



PERFORMANCE
EXCELLENCE IN
ELECTRICITY
RENEWAL

SAMPLE

PEER
REFERENCE
GUIDE

v2

P3ER™

**REFERENCE
GUIDE**

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INTRODUCTION

ABOUT PEER

Performance Excellence in Electricity Renewal (PEER) is the nation's first comprehensive, consumer-centric, and data- and market-driven system for evaluating power system performance. The PEER rating system addresses campuses, cities, utilities, and transit projects and is administered by Green Business Certification Inc. (GBCI).

PEER is a framework for identifying, implementing, and measuring sustainable power delivery and environmental impact reduction. PEER also helps fill a major gap in the smart grid movement by creating an opportunity for power systems to gain competitive advantage by differentiating their performance and demonstrating meaningful outcomes. Market forces can create incentives for the electric power industry to accelerate its transformation.

Modeled after the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) rating system for green residential, commercial, and institutional buildings, PEER evaluates power generation, transmission, and distribution systems through the lens of the customer, focusing on efficiency, reliability, resilience, operations, grid services, and the environment.

PEER version 2 is the next step in the continual improvement of the PEER rating system. Technical updates to PEER v2 emphasize a simple, achievable, yet technically robust standard for sustainable energy generation and delivery systems. A growing number of stakeholders, electricity suppliers, and utilities are exploring how quality can help ensure that their smart grid efforts are successful.

PEER GUIDING PRINCIPLES

The PEER rating system promotes sustainable power distribution through strategies informed by six guiding principles.

1. Customer focus

PEER is customer driven and improves the value of engagement from the customer's perspective. The following areas are critical from a customer perspective:

- Reliability and power quality
- Resilience
- Safety

- Cost management
 - Environmental impact
 - Transparency
 - Customer empowerment
 - Technology readiness
2. Applicability
PEER builds in flexibility so that its approach can be applied to three critical market segments:
 - Utility and city systems
 - Campuses
 - Transit
 3. Performance
PEER emphasizes measurable performance outcomes and capabilities:
 - Approximately 50% of the available points are awarded for measurable outcomes.
 - All credits are designed to be verifiable.
 4. Market transformation
PEER focuses on strategies that will accelerate change in the power market:
 - Increased credit weighting for measurable impacts
 - Actions that lead to investment or actions by others
 - High impact on outcomes for customers or other end users
 5. Transparency
PEER makes sharing metrics with customers a high priority.
 6. Benefits
PEER identifies and incentivizes actions and processes that produce results.

Those guidelines are the basis for PEER's four categories of prerequisites and credits:

- Reliability and Resiliency (RR)
- Energy Efficiency and Environment (EE)
- Operations, Management, and Safety (OP)
- Grid Services (GS)

PROJECT TYPES

Projects eligible for PEER certification may be one of three types:

- Campus: publicly or privately owned or operated projects that distribute power to one or more buildings with individual meters or submeters
- Utility and city: generally, public projects with a large variety of customers
- Transit: monorail, metro rail, and intercity or intracity rail projects with at least three adjacent stations.

PEER CERTIFICATION PROCESS

The process begins when the owner determines the project boundary and registers the project under the applicable PEER project type. The project team meets the requirements for all prerequisites and for those credits it has chosen to pursue. The team submits a completed application, with documentation. The project submission is then reviewed. A preliminary review provides technical advice on credits that require additional documentation or actions for achievement. The final review determines the project's score and certification level. Final review decisions can be appealed if a team believes additional consideration is warranted.

PEER has four levels of certification, depending on the point thresholds achieved:

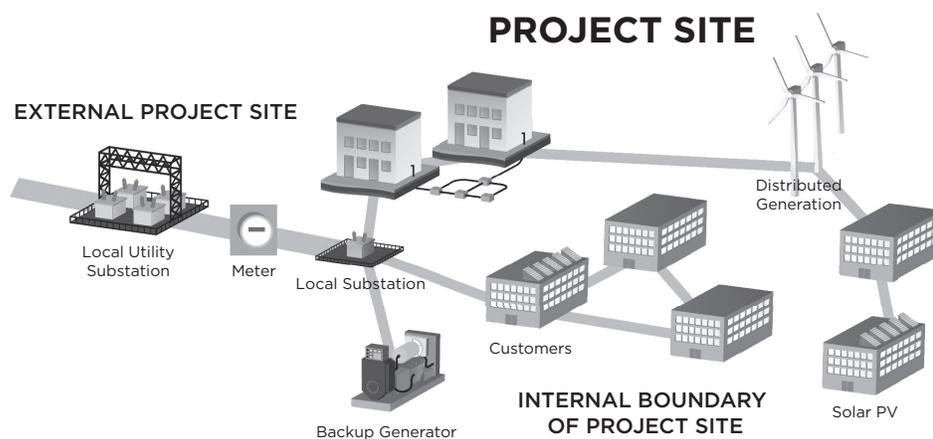
- Certified, 40–49 points
- Silver, 50–59 points
- Gold, 60–79 points
- Platinum, 80 or more points

PROJECT BOUNDARY

The boundaries of the project site should be clearly defined to include all components of the electrical system that are under control of the site operator. Figure 1 shows an example project boundary. External boundaries are the connections to the neighboring grid, and internal boundaries are the connections to customers or buildings. The interface points to the electric grid must be metered so that consumption and the characteristics of the bulk supply or purchased power, including reliability, can be quantified.

The internal boundaries or customer interfaces are defined as follows:

- If the finest measuring point is a whole-building electric meter and there is one meter for every building, then “customers” are the building meters. The building circuits beyond the meters are not part of the project. Example: a residential or small business customer.
- If the finest measuring point is an electric meter and there is more than one meter per building, then the “customer” is the aggregation of the meters feeding the building.
- If there are no building-level meters and the finest measuring point is a substation feeder breaker, then the “customer” is every load or every building on the feeder.
- If the project is a collection of buildings and large loads, such as a wastewater treatment plant, and a large load has a separate meter, each such load can be a “customer.” If the large load does not have a meter, the next metering point above the load would be the “customer.”
- If a customer or building has a local generation source that is metered, the generation source is considered part of the project.
- If a customer or building has a local generation source that is not metered, the generation source is not considered part of the project because its output cannot be quantified. Instead, the generation source is considered part of the customer or building, and it affects the project by offsetting that customer’s or building’s power consumption.



MINIMUM PROGRAM REQUIREMENTS

Utility and city The project must have one or more substations or circuits that have metered customers within the project boundary.

Campus The project must have either (1) at least one main meter and a submeter within the project boundary, or (2) more than one building, each of which is metered individually.

Transit The project must have at least three adjacent stations with at least one receiving substation, and each station within the project boundary must be metered individually. The project must consider both traction and non-traction loads.

GENERAL CONSIDERATIONS

1. Buildings that are tied into power with another building at less than 480V/415V are not included in the building count.
2. Buildings that receive power directly from the utility or city through a metered service or from a power distribution system that operates at a voltage higher than 480V/415V should be included in the building count.
3. Projects with distribution wires that cross property lines or rights-of-way are not considered single building projects, regardless of the voltage.

PREREQUISITES AND CREDITS

The PEER rating system has two categories of requirements:

- Prerequisites. Compliance with all prerequisites is required for PEER certification. No points are awarded for meeting these requirements.
- Credits. Each credit is worth one or more points. Project teams select the credits they wish to achieve and must earn at least 40 of the possible 100 points for certification.

GENERAL REQUIRED DOCUMENTATION

All projects must provide the following basic documentation. This documentation affects multiple credits across the credit categories and must be consistent throughout the application.

- A narrative describing the project's power supply and distribution system configurations
- Data sheets or specifications for the project's generating assets, including the rated output, fuel flow, heat rate, and emissions
- Single-line diagrams of the project
- Site plan showing the project boundary

Specific documentation for each prerequisite and credit is listed under the "Required Documentation" sections.

REFERENCE GUIDE OVERVIEW

This Reference Guide serves as a roadmap, describing the steps for meeting and documenting credit requirements, standards to be complied, strategies to be followed and offering advice on best practices.

Within each section, information is organized to flow from general guidance to more specific tips and finally to supporting references and other information. Sections have been designed with a parallel structure to support way finding and minimize repetition.

Each credit category begins with an overview that discusses sustainability and market factors specific to the category. For each prerequisite and credit, applicants will then find the following sections:

Intent identifies the main sustainability goal or benefit of the prerequisite or credit.

Requirements specifies the criteria that satisfy the prerequisite or credit and, for credits, the number of points available for specific strategies. Where applicable, project type requirements may be called out separately. These special requirements must be met in addition to any requirements listed under “All Projects.”

Background provides contextual information, such as additional explanation or clarification, industry factors, and strategies and technologies.

Required Documentation lists the supporting material that must be provided to GBCI for certification review. Where applicable, project type requirements may be called out separately. These documents must be provided in addition to those listed under “All projects.”

Further Explanation provides sample calculations, examples, and clarifications for different project types or credit approaches.

Related Credits indicates trade-offs and synergies within the PEER rating system and identifies other credits or strategies that may affect or be affected by the credit in question.

Standard and Reference lists any technical referenced standards related to the credit. In some cases, additional resources that may be helpful are listed as well.

Definitions gives the meaning of terms used in the requirements.

ABBREVIATIONS

AMI	advanced metering infrastructure
ASCE	American Society of Civil Engineers
BAS	building automation system
BIS	Bureau of Indian Standards
CEA	Central Electricity Authority
DES	district energy system
EMS	energy management system
GIS	geographic information system
HVAC	heating, ventilation, and air-conditioning
IEEE	Institute of Electrical and Electronics Engineers
ISO	independent system operator
MAIFI	momentary average interruption frequency index
MED	major event day (defined in IEEE 1366)
NESC	National Electrical Safety Code
REC	renewable energy certificate
RTO	regional transmission operator
SAIDI	system average interruption duration index
SAIFI	system average interruption frequency index
SCADA	supervisory control and data acquisition
SEEC	system energy efficiency coefficient
VAR	volt-ampere reactive

