Pitch Deck for Singapore Power

Application of Blockchain Technology on use cases

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Use Cases

- Renewable energy certificates

- Billing of utilities

- Open electricity market

Renewable Electricity Certificates
What is it?

- RECs are certificates that is traded to energy supply companies by trusted companies who generate renewable energy.

- Each REC represents 1 megawatt of energy that was generated and this can be bought over by retailers such as Singapore Power which will then have the authority to distribute the energy to their consumers

Renewable Electricity Certificates
Problems

- Renewable energy is becoming more common in today's context so there is an increasing number of RECs that needs to be given out by renewable energy facilities to the participating companies

- Furthermore, the facilities and companies are usually not in the same country and this poses as a problem because of the potential increase in prices due to the transaction across multiple countries
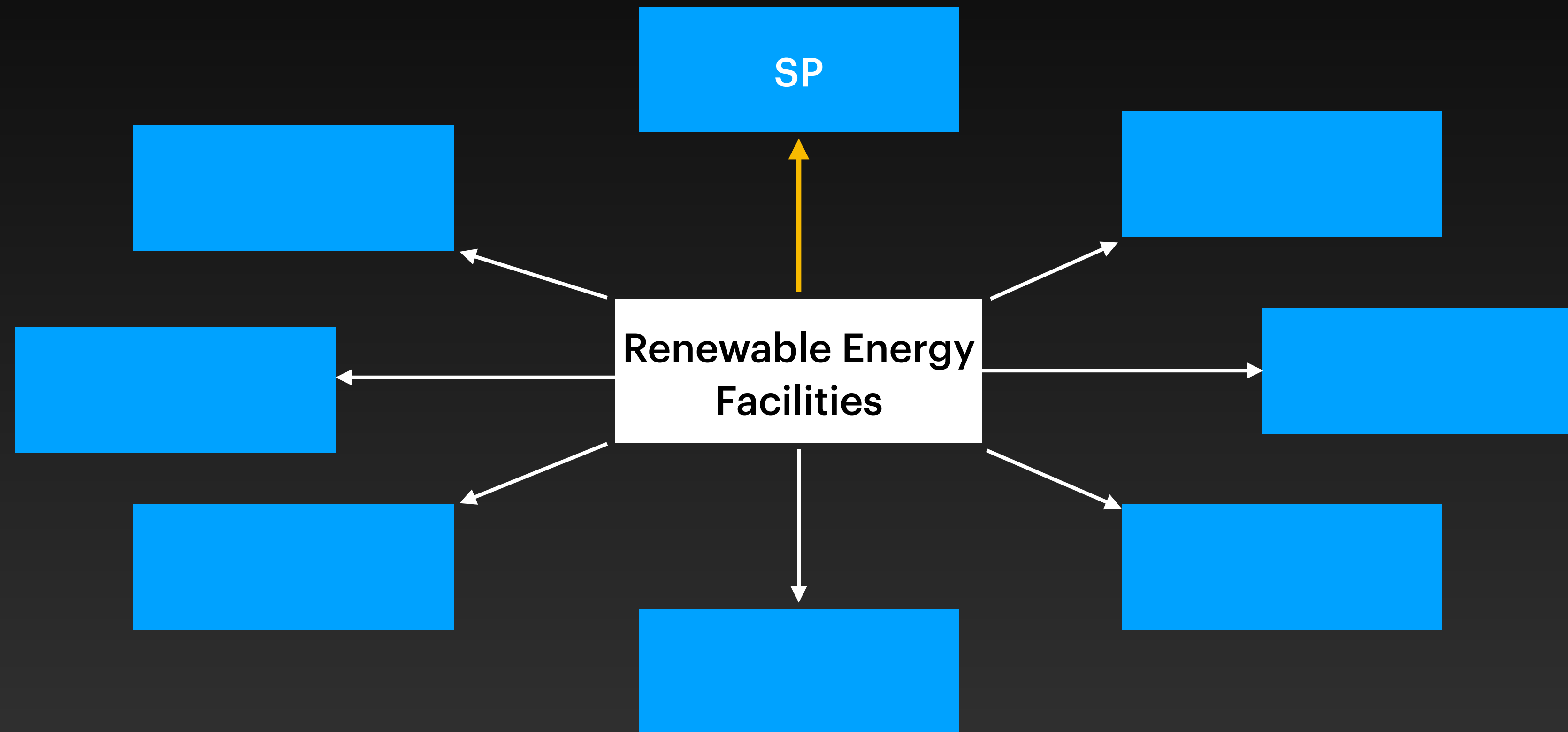
Renewable Electricity Certificates
Blockchain Solution

- Blockchain can be used to quantify these certificates to make it a more efficient trade between the seller and the buyer(retailers such as SP).

- Blockchain for REC can contain metadata of the buyers that is sold to. This will mean that future RECs can be matched to similar buyers according to the matching of preferences

- The digital ledgers can be held by the buyer, seller and also the companies that are involved in the blockchain marketplace.

Renewable Electricity Certificates
Blockchain Solution

Ledgers are given out to all the participating companies so the trade is transparent.

Renewable Electricity Certificates
Benefits and Challenges

- Benefits:

  - Transparency. All companies know of the deals that go around the market and this allows them to make better decisions during trade

  - Efficiency as the trading does not need many contracts to be written out and the transaction processes are seamless

  - Greener all around, since transactions are on the cloud and does not have any paperwork and it encourages buying of renewable energy in larger quantities since the system is more secure and efficient.

- Challenges:

  - Less market for REC since not all companies are on board this technology currently, hence the price is not well adjusted by demand and supply. However it is growing fast because now, even smaller organisations are entitled to buy RECs regardless of their size

  - Pool of competition is bigger since all companies are eligible as long as they have adopted this technology

  - Adopting this technology means they have to get rid of the traditional method of buying through physical contracts to obtain the certs. The change in systems can bring problems of having to change the skillset of workers and also the system of the trade itself.

Billing of Utilities
What is it?

- Bills are adjusted based on the month's average usage. However this only happens once every two months and the month in which it is not recorded, is it estimated to be the bill of the past two readings.

- SP encourages consumers to submit their own readings on the months in which the readings are not taken so that SP can provide a good billing estimates

Billing of Utilities
Problems

- Overcharging might occur if the month that user's bill is estimated is more than his/her actual usage. Even though in the next month it will be compensated

- Currently, Advanced Electricity Meters are used to counter the issue. These advanced meters record data at half-hourly rather than monthly recording.

- The readings can also be read through an app (SP services)

- Sometimes the user is worried about exceeding the usage of electricity and water they intend to consume
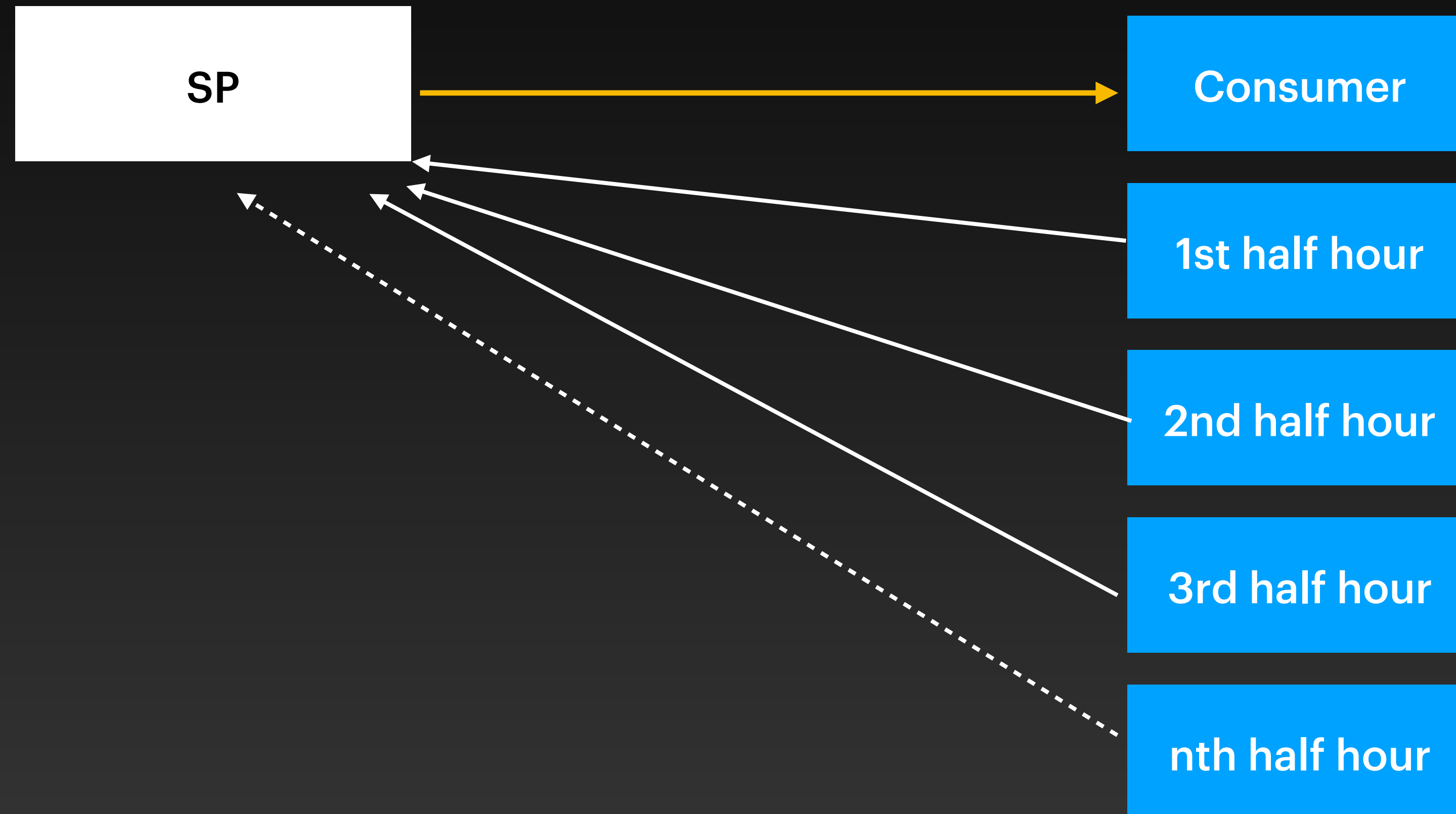
Billing of Utilities
Blockchain Solution

- Solution: Have the utilities be supplied with blockchain technology where the user will pre pay for the utilities and have it quantified using blockchain

- By quantifying the usage of electricity using blockchain technology, SP can supply the utilities and track the usage of the user.

- Having the data recorded and sent through the cloud would also enhance the services of SP because they can use the readings to analyse the consumption of users and adjust their prices through a specified algorithm

Billing of Utilities
Blockchain Solution

SP

Consumer

1st half hour

2nd half hour

3rd half hour

nth half hour

Ledgers are updated every half hour to reflect the credits off the prepaid amount

Billing of Utilities
Benefits and Challenges

- Benefits:
  - Better prices can be given to the consumers
  - Billing will be a seamless process and consumers who use this form of payment (pre-paid utilities) will have better control over their finances
  - Tracking of energy and water quantities will be easier and more efficient
- Challenges:
  - An updated version of the meter has to be deployed and that will take a long time to implement because even now, the implementation of the older meter (cumulative electricity meters) to the advanced electricity meters will stretch to 2024
  - Will be a hassle for the older generation to adapt to the concept of this technology
  - Technical aspect of implementation can be extremely tedious because it affects all the households in Singapore

Open Electricity Market
What is it?

- Gives households the choice to pick the retailer that they feel gives the best price for the electricity supplied tot he households. This will inculcate competition between the different retailers and, through a process of demand and supply, will produce the best prices for Singaporean households.

- SP has to come up with the best deals to find out how to get as many subscribers to their services as possible

Open Electricity Market
Problems

- Consumers do not know what is the best deal that suits their needs at any given point since the deals from all the retailers are filled with numbers and necessary calculations are needed to be done my consumers themselves

- SP needs to compete with other emerging energy companies that may offer better deals

Open Electricity Market
AI solution

- Solution: Have an AI that can be open sourced to the consumers, that captures the recorded data and predict the best deals they can go for in the coming months by predicting the amount of usage in the household

- The deals can be reflected in the application where the recorded data can be seen (SP Services app)

- SP holds data of households for not only months but years since it has been the main energy and water supplier of Singapore for a long time before the open electricity market was implemented. So data is already accessible to them

Open Electricity Market
Benefits and Challenges

- Benefits:
  - More transparent data that improves trust between SP and its consumers
  - SP can better predict the amount of each utility to supply to each neighbourhood in upcoming months
  - Consumers can know the exact usage to aim for to get the best value out of the subscription
- Challenges:
  - Predictions might not be accurate in the first few months as the AI is adjusting to the input data
  - If the actual usage is different from the predicted usage, the deal may not worth it (the prepaid blockchain technology billing can solve this issue)
  - AI can be implemented by anyone and SP still needs to come up with a good algorithm to stay competitive with new energy companies

The End