

Paris Session 2022



Singapore 's Energy Transition To a Low Carbon Future

Study Committee C5 PS 3 Question 4:

What is the impact of the current energy transition on reliability and cost? What market structures should be put in place to ensure a smoother transition to the market of the future to support a fully decarbonised grid?

National Electricity Market of Singapore (NEMS): Experience of transition to date

1. Limited renewable energy potential + High dependency on gas-fired technology → minimal options for reducing carbon emissions
2. Solar energy only feasible renewable solution for deployment in land-scarce Singapore.
3. Impact on reliability is minimal → Singapore grid remains one of the most reliable in the world
4. Impact on cost is relatively muted → Renewable penetration by solar had yet to reach a level to affect price formation in the wholesale market.
5. Expert Committee deemed realistic for Singapore's power sector to achieve net-zero by 2050
6. Some of the recommended strategies include
 - Pursuing the adoption of electricity imports
 - Using more ESS to manage solar intermittency
 - Shape end user consumption patterns to optimize the power system



3 Recommended solutions

1. Adoption of electricity imports

- Why? → Matured Technology, Allow access to cleaner and cost-effective energy sources and reduce reliance on natural gas
- Current progress → 1) Trial electricity with ASEAN countries. LTMS – PIP go live on Jun 22. 2) EMA request for proposal for imports up to 4 GW. 3) Consultation on imports back-up
- Longer-Term Action → Setting up of Regional Power Exchange

2. Using more ESS to manage solar intermittency

- Why? → ESS to support more deployment of Solar in Singapore
- Current Progress → Integrated 2.4MW battery and preparing for 200MW/200MWh battery by end 2022.
- Longer-Term Action → Creation of new revenue streams for ESS

3. Shaping end-user consumer patterns to optimize

- Why? → High adoption of technology + Managing demand to reduce need to upgrade grid or generation capacity
- Current Progress → Consultation on the revamp of Demand-Response Scheme
- Long-Term Action → 1) Enhancing market design to provide price signals and incentivize behavioural change among end-users 2) Unlocking areas where end-users can tap demand flexibility

