

PEER™ Fundamentals

Course Syllabus

BACKGROUND

PEER, modeled after the U.S. Green Building Council's LEED program for buildings, provides energy professionals with a comprehensive understanding of how to define, assess, and specify sustainable power to buildings. The PEER Fundamentals course is an interactive opportunity to explore how microgrid architecture enables utilities, regulators, consumers, and the private sector to work together to accelerate electricity system investment and improvement, and learn how to maximize smart grid benefits for consumers and stakeholders alike.

This course provides:

- ▶ A set of design elements, best practices, and performance measures that empower electricity stakeholders to achieve a higher level of system performance in terms of consumer outcomes
- ▶ A framework for designing an electricity system that is more consumer responsiveness, cost effectiveness, reliability, environmentally sustainability, energy efficiency, and resiliency
- ▶ Methods for improving the business case to accelerate investment and improvement and create new value streams
- ▶ Insights on how customers, grid operators, and stakeholders can work together and each contribute to improve grid performance

OUTLINE

The PEER Fundamentals course consists of six modules that range from 15 to 60 minutes in length each. There will be one primer module, followed by a module for each performance category and a final review module. A certificate of completion is earned by passing an exam comprised of 25 randomly delivered multiple-choice questions that confirm a broad understanding of sustainable electricity design and performance criteria or concerns. This course is provided in both classroom and self-paced on-line formats.

Module 1 - Primer

Introduces the PEER program. This includes a discussion of the program background and a review of the overall program structure.

Topics include:

1. PEER program objectives
2. Introduction to different types of electricity systems and opportunities associated with a microgrid approach
3. The PEER evaluation, design, and project certification process

Module 2 - Energy Efficiency and Environment

Introduces performance criteria and methods for assessing and improving power energy efficiency and environmental performance while providing methods for improving the business case to accelerate investment and improvement in grid services.

Topics include:

1. The importance of energy efficiency and environmental performance outcomes
2. PEER Energy Efficiency and Environment criteria, performance metrics and capabilities
3. Where to get performance data and how to calculate overall performance
4. Design strategies for improving energy efficiency and environmental performance of electricity systems, including performance contracting
5. Accounting for methane leakage in extraction and delivery process
6. Case study and improvement exercise

Module 3 - Reliability, Power Quality and Safety

Introduces performance criteria and methods for assessing and improving grid reliability, power quality (PQ), and critical facility resiliency. Also provides methods for minimizing risks.

Topics include:

1. The importance of reliability, PQ, and safety performance outcomes
2. PEER reliability, PQ, and safety criteria, performance metrics and capabilities
3. Performance criteria and design strategies necessary to effectively assess reliability, resiliency, power quality, and safety performance of electricity systems.
4. Reliability and power quality design features, capabilities, and performance indicators
5. Approaches for improving distribution reliability, protecting key or critical services/loads, identifying and eliminating unforeseen risks, and achieving islanding capability
6. Processes for identifying and eliminating unforeseen risks.

Module 4 – Operational Effectiveness

Introduces performance criteria and methods for assessing operational efficiency and identifying hidden waste. Also provides a framework for quantifying the value of improvements and strengthening the business case for future investment/action.

Topics include:

1. The importance of operational effectiveness performance outcomes
2. PEER operational effectiveness criteria, performance metrics and capabilities
3. Key strategies for lowering electricity prices, reducing demand charges, and generating net revenue from ancillary services.
4. Load curves, load duration curves, and ways to improve both of these.
5. Strategies and metrics to continuously innovate, improve quality, and drive out waste and inefficiencies
6. How to value prior investments and determine the estimated cost of remaining waste
7. How to utilize Failure Modes and Effects Analysis to evaluate systems for failure points, find the highest impact failure modes, and devise solutions.

Module 5 – Enabling Customer Action

Introduces performance criteria and methods for assessing and encouraging customer participation. Also provides a framework for engaging customers to achieve a more dynamic, resilient grid.

Topics include:

1. The importance of customer engagement performance outcomes
2. PEER Enabling Customer Action criteria, performance metrics and capabilities
3. Key strategies for engaging customers in a way that will encourage them to invest.
4. How to value customer investment and action.

Module 6 – Conclusion

Topics include:

1. PEER program objectives review
2. Criteria synergies between categories
3. Interrelation of performance outcomes and design capabilities with savings and potential opportunities.