

Energy Consumption

San Diego Wholesale Market

Optimize Consulting Group

Danayt Aman





Problem?

Energy:

- Cannot be stored
- Determined by the hour
- Transmission capability

Project

Preprocess

Model

Analyze

Evaluate

Data

Deploy



Data



CAISO

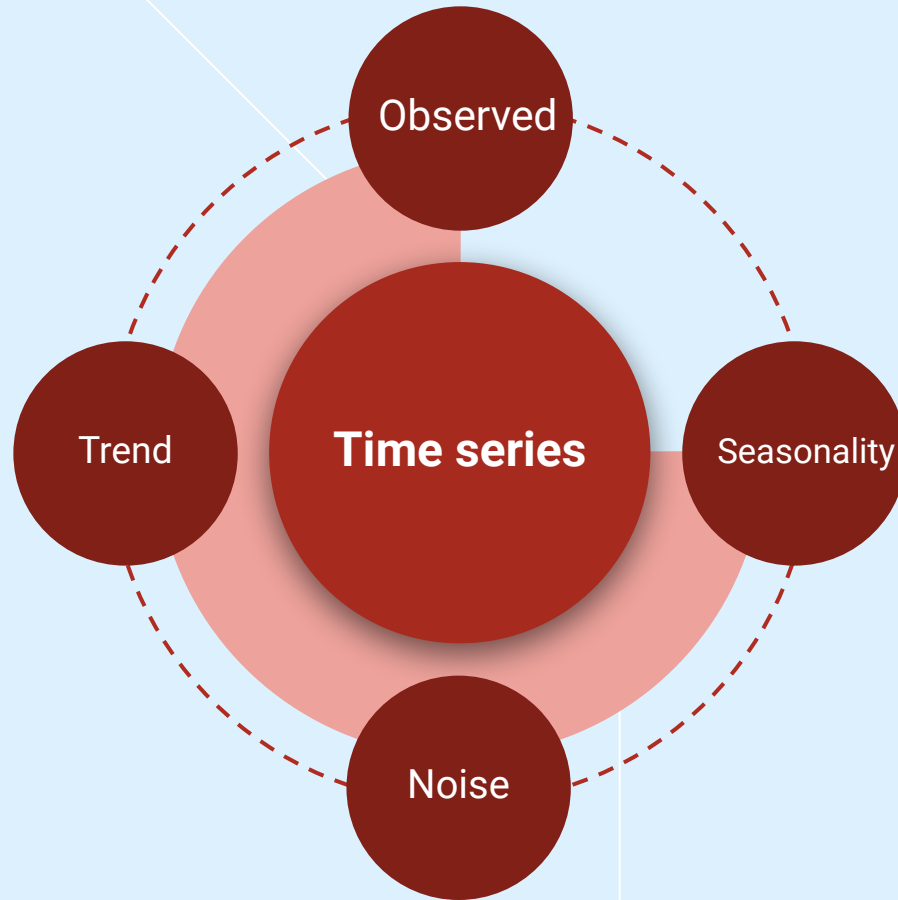
SDGE



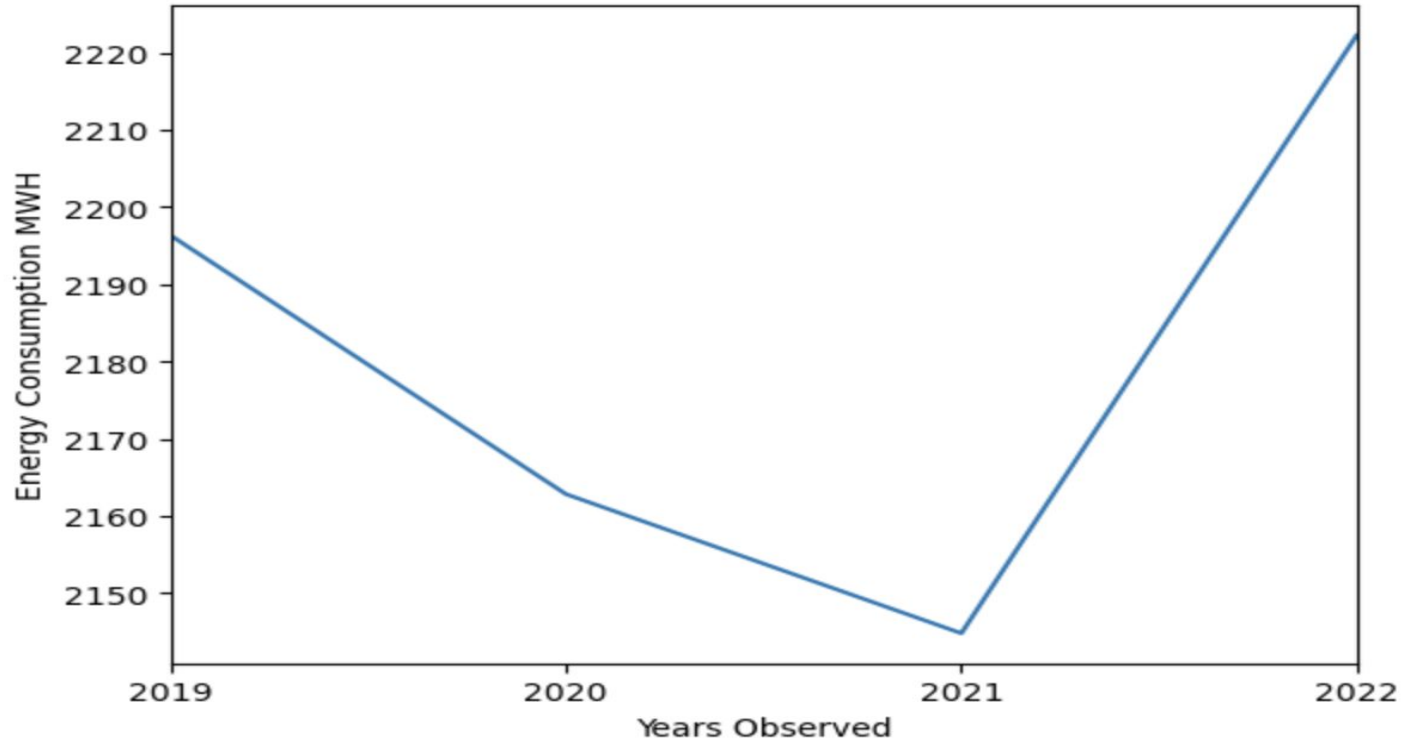
NOVA

Airport Station

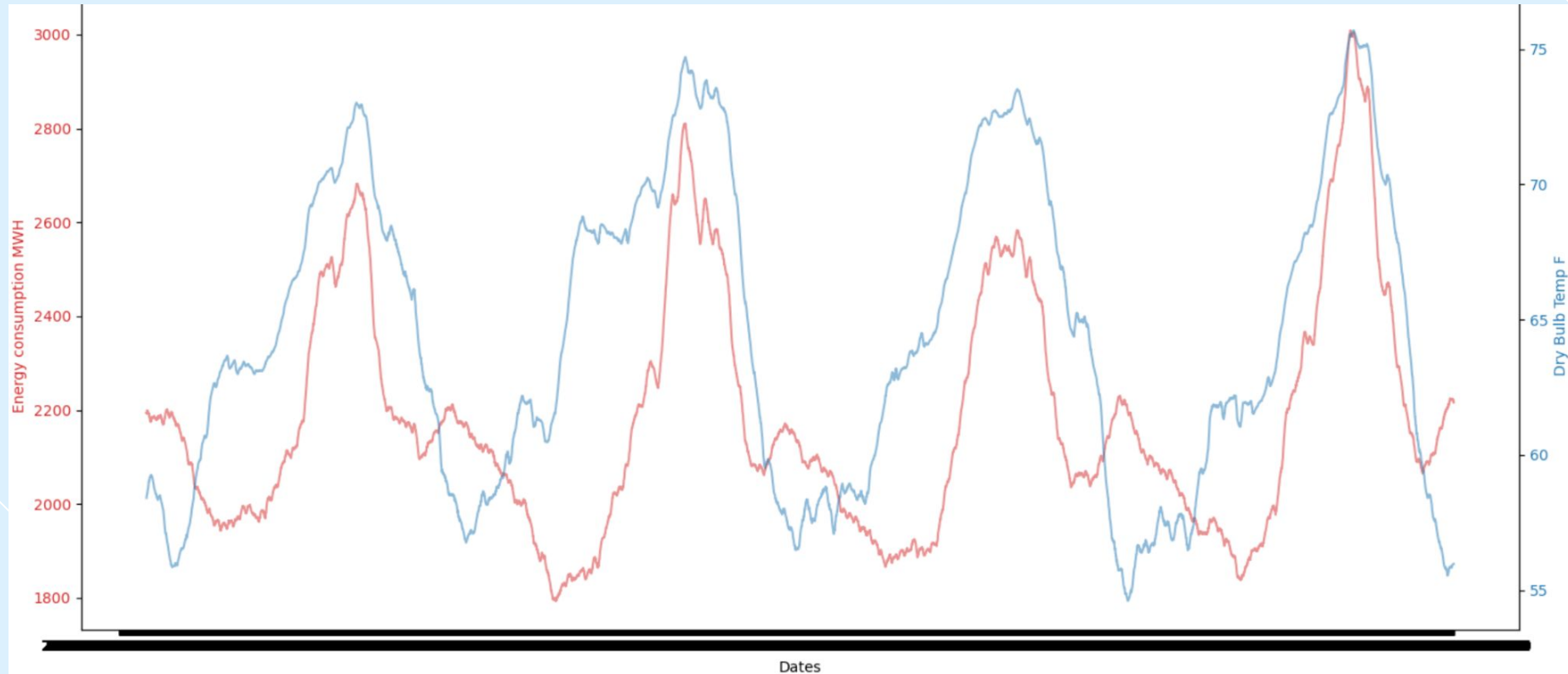
Analysis



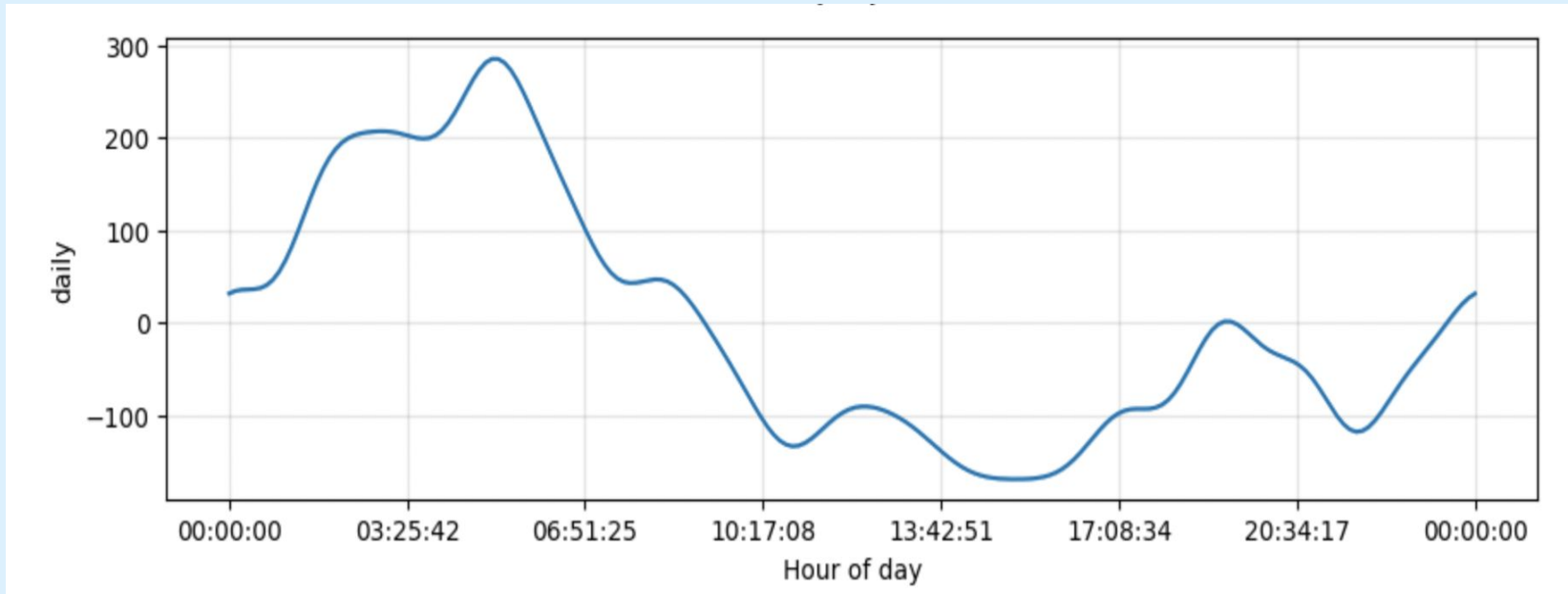
Yearly Trend



Energy Consumption And Temperature



Peak Hours



Agriculture

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Agriculture

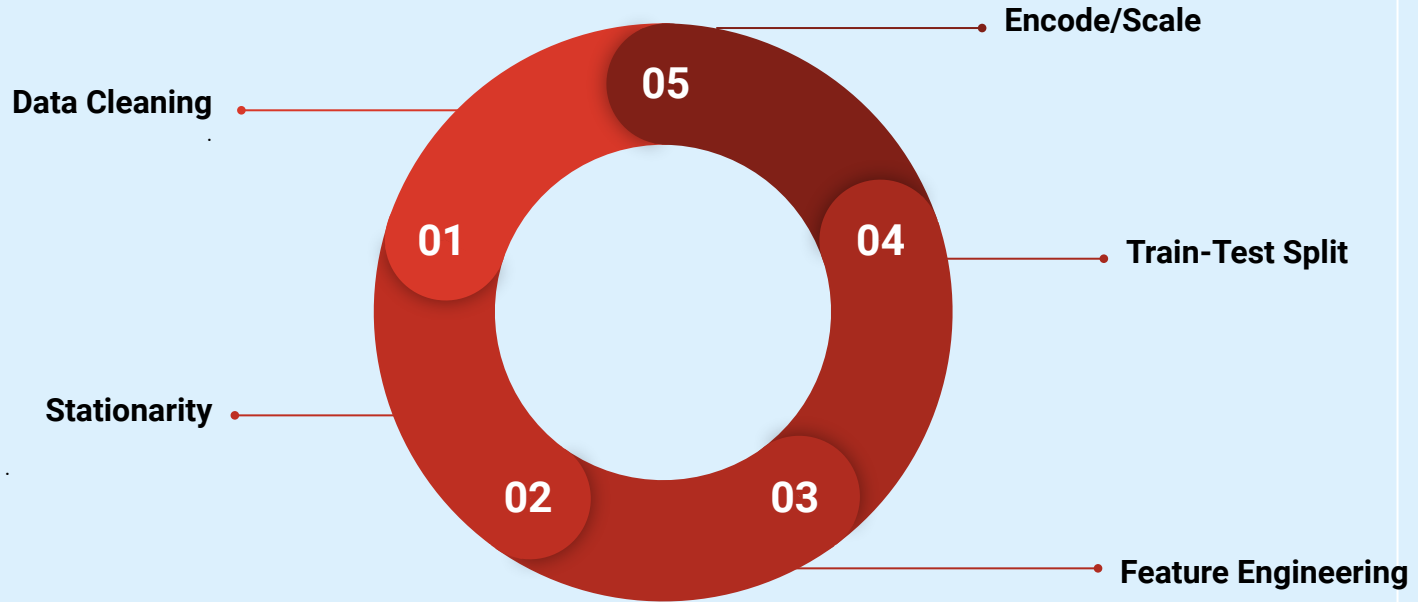
Agriculture Flourishes in New Crop Report, Nears \$1.8 Billion

Oct. 23, 2023 | 9:19 AM

San Diego's new Crop Report covering the County's 2022 growing season shows production was higher than last year at \$1.78 billion in value, making it the seventh year in the past 10 years in which the region has seen an increase.



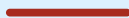
Preprocess



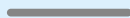
Modeling



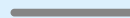
instantiate



Train



Test



Evaluate



Tune

Evaluation

Models	MAPE	MAE
LSTM	15.2%	372.1 MWH
Sarimax	12.8%	279 MWH
Prophet	10.4%	222 MWH
ElasticNet	8.4%	176 MWH
RandomForest	7.3%	154.4 MWH
XGboost	6.7%	147.4 MWH

Model Settings	Value
learning rate	0.1
max_depth	7
n-estimators	100
colsample bytree	0.7

Recommendation

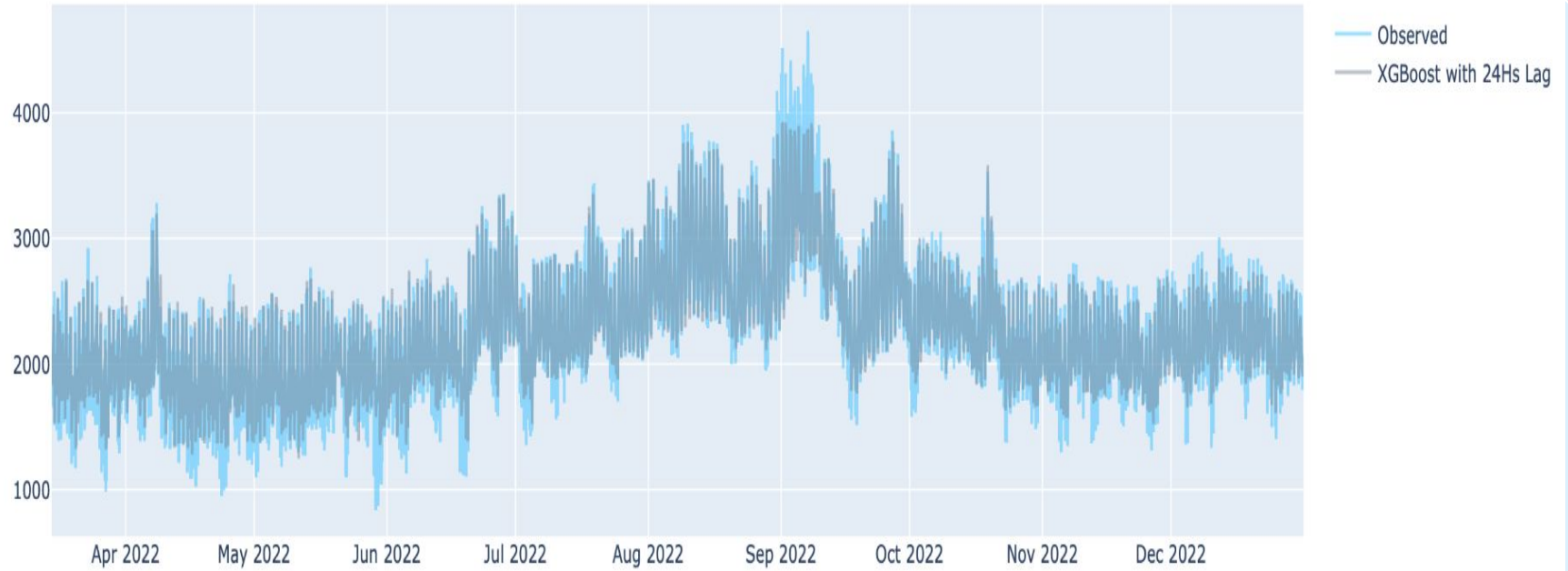
XGBoost+24h lag

MAPE: 6.7%

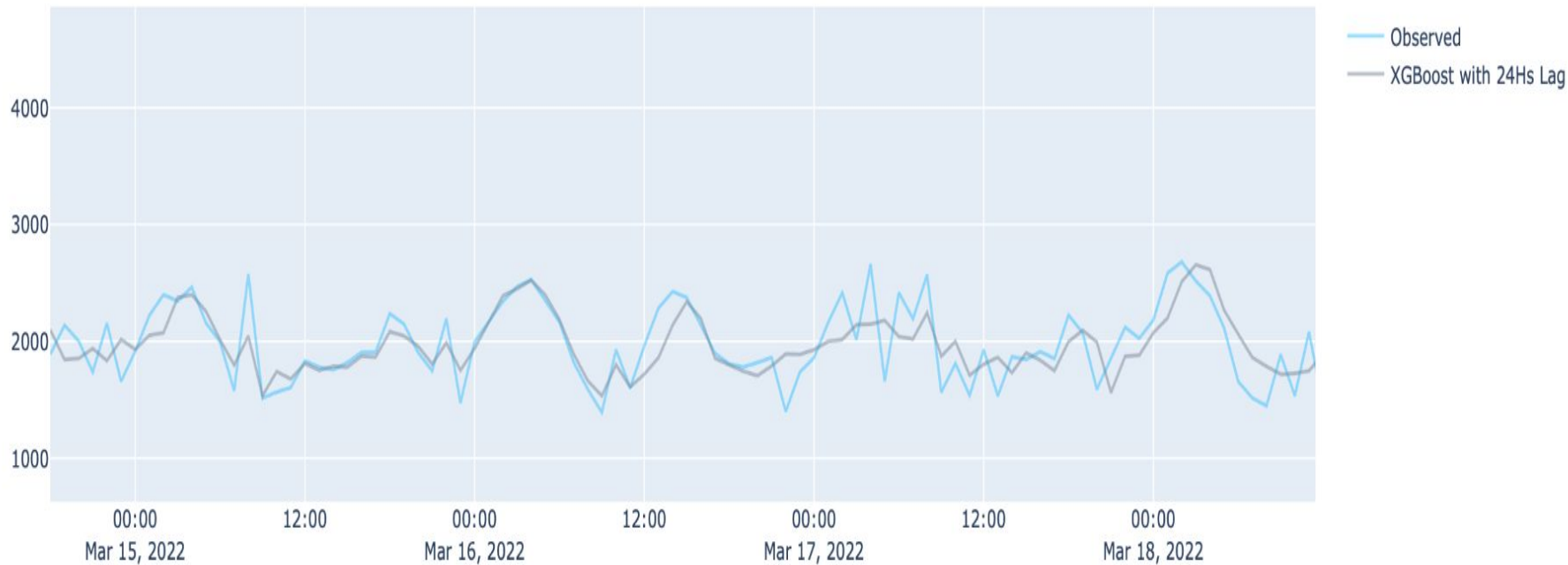
MAE : 147.4 MWH



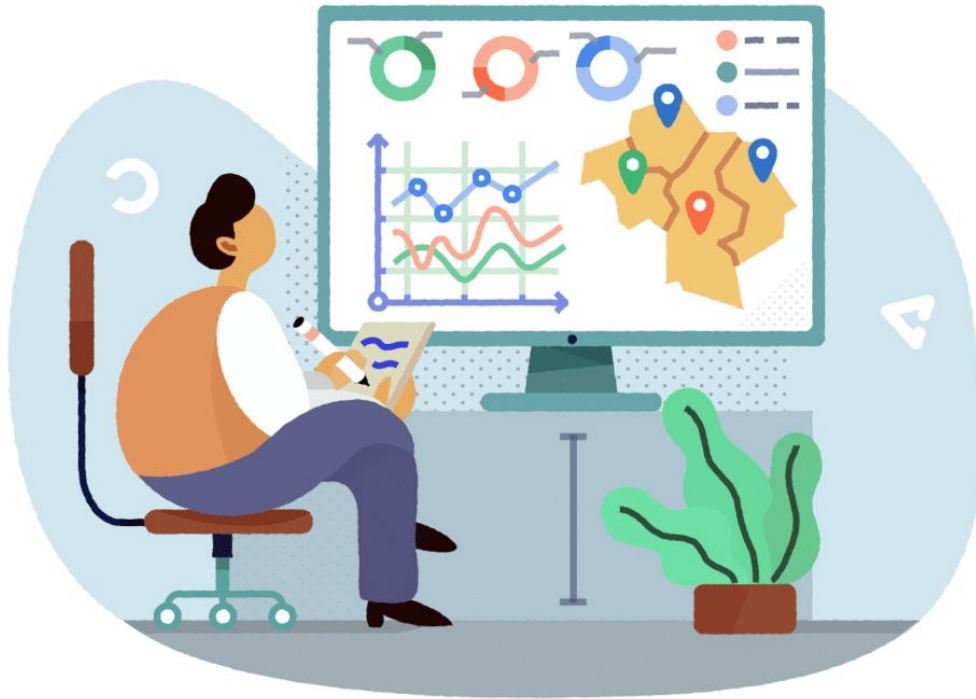
Observed Vs Predicted



Observed Vs Predicted

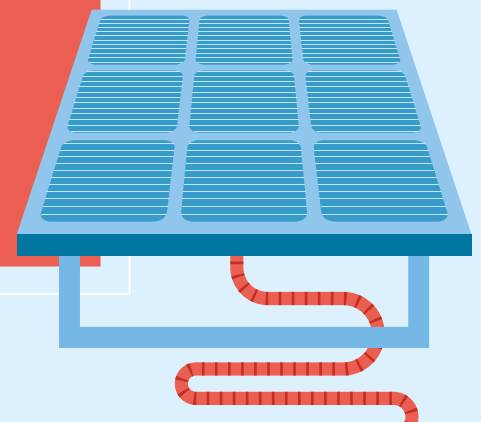


Deploy





Next Steps:

- Include solar, EV and GDP
 - Include more recent data
 - Deploy website
- 



Thank You!



Danayt Aman