Electricity Market Design Training Course

Professional Development Training Course Outline

Category	Renewable Energy	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Electricity Market Design Training Course provides a comprehensive understanding of how modern power markets are structured, regulated, operated, and transformed to support energy security, affordability, reliability, competition, and decarbonization. The course examines the fundamental principles of electricity market design, including wholesale and retail market structures, market power, pricing mechanisms, bidding strategies, transmission constraints, congestion management, balancing markets, ancillary services, capacity mechanisms, and cross-border electricity trading. Participants will explore how renewable energy integration, distributed energy resources, battery energy storage, demand response, smart grids, electrification, and digital technologies are reshaping conventional electricity markets. The program connects economic theory with practical market-operation considerations, enabling participants to evaluate how different market structures influence investment, dispatch, system flexibility, consumer outcomes, and long-term power-sector development.

Designed for professionals operating in increasingly dynamic and interconnected energy systems, the training focuses on future-ready electricity market frameworks that can accommodate high shares of variable renewable generation while maintaining system reliability and efficient price signals. Participants will investigate market coupling, locational pricing, flexibility markets, ancillary-service procurement, balancing mechanisms, capacity adequacy, renewable support mechanisms, carbon pricing, storage participation, prosumer models, and demand-side flexibility. Through practical exercises and international case studies, the course develops the ability to assess existing market arrangements, identify regulatory and structural gaps, design effective market rules, and evaluate reforms associated with the clean energy transition and net-zero economy. By the end of the program, participants will be better equipped to contribute to evidence-based electricity-market reforms that promote competitive markets, investment certainty, operational resilience, consumer value, and sustainable power-sector transformation.

Programme Curriculum

Electricity Market Design Training Course

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Course Duration

5 days

Course Objectives

By the end of the course, participants will be able to:

1. Understand the principles and economic foundations of modern electricity market design.
2. Evaluate wholesale, retail, bilateral, pool-based, and hybrid power-market structures.
3. Analyze electricity pricing, bidding, dispatch, and price formation mechanisms.
4. Assess market power, competition, and anti-manipulation frameworks.
5. Design effective balancing and ancillary-services markets.
6. Evaluate capacity mechanisms and approaches to resource adequacy.
7. Apply market-design principles to renewable energy integration.
8. Assess the role of battery energy storage and flexibility markets.
9. Understand congestion management, transmission rights, and locational pricing.
10. Evaluate demand response, prosumers, distributed energy resources, and consumer flexibility.
11. Analyze regional electricity trading, market coupling, interconnection, and cross-border markets.
12. Develop market-reform strategies supporting decarbonization, energy transition, and net-zero targets.
13. Apply international best practices to develop resilient, competitive, and future-ready electricity markets.

Target Audience

1. Electricity market regulators and policymakers
2. Energy ministry and government officials
3. Transmission system operators and distribution system operators
4. Electricity utilities and independent power producers
5. Energy traders, market analysts, and power-market specialists
6. Renewable energy, battery storage, and clean-energy developers
7. Energy economists, consultants, and financial professionals
8. Corporate energy managers and professionals involved in power-sector strategy

Course Modules

Module 1: Foundations of Electricity Market Design

- **Power-sector economics** and the rationale for competitive electricity markets
- Evolution from **vertically integrated utilities** to liberalized markets
- Wholesale, retail, bilateral, pool, and hybrid market structures
- Roles of **generators, retailers, utilities, aggregators, consumers, and system operators**
- Key principles of **efficiency, reliability, transparency, competition, and affordability**
- **Case Study:** Electricity-market liberalization and structural reform in the **United Kingdom**.

Module 2: Wholesale Electricity Markets and Price Formation

- **Day-ahead, intraday, real-time, and balancing-market** structures
- Bid stacks, economic dispatch, merit-order principles, and **marginal pricing**
- Uniform pricing versus **pay-as-bid** mechanisms
- Price volatility, negative prices, scarcity pricing, and market signals
- Market forecasting, bidding strategies, and **price formation analytics**
- **Case Study:** European wholesale-market price formation during periods of high renewable penetration.

Module 3: Market Power, Competition and Regulatory Design

- Identifying and measuring **market concentration and market power**
- Strategic bidding and electricity-market manipulation risks
- Competition monitoring and **market surveillance**
- Regulatory intervention, transparency, and compliance frameworks
- Designing markets that balance **investment incentives and consumer protection**
- **Case Study:** Market-power management and regulatory oversight in the **PJM electricity market**.

Module 4: Transmission, Congestion and Locational Markets

- Transmission constraints and **congestion management**
- Nodal versus zonal **locational pricing**
- Locational Marginal Pricing (**LMP**) principles
- Transmission rights, interconnection, and network access
- Congestion revenue, grid investment, and **network optimization**
- **Case Study:** Nodal electricity pricing and congestion management in the **United States**.

Module 5: Renewable Energy, Storage and Flexibility Markets

- Electricity-market impacts of **wind and solar integration**

- Managing intermittency through **system flexibility**
- Battery energy storage participation in energy and ancillary-service markets
- Demand response, aggregators, and **distributed energy resources**
- Flexibility markets for a **high-renewables power system**
- **Case Study:** Renewable integration, battery storage, and flexibility-market development in **Australia**.

Module 6: Ancillary Services, Balancing and Resource Adequacy

- Frequency control, reserves, voltage support, and **ancillary services**
- Balancing-market design and real-time system operations
- Capacity markets versus energy-only market structures
- Resource adequacy, reliability standards, and **capacity accreditation**
- Scarcity pricing and incentives for flexible generation and storage
- **Case Study:** Capacity-market design and resource adequacy in **PJM**.

Module 7: Regional Electricity Markets and Market Coupling

- Fundamentals of **cross-border electricity trading**
- Regional market integration and interconnection
- Market coupling and coordinated transmission allocation
- Cross-border congestion and transmission-capacity optimization
- Benefits and challenges of **regional power pools**
- **Case Study: European electricity market coupling** and cross-border day-ahead trading.

Module 8: Future Electricity Market Design and Energy Transition

- Designing markets for **net-zero and decarbonization pathways**
- Digitalization, smart grids, AI, advanced analytics, and automated trading
- Prosumers, peer-to-peer energy trading, and **distributed markets**
- Carbon pricing, clean-energy investment signals, and market reform
- Building **resilient, flexible, consumer-centric, and future-ready electricity markets**
- **Case Study:** Electricity-market transformation under high renewable penetration and **net-zero transition scenarios**.

Training Methodology

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

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