Energy Insights

Background

When electricity demand exceeds generation:

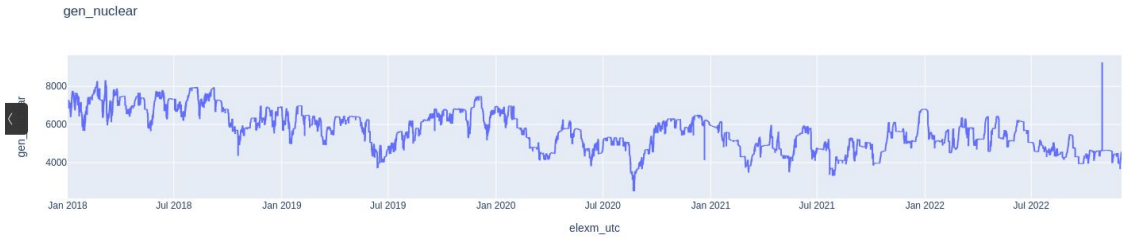
- Electricity prices increase
- Electricity is generated from more carbon-intensive resources (eg through coal burning)

Questions:

- Can we predict electricity demand?
- Can we predict how much electricity we will be able to generate from renewable/less-carbon intensive sources?

Data Insights

- Demand is periodic and predictable
- Change of electricity generation happens on different time-scales for different sources
  - Solar: Changes with time of the day and day of the year
  - Wind: Stable with respect to time of the day, periodic with respect to time of the year
  - Nuclear: Long switch-on time, needs robust predictions
  - Non-pumped: Periodic with time of the year
    - Is this because of rain or because switched on in winter because of higher demand?
  - Oil: Only used for generation spot-wise
  - Coal: Used in winter
    - Dirties fuel, only used to supply when demand exceeds generation
      - Good indicator for improvement opportunity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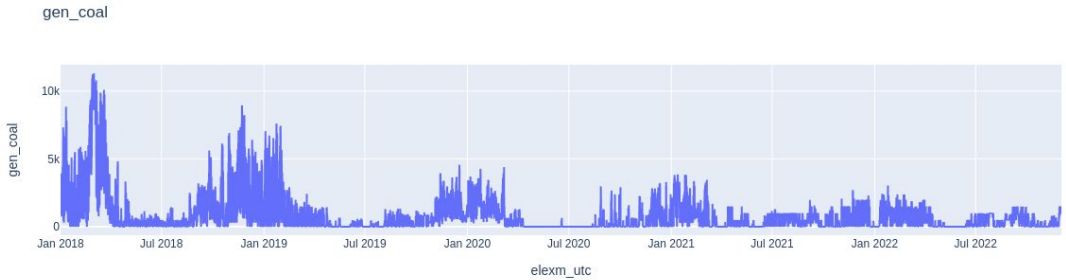
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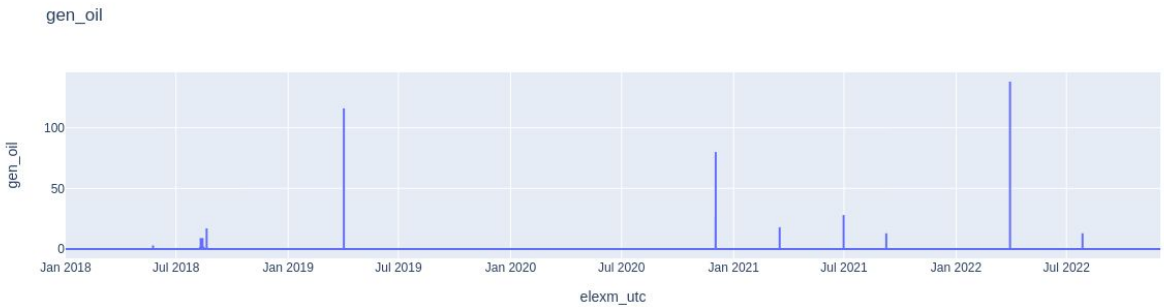
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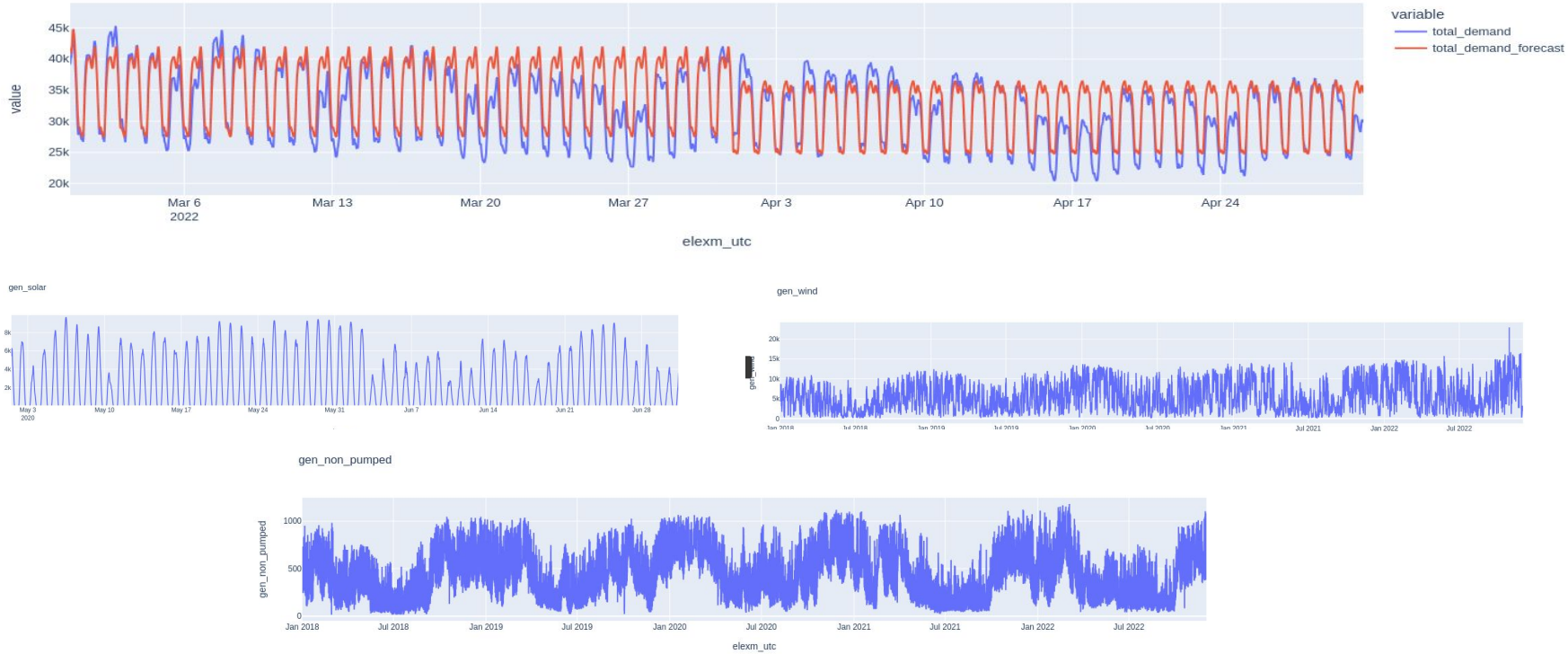
Predicting Demand - Benchmark



Further Work

- Build baseline model for predicting Solar and Wind energy
- Understand time to get non-renewable energy sources up-and-running
- Sort electricity generation according to their carbon footprint