Utility Renewable Portfolio Management 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

Utility Renewable Portfolio Management Training Course is designed to equip utility professionals, energy managers, planners, regulators, and project leaders with the strategic and technical capabilities required to manage rapidly evolving renewable electricity portfolios. As renewable generation expands, utilities must balance energy security, grid flexibility, renewable integration, battery storage, power market dynamics, demand flexibility, decarbonization, digitalization, and investment optimization. Global renewable capacity additions reached about 800 GW in 2025, while solar PV represented more than three-quarters of new renewable capacity, reinforcing the need for sophisticated portfolio planning and operational decision-making.

The course focuses on practical Renewable Portfolio Management (RPM) across the full utility value chain from resource assessment and project selection to procurement, Power Purchase Agreements (PPAs), risk management, forecasting, dispatch optimization, grid integration, storage, performance analytics, and sustainability reporting. Participants explore how utilities can build resilient portfolios while responding to increasing variable renewable energy penetration, transmission constraints, changing electricity demand, and emerging flexibility requirements. The curriculum also incorporates contemporary approaches such as AI-enabled forecasting, data-driven portfolio optimization, energy storage, demand response, virtual power plants, digital grids, and clean-energy procurement. These capabilities are increasingly important as solar and wind deployment accelerates and power systems require greater flexibility.

Programme Curriculum

Utility Renewable Portfolio Management Training Course

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Course Objectives

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

1. Develop strategic renewable portfolio plans aligned with utility growth, reliability, and decarbonization objectives.
2. Evaluate solar PV, wind, hydro, geothermal, biomass, and hybrid renewable projects using commercial and technical criteria.
3. Apply renewable energy forecasting and advanced analytics to improve portfolio planning and operational decisions.
4. Optimize battery energy storage systems (BESS) and other flexibility resources within renewable portfolios.
5. Analyze Power Purchase Agreements (PPAs), contracts for difference, competitive auctions, and renewable procurement strategies.
6. Assess merchant, market, regulatory, resource, technology, and project-finance risks across renewable portfolios.
7. Apply portfolio optimization and scenario analysis to balance cost, risk, reliability, and clean-energy targets.
8. Manage variable renewable energy (VRE) integration, grid congestion, curtailment, and transmission constraints.
9. Use AI, machine learning, digital twins, and predictive analytics to enhance renewable portfolio performance.
10. Integrate demand response, distributed energy resources, electric vehicles, and virtual power plants into portfolio strategies.
11. Develop renewable project investment and financial models, including LCOE, NPV, IRR, and sensitivity analysis.
12. Establish ESG, carbon-management, sustainability, and renewable-energy performance metrics for utility portfolios.

13. Build actionable 2026–2030 renewable portfolio roadmaps that support resilience, affordability, energy security, and net-zero objectives.

Target Audience

1. Utility executives and senior energy managers
2. Renewable energy portfolio managers
3. Power system planners and grid operators
4. Energy procurement and PPA professionals
5. Renewable project developers and asset managers
6. Electricity-market, regulatory, and policy professionals
7. Energy finance, investment, and risk specialists
8. Sustainability, ESG, and decarbonization professionals

Course Modules

Module 1: Renewable Portfolio Strategy and Utility Transformation

- Renewable portfolio management fundamentals and strategic objectives
- Utility decarbonization, **net-zero**, energy security, and resilience strategies
- Portfolio diversification across solar, wind, hydro, geothermal, and hybrid assets
- Renewable capacity planning and long-term electricity-demand scenarios
- **Case Study:** Developing a 2030 renewable portfolio strategy for a utility experiencing rapid electricity-demand growth

Module 2: Renewable Resource Assessment and Project Selection

- Solar, wind, hydro, geothermal, and bioenergy resource evaluation
- Technical feasibility, site assessment, resource variability, and project bankability
- Capacity factors, generation profiles, degradation, availability, and performance assumptions
- Project screening using **LCOE, NPV, IRR, risk-adjusted returns, and strategic value**
- **Case Study:** Ranking competing solar PV and wind projects for utility-scale investment

Module 3: Renewable Procurement, PPAs and Energy Markets

- Renewable procurement strategies and competitive auctions
- **Power Purchase Agreements, CfDs, green tariffs, RECs, and market-based procurement**
- PPA pricing structures, contract duration, indexation, guarantees, and risk allocation
- Merchant renewable exposure and electricity-market price dynamics
- **Case Study:** Comparing long-term PPA procurement against merchant renewable investment

Module 4: Renewable Forecasting, AI and Portfolio Analytics

- Solar and wind generation forecasting methodologies
- Weather-data integration and probabilistic forecasting
- **Artificial intelligence, machine learning, predictive analytics, and digital twins**
- Portfolio dashboards, KPIs, data visualization, and performance intelligence
- **Case Study:** Using AI-assisted forecasting to reduce renewable forecast errors and improve dispatch planning

Module 5: Grid Integration, Flexibility and Energy Storage

- Variable renewable energy integration and system balancing
- Transmission congestion, curtailment, interconnection queues, and grid hosting capacity
- **Battery Energy Storage Systems (BESS)** and ancillary-service opportunities
- Demand response, flexible generation, and distributed energy resources
- **Case Study:** Designing a solar-plus-storage portfolio to reduce curtailment and improve system flexibility

Module 6: Portfolio Risk, Finance and Investment Optimization

- Renewable portfolio risk identification and risk-adjusted investment decisions
- Interest-rate, inflation, currency, commodity, basis, regulatory, and technology risks
- Financial modeling for renewable assets and portfolios
- Scenario planning, sensitivity analysis, Monte Carlo concepts, and stress testing
- **Case Study:** Stress-testing a renewable portfolio under changing power prices, interest rates, and generation conditions

Module 7: Renewable Asset Performance and Lifecycle Management

- Asset management strategies for utility-scale renewable projects
- Performance benchmarking, availability, degradation, O&M, and reliability management
- Predictive maintenance and **condition-based asset management**
- Repowering, refurbishment, life extension, and end-of-life planning
- **Case Study:** Improving the financial performance of an underperforming wind and solar portfolio through predictive maintenance and lifecycle optimization

Module 8: Portfolio Governance, ESG and Future Utility Models

- Renewable portfolio governance, compliance, and regulatory reporting
- **ESG, climate risk, carbon accounting, sustainability, and stakeholder engagement**
- Digital utilities, virtual power plants, prosumers, EV integration, and distributed energy systems
- Developing renewable portfolio KPIs, executive dashboards, and investment roadmaps
- **Case Study:** Creating an integrated 2030 clean-energy portfolio combining renewables, storage, demand flexibility, and digital grid technologies

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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