

Energy Market Surveillance and Regulation in Singapore

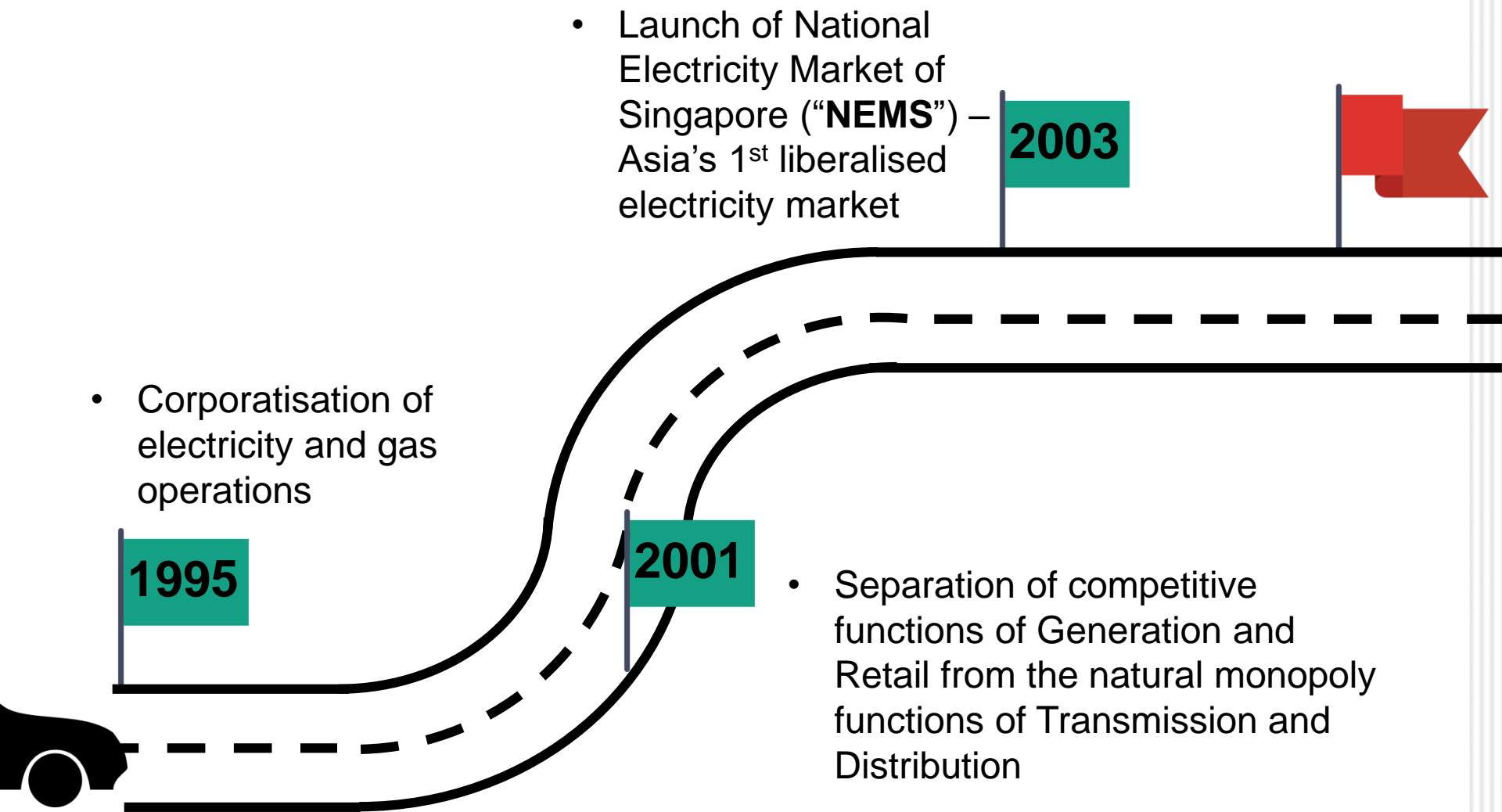
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Deregulation of Singapore's electricity industry



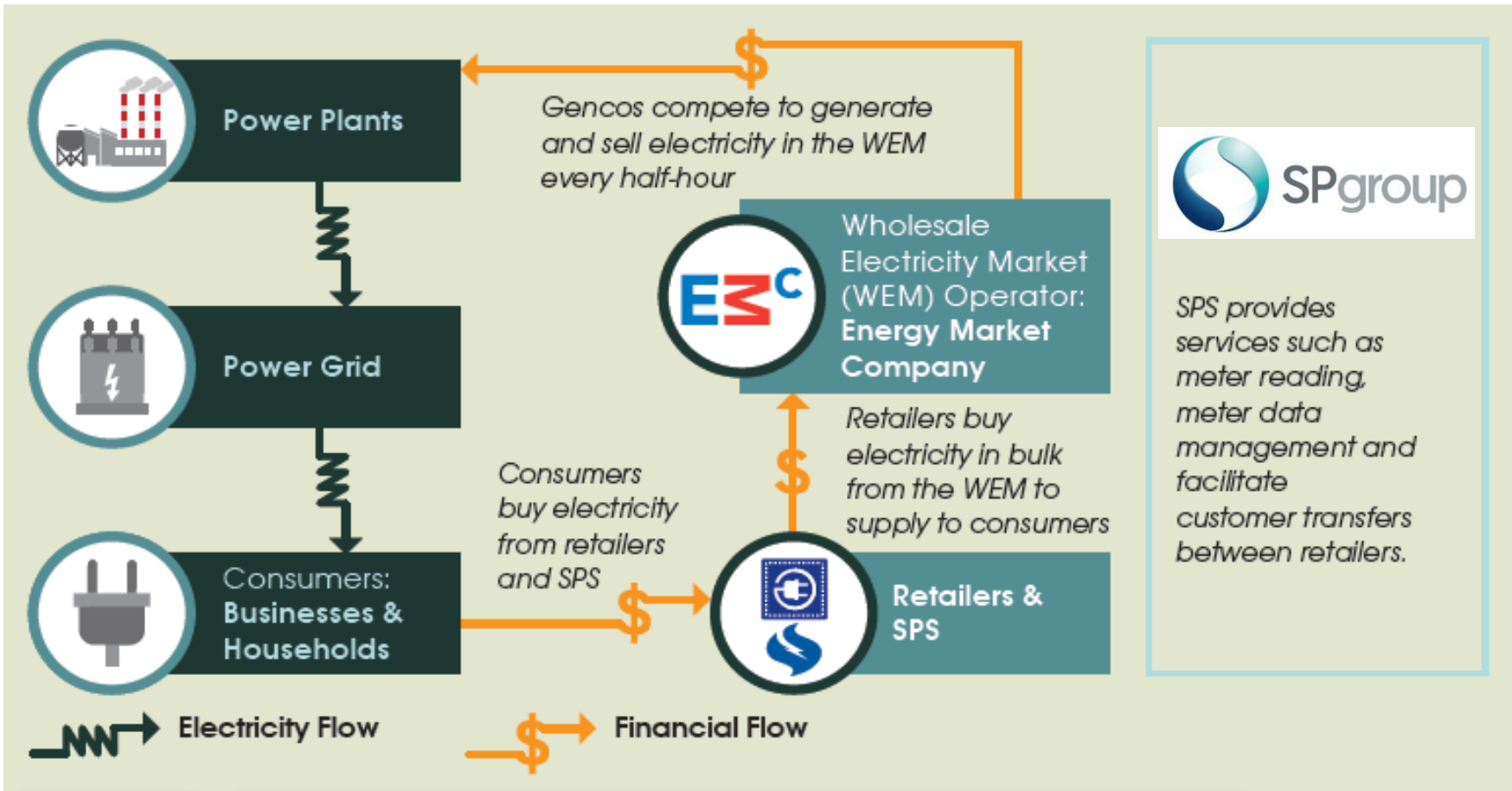
- Corporatisation of electricity and gas operations

- Launch of National Electricity Market of Singapore (“**NEMS**”) – Asia’s 1st liberalised electricity market

- Separation of competitive functions of Generation and Retail from the natural monopoly functions of Transmission and Distribution

- Establishment of EMA and EMC

Overview of Singapore's Electricity Market



Market Mechanism

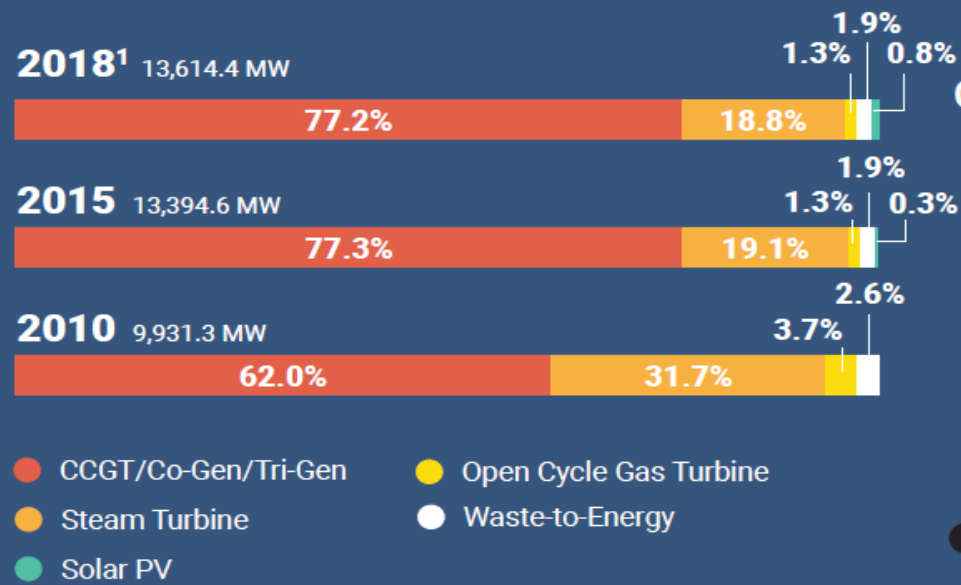
- Generation Companies (“**Gencos**”) bid half-hourly to sell electricity
- Retailers/contestable consumers buy electricity

Market Operator

- Energy Market Company (**EMC**)
- Perform market clearing and settlement functions

Key Singapore Energy Industry Statistics

- Total electricity generation capacity was 13,614.4 MW as at end Mar 2018.
- In June 2018, a new system peak demand of 7,370MW was recorded, with 4,446GWhr of electricity being produced by generators in Singapore.
- About 95% of Singapore’s electricity is generated using gas. Majority of gas plants belong to the F-class Combined Cycle Gas Turbine (“**CCGT**”) generators.



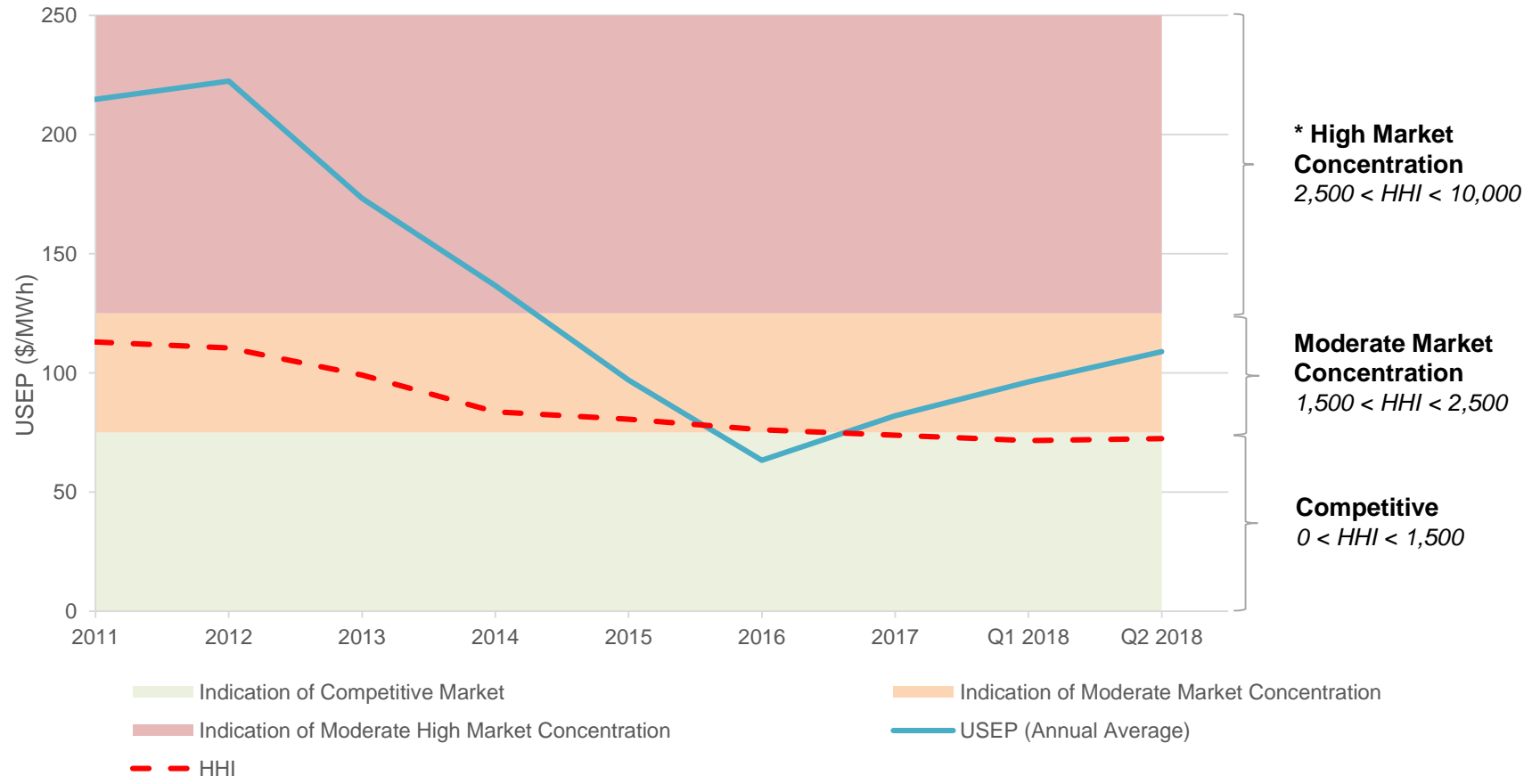
Electricity Generation Capacity by Technology Type



¹ Data for 2018 as at end 1Q 2018.

HHI (Generation Market Share) in the energy market is competitive

Herfindahl-Hirschman Index (“HHI”) based on Generation Market Share and Uniform Singapore Energy Price (“USEP”) (2011 – Q2 2018)

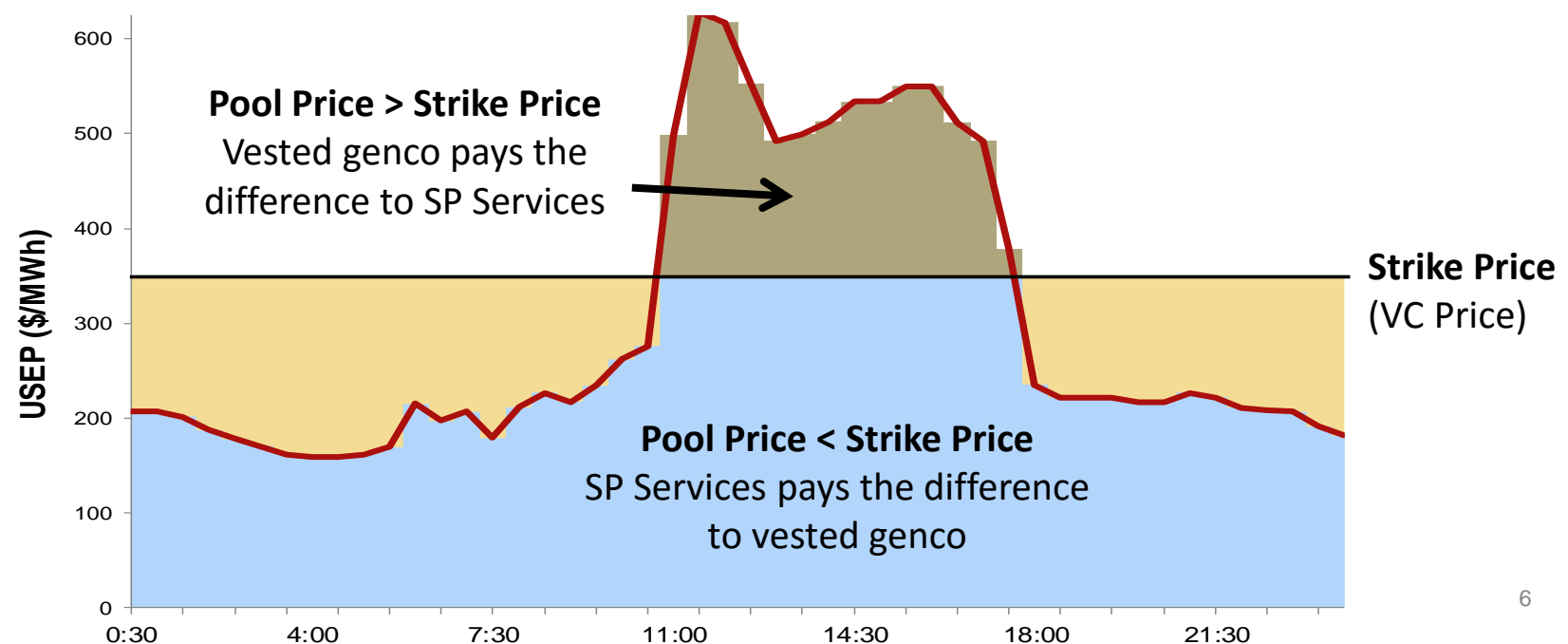


15 generators, 14 wholesale market traders and 25 retailers registered in NEMS currently. Collective trading volume of market participants in the wholesale electricity market was \$4.39 billion in 2017.

* Source: US Department of Justice

As far as possible, EMA mitigates any potential market power on an ex-ante basis

- Vesting Contracts (“**VC**”) were introduced in 2004 to mitigate the exercise of market power by dominant gencos. VCs mandate specific electricity quantities to be hedged at a specific price (“**Strike Price**”). This removes gencos’ incentives to exercise their market power by withholding capacity to raise spot prices.
- In consultation with the industry in 2016, EMA decided to gradually phase out the VC regime given the overcapacity market situation and consequent dilution of market power.
- EMA decided to impose a capacity market share cap of 25%, and gradually phase out the Vesting Contract regime by 2H 2019. LNG Vesting remains until expiry of contracts from 2H 2023 onwards.

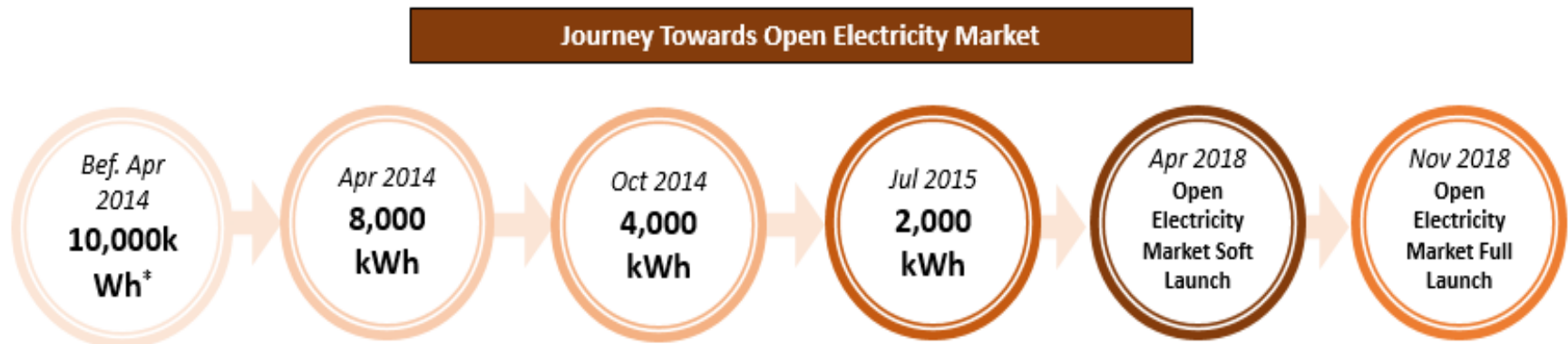


On an ex-post basis, EMA continues to monitor the gencos' bidding behaviours in the Singapore Wholesale Electricity Market ("SWEM")

- A competitive SWEM entails ensuring non-discriminatory access, promoting economic efficiency and protecting the interests of consumers. To meet these outcomes,
 - EMA monitors the outcomes of the market and the behaviours of market participants.
 - EMA continually enhances the market rules to ensure a competitive SWEM.
- EMA monitors the market prices in relation to gencos' bidding behaviours in the SWEM to mitigate the exercise of market power.
- Regulatory actions are taken against any genco that attempts to collude or exercise market power with the objective of sustaining high and inefficient USEP.
- In Singapore, the minimum reserve margin has been set at 30% to ensure system security is maintained. The supply cushion mitigates the gencos' ability to exercise market power and push up USEP.

Full Retail Competition in the Retail Electricity Market (“Open Electricity Market”)

- EMA has progressively opened up the electricity market to provide consumers with more choices and flexibility in their electricity purchases since 2001.
- As of July 2018, more than half of the 95,000 eligible business accounts have switched to a retailer. This accounts for about 77% of total electricity demand.
- In the **final phase of market liberalisation**, 1.4 million accounts, mainly households, will get to enjoy **competitive pricing** and **innovative offers** from retailers with the **same electricity supply**.



* Refers to consumption eligibility threshold based on average monthly electricity consumption

- Performance standards for retailers to conduct retail activities to consumers are established under the Code of Conduct for Retail Electricity Licensees.
 - For e.g., clauses are included on Fair Marketing Practices, and that retailers are required to publish information and terms of offers on the Price Comparison Website for residential consumers.
- EMA has also established conditions for participation in the Open Electricity Market (“**OEM**”). For e.g.:
 - Retailers are required to use reasonable endeavours to resolve any dispute amicably within 30 days from the receipt of the dispute.
 - For retailers with 10 or more unresolved disputes with consumers, EMA will request the retailer for an explanation.
 - For 20 or more unresolved cases, the retailer will be suspended from retailing electricity to OEM consumers, until the unresolved cases fall below 10.

THANK YOU