
IronHack Data Analytics Bootcamp

Technical Analysis for E-PtoP

PRESENTED BY TIAGO DIAS



E-Ptop Business

Overview

PEER-TO-PEER

Energy exchanged directly
between neighbors.

SOLAR ENERGY

Photovoltaic energy
produced on the rooftop.

SMART METERS

Energy consumption and
generation data gathered
in real time.

EXCESS ENERGY

When generation exceeds,
consumption, you can sell
the excess.

€ FOR EACH ENERGY TRANSACTION

Objective

1. Does this location technically fits our requirements?

1.1. Define the moments where our Users would be able to sell energy.

1.1. Study the meteorological impact on the energy generation

Data

KW

MINUTE BY MINUTE READINGS

Appliance energy
consumption and
photovoltaic generation
every minute during
one year (600 000
rows)

KWH

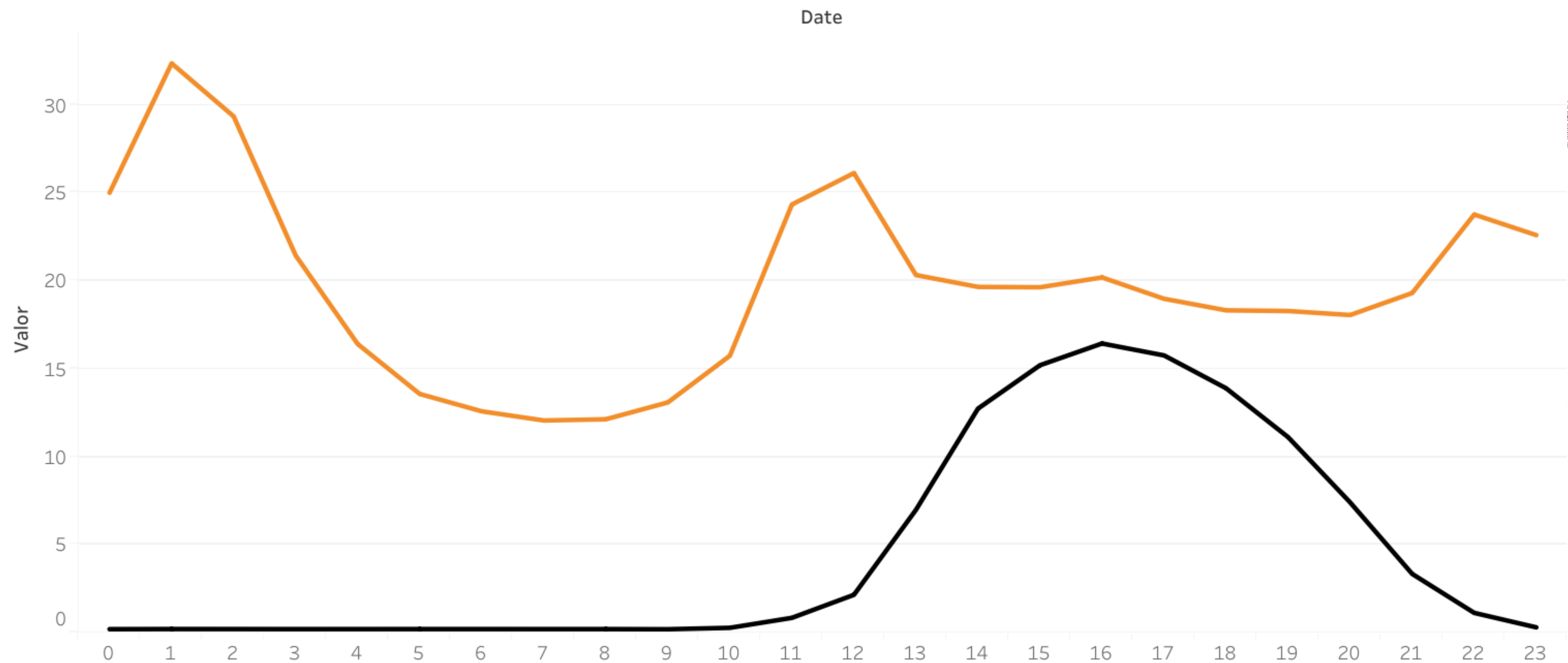
GENERATION

Photovoltaic energy
generation

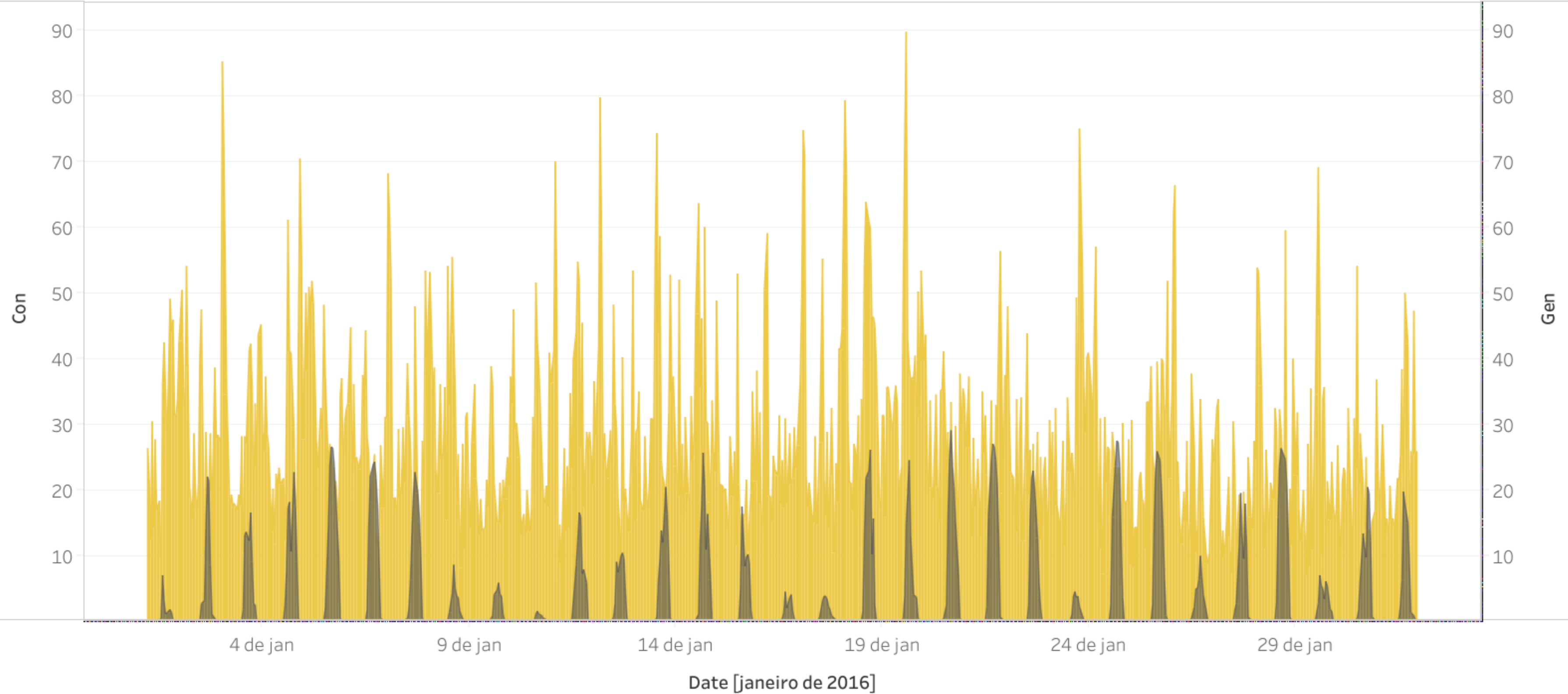
CONSUMPTION

- Microwave
- Kitchen
- Heating
- Dishwasher
- Home Office
- Living Room
- Fridge

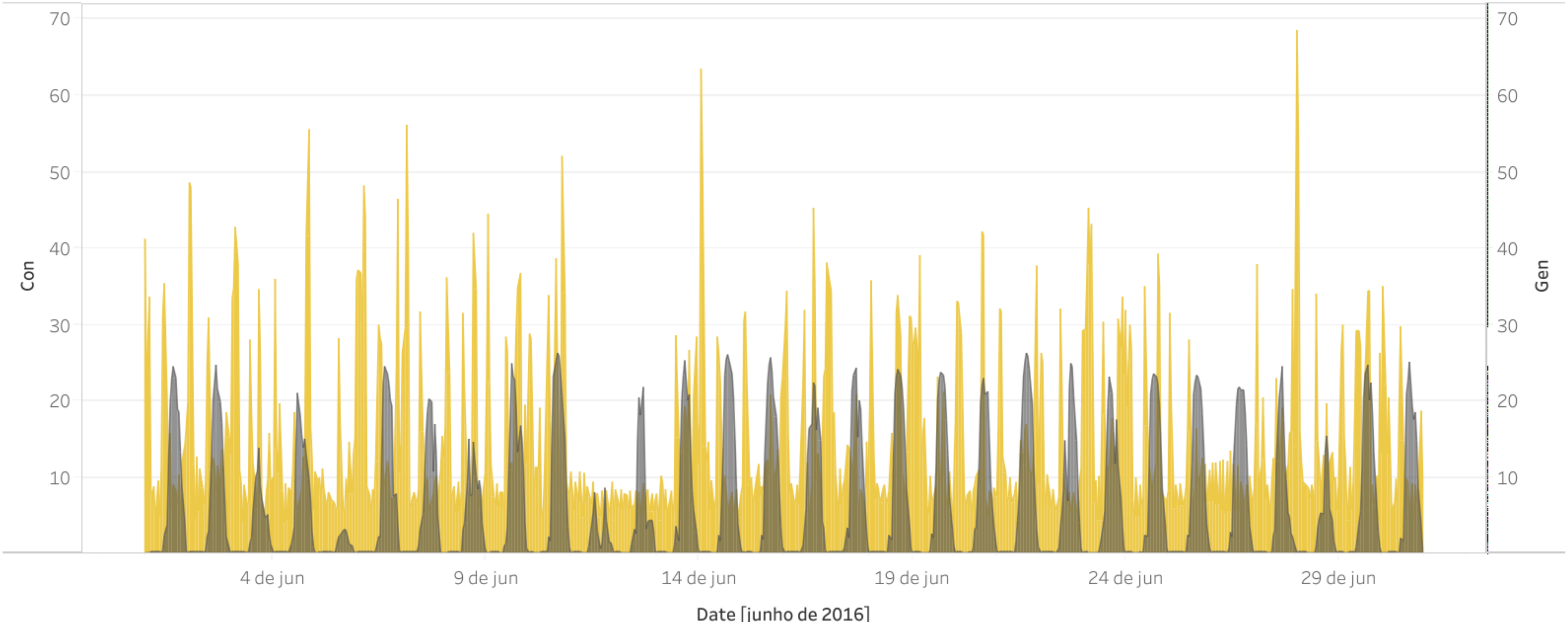
Average Generation and Consumption / Hour (Full Year)



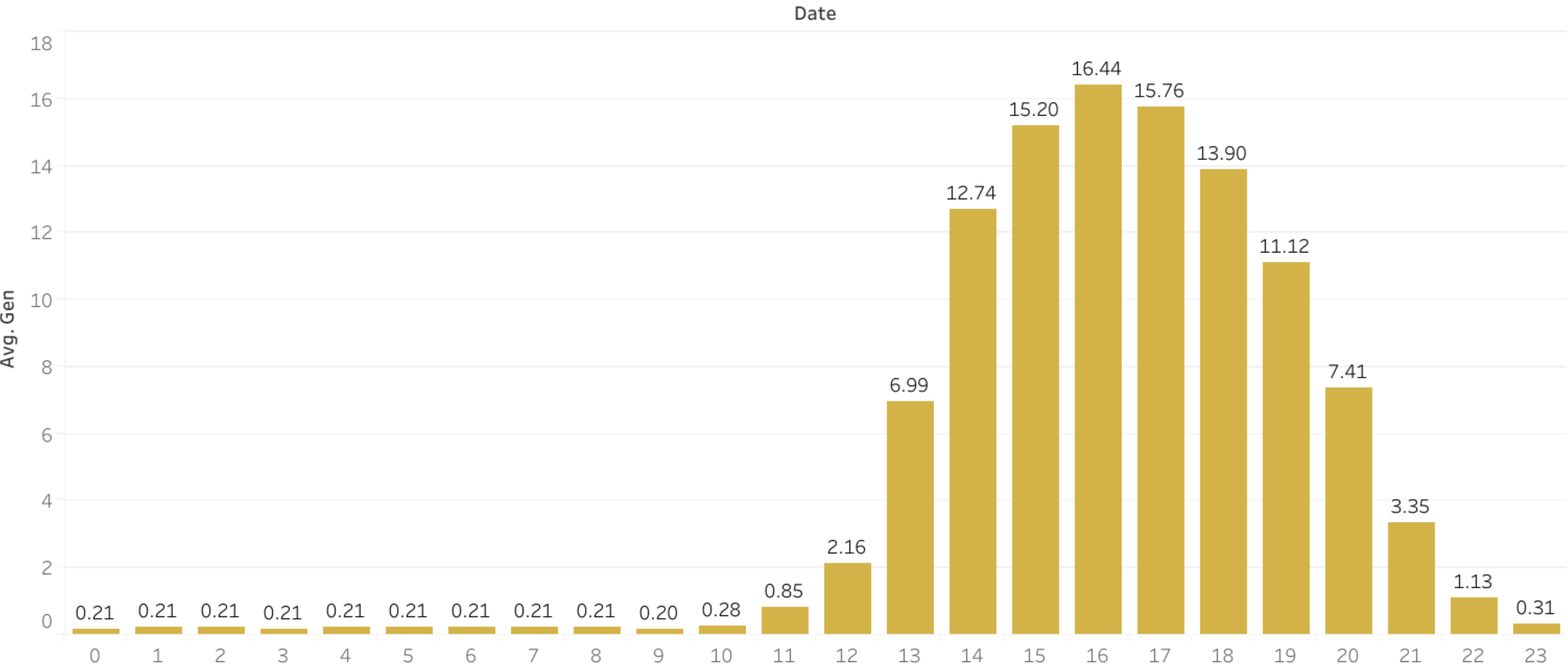
Generation vs Consumption in January



Generation vs Consumption in June



Average Generation / Hour



Consumption

month	lower_limit	higher_limit
January	76.093224	259.178426
February	45.840683	235.736077
March	38.788123	179.369990
April	20.586387	192.123170
May	4.365889	174.169455
June	30.108676	129.959028
July	31.983523	196.375087

Generation

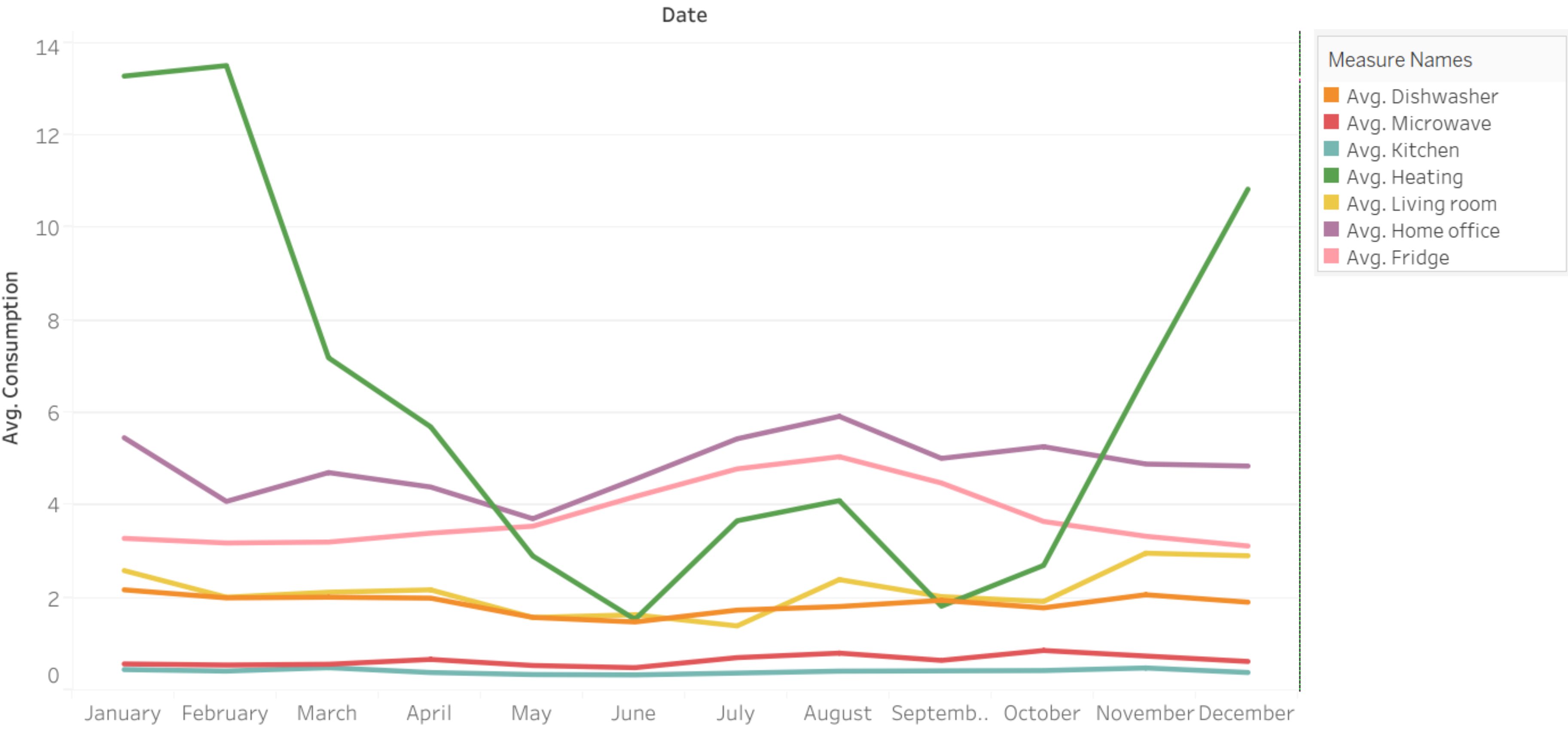
month	lower_limit	higher_limit
January	5.883945	142.265616
February	-18.071441	173.518560
March	31.190005	163.640822
April	0.813697	187.909033
May	11.669613	154.441151
June	53.748849	164.321798
July	47.928591	146.202210

JUNE

14:00 TO 19:00

**GENERATION > CONSUMPTION
95% OF THE TIMES**

Average Consumption /Appliance



Consumption

month	lower_limit	higher_limit
January	9.730438	155.251567
February	5.921665	110.252903
March	20.712064	111.395148
April	10.423190	138.177433
May	-0.703129	144.518099
June	21.064319	116.408280
July	27.750633	148.331143

Generation

month	lower_limit	higher_limit
January	5.883945	142.265616
February	-18.071441	173.518560
March	31.190005	163.640822
April	0.813697	187.909033
May	11.669613	154.441151
June	53.748849	164.321798
July	47.928591	146.202210

JUNE AND MARCH

14:00 TO 19:00

**GENERATION > CONSUMPTION
95% OF THE TIMES**

Technical Insights

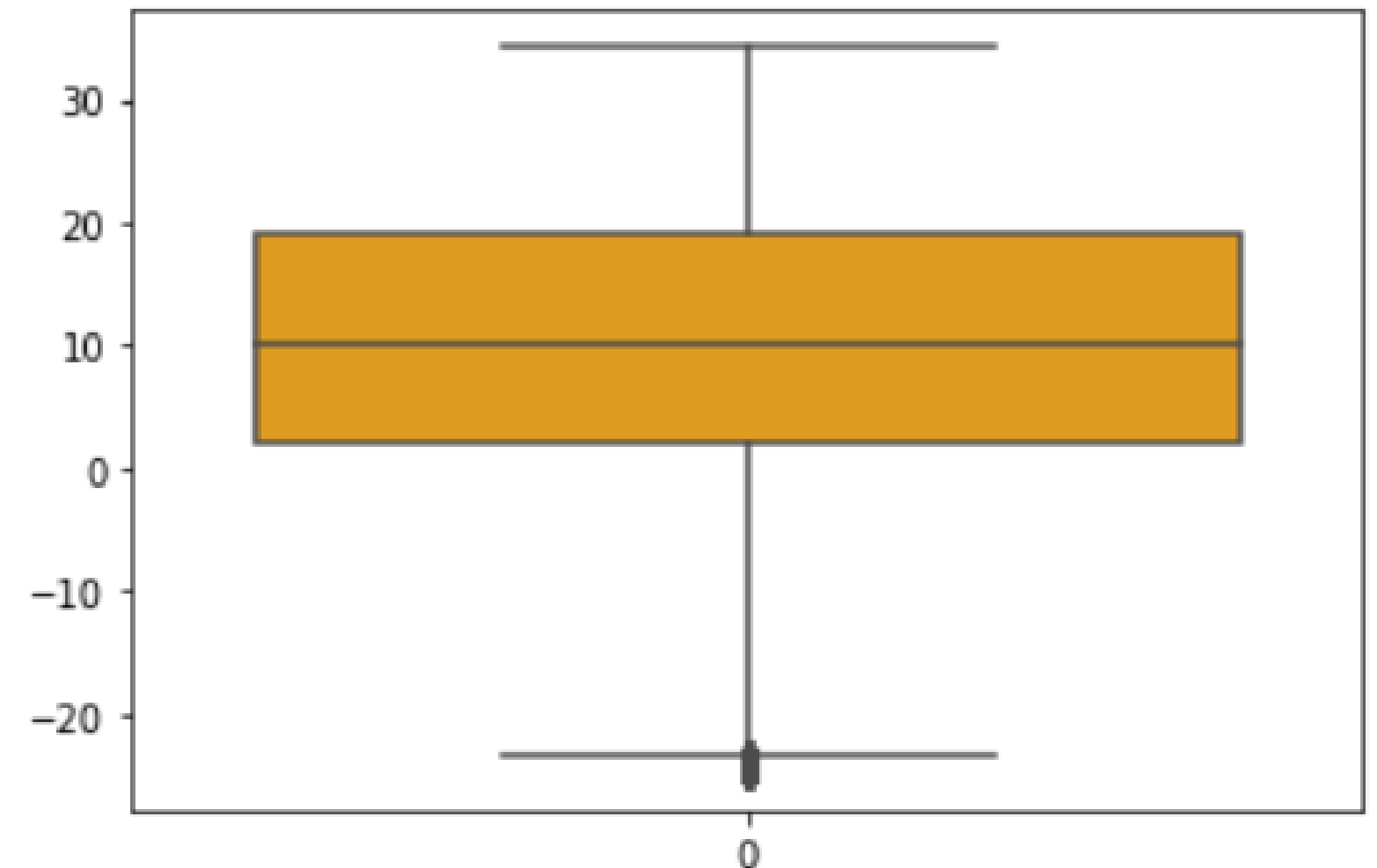
TEMPERATURE RANGE: $[2^{\circ}\text{C}, 19^{\circ}\text{C}]$

PHOTOVOLTAIC ENERGY
STARTS BEING PRODUCED AT
11:AM

NEED FOR HEATING:
MARCH $[1^{\circ}\text{C}, 9^{\circ}\text{C}]$

RELEVANT TIME GENERATION
RANGE: 14:00–19:00

STATISTIC PROOF THAT JUNE IS AND WILL BE THE ONLY MONTH IN THE YEAR WITH AN AVG. GENERATION SUPERIOR TO AVG. CONSUMPTION FROM 14:00–19:00



INVEST HERE OR FIND A BETTER LOCATION?



TEMPERATURE RANGE: $[12^{\circ}\text{C} , 26^{\circ}\text{C}]$

HIGH SOLAR EXPOSITION

LESS NEED FOR HEATING

