# Group Project Idea

## Ideas proposed by Abdo:

Topic 1: Demand Forecasting with Seasonal Decomposition and Machine Learning

Topic 2: Anomaly Detection in Electricity Demand

Topic 3: Climate Change Impact Analysis

Topic 4: Anomaly Detection for Heatwaves

## Proposed by Pam

Topic 5:

Analysing the demand for power, would it be possible to see a correlation between the different suburbs and their economic index. Are more advantaged suburbs consuming more power, or less? Is there a reason for this? Are the suburbs with lower consumption utilising gas for hot water and cooking? How would this information help? And who would benefit from this data?

The challenges

* Demand data not drilled down to suburb
* Finding economic index for suburbs
* Finding gas consumption data for the suburbs
* Finding location of these suburbs from fast food areas, since cooking and heating/cooling takes up majority of power – find articles to confirm this
* Incorporate holidays into the data, and weekends vs weekdays – consumption will fluctuate during different periods
* Power consumption not broken down by suburb – maybe there is a place which shows this?

Topic 6:

Analysing the power usage, could it be used to predict the demand in future? If yes, maybe companies which maintain the grid, could use this data to bulk buy products to reduce costs and/ hire staff to accommodate the demand.

Challenges

* What data points will be analysed to predict the demands in future?

Other options:

* Try map the dates to days of the week and see if there are certain days in the week when the demand is greater
* Check correlation between holidays

Referenced reading

* Consumption in different states – maybe we look at the average or min/max temps in these states and come up with a way to lower the consumption in nsw … change building of homes to have more sealed homes to keep the heat in etc  
  <https://www.finder.com.au/how-much-energy-does-the-average-home-use>
* Consumption per suburb -> <https://data.cityofsydney.nsw.gov.au/datasets/cityofsydney::electricity-consumption-by-suburb/about>
* Socio economic advantages

https://www.abs.gov.au/ausstats/abs@.nsf/mediareleasesbyReleaseDate/AC5B967F97D4902ECA257B3B001AF670

## Proposed by Van

Topic 7: Classify power consumption pattern (peak, not peak, shoulder) and setting electricity price for the power consumption classification.

Using historical power usage, combining with related factors, such as location, weather, economic index, etc, to find the patterns of power consumptions. Then use ABS data on economic index to introduce the packages with different pricing for different power consumption timeframe.

Topic 8: Planning for the workforce based on power usage demand.

# Project Idea Selection

We can use this to vote on the ideas

Add numbers to your columns for top 5 topic, numbers 1 to 5

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| **Topic** | **Votes** | | | |
|  | Abdo | Nezam | Pam | Van |
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# Project Plan

1. Analyse the power consumption data.
2. Find other data to correlate and enrich the power data.
3. Create visualisations to communicate the findings from the above analysis.
4. Find articles to help with making the decisions or ideas more concrete.
5. Write report.