

# Singapore Electricity Network and Market

## [Conducted with Energy Market Company]

Course Code: EFD08

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### COURSE OBJECTIVES

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Upon completion of this course, participants will be able to:

- Understand the structure of generation, transmission and distribution of electricity in Singapore
- Describe the various types of transmission and distribution network configuration
- Describe the switchgear configuration for transmission substation
- Understand the types of equipment implemented in the electricity transmission and distribution network
- Understand the technical and performance standards
- Describe the deregulation process leading to the National Electricity Markets of Singapore (NEMS).
- Identify the market structure and the roles of key stakeholders in the NEMS.
- Describe the basics of the market clearing and settlement process.
- Explain the rationale for some key design features for NEMS.
- State the key regulatory tools employed and governance structure of NEMS.
- Describe the benefits and costs of the 3 possible fuel-mix scenarios in 2050
- Describe the benefits and costs of the 4 Switches that Singapore used to reach net-zero for the power sector in 2050

### MAIN CONTENTS

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- Overview of Singapore Electricity Network
  - Structure of generation, transmission and distribution of electricity
  - Transmission and distribution network configurations
  - Transmission and distribution network assets
  - Technical and performance standards
  - Regulatory requirements and codes of practice
- Electricity Transmission and Distribution Network Configuration and Network Equipment
  - Transmission
    - Electricity transmission network configuration
    - Equipment inside transmission substations
    - Types of transmission switchgear, transformers, shunt reactors and cables
  - Distribution
    - Electricity distribution network configuration
    - Equipment inside distribution substations
    - Types of distribution switchgear, transformers, low voltage boards and overground box, and cables
- Market Reform Milestones and Demand Characteristics
  - Singapore's Market Reform Milestones (1963 – present)
  - Singapore's Electricity Demand Characteristics
- Market Structure
  - Role of key stakeholders in NEMS
  - Retail market overview
- Market Operations
  - Trading in the wholesale market
  - Market clearing and design features
  - Wholesale market settlement
- Regulatory Tools and Governance Structure
  - Market Power mitigation
  - Rules and governance structure
- Energy 2050 Committee Report – Charting the Energy Transition to 2050
  - 3 Possible fuel-mix scenarios in 2050

- Recommendations on energy transition strategies
- Singapore 4's Switches Strategies
  - The Switches – Solar, Natural Gas, Electricity Imports, Low Carbon Alternatives
  - Singapore Energy Policy at a Glance

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## METHODOLOGY

Lecture

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## TARGET AUDIENCE

- Engineering & technical staff in the electrical power industry
- Non-technical staff who are required or interested to know about NEMS

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## COURSE DETAILS

Duration	: 14 hours
Mode of Delivery	: Face-to-Face
Certification	: SIPG Certificate of Completion
PDU by PE Board	: Pending
Additional Requirement/s	: NIL

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## COURSE FEES

Full Course Fee	: S\$720 (before GST)
For Singapore Citizens/PR/LTVP+*	: Not applicable
For Singapore Citizens (40 years old and above)	: Not applicable

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## ADDITIONAL REMARKS

- Trainee must attain at least 75% attendance rate and pass the assessment to receive Certificate of Completion and funding grant (if applicable).
- Subsidy of up to 70% is applicable for Singapore Citizens, Permanent Residents or Long-Term Visitor Pass Plus (LTVP+) Holders, subject to funding agency's approval.
- Enhanced subsidy of up to 90% is applicable for Singapore Citizens aged 40 years and above, subject to funding agency's approval. Note that GST payable will be computed from fee after 70% funding.
- Professional Development Unit (PDU) is applicable for Professional Engineers registered under the Professional Engineers (PE) Board only.
- All published fees are subject to prevailing GST.

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## CONTACT US

For more information, please contact SIPG at +65 6916 7930 or email [training-institute@spgroup.com.sg](mailto:training-institute@spgroup.com.sg).

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