop, start reading: 273234, end reading: 239806

Meter 9134 is malfunctioning from 2015-12-11 07:26:51 to 2015-12-11 07:35:10 due to value drop, start reading: 273234, end reading: 239808

Meter 9134 is malfunctioning from 2015-12-11 09:01:55 to 2015-12-11 09:02:58 due to value drop, start reading: 273236, end reading: 239818

Meter 9134 is malfunctioning from 2015-12-11 09:58:03 to 2015-12-11 10:04:07 due to value drop, start reading: 273236, end reading: 239820

Meter 9134 is malfunctioning from 2015-12-11 11:16:46 to 2015-12-11 11:47:10 due to value drop, start reading: 273236, end reading: 239822

Meter 9134 is malfunctioning from 2015-12-11 12:21:47 to 2015-12-11 12:23:11 due to value drop, start reading: 273236, end reading: 239824

Meter 9134 is malfunctioning from 2015-12-11 13:19:58 to 2015-12-11 13:20:03 due to value drop, start reading: 273238, end reading: 239824

Meter 9134 is malfunctioning from 2015-12-11 13:45:05 to 2015-12-11 13:48:00 due to value drop, start reading: 273238, end reading: 239824

Meter 9134 is malfunctioning from 2015-12-11 15:04:59 to 2015-12-11 15:05:17 due to value drop, start reading: 273238, end reading: 239826

Meter 9134 is malfunctioning from 2015-12-11 15:49:53 to 2015-12-11 15:53:11 due to value drop, start reading: 273238, end reading: 239828

Meter 9134 is malfunctioning from 2015-12-11 17:01:53 to 2015-12-11 17:26:58 due to value drop, start reading: 273238, end reading: 239830

Meter 9134 is malfunctioning from 2015-12-11 18:04:05 to 2015-12-11 18:20:03 due to value drop, start reading: 273238, end reading: 239830

Meter 9134 is malfunctioning from 2015-12-11 19:48:48 to 2015-12-11 20:01:12 due to value drop, start reading: 273240, end reading: 239834

Meter 9134 is malfunctioning from 2015-12-11 20:37:44 to 2015-12-11 20:39:12 due to value drop, start reading: 273240, end reading: 239834

Meter 9134 is malfunctioning from 2015-12-11 21:34:54 to 2015-12-11 21:40:59 due to value drop, start reading: 273240, end reading: 239836

Meter 9134 is malfunctioning from 2015-12-11 22:06:05 to 2015-12-11 22:07:00 due to value drop, start reading: 273240, end reading: 239836

Meter 9134 is malfunctioning from 2015-12-11 22:30:09 to 2015-12-11 22:46:08 due to value drop, start reading: 273240, end reading: 239836

Meter 9134 is malfunctioning from 2015-12-11 23:17:57 to 2015-12-11 23:20:11 due to value drop, start reading: 273242, end reading: 239838

Meter 9134 is malfunctioning from 2015-12-12 00:03:50 to 2015-12-12 00:17:11 due to value drop, start reading: 273242, end reading: 239838

Meter 9134 is malfunctioning from 2015-12-12 00:18:52 to 2015-12-12 00:20:10 due to value drop, start reading: 273242, end reading: 239838

Meter 9134 is malfunctioning from 2015-12-12 02:19:05 to 2015-12-12 02:37:02 due to value drop, start reading: 273242, end reading: 239842

Meter 9134 is malfunctioning from 2015-12-12 03:53:58 to 2015-12-12 04:06:17 due to value drop, start reading: 273244, end reading: 239844

Meter 9134 is malfunctioning from 2015-12-12 05:06:48 to 2015-12-12 05:09:14 due to value drop, start reading: 273244, end reading: 239846

Meter 9134 is malfunctioning from 2015-12-12 05:58:55 to 2015-12-12 06:02:58 due to value drop, start reading: 273244, end reading: 239846

Meter 9134 is malfunctioning from 2015-12-12 07:01:02 to 2015-12-12 07:05:07 due to value drop, start reading: 273244, end reading: 239848

Meter 9134 is malfunctioning from 2015-12-12 08:56:47 to 2015-12-12 09:06:08 due to value drop, start reading: 273246, end reading: 239850

Meter 9134 is malfunctioning from 2015-12-12 09:52:54 to 2015-12-12 09:53:06 due to value drop, start reading: 273246, end reading: 239852

Meter 9134 is malfunctioning from 2015-12-12 10:56:04 to 2015-12-12 11:05:00 due to value drop, start reading: 273246, end reading: 239854

Meter 9134 is malfunctioning from 2015-12-12 12:51:53 to 2015-12-12 12:52:13 due to value drop, start reading: 273248, end reading: 239856

Meter 9134 is malfunctioning from 2015-12-12 13:40:45 to 2015-12-12 14:19:04 due to value drop, start reading: 273248, end reading: 239858

Meter 9134 is malfunctioning from 2015-12-12 17:06:52 to 2015-12-12 18:03:56 due to value drop, start reading: 273250, end reading: 239866

Meter 9134 is malfunctioning from 2015-12-12 18:31:54 to 2015-12-12 19:18:56 due to value drop, start reading: 273250, end reading: 239878

Meter 9134 is malfunctioning from 2015-12-12 21:17:53 to 2015-12-12 22:53:59 due to value drop, start reading: 273250, end reading: 239884

Meter 9134 is malfunctioning from 2015-12-13 00:02:00 to 2015-12-13 00:35:13 due to value drop, start reading: 273252, end reading: 239886

Meter 9134 is malfunctioning from 2015-12-13 01:04:48 to 2015-12-13 01:09:15 due to value drop, start reading: 273252, end reading: 239886

Meter 9134 is malfunctioning from 2015-12-13 01:49:51 to 2015-12-13 02:01:12 due to value drop, start reading: 273252, end reading: 239888

Meter 7739 is malfunctioning from 2015-11-01 01:30:25 to 2015-11-01 01:53:25 due

to value drop, start reading: 150098, end reading: 150096

Meter 7117 is malfunctioning from 2015-10-17 00:00:00 to 2015-10-17 00:07:17 due to value drop, start reading: 212042, end reading: 212036

Meter 7117 is malfunctioning from 2015-10-17 09:20:45 to 2015-10-17 09:37:09 due to value drop, start reading: 212042, end reading: 212040

Meter 7117 is malfunctioning from 2015-10-17 09:58:41 to 2015-10-17 09:58:54 due to value drop, start reading: 212042, end reading: 212040

Meter 7117 is malfunctioning from 2015-10-17 13:58:40 to 2015-10-17 14:08:54 due to value drop, start reading: 212044, end reading: 212042

Meter 7117 is malfunctioning from 2015-10-17 23:07:43 to 2015-10-17 23:25:52 due to value drop, start reading: 212048, end reading: 212046

Meter 7117 is malfunctioning from 2015-10-20 12:21:11 to 2015-10-20 12:26:58 due to value drop, start reading: 212086, end reading: 212082

Meter 7117 is malfunctioning from 2015-10-20 12:49:03 to 2015-10-20 13:44:52 due to value drop, start reading: 212086, end reading: 212084

Meter 7117 is malfunctioning from 2015-11-01 01:02:50 to 2015-11-01 01:04:53 due to value drop, start reading: 212270, end reading: 212268

Meter 7117 is malfunctioning from 2015-11-01 01:05:47 to 2015-11-01 01:09:51 due to value drop, start reading: 212270, end reading: 212268

Meter 7117 is malfunctioning from 2015-11-01 01:14:47 to 2015-11-01 01:14:55 due to value drop, start reading: 212270, end reading: 212268

Meter 7117 is malfunctioning from 2015-11-01 01:25:49 to 2015-11-01 01:25:51 due to value drop, start reading: 212270, end reading: 212268

Meter 7117 is malfunctioning from 2015-12-07 17:12:56 to 2015-12-07 17:15:09 due to value drop, start reading: 233402, end reading: 214602

Meter 7117 is malfunctioning from 2015-12-07 18:28:51 to 2015-12-07 18:32:12 due to value drop, start reading: 233402, end reading: 214604

Meter 7117 is malfunctioning from 2015-12-07 20:57:05 to 2015-12-07 21:04:00 due to value drop, start reading: 233402, end reading: 214614

Meter 7117 is malfunctioning from 2015-12-08 01:47:01 to 2015-12-08 01:52:09 due to value drop, start reading: 233404, end reading: 214622

Meter 7117 is malfunctioning from 2015-12-08 03:01:54 to 2015-12-08 03:20:11 due to value drop, start reading: 233406, end reading: 214624

Meter 7117 is malfunctioning from 2015-12-08 03:45:49 to 2015-12-08 03:53:12 due to value drop, start reading: 233406, end reading: 214624

Meter 7117 is malfunctioning from 2015-12-08 04:45:00 to 2015-12-08 05:34:01 due to value drop, start reading: 233406, end reading: 214626

Meter 7117 is malfunctioning from 2015-12-08 05:48:56 to 2015-12-08 06:02:07 due to value drop, start reading: 233406, end reading: 214626

Meter 7117 is malfunctioning from 2015-12-08 07:15:53 to 2015-12-08 07:52:14 due to value drop, start reading: 233408, end reading: 214638

Meter 7117 is malfunctioning from 2015-12-08 07:56:48 to 2015-12-08 08:00:14 due to value drop, start reading: 233408, end reading: 214638

Meter 7117 is malfunctioning from 2015-12-08 08:22:53 to 2015-12-08 08:37:06 due to value drop, start reading: 233408, end reading: 214638

Meter 7117 is malfunctioning from 2015-12-08 08:53:57 to 2015-12-08 09:26:01 due to value drop, start reading: 233408, end reading: 214648

Meter 7117 is malfunctioning from 2015-12-08 10:40:01 to 2015-12-08 10:48:19 due to value drop, start reading: 233408, end reading: 214656

Meter 7117 is malfunctioning from 2015-12-08 11:27:53 to 2015-12-08 11:31:15 due to value drop, start reading: 233408, end reading: 214658

Meter 7117 is malfunctioning from 2015-12-08 13:50:09 to 2015-12-08 13:59:02 due to value drop, start reading: 233410, end reading: 214662

Meter 7117 is malfunctioning from 2015-12-08 15:34:54 to 2015-12-08 15:36:11 due to value drop, start reading: 233410, end reading: 214664

Meter 7117 is malfunctioning from 2015-12-08 15:49:53 to 2015-12-08 15:54:09 due to value drop, start reading: 233410, end reading: 214664

Meter 7117 is malfunctioning from 2015-12-08 17:03:57 to 2015-12-08 17:14:05 due to value drop, start reading: 233412, end reading: 214666

Meter 7117 is malfunctioning from 2015-12-08 19:54:54 to 2015-12-08 19:55:14 due to value drop, start reading: 233412, end reading: 214694

Meter 7117 is malfunctioning from 2015-12-08 20:04:50 to 2015-12-08 20:17:10 due to value drop, start reading: 233412, end reading: 214698

Meter 7117 is malfunctioning from 2015-12-08 21:18:56 to 2015-12-08 21:24:04 due to value drop, start reading: 233414, end reading: 214716

Meter 7117 is malfunctioning from 2015-12-08 22:55:59 to 2015-12-08 23:01:13 due to value drop, start reading: 233414, end reading: 214722

Meter 7117 is malfunctioning from 2015-12-08 23:28:00 to 2015-12-08 23:30:18 due to value drop, start reading: 233414, end reading: 214722

Meter 7117 is malfunctioning from 2015-12-09 01:15:54 to 2015-12-09 01:24:05 due to value drop, start reading: 233414, end reading: 214726

Meter 7117 is malfunctioning from 2015-12-09 02:54:03 to 2015-12-09 03:17:10 due to value drop, start reading: 233416, end reading: 214728

Meter 7117 is malfunctioning from 2015-12-09 03:41:58 to 2015-12-09 03:50:18 due to value drop, start reading: 233416, end reading: 214728

Meter 7117 is malfunctioning from 2015-12-09 04:11:55 to 2015-12-09 04:16:11 due to value drop, start reading: 233416, end reading: 214730

Meter 7117 is malfunctioning from 2015-12-09 04:24:53 to 2015-12-09 04:35:12 due to value drop, start reading: 233416, end reading: 214730

Meter 7117 is malfunctioning from 2015-12-09 07:05:01 to 2015-12-09 07:10:05 due to value drop, start reading: 233418, end reading: 214740

Meter 7117 is malfunctioning from 2015-12-09 07:12:58 to 2015-12-09 07:18:08 due to value drop, start reading: 233418, end reading: 214742

Meter 7117 is malfunctioning from 2015-12-09 07:48:01 to 2015-12-09 08:18:12 due to value drop, start reading: 233418, end reading: 214752

Meter 7117 is malfunctioning from 2015-12-09 08:33:54 to 2015-12-09 09:00:07 due to value drop, start reading: 233418, end reading: 214754

Meter 7117 is malfunctioning from 2015-12-09 10:49:07 to 2015-12-09 11:50:13 due to value drop, start reading: 233420, end reading: 214766

Meter 7117 is malfunctioning from 2015-12-09 12:27:49 to 2015-12-09 12:47:10 due to value drop, start reading: 233420, end reading: 214766

Meter 7117 is malfunctioning from 2015-12-09 14:01:57 to 2015-12-09 14:06:04 due to value drop, start reading: 233422, end reading: 214768

Meter 7117 is malfunctioning from 2015-12-09 15:58:56 to 2015-12-09 16:00:09 due to value drop, start reading: 233422, end reading: 214770

Meter 7117 is malfunctioning from 2015-12-09 16:20:56 to 2015-12-09 16:35:17 due to value drop, start reading: 233422, end reading: 214772

Meter 7117 is malfunctioning from 2015-12-09 17:10:49 to 2015-12-09 17:20:08 due to value drop, start reading: 233422, end reading: 214784

Meter 7117 is malfunctioning from 2015-12-09 17:29:46 to 2015-12-09 18:00:00 due to value drop, start reading: 233422, end reading: 214786

Meter 7117 is malfunctioning from 2015-12-09 18:14:59 to 2015-12-09 18:19:02 due to value drop, start reading: 233424, end reading: 214786

Meter 7117 is malfunctioning from 2015-12-09 18:28:56 to 2015-12-09 18:53:55 due to value drop, start reading: 233424, end reading: 214788

Meter 7117 is malfunctioning from 2015-12-09 20:08:57 to 2015-12-09 20:15:12 due to value drop, start reading: 233424, end reading: 214790

Meter 7117 is malfunctioning from 2015-12-09 20:21:03 to 2015-12-09 20:25:19 due to value drop, start reading: 233424, end reading: 214790

Meter 7117 is malfunctioning from 2015-12-09 20:55:54 to 2015-12-09 20:56:10 due to value drop, start reading: 233424, end reading: 214790

Meter 7117 is malfunctioning from 2015-12-09 21:00:55 to 2015-12-09 21:08:12 due to value drop, start reading: 233424, end reading: 214790

Meter 7117 is malfunctioning from 2015-12-09 21:49:49 to 2015-12-09 23:12:58 due to value drop, start reading: 233424, end reading: 214794

Meter 7117 is malfunctioning from 2015-12-09 23:13:07 to 2015-12-09 23:20:55 due to value drop, start reading: 233426, end reading: 214794

Meter 7117 is malfunctioning from 2015-12-09 23:34:06 to 2015-12-09 23:54:06 due to value drop, start reading: 233426, end reading: 214794

Meter 7117 is malfunctioning from 2015-12-10 00:04:57 to 2015-12-10 00:11:08 due to value drop, start reading: 233426, end reading: 214794

Meter 7117 is malfunctioning from 2015-12-10 02:32:56 to 2015-12-10 02:39:04 due to value drop, start reading: 233426, end reading: 214798

Meter 7117 is malfunctioning from 2015-12-10 04:05:01 to 2015-12-10 04:25:12 due to value drop, start reading: 233428, end reading: 214800

Meter 7117 is malfunctioning from 2015-12-10 04:47:02 to 2015-12-10 04:57:13 due to value drop, start reading: 233428, end reading: 214802

Meter 7117 is malfunctioning from 2015-12-10 05:31:52 to 2015-12-10 05:36:10 due to value drop, start reading: 233428, end reading: 214802

Meter 7117 is malfunctioning from 2015-12-10 06:05:46 to 2015-12-10 06:06:11 due to value drop, start reading: 233428, end reading: 214802

Meter 7117 is malfunctioning from 2015-12-10 08:21:59 to 2015-12-10 08:28:07 due to value drop, start reading: 233430, end reading: 214806

Meter 7117 is malfunctioning from 2015-12-10 09:38:54 to 2015-12-10 09:48:10 due to value drop, start reading: 233430, end reading: 214808

Meter 7117 is malfunctioning from 2015-12-10 12:12:02 to 2015-12-10 12:17:04 due to value drop, start reading: 233430, end reading: 214822

Meter 7117 is malfunctioning from 2015-12-10 12:28:01 to 2015-12-10 13:16:15 due to value drop, start reading: 233430, end reading: 214824

Meter 7117 is malfunctioning from 2015-12-10 14:49:49 to 2015-12-10 15:12:03 due to value drop, start reading: 233432, end reading: 214828

Meter 7117 is malfunctioning from 2015-12-10 16:30:02 to 2015-12-10 16:32:05 due to value drop, start reading: 233432, end reading: 214828

Meter 7117 is malfunctioning from 2015-12-10 16:45:59 to 2015-12-10 16:49:05 due to value drop, start reading: 233432, end reading: 214830

Meter 7117 is malfunctioning from 2015-12-10 17:03:58 to 2015-12-10 17:16:12 due to value drop, start reading: 233432, end reading: 214830

Meter 7117 is malfunctioning from 2015-12-10 20:41:01 to 2015-12-10 20:42:04 due to value drop, start reading: 233434, end reading: 214836

Meter 7117 is malfunctioning from 2015-12-10 21:16:57 to 2015-12-10 21:18:08 due to value drop, start reading: 233434, end reading: 214836

Meter 7117 is malfunctioning from 2015-12-10 21:55:45 to 2015-12-10 21:56:19 due to value drop, start reading: 233434, end reading: 214838

Meter 7117 is malfunctioning from 2015-12-10 23:25:54 to 2015-12-10 23:26:59 due to value drop, start reading: 233436, end reading: 214840

Meter 7117 is malfunctioning from 2015-12-11 00:21:05 to 2015-12-11 00:23:58 due to value drop, start reading: 233436, end reading: 214840

Meter 7117 is malfunctioning from 2015-12-11 01:29:57 to 2015-12-11 01:42:11 due to value drop, start reading: 233436, end reading: 214842

Meter 7117 is malfunctioning from 2015-12-11 05:20:02 to 2015-12-11 05:21:03 due to value drop, start reading: 233438, end reading: 214848

Meter 7117 is malfunctioning from 2015-12-11 07:20:47 to 2015-12-11 07:26:11 due to value drop, start reading: 233440, end reading: 214852

Meter 7117 is malfunctioning from 2015-12-11 07:52:55 to 2015-12-11 08:05:01 due to value drop, start reading: 233440, end reading: 214854

Meter 7117 is malfunctioning from 2015-12-11 08:30:01 to 2015-12-11 08:30:56 due to value drop, start reading: 233440, end reading: 214864

Meter 7117 is malfunctioning from 2015-12-11 09:02:09 to 2015-12-11 09:06:58 due to value drop, start reading: 233440, end reading: 214866

Meter 7117 is malfunctioning from 2015-12-11 09:38:59 to 2015-12-11 09:45:07 due to value drop, start reading: 233442, end reading: 214866

Meter 7117 is malfunctioning from 2015-12-11 10:46:53 to 2015-12-11 11:15:11 due to value drop, start reading: 233442, end reading: 214868

Meter 7117 is malfunctioning from 2015-12-11 12:22:57 to 2015-12-11 12:33:56 due to value drop, start reading: 233442, end reading: 214882

Meter 7117 is malfunctioning from 2015-12-11 13:37:57 to 2015-12-11 13:50:03 due to value drop, start reading: 233444, end reading: 214884

Meter 7117 is malfunctioning from 2015-12-11 14:30:59 to 2015-12-11 14:48:13 due to value drop, start reading: 233444, end reading: 214884

Meter 7117 is malfunctioning from 2015-12-11 15:45:48 to 2015-12-11 15:47:11 due to value drop, start reading: 233444, end reading: 214886

Meter 7117 is malfunctioning from 2015-12-11 16:26:59 to 2015-12-11 16:28:03 due to value drop, start reading: 233444, end reading: 214886

Meter 7117 is malfunctioning from 2015-12-11 16:55:57 to 2015-12-11 17:01:54 due to value drop, start reading: 233444, end reading: 214888

Meter 7117 is malfunctioning from 2015-12-11 18:24:59 to 2015-12-11 18:55:19 due to value drop, start reading: 233446, end reading: 214890

Meter 7117 is malfunctioning from 2015-12-11 21:04:59 to 2015-12-11 21:08:56 due to value drop, start reading: 233446, end reading: 214894

Meter 7117 is malfunctioning from 2015-12-12 00:56:54 to 2015-12-12 01:39:58 due to value drop, start reading: 233448, end reading: 214900

Meter 7117 is malfunctioning from 2015-12-12 02:16:01 to 2015-12-12 02:24:05 due to value drop, start reading: 233448, end reading: 214900

Meter 7117 is malfunctioning from 2015-12-12 02:34:01 to 2015-12-12 03:05:14 due to value drop, start reading: 233450, end reading: 214902

Meter 7117 is malfunctioning from 2015-12-12 03:16:49 to 2015-12-12 03:48:08 due to value drop, start reading: 233450, end reading: 214902

Meter 7117 is malfunctioning from 2015-12-12 04:22:49 to 2015-12-12 04:26:10 due to value drop, start reading: 233450, end reading: 214904

Meter 7117 is malfunctioning from 2015-12-12 05:25:00 to 2015-12-12 05:44:57 due to value drop, start reading: 233450, end reading: 214906

Meter 7117 is malfunctioning from 2015-12-12 07:52:53 to 2015-12-12 08:36:09 due to value drop, start reading: 233452, end reading: 214910

Meter 7117 is malfunctioning from 2015-12-12 08:46:45 to 2015-12-12 08:47:02 due to value drop, start reading: 233452, end reading: 214910

Meter 7117 is malfunctioning from 2015-12-12 10:14:08 to 2015-12-12 10:21:56 due to value drop, start reading: 233452, end reading: 214912

Meter 7117 is malfunctioning from 2015-12-12 10:31:58 to 2015-12-12 10:40:06 due to value drop, start reading: 233454, end reading: 214912

Meter 7117 is malfunctioning from 2015-12-12 10:50:58 to 2015-12-12 11:11:04 due to value drop, start reading: 233454, end reading: 214914

Meter 7117 is malfunctioning from 2015-12-12 12:17:47 to 2015-12-12 12:20:06 due to value drop, start reading: 233456, end reading: 214916

Meter 7117 is malfunctioning from 2015-12-12 13:24:55 to 2015-12-12 13:36:00 due to value drop, start reading: 233456, end reading: 214916

Meter 7117 is malfunctioning from 2015-12-12 14:11:06 to 2015-12-12 14:11:56 due to value drop, start reading: 233456, end reading: 214918

Meter 7117 is malfunctioning from 2015-12-12 14:16:06 to 2015-12-12 14:21:50 due to value drop, start reading: 233456, end reading: 214918

Meter 7117 is malfunctioning from 2015-12-12 14:27:07 to 2015-12-12 14:38:01 due to value drop, start reading: 233456, end reading: 214918

Meter 7117 is malfunctioning from 2015-12-12 15:37:02 to 2015-12-12 15:56:17 due to value drop, start reading: 233456, end reading: 214920

Meter 7117 is malfunctioning from 2015-12-12 17:07:44 to 2015-12-12 17:29:58 due to value drop, start reading: 233458, end reading: 214922

Meter 7117 is malfunctioning from 2015-12-12 17:48:54 to 2015-12-12 17:52:57 due to value drop, start reading: 233458, end reading: 214922

Meter 7117 is malfunctioning from 2015-12-12 18:19:05 to 2015-12-12 18:19:55 due to value drop, start reading: 233458, end reading: 214924

Meter 7117 is malfunctioning from 2015-12-12 19:55:57 to 2015-12-12 20:10:14 due to value drop, start reading: 233458, end reading: 214926

Meter 7117 is malfunctioning from 2015-12-12 20:31:52 to 2015-12-12 20:56:04 due to value drop, start reading: 233458, end reading: 214928

Meter 7117 is malfunctioning from 2015-12-12 21:03:45 to 2015-12-12 21:11:09 due to value drop, start reading: 233458, end reading: 214928

Meter 7117 is malfunctioning from 2015-12-12 21:26:47 to 2015-12-12 21:59:01 due to value drop, start reading: 233460, end reading: 214928

Meter 7117 is malfunctioning from 2015-12-12 22:23:59 to 2015-12-12 22:36:54 due to value drop, start reading: 233460, end reading: 214930

Meter 7117 is malfunctioning from 2015-12-12 22:39:04 to 2015-12-12 22:50:56 due to value drop, start reading: 233460, end reading: 214930

Meter 7117 is malfunctioning from 2015-12-13 00:27:48 to 2015-12-13 00:38:02 due to value drop, start reading: 233460, end reading: 214932

Meter 7117 is malfunctioning from 2015-12-13 00:56:47 to 2015-12-13 01:12:02 due to value drop, start reading: 233460, end reading: 214934

Meter 7117 is malfunctioning from 2016-03-30 23:04:32 to 2016-03-30 23:06:13 due to value drop, start reading: 230092, end reading: 230090

Meter 5193 is malfunctioning from 2015-11-01 01:38:35 to 2015-11-01 01:40:25 due to value drop, start reading: 151130, end reading: 151128

Meter 5193 is malfunctioning from 2015-11-01 01:49:43 to 2015-11-01 01:51:18 due to value drop, start reading: 151130, end reading: 151128

Meter 5193 is malfunctioning from 2015-11-01 07:36:31 to 2015-11-01 07:41:55 due to value drop, start reading: 151156, end reading: 151146

Meter 5193 is malfunctioning from 2015-11-01 07:47:21 to 2015-11-01 07:48:35 due to value drop, start reading: 151156, end reading: 151150

Meter 2335 is malfunctioning from 2015-10-20 18:22:35 to 2015-10-20 18:23:32 due to value drop, start reading: 202470, end reading: 202468

Meter 2335 is malfunctioning from 2015-12-08 16:30:32 to 2015-12-08 16:33:26 due to value drop, start reading: 237838, end reading: 209104

Meter 2335 is malfunctioning from 2015-12-08 17:30:18 to 2015-12-08 17:53:22 due to value drop, start reading: 237838, end reading: 209136

Meter 2335 is malfunctioning from 2015-12-09 06:34:20 to 2015-12-09 07:27:14 due to value drop, start reading: 237844, end reading: 209172

Meter 2335 is malfunctioning from 2015-12-11 23:45:34 to 2015-12-11 23:52:27 due to value drop, start reading: 237892, end reading: 209292

Meter 4998 is malfunctioning from 2015-10-20 07:30:18 to 2015-10-20 07:38:11 due to value drop, start reading: 163604, end reading: 163590

Meter 5129 is malfunctioning from 2015-10-17 18:36:59 to 2015-10-17 18:39:09 due to value drop, start reading: 153964, end reading: 153960

Meter 5129 is malfunctioning from 2015-10-17 22:39:55 to 2015-10-17 22:40:20 due to value drop, start reading: 153966, end reading: 153964

Meter 5129 is malfunctioning from 2015-10-20 12:32:32 to 2015-10-20 13:02:24 due to value drop, start reading: 154032, end reading: 154030

Meter 5129 is malfunctioning from 2015-12-07 16:34:10 to 2015-12-07 17:10:13 due to value drop, start reading: 168484, end reading: 156770

Meter 5129 is malfunctioning from 2015-12-07 18:31:11 to 2015-12-07 18:39:35 due to value drop, start reading: 168484, end reading: 156772

Meter 5129 is malfunctioning from 2015-12-07 19:24:03 to 2015-12-07 19:26:21 due to value drop, start reading: 168486, end reading: 156772

Meter 5129 is malfunctioning from 2015-12-07 20:25:08 to 2015-12-07 21:13:13 due to value drop, start reading: 168486, end reading: 156786

Meter 5129 is malfunctioning from 2015-12-08 00:08:55 to 2015-12-08 01:12:10 due to value drop, start reading: 168486, end reading: 156802

Meter 5129 is malfunctioning from 2015-12-08 02:29:09 to 2015-12-08 02:46:32 due to value drop, start reading: 168488, end reading: 156822

Meter 5129 is malfunctioning from 2015-12-08 03:10:00 to 2015-12-08 03:16:25 due to value drop, start reading: 168488, end reading: 156822

Meter 5129 is malfunctioning from 2015-12-08 06:39:12 to 2015-12-08 08:12:27 due to value drop, start reading: 168490, end reading: 156870

Meter 5129 is malfunctioning from 2015-12-08 08:21:00 to 2015-12-08 08:46:15 due to value drop, start reading: 168490, end reading: 156870

Meter 5129 is malfunctioning from 2015-12-08 10:18:14 to 2015-12-08 10:41:23 due to value drop, start reading: 168490, end reading: 156890

Meter 5129 is malfunctioning from 2015-12-08 10:43:11 to 2015-12-08 11:14:31 due to value drop, start reading: 168490, end reading: 156890

Meter 5129 is malfunctioning from 2015-12-08 12:22:00 to 2015-12-08 12:50:14 due to value drop, start reading: 168492, end reading: 156892

Meter 5129 is malfunctioning from 2015-12-08 12:58:03 to 2015-12-08 13:10:20 due to value drop, start reading: 168492, end reading: 156892

Meter 5129 is malfunctioning from 2015-12-08 14:15:21 to 2015-12-08 15:32:30 due to value drop, start reading: 168492, end reading: 156912

Meter 5129 is malfunctioning from 2015-12-08 17:46:11 to 2015-12-08 18:44:19 due to value drop, start reading: 168494, end reading: 156912

Meter 5129 is malfunctioning from 2015-12-08 20:43:00 to 2015-12-08 21:08:19 due to value drop, start reading: 168494, end reading: 156912

Meter 5129 is malfunctioning from 2015-12-09 00:35:06 to 2015-12-09 00:49:23 due to value drop, start reading: 168496, end reading: 156914

Meter 5129 is malfunctioning from 2015-12-09 01:08:02 to 2015-12-09 01:36:13 due to value drop, start reading: 168496, end reading: 156914

Meter 5129 is malfunctioning from 2015-12-09 01:58:09 to 2015-12-09 02:36:15 due to value drop, start reading: 168496, end reading: 156914

Meter 5129 is malfunctioning from 2015-12-09 05:51:07 to 2015-12-09 06:20:14 due to value drop, start reading: 168498, end reading: 156916

Meter 5129 is malfunctioning from 2015-12-09 07:22:14 to 2015-12-09 07:27:21 due to value drop, start reading: 168498, end reading: 156916

Meter 5129 is malfunctioning from 2015-12-09 08:29:03 to 2015-12-09 08:59:22 due to value drop, start reading: 168498, end reading: 156926

Meter 5129 is malfunctioning from 2015-12-09 09:17:01 to 2015-12-09 09:58:15 due to value drop, start reading: 168500, end reading: 156928

Meter 5129 is malfunctioning from 2015-12-09 10:49:15 to 2015-12-09 11:08:10 due to value drop, start reading: 168502, end reading: 156928

Meter 5129 is malfunctioning from 2015-12-09 11:33:13 to 2015-12-09 12:00:26 due to value drop, start reading: 168502, end reading: 156928

Meter 5129 is malfunctioning from 2015-12-09 13:22:01 to 2015-12-09 13:36:27 due to value drop, start reading: 168502, end reading: 156928

Meter 5129 is malfunctioning from 2015-12-09 13:40:58 to 2015-12-09 14:36:24 due to value drop, start reading: 168502, end reading: 156928

Meter 5129 is malfunctioning from 2015-12-09 17:00:02 to 2015-12-09 17:34:26 due to value drop, start reading: 168504, end reading: 156930

Meter 5129 is malfunctioning from 2015-12-09 20:05:15 to 2015-12-09 20:44:32 due to value drop, start reading: 168506, end reading: 156940

Meter 5129 is malfunctioning from 2015-12-10 00:52:15 to 2015-12-10 00:58:32 due to value drop, start reading: 168506, end reading: 156950

Meter 5129 is malfunctioning from 2015-12-10 02:06:01 to 2015-12-10 02:48:13 due to value drop, start reading: 168508, end reading: 156950

Meter 5129 is malfunctioning from 2015-12-10 04:58:11 to 2015-12-10 05:03:29 due to value drop, start reading: 168508, end reading: 156952

Meter 5129 is malfunctioning from 2015-12-10 05:23:09 to 2015-12-10 05:40:25 due to value drop, start reading: 168508, end reading: 156952

Meter 5129 is malfunctioning from 2015-12-10 07:18:10 to 2015-12-10 07:52:13 due to value drop, start reading: 168510, end reading: 156964

Meter 5129 is malfunctioning from 2015-12-10 08:10:19 to 2015-12-10 08:27:20 due to value drop, start reading: 168510, end reading: 156964

Meter 5129 is malfunctioning from 2015-12-10 08:41:15 to 2015-12-10 08:50:21 due to value drop, start reading: 168510, end reading: 156964

Meter 5129 is malfunctioning from 2015-12-10 09:47:03 to 2015-12-10 10:00:24 due to value drop, start reading: 168520, end reading: 156964

Meter 5129 is malfunctioning from 2015-12-10 10:48:02 to 2015-12-10 10:56:19 due to value drop, start reading: 168522, end reading: 156966

Meter 5129 is malfunctioning from 2015-12-10 12:35:19 to 2015-12-10 13:12:26 due to value drop, start reading: 168524, end reading: 156966

Meter 5129 is malfunctioning from 2015-12-10 13:36:15 to 2015-12-10 13:38:31 due to value drop, start reading: 168524, end reading: 156966

Meter 5129 is malfunctioning from 2015-12-10 14:50:00 to 2015-12-10 15:08:19 due to value drop, start reading: 168524, end reading: 156966

Meter 5129 is malfunctioning from 2015-12-10 15:50:10 to 2015-12-10 16:02:13 due to value drop, start reading: 168524, end reading: 156966

Meter 5129 is malfunctioning from 2015-12-10 16:12:15 to 2015-12-10 16:30:07 due to value drop, start reading: 168524, end reading: 156968

Meter 5129 is malfunctioning from 2015-12-10 16:53:16 to 2015-12-10 17:22:25 due to value drop, start reading: 168524, end reading: 156968

Meter 5129 is malfunctioning from 2015-12-10 17:28:13 to 2015-12-10 17:56:30 due to value drop, start reading: 168524, end reading: 156968

Meter 5129 is malfunctioning from 2015-12-10 23:24:02 to 2015-12-10 23:24:25 due to value drop, start reading: 168528, end reading: 156978

Meter 5129 is malfunctioning from 2015-12-11 00:41:18 to 2015-12-11 00:48:15 due to value drop, start reading: 168528, end reading: 156978

Meter 5129 is malfunctioning from 2015-12-11 01:35:16 to 2015-12-11 02:00:27 due to value drop, start reading: 168528, end reading: 156978

Meter 5129 is malfunctioning from 2015-12-11 04:05:10 to 2015-12-11 04:12:19 due to value drop, start reading: 168528, end reading: 156980

Meter 5129 is malfunctioning from 2015-12-11 05:04:22 to 2015-12-11 06:06:22 due to value drop, start reading: 168530, end reading: 156980

Meter 5129 is malfunctioning from 2015-12-11 07:19:02 to 2015-12-11 07:20:24 due to value drop, start reading: 168530, end reading: 156980

Meter 5129 is malfunctioning from 2015-12-11 10:17:12 to 2015-12-11 10:46:32 due to value drop, start reading: 168530, end reading: 156992

Meter 5129 is malfunctioning from 2015-12-11 11:04:04 to 2015-12-11 11:49:25 due to value drop, start reading: 168540, end reading: 156992

Meter 5129 is malfunctioning from 2015-12-11 13:57:15 to 2015-12-11 14:10:19 due to value drop, start reading: 168542, end reading: 156994

Meter 5129 is malfunctioning from 2015-12-11 16:54:12 to 2015-12-11 17:46:14 due to value drop, start reading: 168542, end reading: 156994

Meter 5129 is malfunctioning from 2015-12-11 17:53:26 to 2015-12-11 17:56:17 due to value drop, start reading: 168542, end reading: 156994

Meter 5129 is malfunctioning from 2015-12-11 18:23:16 to 2015-12-11 18:39:26 due to value drop, start reading: 168542, end reading: 156996

Meter 5129 is malfunctioning from 2015-12-11 19:02:17 to 2015-12-11 19:56:24 due to value drop, start reading: 168544, end reading: 156996

Meter 5129 is malfunctioning from 2015-12-11 20:58:10 to 2015-12-11 21:26:13 due to value drop, start reading: 168544, end reading: 156996

Meter 5129 is malfunctioning from 2015-12-11 22:10:22 to 2015-12-11 22:54:22 due to value drop, start reading: 168544, end reading: 156996

Meter 5129 is malfunctioning from 2015-12-12 00:15:06 to 2015-12-12 00:24:27 due to value drop, start reading: 168546, end reading: 156998

Meter 5129 is malfunctioning from 2015-12-12 01:22:12 to 2015-12-12 02:00:15 due to value drop, start reading: 168546, end reading: 156998

Meter 5129 is malfunctioning from 2015-12-12 02:47:17 to 2015-12-12 03:50:26 due to value drop, start reading: 168546, end reading: 156998

Meter 5129 is malfunctioning from 2015-12-12 04:30:03 to 2015-12-12 05:26:18 due to value drop, start reading: 168546, end reading: 156998

Meter 5129 is malfunctioning from 2015-12-12 05:55:16 to 2015-12-12 06:00:10 due to value drop, start reading: 168548, end reading: 157000

Meter 5129 is malfunctioning from 2015-12-12 07:19:14 to 2015-12-12 08:48:27 due to value drop, start reading: 168548, end reading: 157000

Meter 5129 is malfunctioning from 2015-12-12 09:54:13 to 2015-12-12 10:12:10 due to value drop, start reading: 168548, end reading: 157000

Meter 5129 is malfunctioning from 2015-12-12 11:27:16 to 2015-12-12 12:28:26 due to value drop, start reading: 168550, end reading: 157016

Meter 5129 is malfunctioning from 2015-12-12 15:21:16 to 2015-12-12 15:22:19 due to value drop, start reading: 168550, end reading: 157016

Meter 5129 is malfunctioning from 2015-12-12 16:31:10 to 2015-12-12 16:50:22 due to value drop, start reading: 168550, end reading: 157018

Meter 5129 is malfunctioning from 2015-12-12 19:58:14 to 2015-12-12 20:48:24 due to value drop, start reading: 168552, end reading: 157018

Meter 5129 is malfunctioning from 2015-12-13 00:48:05 to 2015-12-13 01:25:23 due to value drop, start reading: 168558, end reading: 157020

Meter 5129 is malfunctioning from 2015-12-13 01:52:05 to 2015-12-13 02:02:14 due to value drop, start reading: 168558, end reading: 157020

Meter 483 is malfunctioning from 2015-10-21 00:08:56 to 2015-10-21 00:18:54 due to value drop, start reading: 361144, end reading: 361130

Meter 1556 is malfunctioning from 2015-10-17 12:00:52 to 2015-10-17 12:01:05 due to value drop, start reading: 203154, end reading: 203152

Meter 1556 is malfunctioning from 2015-11-01 01:23:40 to 2015-11-01 01:30:39 due to value drop, start reading: 203580, end reading: 203578

Meter 1556 is malfunctioning from 2015-12-08 00:44:31 to 2015-12-08 02:36:42 due to value drop, start reading: 223266, end reading: 206892

Meter 1556 is malfunctioning from 2015-12-08 02:42:31 to 2015-12-08 02:57:41 due to value drop, start reading: 223266, end reading: 206892

Meter 1556 is malfunctioning from 2015-12-08 05:14:31 to 2015-12-08 05:15:42 due to value drop, start reading: 223268, end reading: 206910

Meter 1556 is malfunctioning from 2015-12-08 16:11:31 to 2015-12-08 18:25:41 due to value drop, start reading: 223282, end reading: 206986

Meter 1556 is malfunctioning from 2015-12-09 08:52:30 to 2015-12-09 09:13:39 due to value drop, start reading: 223304, end reading: 207046

Meter 1556 is malfunctioning from 2015-12-09 10:00:30 to 2015-12-09 11:39:39 due to value drop, start reading: 223306, end reading: 207048

Meter 1556 is malfunctioning from 2015-12-10 01:13:29 to 2015-12-10 02:54:39 due to value drop, start reading: 223318, end reading: 207066

Meter 1556 is malfunctioning from 2015-12-10 05:35:30 to 2015-12-10 06:21:38 due to value drop, start reading: 223320, end reading: 207080

Meter 1556 is malfunctioning from 2015-12-10 17:20:28 to 2015-12-10 18:33:37 due to value drop, start reading: 223332, end reading: 207094

Meter 1556 is malfunctioning from 2015-12-11 02:00:29 to 2015-12-11 02:14:36 due to value drop, start reading: 223340, end reading: 207104

Meter 3544 is malfunctioning from 2015-12-07 18:44:37 to 2015-12-07 19:49:52 due to value drop, start reading: 87498, end reading: 78948

Meter 3544 is malfunctioning from 2015-12-08 01:37:35 to 2015-12-08 04:34:48 due to value drop, start reading: 87500, end reading: 78964

Meter 3544 is malfunctioning from 2015-12-08 06:07:39 to 2015-12-08 07:03:42 due to value drop, start reading: 87502, end reading: 78990

Meter 3544 is malfunctioning from 2015-12-08 12:41:29 to 2015-12-08 13:58:42 due to value drop, start reading: 87504, end reading: 78994

Meter 3544 is malfunctioning from 2015-12-08 14:23:38 to 2015-12-08 14:29:36 due to value drop, start reading: 87504, end reading: 78994

Meter 3544 is malfunctioning from 2015-12-08 14:31:39 to 2015-12-08 15:22:47 due to value drop, start reading: 87504, end reading: 78996

Meter 3544 is malfunctioning from 2015-12-08 23:35:39 to 2015-12-09 08:24:43 due to value drop, start reading: 87508, end reading: 79024

Meter 3544 is malfunctioning from 2015-12-09 13:47:29 to 2015-12-09 14:40:43 due to value drop, start reading: 87512, end reading: 79028

Meter 3544 is malfunctioning from 2015-12-10 07:29:24 to 2015-12-10 07:57:39 due to value drop, start reading: 87518, end reading: 79038

Meter 3544 is malfunctioning from 2015-12-10 08:55:46 to 2015-12-10 09:48:44 due to value drop, start reading: 87518, end reading: 79038

Meter 3544 is malfunctioning from 2015-12-10 10:55:29 to 2015-12-10 11:41:40 due to value drop, start reading: 87518, end reading: 79040

Meter 3544 is malfunctioning from 2015-12-10 14:09:37 to 2015-12-10 14:38:55 due to value drop, start reading: 87520, end reading: 79040

Meter 3544 is malfunctioning from 2015-12-10 14:39:24 to 2015-12-10 16:45:36 due to value drop, start reading: 87520, end reading: 79040

Meter 3544 is malfunctioning from 2015-12-11 02:01:36 to 2015-12-11 02:04:40 due to value drop, start reading: 87524, end reading: 79062

Meter 3544 is malfunctioning from 2015-12-11 07:51:30 to 2015-12-11 12:08:41 due to value drop, start reading: 87526, end reading: 79070

Meter 3544 is malfunctioning from 2015-12-11 14:51:35 to 2015-12-11 15:24:46 due to value drop, start reading: 87534, end reading: 79072

Meter 3544 is malfunctioning from 2015-12-11 18:39:42 to 2015-12-11 18:44:36 due to value drop, start reading: 87536, end reading: 79074

Meter 3544 is malfunctioning from 2015-12-12 16:59:24 to 2015-12-12 18:48:35 due to value drop, start reading: 87544, end reading: 79090

Meter 1801 is malfunctioning from 2015-10-20 07:41:06 to 2015-10-20 07:52:02 due to value drop, start reading: 110628, end reading: 110626

Meter 4031 is malfunctioning from 2015-10-08 06:52:37 to 2015-10-08 07:06:58 due to value drop, start reading: 104812, end reading: 104808

Meter 4031 is malfunctioning from 2015-10-11 17:33:18 to 2015-10-11 17:51:08 due to value drop, start reading: 104886, end reading: 104884

Meter 4031 is malfunctioning from 2015-10-12 12:42:57 to 2015-10-12 13:03:07 due to value drop, start reading: 104904, end reading: 104900

Meter 4031 is malfunctioning from 2015-10-12 17:21:03 to 2015-10-12 17:22:02 due to value drop, start reading: 104920, end reading: 104918

Meter 4031 is malfunctioning from 2015-10-12 18:06:57 to 2015-10-12 18:12:04 due to value drop, start reading: 104922, end reading: 104920

Meter 4031 is malfunctioning from 2015-10-15 06:29:12 to 2015-10-15 06:39:51 due to value drop, start reading: 104976, end reading: 104974

Meter 4031 is malfunctioning from 2015-10-15 06:41:16 to 2015-10-15 06:57:47 due to value drop, start reading: 104978, end reading: 104974

Meter 4031 is malfunctioning from 2015-10-19 07:07:13 to 2015-10-19 07:17:44 due to value drop, start reading: 105088, end reading: 105082

Meter 4031 is malfunctioning from 2016-02-26 06:42:24 to 2016-02-26 06:45:06 due to value drop, start reading: 119854, end reading: 119852

Meter 4031 is malfunctioning from 2016-03-08 21:18:04 to 2016-03-08 21:18:50 due to value drop, start reading: 120444, end reading: 120440

Meter 4031 is malfunctioning from 2016-03-10 03:57:10 to 2016-03-10 04:00:53 due to value drop, start reading: 120472, end reading: 120470

Meter 4031 is malfunctioning from 2016-03-10 21:01:10 to 2016-03-10 21:02:50 due to value drop, start reading: 120504, end reading: 120502

Meter 4031 is malfunctioning from 2016-03-11 21:12:46 to 2016-03-11 21:16:57 due to value drop, start reading: 120534, end reading: 120532

Meter 4031 is malfunctioning from 2016-03-17 20:09:39 to 2016-03-17 20:12:36 due to value drop, start reading: 120662, end reading: 120658

Meter 4031 is malfunctioning from 2016-03-27 08:59:54 to 2016-03-27 09:02:26 due to value drop, start reading: 121076, end reading: 121074

Meter 4031 is malfunctioning from 2016-03-28 14:21:23 to 2016-03-28 14:22:29 due to value drop, start reading: 121192, end reading: 121190

Meter 3893 is malfunctioning from 2015-11-01 01:14:05 to 2015-11-01 01:15:36 due to value drop, start reading: 90474, end reading: 90472

Meter 3893 is malfunctioning from 2015-11-01 01:20:21 to 2015-11-01 01:31:36 due to value drop, start reading: 90474, end reading: 90472

Meter 1185 is malfunctioning from 2015-10-17 10:50:54 to 2015-10-17 10:51:09 due to value drop, start reading: 139798, end reading: 139796

Meter 1185 is malfunctioning from 2015-10-17 10:59:49 to 2015-10-17 11:08:06 due to value drop, start reading: 139798, end reading: 139796

Meter 1185 is malfunctioning from 2015-10-17 11:43:41 to 2015-10-17 11:47:03 due to value drop, start reading: 139800, end reading: 139798

Meter 1185 is malfunctioning from 2015-10-17 12:31:41 to 2015-10-17 12:33:57 due to value drop, start reading: 139806, end reading: 139802

Meter 1185 is malfunctioning from 2015-10-17 13:03:51 to 2015-10-17 13:27:01 due

to value drop, start reading: 139812, end reading: 139806

Meter 1185 is malfunctioning from 2015-10-17 13:37:59 to 2015-10-17 13:40:02 due to value drop, start reading: 139814, end reading: 139806

Meter 1185 is malfunctioning from 2015-10-17 16:50:47 to 2015-10-17 17:12:56 due to value drop, start reading: 139818, end reading: 139816

Meter 1185 is malfunctioning from 2015-10-17 23:53:45 to 2015-10-17 23:59:04 due to value drop, start reading: 139832, end reading: 139830

Meter 1185 is malfunctioning from 2015-10-20 12:21:27 to 2015-10-20 12:29:48 due to value drop, start reading: 139928, end reading: 139916

Meter 1185 is malfunctioning from 2015-10-20 12:40:18 to 2015-10-20 13:49:08 due to value drop, start reading: 139928, end reading: 139916

Meter 1185 is malfunctioning from 2015-12-07 17:06:07 to 2015-12-07 17:19:59 due to value drop, start reading: 162346, end reading: 144548

Meter 1185 is malfunctioning from 2015-12-07 18:16:16 to 2015-12-07 18:21:50 due to value drop, start reading: 162348, end reading: 144550

Meter 1185 is malfunctioning from 2015-12-07 19:52:20 to 2015-12-07 19:58:12 due to value drop, start reading: 162350, end reading: 144558

Meter 1185 is malfunctioning from 2015-12-07 20:08:14 to 2015-12-07 20:12:12 due to value drop, start reading: 162350, end reading: 144558

Meter 1185 is malfunctioning from 2015-12-07 20:33:14 to 2015-12-07 20:34:59 due to value drop, start reading: 162350, end reading: 144558

Meter 1185 is malfunctioning from 2015-12-07 20:38:11 to 2015-12-07 21:20:06 due to value drop, start reading: 162350, end reading: 144558

Meter 1185 is malfunctioning from 2015-12-07 21:37:09 to 2015-12-07 21:58:58 due to value drop, start reading: 162350, end reading: 144558

Meter 1185 is malfunctioning from 2015-12-07 22:06:15 to 2015-12-07 23:09:55 due to value drop, start reading: 162350, end reading: 144558

Meter 1185 is malfunctioning from 2015-12-08 01:03:05 to 2015-12-08 01:05:02 due to value drop, start reading: 162352, end reading: 144560

Meter 1185 is malfunctioning from 2015-12-08 01:50:08 to 2015-12-08 01:52:51 due to value drop, start reading: 162352, end reading: 144592

Meter 1185 is malfunctioning from 2015-12-08 01:56:11 to 2015-12-08 02:06:59 due

to value drop, start reading: 162352, end reading: 144612

Meter 1185 is malfunctioning from 2015-12-08 02:10:16 to 2015-12-08 02:15:55 due
to value drop, start reading: 162352, end reading: 144612

Meter 1185 is malfunctioning from 2015-12-08 03:56:18 to 2015-12-08 03:58:05 due
to value drop, start reading: 162352, end reading: 144614

Meter 1185 is malfunctioning from 2015-12-08 04:38:06 to 2015-12-08 04:49:06 due
to value drop, start reading: 162352, end reading: 144636

Meter 1185 is malfunctioning from 2015-12-08 05:55:04 to 2015-12-08 06:15:55 due
to value drop, start reading: 162354, end reading: 144674

Meter 1185 is malfunctioning from 2015-12-08 06:32:14 to 2015-12-08 06:35:56 due
to value drop, start reading: 162354, end reading: 144674

Meter 1185 is malfunctioning from 2015-12-08 07:04:24 to 2015-12-08 07:07:52 due
to value drop, start reading: 162354, end reading: 144682

Meter 1185 is malfunctioning from 2015-12-08 07:09:25 to 2015-12-08 07:17:48 due
to value drop, start reading: 162354, end reading: 144682

Meter 1185 is malfunctioning from 2015-12-08 07:41:18 to 2015-12-08 07:51:59 due
to value drop, start reading: 162354, end reading: 144682

Meter 1185 is malfunctioning from 2015-12-08 08:12:17 to 2015-12-08 08:20:00 due
to value drop, start reading: 162354, end reading: 144692

Meter 1185 is malfunctioning from 2015-12-08 08:20:16 to 2015-12-08 08:54:12 due
to value drop, start reading: 162354, end reading: 144738

Meter 1185 is malfunctioning from 2015-12-08 09:52:07 to 2015-12-08 10:04:00 due
to value drop, start reading: 162354, end reading: 144740

Meter 1185 is malfunctioning from 2015-12-08 10:27:14 to 2015-12-08 11:06:49 due
to value drop, start reading: 162356, end reading: 144740

Meter 1185 is malfunctioning from 2015-12-08 12:21:20 to 2015-12-08 12:24:05 due
to value drop, start reading: 162356, end reading: 144740

Meter 1185 is malfunctioning from 2015-12-08 12:33:17 to 2015-12-08 12:41:09 due
to value drop, start reading: 162356, end reading: 144740

Meter 1185 is malfunctioning from 2015-12-08 13:28:11 to 2015-12-08 13:35:00 due
to value drop, start reading: 162356, end reading: 144740

Meter 1185 is malfunctioning from 2015-12-08 13:35:09 to 2015-12-08 13:38:00 due

to value drop, start reading: 162356, end reading: 144740

Meter 1185 is malfunctioning from 2015-12-08 13:48:07 to 2015-12-08 13:52:00 due to value drop, start reading: 162356, end reading: 144740

Meter 1185 is malfunctioning from 2015-12-08 13:59:03 to 2015-12-08 14:06:04 due to value drop, start reading: 162356, end reading: 144742

Meter 1185 is malfunctioning from 2015-12-08 16:34:20 to 2015-12-08 17:02:09 due to value drop, start reading: 162358, end reading: 144742

Meter 1185 is malfunctioning from 2015-12-08 17:41:12 to 2015-12-08 17:43:03 due to value drop, start reading: 162358, end reading: 144744

Meter 1185 is malfunctioning from 2015-12-08 17:43:11 to 2015-12-08 17:48:00 due to value drop, start reading: 162358, end reading: 144744

Meter 1185 is malfunctioning from 2015-12-08 19:17:18 to 2015-12-08 19:17:50 due to value drop, start reading: 162362, end reading: 144752

Meter 1185 is malfunctioning from 2015-12-08 19:31:16 to 2015-12-08 19:45:50 due to value drop, start reading: 162362, end reading: 144752

Meter 1185 is malfunctioning from 2015-12-08 21:00:19 to 2015-12-08 21:18:05 due to value drop, start reading: 162362, end reading: 144754

Meter 1185 is malfunctioning from 2015-12-08 21:44:13 to 2015-12-08 21:48:00 due to value drop, start reading: 162362, end reading: 144754

Meter 1185 is malfunctioning from 2015-12-08 22:08:10 to 2015-12-08 22:14:01 due to value drop, start reading: 162362, end reading: 144754

Meter 1185 is malfunctioning from 2015-12-08 23:00:12 to 2015-12-08 23:07:58 due to value drop, start reading: 162362, end reading: 144754

Meter 1185 is malfunctioning from 2015-12-08 23:14:14 to 2015-12-08 23:14:56 due to value drop, start reading: 162362, end reading: 144754

Meter 1185 is malfunctioning from 2015-12-09 01:30:13 to 2015-12-09 01:34:09 due to value drop, start reading: 162364, end reading: 144754

Meter 1185 is malfunctioning from 2015-12-09 01:43:07 to 2015-12-09 01:50:06 due to value drop, start reading: 162364, end reading: 144754

Meter 1185 is malfunctioning from 2015-12-09 02:46:07 to 2015-12-09 02:57:58 due to value drop, start reading: 162364, end reading: 144756

Meter 1185 is malfunctioning from 2015-12-09 05:13:15 to 2015-12-09 05:21:00 due

to value drop, start reading: 162366, end reading: 144756

Meter 1185 is malfunctioning from 2015-12-09 05:47:11 to 2015-12-09 06:06:01 due
to value drop, start reading: 162366, end reading: 144768

Meter 1185 is malfunctioning from 2015-12-09 08:44:21 to 2015-12-09 09:46:11 due
to value drop, start reading: 162366, end reading: 144818

Meter 1185 is malfunctioning from 2015-12-09 10:05:05 to 2015-12-09 10:27:03 due
to value drop, start reading: 162368, end reading: 144818

Meter 1185 is malfunctioning from 2015-12-09 10:44:10 to 2015-12-09 10:49:02 due
to value drop, start reading: 162368, end reading: 144818

Meter 1185 is malfunctioning from 2015-12-09 13:21:16 to 2015-12-09 13:31:02 due
to value drop, start reading: 162370, end reading: 144820

Meter 1185 is malfunctioning from 2015-12-09 13:33:20 to 2015-12-09 13:35:02 due
to value drop, start reading: 162370, end reading: 144820

Meter 1185 is malfunctioning from 2015-12-09 14:56:10 to 2015-12-09 15:07:58 due
to value drop, start reading: 162370, end reading: 144820

Meter 1185 is malfunctioning from 2015-12-09 16:27:18 to 2015-12-09 16:49:50 due
to value drop, start reading: 162372, end reading: 144822

Meter 1185 is malfunctioning from 2015-12-09 18:52:11 to 2015-12-09 19:08:02 due
to value drop, start reading: 162374, end reading: 144822

Meter 1185 is malfunctioning from 2015-12-09 19:16:06 to 2015-12-09 19:35:04 due
to value drop, start reading: 162374, end reading: 144822

Meter 1185 is malfunctioning from 2015-12-09 21:05:23 to 2015-12-09 21:10:50 due
to value drop, start reading: 162376, end reading: 144830

Meter 1185 is malfunctioning from 2015-12-09 22:02:16 to 2015-12-09 22:16:06 due
to value drop, start reading: 162376, end reading: 144830

Meter 1185 is malfunctioning from 2015-12-09 23:37:03 to 2015-12-09 23:51:58 due
to value drop, start reading: 162376, end reading: 144832

Meter 1185 is malfunctioning from 2015-12-10 00:41:18 to 2015-12-10 00:43:49 due
to value drop, start reading: 162376, end reading: 144832

Meter 1185 is malfunctioning from 2015-12-10 00:44:20 to 2015-12-10 00:45:52 due
to value drop, start reading: 162376, end reading: 144832

Meter 1185 is malfunctioning from 2015-12-10 01:55:19 to 2015-12-10 02:03:58 due

to value drop, start reading: 162378, end reading: 144832

Meter 1185 is malfunctioning from 2015-12-10 04:12:08 to 2015-12-10 04:30:56 due to value drop, start reading: 162378, end reading: 144832

Meter 1185 is malfunctioning from 2015-12-10 05:37:28 to 2015-12-10 05:45:53 due to value drop, start reading: 162378, end reading: 144834

Meter 1185 is malfunctioning from 2015-12-10 06:55:13 to 2015-12-10 06:56:06 due to value drop, start reading: 162380, end reading: 144834

Meter 1185 is malfunctioning from 2015-12-10 08:40:14 to 2015-12-10 08:43:56 due to value drop, start reading: 162380, end reading: 144846

Meter 1185 is malfunctioning from 2015-12-10 09:53:25 to 2015-12-10 09:57:52 due to value drop, start reading: 162380, end reading: 144846

Meter 1185 is malfunctioning from 2015-12-10 11:13:07 to 2015-12-10 11:15:10 due to value drop, start reading: 162382, end reading: 144846

Meter 1185 is malfunctioning from 2015-12-10 12:09:03 to 2015-12-10 12:27:00 due to value drop, start reading: 162382, end reading: 144846

Meter 1185 is malfunctioning from 2015-12-10 13:18:16 to 2015-12-10 13:28:48 due to value drop, start reading: 162382, end reading: 144848

Meter 1185 is malfunctioning from 2015-12-10 13:32:18 to 2015-12-10 13:39:47 due to value drop, start reading: 162382, end reading: 144848

Meter 1185 is malfunctioning from 2015-12-10 13:53:22 to 2015-12-10 13:55:44 due to value drop, start reading: 162382, end reading: 144848

Meter 1185 is malfunctioning from 2015-12-10 14:26:21 to 2015-12-10 14:39:57 due to value drop, start reading: 162384, end reading: 144848

Meter 1185 is malfunctioning from 2015-12-10 17:36:17 to 2015-12-10 17:56:49 due to value drop, start reading: 162384, end reading: 144856

Meter 1185 is malfunctioning from 2015-12-10 23:36:18 to 2015-12-10 23:41:04 due to value drop, start reading: 162386, end reading: 144858

Meter 1185 is malfunctioning from 2015-12-10 23:44:14 to 2015-12-10 23:58:02 due to value drop, start reading: 162386, end reading: 144858

Meter 1185 is malfunctioning from 2015-12-11 00:26:06 to 2015-12-11 00:40:57 due to value drop, start reading: 162388, end reading: 144858

Meter 1185 is malfunctioning from 2015-12-11 01:03:03 to 2015-12-11 01:07:55 due

to value drop, start reading: 162388, end reading: 144858

Meter 1185 is malfunctioning from 2015-12-11 01:17:07 to 2015-12-11 01:20:49 due
to value drop, start reading: 162388, end reading: 144860

Meter 1185 is malfunctioning from 2015-12-11 01:49:14 to 2015-12-11 02:03:46 due
to value drop, start reading: 162388, end reading: 144860

Meter 1185 is malfunctioning from 2015-12-11 02:57:13 to 2015-12-11 03:10:54 due
to value drop, start reading: 162388, end reading: 144860

Meter 1185 is malfunctioning from 2015-12-11 03:56:13 to 2015-12-11 04:00:08 due
to value drop, start reading: 162388, end reading: 144860

Meter 1185 is malfunctioning from 2015-12-11 04:37:07 to 2015-12-11 04:39:57 due
to value drop, start reading: 162388, end reading: 144860

Meter 1185 is malfunctioning from 2015-12-11 05:14:04 to 2015-12-11 05:18:56 due
to value drop, start reading: 162390, end reading: 144860

Meter 1185 is malfunctioning from 2015-12-11 05:26:07 to 2015-12-11 05:57:52 due
to value drop, start reading: 162390, end reading: 144864

Meter 1185 is malfunctioning from 2015-12-11 07:30:19 to 2015-12-11 07:38:58 due
to value drop, start reading: 162390, end reading: 144880

Meter 1185 is malfunctioning from 2015-12-11 07:54:20 to 2015-12-11 07:55:05 due
to value drop, start reading: 162390, end reading: 144880

Meter 1185 is malfunctioning from 2015-12-11 08:11:11 to 2015-12-11 08:15:09 due
to value drop, start reading: 162390, end reading: 144880

Meter 1185 is malfunctioning from 2015-12-11 08:42:12 to 2015-12-11 08:57:59 due
to value drop, start reading: 162390, end reading: 144882

Meter 1185 is malfunctioning from 2015-12-11 09:00:06 to 2015-12-11 09:01:58 due
to value drop, start reading: 162390, end reading: 144882

Meter 1185 is malfunctioning from 2015-12-11 09:24:06 to 2015-12-11 09:29:57 due
to value drop, start reading: 162390, end reading: 144882

Meter 1185 is malfunctioning from 2015-12-11 11:46:20 to 2015-12-11 11:48:01 due
to value drop, start reading: 162392, end reading: 144882

Meter 1185 is malfunctioning from 2015-12-11 11:53:15 to 2015-12-11 12:20:04 due
to value drop, start reading: 162392, end reading: 144882

Meter 1185 is malfunctioning from 2015-12-11 12:20:13 to 2015-12-11 12:22:06 due

to value drop, start reading: 162392, end reading: 144882

Meter 1185 is malfunctioning from 2015-12-11 13:35:08 to 2015-12-11 13:49:50 due
to value drop, start reading: 162392, end reading: 144884

Meter 1185 is malfunctioning from 2015-12-11 14:09:14 to 2015-12-11 14:29:46 due
to value drop, start reading: 162392, end reading: 144884

Meter 1185 is malfunctioning from 2015-12-11 15:27:18 to 2015-12-11 15:27:54 due
to value drop, start reading: 162394, end reading: 144884

Meter 1185 is malfunctioning from 2015-12-11 15:35:17 to 2015-12-11 15:37:56 due
to value drop, start reading: 162394, end reading: 144884

Meter 1185 is malfunctioning from 2015-12-11 16:42:06 to 2015-12-11 16:53:58 due
to value drop, start reading: 162394, end reading: 144884

Meter 1185 is malfunctioning from 2015-12-11 17:08:10 to 2015-12-11 17:10:56 due
to value drop, start reading: 162394, end reading: 144884

Meter 1185 is malfunctioning from 2015-12-11 19:16:21 to 2015-12-11 19:17:43 due
to value drop, start reading: 162394, end reading: 144886

Meter 1185 is malfunctioning from 2015-12-11 21:00:07 to 2015-12-11 21:25:55 due
to value drop, start reading: 162396, end reading: 144900

Meter 1185 is malfunctioning from 2015-12-11 21:47:03 to 2015-12-11 21:59:01 due
to value drop, start reading: 162396, end reading: 144900

Meter 1185 is malfunctioning from 2015-12-11 22:59:19 to 2015-12-11 22:59:50 due
to value drop, start reading: 162396, end reading: 144902

Meter 1185 is malfunctioning from 2015-12-11 23:06:15 to 2015-12-11 23:09:45 due
to value drop, start reading: 162396, end reading: 144902

Meter 1185 is malfunctioning from 2015-12-11 23:16:23 to 2015-12-11 23:16:46 due
to value drop, start reading: 162396, end reading: 144902

Meter 1185 is malfunctioning from 2015-12-12 00:11:17 to 2015-12-12 00:35:00 due
to value drop, start reading: 162396, end reading: 144902

Meter 1185 is malfunctioning from 2015-12-12 01:33:11 to 2015-12-12 01:33:57 due
to value drop, start reading: 162398, end reading: 144902

Meter 1185 is malfunctioning from 2015-12-12 01:40:05 to 2015-12-12 01:55:55 due
to value drop, start reading: 162398, end reading: 144902

Meter 1185 is malfunctioning from 2015-12-12 03:25:20 to 2015-12-12 03:27:45 due

to value drop, start reading: 162398, end reading: 144904

Meter 1185 is malfunctioning from 2015-12-12 03:57:22 to 2015-12-12 03:57:50 due to value drop, start reading: 162398, end reading: 144904

Meter 1185 is malfunctioning from 2015-12-12 04:58:19 to 2015-12-12 05:22:00 due to value drop, start reading: 162398, end reading: 144904

Meter 1185 is malfunctioning from 2015-12-12 06:43:10 to 2015-12-12 07:30:44 due to value drop, start reading: 162400, end reading: 144904

Meter 1185 is malfunctioning from 2015-12-12 07:48:24 to 2015-12-12 07:53:42 due to value drop, start reading: 162400, end reading: 144904

Meter 1185 is malfunctioning from 2015-12-12 08:08:20 to 2015-12-12 08:19:52 due to value drop, start reading: 162400, end reading: 144912

Meter 1185 is malfunctioning from 2015-12-12 08:37:15 to 2015-12-12 08:37:55 due to value drop, start reading: 162400, end reading: 144912

Meter 1185 is malfunctioning from 2015-12-12 11:53:23 to 2015-12-12 12:23:52 due to value drop, start reading: 162402, end reading: 144922

Meter 1185 is malfunctioning from 2015-12-12 13:18:20 to 2015-12-12 13:39:07 due to value drop, start reading: 162402, end reading: 144922

Meter 1185 is malfunctioning from 2015-12-12 14:21:09 to 2015-12-12 14:39:58 due to value drop, start reading: 162402, end reading: 144924

Meter 1185 is malfunctioning from 2015-12-12 14:47:08 to 2015-12-12 15:18:53 due to value drop, start reading: 162402, end reading: 144932

Meter 1185 is malfunctioning from 2015-12-12 16:30:23 to 2015-12-12 16:44:51 due to value drop, start reading: 162404, end reading: 144934

Meter 1185 is malfunctioning from 2015-12-12 17:19:13 to 2015-12-12 17:31:03 due to value drop, start reading: 162404, end reading: 144940

Meter 1185 is malfunctioning from 2015-12-12 17:34:19 to 2015-12-12 18:38:54 due to value drop, start reading: 162404, end reading: 144950

Meter 1185 is malfunctioning from 2015-12-12 18:47:02 to 2015-12-12 19:49:47 due to value drop, start reading: 162404, end reading: 144958

Meter 1185 is malfunctioning from 2015-12-12 21:13:15 to 2015-12-12 21:17:55 due to value drop, start reading: 162406, end reading: 144966

Meter 1185 is malfunctioning from 2015-12-12 22:27:11 to 2015-12-12 22:57:55 due

to value drop, start reading: 162406, end reading: 144968

Meter 1185 is malfunctioning from 2015-12-12 23:31:10 to 2015-12-12 23:53:49 due
to value drop, start reading: 162406, end reading: 144968

Meter 1185 is malfunctioning from 2015-12-13 01:25:15 to 2015-12-13 01:27:54 due
to value drop, start reading: 162408, end reading: 144968

Meter 4514 is malfunctioning from 2015-10-17 09:53:41 to 2015-10-17 09:53:59 due
to value drop, start reading: 382990, end reading: 382988

Meter 4514 is malfunctioning from 2015-10-17 10:16:45 to 2015-10-17 10:16:56 due
to value drop, start reading: 382990, end reading: 382988

Meter 4514 is malfunctioning from 2015-10-17 11:24:56 to 2015-10-17 11:30:02 due
to value drop, start reading: 382992, end reading: 382990

Meter 4514 is malfunctioning from 2015-10-17 12:44:51 to 2015-10-17 12:46:06 due
to value drop, start reading: 382994, end reading: 382992

Meter 4514 is malfunctioning from 2015-10-17 20:50:47 to 2015-10-17 20:53:08 due
to value drop, start reading: 383010, end reading: 383004

Meter 4514 is malfunctioning from 2015-10-17 21:42:46 to 2015-10-17 21:44:06 due
to value drop, start reading: 383014, end reading: 383010

Meter 4514 is malfunctioning from 2015-10-17 22:06:42 to 2015-10-17 22:07:54 due
to value drop, start reading: 383014, end reading: 383010

Meter 4514 is malfunctioning from 2015-10-20 10:21:02 to 2015-10-20 10:28:59 due
to value drop, start reading: 383132, end reading: 383128

Meter 4514 is malfunctioning from 2015-10-20 12:21:08 to 2015-10-20 12:22:04 due
to value drop, start reading: 383142, end reading: 383140

Meter 4514 is malfunctioning from 2015-10-20 14:58:08 to 2015-10-20 15:14:05 due
to value drop, start reading: 383146, end reading: 383144

Meter 4514 is malfunctioning from 2015-10-20 16:21:04 to 2015-10-20 16:32:02 due
to value drop, start reading: 383148, end reading: 383146

Meter 4514 is malfunctioning from 2015-10-20 17:47:54 to 2015-10-20 17:49:57 due
to value drop, start reading: 383150, end reading: 383148

Meter 4514 is malfunctioning from 2015-10-20 18:06:57 to 2015-10-20 18:09:52 due
to value drop, start reading: 383154, end reading: 383150

Meter 4514 is malfunctioning from 2015-11-01 01:30:52 to 2015-11-01 01:40:05 due to value drop, start reading: 383756, end reading: 383754

Meter 4514 is malfunctioning from 2015-12-07 16:37:10 to 2015-12-07 16:41:04 due to value drop, start reading: 415998, end reading: 389060

Meter 4514 is malfunctioning from 2015-12-07 16:45:03 to 2015-12-07 17:02:07 due to value drop, start reading: 415998, end reading: 389060

Meter 4514 is malfunctioning from 2015-12-07 18:43:52 to 2015-12-07 19:08:09 due to value drop, start reading: 416002, end reading: 389064

Meter 4514 is malfunctioning from 2015-12-07 19:38:57 to 2015-12-07 19:45:02 due to value drop, start reading: 416004, end reading: 389064

Meter 4514 is malfunctioning from 2015-12-07 20:23:03 to 2015-12-07 20:40:59 due to value drop, start reading: 416008, end reading: 389066

Meter 4514 is malfunctioning from 2015-12-07 21:40:57 to 2015-12-07 21:42:12 due to value drop, start reading: 416014, end reading: 389068

Meter 4514 is malfunctioning from 2015-12-07 21:48:01 to 2015-12-07 21:48:15 due to value drop, start reading: 416018, end reading: 389068

Meter 4514 is malfunctioning from 2015-12-07 22:34:54 to 2015-12-07 22:39:09 due to value drop, start reading: 416020, end reading: 389070

Meter 4514 is malfunctioning from 2015-12-07 22:47:48 to 2015-12-07 22:50:09 due to value drop, start reading: 416022, end reading: 389070

Meter 4514 is malfunctioning from 2015-12-08 01:05:05 to 2015-12-08 01:09:05 due to value drop, start reading: 416032, end reading: 389074

Meter 4514 is malfunctioning from 2015-12-08 03:13:49 to 2015-12-08 03:23:11 due to value drop, start reading: 416034, end reading: 389076

Meter 4514 is malfunctioning from 2015-12-08 03:46:52 to 2015-12-08 03:57:02 due to value drop, start reading: 416036, end reading: 389078

Meter 4514 is malfunctioning from 2015-12-08 03:59:56 to 2015-12-08 04:11:02 due to value drop, start reading: 416036, end reading: 389080

Meter 4514 is malfunctioning from 2015-12-08 04:32:03 to 2015-12-08 04:43:54 due to value drop, start reading: 416036, end reading: 389086

Meter 4514 is malfunctioning from 2015-12-08 05:06:08 to 2015-12-08 05:08:00 due to value drop, start reading: 416038, end reading: 389092

Meter 4514 is malfunctioning from 2015-12-08 05:34:03 to 2015-12-08 05:37:06 due to value drop, start reading: 416038, end reading: 389094

Meter 4514 is malfunctioning from 2015-12-08 06:04:57 to 2015-12-08 06:30:18 due to value drop, start reading: 416038, end reading: 389140

Meter 4514 is malfunctioning from 2015-12-08 06:30:57 to 2015-12-08 06:34:20 due to value drop, start reading: 416040, end reading: 389142

Meter 4514 is malfunctioning from 2015-12-08 06:58:55 to 2015-12-08 07:33:10 due to value drop, start reading: 416040, end reading: 389154

Meter 4514 is malfunctioning from 2015-12-08 08:10:56 to 2015-12-08 08:11:04 due to value drop, start reading: 416042, end reading: 389166

Meter 4514 is malfunctioning from 2015-12-08 08:21:00 to 2015-12-08 08:46:57 due to value drop, start reading: 416042, end reading: 389176

Meter 4514 is malfunctioning from 2015-12-08 09:51:01 to 2015-12-08 09:54:07 due to value drop, start reading: 416044, end reading: 389192

Meter 4514 is malfunctioning from 2015-12-08 10:16:57 to 2015-12-08 10:21:14 due to value drop, start reading: 416046, end reading: 389198

Meter 4514 is malfunctioning from 2015-12-08 11:20:52 to 2015-12-08 11:46:11 due to value drop, start reading: 416046, end reading: 389210

Meter 4514 is malfunctioning from 2015-12-08 12:44:58 to 2015-12-08 12:48:58 due to value drop, start reading: 416048, end reading: 389210

Meter 4514 is malfunctioning from 2015-12-08 13:13:07 to 2015-12-08 13:18:01 due to value drop, start reading: 416050, end reading: 389212

Meter 4514 is malfunctioning from 2015-12-08 18:22:59 to 2015-12-08 18:24:10 due to value drop, start reading: 416058, end reading: 389218

Meter 4514 is malfunctioning from 2015-12-08 18:31:03 to 2015-12-08 18:44:12 due to value drop, start reading: 416058, end reading: 389220

Meter 4514 is malfunctioning from 2015-12-08 18:56:03 to 2015-12-08 18:58:14 due to value drop, start reading: 416058, end reading: 389220

Meter 4514 is malfunctioning from 2015-12-08 19:09:53 to 2015-12-08 19:10:20 due to value drop, start reading: 416058, end reading: 389220

Meter 4514 is malfunctioning from 2015-12-08 19:19:51 to 2015-12-08 19:34:11 due to value drop, start reading: 416060, end reading: 389220

Meter 4514 is malfunctioning from 2015-12-08 20:55:59 to 2015-12-08 21:09:56 due to value drop, start reading: 416062, end reading: 389222

Meter 4514 is malfunctioning from 2015-12-08 21:45:07 to 2015-12-08 21:47:52 due to value drop, start reading: 416070, end reading: 389224

Meter 4514 is malfunctioning from 2015-12-08 22:01:12 to 2015-12-08 22:07:04 due to value drop, start reading: 416070, end reading: 389224

Meter 4514 is malfunctioning from 2015-12-08 22:25:03 to 2015-12-08 22:25:06 due to value drop, start reading: 416072, end reading: 389224

Meter 4514 is malfunctioning from 2015-12-08 22:45:02 to 2015-12-08 23:02:17 due to value drop, start reading: 416072, end reading: 389226

Meter 4514 is malfunctioning from 2015-12-09 00:32:53 to 2015-12-09 01:12:04 due to value drop, start reading: 416074, end reading: 389228

Meter 4514 is malfunctioning from 2015-12-09 01:49:08 to 2015-12-09 02:08:01 due to value drop, start reading: 416076, end reading: 389230

Meter 4514 is malfunctioning from 2015-12-09 03:00:00 to 2015-12-09 03:04:12 due to value drop, start reading: 416078, end reading: 389232

Meter 4514 is malfunctioning from 2015-12-09 03:33:54 to 2015-12-09 03:56:11 due to value drop, start reading: 416080, end reading: 389232

Meter 4514 is malfunctioning from 2015-12-09 05:48:03 to 2015-12-09 05:57:58 due to value drop, start reading: 416082, end reading: 389236

Meter 4514 is malfunctioning from 2015-12-09 06:20:11 to 2015-12-09 06:21:59 due to value drop, start reading: 416082, end reading: 389244

Meter 4514 is malfunctioning from 2015-12-09 07:13:00 to 2015-12-09 07:27:19 due to value drop, start reading: 416084, end reading: 389258

Meter 4514 is malfunctioning from 2015-12-09 08:08:57 to 2015-12-09 08:17:08 due to value drop, start reading: 416086, end reading: 389270

Meter 4514 is malfunctioning from 2015-12-09 09:05:49 to 2015-12-09 09:09:58 due to value drop, start reading: 416088, end reading: 389280

Meter 4514 is malfunctioning from 2015-12-09 10:21:07 to 2015-12-09 10:29:00 due to value drop, start reading: 416092, end reading: 389290

Meter 4514 is malfunctioning from 2015-12-09 11:19:04 to 2015-12-09 11:53:19 due to value drop, start reading: 416094, end reading: 389294

Meter 4514 is malfunctioning from 2015-12-09 12:41:54 to 2015-12-09 13:17:04 due to value drop, start reading: 416096, end reading: 389296

Meter 4514 is malfunctioning from 2015-12-09 13:49:56 to 2015-12-09 14:17:55 due to value drop, start reading: 416096, end reading: 389298

Meter 4514 is malfunctioning from 2015-12-09 15:28:04 to 2015-12-09 15:29:12 due to value drop, start reading: 416100, end reading: 389300

Meter 4514 is malfunctioning from 2015-12-09 16:33:55 to 2015-12-09 17:30:03 due to value drop, start reading: 416100, end reading: 389302

Meter 4514 is malfunctioning from 2015-12-09 17:41:55 to 2015-12-09 17:42:59 due to value drop, start reading: 416102, end reading: 389302

Meter 4514 is malfunctioning from 2015-12-09 19:29:03 to 2015-12-09 19:41:12 due to value drop, start reading: 416106, end reading: 389306

Meter 4514 is malfunctioning from 2015-12-09 20:14:00 to 2015-12-09 20:19:20 due to value drop, start reading: 416108, end reading: 389306

Meter 4514 is malfunctioning from 2015-12-09 22:02:59 to 2015-12-09 22:11:03 due to value drop, start reading: 416118, end reading: 389308

Meter 4514 is malfunctioning from 2015-12-09 23:22:07 to 2015-12-09 23:33:06 due to value drop, start reading: 416124, end reading: 389310

Meter 4514 is malfunctioning from 2015-12-10 00:44:52 to 2015-12-10 01:00:10 due to value drop, start reading: 416126, end reading: 389312

Meter 4514 is malfunctioning from 2015-12-10 01:08:54 to 2015-12-10 01:14:09 due to value drop, start reading: 416128, end reading: 389314

Meter 4514 is malfunctioning from 2015-12-10 02:17:59 to 2015-12-10 02:19:03 due to value drop, start reading: 416130, end reading: 389314

Meter 4514 is malfunctioning from 2015-12-10 05:35:50 to 2015-12-10 05:39:08 due to value drop, start reading: 416134, end reading: 389320

Meter 4514 is malfunctioning from 2015-12-10 07:14:09 to 2015-12-10 07:18:59 due to value drop, start reading: 416136, end reading: 389332

Meter 4514 is malfunctioning from 2015-12-10 07:20:08 to 2015-12-10 07:21:56 due to value drop, start reading: 416136, end reading: 389332

Meter 4514 is malfunctioning from 2015-12-10 08:15:02 to 2015-12-10 08:27:10 due to value drop, start reading: 416138, end reading: 389338

Meter 4514 is malfunctioning from 2015-12-10 08:51:00 to 2015-12-10 08:53:19 due to value drop, start reading: 416138, end reading: 389340

Meter 4514 is malfunctioning from 2015-12-10 11:04:01 to 2015-12-10 11:18:56 due to value drop, start reading: 416142, end reading: 389348

Meter 4514 is malfunctioning from 2015-12-10 11:52:09 to 2015-12-10 11:55:04 due to value drop, start reading: 416142, end reading: 389348

Meter 4514 is malfunctioning from 2015-12-10 13:30:59 to 2015-12-10 13:35:12 due to value drop, start reading: 416146, end reading: 389350

Meter 4514 is malfunctioning from 2015-12-10 14:47:59 to 2015-12-10 15:08:00 due to value drop, start reading: 416148, end reading: 389352

Meter 4514 is malfunctioning from 2015-12-10 15:31:06 to 2015-12-10 15:35:58 due to value drop, start reading: 416148, end reading: 389354

Meter 4514 is malfunctioning from 2015-12-10 16:07:08 to 2015-12-10 16:18:09 due to value drop, start reading: 416150, end reading: 389354

Meter 4514 is malfunctioning from 2015-12-10 17:41:58 to 2015-12-10 17:59:09 due to value drop, start reading: 416152, end reading: 389356

Meter 4514 is malfunctioning from 2015-12-10 19:13:58 to 2015-12-10 19:19:00 due to value drop, start reading: 416154, end reading: 389358

Meter 4514 is malfunctioning from 2015-12-10 19:49:10 to 2015-12-10 19:54:01 due to value drop, start reading: 416154, end reading: 389360

Meter 4514 is malfunctioning from 2015-12-10 20:04:09 to 2015-12-10 20:20:05 due to value drop, start reading: 416154, end reading: 389360

Meter 4514 is malfunctioning from 2015-12-10 21:08:04 to 2015-12-10 21:16:17 due to value drop, start reading: 416156, end reading: 389362

Meter 4514 is malfunctioning from 2015-12-10 21:27:59 to 2015-12-10 21:37:16 due to value drop, start reading: 416158, end reading: 389362

Meter 4514 is malfunctioning from 2015-12-10 23:31:59 to 2015-12-10 23:47:56 due to value drop, start reading: 416160, end reading: 389366

Meter 4514 is malfunctioning from 2015-12-10 23:50:02 to 2015-12-11 00:04:00 due to value drop, start reading: 416160, end reading: 389366

Meter 4514 is malfunctioning from 2015-12-11 03:07:54 to 2015-12-11 03:27:05 due to value drop, start reading: 416166, end reading: 389370

Meter 4514 is malfunctioning from 2015-12-11 03:30:00 to 2015-12-11 03:47:58 due to value drop, start reading: 416166, end reading: 389370

Meter 4514 is malfunctioning from 2015-12-11 04:14:10 to 2015-12-11 04:16:59 due to value drop, start reading: 416166, end reading: 389372

Meter 4514 is malfunctioning from 2015-12-11 06:08:53 to 2015-12-11 06:15:08 due to value drop, start reading: 416170, end reading: 389374

Meter 4514 is malfunctioning from 2015-12-11 07:04:53 to 2015-12-11 07:14:05 due to value drop, start reading: 416172, end reading: 389378

Meter 4514 is malfunctioning from 2015-12-11 08:27:10 to 2015-12-11 08:37:56 due to value drop, start reading: 416174, end reading: 389382

Meter 4514 is malfunctioning from 2015-12-11 10:21:53 to 2015-12-11 10:25:11 due to value drop, start reading: 416176, end reading: 389390

Meter 4514 is malfunctioning from 2015-12-11 11:37:52 to 2015-12-11 11:38:59 due to value drop, start reading: 416178, end reading: 389392

Meter 4514 is malfunctioning from 2015-12-11 12:32:07 to 2015-12-11 12:33:58 due to value drop, start reading: 416178, end reading: 389392

Meter 4514 is malfunctioning from 2015-12-11 13:02:14 to 2015-12-11 13:13:05 due to value drop, start reading: 416180, end reading: 389394

Meter 4514 is malfunctioning from 2015-12-11 15:18:50 to 2015-12-11 15:53:59 due to value drop, start reading: 416184, end reading: 389398

Meter 4514 is malfunctioning from 2015-12-11 16:04:59 to 2015-12-11 16:12:04 due to value drop, start reading: 416188, end reading: 389398

Meter 4514 is malfunctioning from 2015-12-11 17:17:09 to 2015-12-11 17:19:04 due to value drop, start reading: 416190, end reading: 389400

Meter 4514 is malfunctioning from 2015-12-11 18:15:08 to 2015-12-11 18:24:15 due to value drop, start reading: 416190, end reading: 389402

Meter 4514 is malfunctioning from 2015-12-11 18:44:53 to 2015-12-11 18:51:08 due to value drop, start reading: 416192, end reading: 389402

Meter 4514 is malfunctioning from 2015-12-11 19:34:49 to 2015-12-11 19:46:09 due to value drop, start reading: 416192, end reading: 389404

Meter 4514 is malfunctioning from 2015-12-11 20:25:59 to 2015-12-11 20:33:57 due to value drop, start reading: 416194, end reading: 389404

Meter 4514 is malfunctioning from 2015-12-11 20:51:03 to 2015-12-11 21:08:56 due to value drop, start reading: 416194, end reading: 389406

Meter 4514 is malfunctioning from 2015-12-11 21:13:10 to 2015-12-11 21:28:04 due to value drop, start reading: 416196, end reading: 389406

Meter 4514 is malfunctioning from 2015-12-11 22:16:02 to 2015-12-11 22:21:15 due to value drop, start reading: 416196, end reading: 389408

Meter 4514 is malfunctioning from 2015-12-11 22:59:57 to 2015-12-11 23:10:12 due to value drop, start reading: 416198, end reading: 389408

Meter 4514 is malfunctioning from 2015-12-11 23:28:55 to 2015-12-11 23:34:08 due to value drop, start reading: 416198, end reading: 389410

Meter 4514 is malfunctioning from 2015-12-12 00:12:54 to 2015-12-12 00:24:05 due to value drop, start reading: 416200, end reading: 389410

Meter 4514 is malfunctioning from 2015-12-12 00:46:02 to 2015-12-12 00:55:58 due to value drop, start reading: 416200, end reading: 389412

Meter 4514 is malfunctioning from 2015-12-12 01:11:08 to 2015-12-12 01:19:56 due to value drop, start reading: 416202, end reading: 389412

Meter 4514 is malfunctioning from 2015-12-12 01:42:08 to 2015-12-12 01:49:04 due to value drop, start reading: 416202, end reading: 389412

Meter 4514 is malfunctioning from 2015-12-12 02:04:04 to 2015-12-12 02:10:07 due to value drop, start reading: 416202, end reading: 389412

Meter 4514 is malfunctioning from 2015-12-12 03:48:53 to 2015-12-12 04:29:58 due to value drop, start reading: 416206, end reading: 389416

Meter 4514 is malfunctioning from 2015-12-12 05:45:13 to 2015-12-12 05:56:05 due to value drop, start reading: 416208, end reading: 389418

Meter 4514 is malfunctioning from 2015-12-12 07:03:02 to 2015-12-12 07:10:20 due to value drop, start reading: 416210, end reading: 389420

Meter 4514 is malfunctioning from 2015-12-12 08:13:54 to 2015-12-12 08:31:01 due to value drop, start reading: 416212, end reading: 389422

Meter 4514 is malfunctioning from 2015-12-12 09:42:14 to 2015-12-12 09:57:59 due to value drop, start reading: 416214, end reading: 389424

Meter 4514 is malfunctioning from 2015-12-12 10:48:03 to 2015-12-12 10:54:12 due to value drop, start reading: 416216, end reading: 389426

Meter 4514 is malfunctioning from 2015-12-12 11:14:03 to 2015-12-12 11:14:15 due to value drop, start reading: 416216, end reading: 389426

Meter 4514 is malfunctioning from 2015-12-12 12:17:52 to 2015-12-12 12:21:10 due to value drop, start reading: 416218, end reading: 389428

Meter 4514 is malfunctioning from 2015-12-12 13:06:01 to 2015-12-12 13:10:03 due to value drop, start reading: 416218, end reading: 389430

Meter 4514 is malfunctioning from 2015-12-12 15:11:07 to 2015-12-12 15:34:20 due to value drop, start reading: 416222, end reading: 389432

Meter 4514 is malfunctioning from 2015-12-12 16:30:51 to 2015-12-12 16:40:12 due to value drop, start reading: 416224, end reading: 389436

Meter 4514 is malfunctioning from 2015-12-12 17:20:03 to 2015-12-12 17:59:57 due to value drop, start reading: 416224, end reading: 389442

Meter 4514 is malfunctioning from 2015-12-12 18:00:10 to 2015-12-12 18:13:55 due to value drop, start reading: 416226, end reading: 389444

Meter 4514 is malfunctioning from 2015-12-12 18:48:09 to 2015-12-12 19:04:10 due to value drop, start reading: 416226, end reading: 389444

Meter 4514 is malfunctioning from 2015-12-12 20:11:00 to 2015-12-12 20:24:09 due to value drop, start reading: 416228, end reading: 389446

Meter 4514 is malfunctioning from 2015-12-12 20:57:55 to 2015-12-12 21:00:06 due to value drop, start reading: 416230, end reading: 389448

Meter 4514 is malfunctioning from 2015-12-12 21:59:05 to 2015-12-12 22:03:55 due to value drop, start reading: 416232, end reading: 389448

Meter 4514 is malfunctioning from 2015-12-12 22:53:05 to 2015-12-12 23:00:04 due to value drop, start reading: 416232, end reading: 389450

Meter 4514 is malfunctioning from 2015-12-13 00:04:55 to 2015-12-13 00:08:11 due to value drop, start reading: 416234, end reading: 389452

Meter 4514 is malfunctioning from 2015-12-13 00:20:00 to 2015-12-13 00:24:10 due to value drop, start reading: 416236, end reading: 389454

Meter 4514 is malfunctioning from 2015-12-13 01:17:53 to 2015-12-13 01:19:59 due to value drop, start reading: 416236, end reading: 389466

Meter 4514 is malfunctioning from 2016-03-30 21:56:41 to 2016-03-30 22:00:32 due to value drop, start reading: 410418, end reading: 410410

Meter 5814 is malfunctioning from 2015-11-01 01:53:17 to 2015-11-01 01:57:39 due
to value drop, start reading: 803420, end reading: 803418

Meter 77 is malfunctioning from 2015-10-20 20:07:57 to 2015-10-20 20:20:55 due
to value drop, start reading: 59260, end reading: 59258

Meter 3134 is malfunctioning from 2015-10-20 12:42:53 to 2015-10-20 13:51:35 due
to value drop, start reading: 162706, end reading: 162704

Meter 3134 is malfunctioning from 2015-12-08 06:51:33 to 2015-12-08 06:56:40 due
to value drop, start reading: 180674, end reading: 166866

Meter 3134 is malfunctioning from 2015-12-08 14:48:31 to 2015-12-08 14:59:41 due
to value drop, start reading: 180684, end reading: 166908

Meter 3134 is malfunctioning from 2015-12-09 04:33:25 to 2015-12-09 04:55:32 due
to value drop, start reading: 180690, end reading: 166936

Meter 3134 is malfunctioning from 2015-12-09 19:29:39 to 2015-12-09 20:53:40 due
to value drop, start reading: 180704, end reading: 167076

Meter 3134 is malfunctioning from 2015-12-09 23:36:41 to 2015-12-10 00:51:37 due
to value drop, start reading: 180706, end reading: 167078

Meter 3134 is malfunctioning from 2015-12-10 03:28:43 to 2015-12-10 03:59:37 due
to value drop, start reading: 180708, end reading: 167080

Meter 3134 is malfunctioning from 2015-12-10 14:39:41 to 2015-12-10 14:50:31 due
to value drop, start reading: 180722, end reading: 167118

Meter 3134 is malfunctioning from 2015-12-10 18:42:37 to 2015-12-10 18:53:33 due
to value drop, start reading: 180724, end reading: 167120

Meter 3134 is malfunctioning from 2015-12-10 20:04:45 to 2015-12-10 20:28:34 due
to value drop, start reading: 180724, end reading: 167120

Meter 3134 is malfunctioning from 2015-12-10 21:37:37 to 2015-12-10 23:05:33 due
to value drop, start reading: 180724, end reading: 167122

Meter 3134 is malfunctioning from 2015-12-11 00:45:41 to 2015-12-11 00:46:36 due
to value drop, start reading: 180726, end reading: 167122

Meter 3134 is malfunctioning from 2015-12-11 05:07:39 to 2015-12-11 05:49:42 due to value drop, start reading: 180728, end reading: 167124

Meter 3134 is malfunctioning from 2015-12-11 20:17:38 to 2015-12-11 20:51:26 due to value drop, start reading: 180740, end reading: 167148

Meter 3134 is malfunctioning from 2015-12-11 21:11:46 to 2015-12-11 21:23:33 due to value drop, start reading: 180740, end reading: 167148

Meter 3134 is malfunctioning from 2015-12-12 08:05:27 to 2015-12-12 08:29:25 due to value drop, start reading: 180754, end reading: 167160

Meter 3134 is malfunctioning from 2015-12-12 11:43:27 to 2015-12-12 12:51:31 due to value drop, start reading: 180754, end reading: 167168

Meter 3134 is malfunctioning from 2015-12-12 16:57:37 to 2015-12-12 17:10:28 due to value drop, start reading: 180756, end reading: 167176

Meter 6836 is malfunctioning from 2015-10-17 12:01:39 to 2015-10-17 12:36:50 due to value drop, start reading: 92874, end reading: 92870

Meter 6836 is malfunctioning from 2015-12-07 19:22:40 to 2015-12-07 20:07:34 due to value drop, start reading: 106066, end reading: 94426

Meter 6836 is malfunctioning from 2015-12-07 20:51:49 to 2015-12-07 22:15:50 due to value drop, start reading: 106068, end reading: 94428

Meter 6836 is malfunctioning from 2015-12-07 22:24:41 to 2015-12-07 23:06:47 due to value drop, start reading: 106068, end reading: 94428

Meter 6836 is malfunctioning from 2015-12-07 23:31:37 to 2015-12-07 23:43:40 due to value drop, start reading: 106068, end reading: 94428

Meter 6836 is malfunctioning from 2015-12-08 02:42:40 to 2015-12-08 04:29:33 due to value drop, start reading: 106070, end reading: 94430

Meter 6836 is malfunctioning from 2015-12-08 07:18:33 to 2015-12-08 07:23:44 due to value drop, start reading: 106072, end reading: 94432

Meter 6836 is malfunctioning from 2015-12-08 10:05:44 to 2015-12-08 11:18:45 due to value drop, start reading: 106072, end reading: 94442

Meter 6836 is malfunctioning from 2015-12-08 11:21:38 to 2015-12-08 11:26:46 due to value drop, start reading: 106072, end reading: 94442

Meter 6836 is malfunctioning from 2015-12-08 12:11:41 to 2015-12-08 12:43:33 due to value drop, start reading: 106072, end reading: 94442

Meter 6836 is malfunctioning from 2015-12-08 12:54:44 to 2015-12-08 13:05:32 due to value drop, start reading: 106074, end reading: 94442

Meter 6836 is malfunctioning from 2015-12-08 14:25:47 to 2015-12-08 14:35:55 due to value drop, start reading: 106074, end reading: 94442

Meter 6836 is malfunctioning from 2015-12-08 16:01:35 to 2015-12-08 16:41:38 due to value drop, start reading: 106074, end reading: 94444

Meter 6836 is malfunctioning from 2015-12-08 17:59:44 to 2015-12-08 18:13:41 due to value drop, start reading: 106074, end reading: 94444

Meter 6836 is malfunctioning from 2015-12-08 18:34:45 to 2015-12-08 19:15:49 due to value drop, start reading: 106076, end reading: 94444

Meter 6836 is malfunctioning from 2015-12-08 20:56:43 to 2015-12-08 22:09:40 due to value drop, start reading: 106076, end reading: 94446

Meter 6836 is malfunctioning from 2015-12-08 23:23:36 to 2015-12-08 23:29:47 due to value drop, start reading: 106076, end reading: 94446

Meter 6836 is malfunctioning from 2015-12-09 09:04:35 to 2015-12-09 09:35:37 due to value drop, start reading: 106080, end reading: 94450

Meter 6836 is malfunctioning from 2015-12-09 12:40:34 to 2015-12-09 13:05:42 due to value drop, start reading: 106082, end reading: 94450

Meter 6836 is malfunctioning from 2015-12-09 20:58:38 to 2015-12-09 21:10:40 due to value drop, start reading: 106084, end reading: 94454

Meter 6836 is malfunctioning from 2015-12-09 21:55:41 to 2015-12-09 22:03:36 due to value drop, start reading: 106084, end reading: 94454

Meter 6836 is malfunctioning from 2015-12-09 22:48:51 to 2015-12-09 22:55:28 due to value drop, start reading: 106086, end reading: 94454

Meter 6836 is malfunctioning from 2015-12-10 03:13:55 to 2015-12-10 03:16:34 due to value drop, start reading: 106086, end reading: 94456

Meter 6836 is malfunctioning from 2015-12-10 06:08:38 to 2015-12-10 06:20:39 due to value drop, start reading: 106088, end reading: 94456

Meter 6836 is malfunctioning from 2015-12-10 07:11:51 to 2015-12-10 07:33:34 due to value drop, start reading: 106088, end reading: 94458

Meter 6836 is malfunctioning from 2015-12-10 08:49:37 to 2015-12-10 09:17:46 due to value drop, start reading: 106088, end reading: 94458

Meter 6836 is malfunctioning from 2015-12-10 13:34:39 to 2015-12-10 14:22:38 due to value drop, start reading: 106090, end reading: 94460

Meter 6836 is malfunctioning from 2015-12-10 16:12:45 to 2015-12-10 16:47:43 due to value drop, start reading: 106092, end reading: 94460

Meter 6836 is malfunctioning from 2015-12-10 17:38:39 to 2015-12-10 18:35:38 due to value drop, start reading: 106092, end reading: 94462

Meter 6836 is malfunctioning from 2015-12-10 21:58:39 to 2015-12-10 22:01:40 due to value drop, start reading: 106094, end reading: 94462

Meter 6836 is malfunctioning from 2015-12-11 00:28:46 to 2015-12-11 01:17:47 due to value drop, start reading: 106094, end reading: 94464

Meter 6836 is malfunctioning from 2015-12-11 01:44:35 to 2015-12-11 02:17:40 due to value drop, start reading: 106094, end reading: 94474

Meter 6836 is malfunctioning from 2015-12-11 03:50:45 to 2015-12-11 03:56:28 due to value drop, start reading: 106096, end reading: 94474

Meter 6836 is malfunctioning from 2015-12-11 04:16:50 to 2015-12-11 04:40:37 due to value drop, start reading: 106096, end reading: 94474

Meter 6836 is malfunctioning from 2015-12-11 05:02:43 to 2015-12-11 05:09:40 due to value drop, start reading: 106096, end reading: 94474

Meter 6836 is malfunctioning from 2015-12-11 05:37:46 to 2015-12-11 06:16:43 due to value drop, start reading: 106096, end reading: 94474

Meter 6836 is malfunctioning from 2015-12-11 06:19:40 to 2015-12-11 06:53:43 due to value drop, start reading: 106096, end reading: 94476

Meter 6836 is malfunctioning from 2015-12-11 08:28:50 to 2015-12-11 09:27:41 due to value drop, start reading: 106098, end reading: 94476

Meter 6836 is malfunctioning from 2015-12-11 09:35:45 to 2015-12-11 09:36:44 due to value drop, start reading: 106098, end reading: 94476

Meter 6836 is malfunctioning from 2015-12-11 13:00:48 to 2015-12-11 14:14:50 due to value drop, start reading: 106098, end reading: 94478

Meter 6836 is malfunctioning from 2015-12-11 15:14:30 to 2015-12-11 15:56:37 due to value drop, start reading: 106100, end reading: 94478

Meter 6836 is malfunctioning from 2015-12-11 16:16:42 to 2015-12-11 16:46:31 due to value drop, start reading: 106100, end reading: 94478

Meter 6836 is malfunctioning from 2015-12-11 18:17:43 to 2015-12-11 18:33:47 due to value drop, start reading: 106100, end reading: 94492

Meter 6836 is malfunctioning from 2015-12-11 19:26:30 to 2015-12-11 19:54:29 due to value drop, start reading: 106102, end reading: 94492

Meter 6836 is malfunctioning from 2015-12-11 23:42:33 to 2015-12-12 00:19:35 due to value drop, start reading: 106102, end reading: 94494

Meter 6836 is malfunctioning from 2015-12-12 05:32:51 to 2015-12-12 05:51:35 due to value drop, start reading: 106104, end reading: 94502

Meter 6836 is malfunctioning from 2015-12-12 07:07:33 to 2015-12-12 07:30:42 due to value drop, start reading: 106106, end reading: 94502

Meter 6836 is malfunctioning from 2015-12-12 15:25:36 to 2015-12-12 15:36:44 due to value drop, start reading: 106108, end reading: 94506

Meter 6836 is malfunctioning from 2015-12-12 15:53:37 to 2015-12-12 16:16:37 due to value drop, start reading: 106108, end reading: 94506

Meter 6836 is malfunctioning from 2015-12-12 19:22:48 to 2015-12-12 19:26:45 due to value drop, start reading: 106110, end reading: 94508

Meter 6836 is malfunctioning from 2015-12-12 22:39:47 to 2015-12-12 23:56:47 due to value drop, start reading: 106110, end reading: 94508

Meter 1042 is malfunctioning from 2015-10-07 14:24:06 to 2015-10-07 14:32:08 due to value drop, start reading: 203558, end reading: 203556

Meter 9982 is malfunctioning from 2015-12-08 14:50:53 to 2015-12-08 20:31:41 due to value drop, start reading: 123622, end reading: 109532

Meter 9982 is malfunctioning from 2015-12-11 12:17:07 to 2015-12-11 12:29:49 due to value drop, start reading: 123708, end reading: 109726

Meter 1790 is malfunctioning from 2015-10-20 16:07:21 to 2015-10-20 16:12:26 due to value drop, start reading: 297084, end reading: 297082

```
*****
*****
Meter 5892 is malfunctioning from 2015-11-01 01:05:44 to 2015-11-01 01:22:43 due
to value drop, start reading: 265750, end reading: 265748
-----
*****
*****
Meter 3527 is malfunctioning from 2015-11-01 01:08:08 to 2015-11-01 01:11:57 due
to value drop, start reading: 236020, end reading: 236018
-----
*****
*****
Meter 2129 is malfunctioning from 2015-11-01 01:22:51 to 2015-11-01 01:24:54 due
to value drop, start reading: 173634, end reading: 173632
-----
Meter 2129 is malfunctioning from 2015-11-01 01:42:46 to 2015-11-01 01:51:54 due
to value drop, start reading: 173634, end reading: 173632
-----
Meter 2129 is malfunctioning from 2015-11-01 01:52:43 to 2015-11-01 01:55:52 due
to value drop, start reading: 173634, end reading: 173632
-----
*****
*****
Meter 4193 is malfunctioning from 2015-11-01 01:08:17 to 2015-11-01 01:23:17 due
to value drop, start reading: 290350, end reading: 290348
-----
*****
*****
Meter 7989 is malfunctioning from 2015-11-01 01:40:20 to 2015-11-01 01:45:28 due
to value drop, start reading: 110808, end reading: 110806
-----
Meter 7989 is malfunctioning from 2015-12-13 00:00:00 to 2015-12-13 00:01:18 due
to value drop, start reading: 113706, end reading: 113656
-----
```

```
[10]: # print out total number of malfunctioning incidents
print('Total number of malfunctioning incidents due to a value drop in meter is' 
      + str(numMal))
```

Total number of malfunctioning incidents due to a value drop in meter is 1306

6.4 Question 1.2

Generate hourly readings from the raw data. Select one month from the 6-month study interval and plot the hourly readings (time-series) for that month. Hint: You will have to decide what to do if there are no readings for a certain hour.

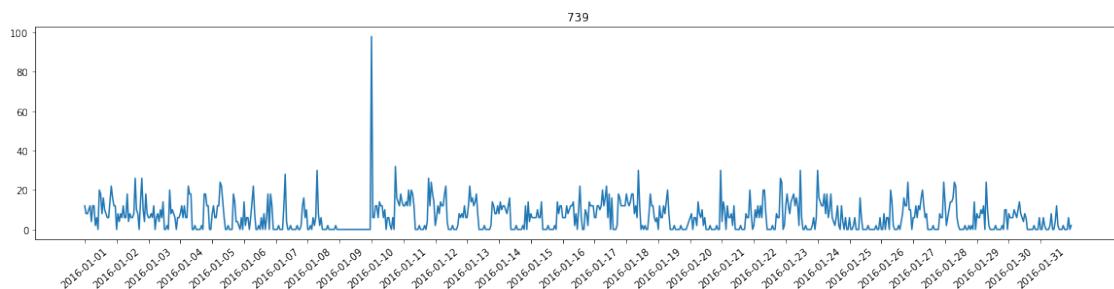
6.5 Discussion

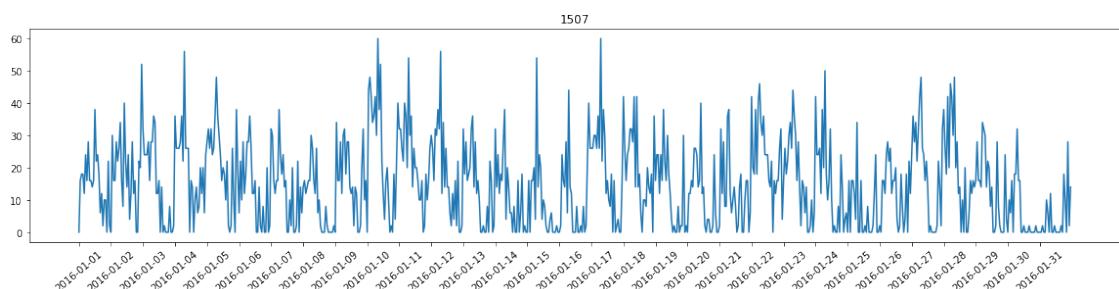
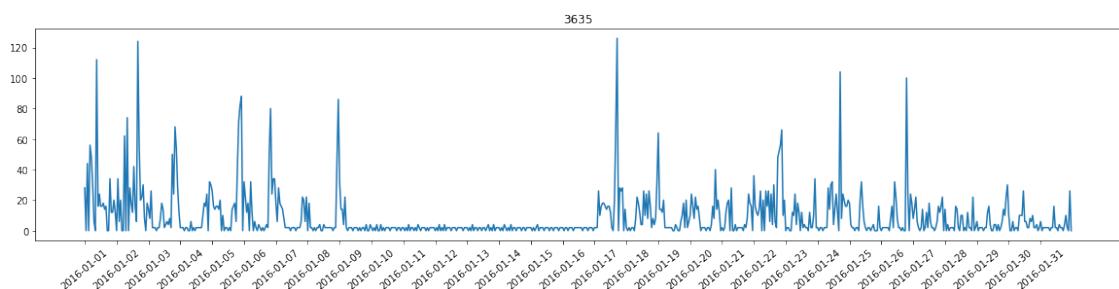
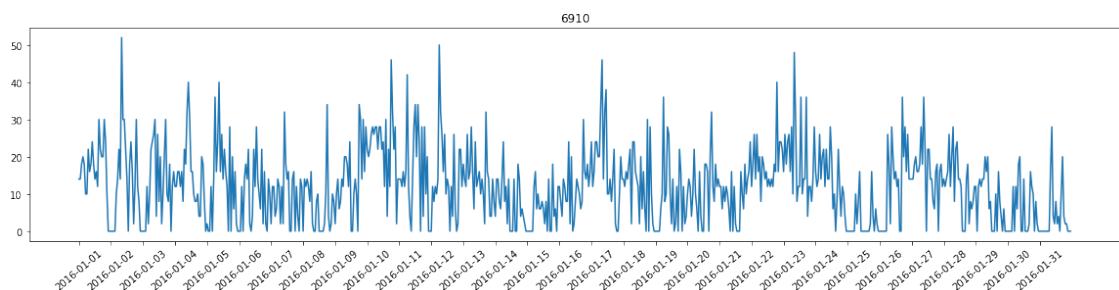
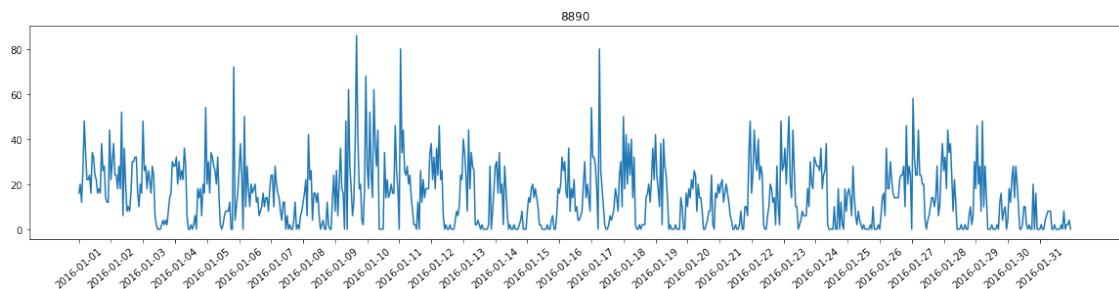
Please refer to the following graphs for the hourly reading of each house in January 2016, ranging from 2016-01-01 to 2016-01-31

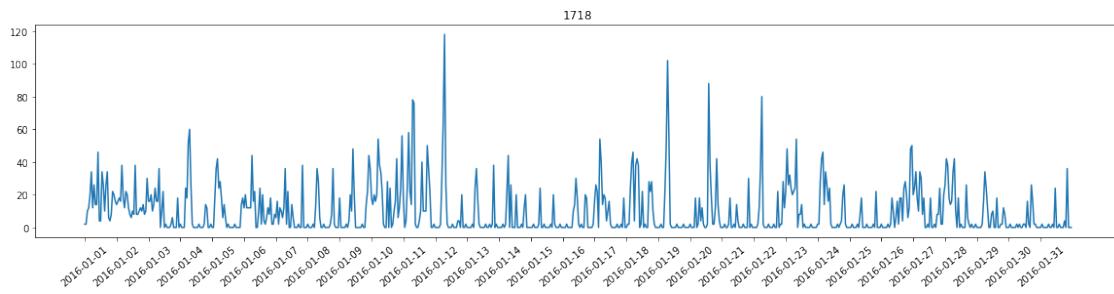
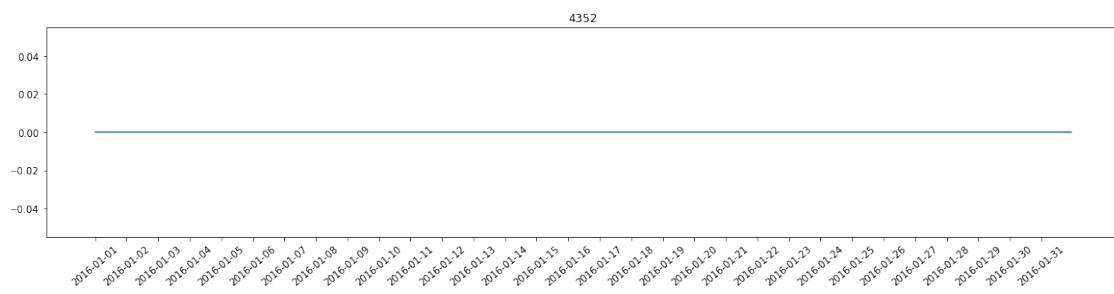
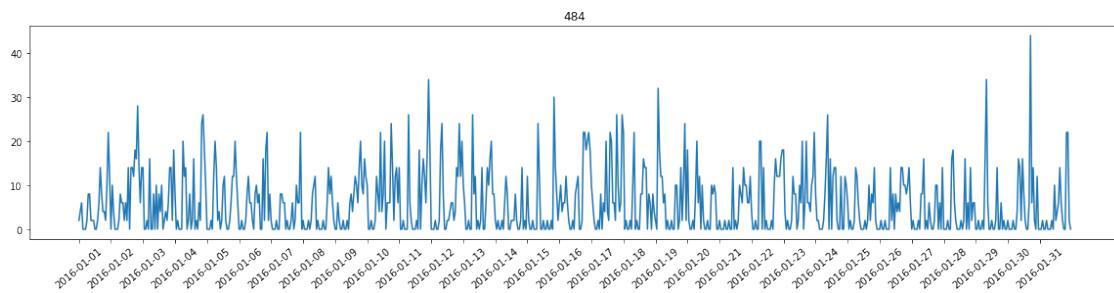
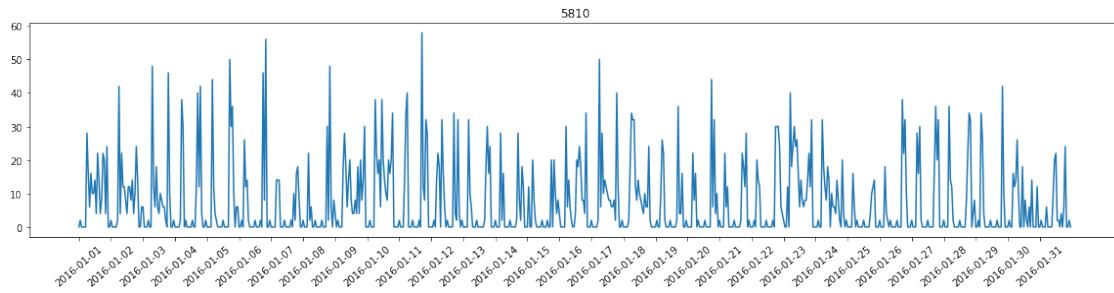
```
[11]: # generate hourly readings graph of each unique meter ID for the month from
      ↪2016-01-01 to 2016-01-31

# lstMeter == unique_houses

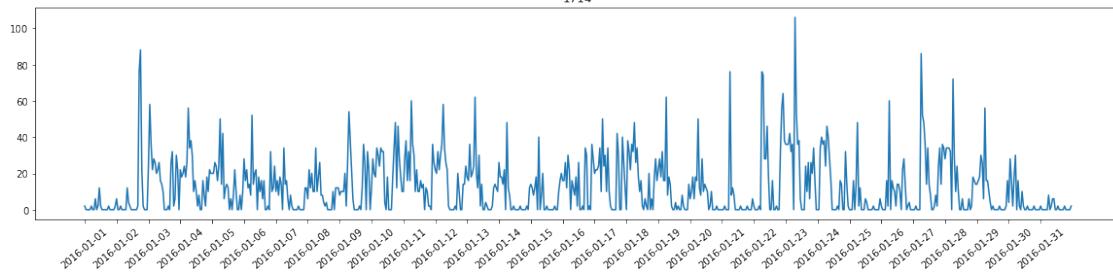
for unique_house in lstMeter:
    start_time = pd.Timestamp(year=2016, month=1, day=1)
    house_reading = data[data['dataid'] == unique_house].\
        sort_values(by='localminute', ascending=True).reset_index()
    hourly_reading = np.zeros(24*31)
    x_idx = [i for i in range(24*31)]
    date_idx = [date(year=2016, month=1, day=i+1).isoformat() for i in
      ↪range(31)]
    for i in range(24*31):
        start_row = house_reading[house_reading['localminute'] < start_time + pd.Timedelta(hours=i)].reset_index()
        if len(start_row) > 0:
            start_row = start_row.iloc[-1]
        else:
            continue
        end_row = house_reading[house_reading['localminute'] < start_time + pd.Timedelta(hours=i+1)].reset_index()
        if len(end_row) > 0:
            end_row = end_row.iloc[-1]
        else:
            continue
        hourly_reading[i] = end_row['meter_value'] - start_row['meter_value']
    # print(hourly_reading)
    plt.rcParams['figure.figsize'] = (20.0, 4.0)
    plt.plot(x_idx, hourly_reading)
    plt.title(str(house_reading.iloc[0]['dataid']))
    plt.xticks(x_idx[::24], date_idx[::1], rotation=40)
    plt.show()
```



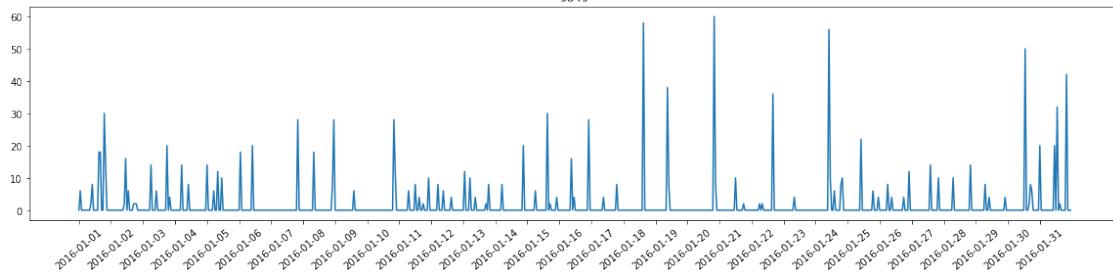




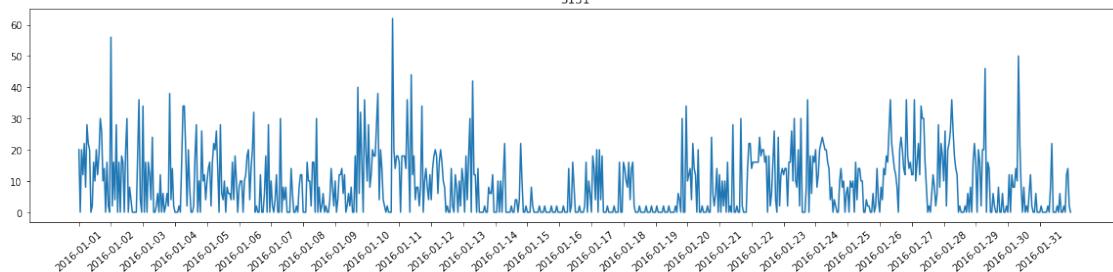
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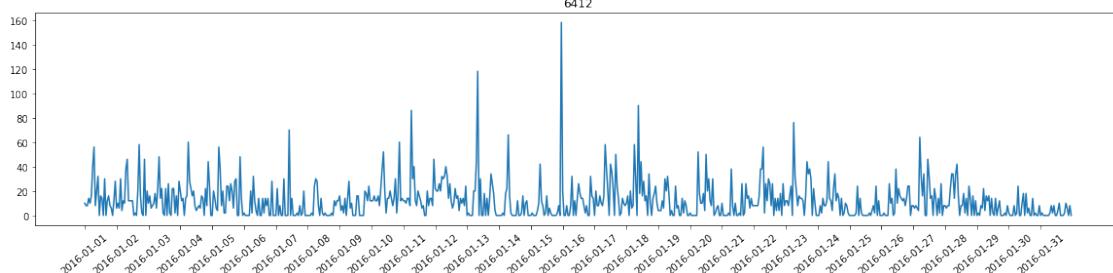
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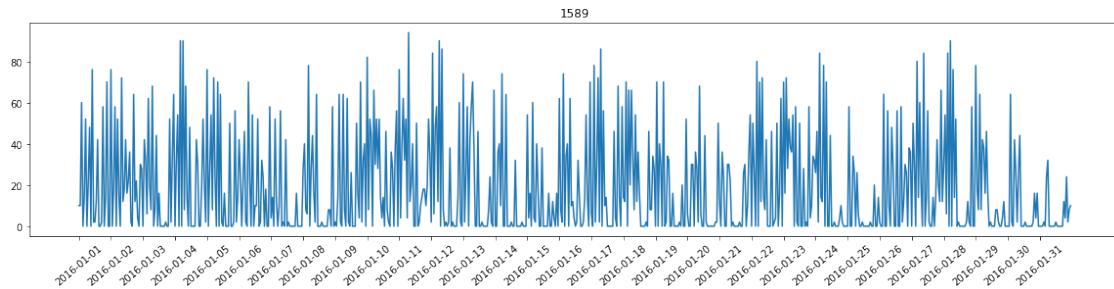
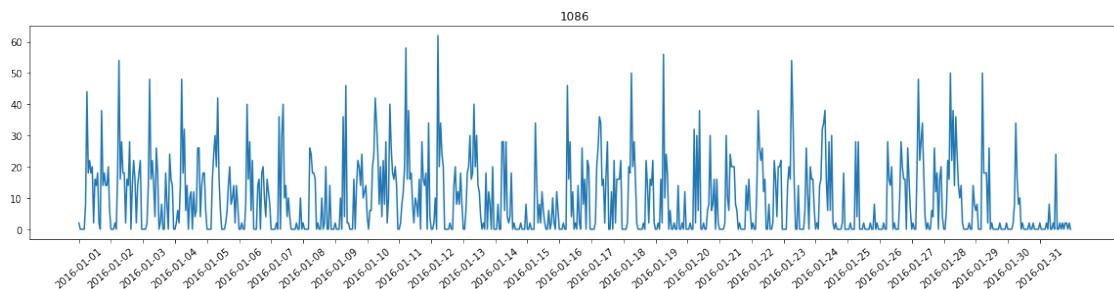
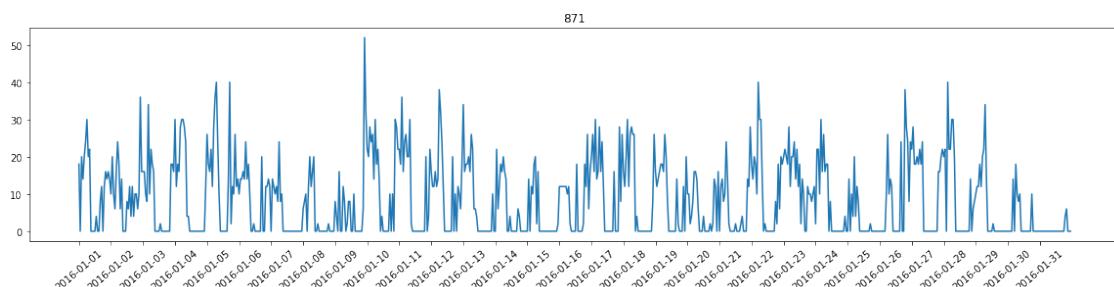
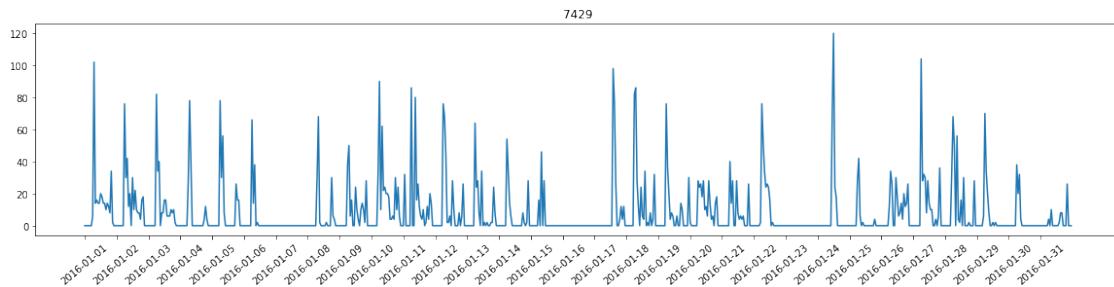


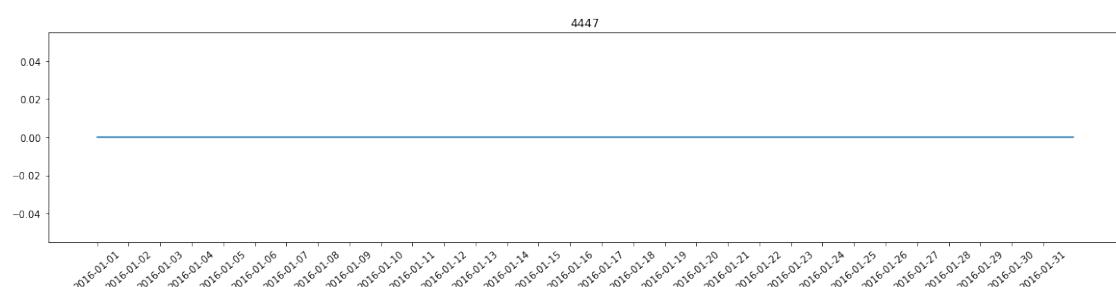
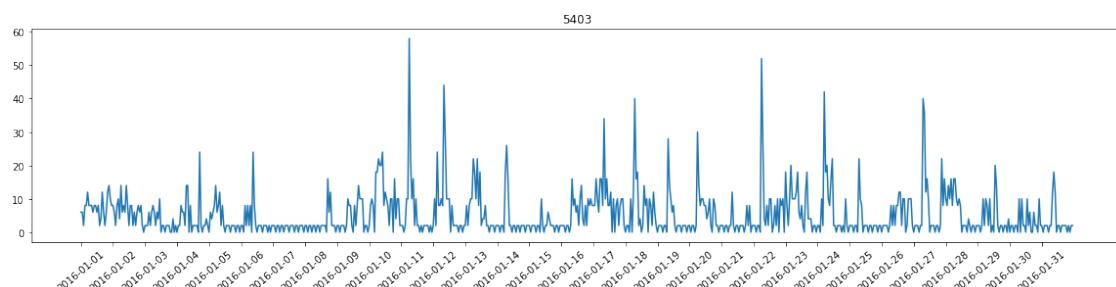
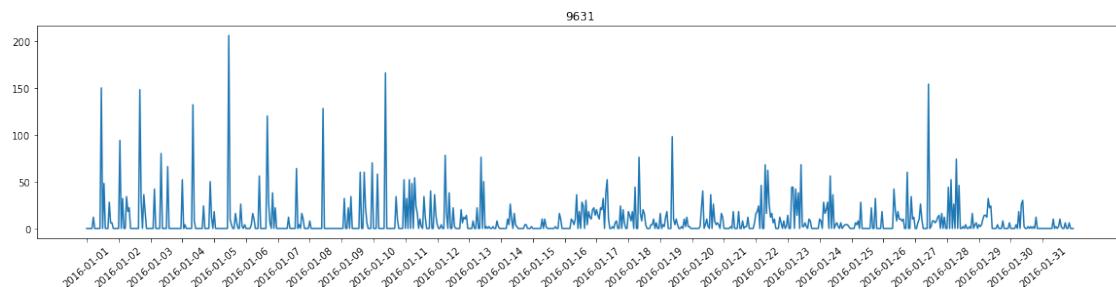
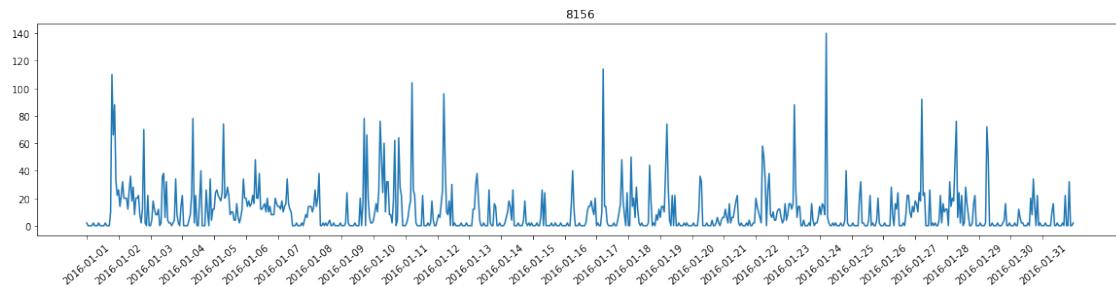
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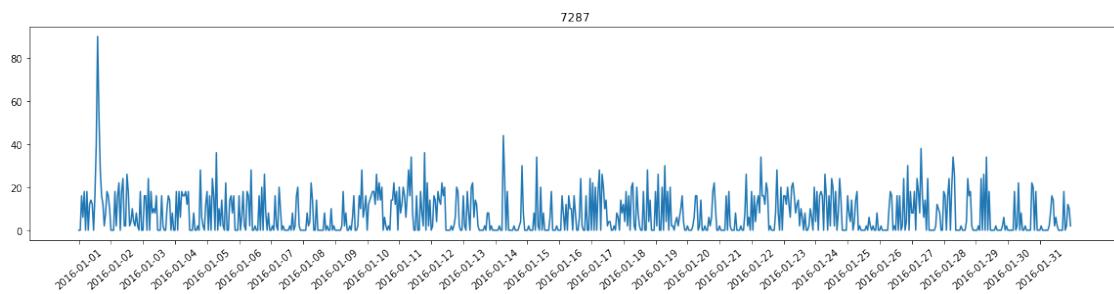
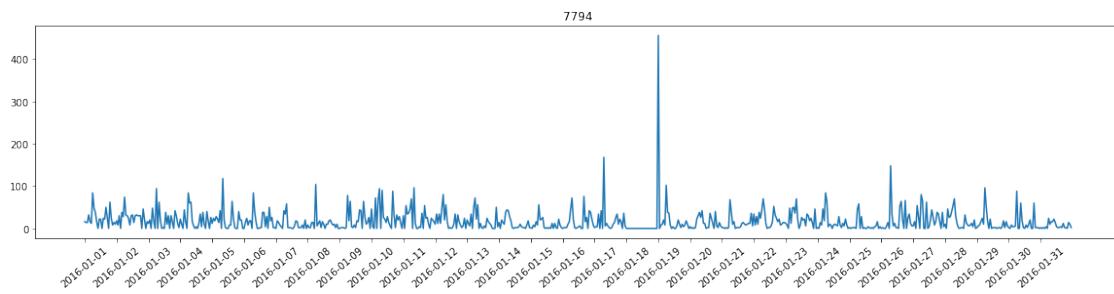
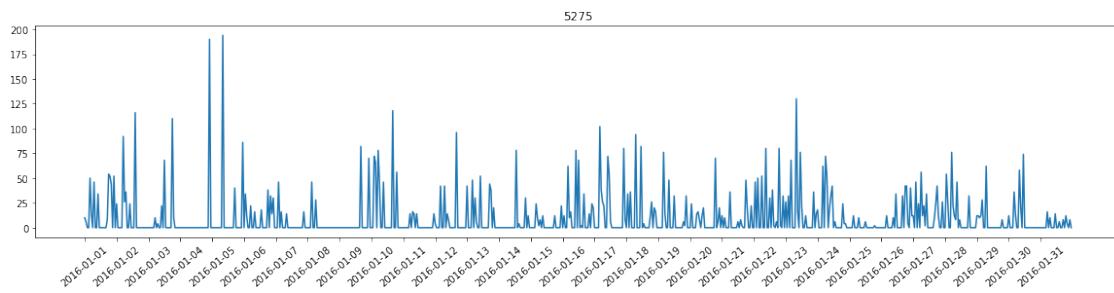
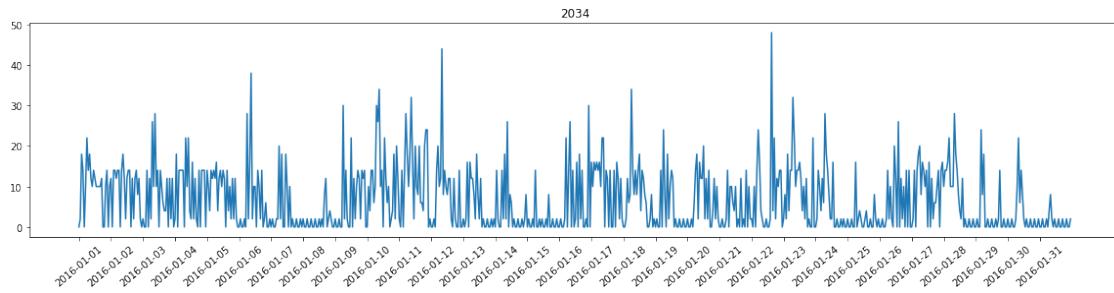


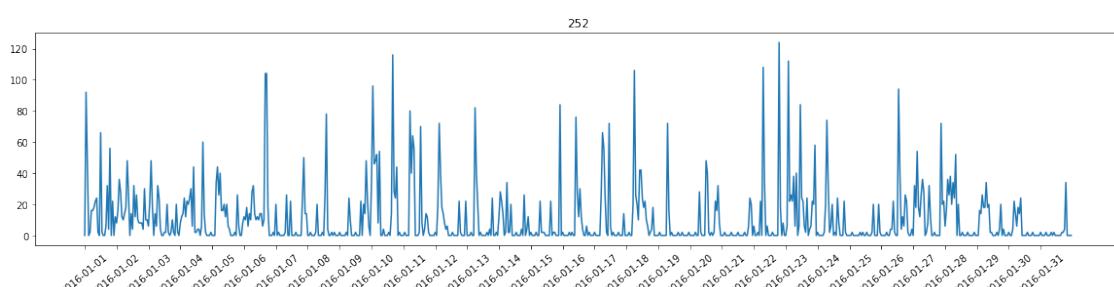
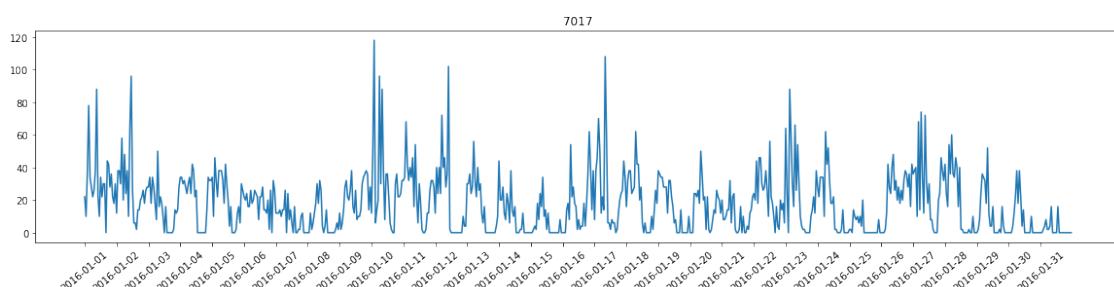
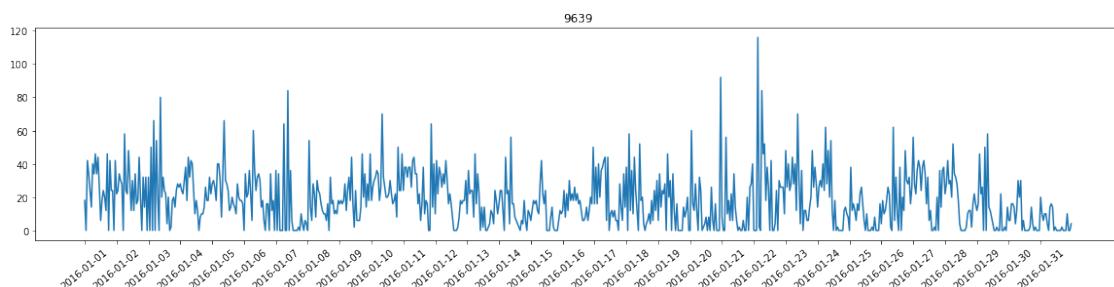
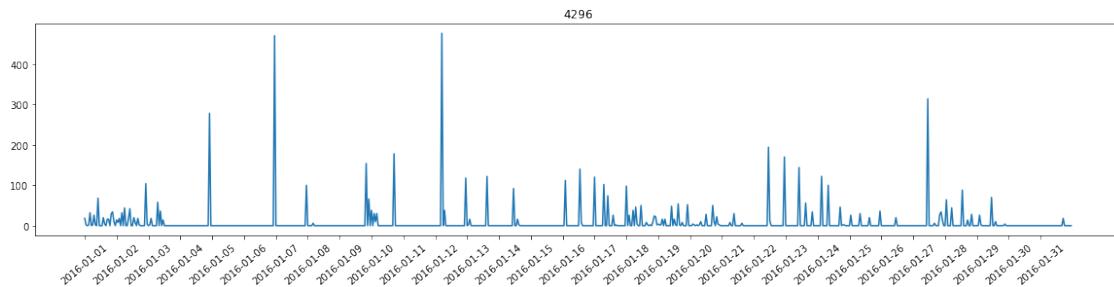
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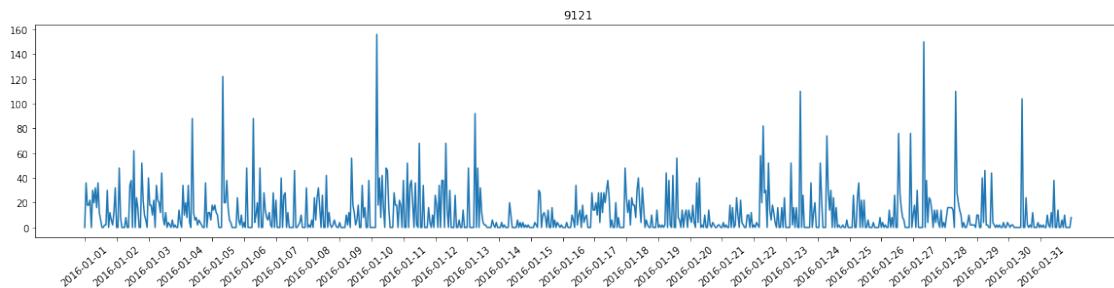
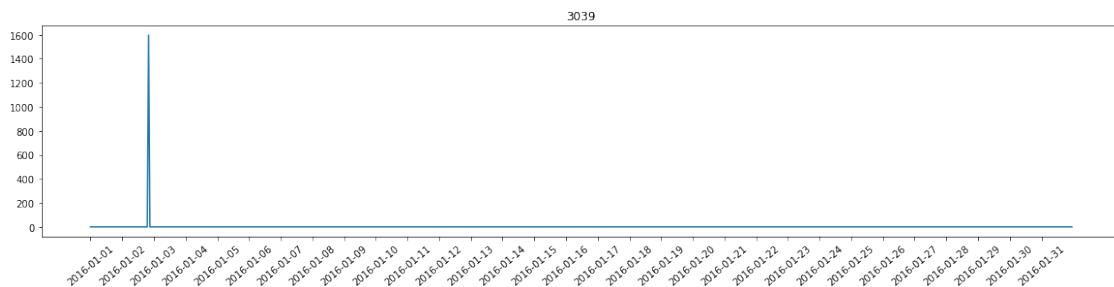
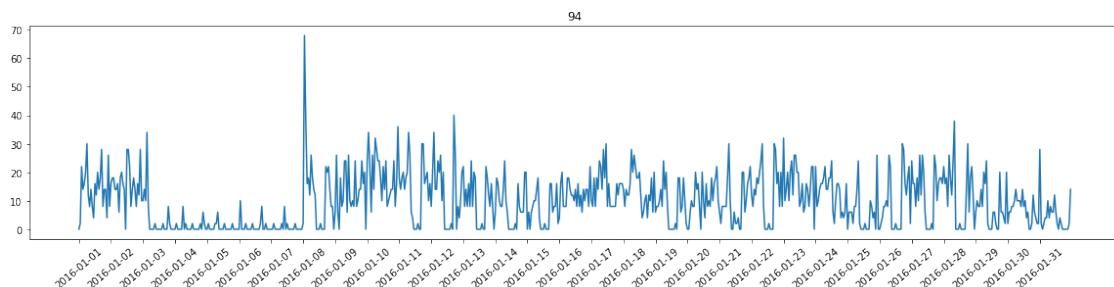
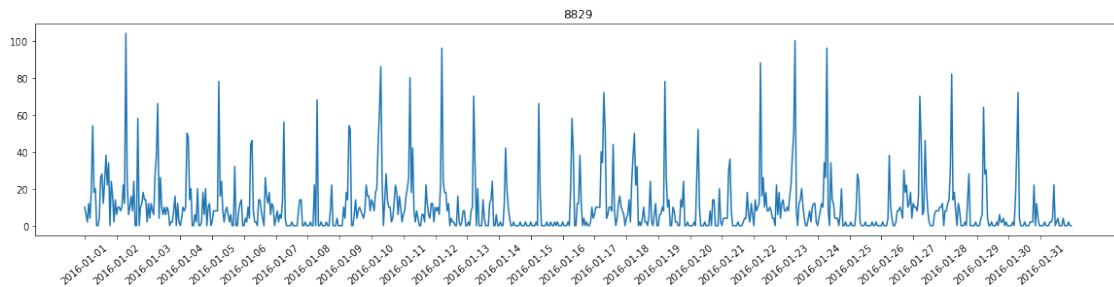


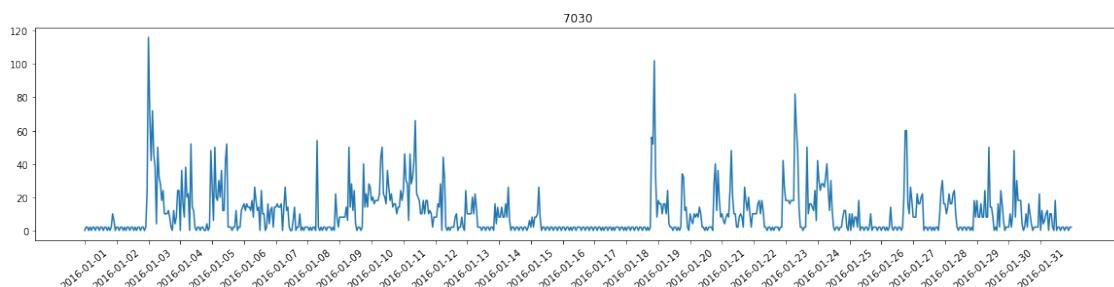
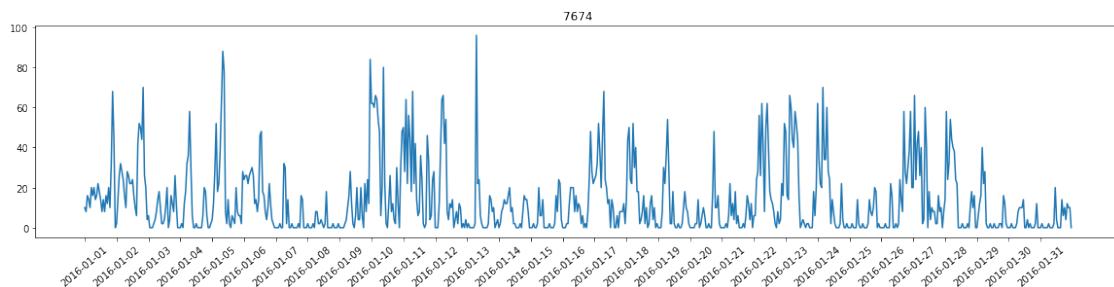
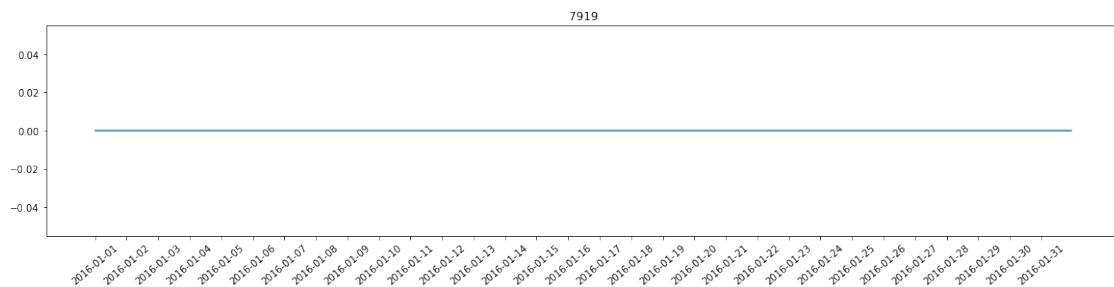
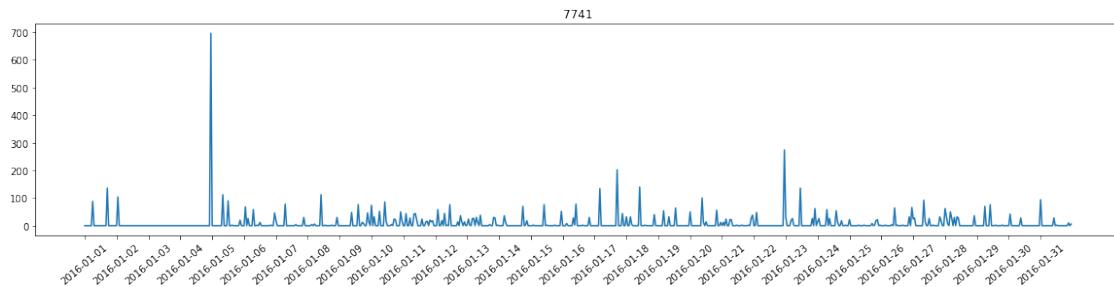




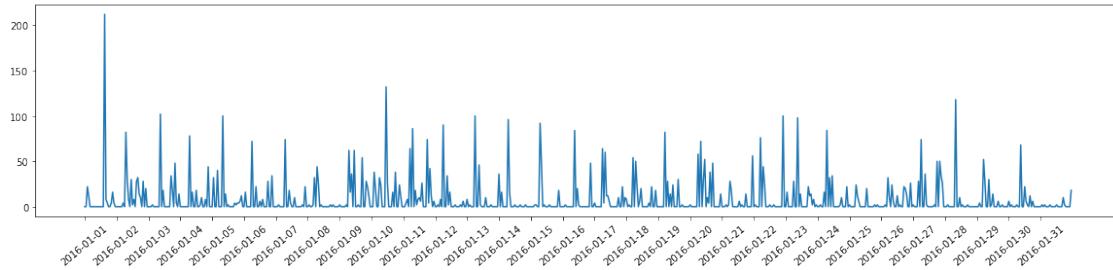




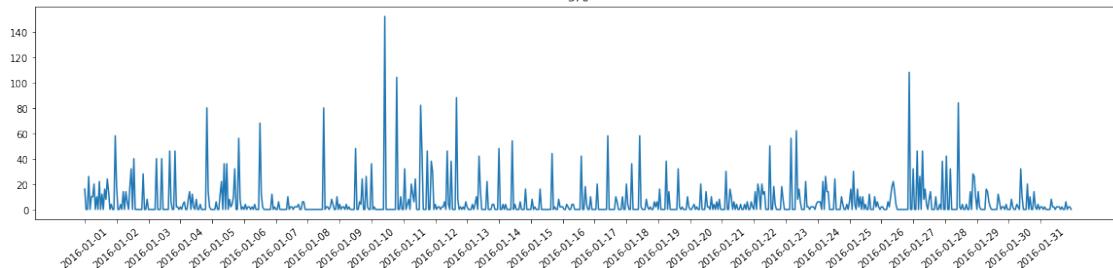




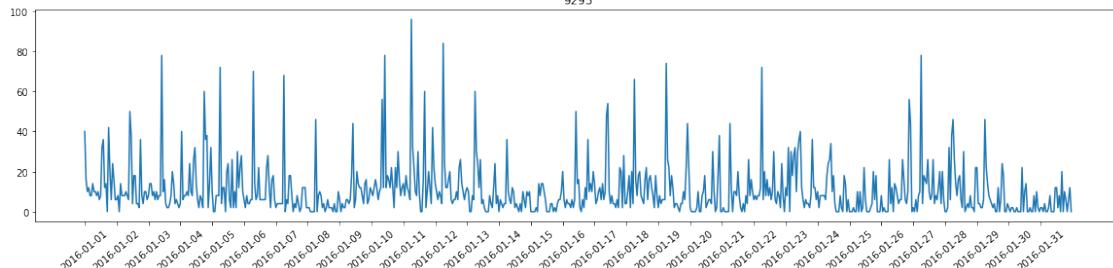
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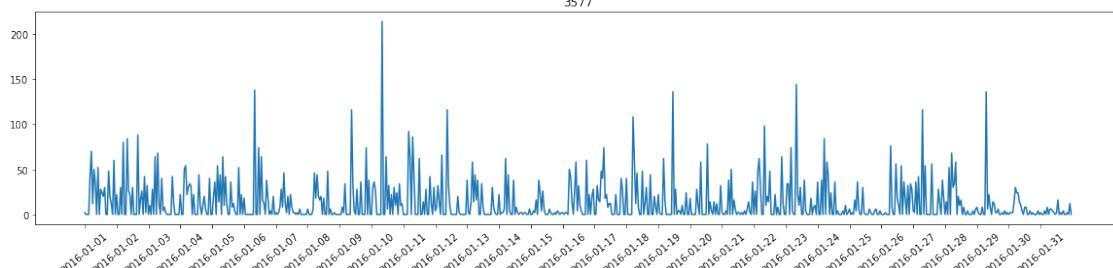
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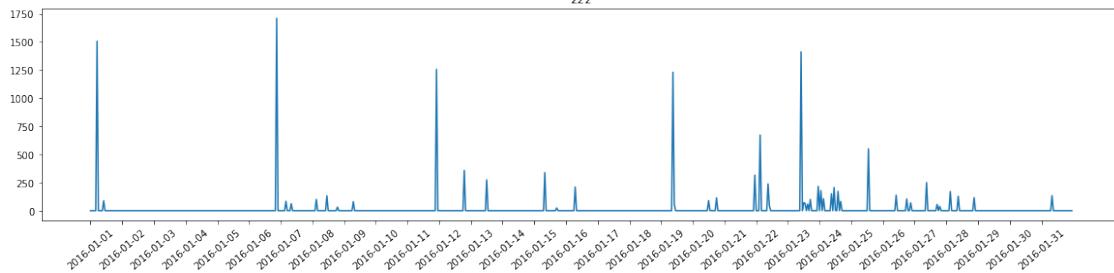
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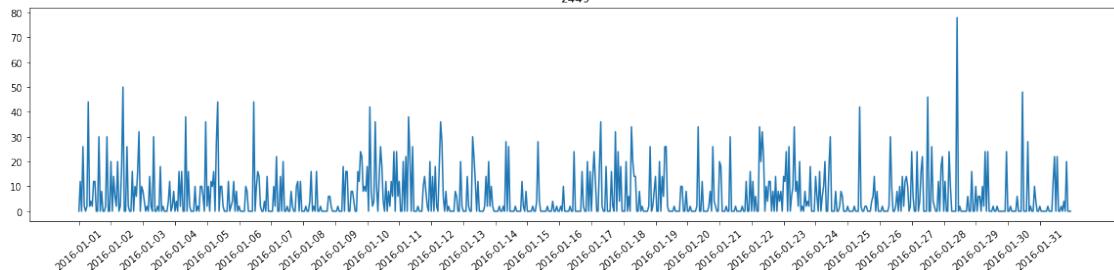
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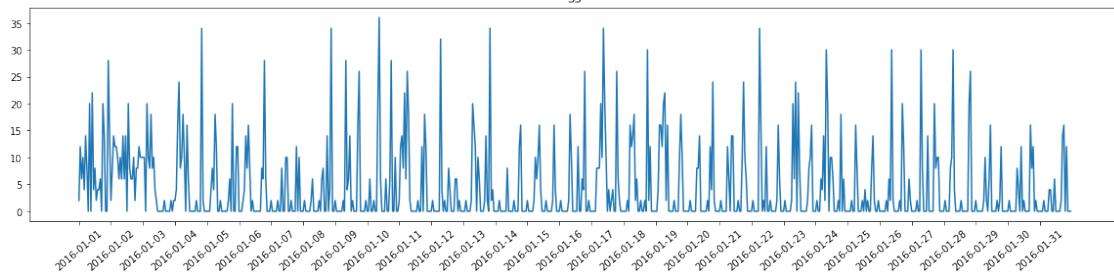
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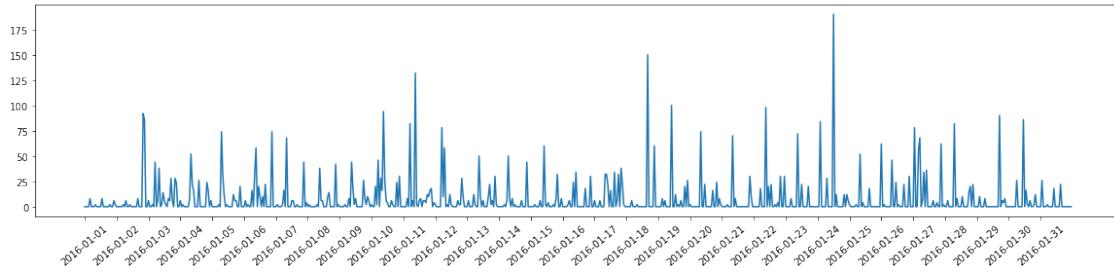
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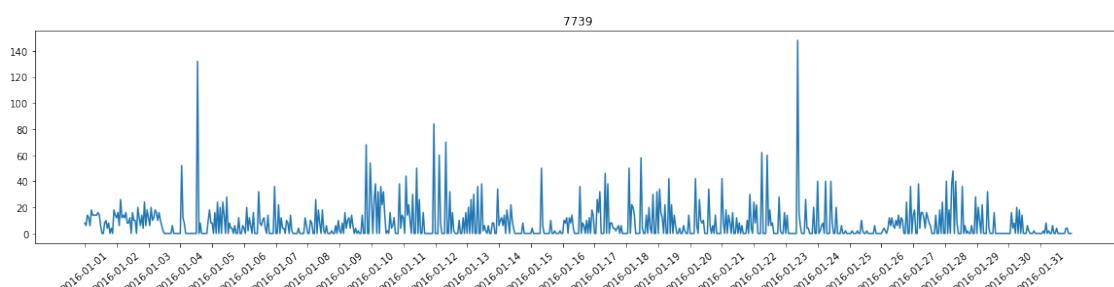
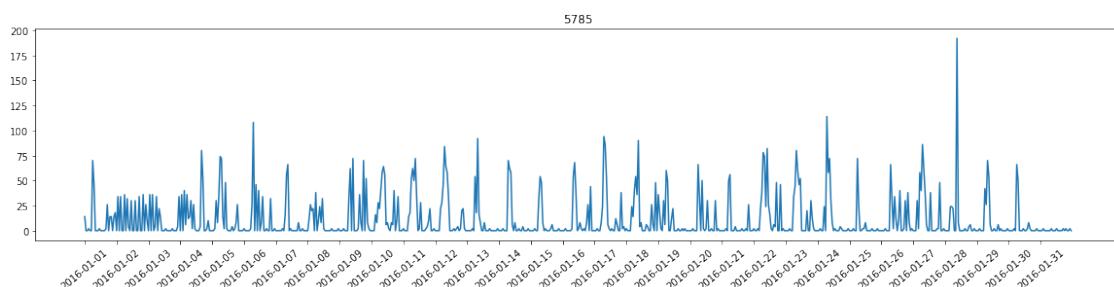
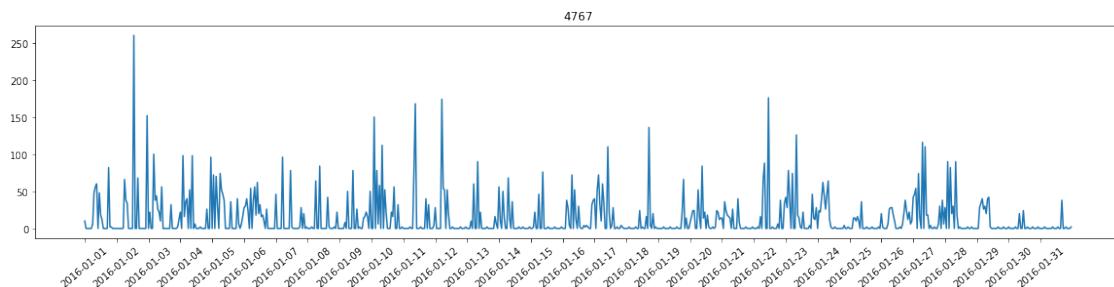
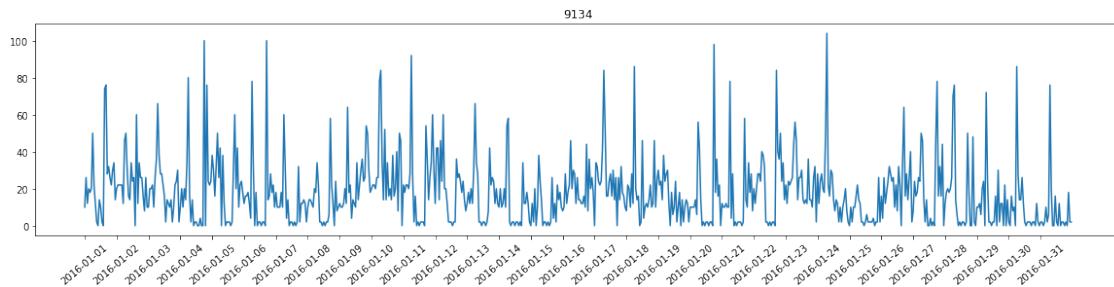


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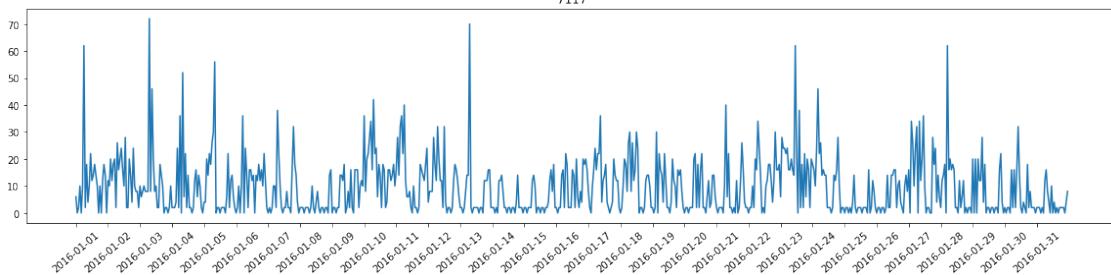


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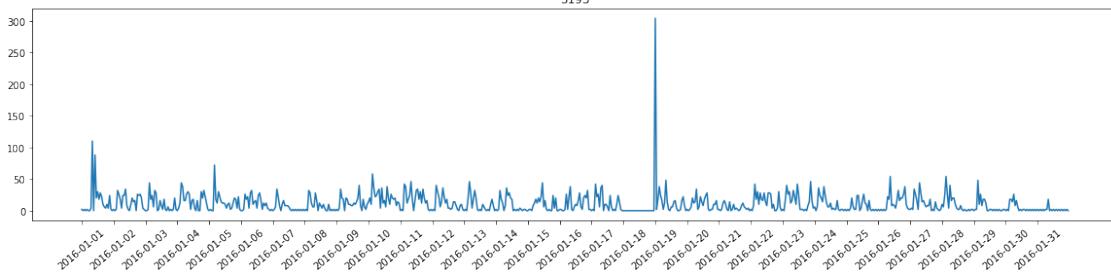




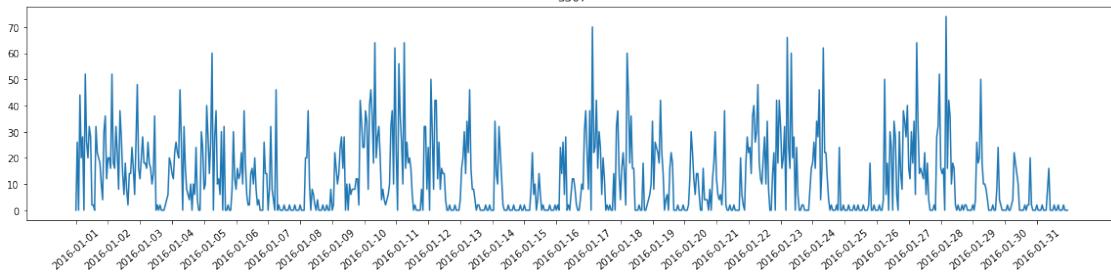
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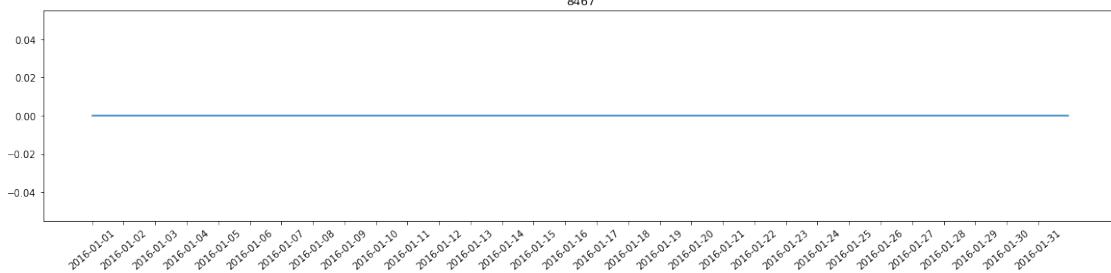
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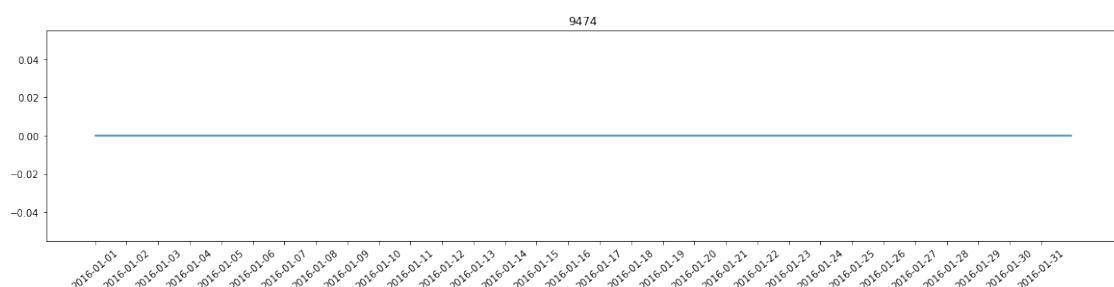
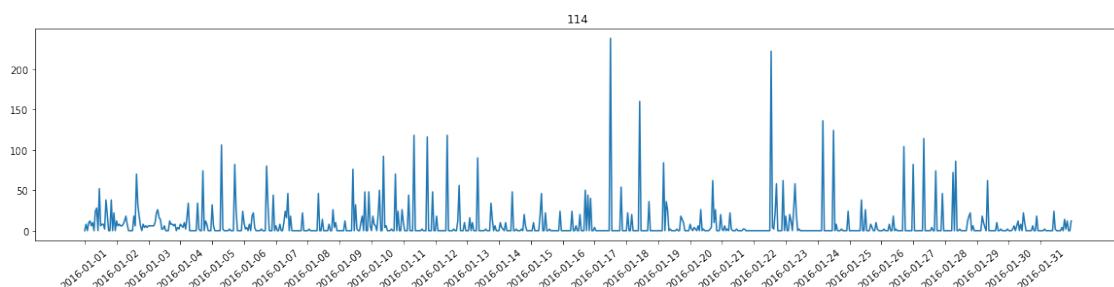
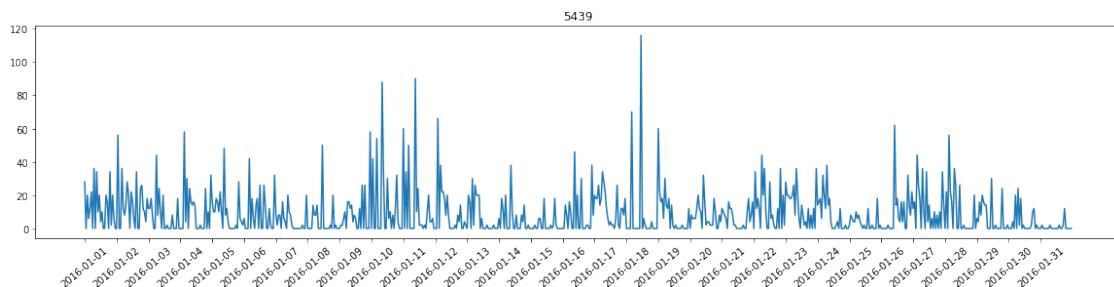
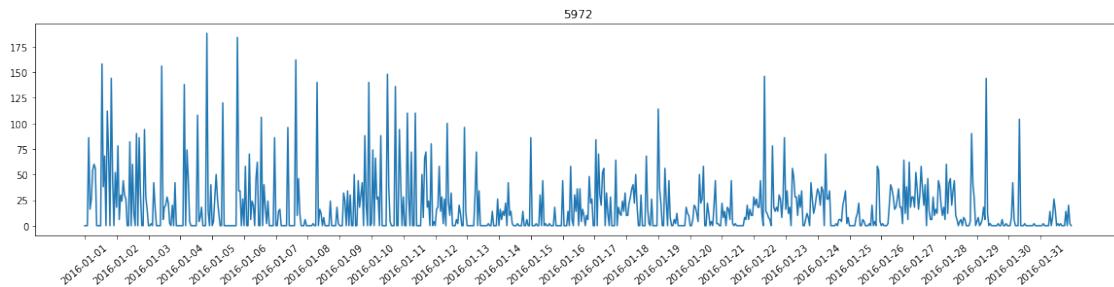


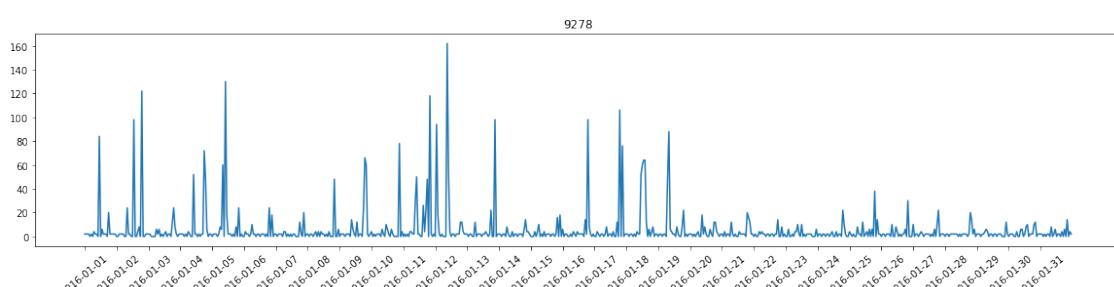
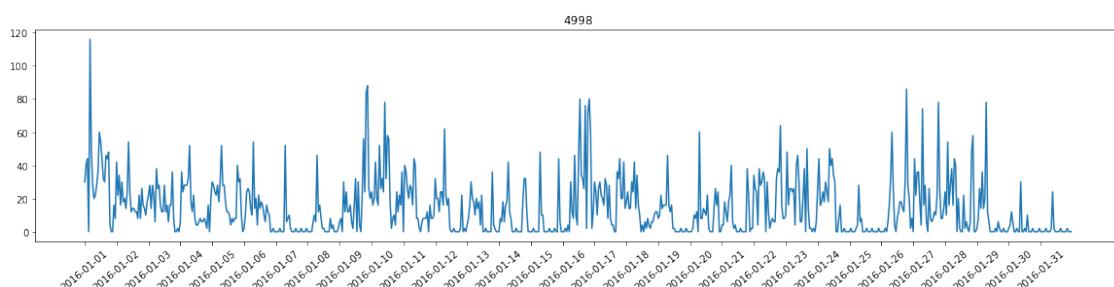
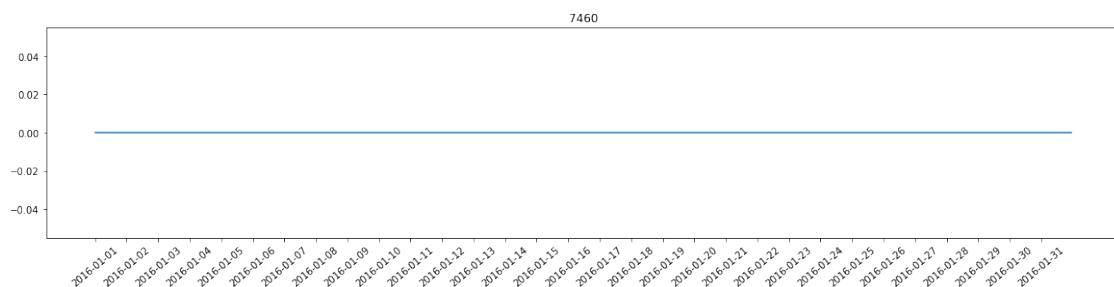
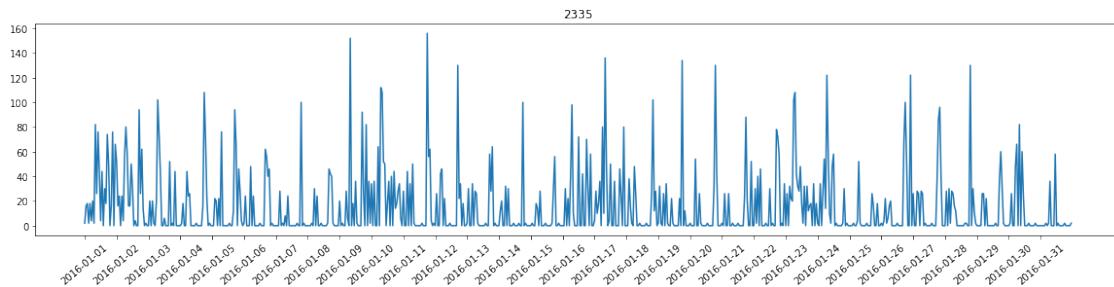
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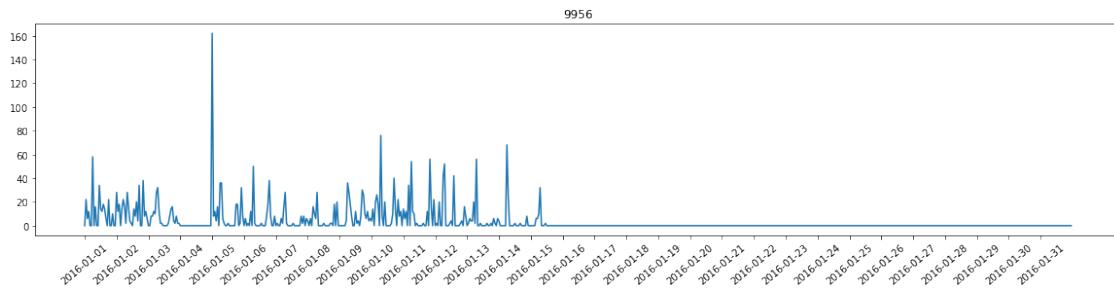
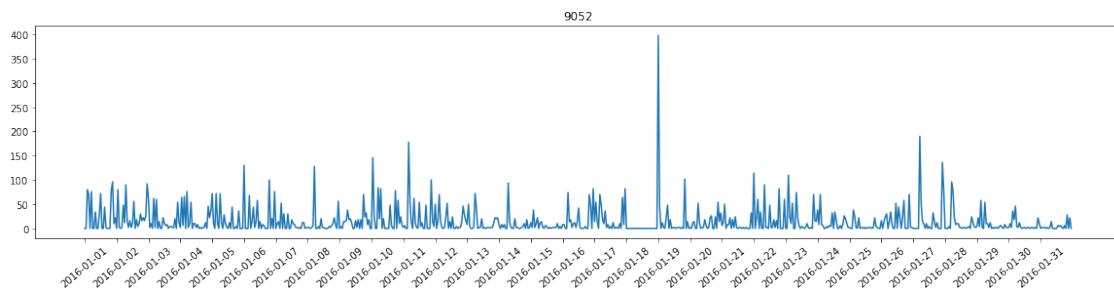
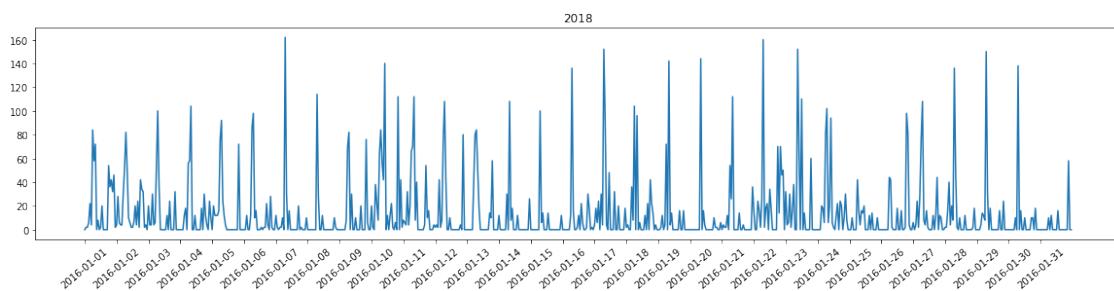
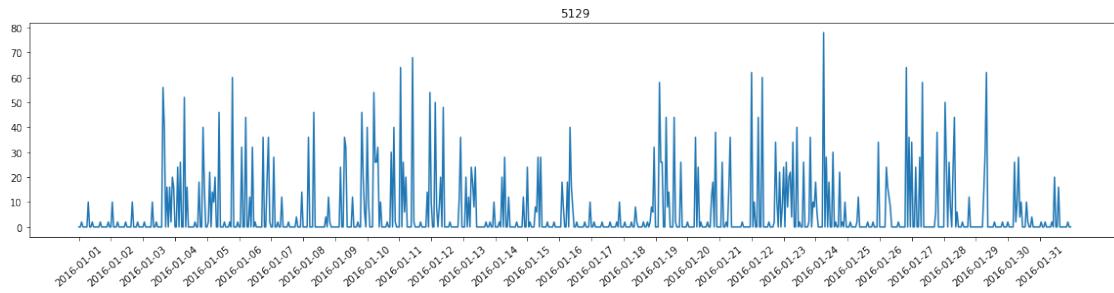


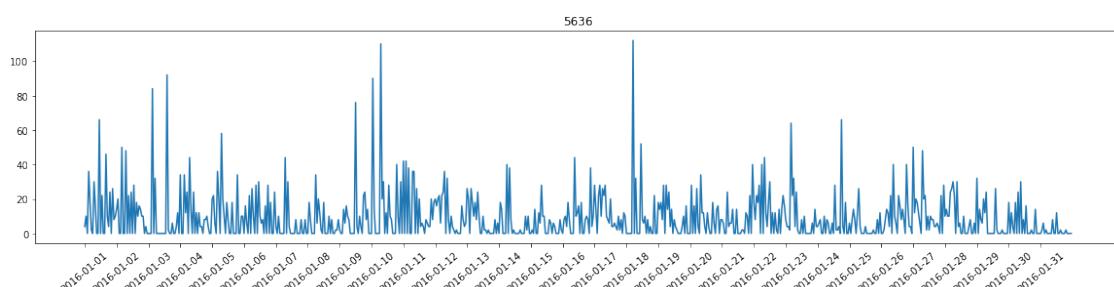
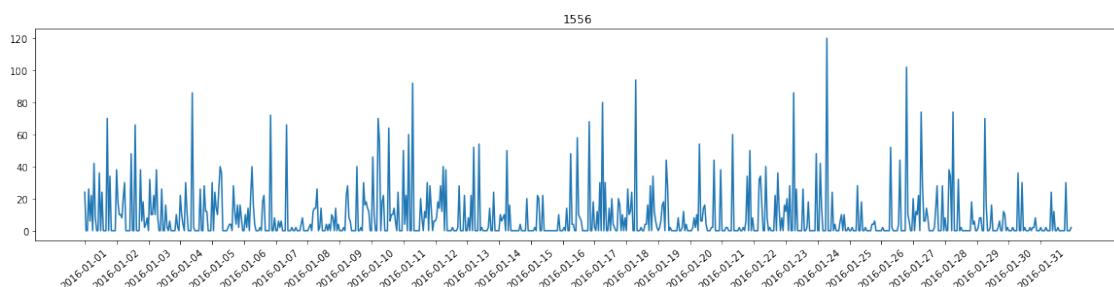
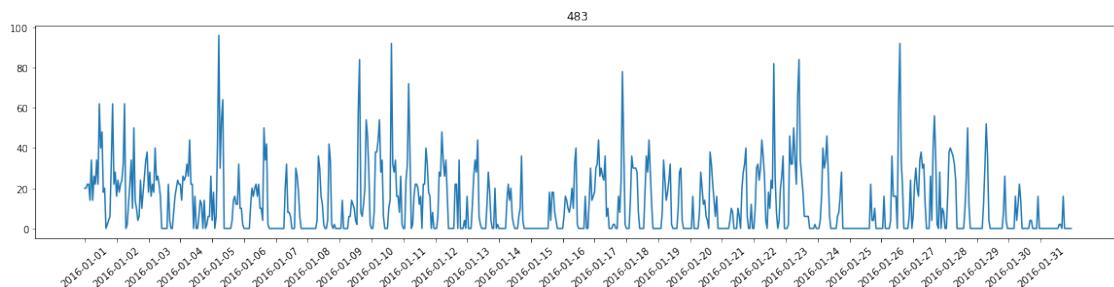
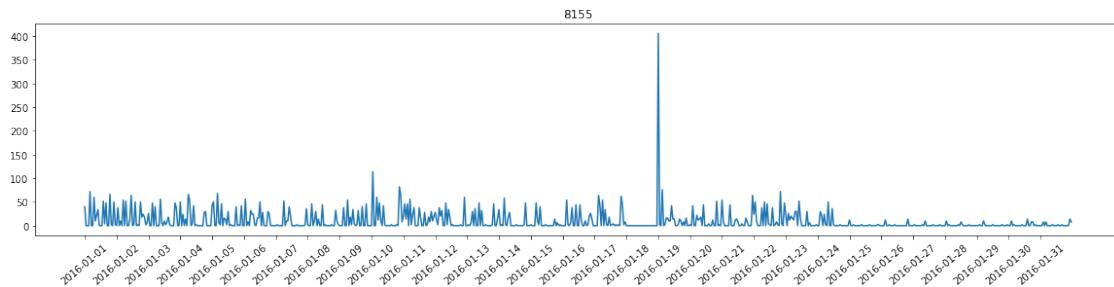
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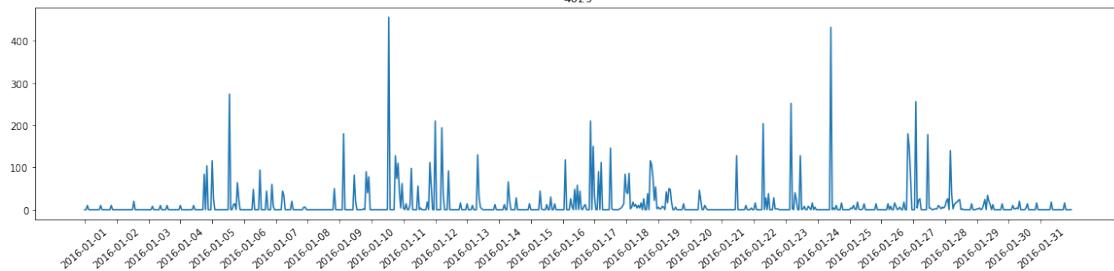




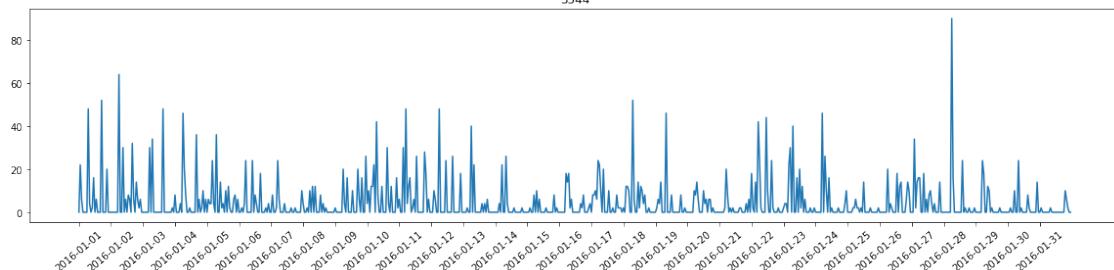




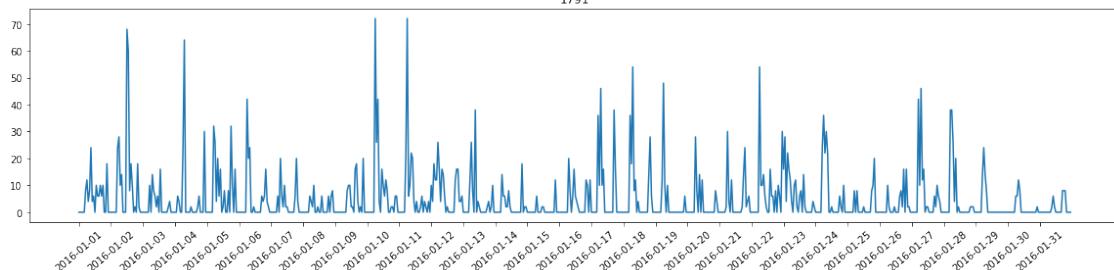
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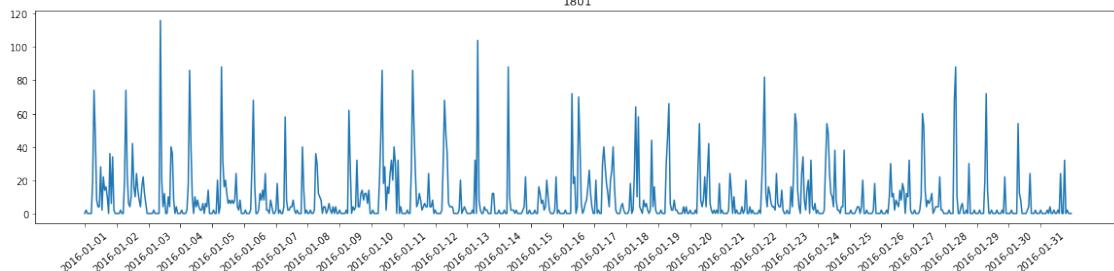
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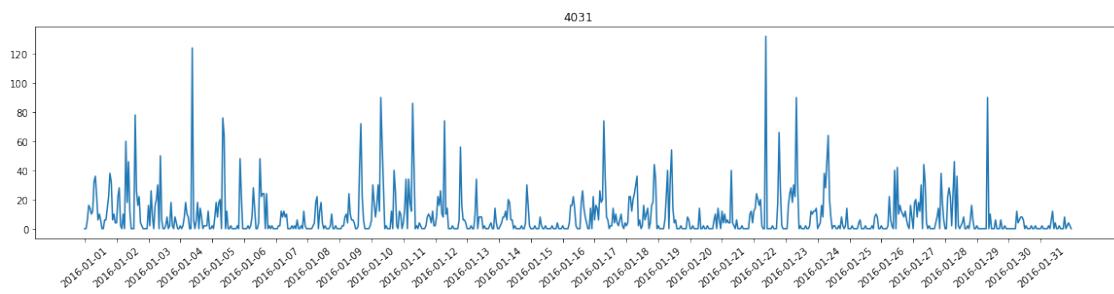
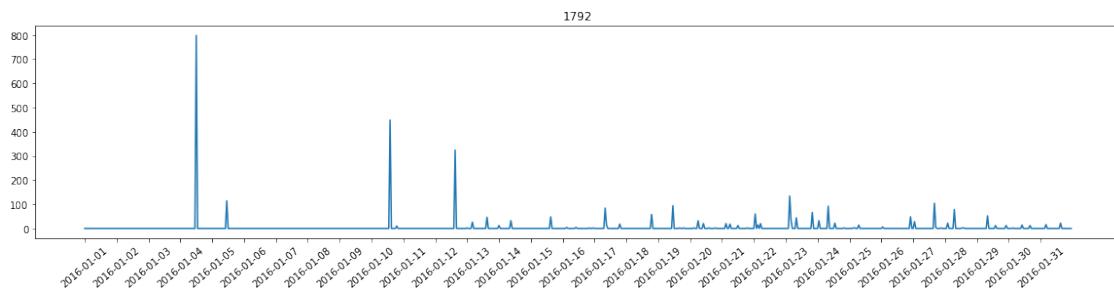
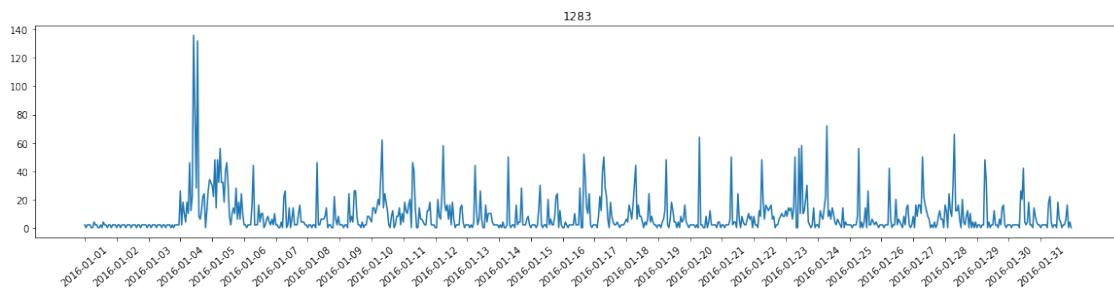
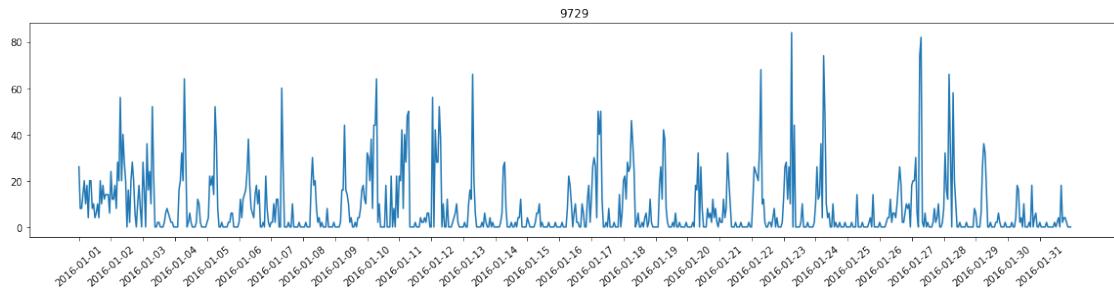


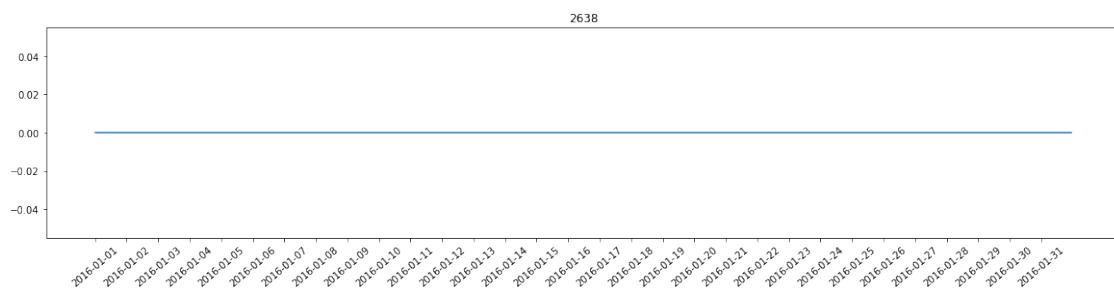
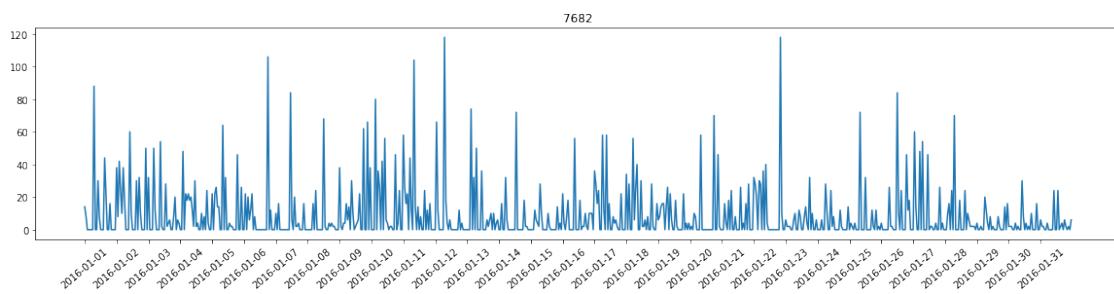
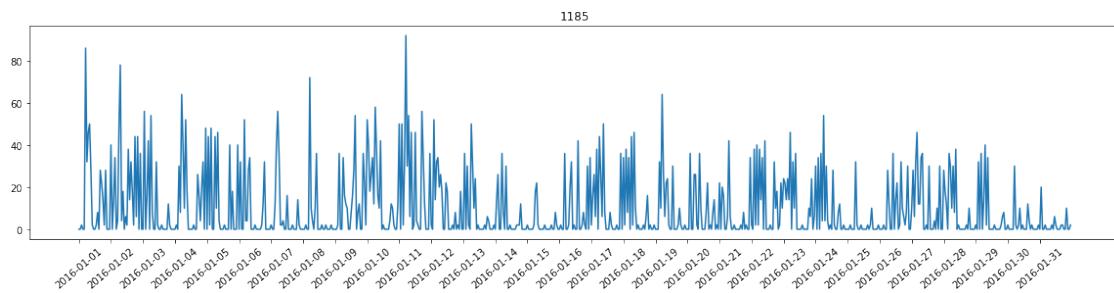
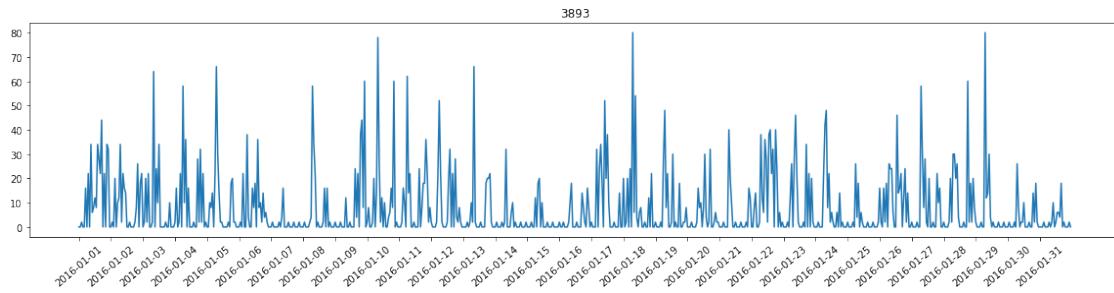
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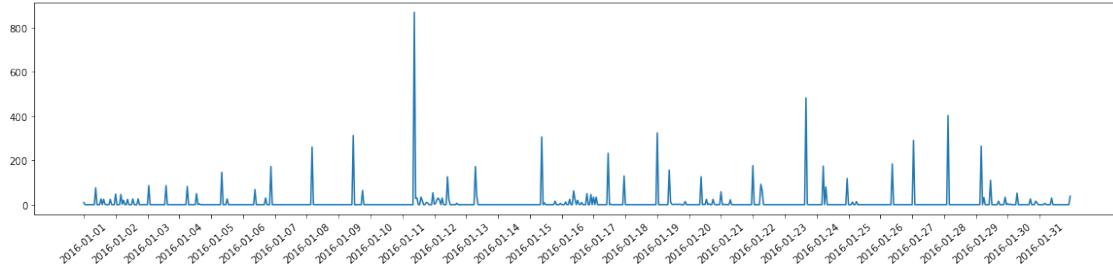
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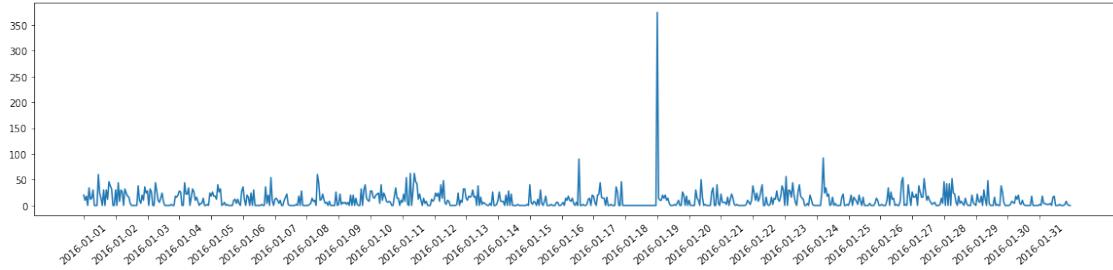




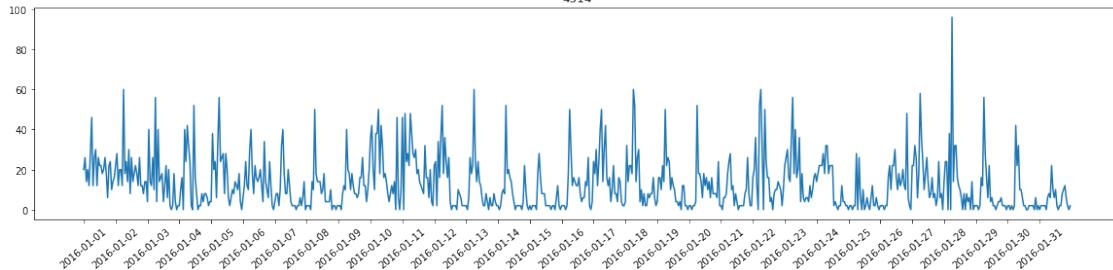
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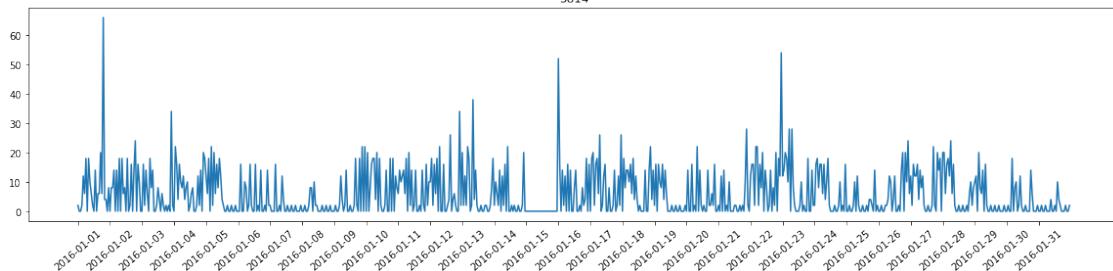
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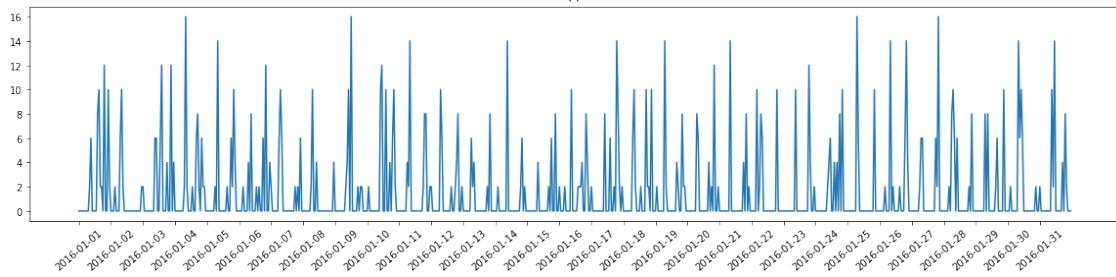
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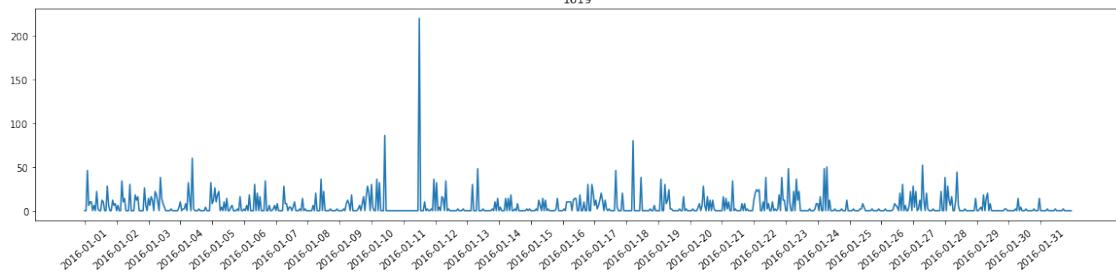
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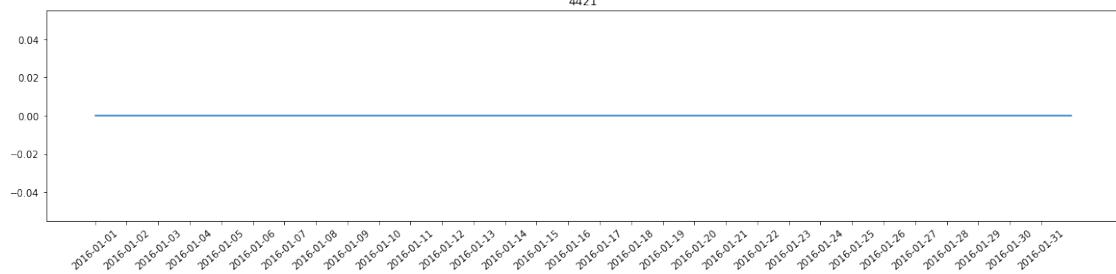
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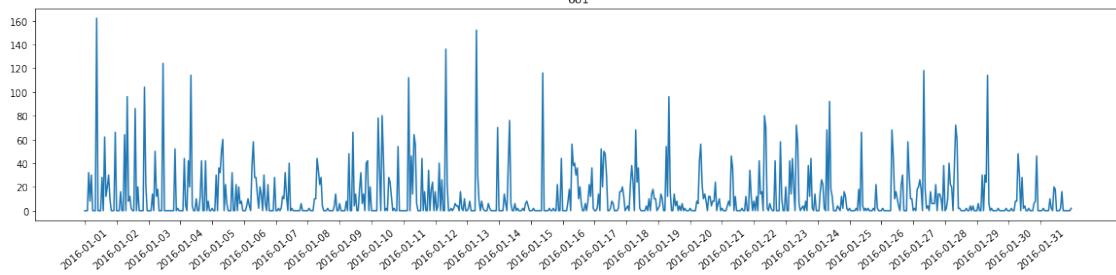
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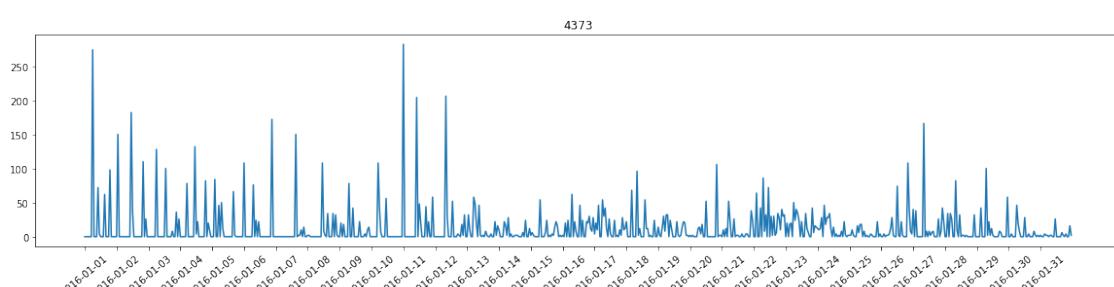
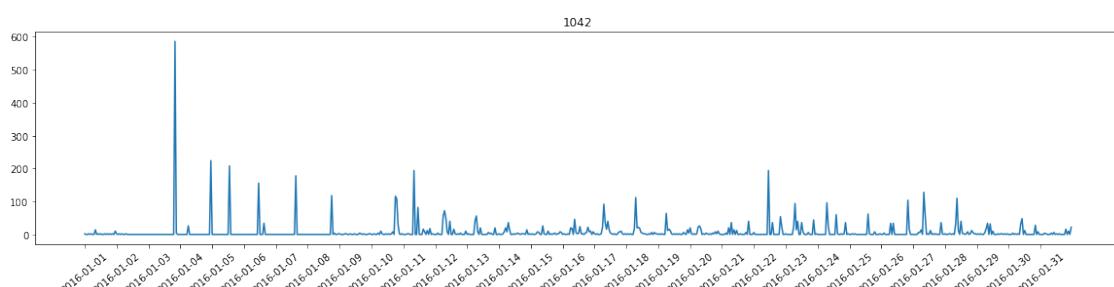
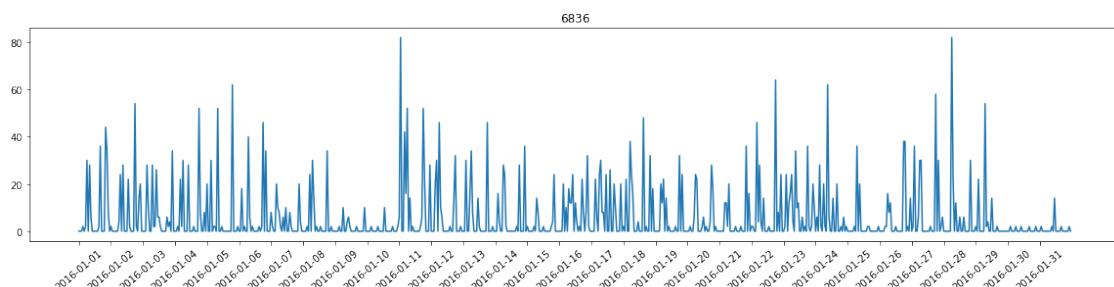
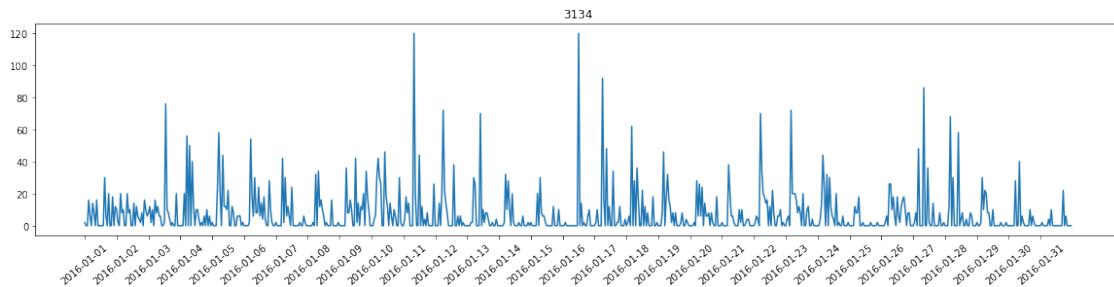


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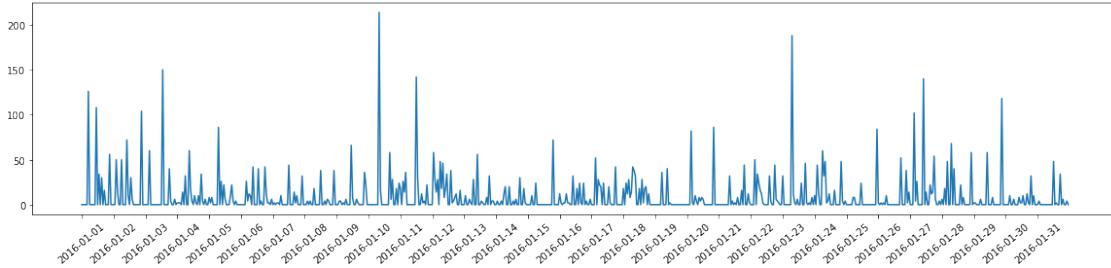


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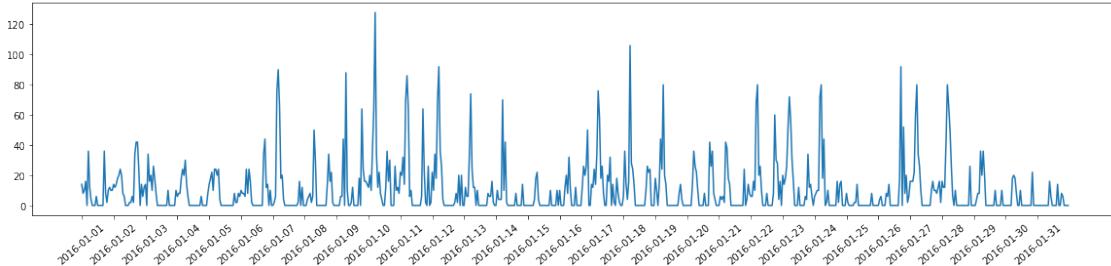




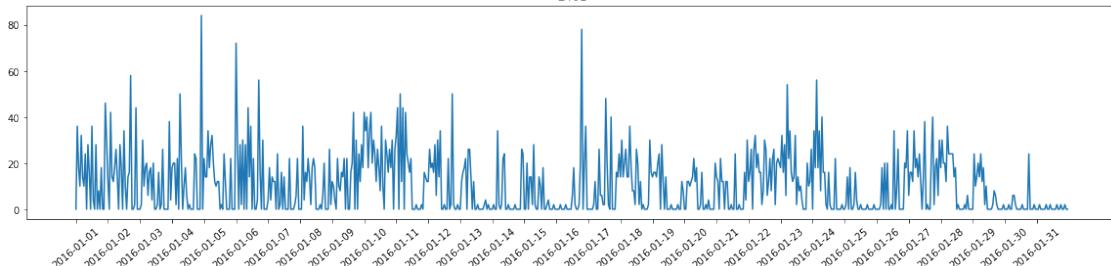
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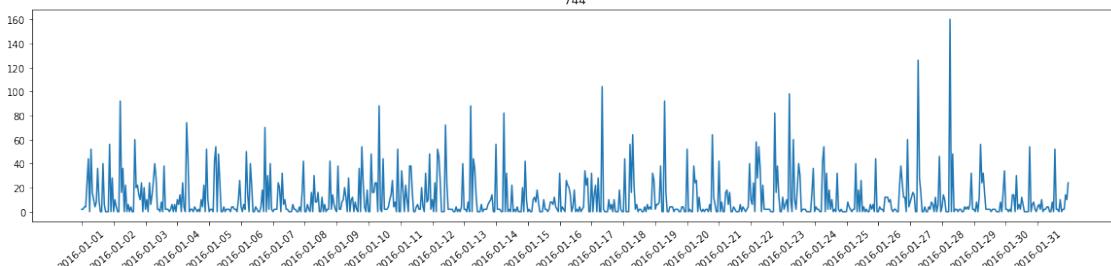
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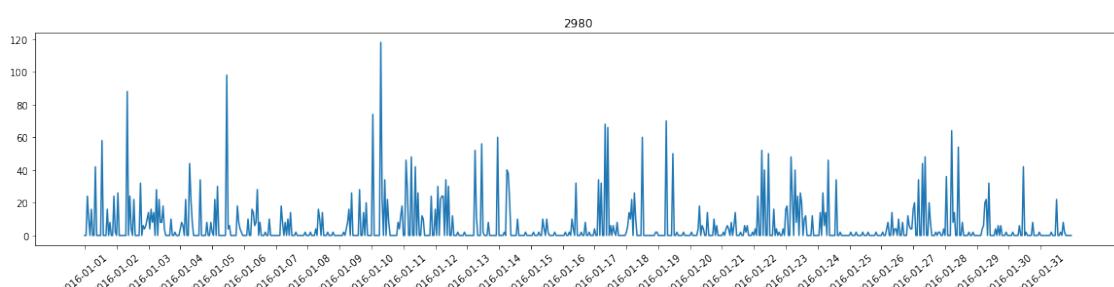
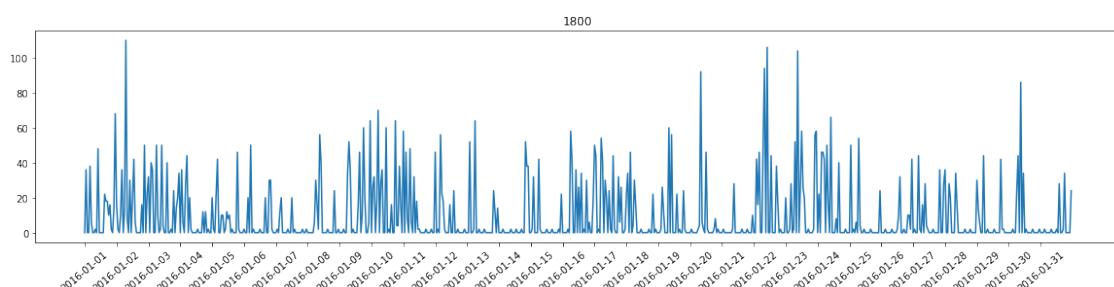
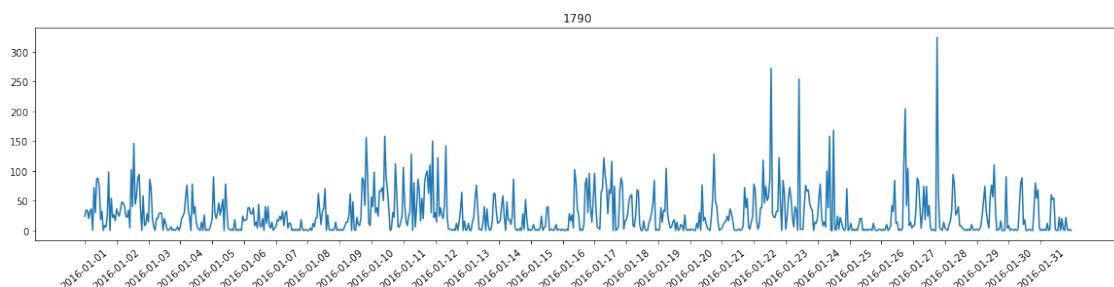
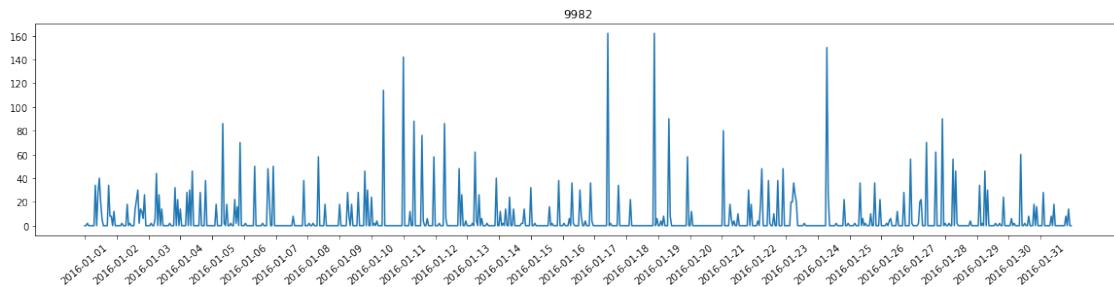


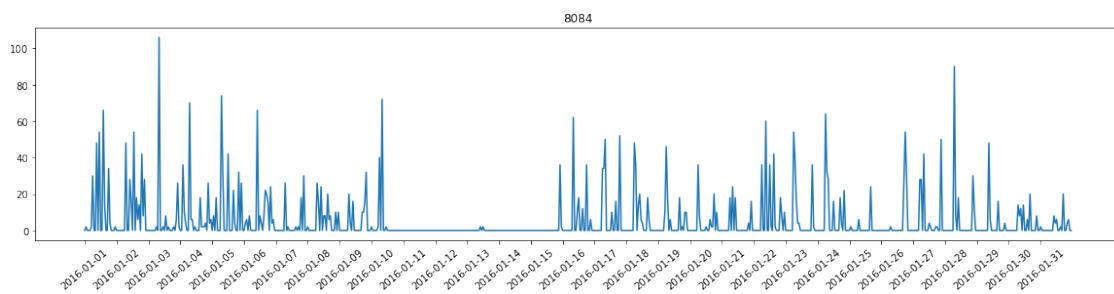
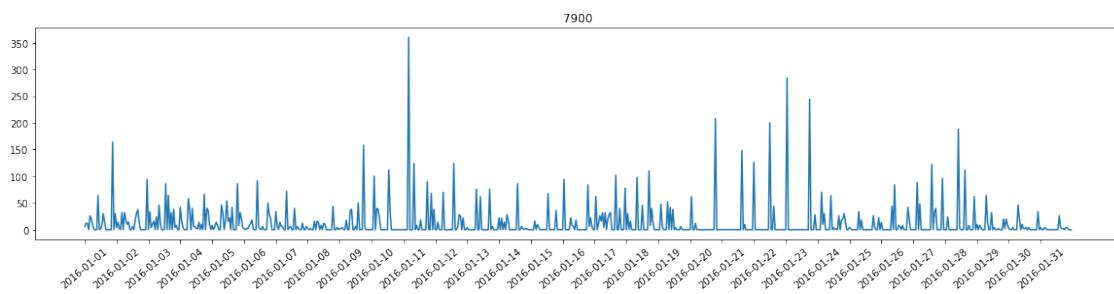
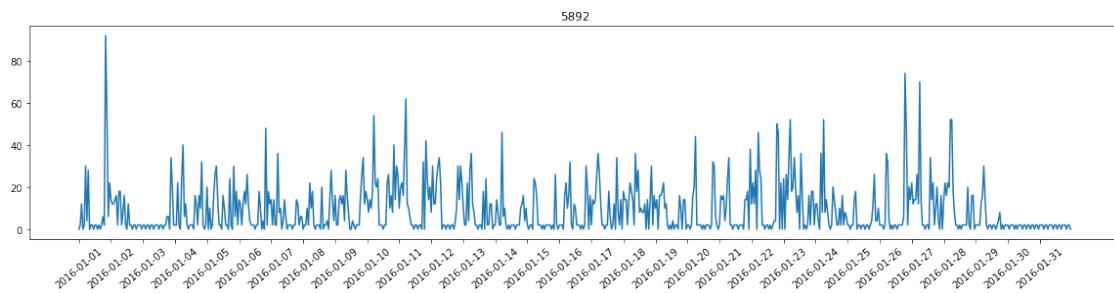
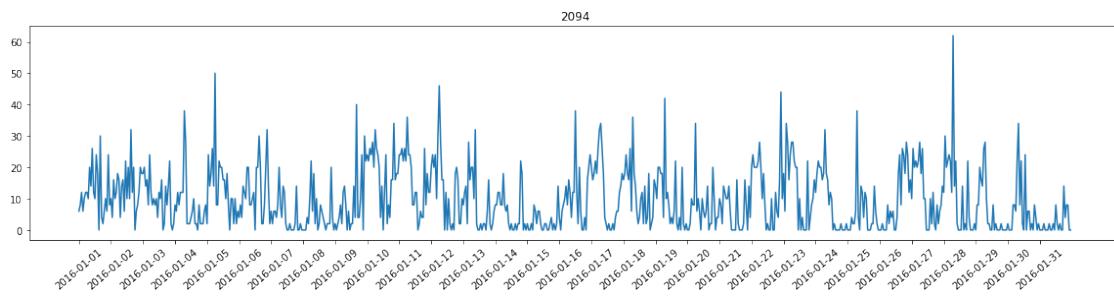
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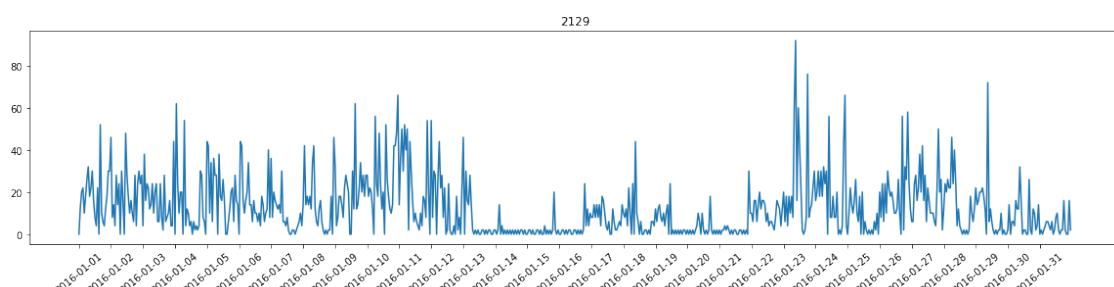
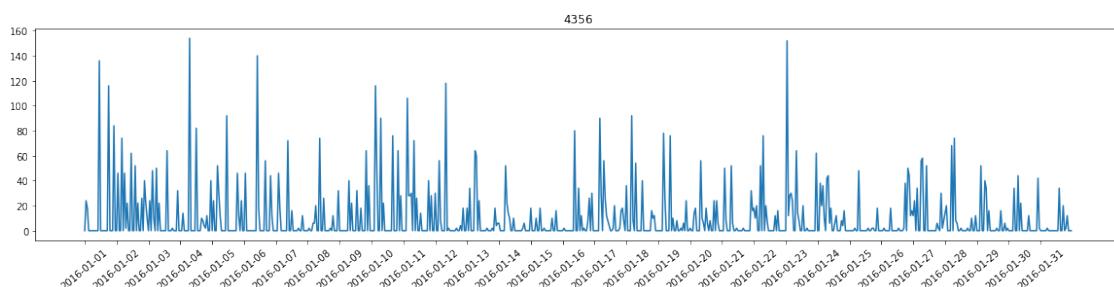
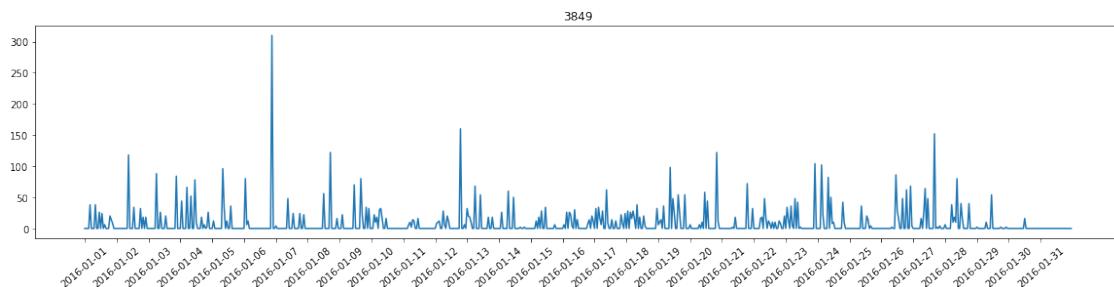
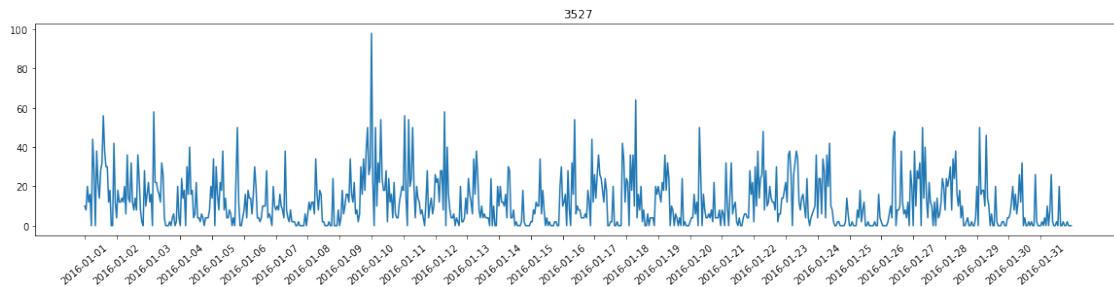


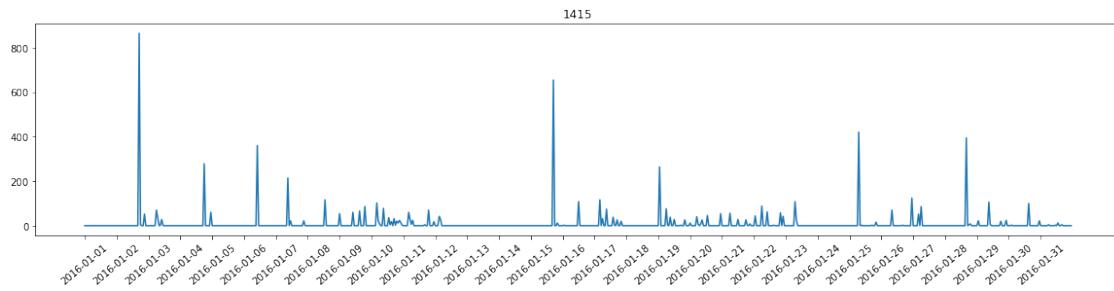
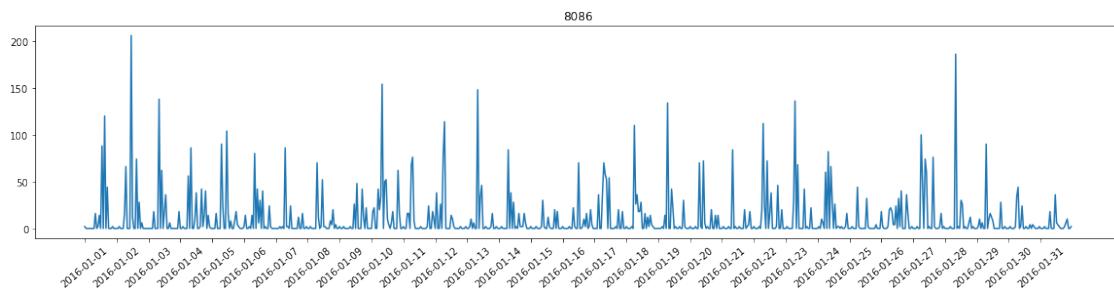
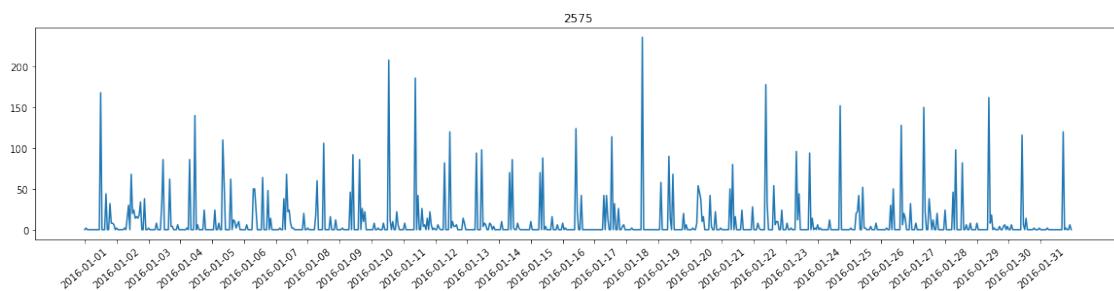
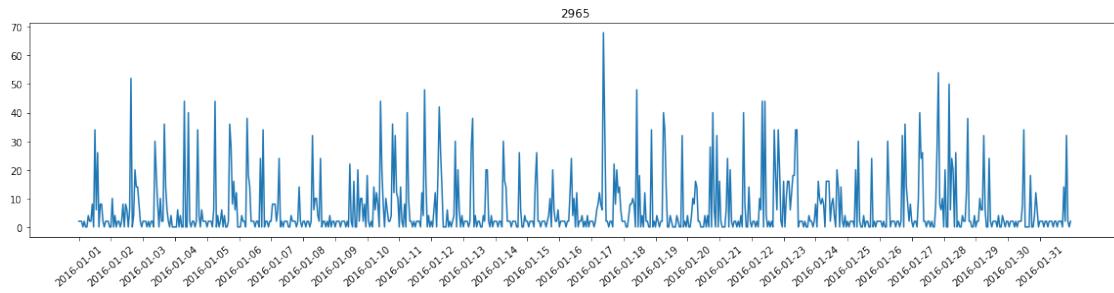
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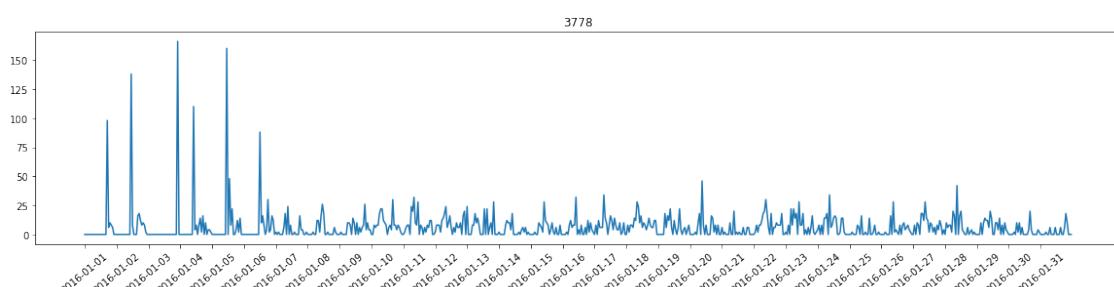
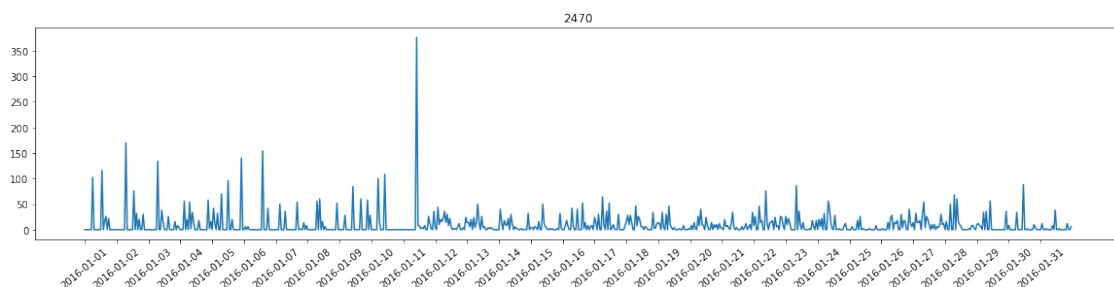
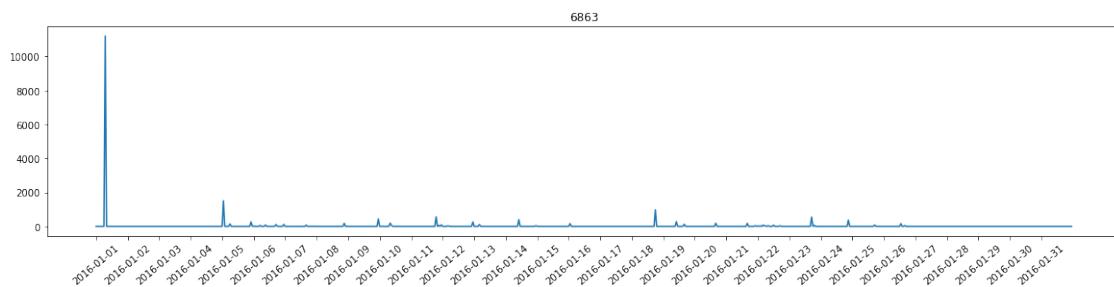
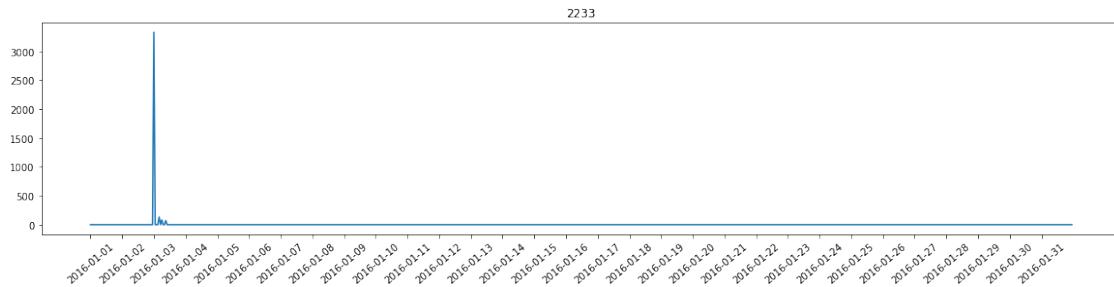


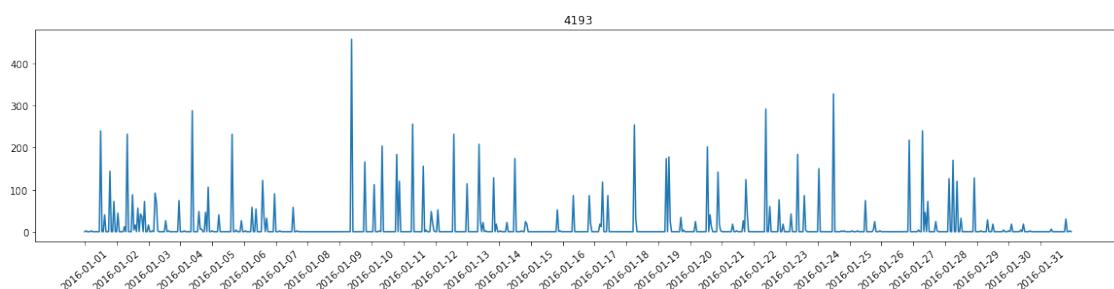
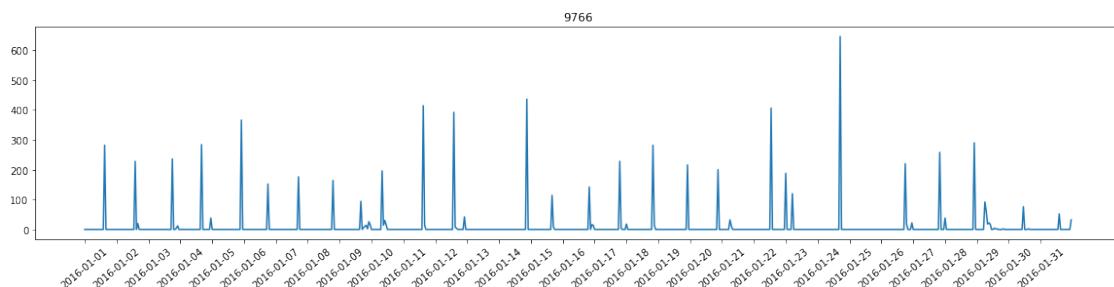
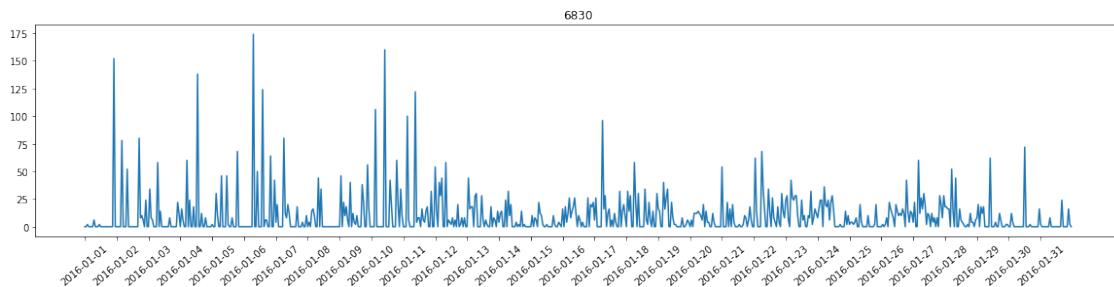
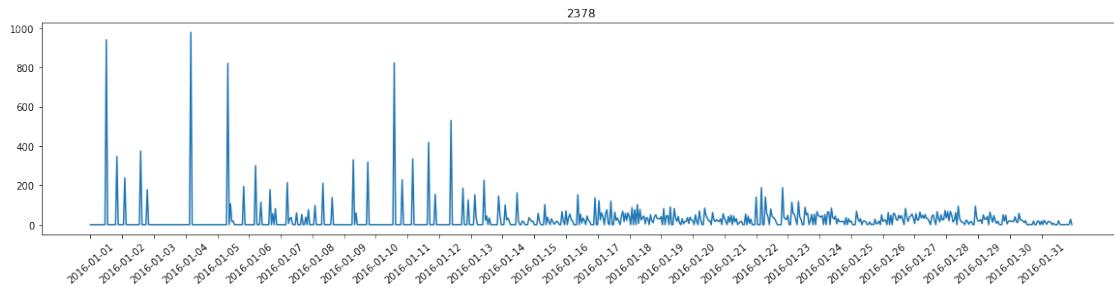


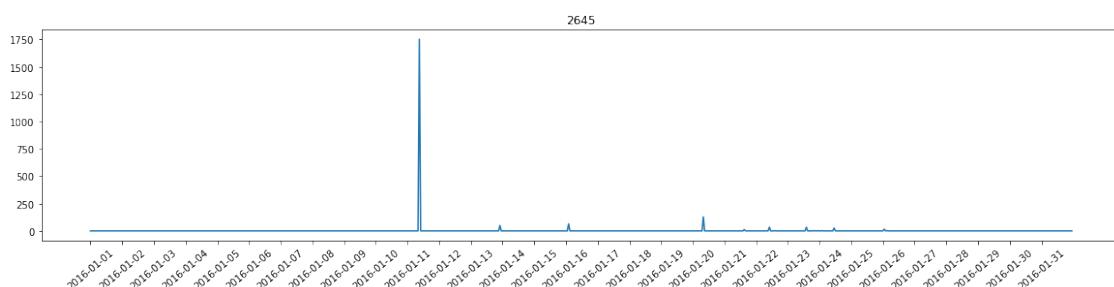
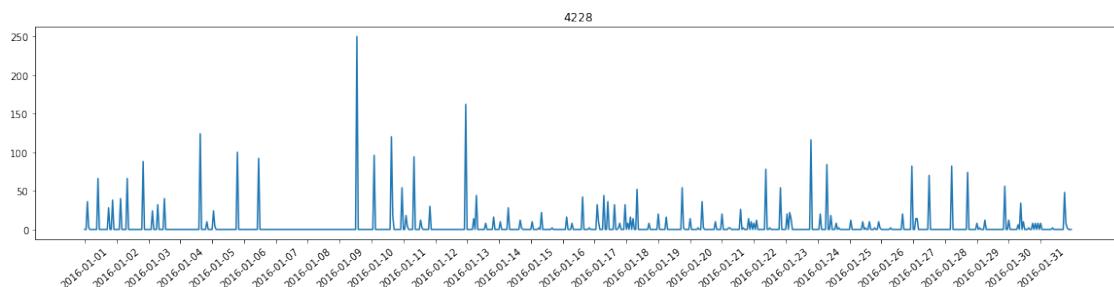
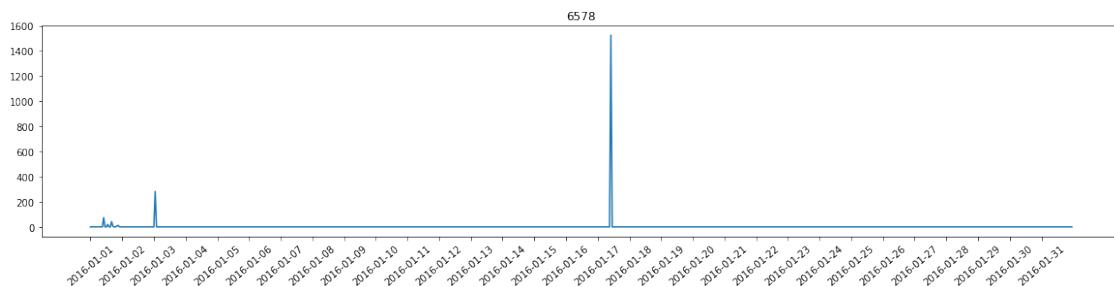
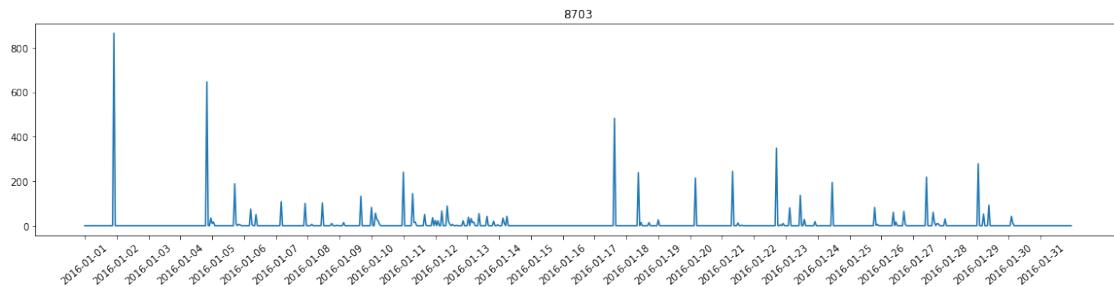


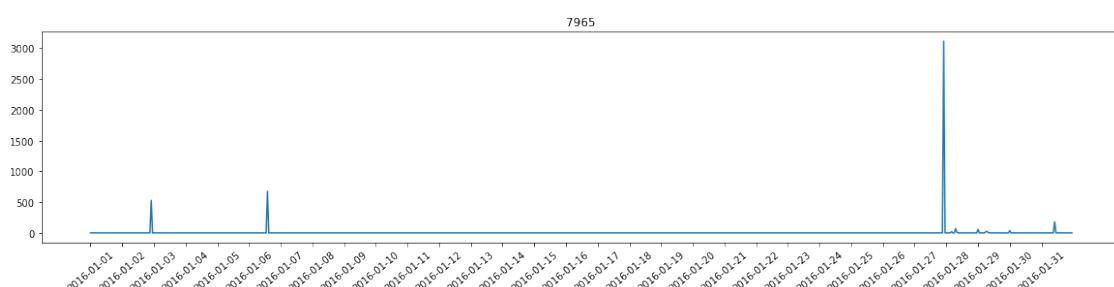
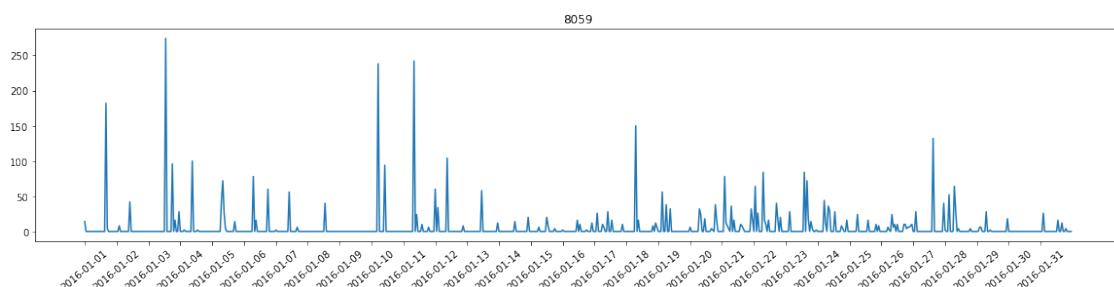
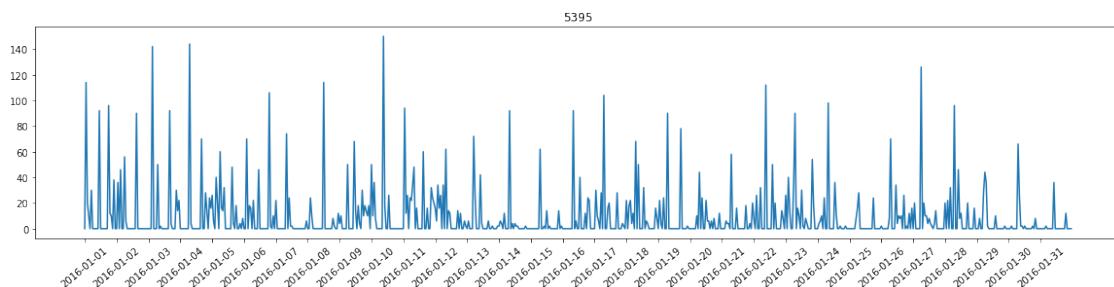
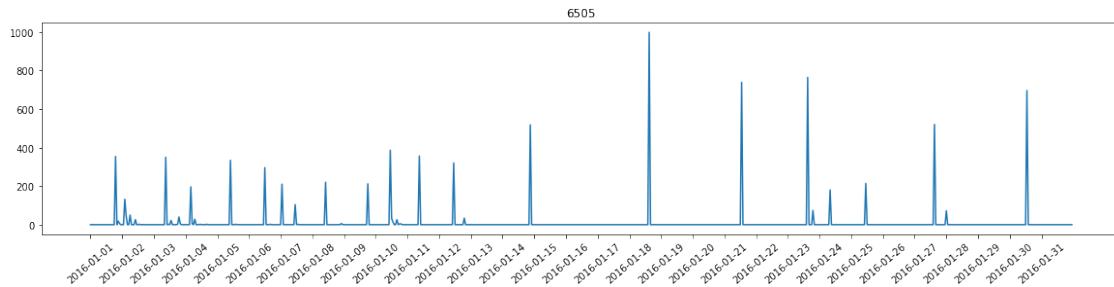




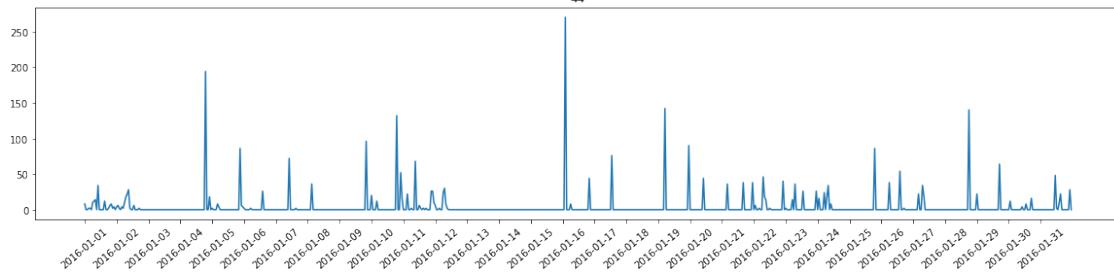




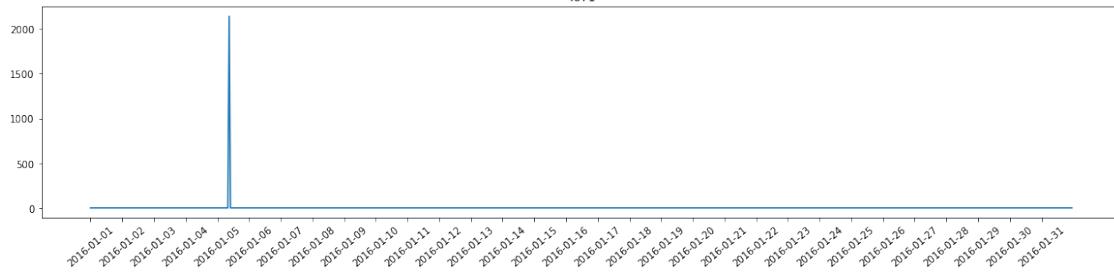




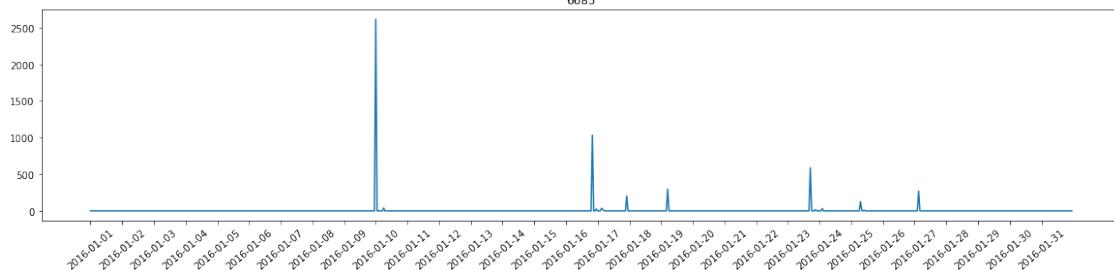
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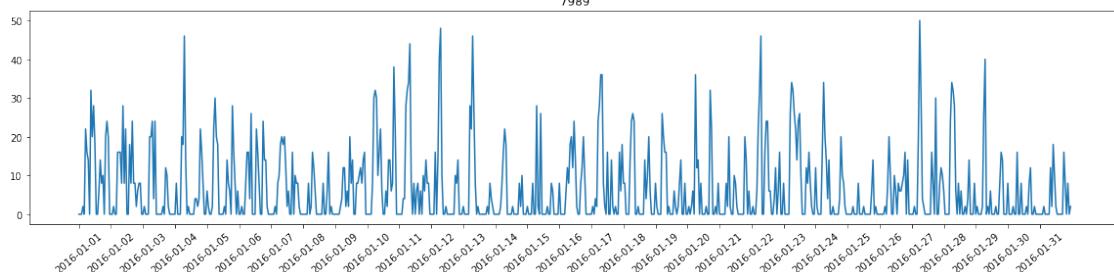
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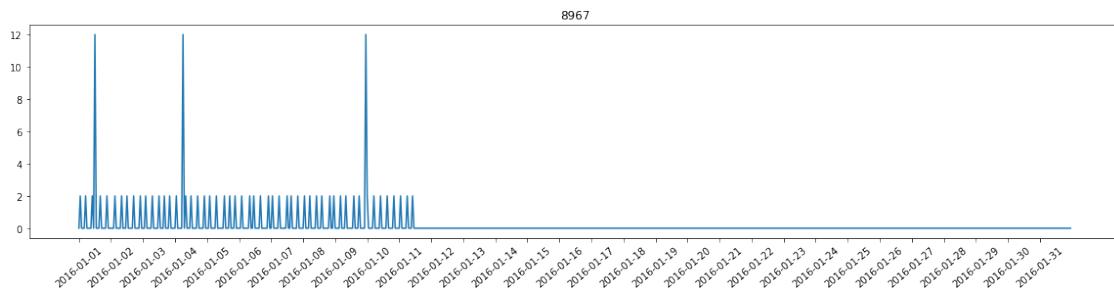
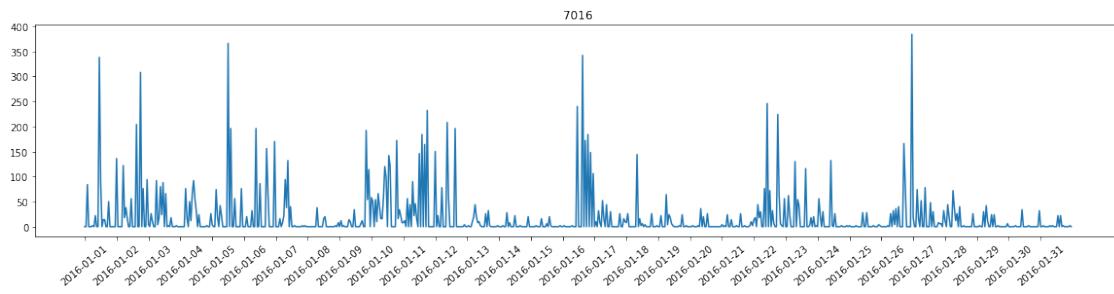
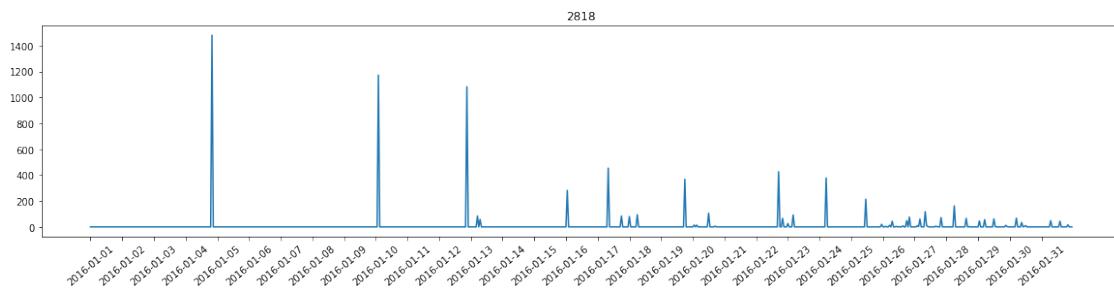
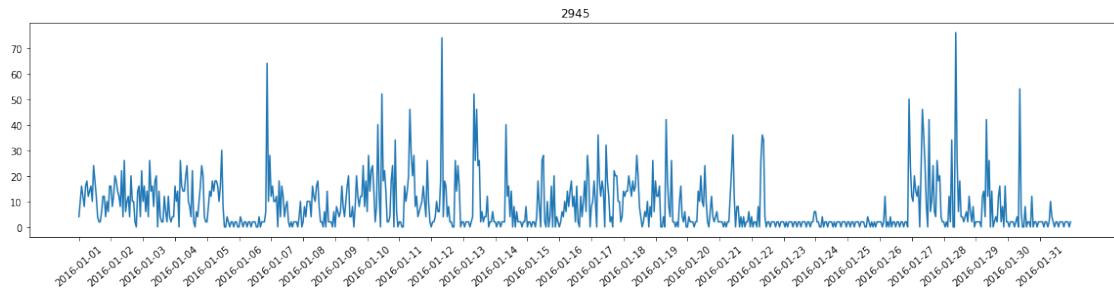


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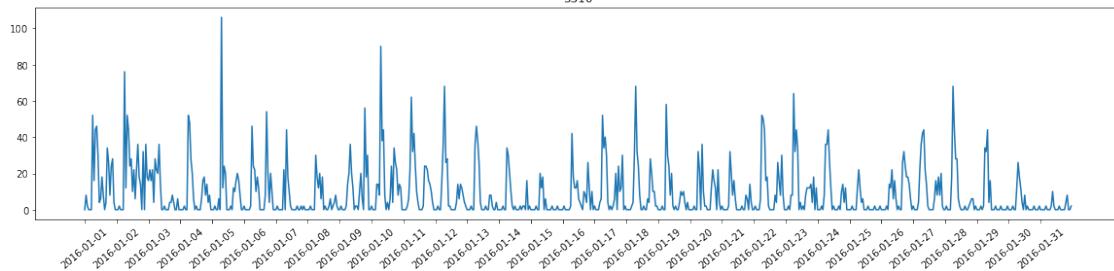


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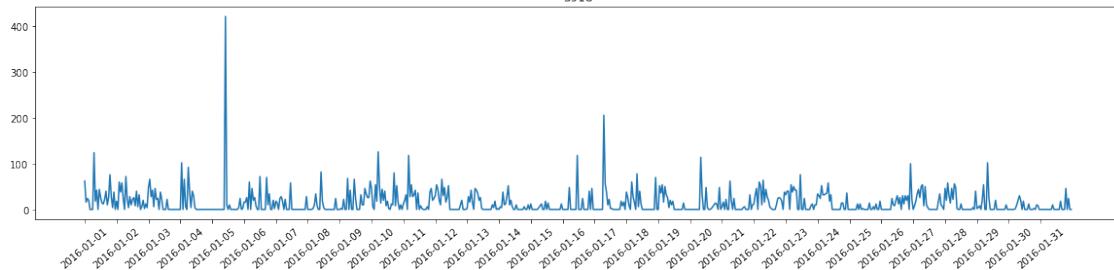




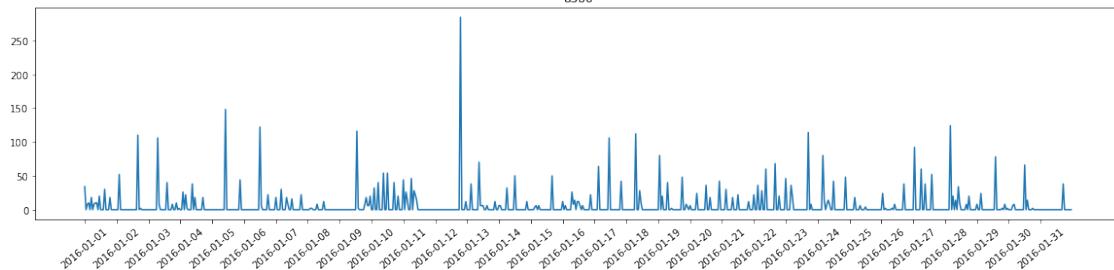
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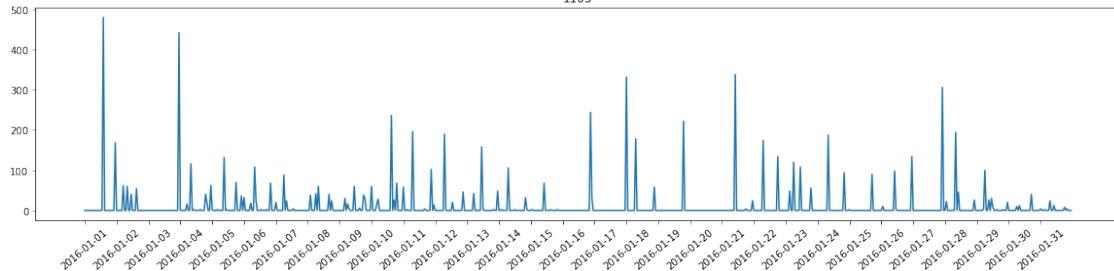
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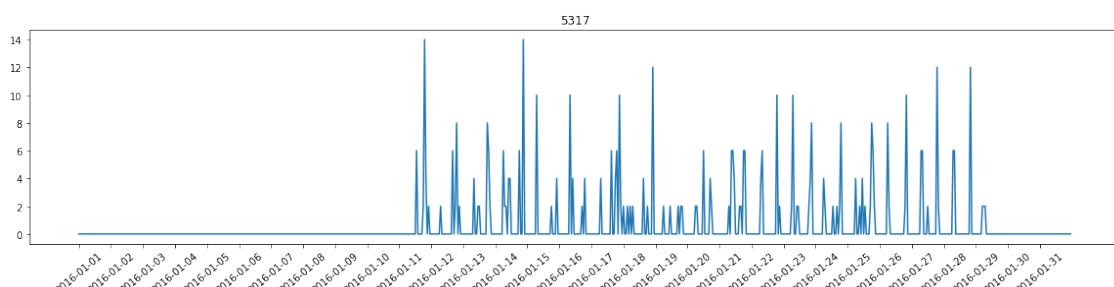
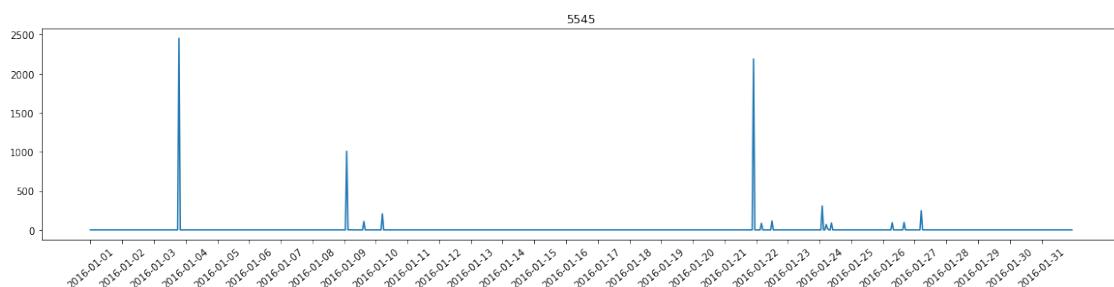
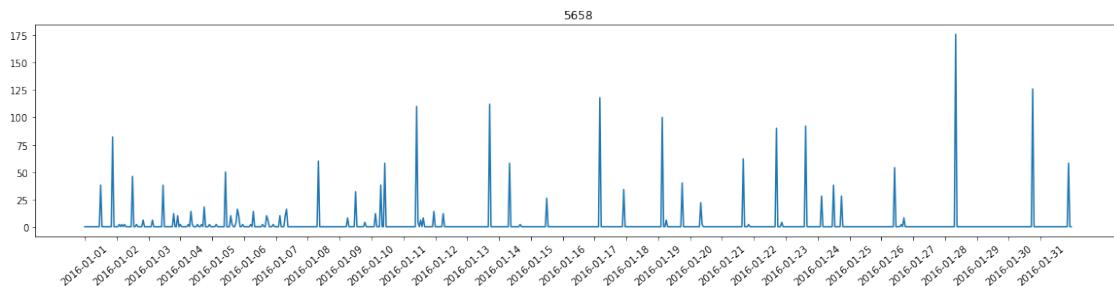
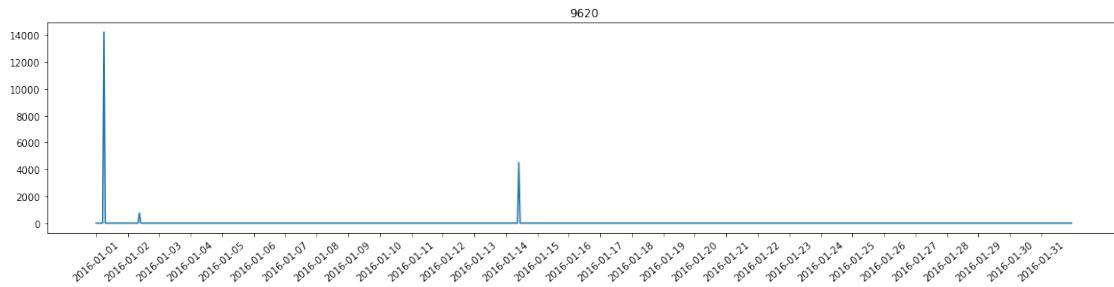


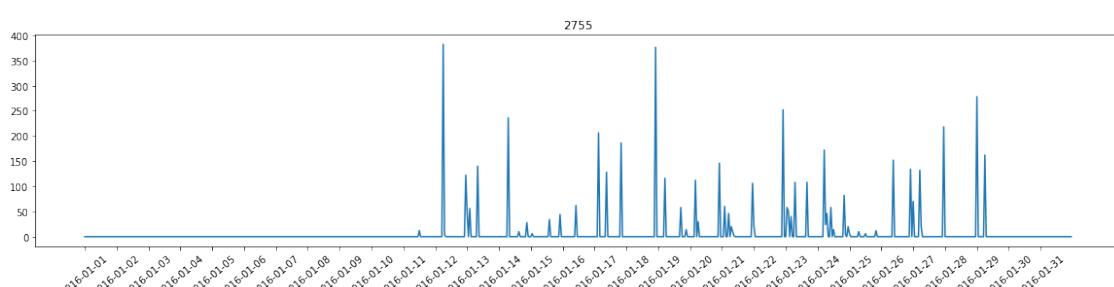
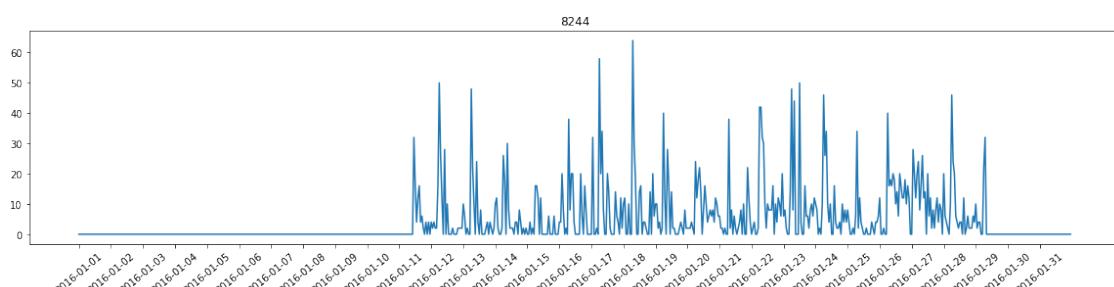
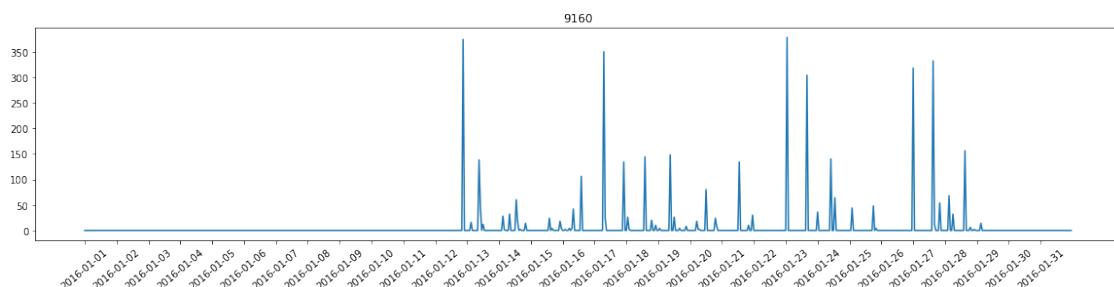
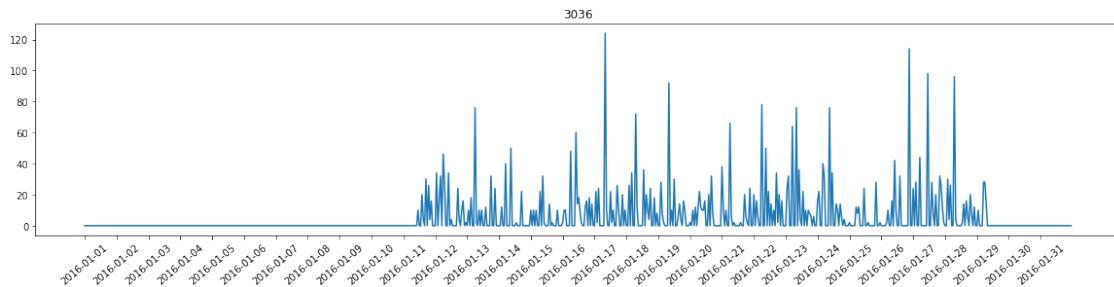
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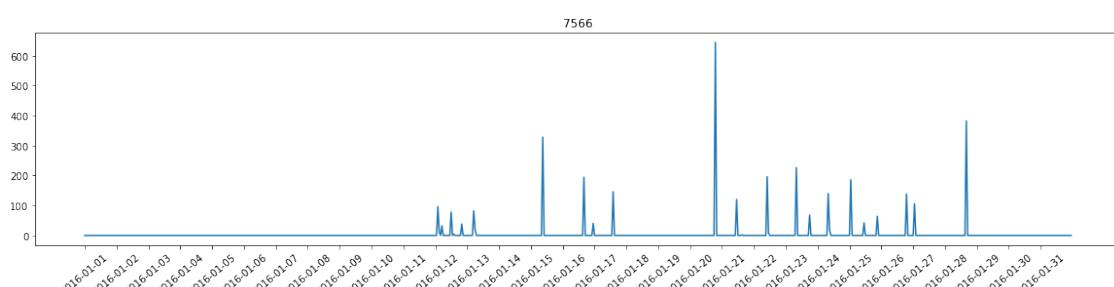
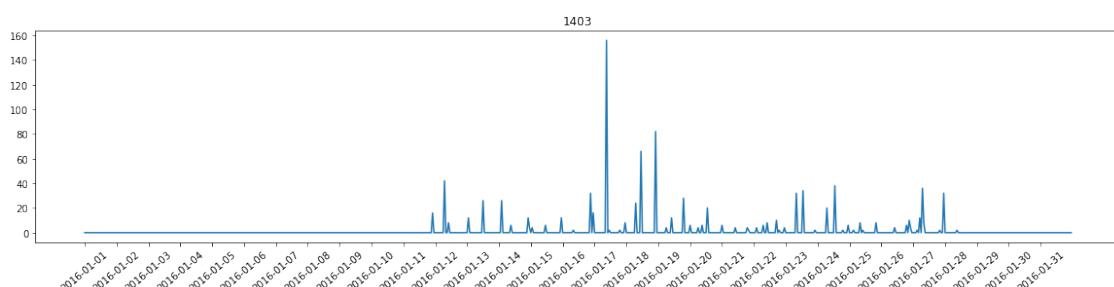
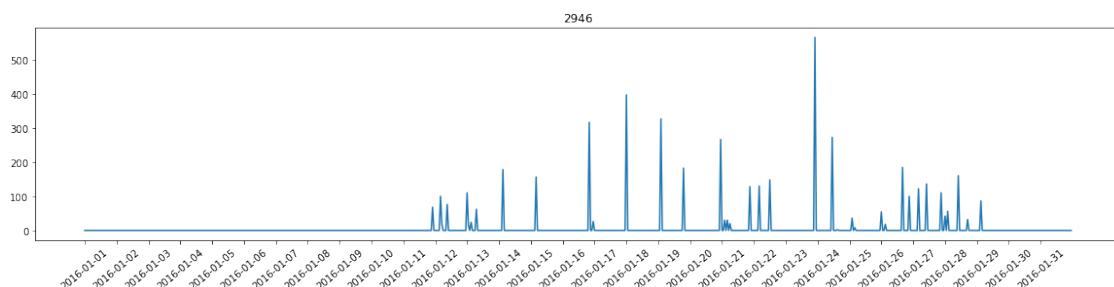
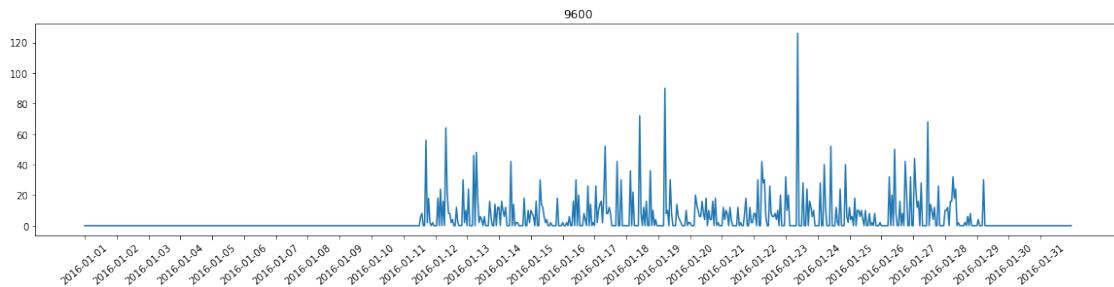


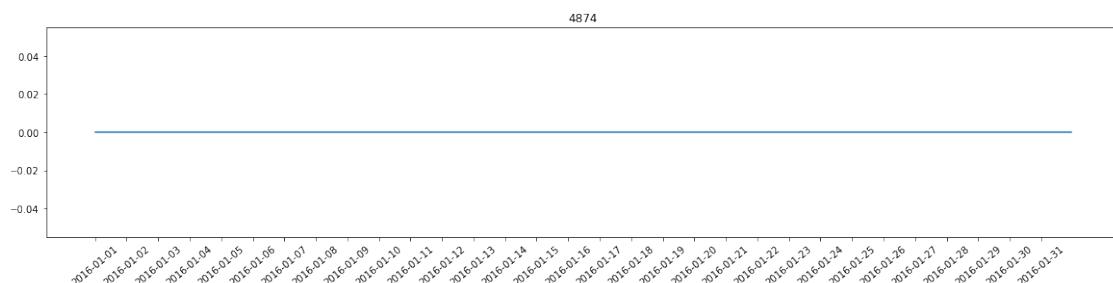
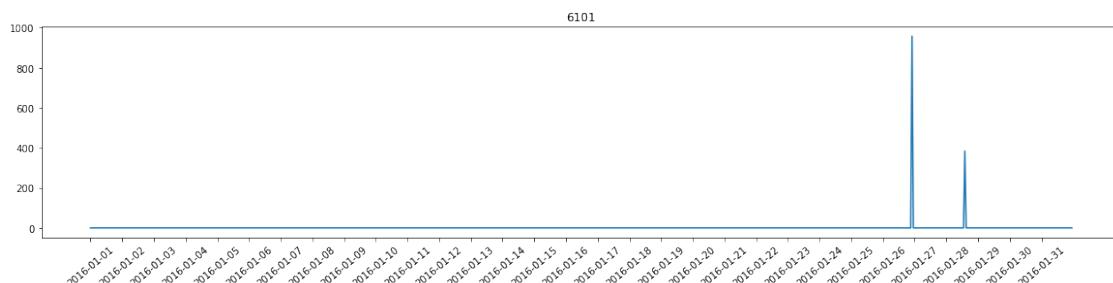
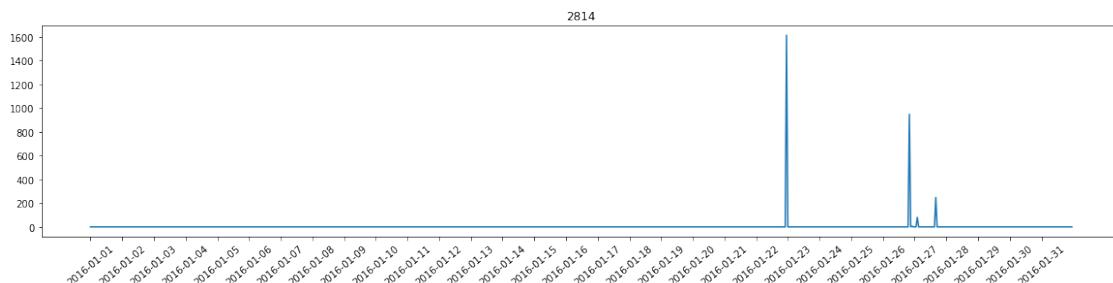
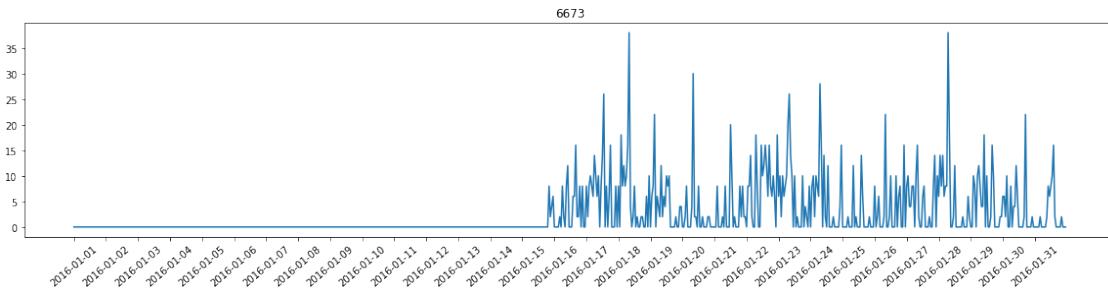
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6.6 Question 1.3

Intuitively, we expect that gas consumption from different homes to be correlated. For example, many homes would experience higher consumption levels in the evening when meals are cooked. For each home, find the top five homes with which it shows the highest correlation.

6.7 Discussion

Here, we investigate the relationship of each home's average hourly consumption on a daily basis, based on their *Euclidean Distance*. A series of plots identifying the top 5 most correlated homes, for each of the 157 homes, are presented below.

```
[12]: # unique_houses = data['dataid'].unique()
# unique_houses == lstMeter

hourly_readings = []
for unique_house in lstMeter:
    start_time = pd.Timestamp(year=2015, month=10, day=1)
    house_reading = data[data['dataid'] == unique_house].\
        sort_values(by='localminute', ascending=True).reset_index()
    hourly_reading = np.zeros(24)
    for i in range(24*183):
        start_row = house_reading[house_reading['localminute'] < start_time + pd.Timedelta(hours=i)].reset_index()
        if len(start_row) > 0:
            start_row = start_row.iloc[-1]
        else:
            continue
        end_row = house_reading[house_reading['localminute'] < start_time + pd.Timedelta(hours=i+1)].reset_index()
        if len(end_row) > 0:
            end_row = end_row.iloc[-1]
        else:
            continue
        hourly_reading[i % 24] += end_row['meter_value'] - start_row['meter_value']
    hourly_reading /= 183
    if np.sum(hourly_reading) != 0:
        hourly_reading /= np.sum(hourly_reading)
    hourly_readings.append(hourly_reading)

dist_map = np.zeros((len(lstMeter), len(lstMeter)))
for i in range(len(lstMeter)):
    for j in range(len(lstMeter)):
        dist_map[i][j] = np.linalg.norm(hourly_readings[i] - hourly_readings[j])
print(dist_map)

x_idx = [i for i in range(24)]
```

```

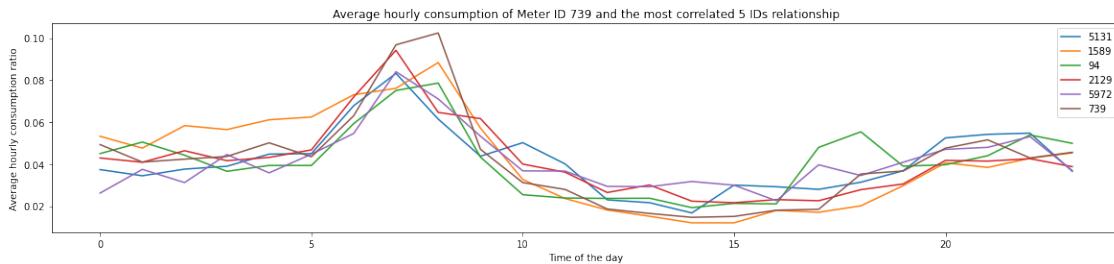
for i in range(len(lstMeter)):
    nearests = np.argpartition(dist_map[i], 6)[:6]
    plt.rcParams['figure.figsize'] = (20.0, 4.0)
    a = []
    for idx in nearests:
        plt.plot(x_idx, hourly_readings[idx], label=str(lstMeter[idx]))
        a.append(lstMeter[idx])
    plt.title('Average hourly consumption of Meter ID {} and the most correlated 5 IDs relationship'.format(str(lstMeter[i])))
    plt.xlabel('Time of the day')
    plt.ylabel('Average hourly consumption ratio')
    plt.legend()
    plt.show()
    a.remove(lstMeter[i])
    print('The top 5 most correlated IDs for meter ID {} is: {}, {}, {}, {} and {}'.format(lstMeter[i], a[0], a[1], a[2], a[3], a[4]))
    print('-----')

```

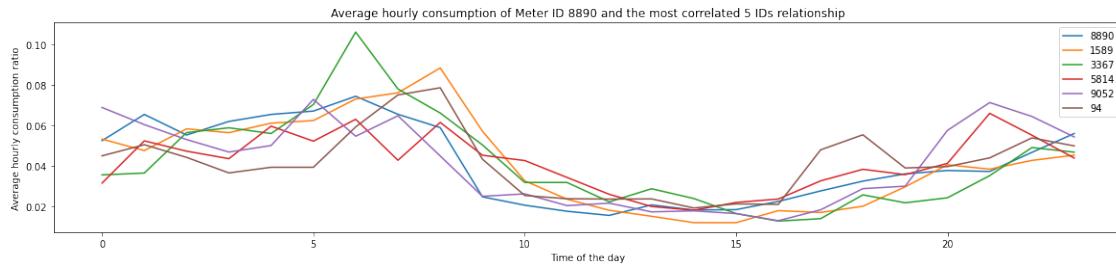
```

[[0.          0.0787368  0.1107279  ... 0.28698664 0.75825741 0.99537203]
 [0.0787368  0.          0.1170329  ... 0.30893595 0.75152463 1.00456777]
 [0.1107279  0.1170329  0.          ... 0.3070459  0.7647699  0.98396455]
 ...
 [0.28698664 0.30893595 0.3070459  ... 0.          0.84186879 1.019781  ]
 [0.75825741 0.75152463 0.7647699  ... 0.84186879 0.          1.26153562]
 [0.99537203 1.00456777 0.98396455 ... 1.019781  1.26153562 0.          ]]

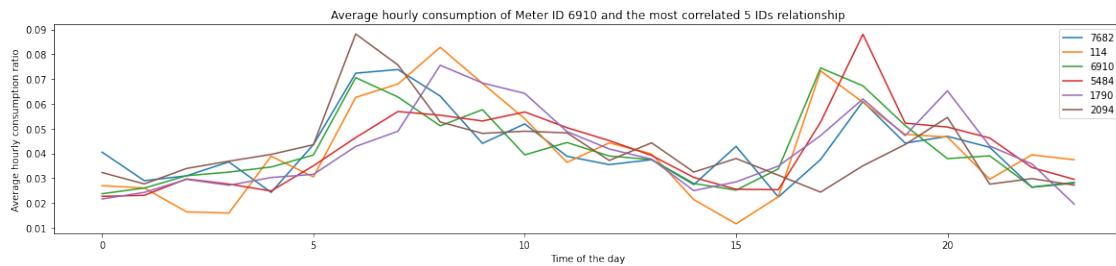
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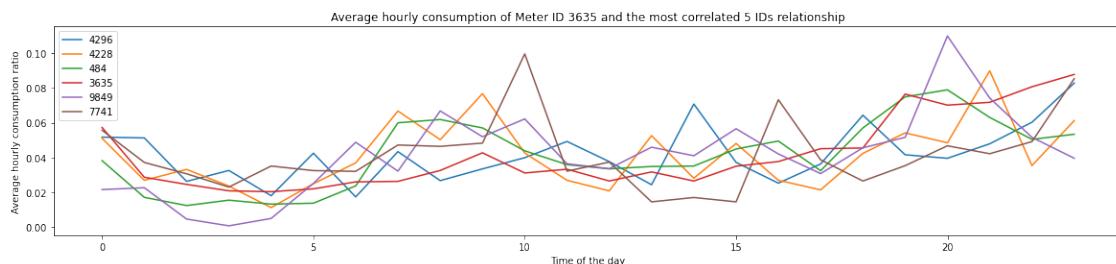
The top 5 most correlated IDs for meter ID 739 is: 5131, 1589, 94, 2129 and 5972



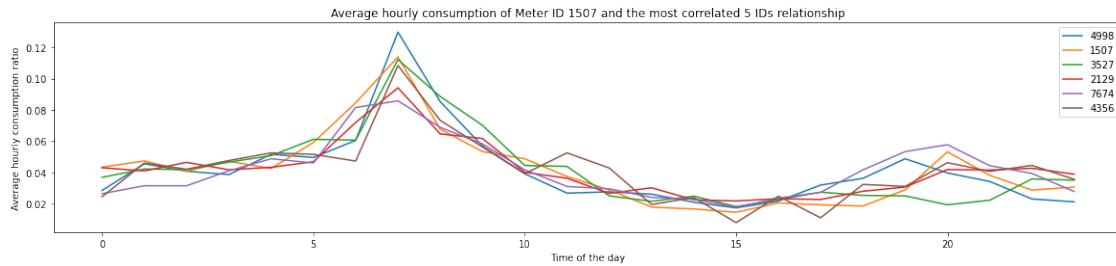
The top 5 most correlated IDs for meter ID 8890 is: 1589, 3367, 5814, 9052 and 94



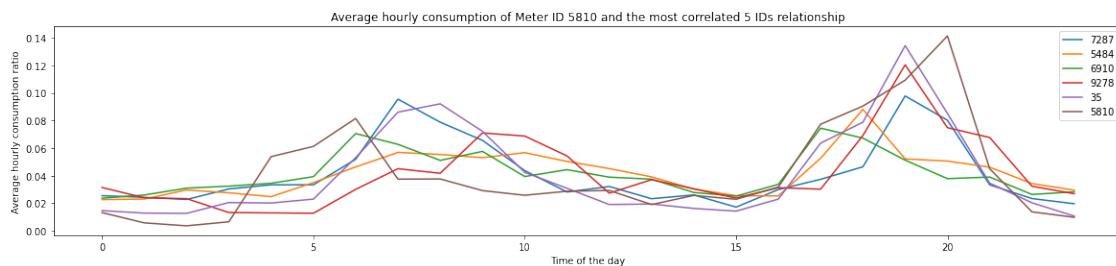
The top 5 most correlated IDs for meter ID 6910 is: 7682, 114, 5484, 1790 and 2094



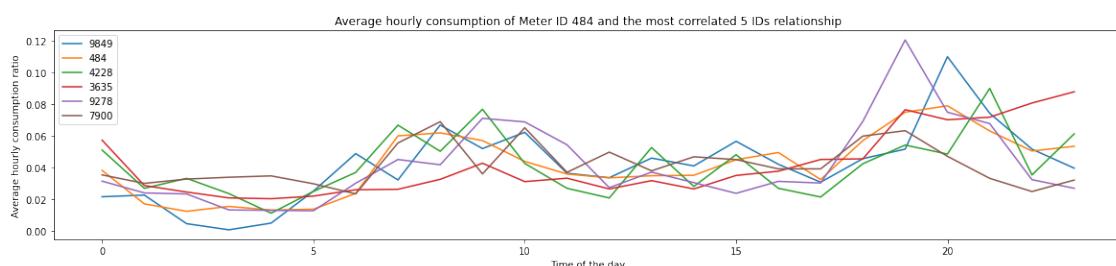
The top 5 most correlated IDs for meter ID 3635 is: 4296, 4228, 484, 9849 and 7741



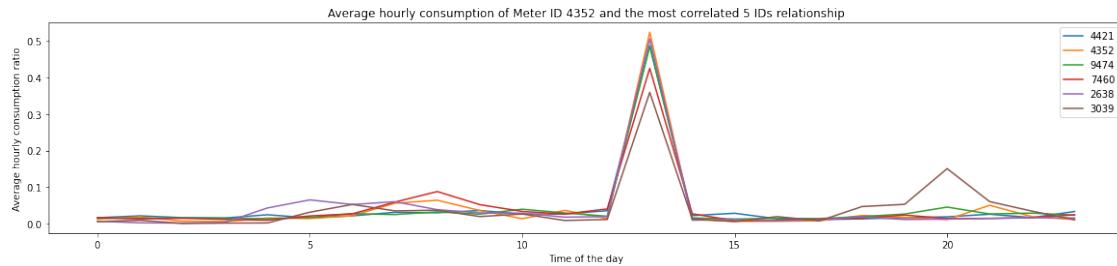
The top 5 most correlated IDs for meter ID 1507 is: 4998, 3527, 2129, 7674 and 4356



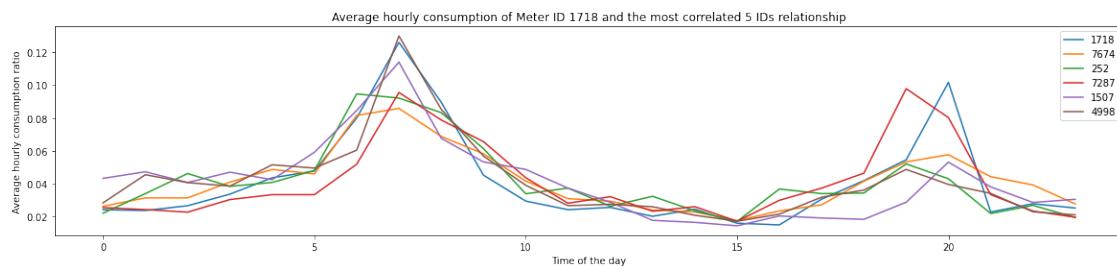
The top 5 most correlated IDs for meter ID 5810 is: 7287, 5484, 6910, 9278 and 35



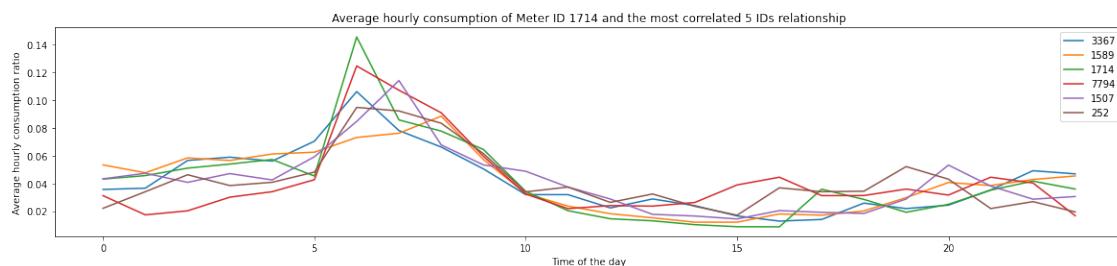
The top 5 most correlated IDs for meter ID 484 is: 9849, 4228, 3635, 9278 and 7900



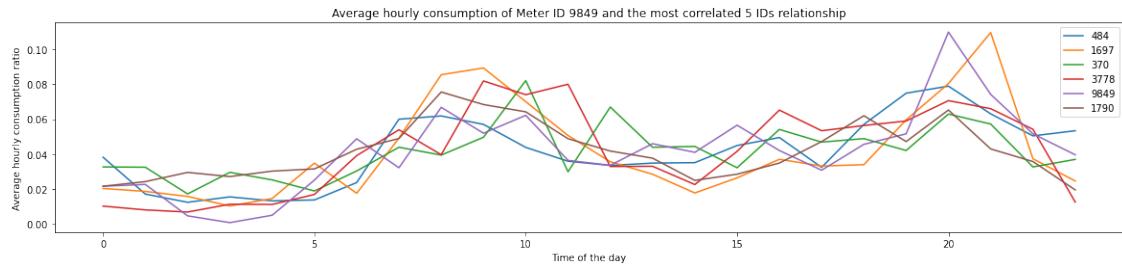
The top 5 most correlated IDs for meter ID 4352 is: 4421, 9474, 7460, 2638 and 3039



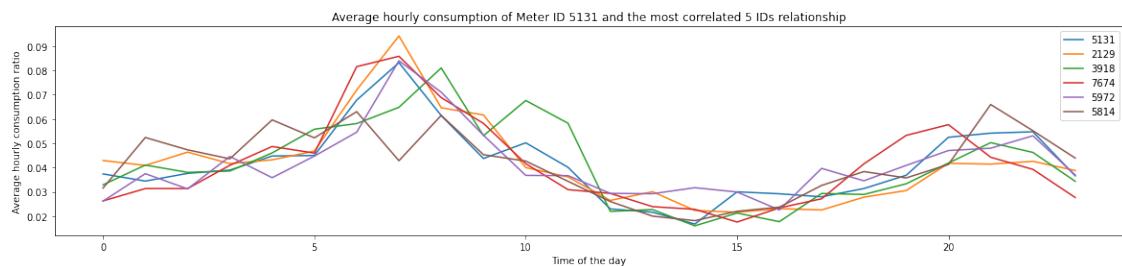
The top 5 most correlated IDs for meter ID 1718 is: 7674, 252, 7287, 1507 and 4998



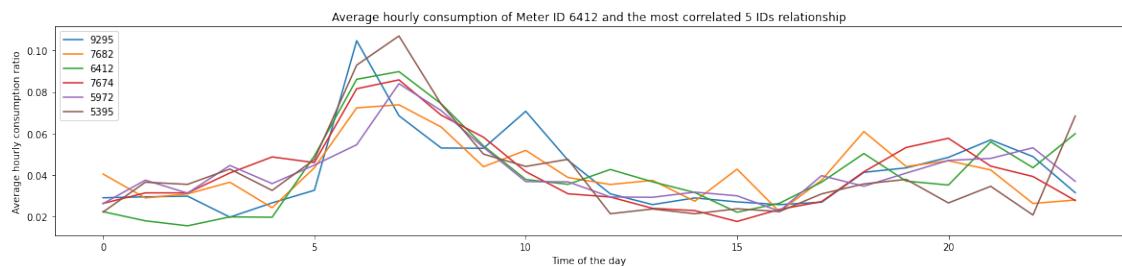
The top 5 most correlated IDs for meter ID 1714 is: 3367, 1589, 7794, 1507 and 252



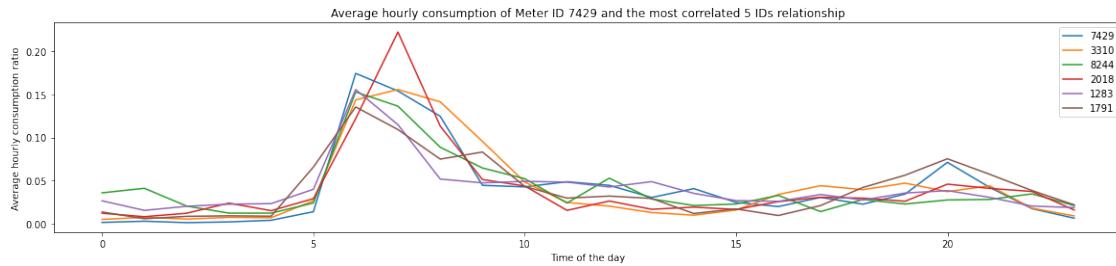
The top 5 most correlated IDs for meter ID 9849 is: 484, 1697, 370, 3778 and 1790



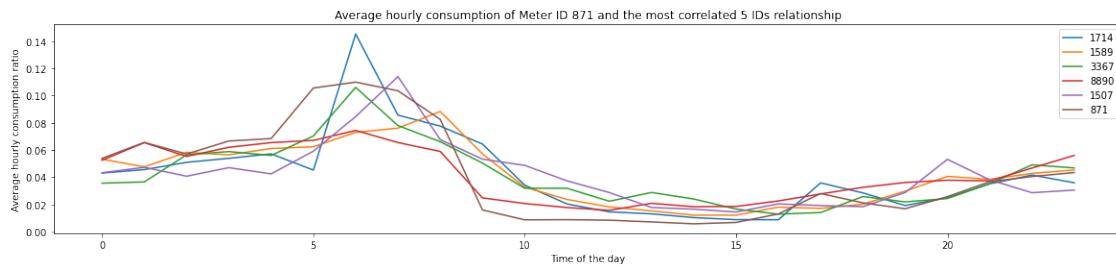
The top 5 most correlated IDs for meter ID 5131 is: 2129, 3918, 7674, 5972 and 5814



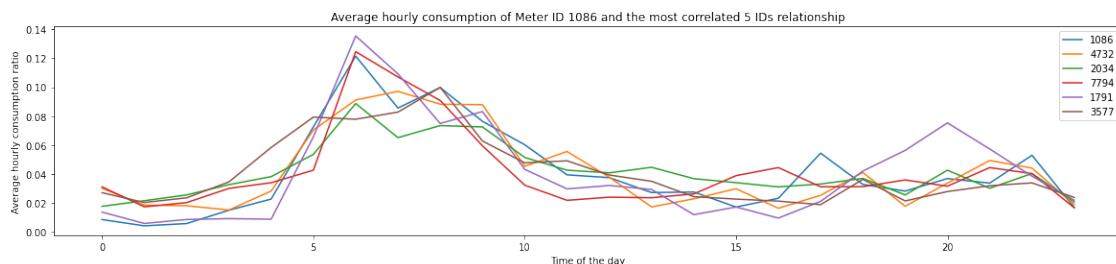
The top 5 most correlated IDs for meter ID 6412 is: 9295, 7682, 7674, 5972 and 5395



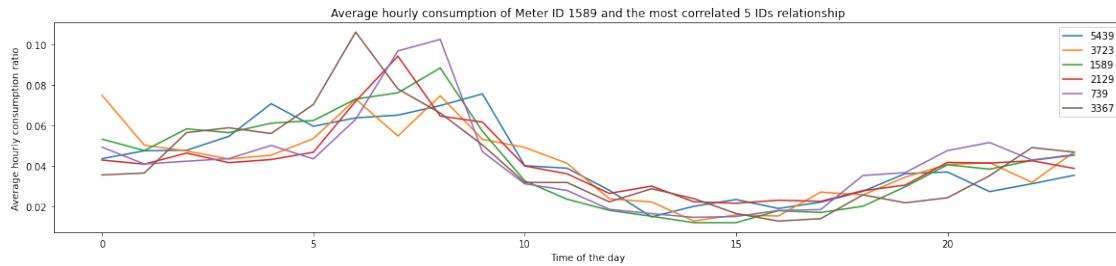
The top 5 most correlated IDs for meter ID 7429 is: 3310, 8244, 2018, 1283 and 1791



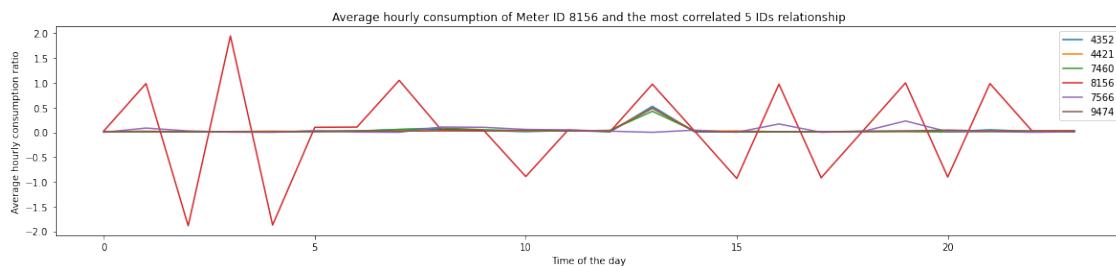
The top 5 most correlated IDs for meter ID 871 is: 1714, 1589, 3367, 8890 and 1507



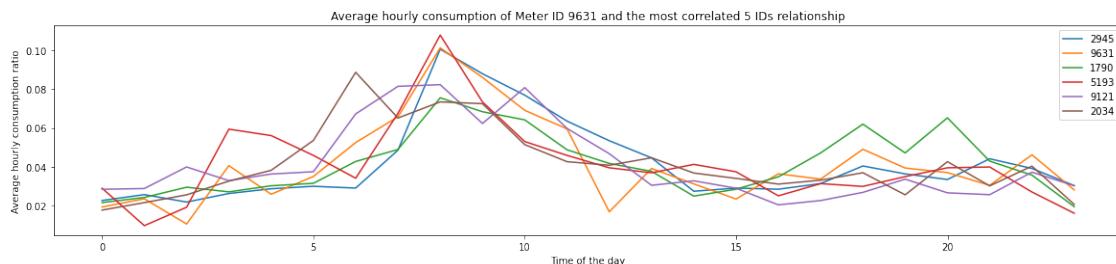
The top 5 most correlated IDs for meter ID 1086 is: 4732, 2034, 7794, 1791 and 3577



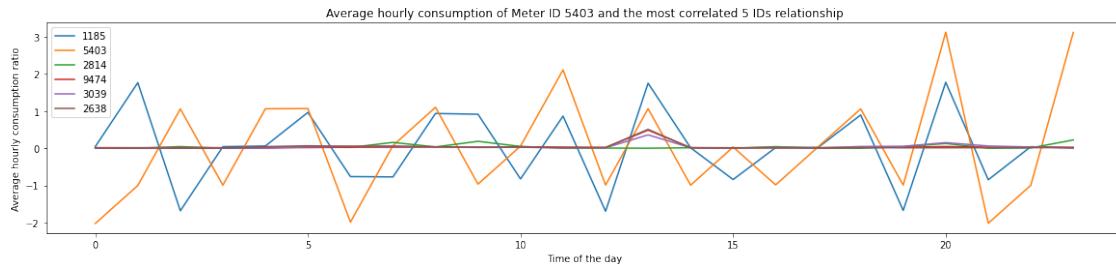
The top 5 most correlated IDs for meter ID 1589 is: 5439, 3723, 2129, 739 and 3367



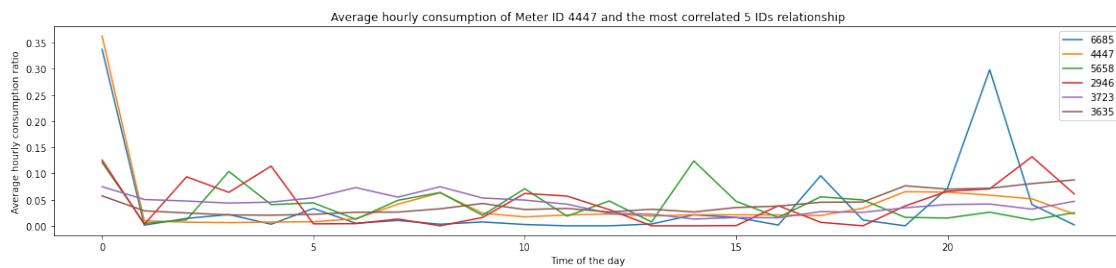
The top 5 most correlated IDs for meter ID 8156 is: 4352, 4421, 7460, 7566 and 9474



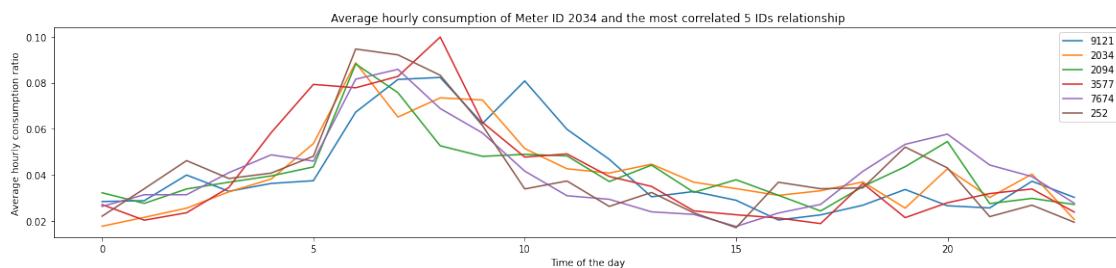
The top 5 most correlated IDs for meter ID 9631 is: 2945, 1790, 5193, 9121 and 2034



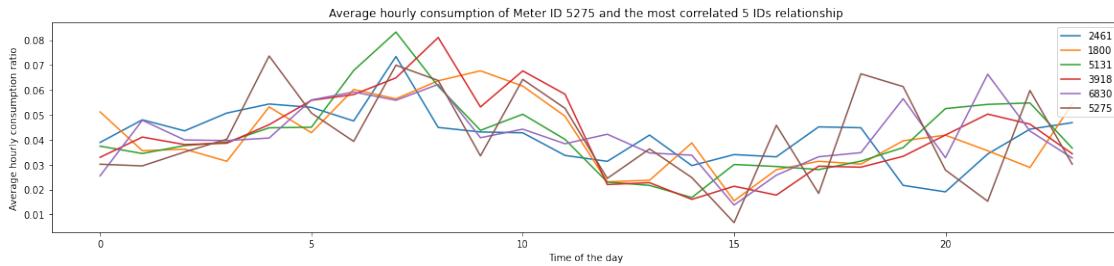
The top 5 most correlated IDs for meter ID 5403 is: 1185, 2814, 9474, 3039 and 2638



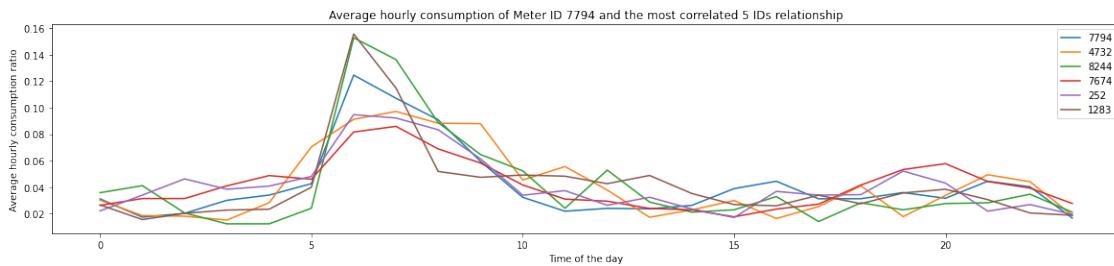
The top 5 most correlated IDs for meter ID 4447 is: 6685, 5658, 2946, 3723 and 3635



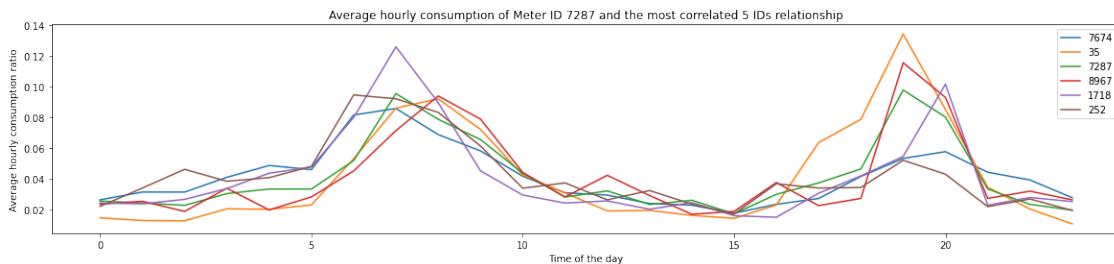
The top 5 most correlated IDs for meter ID 2034 is: 9121, 2094, 3577, 7674 and 252



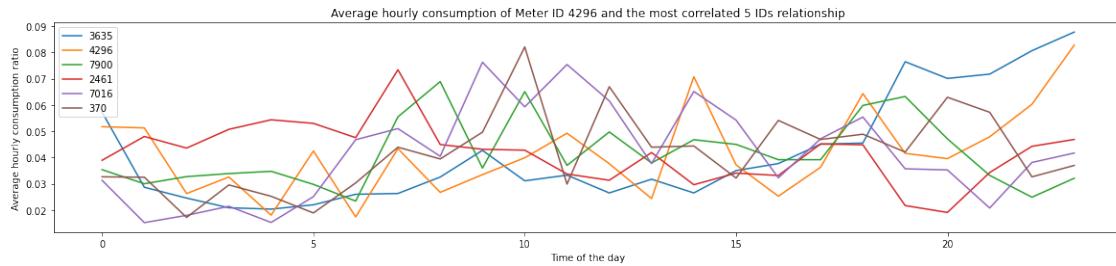
The top 5 most correlated IDs for meter ID 5275 is: 2461, 1800, 5131, 3918 and 6830



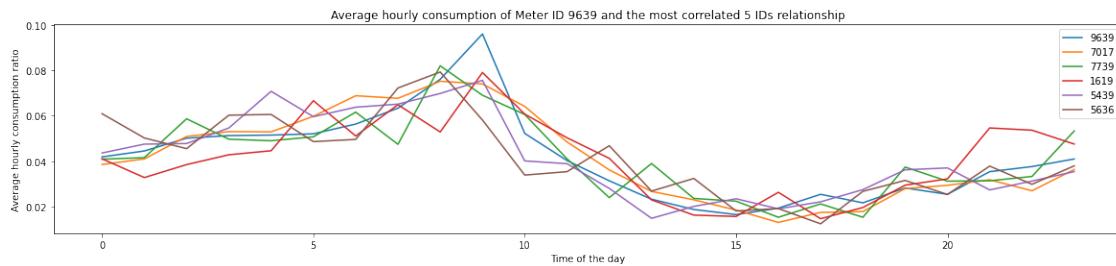
The top 5 most correlated IDs for meter ID 7794 is: 4732, 8244, 7674, 252 and 1283



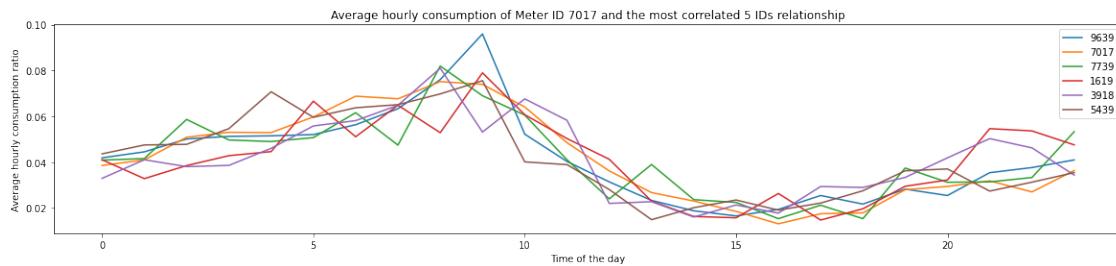
The top 5 most correlated IDs for meter ID 7287 is: 7674, 35, 8967, 1718 and 252



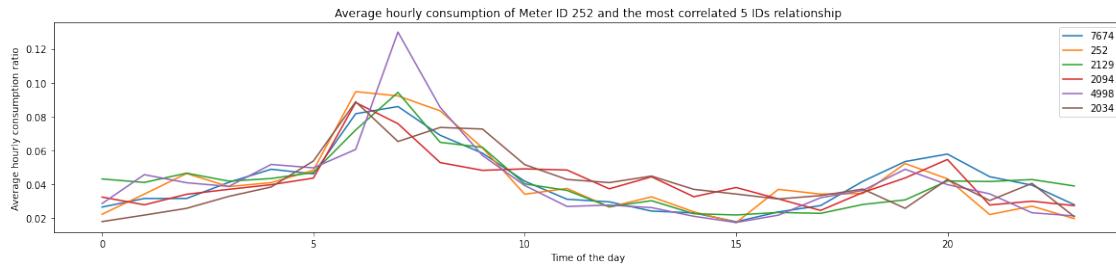
The top 5 most correlated IDs for meter ID 4296 is: 3635, 7900, 2461, 7016 and 370



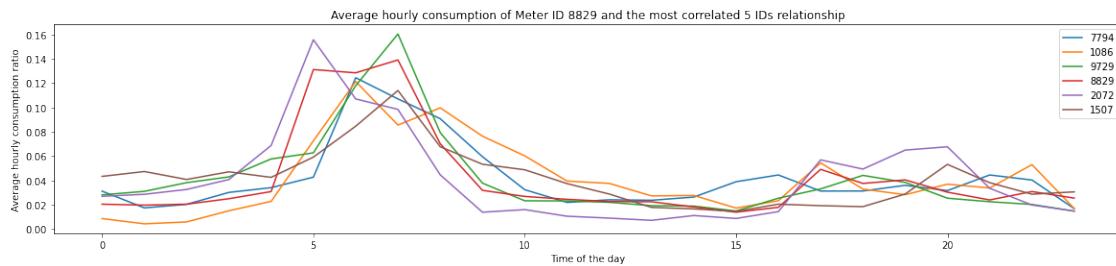
The top 5 most correlated IDs for meter ID 9639 is: 7017, 7739, 1619, 5439 and 5636



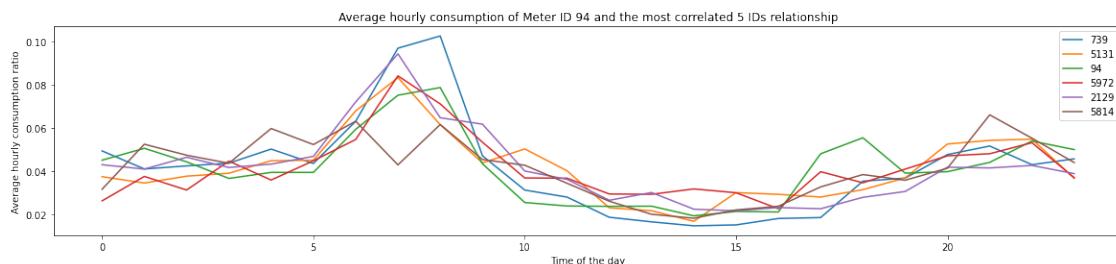
The top 5 most correlated IDs for meter ID 7017 is: 9639, 7739, 1619, 3918 and 5439



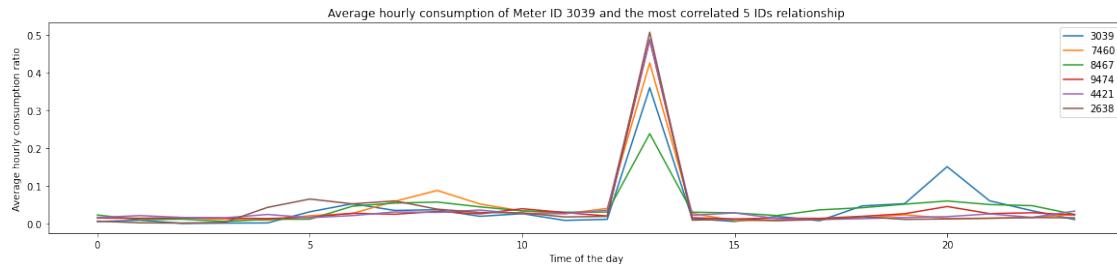
The top 5 most correlated IDs for meter ID 252 is: 7674, 2129, 2094, 4998 and 2034



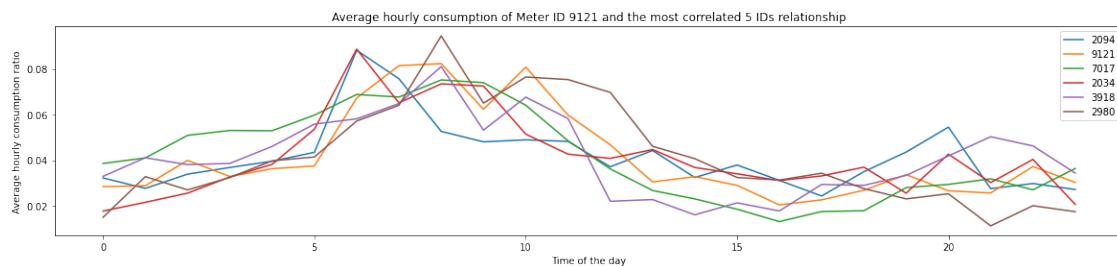
The top 5 most correlated IDs for meter ID 8829 is: 7794, 1086, 9729, 2072 and 1507



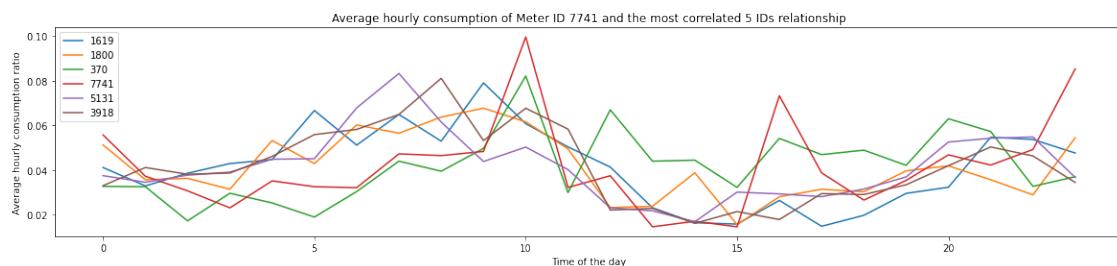
The top 5 most correlated IDs for meter ID 94 is: 739, 5131, 5972, 2129 and 5814



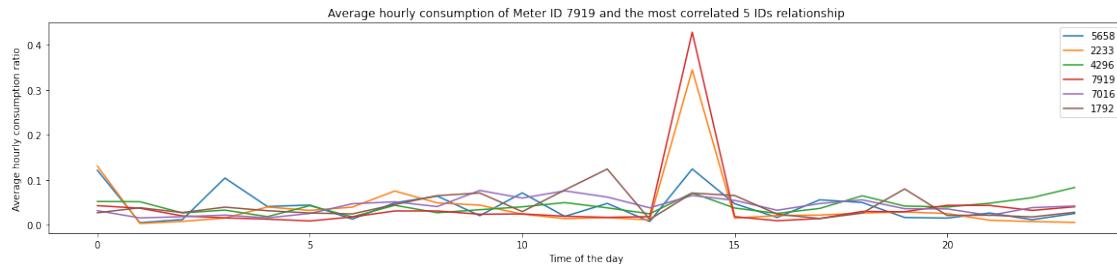
The top 5 most correlated IDs for meter ID 3039 is: 7460, 8467, 9474, 4421 and 2638



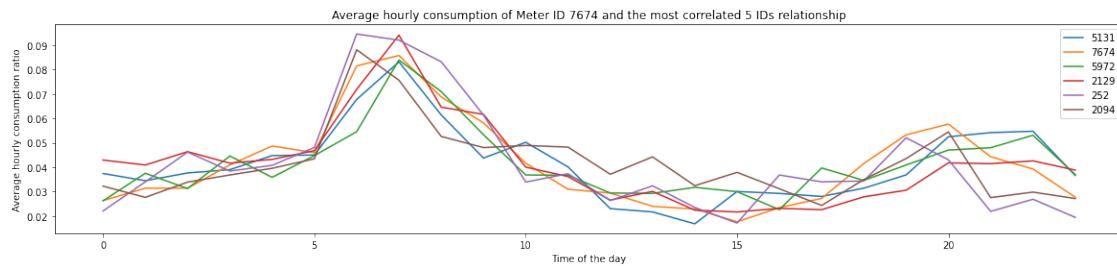
The top 5 most correlated IDs for meter ID 9121 is: 2094, 7017, 2034, 3918 and 2980



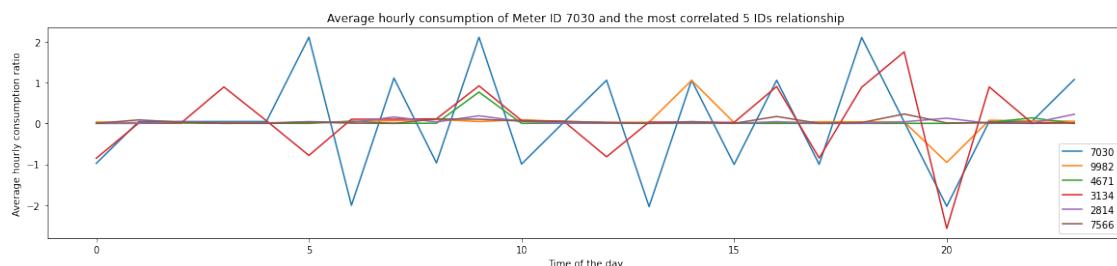
The top 5 most correlated IDs for meter ID 7741 is: 1619, 1800, 370, 5131 and 3918



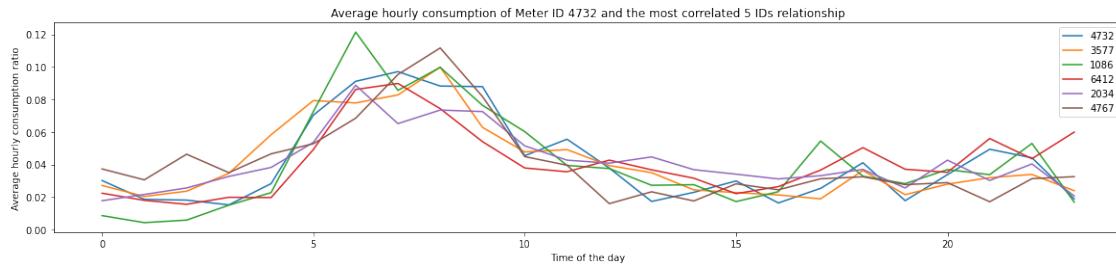
The top 5 most correlated IDs for meter ID 7919 is: 5658, 2233, 4296, 7016 and 1792



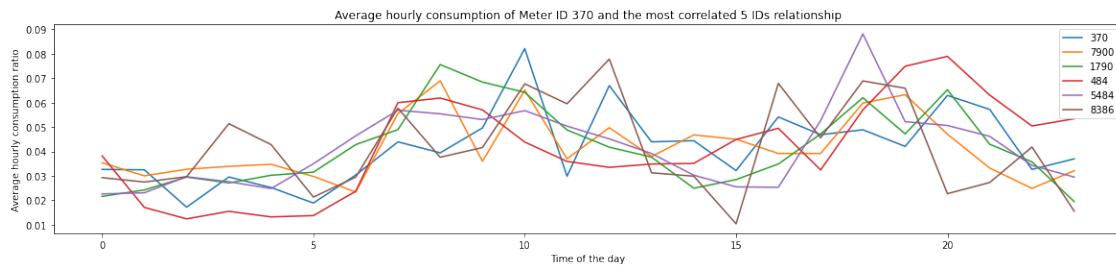
The top 5 most correlated IDs for meter ID 7674 is: 5131, 5972, 2129, 252 and 2094



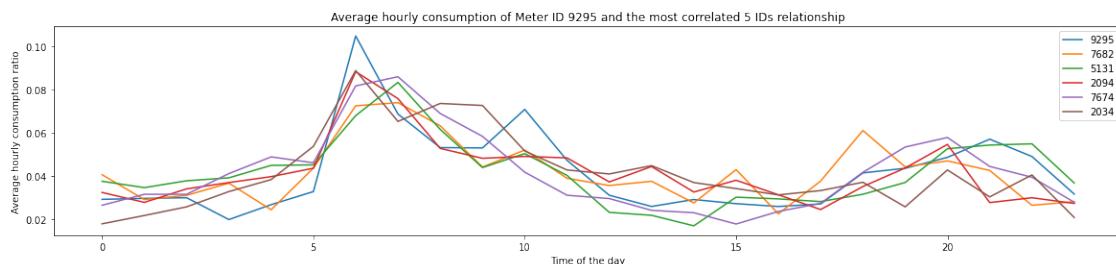
The top 5 most correlated IDs for meter ID 7030 is: 9982, 4671, 3134, 2814 and 7566



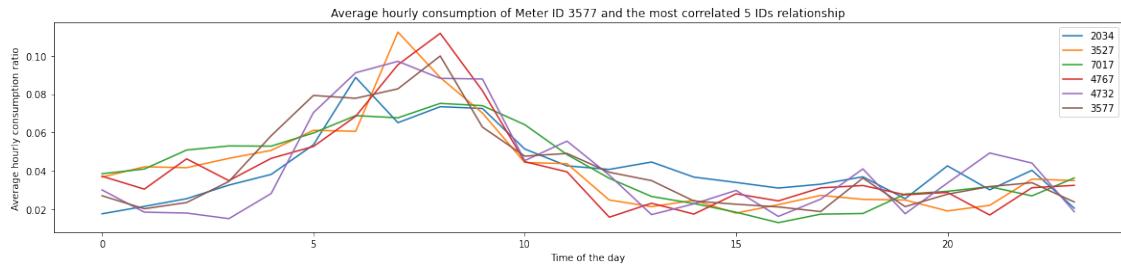
The top 5 most correlated IDs for meter ID 4732 is: 3577, 1086, 6412, 2034 and 4767



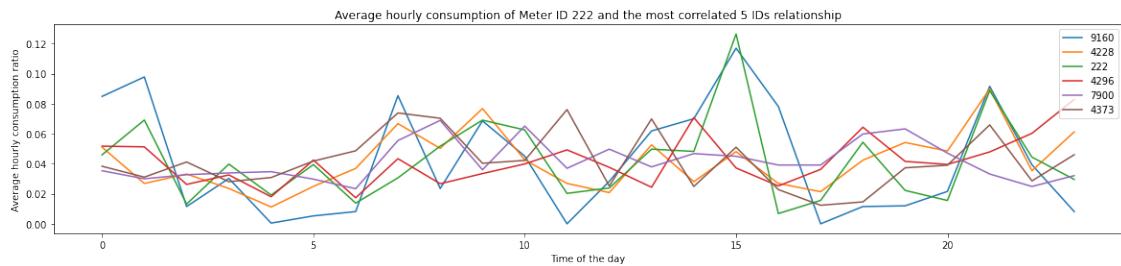
The top 5 most correlated IDs for meter ID 370 is: 7900, 1790, 484, 5484 and 8386



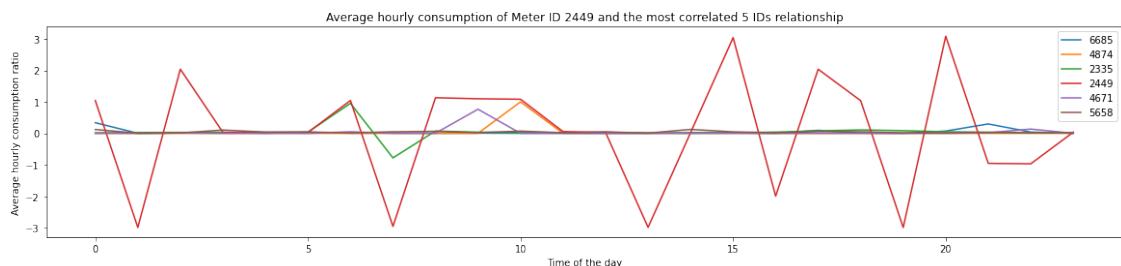
The top 5 most correlated IDs for meter ID 9295 is: 7682, 5131, 2094, 7674 and 2034



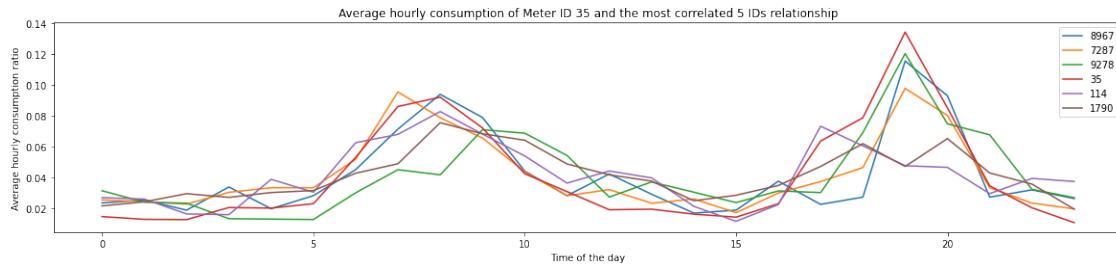
The top 5 most correlated IDs for meter ID 3577 is: 2034, 3527, 7017, 4767 and 4732



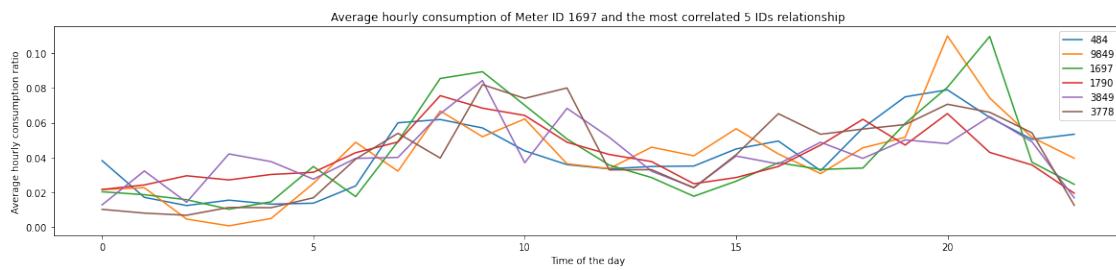
The top 5 most correlated IDs for meter ID 222 is: 9160, 4228, 4296, 7900 and 4373



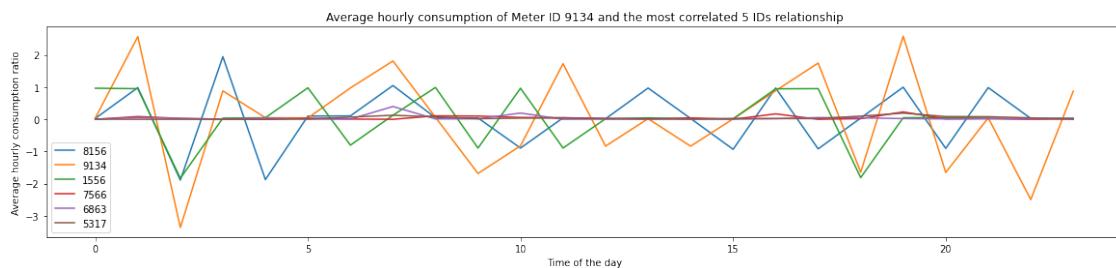
The top 5 most correlated IDs for meter ID 2449 is: 6685, 4874, 2335, 4671 and 5658



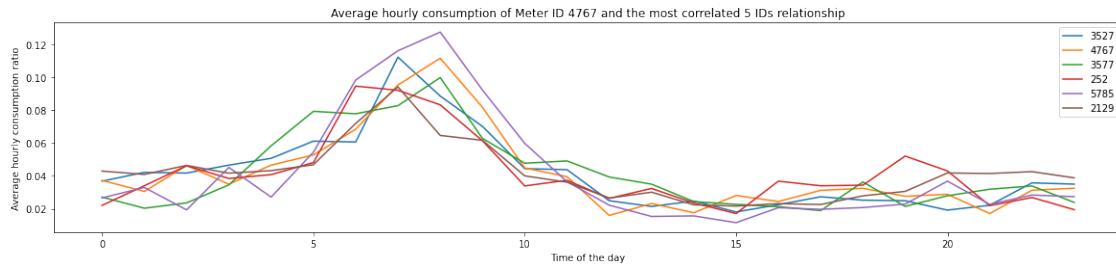
The top 5 most correlated IDs for meter ID 35 is: 8967, 7287, 9278, 114 and 1790



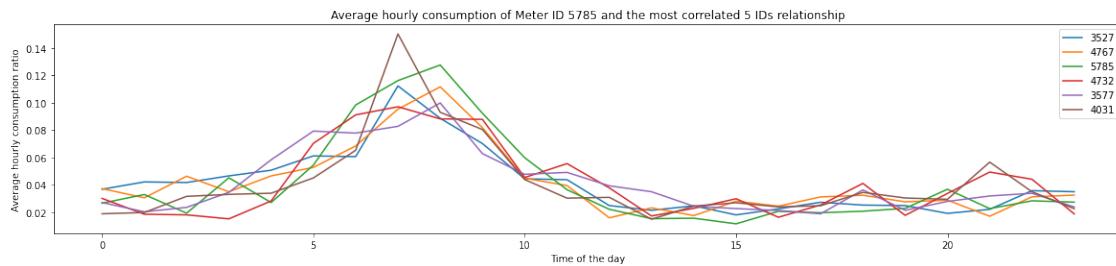
The top 5 most correlated IDs for meter ID 1697 is: 484, 9849, 1790, 3849 and 3778



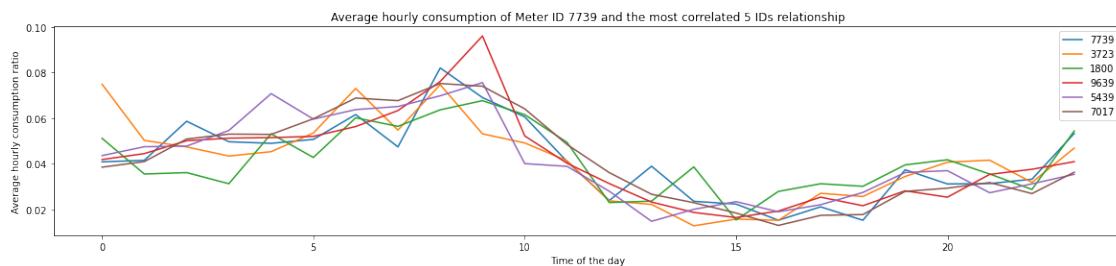
The top 5 most correlated IDs for meter ID 9134 is: 8156, 1556, 7566, 6863 and 5317



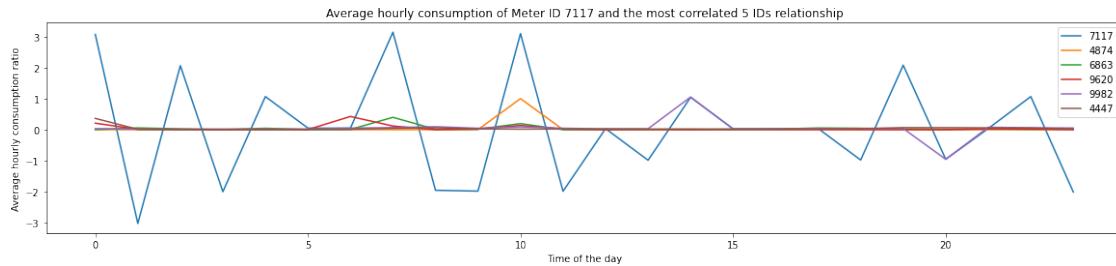
The top 5 most correlated IDs for meter ID 4767 is: 3527, 3577, 252, 5785 and 2129



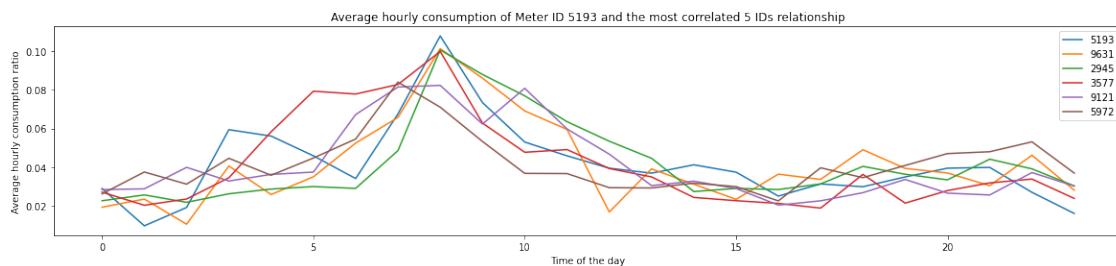
The top 5 most correlated IDs for meter ID 5785 is: 3527, 4767, 4732, 3577 and 4031



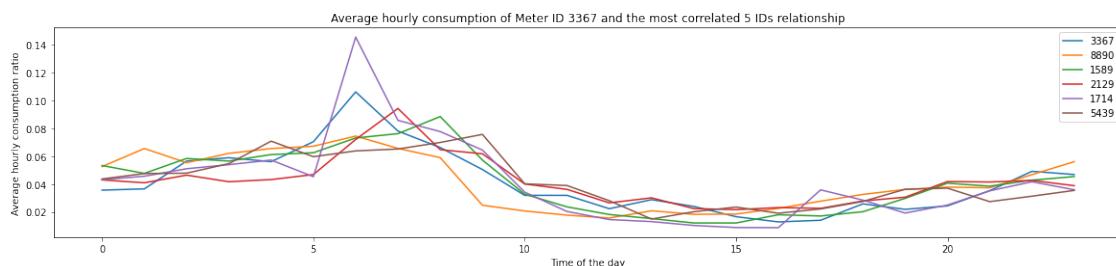
The top 5 most correlated IDs for meter ID 7739 is: 3723, 1800, 9639, 5439 and 7017



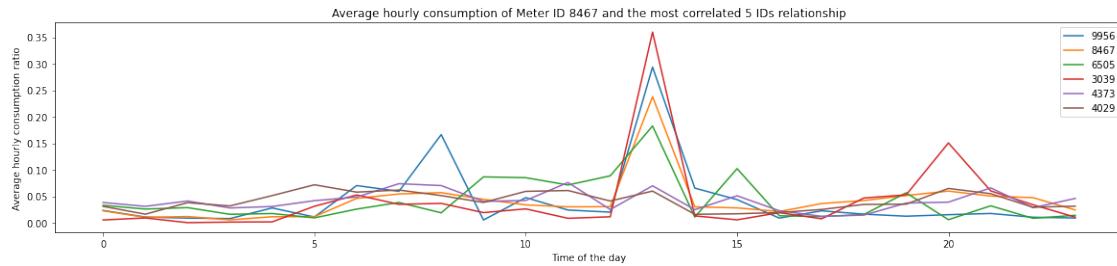
The top 5 most correlated IDs for meter ID 7117 is: 4874, 6863, 9620, 9982 and 4447



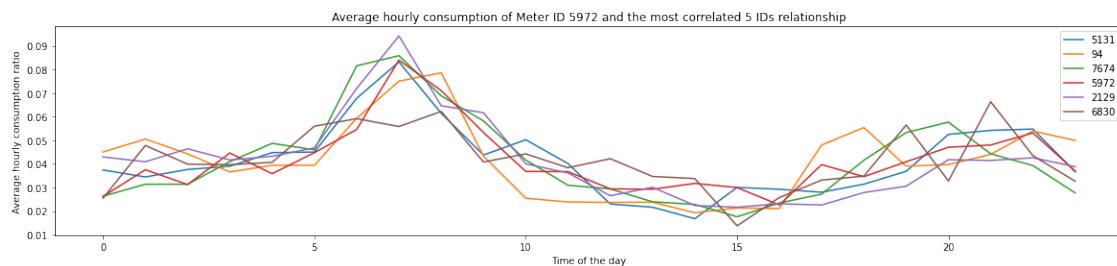
The top 5 most correlated IDs for meter ID 5193 is: 9631, 2945, 3577, 9121 and 5972



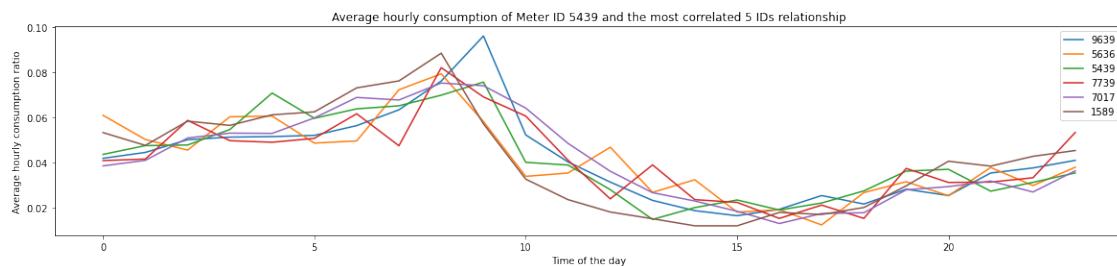
The top 5 most correlated IDs for meter ID 3367 is: 8890, 1589, 2129, 1714 and 5439



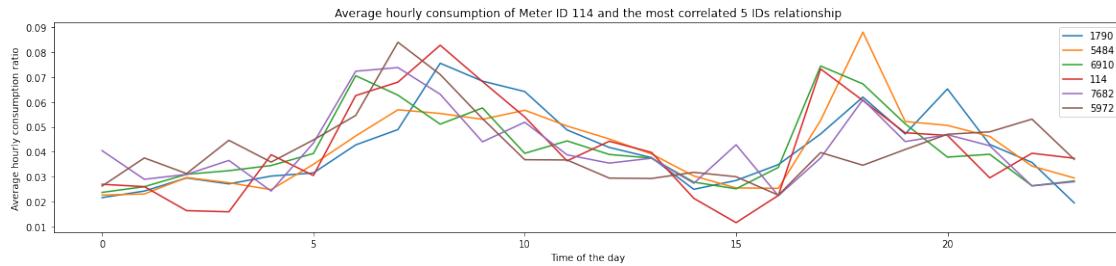
The top 5 most correlated IDs for meter ID 8467 is: 9956, 6505, 3039, 4373 and 4029



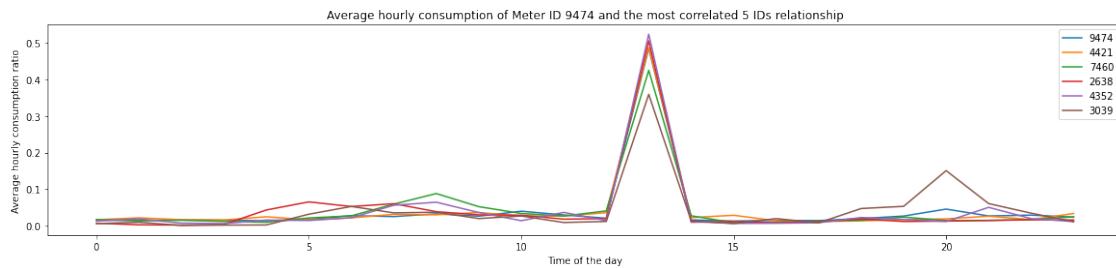
The top 5 most correlated IDs for meter ID 5972 is: 5131, 94, 7674, 2129 and 6830



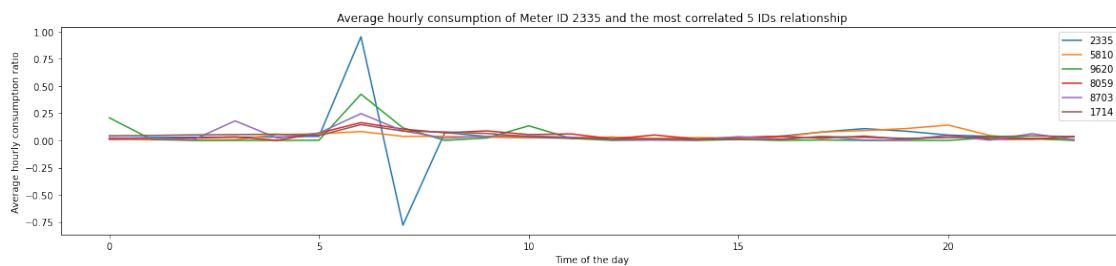
The top 5 most correlated IDs for meter ID 5439 is: 9639, 5636, 7739, 7017 and 1589



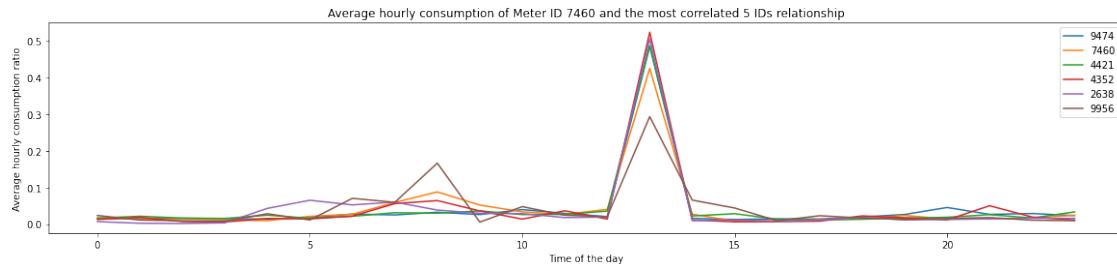
The top 5 most correlated IDs for meter ID 114 is: 1790, 5484, 6910, 7682 and 5972



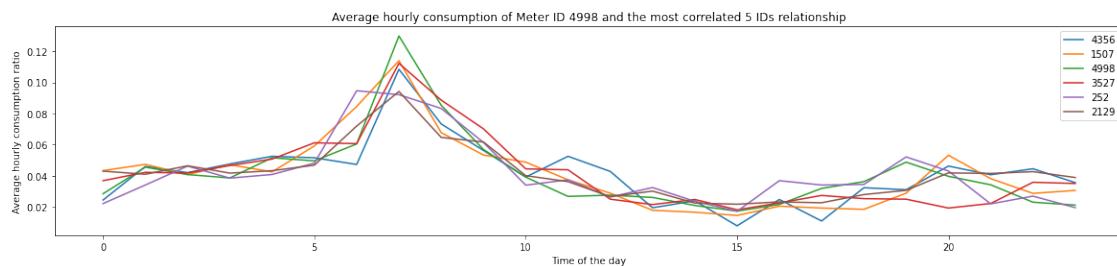
The top 5 most correlated IDs for meter ID 9474 is: 4421, 7460, 2638, 4352 and 3039



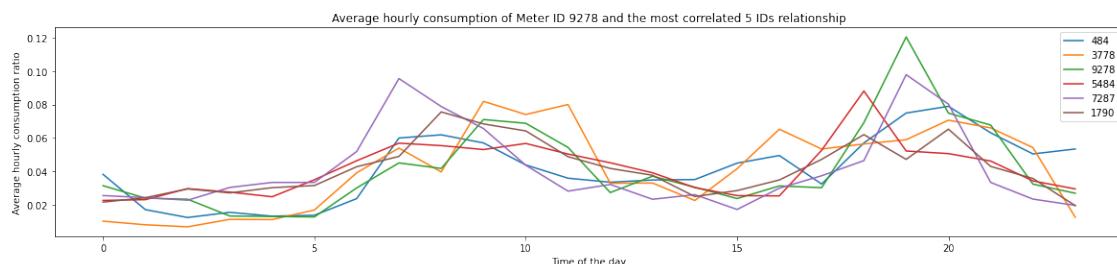
The top 5 most correlated IDs for meter ID 2335 is: 5810, 9620, 8059, 8703 and 1714



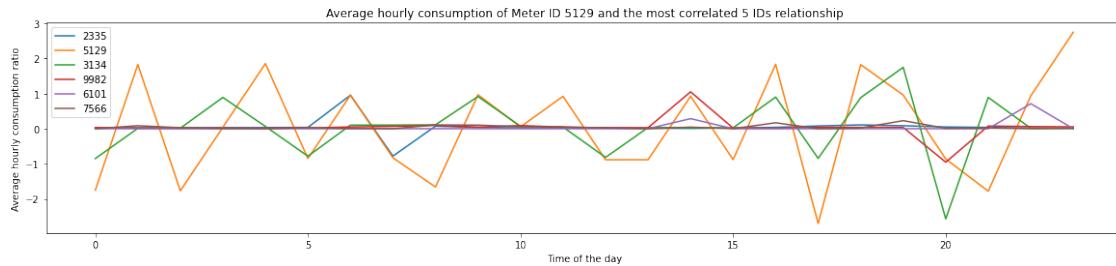
The top 5 most correlated IDs for meter ID 7460 is: 9474, 4421, 4352, 2638 and 9956



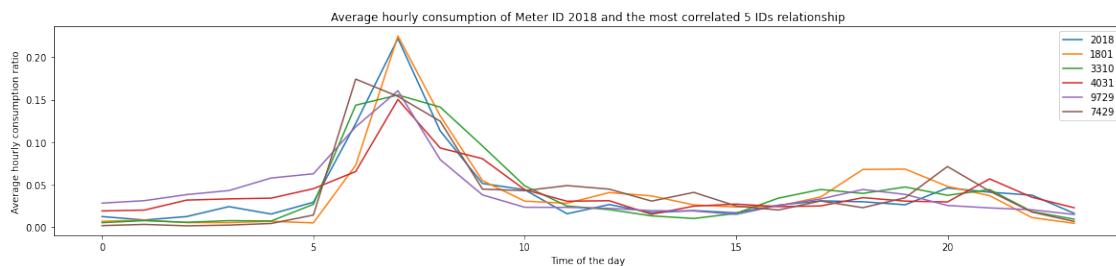
The top 5 most correlated IDs for meter ID 4998 is: 4356, 1507, 3527, 252 and 2129



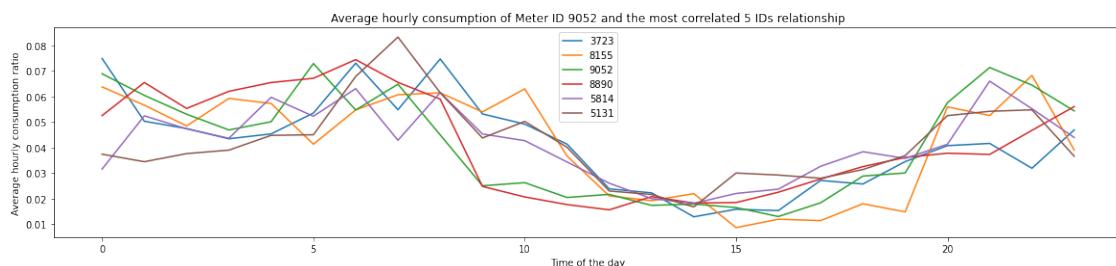
The top 5 most correlated IDs for meter ID 9278 is: 484, 3778, 5484, 7287 and 1790



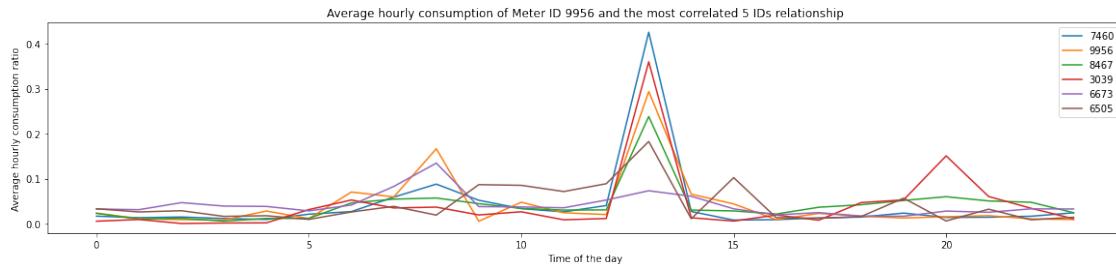
The top 5 most correlated IDs for meter ID 5129 is: 2335, 3134, 9982, 6101 and 7566



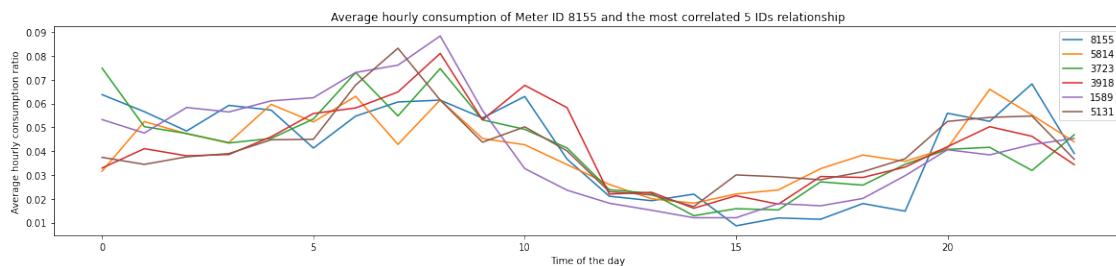
The top 5 most correlated IDs for meter ID 2018 is: 1801, 3310, 4031, 9729 and 7429



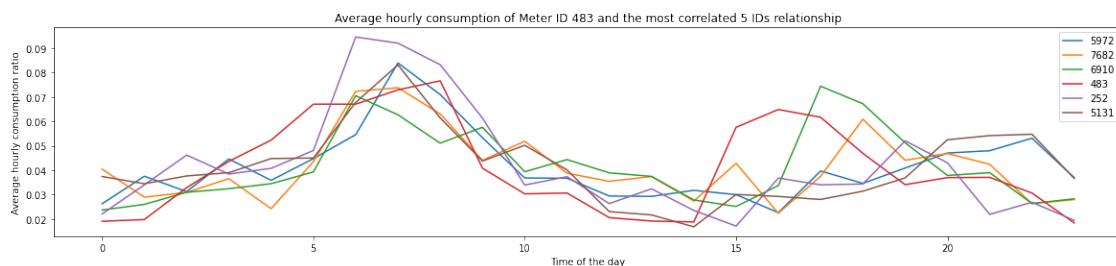
The top 5 most correlated IDs for meter ID 9052 is: 3723, 8155, 8890, 5814 and 5131



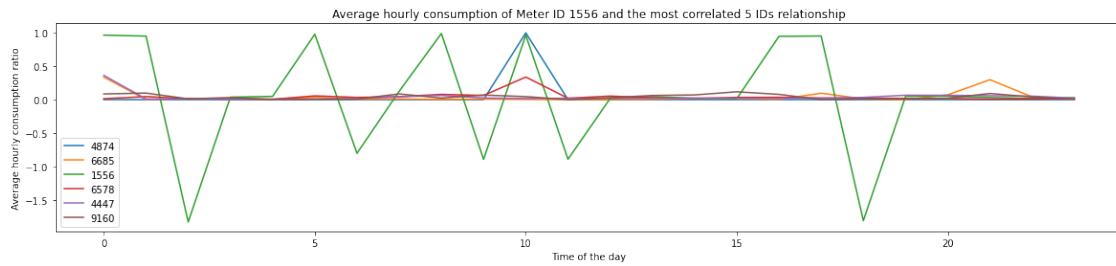
The top 5 most correlated IDs for meter ID 9956 is: 7460, 8467, 3039, 6673 and 6505



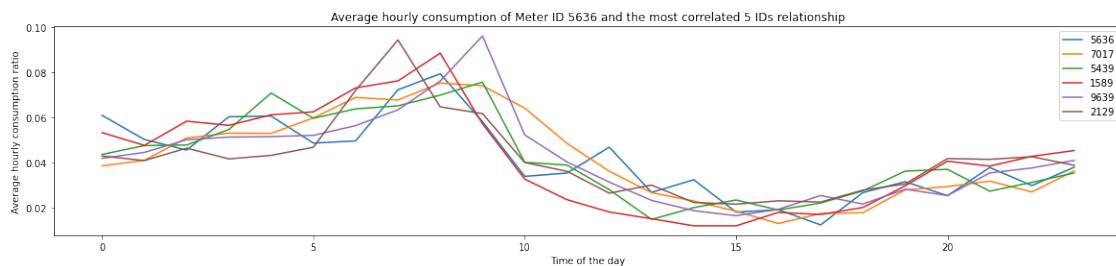
The top 5 most correlated IDs for meter ID 8155 is: 5814, 3723, 3918, 1589 and 5131



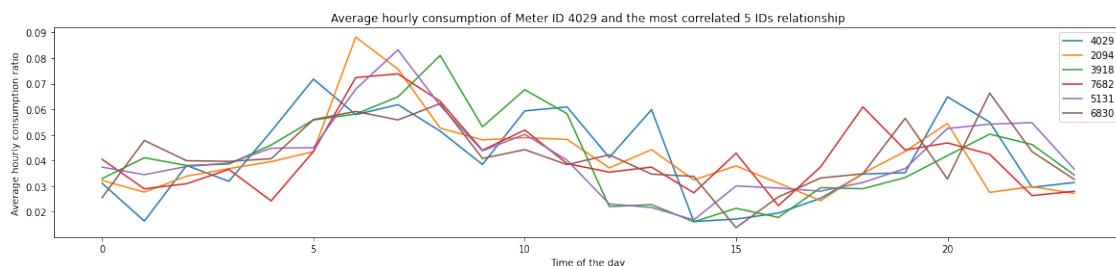
The top 5 most correlated IDs for meter ID 483 is: 5972, 7682, 6910, 252 and 5131



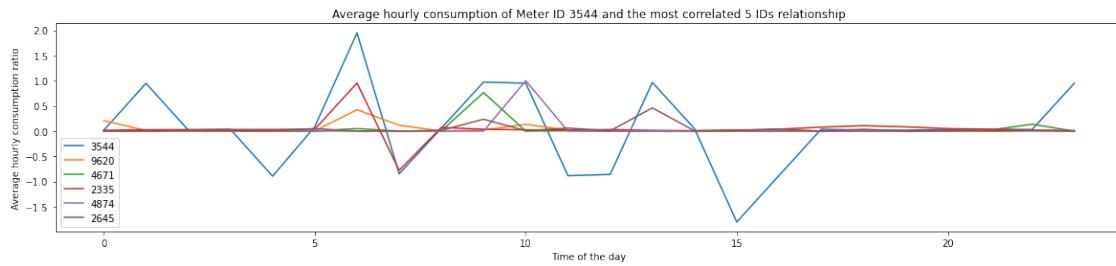
The top 5 most correlated IDs for meter ID 1556 is: 4874, 6685, 6578, 4447 and 9160



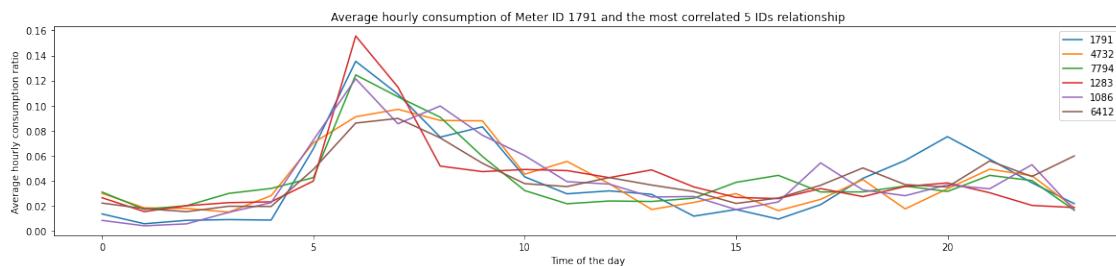
The top 5 most correlated IDs for meter ID 5636 is: 7017, 5439, 1589, 9639 and 2129



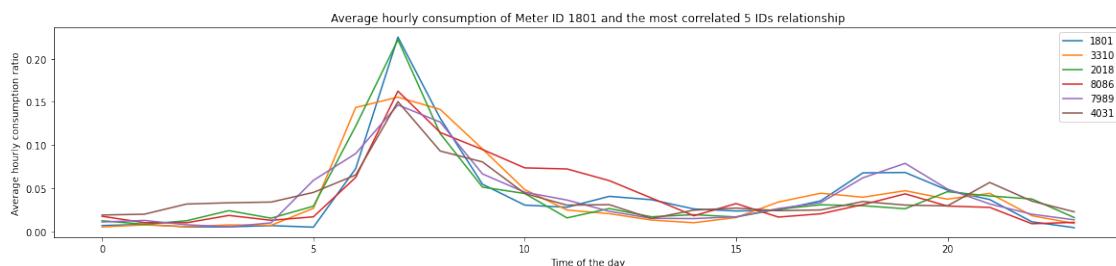
The top 5 most correlated IDs for meter ID 4029 is: 2094, 3918, 7682, 5131 and 6830



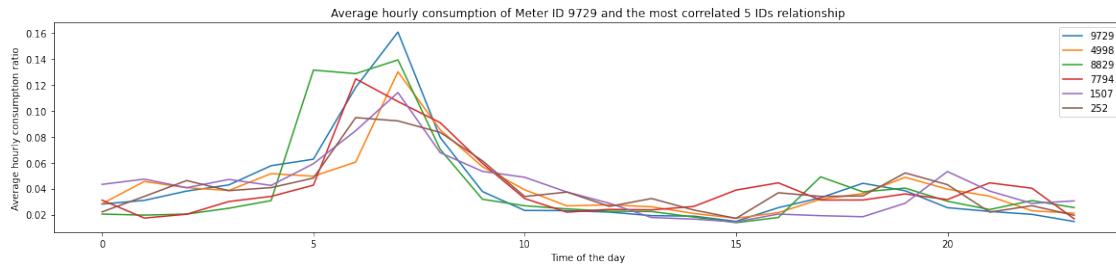
The top 5 most correlated IDs for meter ID 3544 is: 9620, 4671, 2335, 4874 and 2645



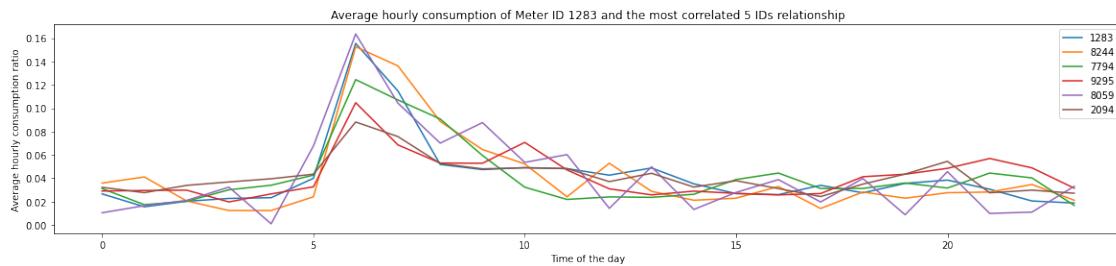
The top 5 most correlated IDs for meter ID 1791 is: 4732, 7794, 1283, 1086 and 6412



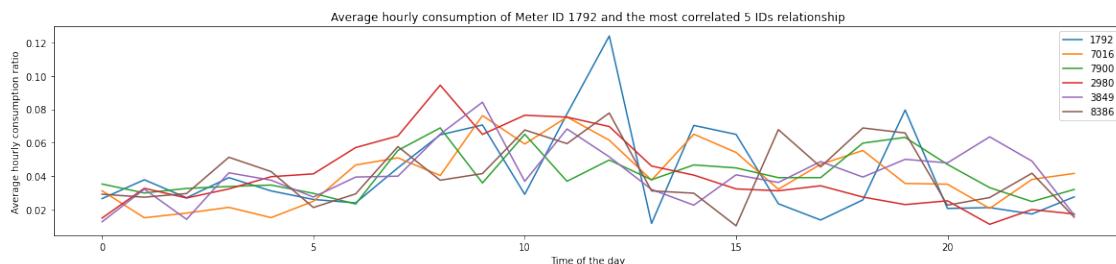
The top 5 most correlated IDs for meter ID 1801 is: 3310, 2018, 8086, 7989 and 4031



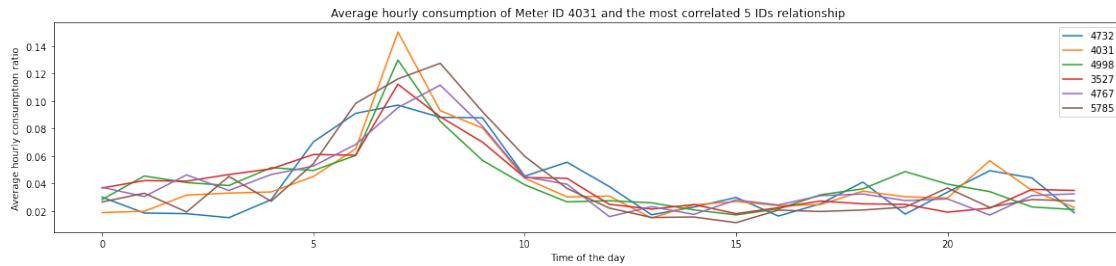
The top 5 most correlated IDs for meter ID 9729 is: 4998, 8829, 7794, 1507 and 252



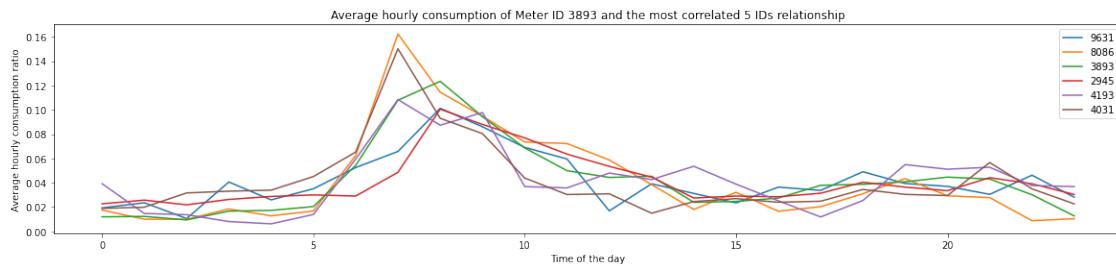
The top 5 most correlated IDs for meter ID 1283 is: 8244, 7794, 9295, 8059 and 2094



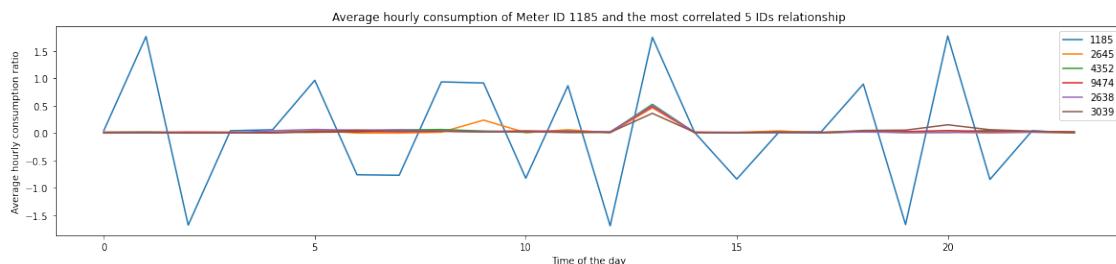
The top 5 most correlated IDs for meter ID 1792 is: 7016, 7900, 2980, 3849 and 8386



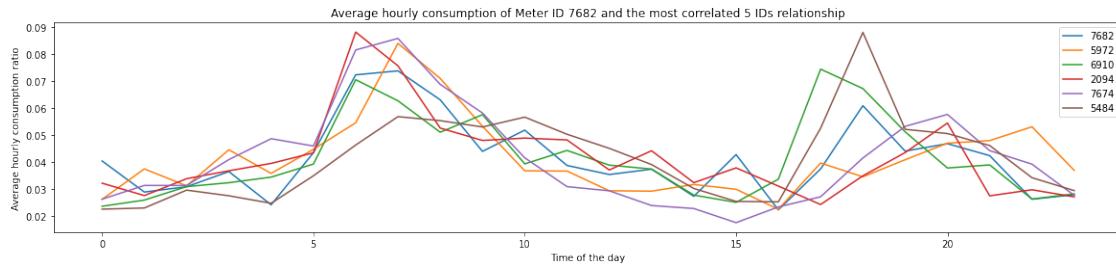
The top 5 most correlated IDs for meter ID 4031 is: 4732, 4998, 3527, 4767 and 5785



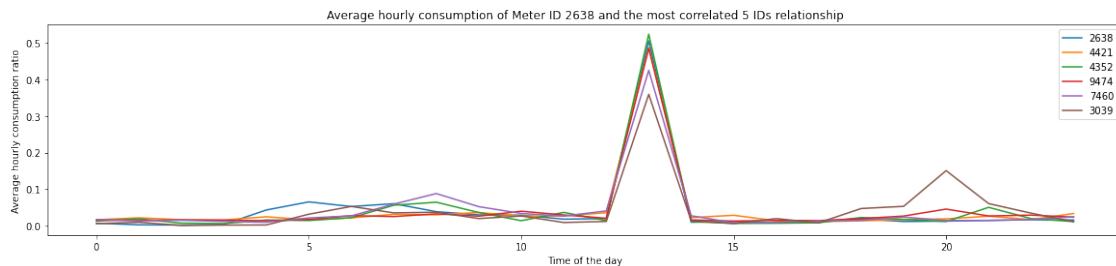
The top 5 most correlated IDs for meter ID 3893 is: 9631, 8086, 2945, 4193 and 4031



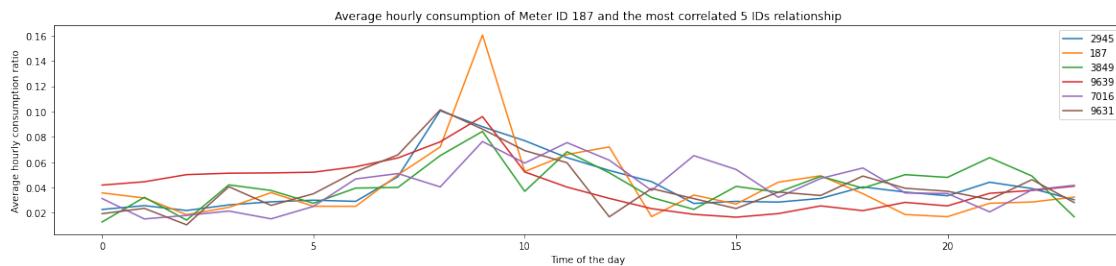
The top 5 most correlated IDs for meter ID 1185 is: 2645, 4352, 9474, 2638 and 3039



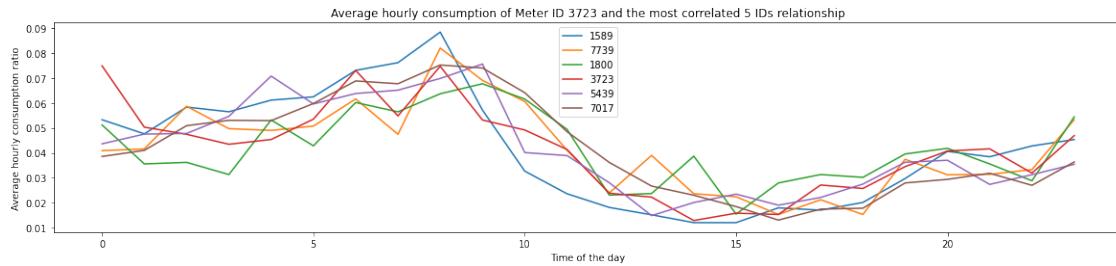
The top 5 most correlated IDs for meter ID 7682 is: 5972, 6910, 2094, 7674 and 5484



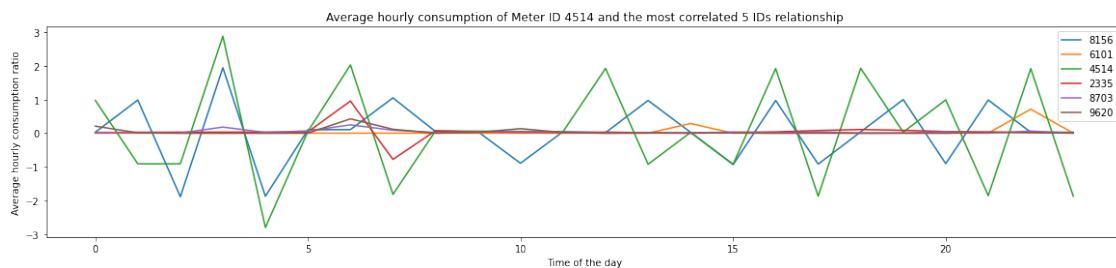
The top 5 most correlated IDs for meter ID 2638 is: 4421, 4352, 9474, 7460 and 3039



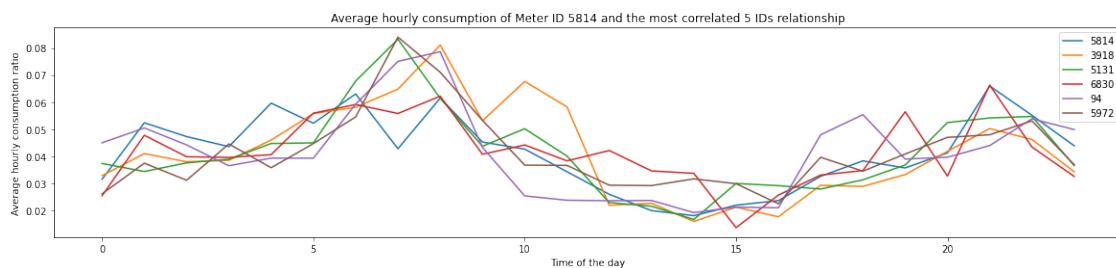
The top 5 most correlated IDs for meter ID 187 is: 2945, 3849, 9639, 7016 and 9631



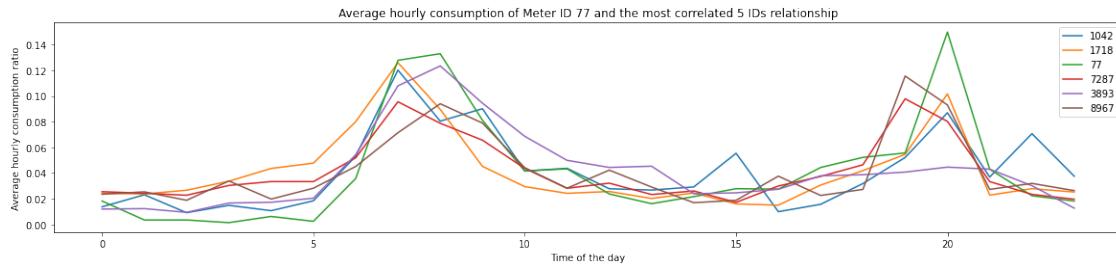
The top 5 most correlated IDs for meter ID 3723 is: 1589, 7739, 1800, 5439 and 7017



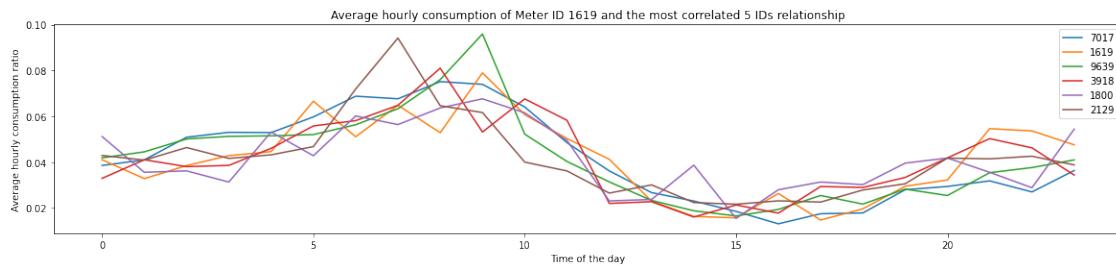
The top 5 most correlated IDs for meter ID 4514 is: 8156, 6101, 2335, 8703 and 9620



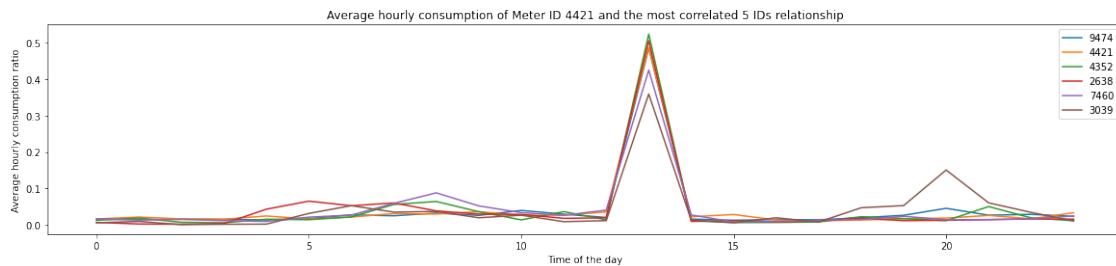
The top 5 most correlated IDs for meter ID 5814 is: 3918, 5131, 6830, 94 and 5972



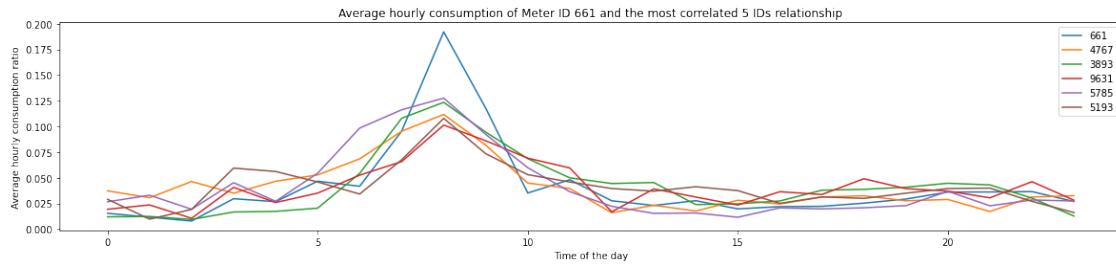
The top 5 most correlated IDs for meter ID 77 is: 1042, 1718, 7287, 3893 and 8967



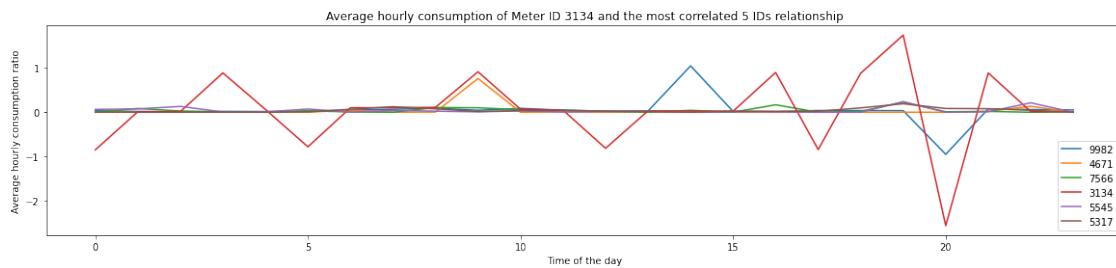
The top 5 most correlated IDs for meter ID 1619 is: 7017, 9639, 3918, 1800 and 2129



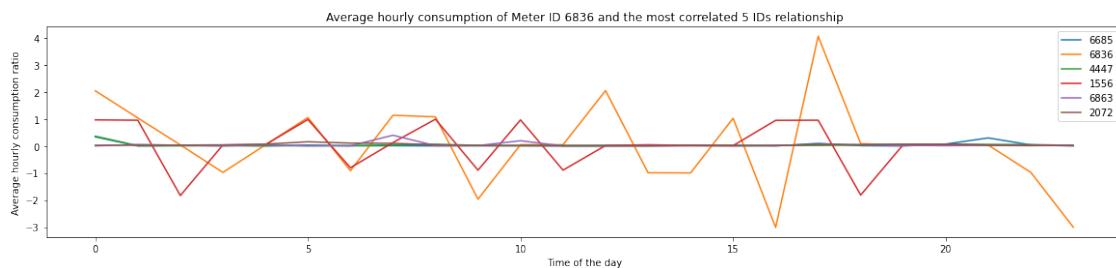
The top 5 most correlated IDs for meter ID 4421 is: 9474, 4352, 2638, 7460 and 3039



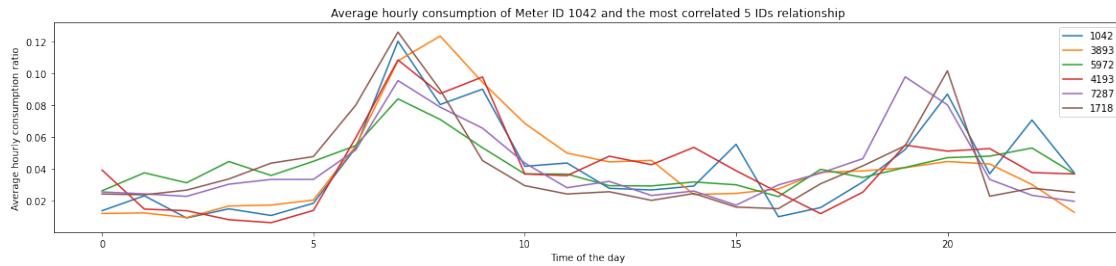
The top 5 most correlated IDs for meter ID 661 is: 4767, 3893, 9631, 5785 and 5193



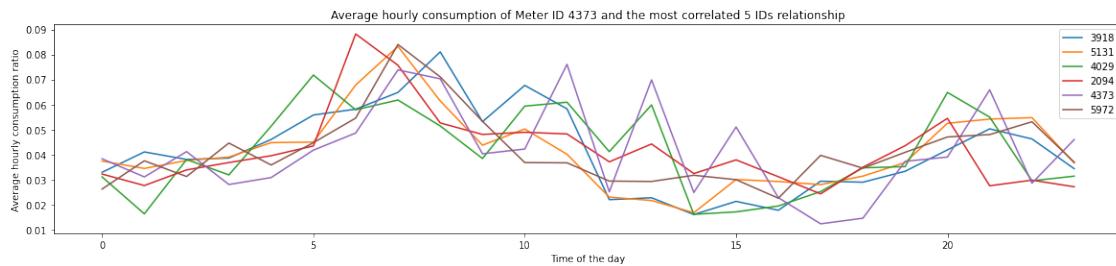
The top 5 most correlated IDs for meter ID 3134 is: 9982, 4671, 7566, 5545 and 5317



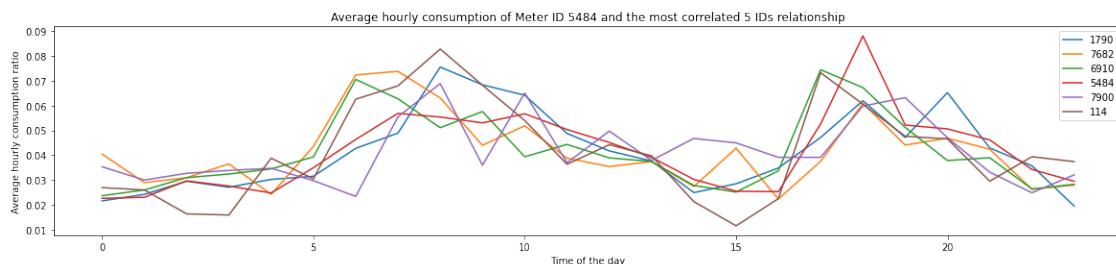
The top 5 most correlated IDs for meter ID 6836 is: 6685, 4447, 1556, 6863 and 2072



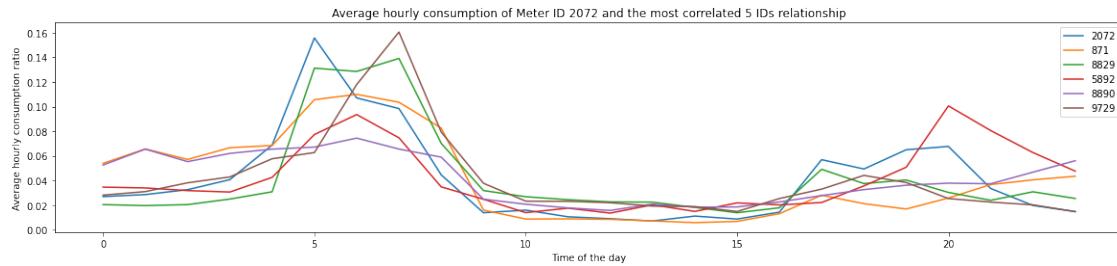
The top 5 most correlated IDs for meter ID 1042 is: 3893, 5972, 4193, 7287 and 1718



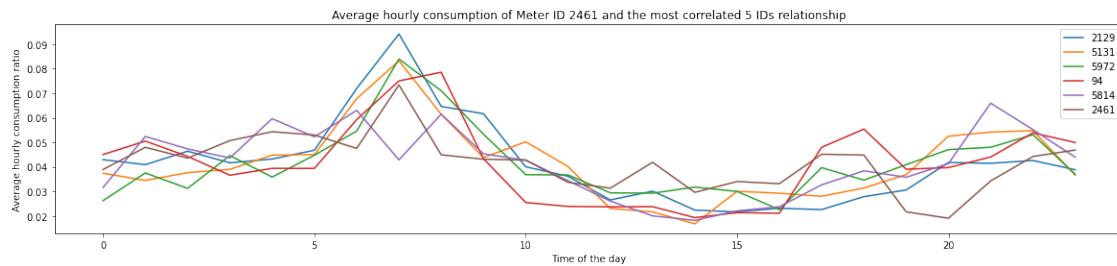
The top 5 most correlated IDs for meter ID 4373 is: 3918, 5131, 4029, 2094 and 5972



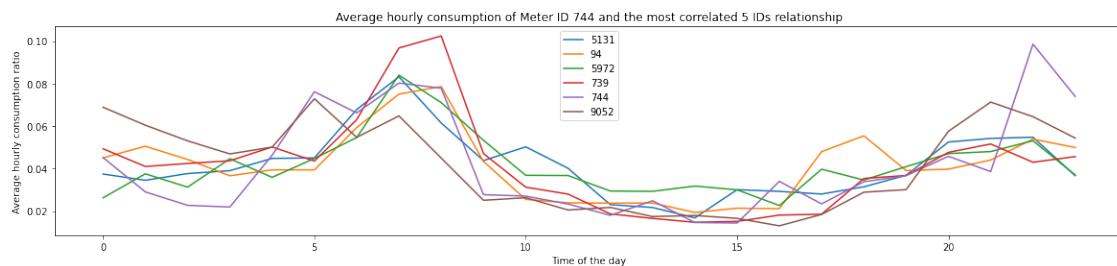
The top 5 most correlated IDs for meter ID 5484 is: 1790, 7682, 6910, 7900 and 114



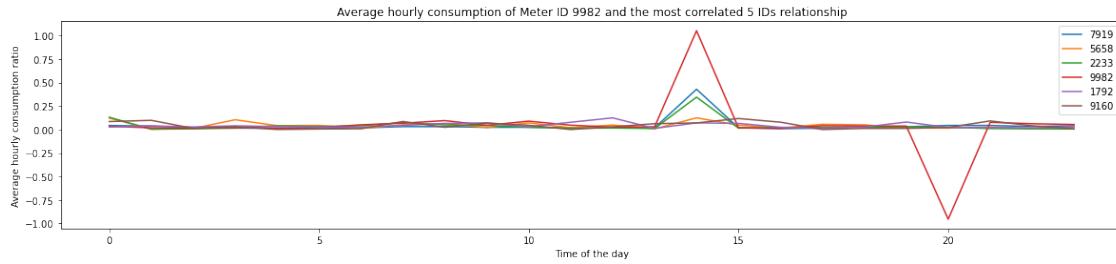
The top 5 most correlated IDs for meter ID 2072 is: 871, 8829, 5892, 8890 and 9729



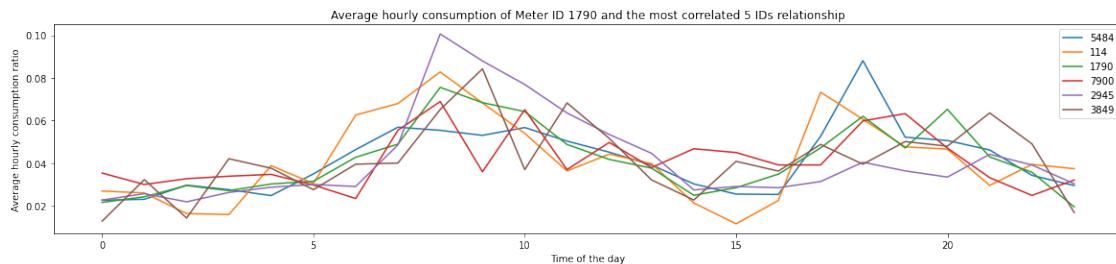
The top 5 most correlated IDs for meter ID 2461 is: 2129, 5131, 5972, 94 and 5814



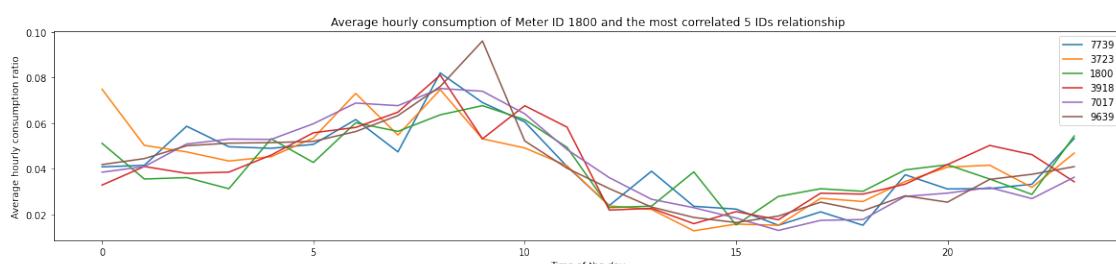
The top 5 most correlated IDs for meter ID 744 is: 5131, 94, 5972, 739 and 9052



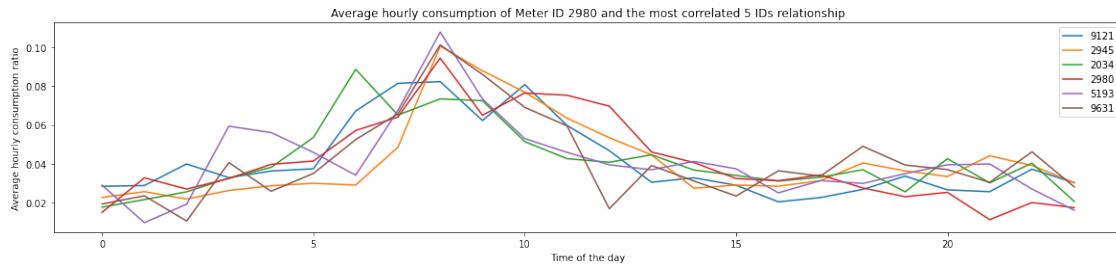
The top 5 most correlated IDs for meter ID 9982 is: 7919, 5658, 2233, 1792 and 9160



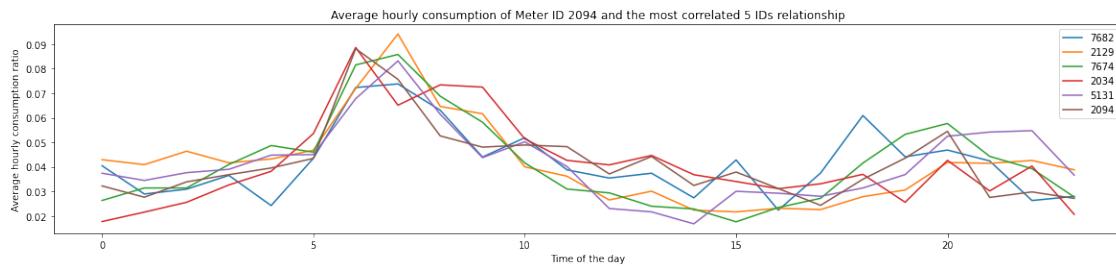
The top 5 most correlated IDs for meter ID 1790 is: 5484, 114, 7900, 2945 and 3849



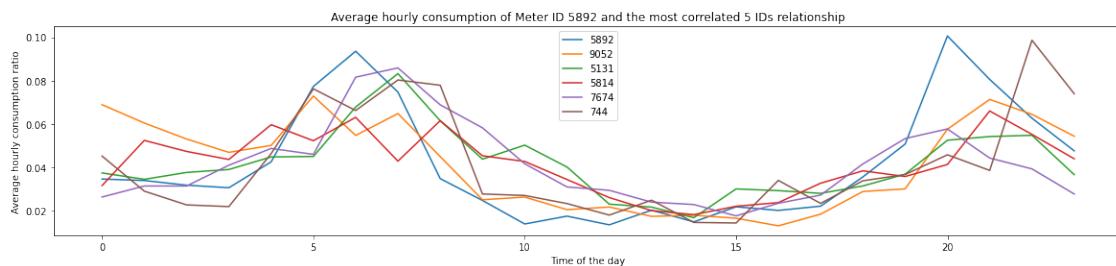
The top 5 most correlated IDs for meter ID 1800 is: 7739, 3723, 3918, 7017 and 9639



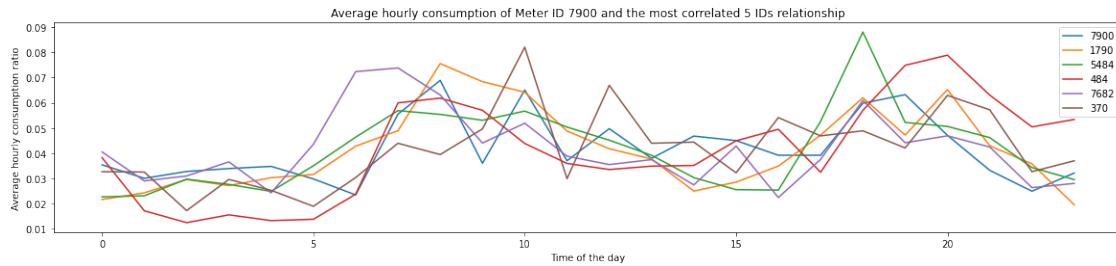
The top 5 most correlated IDs for meter ID 2980 is: 9121, 2945, 2034, 5193 and 9631



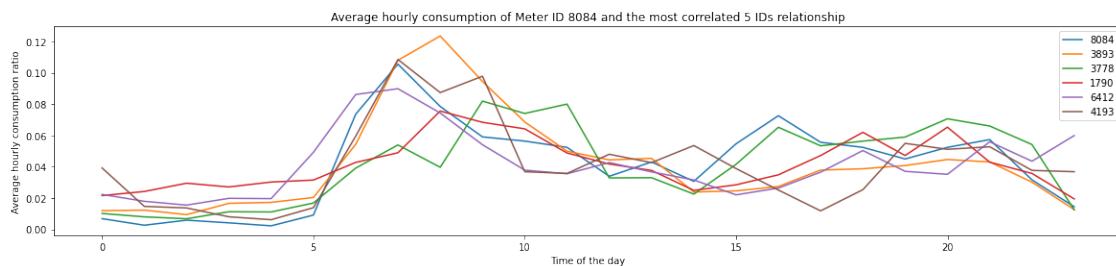
The top 5 most correlated IDs for meter ID 2094 is: 7682, 2129, 7674, 2034 and 5131



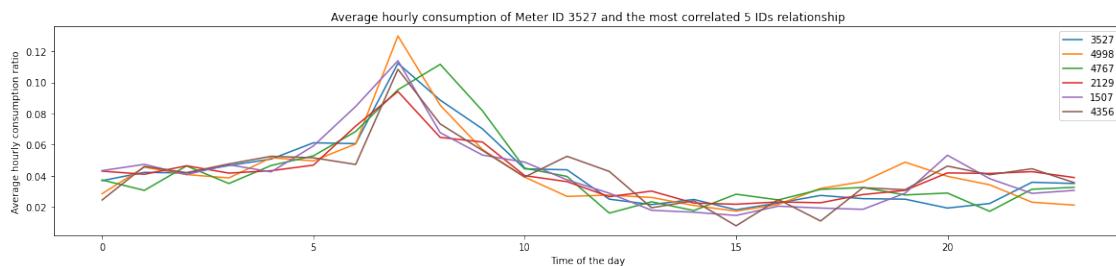
The top 5 most correlated IDs for meter ID 5892 is: 9052, 5131, 5814, 7674 and 744



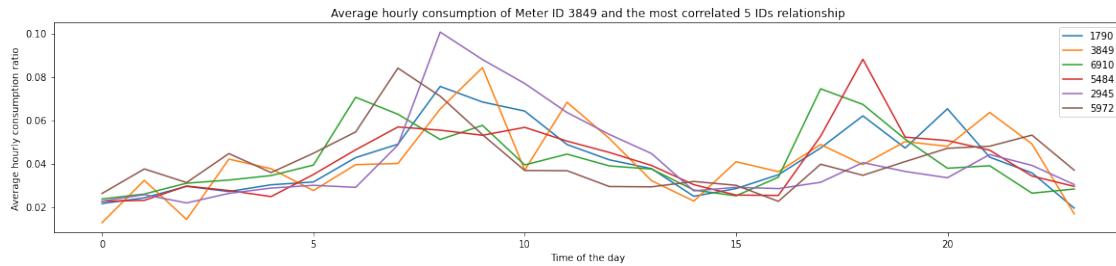
The top 5 most correlated IDs for meter ID 7900 is: 1790, 5484, 484, 7682 and 370



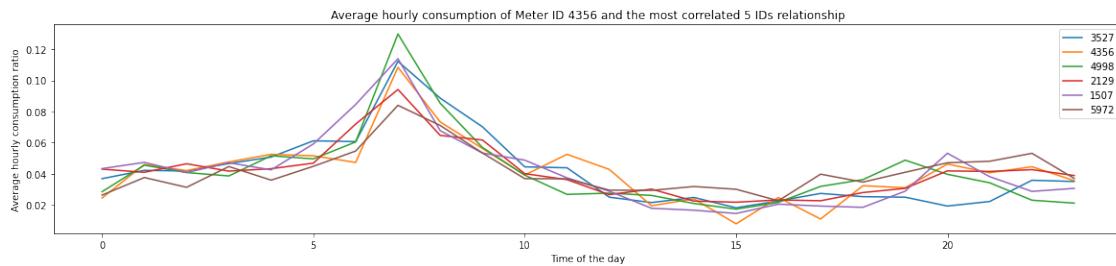
The top 5 most correlated IDs for meter ID 8084 is: 3893, 3778, 1790, 6412 and 4193



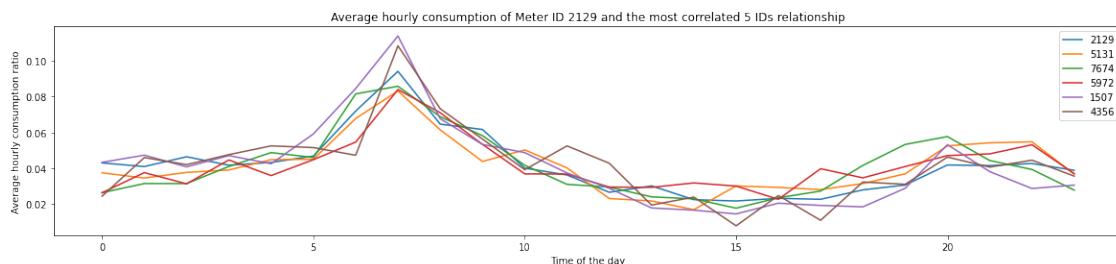
The top 5 most correlated IDs for meter ID 3527 is: 4998, 4767, 2129, 1507 and 4356



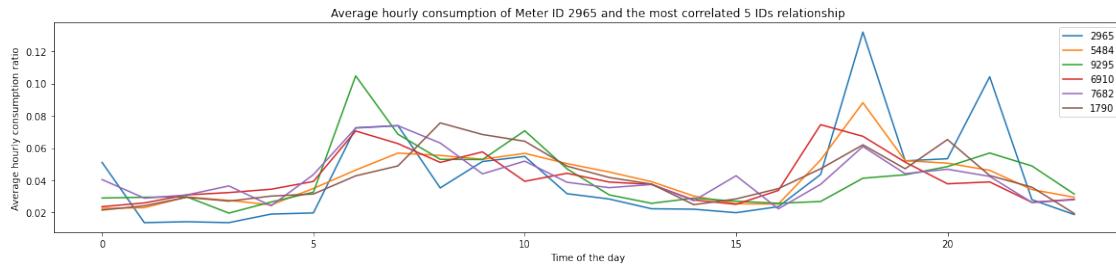
The top 5 most correlated IDs for meter ID 3849 is: 1790, 6910, 5484, 2945 and 5972



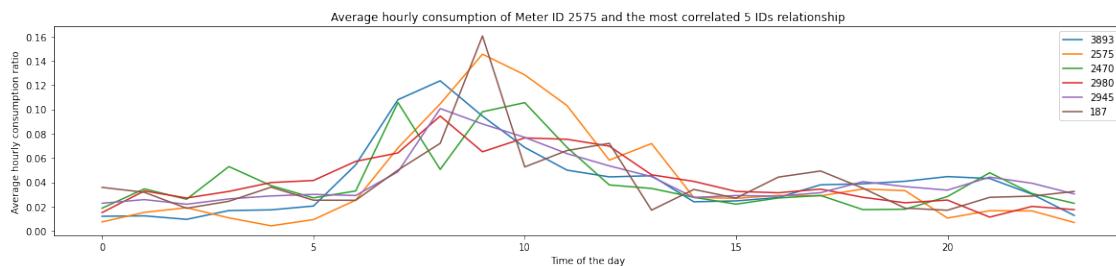
The top 5 most correlated IDs for meter ID 4356 is: 3527, 4998, 2129, 1507 and 5972



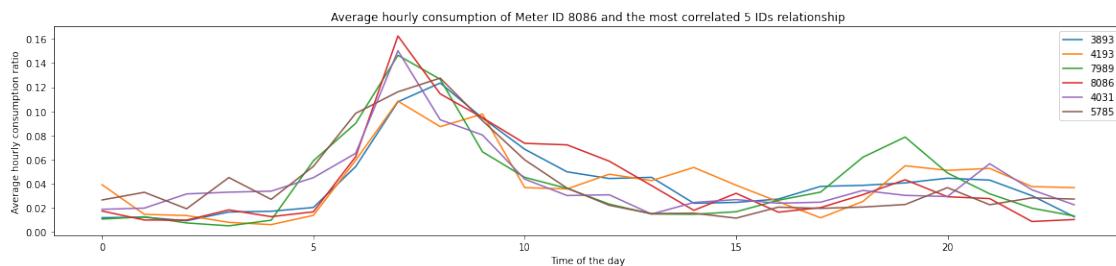
The top 5 most correlated IDs for meter ID 2129 is: 5131, 7674, 5972, 1507 and 4356



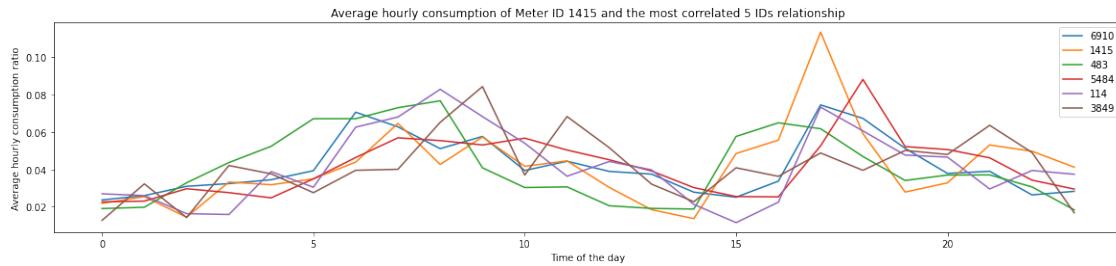
The top 5 most correlated IDs for meter ID 2965 is: 5484, 9295, 6910, 7682 and 1790



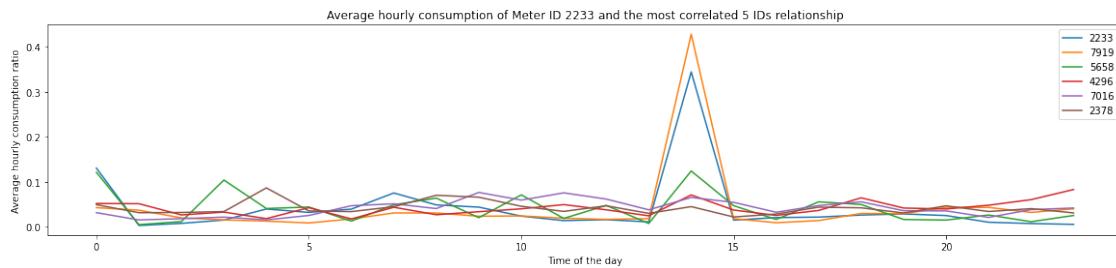
The top 5 most correlated IDs for meter ID 2575 is: 3893, 2470, 2980, 2945 and 187



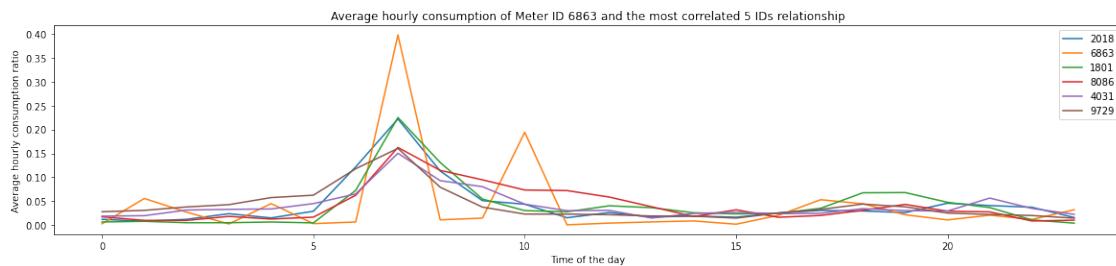
The top 5 most correlated IDs for meter ID 8086 is: 3893, 4193, 7989, 4031 and 5785



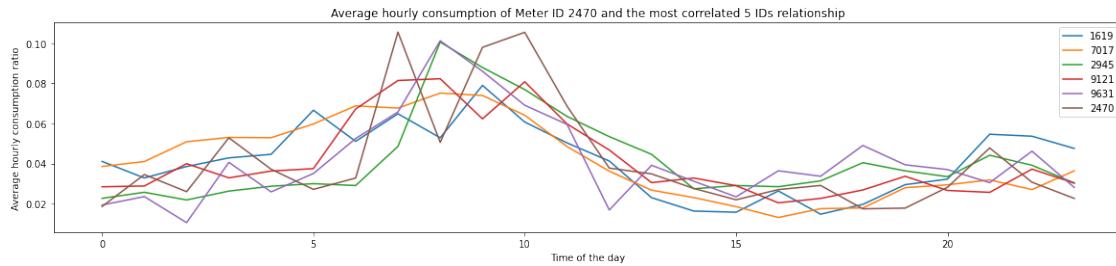
The top 5 most correlated IDs for meter ID 1415 is: 6910, 483, 5484, 114 and 3849



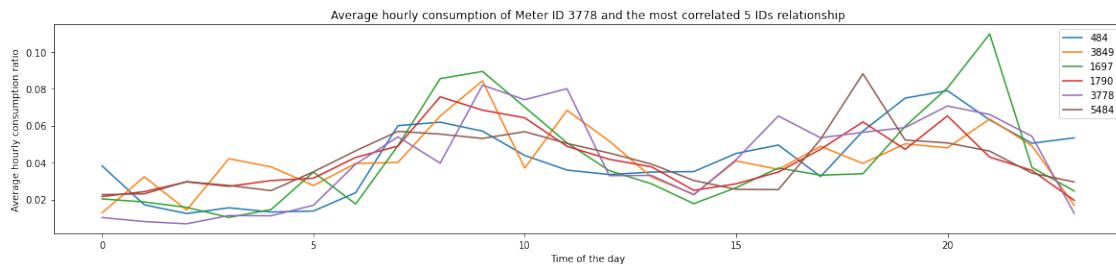
The top 5 most correlated IDs for meter ID 2233 is: 7919, 5658, 4296, 7016 and 2378



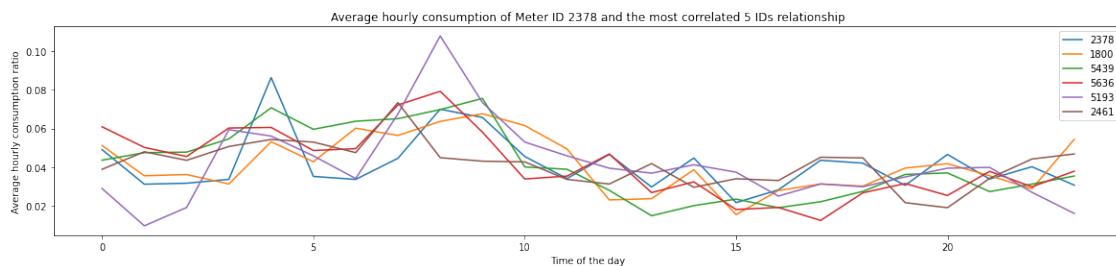
The top 5 most correlated IDs for meter ID 6863 is: 2018, 1801, 8086, 4031 and 9729



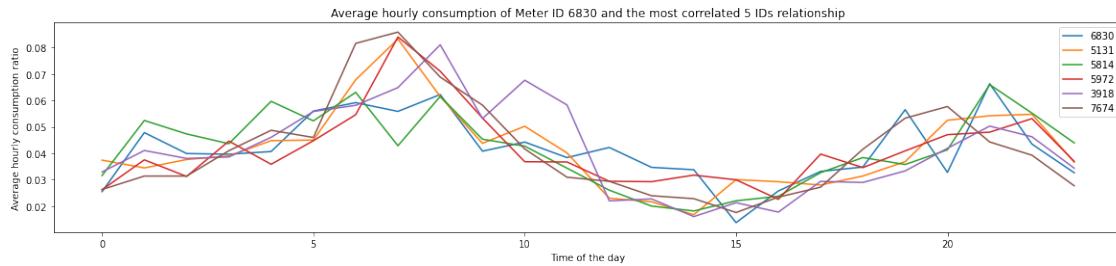
The top 5 most correlated IDs for meter ID 2470 is: 1619, 7017, 2945, 9121 and 9631



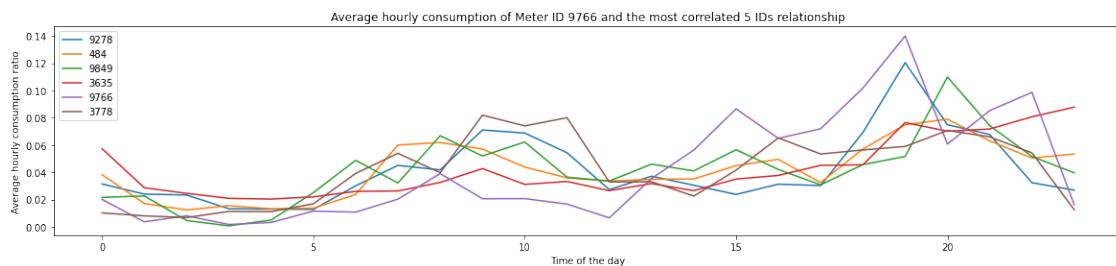
The top 5 most correlated IDs for meter ID 3778 is: 484, 3849, 1697, 1790 and 5484



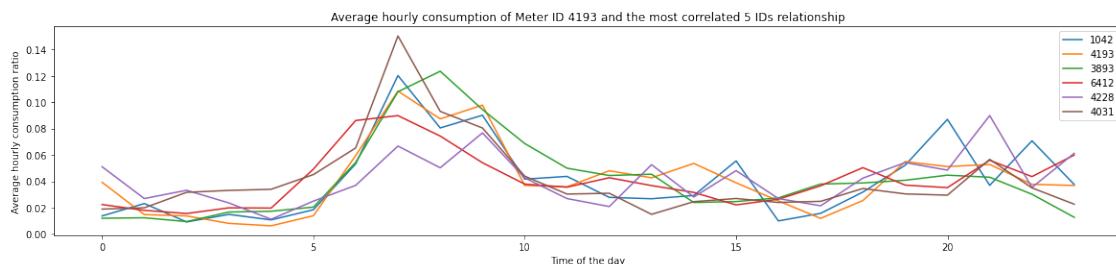
The top 5 most correlated IDs for meter ID 2378 is: 1800, 5439, 5636, 5193 and 2461



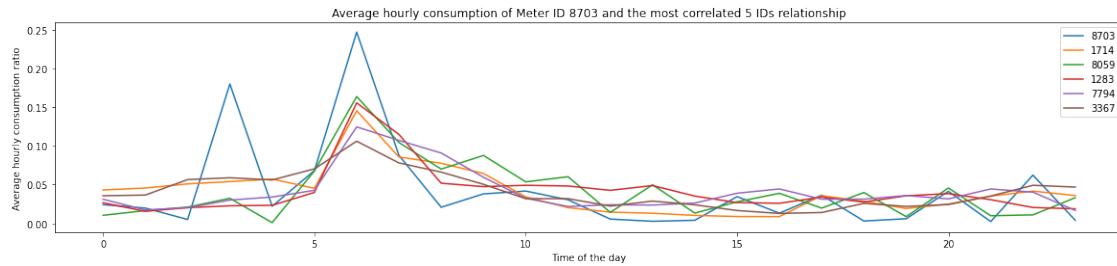
The top 5 most correlated IDs for meter ID 6830 is: 5131, 5814, 5972, 3918 and 7674



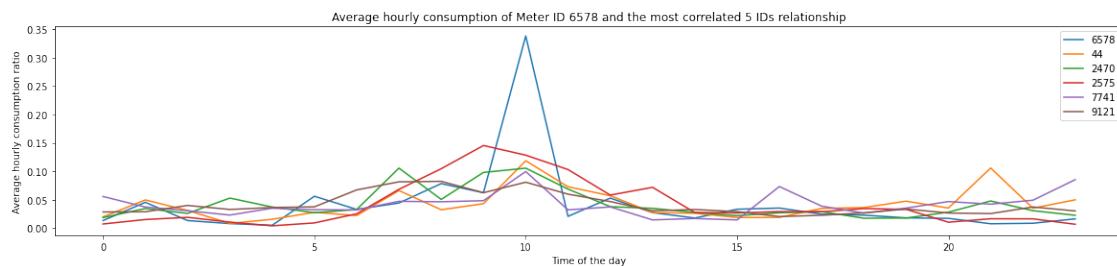
The top 5 most correlated IDs for meter ID 9766 is: 9278, 484, 9849, 3635 and 3778



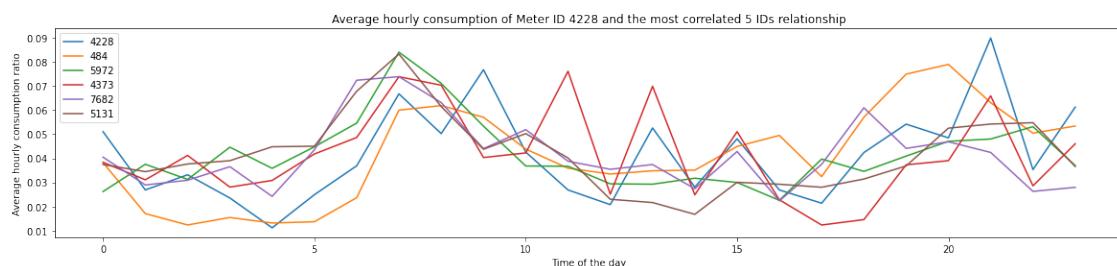
The top 5 most correlated IDs for meter ID 4193 is: 1042, 3893, 6412, 4228 and 4031



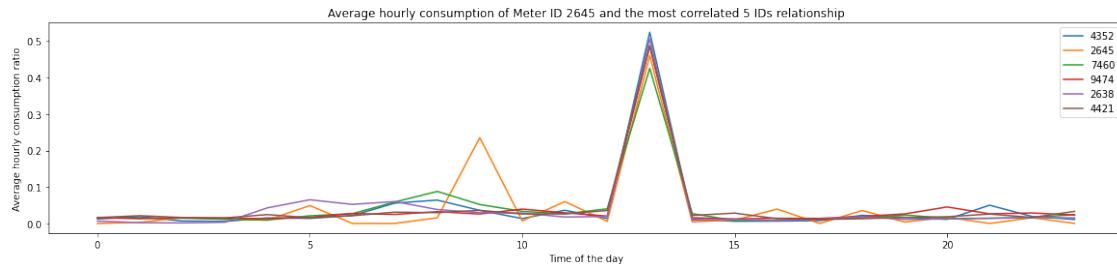
The top 5 most correlated IDs for meter ID 8703 is: 1714, 8059, 1283, 7794 and 3367



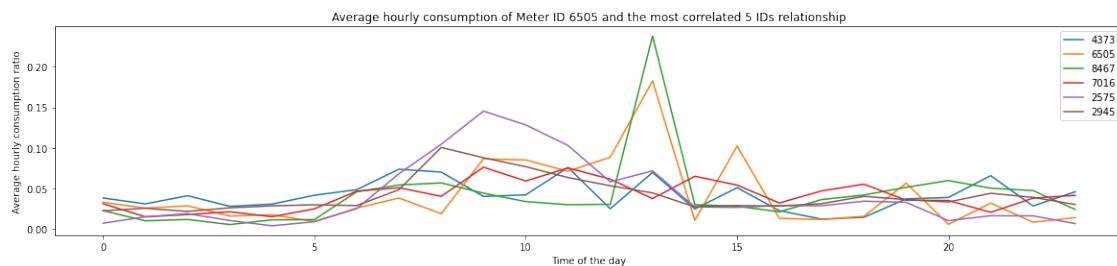
The top 5 most correlated IDs for meter ID 6578 is: 44, 2470, 2575, 7741 and 9121



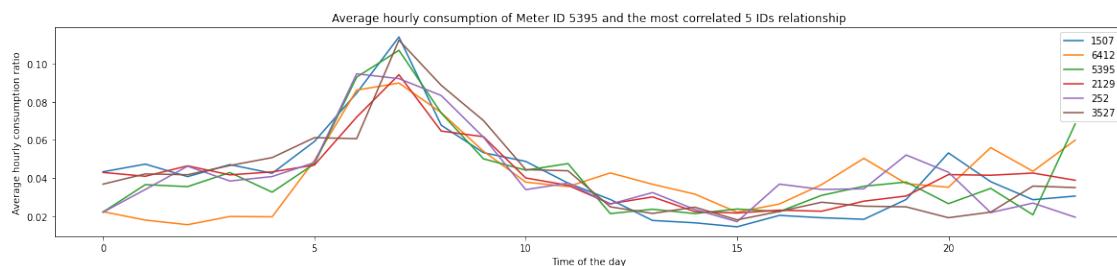
The top 5 most correlated IDs for meter ID 4228 is: 484, 5972, 4373, 7682 and 5131



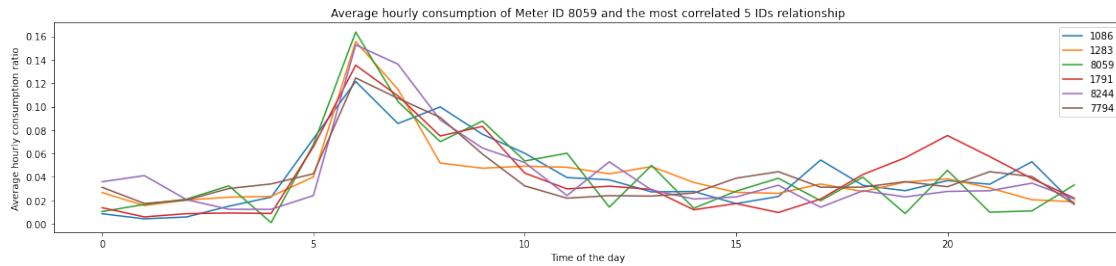
The top 5 most correlated IDs for meter ID 2645 is: 4352, 7460, 9474, 2638 and 4421



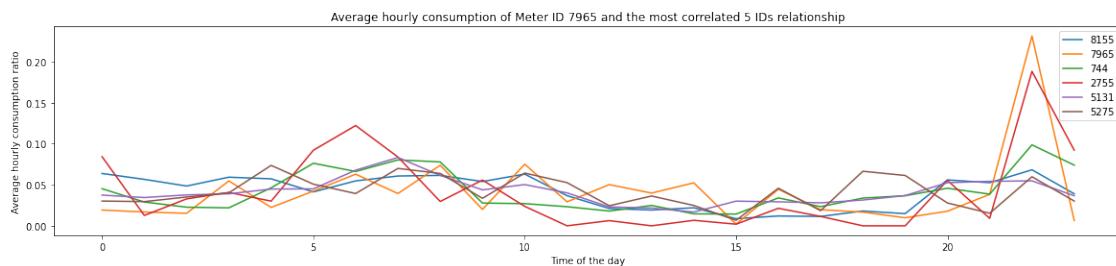
The top 5 most correlated IDs for meter ID 6505 is: 4373, 8467, 7016, 2575 and 2945



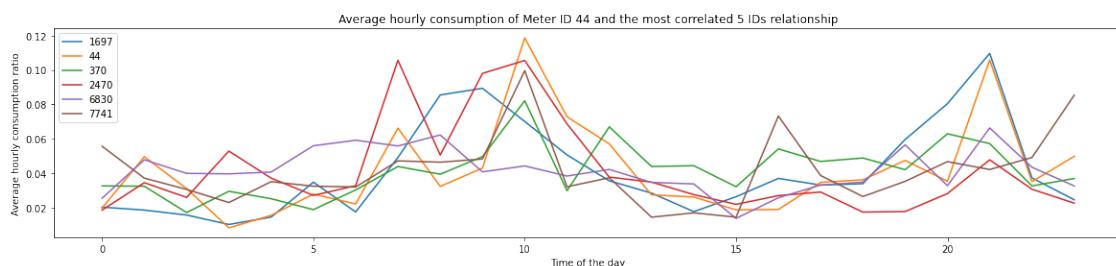
The top 5 most correlated IDs for meter ID 5395 is: 1507, 6412, 2129, 252 and 3527



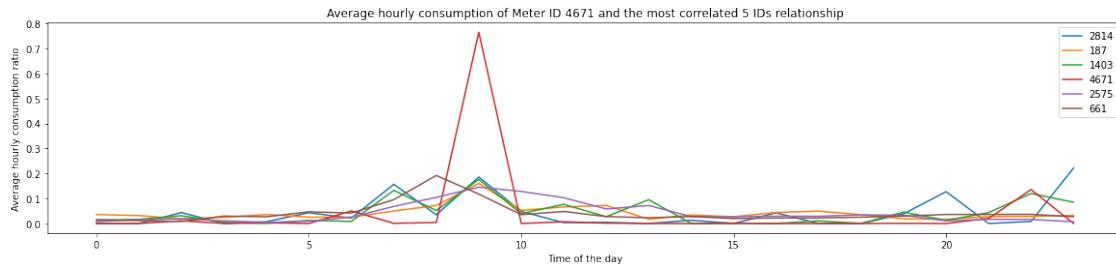
The top 5 most correlated IDs for meter ID 8059 is: 1086, 1283, 1791, 8244 and 7794



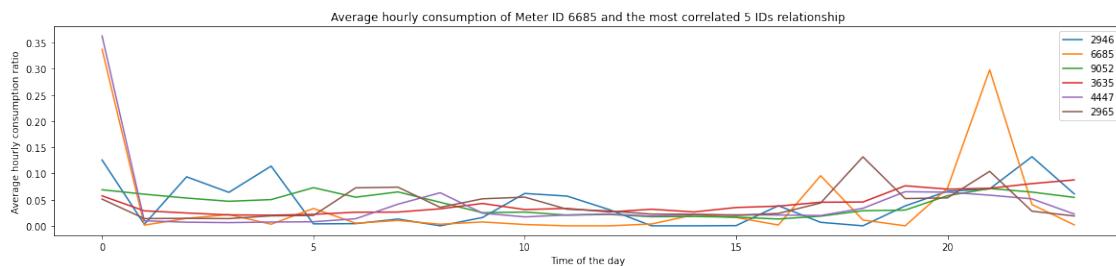
The top 5 most correlated IDs for meter ID 7965 is: 8155, 744, 2755, 5131 and 5275



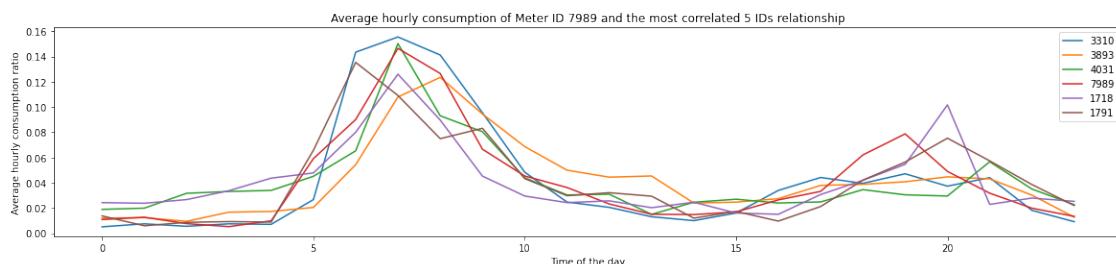
The top 5 most correlated IDs for meter ID 44 is: 1697, 370, 2470, 6830 and 7741



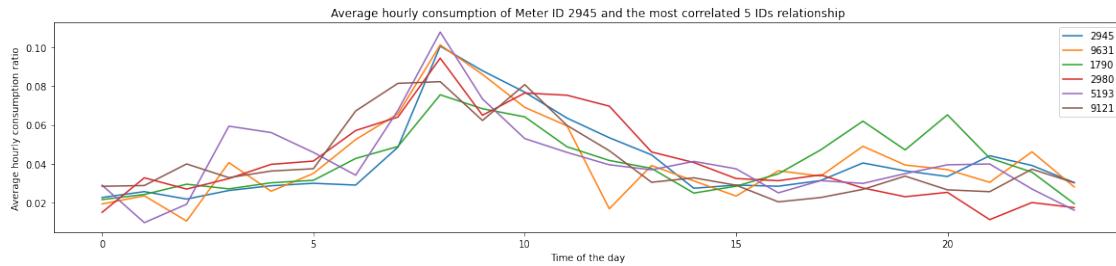
The top 5 most correlated IDs for meter ID 4671 is: 2814, 187, 1403, 2575 and 661



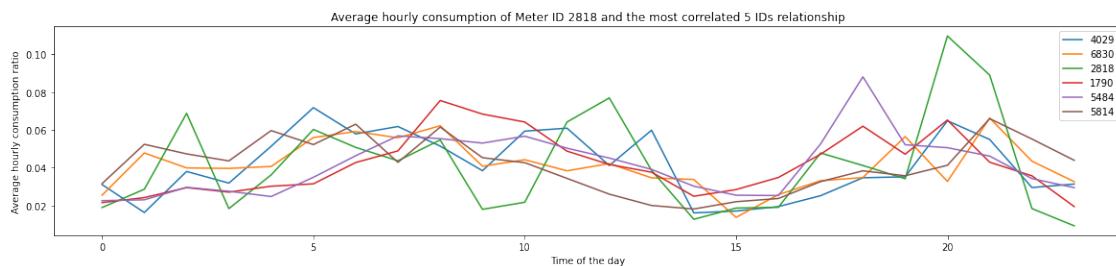
The top 5 most correlated IDs for meter ID 6685 is: 2946, 9052, 3635, 4447 and 2965



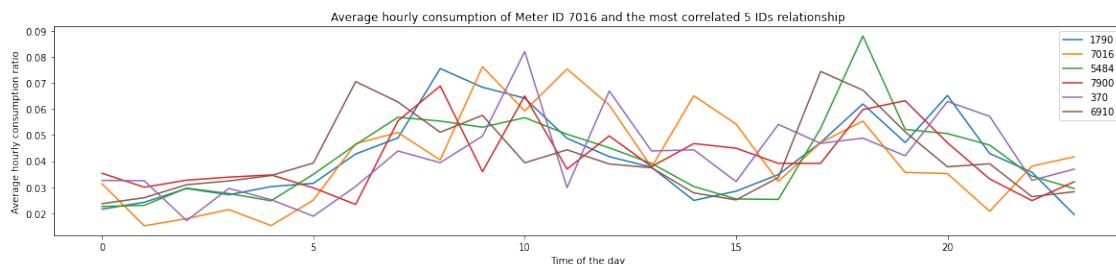
The top 5 most correlated IDs for meter ID 7989 is: 3310, 3893, 4031, 1718 and 1791



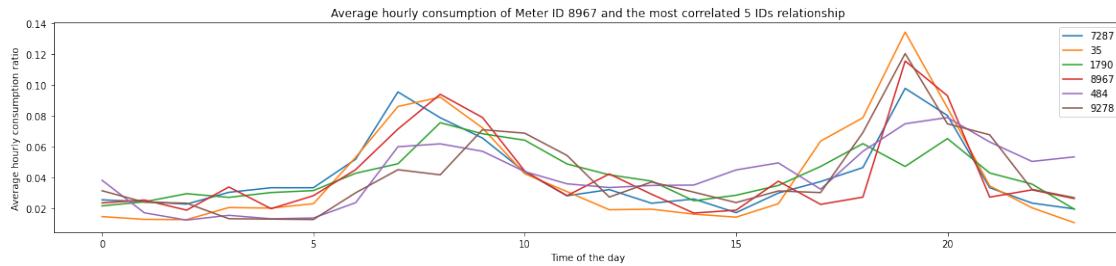
The top 5 most correlated IDs for meter ID 2945 is: 9631, 1790, 2980, 5193 and 9121



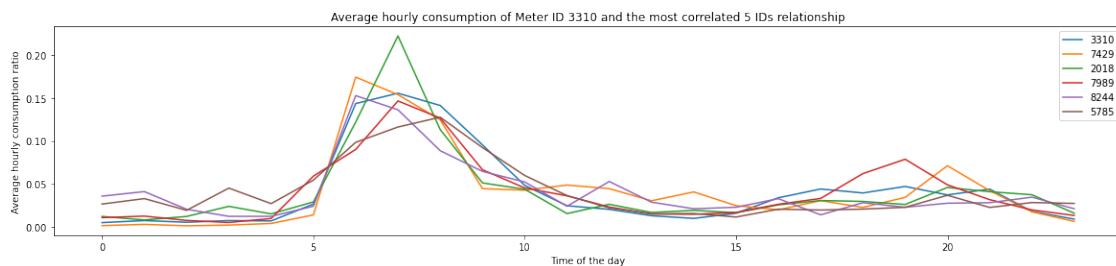
The top 5 most correlated IDs for meter ID 2818 is: 4029, 6830, 1790, 5484 and 5814



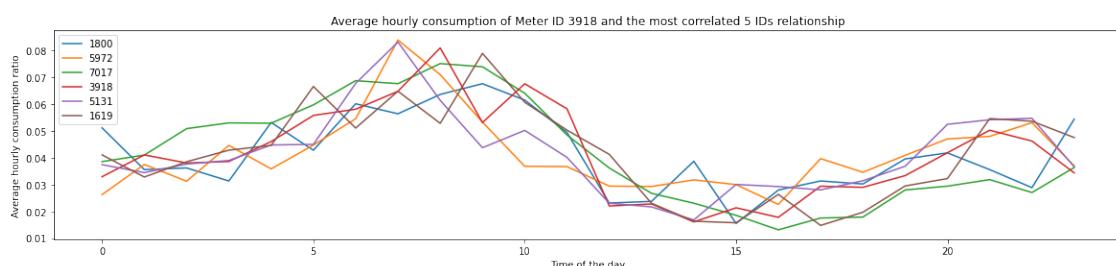
The top 5 most correlated IDs for meter ID 7016 is: 1790, 5484, 7900, 370 and 6910



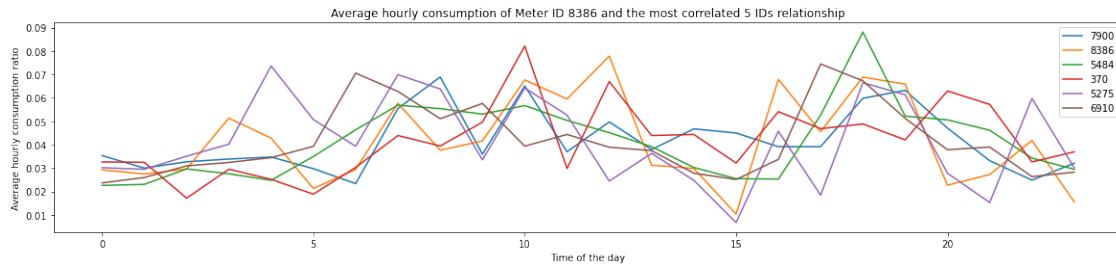
The top 5 most correlated IDs for meter ID 8967 is: 7287, 35, 1790, 484 and 9278



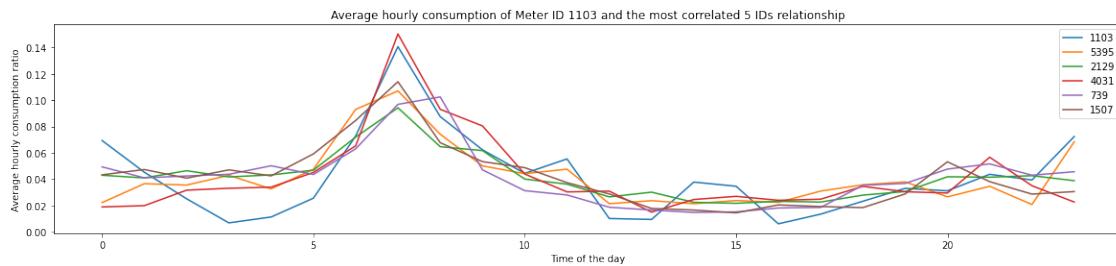
The top 5 most correlated IDs for meter ID 3310 is: 7429, 2018, 7989, 8244 and 5785



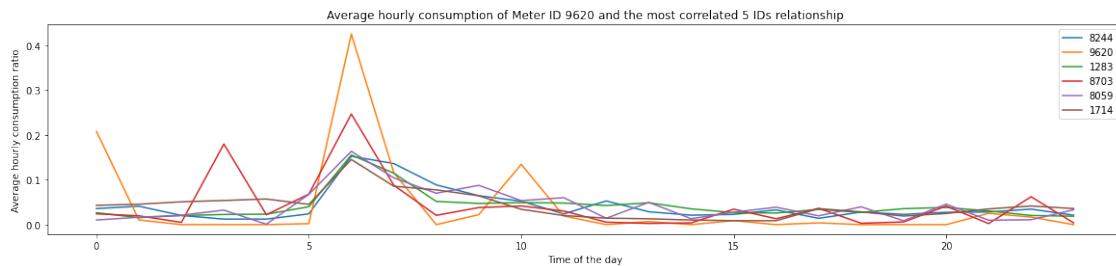
The top 5 most correlated IDs for meter ID 3918 is: 1800, 5972, 7017, 5131 and 1619



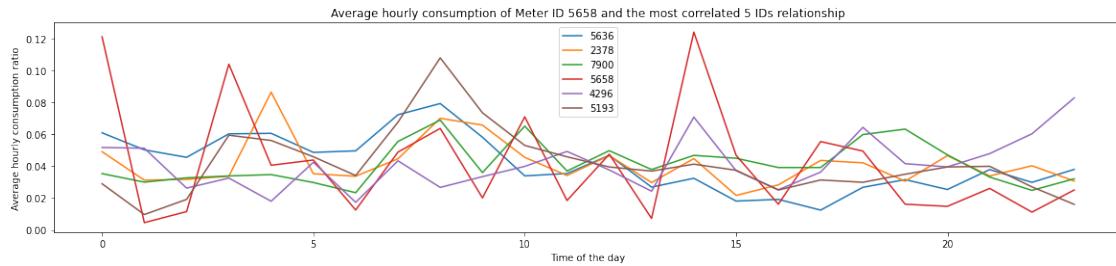
The top 5 most correlated IDs for meter ID 8386 is: 7900, 5484, 370, 5275 and 6910



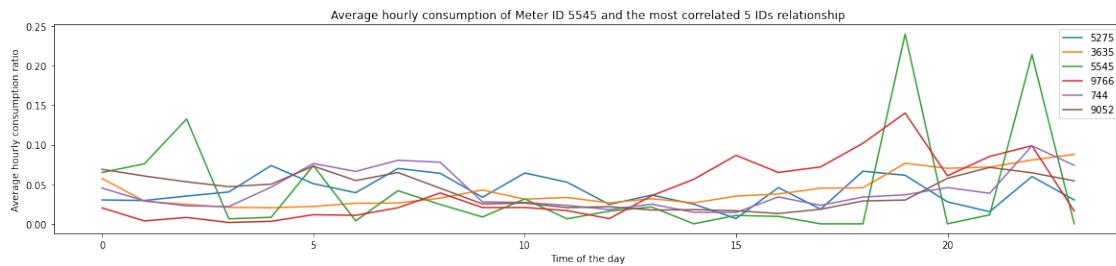
The top 5 most correlated IDs for meter ID 1103 is: 5395, 2129, 4031, 739 and 1507



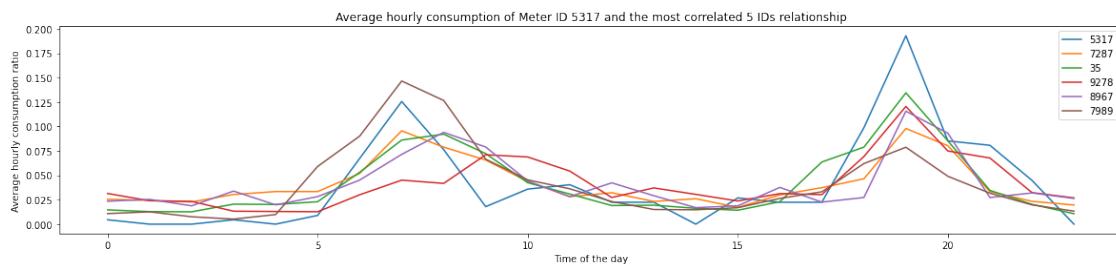
The top 5 most correlated IDs for meter ID 9620 is: 8244, 1283, 8703, 8059 and 1714



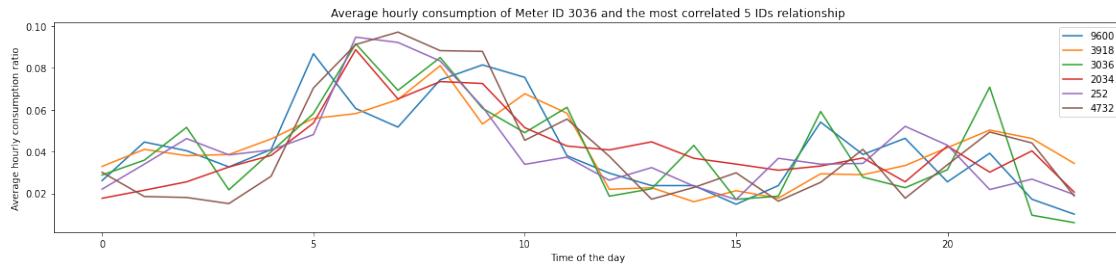
The top 5 most correlated IDs for meter ID 5658 is: 5636, 2378, 7900, 4296 and 5193



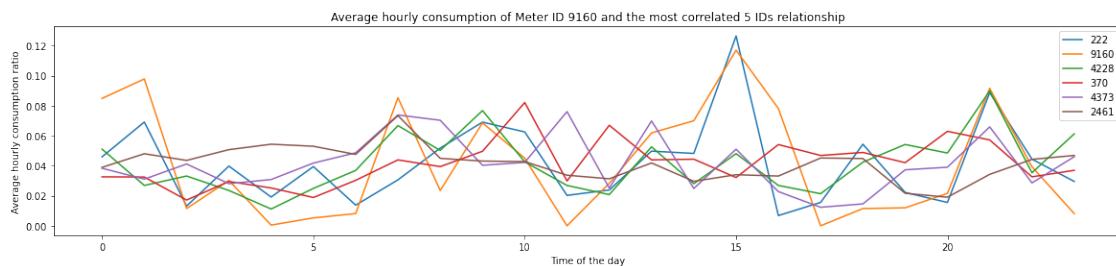
The top 5 most correlated IDs for meter ID 5545 is: 5275, 3635, 9766, 744 and 9052



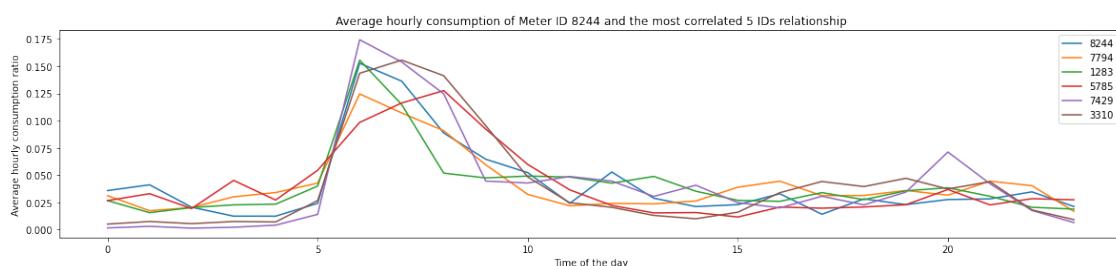
The top 5 most correlated IDs for meter ID 5317 is: 7287, 35, 9278, 8967 and 7989



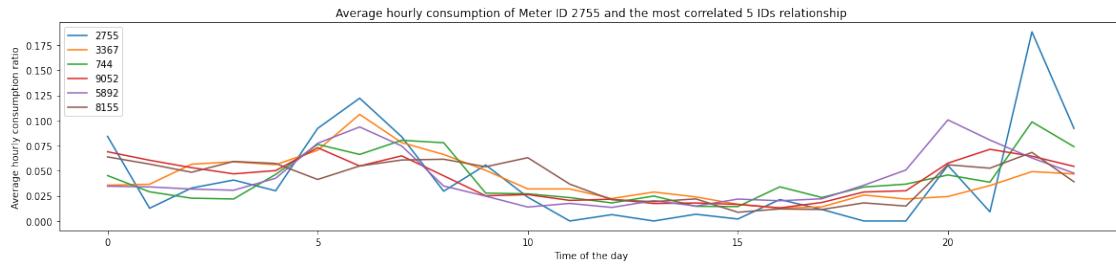
The top 5 most correlated IDs for meter ID 3036 is: 9600, 3918, 2034, 252 and 4732



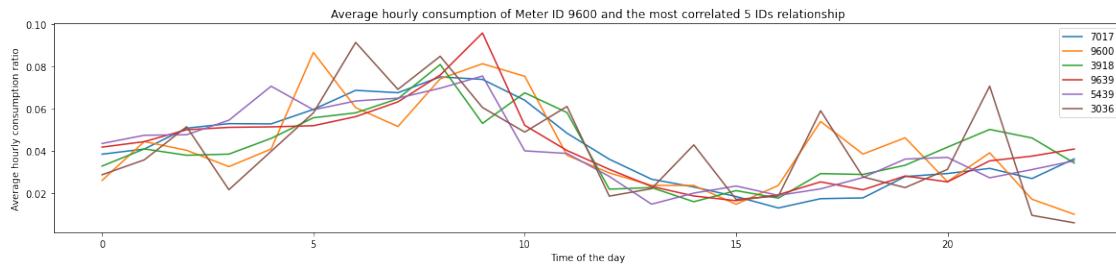
The top 5 most correlated IDs for meter ID 9160 is: 222, 4228, 370, 4373 and 2461



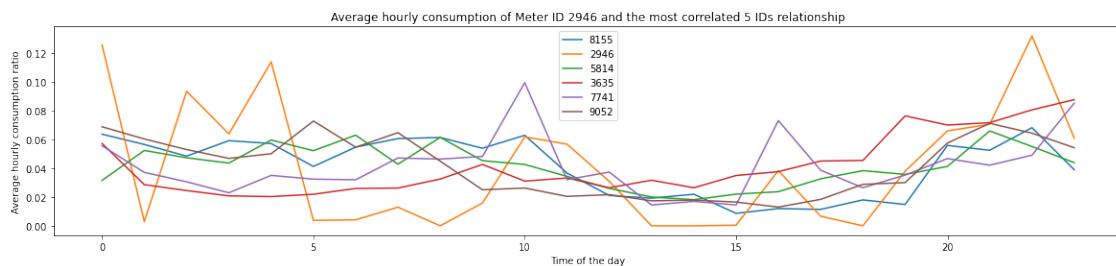
The top 5 most correlated IDs for meter ID 8244 is: 7794, 1283, 5785, 7429 and 3310



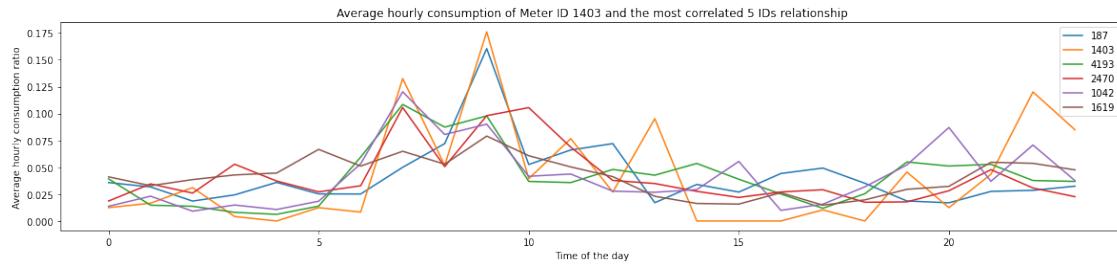
The top 5 most correlated IDs for meter ID 2755 is: 3367, 744, 9052, 5892 and 8155



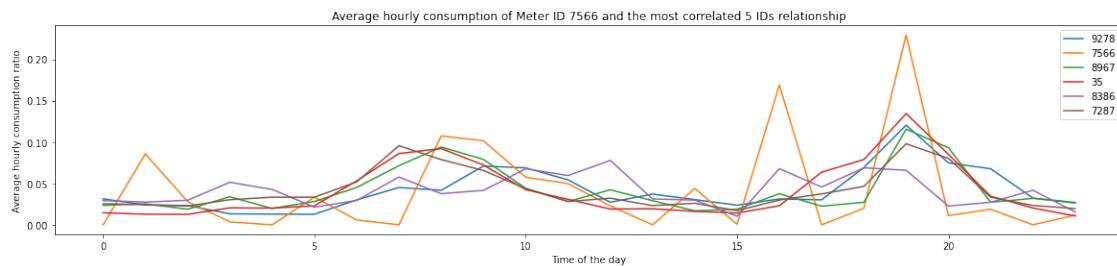
The top 5 most correlated IDs for meter ID 9600 is: 7017, 3918, 9639, 5439 and 3036



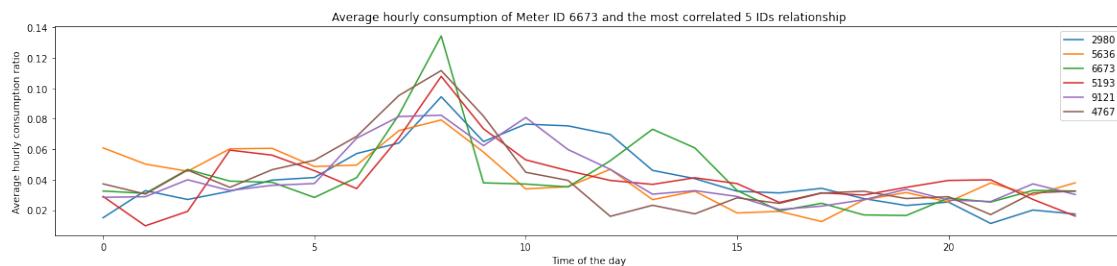
The top 5 most correlated IDs for meter ID 2946 is: 8155, 5814, 3635, 7741 and 9052



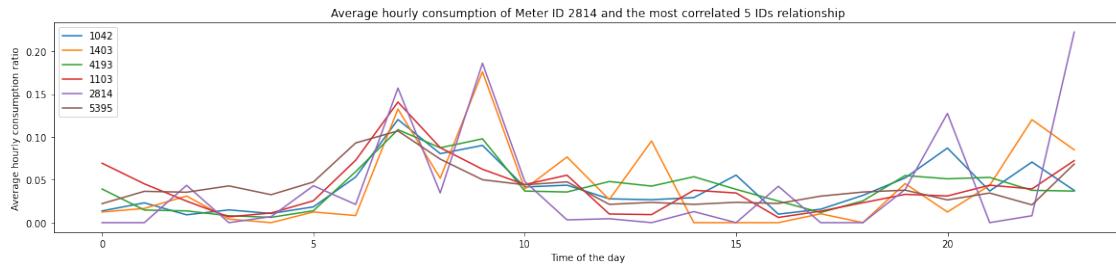
The top 5 most correlated IDs for meter ID 1403 is: 187, 4193, 2470, 1042 and 1619



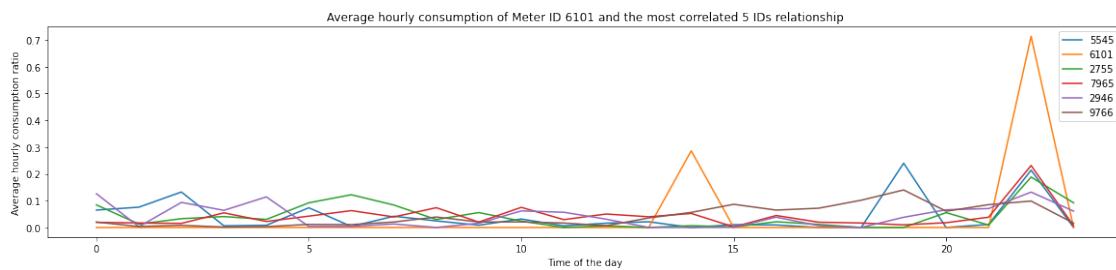
The top 5 most correlated IDs for meter ID 7566 is: 9278, 8967, 35, 8386 and 7287



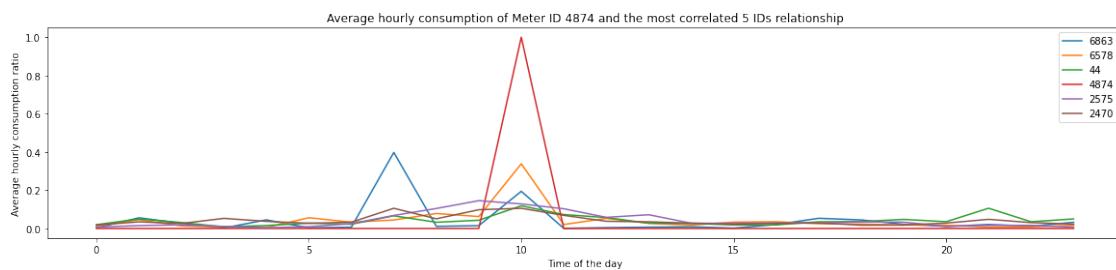
The top 5 most correlated IDs for meter ID 6673 is: 2980, 5636, 5193, 9121 and 4767



The top 5 most correlated IDs for meter ID 2814 is: 1042, 1403, 4193, 1103 and 5395



The top 5 most correlated IDs for meter ID 6101 is: 5545, 2755, 7965, 2946 and 9766



The top 5 most correlated IDs for meter ID 4874 is: 6863, 6578, 44, 2575 and 2470

6.8 Discussion

We also investigated and defined a total of 4 periods in a given day that might see houses consume more natural gas. >

The 4 periods are: 1. 06:30:00 to 08:30:00 2. 12:00:00 to 14:00:00 3. 18:00:00 to 20:00:00
4. 22:00:00 to 23:59:59

We calculated the average consumption in the 4 periods of each day, for each home, across the 6-month period.

For each of the 4 periods, we identified the 5 homes that consumed the most natural gas:

From 06:30:00 to 08:30:00:

ID4514, ID7117, ID6836, ID1185, ID8156 (ordered from highest consumption to lowest)

From 12:00:00 to 14:00:00:

ID1185, ID5129, ID4514, ID8156, ID3544 (ordered from highest consumption to lowest)

From 18:00:00 to 20:00:00:

ID9134, ID7030, ID3134, ID5129, ID6836 (ordered from highest consumption to lowest)

From 22:00:00 to 23:59:59:

ID5403, ID9134, ID5129, ID4514, ID7030 (ordered from highest consumption to lowest)

Total average consumption of each day of each home for all above 4 periods:

ID4514, ID9134, ID5129, ID1185, ID7030 (ordered from highest consumption to lowest)

Please refer to the following tables for detailed consumption

```
[13]: # initialization
# arrAveReading_1: 06:30:00 - 08:30:00
# arrAveReading_2: 12:00:00 - 14:00:00
# arrAveReading_3: 18:00:00 - 20:00:00
# arrAveReading_4: 22:00:00 - 23:59:59

dictAveReading = dictMeter.copy()
arrAveReading_1 = {}
arrAveReading_2 = {}
arrAveReading_3 = {}
arrAveReading_4 = {}

dictAveReading_1 = {}
dictAveReading_2 = {}
dictAveReading_3 = {}
dictAveReading_4 = {}
result = []

# filter the readings of each home meter for 4 periods

for key in dictAveReading:
```

```

dictAveReading[key].index = dictAveReading[key]['localminute']
dictAveReading[key]['localtime'] = pd.
    to_datetime(dictAveReading[key]['localminute']).dt.date
dictAveReading[key] = dictAveReading[key].drop(columns=['localminute', u
    'meter_value_diff', 'localminute_diff'])

dictAveReading_1[key] = dictAveReading[key].between_time('06:30:00', '08:30:
    →00')
dictAveReading_2[key] = dictAveReading[key].between_time('12:00:00', '14:00:
    →00')
dictAveReading_3[key] = dictAveReading[key].between_time('18:00:00', '20:00:
    →00')
dictAveReading_4[key] = dictAveReading[key].between_time('22:00:00', '23:59:
    →59')

arrAveReading_1[key] = np.array(dictAveReading_1[key])
arrAveReading_2[key] = np.array(dictAveReading_2[key])
arrAveReading_3[key] = np.array(dictAveReading_3[key])
arrAveReading_4[key] = np.array(dictAveReading_4[key])

# get the average consumption of each home for each of 4 periods

lst = [arrAveReading_1, arrAveReading_2, arrAveReading_3, arrAveReading_4]

for i in range(len(lst)):
    arr = lst[i]
    for key in arr:
        if len(arr[key]) == 1 or len(arr[key]) == 0:
            arr[key] = 0
        else:
            initRead = arr[key][0,1]
            reading = 0
            day = 0
            j = 0
            for j in range(len(arr[key])-1):
                if arr[key][j,2] < arr[key][j+1,2]:
                    diff = arr[key][j,1] - initRead
                    if diff < 0:
                        diff = 0
                    reading = reading + diff
                    initRead = arr[key][j+1,1]
                    day += 1
            aveReading = reading / day

            arr[key] = aveReading
    result.append(arr)

```

```

# plot the bar chart of average consumption of each home for each of 4 periods

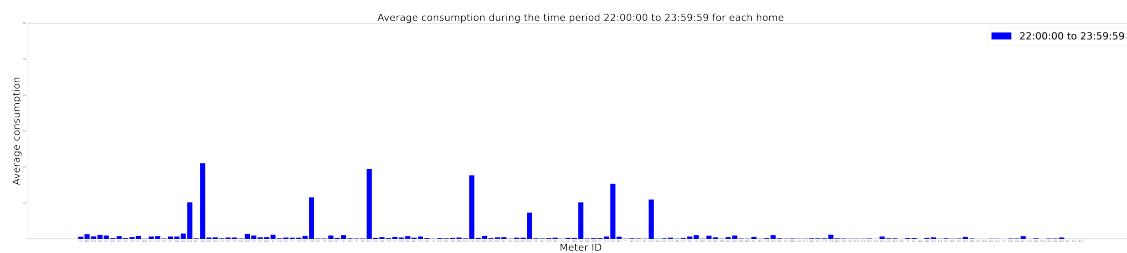
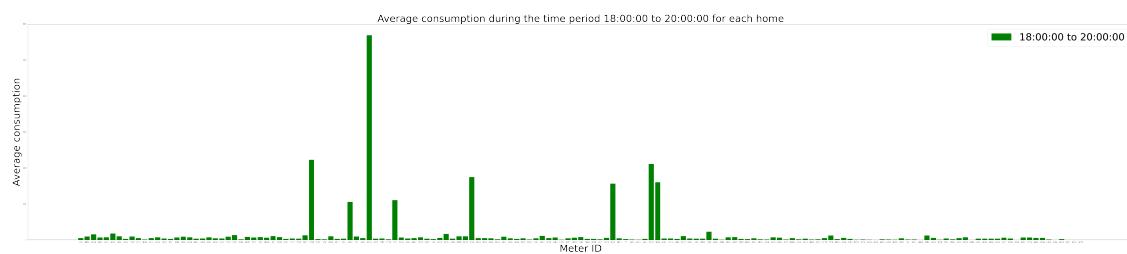
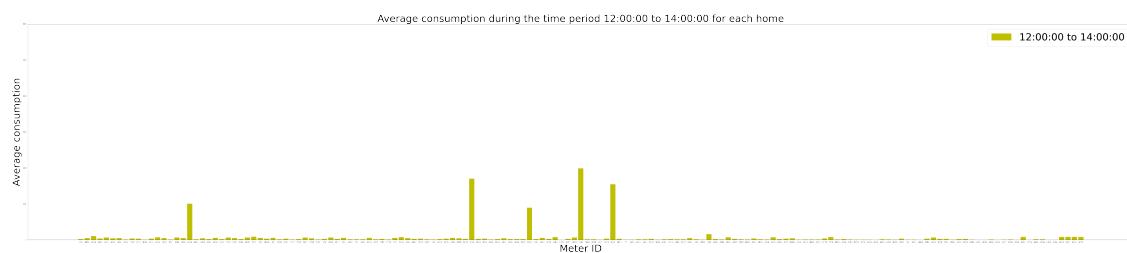
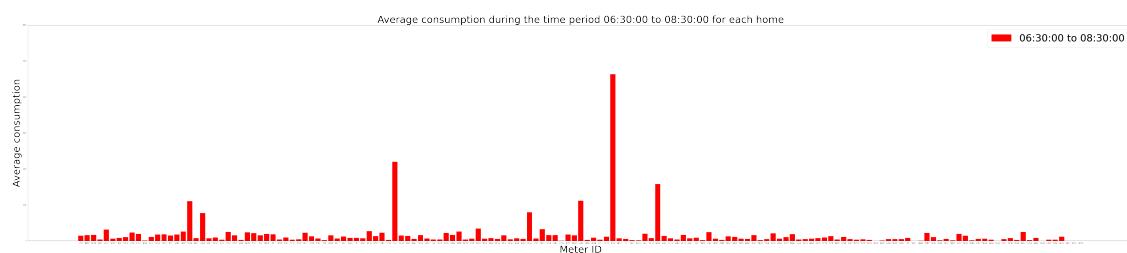
timeLst = ['06:30:00 to 08:30:00', '12:00:00 to 14:00:00', '18:00:00 to 20:00:
→00', '22:00:00 to 23:59:59']
colorLst = ['r', 'y', 'g', 'b']
for k in range(len(result)):
    readingLst = list(result[k].values())
    meterLst = [str(i) for i in list(result[k].keys())]
    plt.figure(figsize=(100,20))
    plt.bar(meterLst,readingLst, color=colorLst[k], label=timeLst[k])
    plt.xlabel('Meter ID', fontsize=50)
    plt.ylabel('Average consumption', fontsize=50)
    plt.ylim(0,600)
    plt.title('Average consumption during the time period {} for each home'.
    →format(timeLst[k]), fontsize=50)
    plt.legend(fontsize=50)
    plt.show()
print('-----')
print('-----')

# plot the stacked bar chart of total average consumption of each meter of all
→the above 4 periods
print('Below is the stacked bar chart of total average consumption of each home
→of all the above 4 periods')
plt.figure(figsize=(100,20))
readingLst1 = list(result[0].values())
meterLst1 = [str(i) for i in list(result[0].keys())]
readingLst2 = list(result[1].values())
meterLst2 = [str(i) for i in list(result[1].keys())]
readingLst3 = list(result[2].values())
meterLst3 = [str(i) for i in list(result[2].keys())]
readingLst4 = list(result[3].values())
meterLst4 = [str(i) for i in list(result[3].keys())]
plt.figure(figsize=(100,20))

plt.bar(meterLst1,readingLst1,color='r',label='06:30:00 to 08:30:00')
plt.bar(meterLst2,readingLst2,color='y',bottom=readingLst1,label='12:00:00 to
→14:00:00')
plt.bar(meterLst3,readingLst3,color='b',bottom=np.
    →add(readingLst2,readingLst1),label='18:00:00 to 20:00:00')
plt.bar(meterLst4,readingLst4,color='g',bottom=np.add(np.
    →add(readingLst3,readingLst2),readingLst1),label='22:00:00 to 23:59:59')
plt.xlabel('Meter ID', fontsize=50)
plt.ylabel('Average consumption', fontsize=50)
plt.legend(fontsize=50)

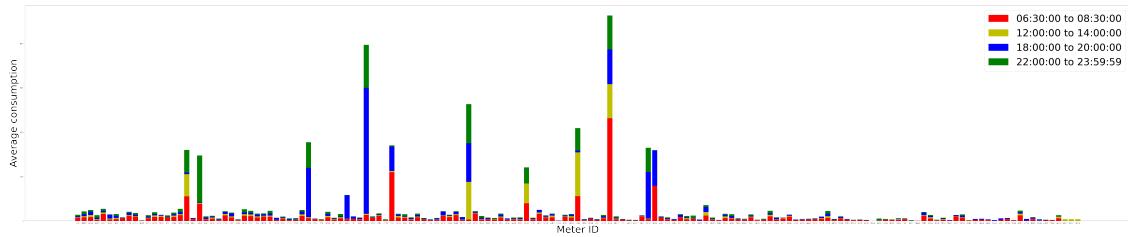
```

```
plt.show()
```



Below is the stacked bar chart of total average consumption of each home of all the above 4 periods

<Figure size 7200x1440 with 0 Axes>



```
[14]: # Top5 homes with most average consumption in between '06:30:00 to 08:30:00' of a day
```

```
d1 = {'4514':[result[0][4514]], '7117':[result[0][7117]], '6836': [result[0][6836]], '1185':[result[0][1185]], '8156':[result[0][8156]]}
```

```
table1 = pd.DataFrame(data=d1, index=['consumption value'])
```

```
print("Top 5 homes with the highest average consumption between '06:30:00 to 08:30:00' of a day")
```

```
print(table1)
```

```
print('-----')
```

```
# Top5 homes with most average consumption in between '12:00:00 - 14:00:00' of a day
```

```
d2 = {'1185':[result[1][1185]], '5129':[result[1][5129]], '4514': [result[1][4514]], '8156':[result[1][8156]], '3544':[result[1][3544]]}
```

```
table2 = pd.DataFrame(data=d2, index=['consumption value'])
```

```
print("Top 5 homes with the highest average consumption between '12:00:00 - 14:00:00' of a day")
```

```
print(table2)
```

```
print('-----')
```

```
# Top5 homes with most average consumption in between '18:00:00 to 20:00:00' of a day
```

```
d3 = {'9134':[result[2][9134]], '7030':[result[2][7030]], '3134': [result[2][3134]], '5129':[result[2][5129]], '6836':[result[2][6836]]}
```

```
table3 = pd.DataFrame(data=d3, index=['consumption value'])
```

```
print("Top 5 homes with the highest average consumption between '18:00:00 to 20:00:00' of a day")
```

```
print(table3)
```

```
print('-----')
```

```
# Top5 homes with most average consumption in between '22:00:00 to 23:59:59' of a day
```

```

d4 = {'5403':[result[3][5403]], '9134':[result[3][9134]], '5129':
    [result[3][5129]], '4514':[result[3][4514]], '7030':[result[3][7030]]}
table4 = pd.DataFrame(data=d4, index=['consumption value'])
print("Top 5 homes with the highest average consumption between '22:00:00 to 23:
    ~59:59' of a day")
print(table4)
print('-----')

# Top5 homes with most average consumption in all 4 periods of a day

dic1 = result[0] # daily average consumption during 06:30:00 - 08:30:00 of each
    ↵home
dic2 = result[1] # daily average consumption during 12:00:00 - 14:00:00 of each
    ↵home
dic3 = result[2] # daily average consumption during 18:00:00 - 20:00:00 of each
    ↵home
dic4 = result[3] # daily average consumption during 22:00:00 - 23:59:59 of each
    ↵home
dic_total = {}
for key in dic1:
    dic_total[key] = dic1[key]+dic2[key]+dic3[key]+dic4[key]

d5 = {'4514':[dic_total[4514]], '9134':[dic_total[9134]], '5129':
    [dic_total[5129]], '1185':[dic_total[1185]], '7030':[dic_total[7030]]}
table5 = pd.DataFrame(data=d5, index=['total consumption value'])
print("Top 5 homes with the highest average consumption in all 4 periods of a
    ~day")
print(table5)

```

Top 5 homes with the highest average consumption between '06:30:00 to 08:30:00'
of a day

	4514	7117	6836	1185	8156
consumption value	462.651934	219.59116	157.827815	111.259669	110.41989

Top 5 homes with the highest average consumption between '12:00:00 - 14:00:00'
of a day

	1185	5129	4514	8156	3544
consumption value	198.375691	169.605839	154.353591	100.209945	89.3125

Top 5 homes with the highest average consumption between '18:00:00 to 20:00:00'
of a day

	9134	7030	3134	5129	6836
consumption value	568.154696	222.430939	210.876923	174.552239	159.904762

```
----  
Top 5 homes with the highest average consumption between '22:00:00 to 23:59:59'  
of a day
```

5403	9134	5129	4514	7030	
consumption value	210.232044	194.187845	176.646617	152.773481	115.071823

```
----  
Top 5 homes with the highest average consumption in all 4 periods of a day  
4514 9134 5129 1185 7030  
total consumption value 926.0 794.14733 526.776526 418.537815 354.466807
```

```
[15]: # identify the top 5 most correlated meter ID by finding the Euclidean Distance  
# for each home, comparing with the rest of the homes  
# for the average consumption in the 4 periods  
  
# initialize the correlation matrix  
distArr = np.ones((157,157))  
distArr  
  
# create correlation matrix based on the Euclidean Distance between each home  
i = 0  
for key1 in dic1:  
    j = 0  
    for key2 in dic1:  
        distArr[i,j] = np.sqrt(np.square(dic1[key1]-dic1[key2])+ \  
                               np.square(dic2[key1]-dic2[key2])+np.square(dic3[key1]-dic3[key2])+ \  
                               np.square(dic4[key1]-dic4[key2]))  
        j += 1  
    i += 1  
  
# create the index list for the home meter ID  
keyInd = []  
for key in dic1:  
    keyInd.append(key)  
  
# get the index matrix for sorted correlation matrix in ascending manner, the  
# smallest distance means the most correlated  
distArrInd = np.argsort(distArr,kind='mergesort')  
  
# find the top 5 most correlated home meters ID for each home meter ID  
  
for i in range(157):  
    j = 0  
    if distArrInd[i, j] != i:  
        a = distArrInd[i, j]  
    else:  
        a = distArrInd[i, j+1]
```

```

        j = j + 1
        j = j + 1
        if distArrInd[i, j] != i:
            b = distArrInd[i, j]
        else:
            b = distArrInd[i, j+1]
            j = j + 1
        j = j + 1
        if distArrInd[i, j] != i:
            c = distArrInd[i, j]
        else:
            c = distArrInd[i, j+1]
            j = j + 1
        j = j + 1
        if distArrInd[i, j] != i:
            d = distArrInd[i, j]
        else:
            d = distArrInd[i, j+1]
            j = j + 1
        j = j + 1
        if distArrInd[i, j] != i:
            e = distArrInd[i, j]
        else:
            e = distArrInd[i, j+1]
            j = j + 1
        j = j + 1

        print('For home #{} (meter ID {}), its top 5 most correlated homes in the\u
→period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:
→00:00 - 23:59:59 are meter ID {}, {}, {}, {}, {}, respectively.'.format((i+1), keyInd[i], keyInd[a], keyInd[b], keyInd[c], keyInd[d], keyInd[e]))
        print('-----')
# print(keyInd)

```

For home #1 (meter ID 739), its top 5 most correlated homes in the period
06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 -
23:59:59 are meter ID 3527, 3918, 871, 3723, 5972, respectively.

For home #2 (meter ID 8890), its top 5 most correlated homes in the period
06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 -
23:59:59 are meter ID 94, 9295, 2378, 2129, 6412, respectively.

For home #3 (meter ID 6910), its top 5 most correlated homes in the period
06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 -
23:59:59 are meter ID 9295, 2378, 7287, 7674, 94, respectively.

For home #4 (meter ID 3635), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 9052, 744, 5814, 2461, 484, respectively.

For home #5 (meter ID 1507), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 8244, 2018, 1589, 7794, 4998, respectively.

For home #6 (meter ID 5810), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 9278, 35, 484, 7287, 3039, respectively.

For home #7 (meter ID 484), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 5892, 4447, 9052, 3723, 5814, respectively.

For home #8 (meter ID 4352), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 2638, 9121, 44, 4767, 2575, respectively.

For home #9 (meter ID 1718), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 4998, 7794, 7989, 8829, 7674, respectively.

For home #10 (meter ID 1714), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 8829, 5972, 3527, 1086, 5785, respectively.

For home #11 (meter ID 9849), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 1792, 8967, 4421, 6685, 8386, respectively.

For home #12 (meter ID 5131), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 3723, 739, 3367, 9121, 5814, respectively.

For home #13 (meter ID 6412), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 1086, 9295, 2129, 5972, 7017, respectively.

For home #14 (meter ID 7429), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 8086, 7460, 4031, 3310, 9729, respectively.

For home #15 (meter ID 871), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 739, 3527, 4767, 3367, 5131, respectively.

For home #16 (meter ID 1086), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 6412, 252, 5972, 8829, 1283, respectively.

For home #17 (meter ID 1589), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 9639, 2129, 7017, 94, 8244, respectively.

For home #18 (meter ID 8156), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 3544, 1185, 5403, 1790, 1507, respectively.

For home #19 (meter ID 9631), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 3036, 5439, 1791, 9956, 2638, respectively.

For home #20 (meter ID 5403), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 8156, 3544, 1589, 9639, 1507, respectively.

For home #21 (meter ID 4447), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 2965, 8467, 4029, 9600, 9956, respectively.

For home #22 (meter ID 2034), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 2945, 9121, 2461, 3778, 6673, respectively.

For home #23 (meter ID 5275), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 7682, 7741, 1556, 5484, 9474, respectively.

For home #24 (meter ID 7794), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 4998, 1718, 8244, 7989, 7674, respectively.

For home #25 (meter ID 7287), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 483, 2072, 252, 9295, 6910, respectively.

For home #26 (meter ID 4296), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 370, 7739, 3849, 7682, 2980, respectively.

For home #27 (meter ID 9639), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 1589, 2129, 7017, 94, 8244, respectively.

For home #28 (meter ID 7017), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 2129, 8244, 6412, 1086, 9639, respectively.

For home #29 (meter ID 252), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 483, 3893, 5193, 1283, 2094, respectively.

For home #30 (meter ID 8829), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 4031, 1714, 1086, 3527, 5972, respectively.

For home #31 (meter ID 94), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 8890, 9295, 2129, 6412, 2378, respectively.

For home #32 (meter ID 3039), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 9474, 5317, 2965, 9278, 2755, respectively.

For home #33 (meter ID 9121), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 2638, 5636, 2034, 4352, 4373, respectively.

For home #34 (meter ID 7741), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 7919, 5275, 9474, 6830, 7682, respectively.

For home #35 (meter ID 7919), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 7741, 5275, 4029, 8467, 7016, respectively.

For home #36 (meter ID 7674), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 1718, 7794, 94, 2129, 4998, respectively.

For home #37 (meter ID 7030), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 3134, 2449, 5129, 6836, 1790, respectively.

For home #38 (meter ID 4732), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 2470, 7900, 77, 8084, 5439, respectively.

For home #39 (meter ID 370), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 4296, 3849, 7739, 7682, 2818, respectively.

For home #40 (meter ID 9295), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 94, 2378, 6412, 8890, 1086, respectively.

For home #41 (meter ID 3577), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 5636, 5439, 4373, 7016, 7900, respectively.

For home #42 (meter ID 222), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 3367, 744, 3723, 5131, 5892, respectively.

For home #43 (meter ID 2449), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 1790, 5810, 2335, 6910, 7287, respectively.

For home #44 (meter ID 35), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 4447, 2965, 9600, 9766, 3039, respectively.

For home #45 (meter ID 1697), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 1791, 9956, 9600, 3036, 9631, respectively.

For home #46 (meter ID 9134), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 7030, 3134, 5129, 6836, 2449, respectively.

For home #47 (meter ID 4767), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 1042, 4352, 9729, 9766, 739, respectively.

For home #48 (meter ID 5785), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 8829, 1714, 4031, 661, 3310, respectively.

For home #49 (meter ID 7739), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 187, 4296, 6830, 1619, 370, respectively.

For home #50 (meter ID 7117), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 6836, 8156, 3544, 2449, 1801, respectively.

For home #51 (meter ID 5193), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 1283, 3893, 252, 2094, 1086, respectively.

For home #52 (meter ID 3367), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 739, 222, 3527, 3723, 5131, respectively.

For home #53 (meter ID 8467), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 4029, 7016, 4373, 2965, 7919, respectively.

For home #54 (meter ID 5972), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 3918, 483, 739, 3527, 252, respectively.

For home #55 (meter ID 5439), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 9631, 7900, 3577, 1791, 4732, respectively.

For home #56 (meter ID 114), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 1415, 6830, 5658, 5484, 4193, respectively.

For home #57 (meter ID 9474), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 5275, 1556, 7741, 7919, 3039, respectively.

For home #58 (meter ID 2335), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 7989, 7287, 1718, 4998, 7674, respectively.

For home #59 (meter ID 7460), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 7429, 8086, 4031, 3893, 9729, respectively.

For home #60 (meter ID 4998), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 7794, 1718, 7989, 7674, 8244, respectively.

For home #61 (meter ID 9278), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 3039, 2965, 9474, 5317, 2755, respectively.

For home #62 (meter ID 5129), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 7030, 3134, 1185, 8156, 3544, respectively.

For home #63 (meter ID 2018), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 1801, 1507, 4998, 7794, 5785, respectively.

For home #64 (meter ID 9052), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 5814, 2461, 744, 3635, 1800, respectively.

For home #65 (meter ID 9956), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 3036, 1791, 9600, 1697, 9631, respectively.

For home #66 (meter ID 8155), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 1800, 5636, 3577, 4356, 7919, respectively.

For home #67 (meter ID 483), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 252, 5972, 3918, 3893, 1086, respectively.

For home #68 (meter ID 1556), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 7965, 5484, 2233, 5275, 4193, respectively.

For home #69 (meter ID 5636), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 4373, 3577, 1800, 5439, 8155, respectively.

For home #70 (meter ID 4029), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 8467, 4373, 1800, 7919, 7016, respectively.

For home #71 (meter ID 3544), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 8156, 1790, 1507, 1589, 9639, respectively.

For home #72 (meter ID 1791), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 1697, 9956, 9631, 5439, 3036, respectively.

For home #73 (meter ID 1801), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 2018, 4998, 7794, 1507, 1718, respectively.

For home #74 (meter ID 9729), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 4031, 1042, 7460, 8086, 4767, respectively.

For home #75 (meter ID 1283), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 5193, 3893, 252, 2094, 1086, respectively.

For home #76 (meter ID 1792), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 9849, 6685, 2645, 8967, 8386, respectively.

For home #77 (meter ID 4031), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 9729, 3310, 8086, 7429, 7460, respectively.

For home #78 (meter ID 3893), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 5193, 1283, 252, 7460, 2094, respectively.

For home #79 (meter ID 1185), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 8156, 3544, 5129, 1790, 5403, respectively.

For home #80 (meter ID 7682), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 5658, 5484, 4296, 6830, 5275, respectively.

For home #81 (meter ID 2638), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 2470, 9631, 3036, 44, 5439, respectively.

For home #82 (meter ID 187), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 7739, 6830, 4296, 114, 1619, respectively.

For home #83 (meter ID 3723), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 5131, 739, 5892, 3918, 3367, respectively.

For home #84 (meter ID 4514), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 7117, 6836, 1185, 8156, 3544, respectively.

For home #85 (meter ID 5814), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 2461, 9052, 1800, 4373, 4029, respectively.

For home #86 (meter ID 77), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 8084, 4193, 7900, 2233, 4732, respectively.

For home #87 (meter ID 1619), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 8967, 8386, 4421, 4228, 2980, respectively.

For home #88 (meter ID 4421), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 8386, 1619, 9849, 8967, 2818, respectively.

For home #89 (meter ID 661), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 3310, 4031, 7429, 8086, 9729, respectively.

For home #90 (meter ID 3134), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 7030, 2449, 5129, 6836, 1790, respectively.

For home #91 (meter ID 6836), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 7117, 2449, 3134, 1790, 1801, respectively.

For home #92 (meter ID 1042), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 4767, 9729, 9766, 4352, 4031, respectively.

For home #93 (meter ID 4373), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 5636, 3577, 5439, 1800, 4029, respectively.

For home #94 (meter ID 5484), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 2233, 5658, 4193, 7682, 114, respectively.

For home #95 (meter ID 2072), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 483, 3918, 7287, 9729, 252, respectively.

For home #96 (meter ID 2461), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 5814, 2034, 9052, 9121, 1800, respectively.

For home #97 (meter ID 744), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 9052, 222, 5814, 5131, 3723, respectively.

For home #98 (meter ID 9982), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 5658, 7682, 8967, 114, 5484, respectively.

For home #99 (meter ID 1790), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 6910, 7674, 2335, 94, 2378, respectively.

For home #100 (meter ID 1800), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 5636, 4373, 8155, 4029, 3577, respectively.

For home #101 (meter ID 2980), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 4228, 8703, 8386, 9160, 1403, respectively.

For home #102 (meter ID 2094), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 5193, 252, 2945, 3893, 1283, respectively.

For home #103 (meter ID 5892), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 3723, 5131, 484, 3918, 744, respectively.

For home #104 (meter ID 7900), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 8084, 77, 4732, 2233, 5439, respectively.

For home #105 (meter ID 8084), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 77, 7900, 4193, 2233, 4732, respectively.

For home #106 (meter ID 3527), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 739, 871, 5972, 4031, 3367, respectively.

For home #107 (meter ID 3849), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 4296, 370, 2818, 2980, 4421, respectively.

For home #108 (meter ID 4356), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 5395, 6863, 8059, 6830, 8084, respectively.

For home #109 (meter ID 2129), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 7017, 6412, 94, 9639, 8244, respectively.

For home #110 (meter ID 2965), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 8467, 1697, 1791, 7016, 9474, respectively.

For home #111 (meter ID 2575), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 4352, 2638, 44, 9121, 2470, respectively.

For home #112 (meter ID 8086), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 7429, 3310, 7460, 4031, 9729, respectively.

For home #113 (meter ID 1415), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 114, 6578, 8703, 1403, 6830, respectively.

For home #114 (meter ID 2233), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 4193, 5484, 8084, 77, 1103, respectively.

For home #115 (meter ID 6863), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 4356, 5395, 4732, 2470, 8084, respectively.

For home #116 (meter ID 2470), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 4732, 44, 6863, 2638, 5439, respectively.

For home #117 (meter ID 3778), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 9600, 9766, 9121, 1697, 2034, respectively.

For home #118 (meter ID 2378), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 9295, 8890, 94, 6910, 484, respectively.

For home #119 (meter ID 6830), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 187, 114, 7739, 7682, 5484, respectively.

For home #120 (meter ID 9766), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 3778, 9600, 4352, 1042, 4767, respectively.

For home #121 (meter ID 4193), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 2233, 8084, 77, 1103, 5484, respectively.

For home #122 (meter ID 8703), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 1403, 4228, 2980, 6578, 7566, respectively.

For home #123 (meter ID 6578), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 1415, 8703, 8059, 1403, 114, respectively.

For home #124 (meter ID 4228), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 9160, 7566, 1403, 2980, 8703, respectively.

For home #125 (meter ID 2645), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 6685, 1792, 9849, 8386, 8967, respectively.

For home #126 (meter ID 6505), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 4671, 7739, 7741, 187, 1619, respectively.

For home #127 (meter ID 5395), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 4356, 8059, 6863, 6830, 77, respectively.

For home #128 (meter ID 8059), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 5395, 6578, 4356, 8703, 1415, respectively.

For home #129 (meter ID 7965), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 1556, 7016, 5484, 2233, 5275, respectively.

For home #130 (meter ID 44), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 2470, 2638, 6863, 4732, 5439, respectively.

For home #131 (meter ID 4671), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 1619, 4421, 9849, 1792, 8967, respectively.

For home #132 (meter ID 6685), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 2645, 1792, 9849, 8386, 8967, respectively.

For home #133 (meter ID 7989), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 1718, 4998, 2335, 7794, 7674, respectively.

For home #134 (meter ID 2945), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 2034, 2094, 6673, 5131, 3778, respectively.

For home #135 (meter ID 2818), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 3849, 4421, 370, 4296, 8386, respectively.

For home #136 (meter ID 7016), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 8467, 1791, 3577, 4029, 1556, respectively.

For home #137 (meter ID 8967), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 9849, 1619, 1792, 4421, 8386, respectively.

For home #138 (meter ID 3310), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 661, 4031, 8086, 7429, 9729, respectively.

For home #139 (meter ID 3918), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 739, 5972, 483, 252, 3527, respectively.

For home #140 (meter ID 8386), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 4421, 2980, 4228, 1619, 9160, respectively.

For home #141 (meter ID 1103), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 9620, 4193, 2233, 77, 8084, respectively.

For home #142 (meter ID 9620), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 1103, 77, 4193, 8084, 7900, respectively.

For home #143 (meter ID 5658), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 5484, 7682, 9982, 114, 2233, respectively.

For home #144 (meter ID 5545), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 9982, 9849, 8967, 1792, 4671, respectively.

For home #145 (meter ID 5317), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 3039, 2965, 1556, 9474, 2755, respectively.

For home #146 (meter ID 3036), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 9631, 9956, 1791, 1697, 5439, respectively.

For home #147 (meter ID 9160), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 7566, 4228, 1403, 2980, 8386, respectively.

For home #148 (meter ID 8244), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 7017, 7794, 2129, 1718, 4998, respectively.

For home #149 (meter ID 2755), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 5317, 2946, 3039, 9982, 9474, respectively.

For home #150 (meter ID 9600), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 9956, 1697, 1791, 3036, 9631, respectively.

For home #151 (meter ID 2946), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 5545, 2755, 9982, 5275, 7682, respectively.

For home #152 (meter ID 1403), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 4228, 8703, 7566, 9160, 2980, respectively.

For home #153 (meter ID 7566), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 9160, 4228, 8703, 1403, 2980, respectively.

For home #154 (meter ID 6673), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 2945, 2034, 9121, 5193, 3367, respectively.

For home #155 (meter ID 2814), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 6101, 4874, 2818, 370, 3849, respectively.

For home #156 (meter ID 6101), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 2814, 4874, 2818, 370, 3849, respectively.

For home #157 (meter ID 4874), its top 5 most correlated homes in the period 06:30:00 - 08:30:00, 12:00:00 - 14:00:00, 18:00:00 - 20:00:00 and 22:00:00 - 23:59:59 are meter ID 2814, 6101, 2818, 370, 3849, respectively.

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