



# **Business Models and Market transformation: Integrating PV, Storage, EV Charging Infrastructure and Virtual Power Plants**

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Business model is an **evolving playbook** developed by the company to earn **profits**. It charts out the company's relationships with external parties and management of its resources.

A market is a medium that facilitates the exchange of a **specific good or service** between a willing buyer and willing seller within the **permissible limits set by the laws.**



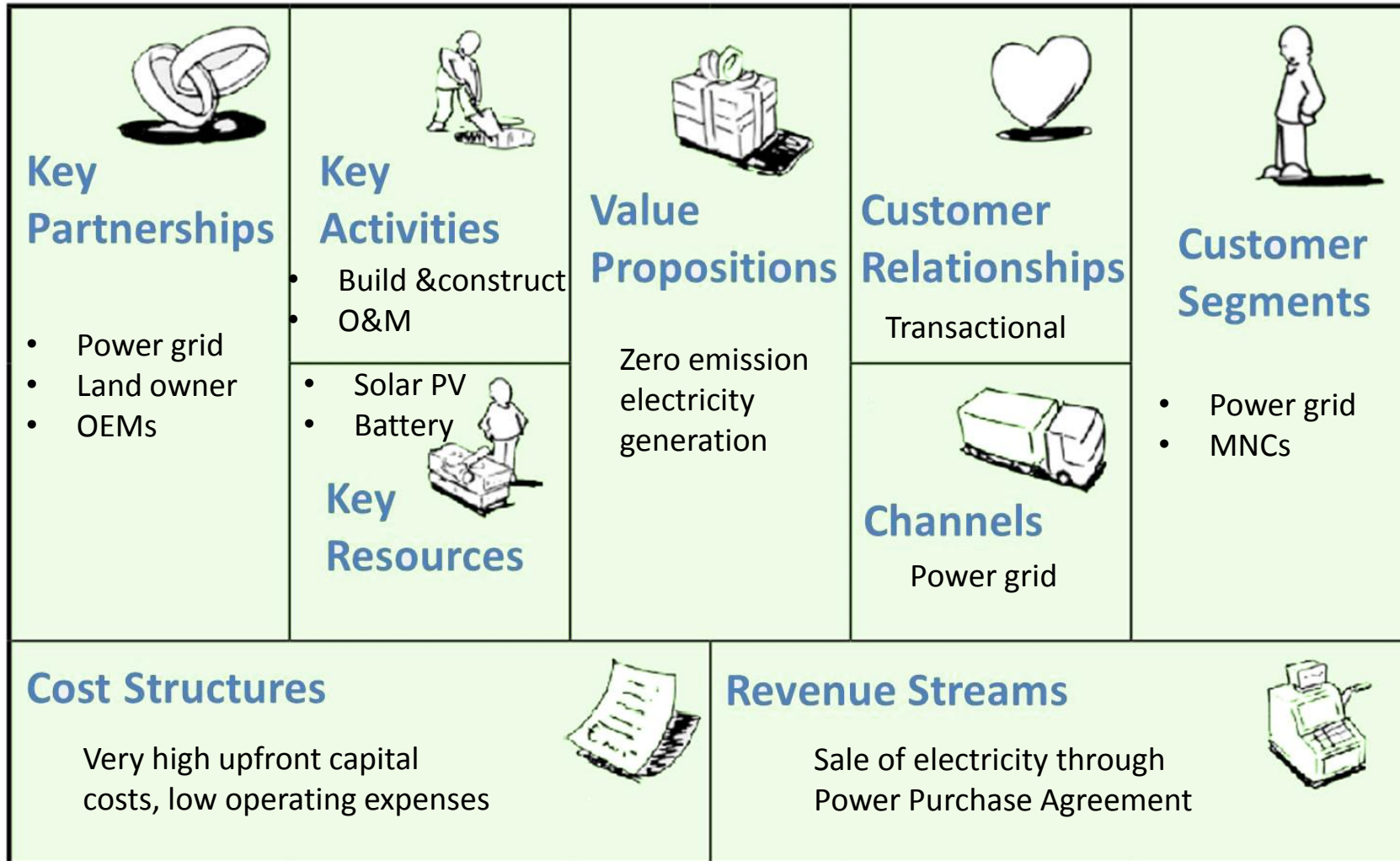
### **Question 1**

*Has the integration of new energy technologies led to a significant change in electricity business model?*

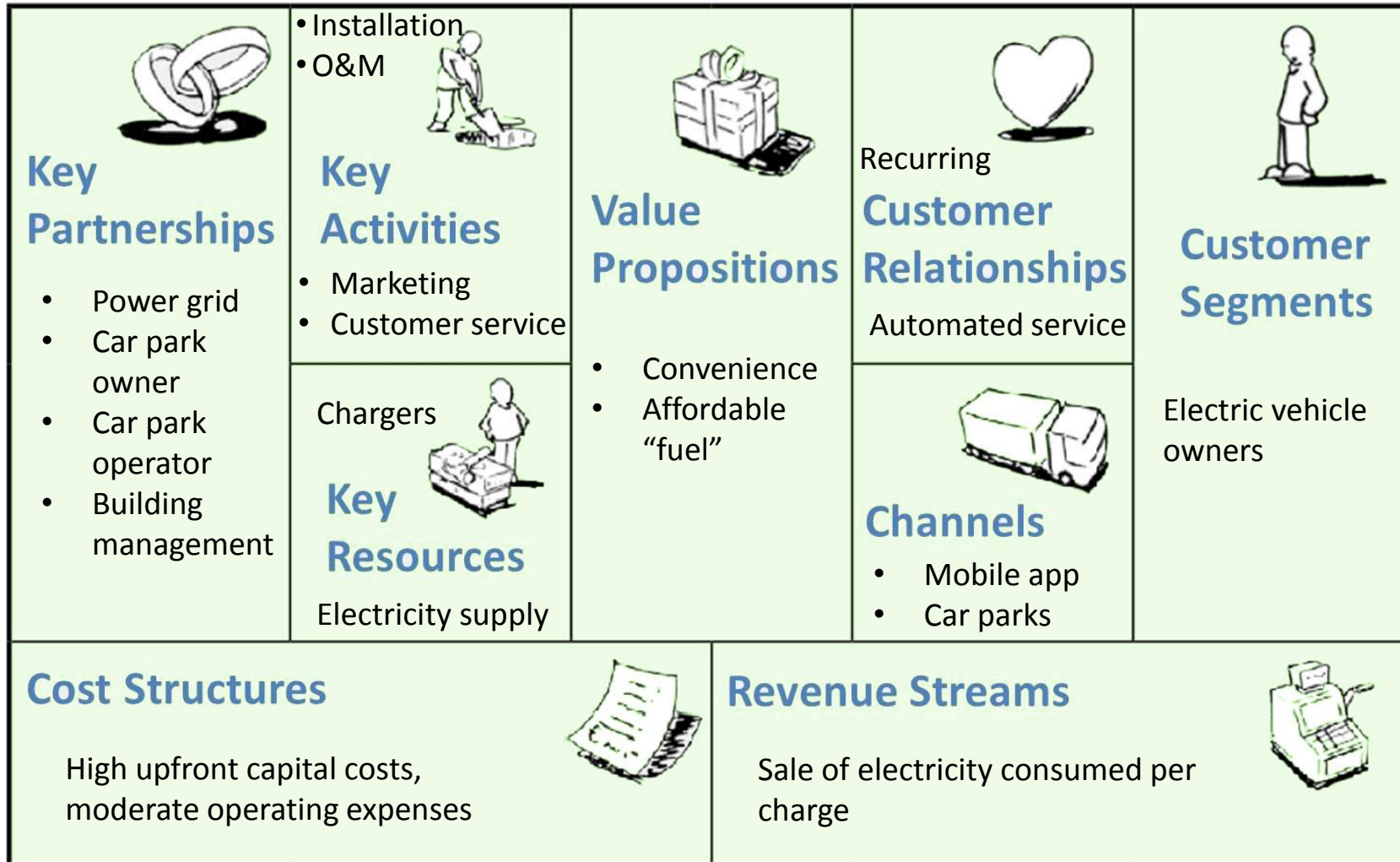
### **Question 2**

*Is there a critical mass of companies that changed their business model to warrant a transformation of the electricity market?*

**Business model of large-scale solar PV farms paired with on-site storage systems is similar to conventional power plants.**



EV charging is another consumer of electricity, not much different from other class of consumers.



When considered in **silos**, the new energy technologies do not significantly alter the conventional electricity business model.

***BUT.....***



# THE INTERACTION OF ALL NEW ENERGY ASSETS CHANGES THE GAME

The collision of new energy assets, advanced communication network systems, smart metering systems, and big data analytics is pushing the electricity market boundary.

## **Examples of potential changes:**

- Virtual Power Powers (VPPs), a network of decentralized medium-scale power generation units, are becoming a reality. Will small-scale units be next?
- Consumer choice of green vs. black electricity. Will there be shades in between?
- Convergence of energy vectors – electricity, heat, gas – may lead to the merger of multiple markets into one consolidated energy market.



# SINGAPORE'S LEADING INTEGRATED ELECTRICITY SOLUTIONS PROVIDER

- ❑ Creating value for customers through competitively priced core retail activity
  - ❑ Singapore's first independent electricity retailer, currently supplying 1,500MWh/day to commercial and industrial customers
- ❑ Actively supporting the efficient and effective operations of Singapore's energy markets
  - ❑ One of six Market Makers in the SGX Electricity Exchange Futures Market Forward Sales Contract Scheme
- ❑ Introducing innovative business solutions
  - ❑ Demand Management – undertook Singapore's first successful demand response trial and demand management is now a rapidly growing part of RDP's business.
  - ❑ Solar Solutions – providing supply and cost security through provision of PPA contracts
  - ❑ Energy Storage Services – providing multiple value streams including load management and demand response
  - ❑ Electric Vehicle Charging – RDP in discussions to launch EV station business, as Singapore market first-mover



**RDP's retail business provides the opportunity to serve customers through a range of additional offerings**

# PARTING THOUGHTS

**“Has the integration of new energy technologies led to a significant change in electricity business model?”**

The switch from one generation source to another does not constitute a significant change in the business model but it does disturb the status quo. Although the physical technologies are largely in place, many key intangible assets that underpin the new business models are still being improved.

**“Is there a critical mass of companies that changed their business model to warrant a transformation of the electricity market?”**

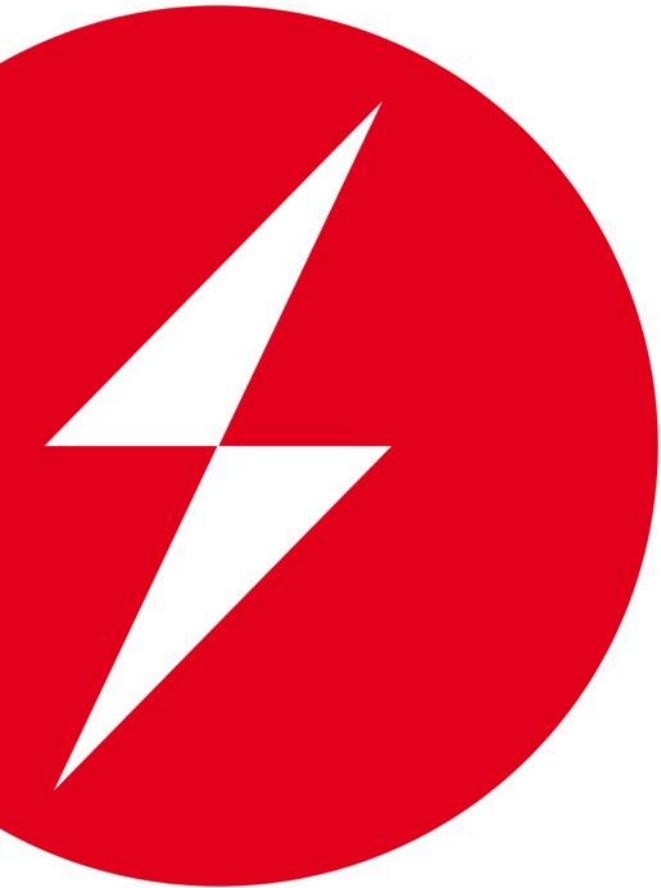
Some countries are transforming faster than others due to the differences in technological advancements and regulatory environment. Changes are happening but a full-fledged transformation is still in the works. A crucial element to a successful transformation is the ability of regulators to adapt to the business model changes.



## **Vijay Sirse**

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Mr. Vijay Sirse is the Founder, Chairman and CEO of vTrium Energy Pte. Ltd., a Singapore incorporated company specialising in Energy Management, Electricity Retail (Discom), Distributed Solar Power Generation and Battery Storage solutions. Mr. Sirse is the entrepreneur, innovator, investor, developer and owner of companies that carry out projects in these cutting edge technologies with Singapore as its Headquarters



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**THANK YOU!**