Online Courses | RENEWABLE ENERGY OVERVIEW

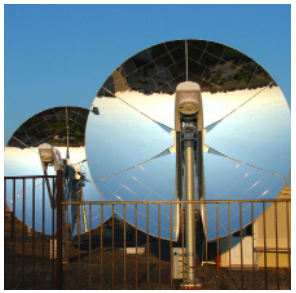
enerdynamics
The Energy Education Experts

Course length: 2 hours
Prerequisites: None
CPE credits: 4 (see website for more details)

Cost: $295-$350*
Subscription: 2-12 months

A study of renewable energy sources and technologies

Technological advancements are rapidly making renewable resources more viable options for electric generation. Renewable Energy Overview explores the primary renewable resources used to generate electricity, the technologies used for each resource, and how each technology actually works. It also examines the key attributes that determine the benefits, costs, and challenges associated with renewable generation technologies and the future potential for each resource. This learning path is intended for those with limited experience in renewables as well as those with a background in renewable energy who need more details on the various technologies.



* Please contact us for bulk discounts and site license pricing.

WHO WILL BENEFIT FROM THIS COURSE?

- Energy buyers for large electric users
- Utility or retail marketer procurement professionals
- Utility account representatives and department managers
- Employees of ISOs/RTOs needing a vision of the current and future impact of renewables
- Regulatory professionals needing a background in renewable energy
- Professionals such as attorneys, accountants, finance, PR, etc., who are becoming active in renewable energy
- Technical employees such as engineers and Information Technology professionals needing a fundamental overview of renewables and issues with integration
- Professionals from the advocacy community who want to learn the business aspects of green power

WHAT PARTICIPANTS WILL LEARN

- What each renewable resource is
- The technologies used to generate electricity from each renewable resource
- How the technologies convert the energy in the resource to electricity
- The current role of each renewable resource in the U.S. electric generation mix
- The key attributes that determine the benefits, costs, and operational characteristics associated with renewable generation technologies
- The potential role of each renewable resource in a region's overall electric generation mix
- Key issues for the future growth of each renewable resource

COURSE AGENDA

Introduction

- Course objectives
- What is renewable electricity?
- Renewable technologies
- The role and recent growth of renewable electricity
- Key attributes of renewable technology and why they are important (technology maturity, resource availability, costs, application and grid integration, environmental considerations, potential for future growth)

Wind Power

- What wind power is
- Two key wind power technology types (horizontal and vertical axis)
- How wind power works
- Maturity of wind power technology
- Wind resource availability
- Wind power costs as compared with competing technologies: capital, fixed O&M, variable O&M, levelized
- Dispatchability, variability, and predictability
- Where wind power fits into the dispatch curve and why
- Grid integration
- Transmission requirements
- Environmental considerations
- The future of wind power

Solar Power

- What solar power is
- Two types of solar electricity – Photovoltiac (PV) and Concentrated Solar Power (CSP)
- How PV technology works
- PV cells

- Types of solar modules (flat plate, concentrator PV systems)
- Types of arrays (fixed and tracking systems)
- Distributed vs. utility-scale PV
- How Concentrated Solar Power (CSP) technology works
- Types of CSP technologies (parabolic trough systems, linear fresnel systems, power towers, parabolic dish systems)
- How thermal storage works
- Hybrid CSP systems
- Heat engine systems
- Solar resource availability
- Solar power costs as compared with competing technologies: capital, fixed O&M, variable O&M, levelized
- Dispatchability, variability, and predictability
- Where solar power fits into the dispatch curve and why
- Grid integration
- Transmission requirements
- Environmental considerations
- The future of solar power

Geothermal Power

- What geothermal power is
- Sources of geothermal energy: conventional reservoirs, dry rock formations, hydrocarbon reservoirs
- Four key geothermal power technology types (dry steam, flash steam, binary, flash/binary)
- How geothermal power works
- Maturity of geothermal technologies
- Geothermal resource availability
- Geothermal power costs as compared with competing technologies: capital, fixed O&M, variable O&M, levelized
- Dispatchability, variability, and predictability
- Where geothermal power fits into the dispatch curve and why
- Grid integration
- Transmission requirements
- Environmental considerations
- The future of geothermal power

Biopower

- What biopower is
- Sources of biomass
- How biomass is converted to electricity (direct combustion, co-firing, Municipal Solid Waste, gasification, anaerobic digestion, landfill gas)
- Maturity of biopower technologies
- Biopower resource availability
- Biopower costs as compared with competing technologies: capital, fixed O&M, variable O&M, levelized
- Dispatchability, variability, and predictability
- Where biopower fits into the dispatch curve and why
- Grid integration
- Transmission requirements
- Environmental considerations
- The future of biopower

Hydropower

- What hydropower is
- How hydropower works
- Maturity of hydropower technologies
- Hydropower resource availability
- Hydropower costs as compared with competing technologies: capital, fixed, O&M, variable O&M, levelized
- Dispatchability, variability, and predictability
- Where hydropower fits in the dispatch curve and why
- Grid integration
- Transmission requirements
- Environmental considerations
- The future of hydropower

Hydrokinetic Power

- What hydrokinetic power is
- Types of hydrokinetic power
- How Wave Energy Conversion (WEC) technologies work (attenuator, oscillating water column, oscillating wavesurge converter, overtopping device, point absorber)
- How Current Energy Conversions (CEC) technologies work (axial flow turbine, cross flow turbine)
- Maturity of hydrokinetic technologies
- Hydrokinetic resource availability
- Hydrokinetic power costs as compared with competing technologies: capital, fixed, O&M, variable O&M, levelized
- Dispatchability, variability, and predictability
- Where hydrokinetic fits in the dispatch curve and why
- Grid integration
- Transmission requirements
- Environmental considerations
- The future of hydrokinetic power