PEER

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Reliability and Resiliency

Advanced Meters for Reliability and Power Quality

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Prerequisite	Design Consideration	Required	Required	Required

INTENT

To facilitate reliability measurement and monitoring by ensuring a minimum standard for metering throughout the project.

REQUIREMENTS

Install advanced meters to track reliability and power quality performance.

Option 1

More than 5% of customers must have advanced meters capable of reporting interruption data to site management at least every 15 minutes to demonstrate compliance with this prerequisite. Additionally, the project must demonstrate a plan to reach all customers within 10 years.

OR

Option 2

Maintain a power interruption log showing date, time, duration, location, and number of customers affected.

Communications Backbone

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Prerequisite	Design Consideration	Required	Required	N/A

INTENT

To facilitate power reliability and quality by ensuring the communication infrastructure is in place for monitoring and controlling the project as well as gathering electric meter data.

REQUIREMENTS

Have a communications backbone connected to all major assets of the project.

SCADA

Credit Type	Criteria Type	Points		
		Campus	**City**	**Supply**
Prerequisite	Design Consideration	Required	Required	Required

INTENT

To establish standards and capabilities for gathering and processing meter and other system data.

REQUIREMENTS

Have in place, at a minimum, one supervisory control and data acquisition system (SCADA) for collecting, displaying, and calculating metrics for electric reliability, and indicating interruptions. The SCADA must be connected to the project's major assets to demonstrate compliance with this prerequisite.

Emergency Response Plan

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Prerequisite	Standard Process	Required	Required	Required

INTENT

To facilitate power reliability and quality by ensuring that the project is capable of and prepared for responding to emergency situations resulting from power interruptions.

REQUIREMENTS

Have in place an emergency response plan or procedure, written specifically for the project or for the project community, addressing both short-term and extended power interruptions.

The plan must address backup power to facilities responsible for command and control during emergencies and at least 2 of the following attributes to demonstrate compliance with this prerequisite:

▶ Contingencies for inter and intra departmental communication

▶ Prioritization of circuits supplying essential and critical services

▶ Drills and training on emergency response procedures

▶ Traffic management

Safety Review of Design Changes

Credit Type	Criteria Type	Points		
		Campus	**City**	**Supply**
Prerequisite	Standard Process	Required	Required	Required

INTENT

To ensure that distribution and generation systems are operated safely.

REQUIREMENTS

All Projects
Review proposed design and operational changes under a safety process that is in compliance with local building code requirements and includes methods for identifying potential unintended consequences.

For Existing Projects Only
Safety review policies and procedures must require at least 2 of the following to demonstrate compliance with this prerequisite:

▶ Formal risk analysis for significant design or operational changes

▶ Periodic safety meetings to review significant design or operational changes

▶ Compliance with safety code requirements for any design or operational changes

▶ Periodic updates to operating documents (procedures, manuals, diagrams, etc.) to incorporate proposed or new design changes

For New Construction Projects Only
At least 2 of the following are required to demonstrate compliance with this prerequisite:

▶ Formal risk analysis for design changes during the design and construction process

▶ Periodic safety meetings to review significant design or operational changes

▶ Process or policy requiring compliance with safety code requirements for any design or operational changes

▶ Comprehensive operating procedures

SAIDI (Sustained Interruption Duration)

Credit Type	Criteria Type	Points		
		Campus	**City**	**Supply**
Core	Performance Outcome	Up to 1 point	Up to 15 points	N/A

INTENT

To provide operators and customers with greater transparency regarding interruption duration, enabling action to improve project reliability.

REQUIREMENTS

All Projects

Calculate the System Average Interruption Duration Index (SAIDI), as defined by IEEE-1366 and including all interruptions lasting longer than 5 minutes regardless of cause, using the following formula:

$$SAIDI = \frac{\sum (\text{Restoration time for interruptions, mins} * \text{Number of customers interrupted})}{\text{Total number of customers served}}$$

For Campus Projects Only

Up to 1 point is available for SAIDI performance (Figure 1).
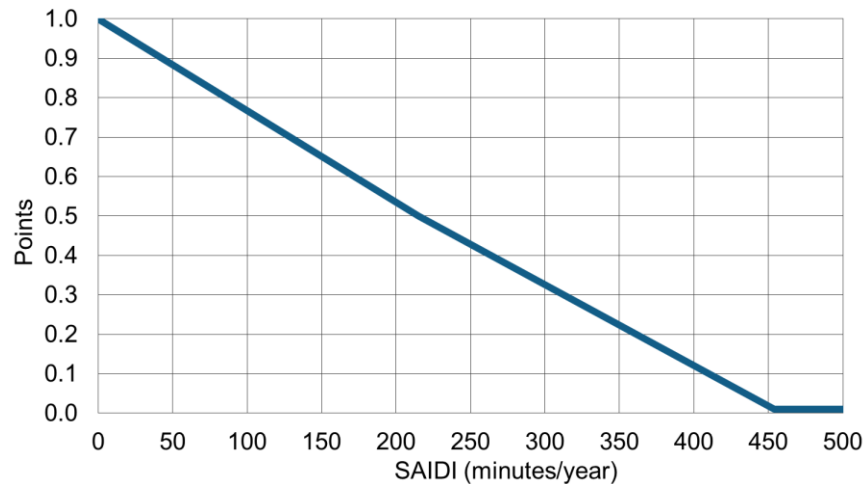
Figure 1. Points for SAIDI Performance - Campus

For City Projects Only

Up to 13 points are available for SAIDI performance (Figure 2).
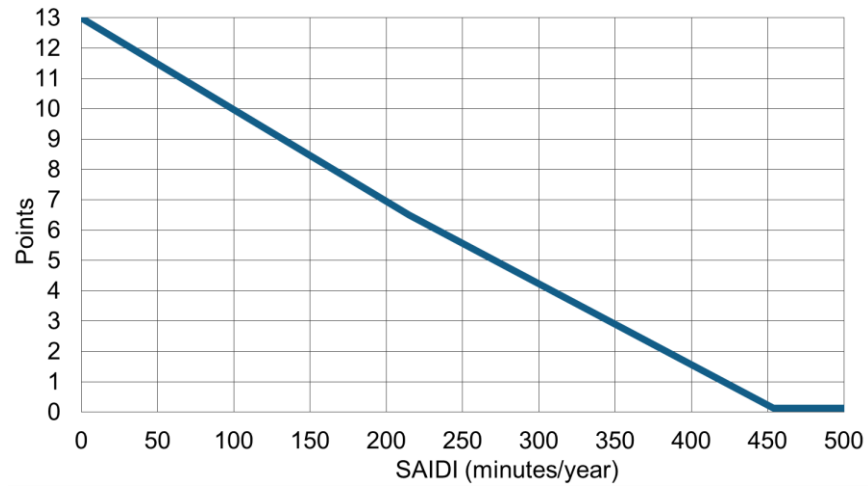
Figure 2. Points for SAIDI Performance - City

Additionally, 2 points are available to projects that provide detailed information (voltage level and substation, cause, location, operator cost, and other impacts) for each interruption.

SAIFI (Sustained Interruption Frequency)

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Core	Performance Outcome	Up to 1 point	Up to 15 points	N/A

INTENT

To provide operators and customers with greater transparency regarding interruption frequency, enabling action to improve project reliability.

REQUIREMENTS

All Projects

Calculate the System Average Interruption Frequency Index (SAIFI), as defined by IEEE-1366 and including all interruptions lasting longer than 5 minutes regardless of cause, using the following formula:

$$SAIFI = \frac{\sum (\text{Number of customers interrupted})}{\text{Total number of customers served}}$$

For Campus Projects Only

Up to 1 point is available for SAIFI performance (Figure 1).
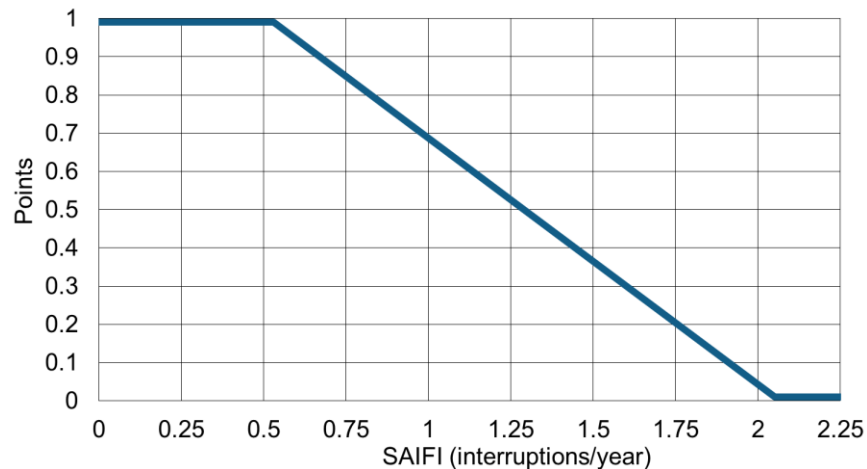
Figure 1. Points for SAIFI Performance - Campus

For City Projects Only

Up to 15 points are available for SAIFI performance (Figure 2).

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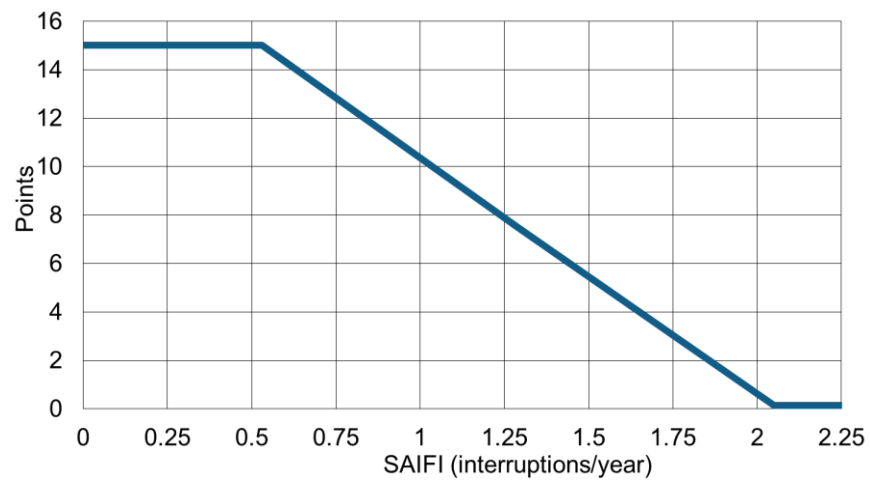
Figure 2. Points for SAIFI Performance - City

CELID-5 (Interruptions Lasting > 5 Hours)

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Core	Performance Outcome	N/A	Up to 10 points	N/A

INTENT

To provide operators and customers with greater transparency regarding long interruptions, enabling action to improve project reliability.

REQUIREMENTS

All Projects

Calculate the percentage of customers experiencing long (more than 5 hours) interruption durations over the course of a year (CELID-5), as defined by IEEE-1366, using the following formula:

$$\text{CELID-5} = \frac{\text{Number of customers experiencing interruptions} > 5 \text{ hours}}{\text{Total number of customers served}}$$

For Existing Projects Only

Up to 10 points are available for CELID-5 performance (Figure 1).
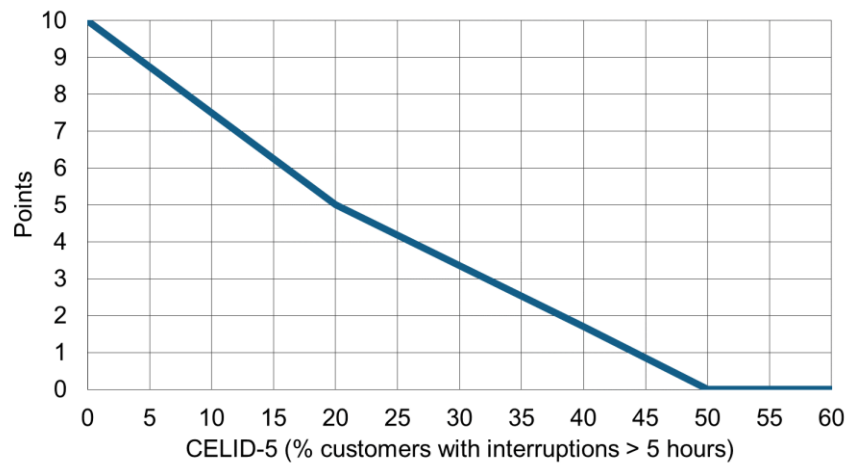
Figure 1. Points for CELID-5 Performance - Existing

For New Construction Projects Only

Up to 5 points are available for CELID-5 performance, as estimated based on SAIDI and SAIFI (Figure 2).
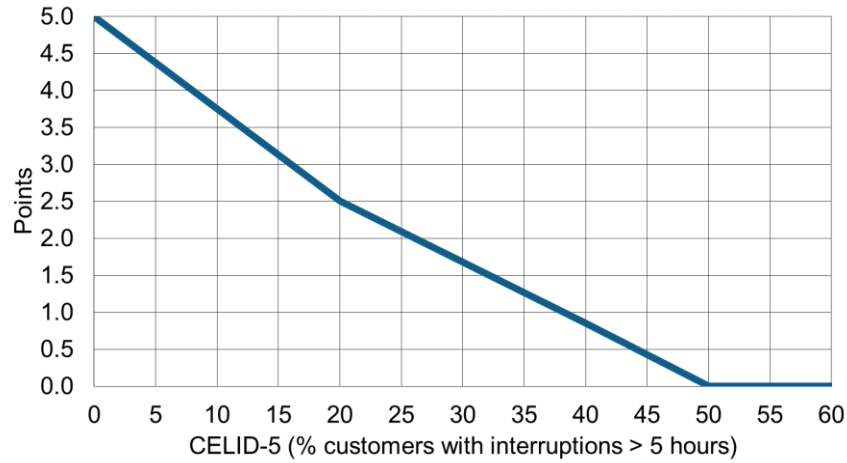
Figure 2. Points for CELID-5 Performance - New

Additionally, 1 point is available for each of the following:

▸ A SCADA tied into a GIS that helps operators quickly locate power interruptions

▸ An inventory and logistics plan that provides operators with quick access to commonly failed transformers, switches, cables, and other key distribution system assets

▸ Personnel pre-assigned to specific emergency positions

▸ The ability to restore power if a primary control center is damaged, either by operating out of decentralized control facilities or by moving to a backup control facility

▸ Storm anticipation practices that track severe storms and change operating procedures in preparation for power outages

ASAI (Availability)

Credit Type	Criteria Type	Points		
		Campus	**City**	**Supply**
Core	Performance Outcome	Up to 23 points	N/A	Up to 25 points

INTENT

To provide operators and customers with a performance metric for power availability, enabling action to improve project reliability.

REQUIREMENTS

Calculate the Average Service Availability Index (ASAI), as defined by IEEE-1366 and including all interruptions lasting longer than 5 minutes regardless of cause, using the following formula:

$$ASAI = \frac{(CS * H) - \sum (RT * CI)}{CS * H}$$

Where:

CS = Total number of customers served

H = Hours per year

RT = Restoration time, mins

CI = Number of customers interrupted

Up to 21/23 (Campus/Supply) points are available based on ASAI performance (Figure 1).
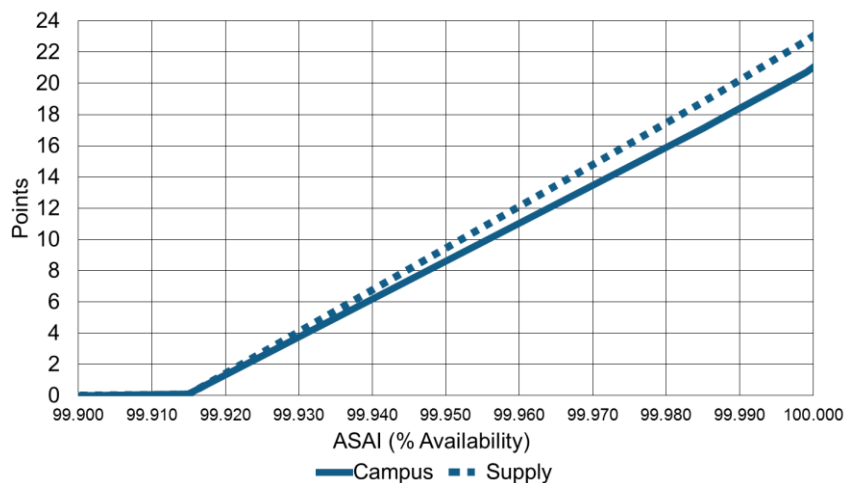
Figure 1. Points for ASAI Performance

Additionally, 2 points are available to projects that provide detailed information (voltage level and substation, cause, location, operator cost, and other impacts) for each interruption.

MAIFI (Momentary Interruptions)

Credit Type	Criteria Type	Points		
		Campus	**City**	**Supply**
Bonus	Performance Transparency	Up to 3 points	Up to 3 points	N/A

INTENT

To provide operators and customers with greater transparency regarding momentary interruption frequency, enabling action to improve project reliability.

REQUIREMENTS

For Existing Projects Only
Track and trend the Momentary Average Interruption Frequency Index (MAIFI), as defined by IEEE-1366, including interruptions lasting less than 5 minutes and caused by interrupting devices, using the following formula:

$$MAIFI = \frac{\sum (IDO_M * CI)}{CS}$$

Where:

IDO_M = Number of interrupting device operations, momentary interruptions

CI = Number of customers interrupted

CS = Total number of customers served

For New Construction Projects Only
Have in place project capabilities, processes, and/or policies for tracking and trending MAIFI.

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CEMMI-5 (Multiple Momentary Interruptions)

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Bonus	Performance Transparency	Up to 3 points	Up to 3 points	N/A

INTENT

To provide operators with greater transparency regarding multiple momentary interruptions, enabling action to improve project reliability.

REQUIREMENTS

For Existing Projects Only
Track and trend the percentage of customers experiencing multiple (more than five) momentary interruptions in a year (CEMMI-5), as defined by IEEE-1366, including interruptions lasting less than 5 minutes and caused by interrupting devices, using the following formula:

$$\text{CEMMI-5} = \frac{\text{Number of customers experiencing} > 5 \text{ momentary interruptions}}{\text{Total number of customers served}}$$

For New Construction Projects Only
Have in place project capabilities, processes, and/or policies for tracking and trending CEMMI-5.

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AIFI (Interruption Frequency)

Credit Type	Criteria Type	Points		
		Campus	**City**	**Supply**
Bonus	Performance Transparency	Up to 4 points	Up to 4 points	Up to 5 points

INTENT

To provide operators with greater transparency regarding the total number of interruptions experienced by customers, enabling action to improve project reliability.

REQUIREMENTS

For Existing Projects Only
Track and trend the Average Interruption Frequency Index (AIFI), including all interruptions regardless of duration or cause, using the following formula:

$$AIFI = \frac{\sum (\text{Number of interruptions} * \text{Number of customers interrupted})}{\text{Total number of customers served}}$$

For New Construction Projects Only
Have in place project capabilities, processes, and/or policies for tracking and trending AIFI.

Damage and Exposure Prevention

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Core	Design Consideration	Up to 5 points	Up to 10 points	Up to 10 points

INTENT

To improve reliability by protecting equipment from external threats.

REQUIREMENTS

Establish design standards and install measures for reducing damage to local distribution and generation equipment from external threats.

0.833/1.667/1.667 (Campus/City/Supply) points are available for each of the following measures:

▶ Pad-mounted equipment protected from pedestrian or vehicle traffic

▶ Areas with potential exposure to dangerous high voltages secured and protected from the public

▶ Animals prevented from entering areas with exposed wiring, chewing through insulators, or nesting near exposed wires

▶ Identification of animals that could potentially harm the project's distribution system

Up to 2.5/5/5 (Campus/City/Supply) points are available to projects with distribution conductors underground or enclosed within buildings (Figure 1).
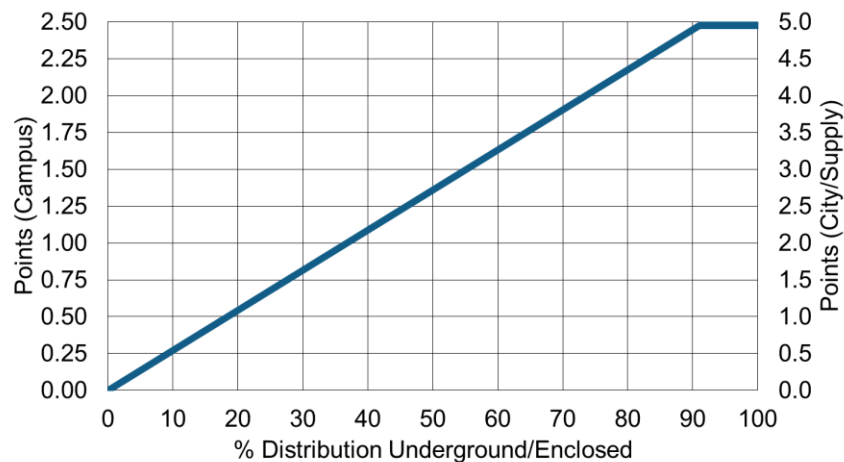
Figure 1. Points for Underground/Enclosed Conductors

For projects with more than 10% of conductors above ground and outside buildings, an additional 0.417/0.833/0.833 (Campus/City/Supply) points are available for the following strategies:

▶ Utility poles and overhead conductors protected from pedestrian or vehicle traffic

▶ Animals prevented from burrowing into fenced-in high voltage areas

- Animals prevented from climbing power poles
- Anti-perching features or conductor covers to prevent birds from perching, nesting, and shorting exposed overheard conductors

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Alternative Sources of Project Electricity Supply

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Core	Project Capability	Up to 5 points	Up to 10 points	Up to 10 points

INTENT

To improve reliability by ensuring redundant sources of electricity supply.

REQUIREMENTS

All Projects
Equip the project with at least 1 alternative, independent source of electricity supply so that the project is capable of operating if a primary source of power experiences an interruption. If an uninterruptible power supply (UPS) or energy storage system is used, it must be capable of providing power for at least 8 hours.

For Campus and Supply Projects Only
Up to 5/10 (Campus/Supply) points are available based on the percentage of customers with alternate project supply with backup feeder or local generator as an alternative power source (Figure 1).
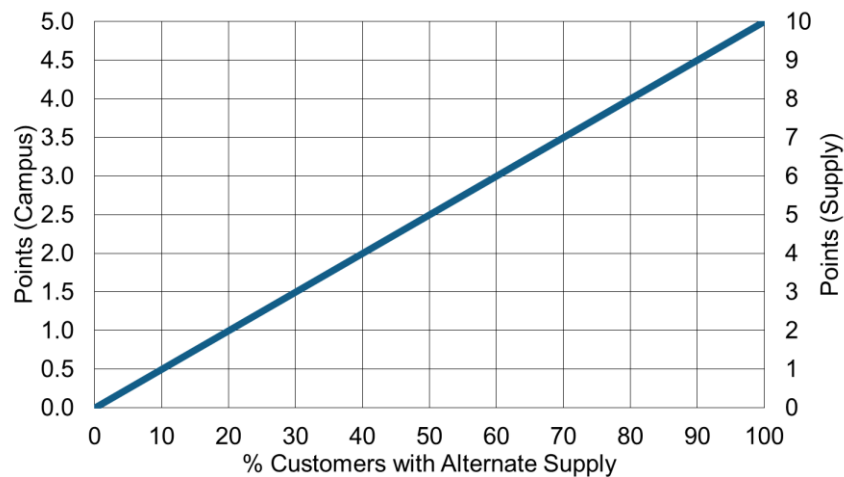
Figure 1. Points for Customers with Alternate Supply

Load, building, and billing meters can be considered customers. Local generation must be connected to substations buses to quality for this credit; local generation connected to distribution circuits are not eligible.

For City Projects Only
Up to 10 points are available based on the percentage of distribution circuits with alternate supply (Figure 2).
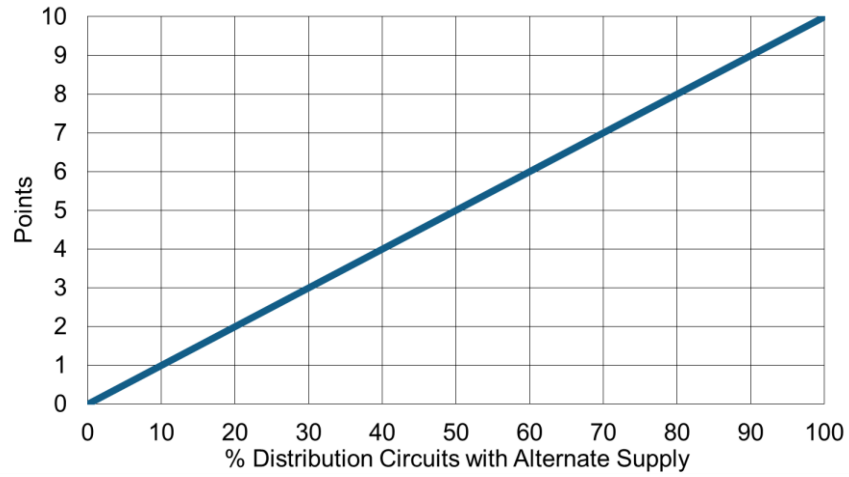
Figure 2. Points for Distribution Circuits with Alternate Supply

Distribution Redundancy and Automated Restoration

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Core	Project Capability	Up to 10 points	Up to 5 points	N/A

INTENT

To improve reliability by ensuring redundant distribution and automated restoration to customers within the local grid.

REQUIREMENTS

Equip the project grid with distribution redundancy and automated power restoration so that customer power can be sustained with the use of alternate or redundant distribution in the event of an interruption within the project. Uninterruptible power supply (UPS) and energy storage systems must be capable of providing power for at least 2 hours.

Calculate the percentage of customers or circuits protected with distribution redundancy and/or automated restoration using the following formulas:

$$\% \text{ Protected}_{\text{Campus}} = \frac{1}{3}\left[2 \times \%DR \times \left(1 - \frac{1}{1 + ANS}\right) + \%AR \times \left(1 - \frac{1}{1 + ANAS}\right)\right]$$

$$\% \text{ Protected}_{\text{City}} = \frac{1}{2}\left[\%DR \times \left(1 - \frac{1}{1 + ANS}\right) + \%AR \times \left(1 - \frac{1}{1 + ANAS}\right)\right]$$

Where:

%DR = % customers or circuits with distribution redundancy

%AR = % customers or circuits with automated restoration

ANS = Average # of distribution switches on circuits w/ distribution redundancy

ANAS = Average # of automated distribution switches on circuits w/ automated restoration

Up to 10/5 (Campus/City) points are available based on the percentage protected (Figure 1).
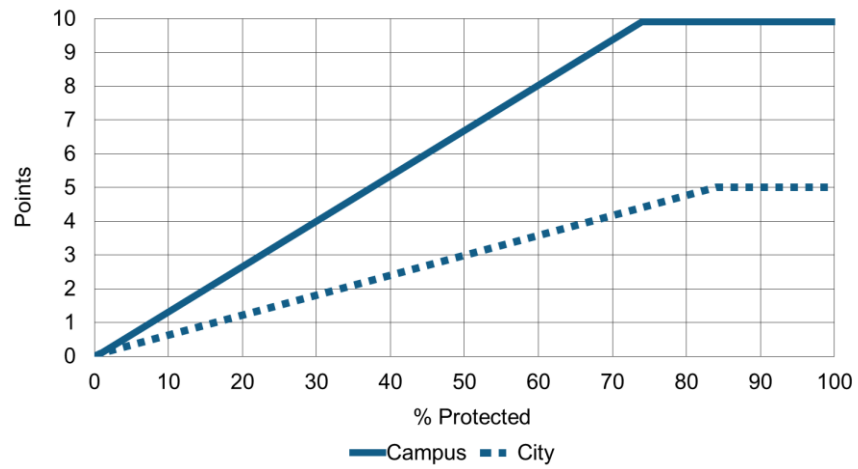
Figure 1. Points for Customers/Circuits Protected

Islanding Capability

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Core	Project Capability	Up to 20 points	Up to 5 points	Up to 30 points

INTENT

To improve reliability by encouraging the development of projects with islanding capability.

REQUIREMENTS

All Projects

Equip the project grid with the ability to island, either in its entirety or partially. Establish operating procedures for how the project will handle loss of off-site or grid power, transition to a backup source of power, and transition back to normal operation. In addition, identify priority loads and have in place procedures for supporting them.

Points available for project islanding, based on the percentage of the project load supported, are shown in Figure 1.
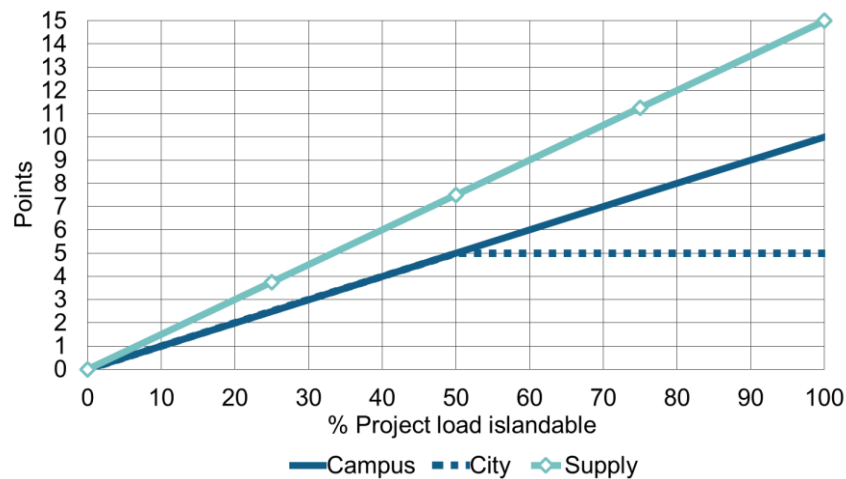
Figure 1. Points for Islanding Capability

Additional points are available for black start or ride through capability, based on the percentage of the project load supported (Figure 2).

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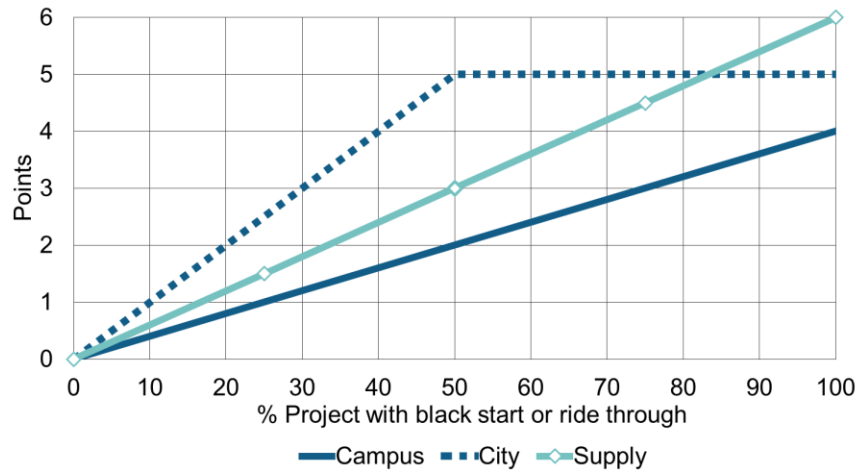
Figure 2. Points for Black Start or Ride Through Capability

For Campus and Supply Projects Only

Additional points are available for each of the following capabilities, based on the percentage of the project load supported (Figure 3):

▶ Automatic transfer

▶ Seamless transfer

▶ Quick transfer

▶ Automatic load shedding

▶ Automatic load restoration
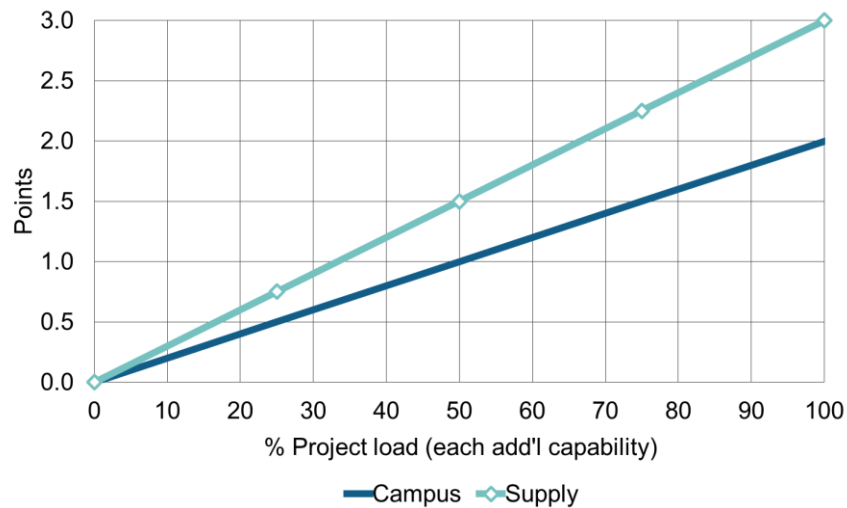
Figure 3. Points for Additional Capabilities

Power Surety for Critical Loads

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Core	Project Capability	Up to 10 points	Up to 5 points	N/A

INTENT

To improve reliability in emergency situations by providing power surety to critical loads.

REQUIREMENTS

Identify the project's critical loads and provide them with short-term backup or redundant power.

2/1 (Campus/City) points are available to projects that perform a comprehensive assessment to identify critical loads and determine the minimum backup runtime for each.

An additional 8/4 (Campus/City) points are available based on the percentage of critical loads supplied with backup power for the duration of the minimum backup runtime (Figure 1).
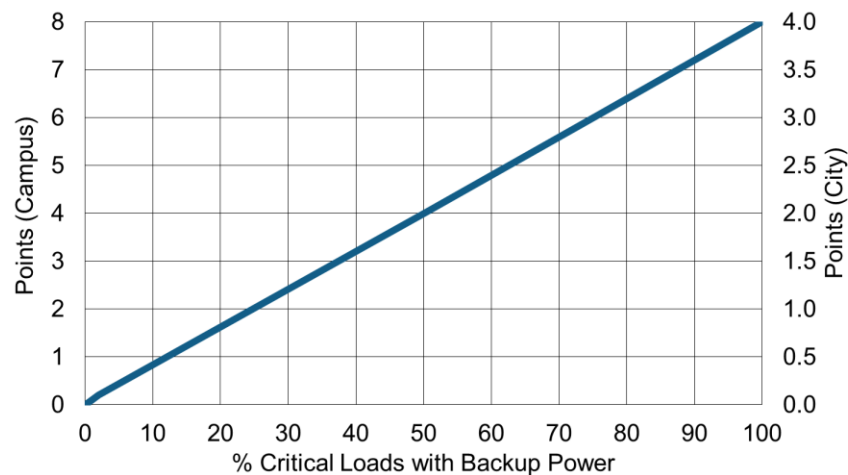
Figure 1. Points for Critical Loads with Backup Power

Constraints on allowable alternate power sources are as follows:

▸ Cannot originate from the bulk grid as this criteria is intended to ensure power to critical loads during widespread grid outages

▸ Must be able to supply backup power for a duration exceeding the minimum backup runtime determined in the emergency response plan for the critical load

Allowable alternate power sources include:

▸ Local generator or energy storage at the critical load or in the same building as the critical load

▸ Local generator or energy storage at an adjacent building that is considered part of the

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same project

- Substation for non-adjacent building within the project as long there is redundant or underground distribution between buildings from the local generation or energy storage source to the critical load

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Power Resiliency through Recovery

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Core	Project Capability	Up to 5 points	Up to 5 points	N/A

INTENT

To support community recovery during catastrophic events and extended bulk power grid outages by ensuring power resiliency to essential services.

REQUIREMENTS

Identify the project's essential services, and implement design standards for providing these services with long-term local power.

1 point is available for projects that perform a comprehensive assessment to identify essential services within the project boundary and determine the minimum daily runtimes for each.

Up to 4 points are available for projects that implement design standards and practices to provide essential services with local power for the duration of the minimum daily runtime for at least 3 weeks (Figure 1).
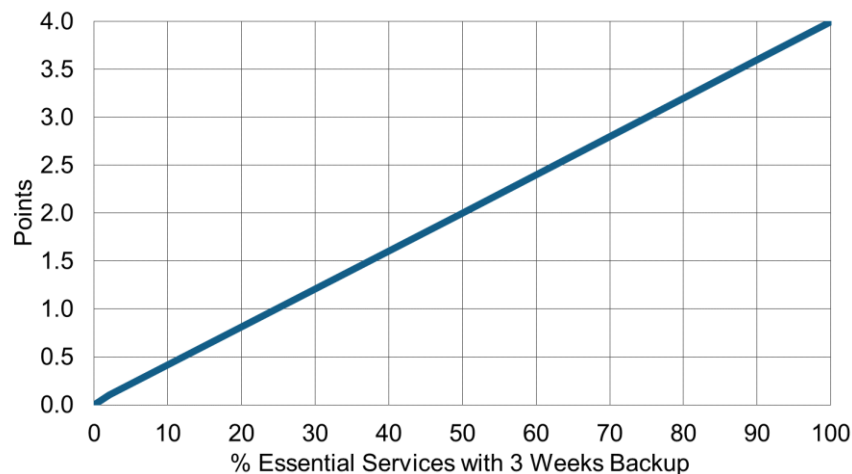
Figure 1. Points for Essential Services with Backup

Constraints on allowable alternate power sources are as follows:

▶ Cannot originate from the bulk grid as this criteria is intended to ensure that essential services can be operated for at least 3 weeks during widespread grid outages

▶ Must be able to supply backup power for a duration exceeding the minimum daily runtime determined for the essential service for at least 3 weeks

Allowable alternate power sources include:

▶ Local generator or energy storage at the essential service or in the same building as the

essential service.

- ▶ Local generator or energy storage at an adjacent building that is considered part of the same project

- ▶ Substation or non-adjacent building within the project as long there is redundant or underground distribution from the local generation or energy storage source to the essential service

Power Quality Measurement

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Bonus	Performance Transparency	Up to 5 points	Up to 5 points	Up to 5 points

INTENT

To improve power system and end-use equipment reliability by providing greater transparency, measurement, and tracking of power quality metrics.

REQUIREMENTS

All Projects
Up to 5 points are available based on the following equation:

$$Points = \frac{1.25 * C_{PQ} * ET}{CS}$$

Where:

C_{PQ} = Total number of customers with PQ measured at the substation and/or customer level

ET = Average number of PQ event types measured

CS = Total number of customers served

Acceptable power quality (PQ) event types (ET) include the following:

- Supply voltage variations
- Voltage swells or dips
- Voltage phase imbalance
- Frequency variations
- Rapid voltage changes
- Flicker
- Harmonics
- Power factor

For Existing Projects Only
Track and record power quality events that fall outside established event limits.

For New Construction Projects Only
Demonstrate the ability to track and record power quality events that fall outside established limits.

Capabilities for Power Quality

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Bonus	Design Consideration	Up to 5 points	Up to 5 points	Up to 5 points

INTENT

To reduce equipment damage, equipment malfunction, and electricity costs by mitigating power quality events through prevention, detection, and corrective action.

REQUIREMENTS

Supplement or establish design requirements and standard procedures for reducing the impact of power quality (PQ) events.

2.5 points are available for each of the following strategies implemented at the project:

▶ Power quality needs assessment

▶ Power quality measurement program that includes procedures or policies for measuring power quality within the project

▶ Power quality improvement program includes procedures or policies for determining the appropriate course of action for meeting power quality objectives

Up to 1.25 points are available for each of the following Option 1 capabilities based on % customers protected (Figure 1):

▶ Active VAR control – Monitor the power factor in real time and demonstrate the ability to inject VARs, originating from onsite generation or active filters, into the controlled bus or circuit.

▶ Active voltage control – Monitor voltage in real time and demonstrate the ability to increase or decrease voltage, from onsite generator on other device, on the controlled bus or circuit

Additionally, up to 2.5 points are available for each of the following Option 2 capabilities based on % customers protected (Figure 1):

▶ Power quality prevention/mitigation devices

▶ Active power quality filters

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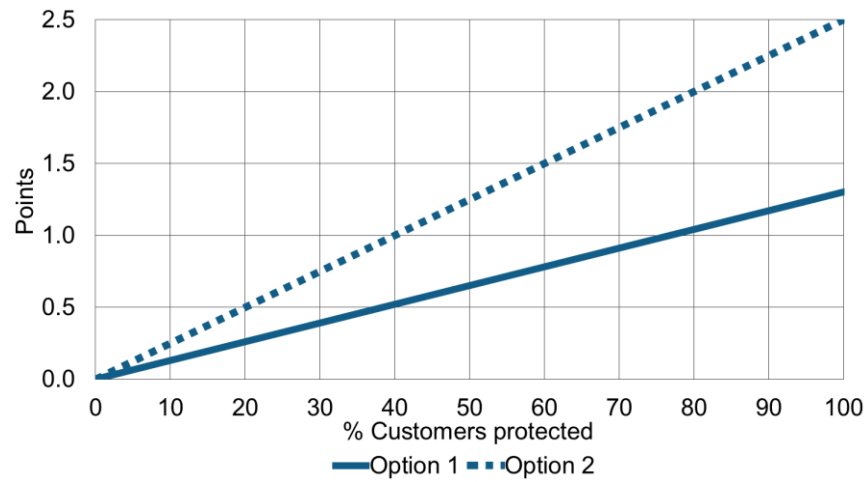
Figure 1. Points for Each Capability for Power Quality

Mitigation of Common Risks and Threats

Credit Type	Criteria Type	Points		
		Campus	**City**	**Supply**
Core	Design Consideration	Up to 15 points	Up to 15 points	Up to 20 points

INTENT

To improve reliability by systematically identifying and mitigating common risks and threats to the grid.

REQUIREMENTS

All Projects
Have in place standard procedures and design requirements for handling and mitigating all common risks and threats to the project grid identified through risk analysis and historical review.

For Projects with a Formal Risk Analysis Only
Note, for projects whose formal risk analysis process is limited to a review of major system modifications, *halve* the points listed below.

5 points are available to projects with a process for periodically updating the formal risk analysis.

Systems Evaluated

0.75/0.75/1 (Campus/City/Supply) points are available for each of the following systems evaluated in the formal risk analysis:

▶ Communication backbone, AMI, and SCADA system

▶ Substations, including feeds to substations

▶ Distribution system internal to the project

▶ Local generation and supporting systems

Failure Modes

0.5/0.5/0.75 (Campus/City/Supply) points are available for each of the following failure modes addressed by the formal risk analysis:

▶ Extreme weather, earthquakes, and fire

▶ Animal intrusion

▶ Vegetation intrusion

▶ Wear and aging

▶ Unintentional damage (including traffic accidents, overloading, and chemical spills)

▶ Intentional damage (including vandalism, terrorism, and cyber security)

Protection

Additionally, up to 4/4/6.5 (Campus/City/Supply) points are available based on the percentage of

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high or extreme risk failure modes that are mitigated (Figure 1).
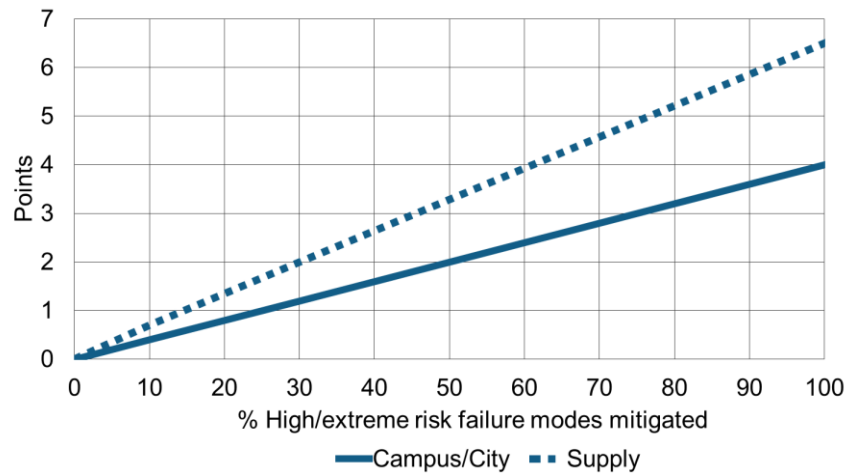
Figure 1. Points for Failure Modes Mitigated

For Projects with No Formal Risk Analysis Only

1/1/1.6 (Campus/City/Supply) points are available for each of the following that are hardened against historical threats:

▶ Communication backbone, AMI, and SCADA system

▶ Feeds to substations

▶ Distribution system

▶ Local generation and supporting systems

Identification of Infrequent Risks and Threats

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Core	Standard Process	Up to 5 points	Up to 5 points	Up to 5 points

INTENT

To improve reliability by systematically identifying and prioritizing infrequent risks and threats to the grid.

REQUIREMENTS

Identify infrequent risks and threats to the project grid using a system-wide risk analysis and input from a wide array of stakeholders. Have in place processes for prioritizing these risks and threats and mitigating those that the project deems unacceptable.

Up to 4 points are available based on the percentage of severe failure modes identified and addressed by mitigation plans (Figure 1).
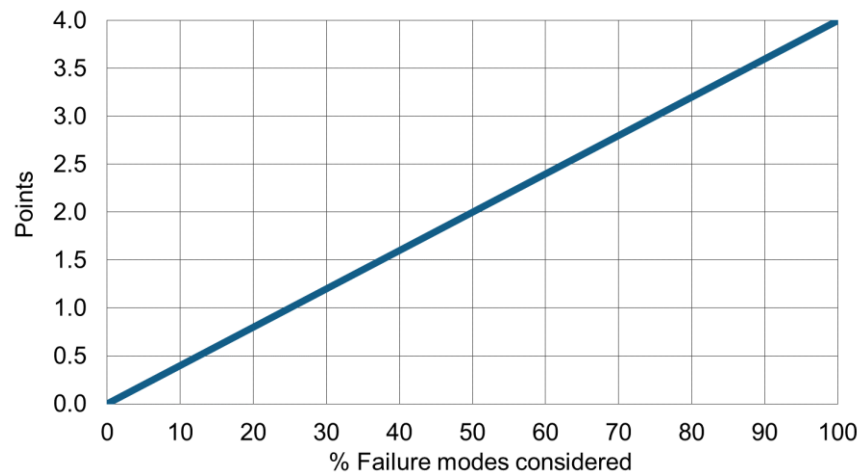
Figure 1. Points for Failure Modes Considered

Additionally, 1 point is available to projects that periodically review risk analyses to address any new or updated information such as changes in weather patterns.

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Reliability and Resiliency Innovations

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Bonus	n/a	Up to 5 points	Up to 5 points	Up to 10 points

INTENT

To encourage projects to achieve exceptional or innovative performance.

REQUIREMENTS

Have in place a process or capability that demonstrates increased reliability, power quality, or safety. Points are based on the criteria outlined in Table 1.

Table 1. Points for Innovations

Points		Originality	Replicability	Measureable Impact	Customer Impact
Campus/ City	Supply				
0.25	0.75	Limited to exceptional performance in existing PEER criteria	Can only be implemented by limited portion of projects, > 10 years to implement	Impact of Innovation can only be described subjectively	Has subjective value that is not readily apparent to customers/operator
0.5	1.5	Includes performance metrics that are not PEER criteria	Can be implemented by most projects, requires > 10 years to implement	n/a	Has subjective value that is clearly appreciated by customers/operator
0.75	2.25	Includes process improvements that are not PEER criteria	Can be implemented by most projects in < 10 years; ROI is indeterminate or > 10%	Impact of innovation can be measured objectively using non-PEER metrics	Value to customers/operator can be objectively calculated as < $1/MWh
1	3	Includes design considerations that are not PEER criteria	ROI > 10%, but is not applicable to all project types	Impact of innovation can be measured objectively using PEER criteria metrics	Value to customers/operator can be objectively calculated as > $1/MWh
1.25	3.75	Includes process improvements & design considerations that are not PEER criteria	ROI > 10% and is applicable to all 3 project types	Impact is measured objectively using PEER metrics & worth > 10 PEER points	Value to customers/operator can be objectively calculated as > $10/MWh

Energy Efficiency and Environment

Renewable Portfolio Standard

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Prerequisite	Standard Process	Required	Required	N/A

INTENT

To ensure compliance with local renewable requirements.

REQUIREMENTS

Meet the renewable portfolio standard (RPS) requirements of the local governing body. Purchased electricity must meet the requirements of the local RPS to demonstrate compliance with this prerequisite.

Projects with more than 95% locally generated and operated power automatically achieve this prerequisite.

Local Air Permits

Credit Type	Criteria Type	Points		
		Campus	**City**	**Supply**
Prerequisite	Standard Process	Required	Required	Required

INTENT

To ensure that the air quality impacts of local distributed generation are considered.

REQUIREMENTS

Obtain and maintain appropriate permits from the state or local air quality governing body for all local generation at the site.

Projects that do not operate local generation automatically achieve this prerequisite.

Source Energy Intensity

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Core	Performance Outcome	Up to 50 points	Up to 50 points	Up to 50 points

INTENT

To provide project operators and customers with greater transparency regarding energy losses associated with electricity generation and delivery, enabling action to improve efficiency performance.

REQUIREMENTS

Obtain the following detailed data for each generation source supplying electricity to the project:

▶ Non-renewable energy consumed by each generation source, local and bulk, in MMBtu

▶ Adjustment for non-renewable energy transmission and distribution losses from bulk generation to project site

▶ Thermal energy recovered from each local generation source, in MMBtu

▶ Gross bulk generation and gross local generation delivered to site, in MWh

▶ Project electrical load, in MWh

Calculate the project's source energy intensity (SEI) using the following formula:

$$SEI = \frac{(\text{Non-renewable energy consumed, MMBtu} - \text{Recovered thermal energy, MMBtu})}{\text{Project electrical load, MWh}}$$

Up to 50 points are available based on the overall project SEI (Figure 1).
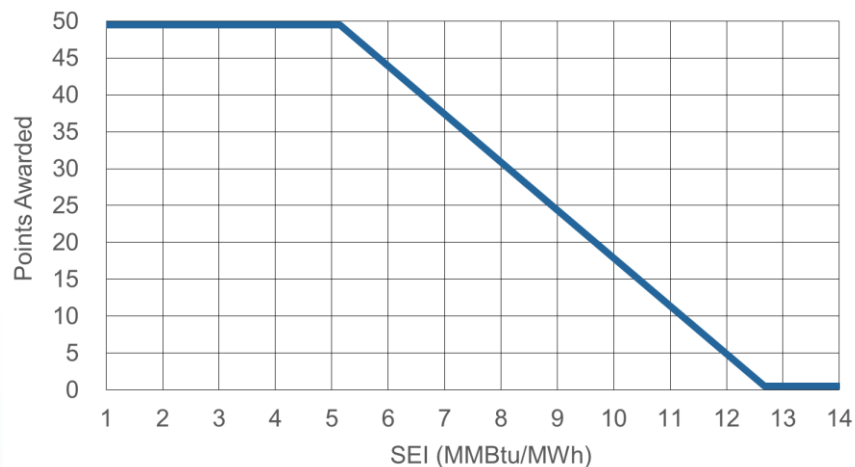
Figure 1. Points for SEI

CO₂ Emissions Intensity

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Core	Performance Outcome	Up to 20 points	Up to 20 points	Up to 20 points

INTENT

To provide operators and customers with greater transparency regarding carbon dioxide emissions related to electricity generation and delivery, enabling action to reduce these emissions.

REQUIREMENTS

Obtain the following data for each generation source supplying electricity to the project:

▸ Carbon dioxide (CO_2) emissions, from local and bulk generation, in lbs

▸ Adjustment for transmission and distribution losses from bulk generation to project site

▸ Source energy consumed by natural gas and coal-fired generation, in MMBtu

▸ Adjustment for methane leakage from natural gas and coal-fired generation, in lbs

▸ Thermal energy recovered from each local generation source, in MMBtu

▸ Adjustment for avoided emissions from local generation, in lbs/MMBtu

▸ Gross bulk generation and gross local generation delivered to site, in MWh

▸ Project electrical load, in MWh

Calculate the CO_2 emissions intensity using the following formula:

$$CO_2 \text{ Emissions Intensity} = \frac{\text{Net } CO_2 \text{ emissions from generation, lbs}}{\text{Project electrical load, MWh}}$$

Up to 20 points are available based on the overall project CO_2 emissions intensity (Figure 1).
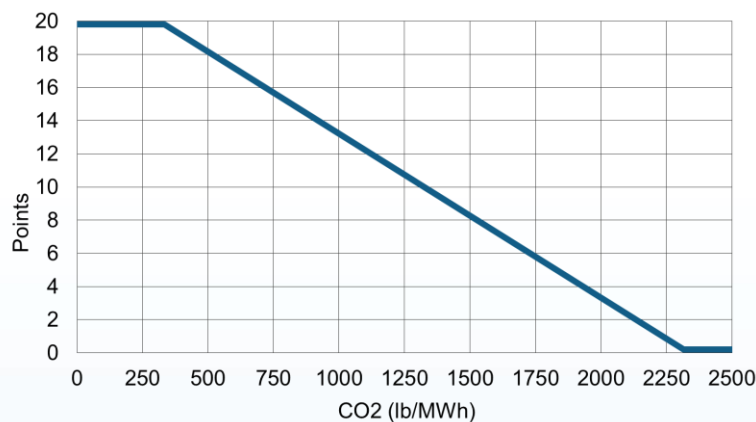
Figure 1. Points for CO_2 Emissions Intensity

NO$_X$ Emissions Intensity

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Core	Performance Outcome	Up to 10 points	Up to 10 points	Up to 10 points

INTENT

To provide operators and customers with greater transparency regarding nitrogen oxide emissions related to electricity generation and delivery, enabling action to reduce these emissions.

REQUIREMENTS

Obtain the following data for each generation source supplying electricity to the project:

▸ Nitrogen oxide (NO$_X$) emissions, from local and bulk generation, in lbs

▸ Adjustment for transmission and distribution losses from bulk generation to project site

▸ Thermal energy recovered from each local generation source, in MMBtu

▸ Adjustment for avoided emissions from local generation, in lbs/MMBtu

▸ Average boiler NO$_X$ emissions factor, in lbs/MMBtu

▸ Gross bulk generation and gross local generation delivered to site, in MWh

▸ Project electrical load, in MWh

Calculate the project's NO$_X$ emissions intensity using the following formula:

$$\text{NO}_X \text{ Emissions Intensity} = \frac{\text{Net NO}_X \text{ emissions from generation, lbs}}{\text{Project electrical load, MWh}}$$

Up to 10 points are available based on the overall project NO$_x$ emissions intensity (Figure 1).
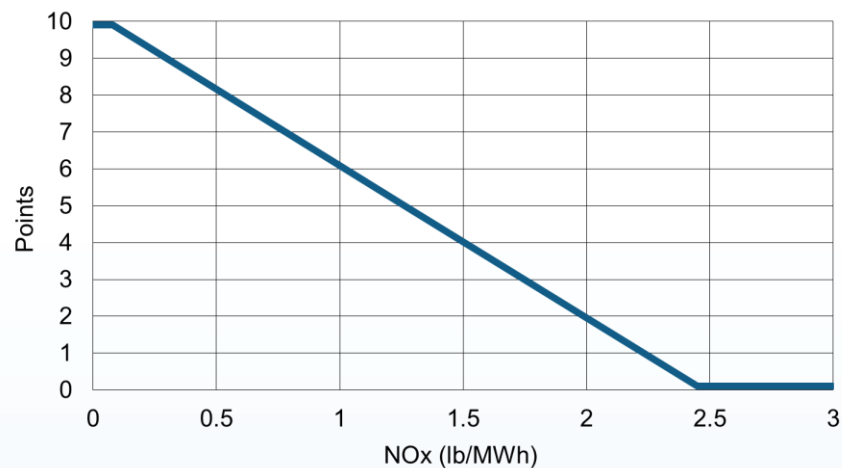
Figure 1. Points for NOx Emissions Intensity

PERFORMANCE EXCELLENCE IN ELECTRICITY RENEWAL

SO₂ Emissions Intensity

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Core	Performance Outcome	Up to 10 points	Up to 10 points	Up to 10 points

INTENT

To provide operators and customers with greater transparency regarding sulfur dioxide emissions related to electricity generation and delivery, enabling action to reduce these emissions.

REQUIREMENTS

Obtain the following data for each generation source supplying electricity to the project:

▶ Sulfur dioxide (SO_2) emissions, from local and bulk generation, in lbs

▶ Adjustment for transmission and distribution losses from bulk generation to project site

▶ Thermal energy recovered from each local generation source, in MMBtu

▶ Adjustment for avoided emissions from local generation, in lbs/MMBtu

▶ Average boiler SO_2 emissions factor, in lbs/MMBtu

▶ Gross bulk generation and gross local generation delivered to site, in MWh

▶ Project electrical load, in MWh

Calculate the project's SO_2 emissions intensity using the following formula:

$$SO_2 \text{ Emissions Intensity} = \frac{\text{Net } SO_2 \text{ emissions from generation, lbs}}{\text{Project electrical load, MWh}}$$

Up to 10 points are available based on the overall project SO_2 emissions intensity (Figure 1).
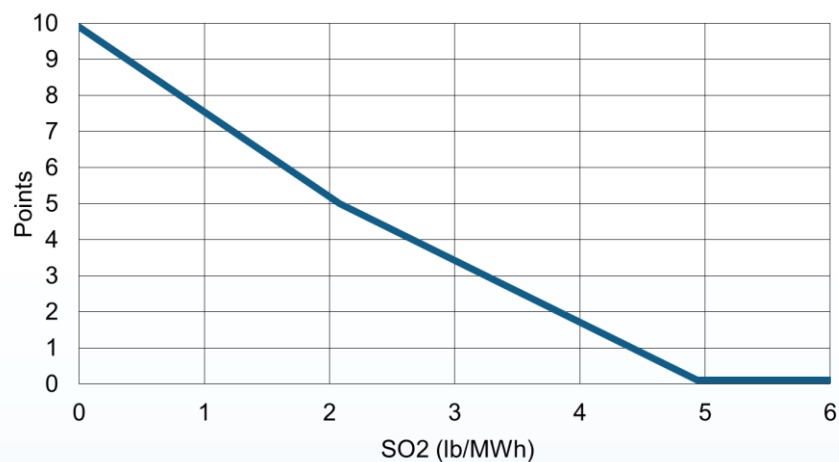
Figure 1. Points for SO2 Emissions Intensity

Water Consumption Intensity

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Core	Performance Outcome	Up to 5 points	Up to 5 points	Up to 5 points

INTENT

To provide operators and customers with greater transparency regarding water consumption associated with electricity generation and delivery, enabling action to reduce the amount of water consumed.

REQUIREMENTS

Obtain the following data for each generation source supplying electricity to the project:

▶ Water consumption, from local and bulk generation, in gallons

▶ Transmission and distribution losses from bulk generation to project site

▶ Gross bulk generation and gross local generation delivered to site, in MWh

▶ Project electrical load, in MWh

Calculate the project's water consumption intensity using the following formula:

$$\text{Water Consumption Intensity} = \frac{\text{Net water consumption from generation, gal}}{\text{Project electrical load, MWh}}$$

Up to 5 points are available based on the overall project water consumption intensity (Figure 1).
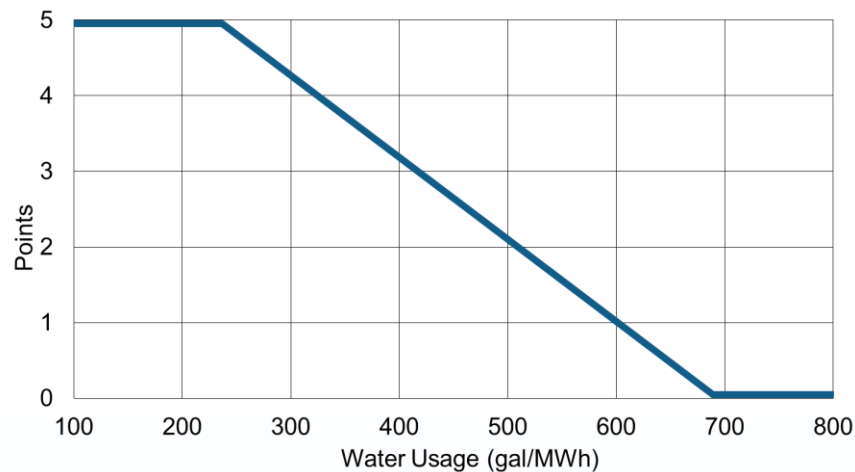
Figure 1. Points for Water Consumption Intensity

Solid Waste Recycled

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Core	Performance Outcome	Up to 5 points	Up to 5 points	Up to 5 points

INTENT

To provide operators and customers with greater transparency regarding solid waste production that is not recycled, enabling action to reduce solid waste disposed of in landfills.

REQUIREMENTS

Obtain the following data for each generation source supplying electricity to the project:

▸ Total amount of waste that is produced from generation, in tons

▸ Total amount of waste that is recycled, in tons

Calculate the average percentage solid waste recycled for generating plants that supply the project and the overall solid waste recycled for the project, weighted by generation, using the following formula:

$$\text{Solid Waste Recycled (Weighted \%)} = \sum_{Plant\ 1}^{Plant\ n} \frac{\text{Total waste recycled, tons} * \text{\% Gross generation produced by plant}}{\text{Total waste produced, tons}}$$

Up to 5 points are available based on the overall project solid waste recycled (Figure 1).
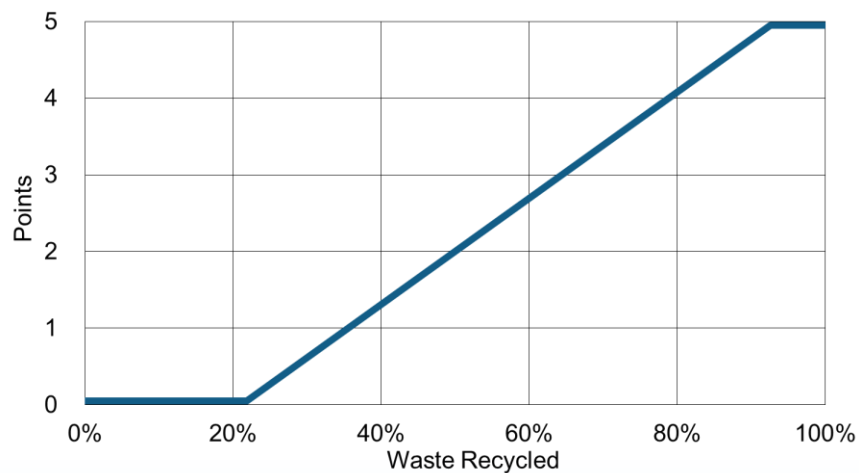
Figure 1. Points for Solid Waste Recycled

Renewable Energy Certificates

Credit Type	Criteria Type	Points		
		Campus	**City**	**Supply**
Bonus	Standard Process	Up to 10 points	Up to 10 points	Up to 10 points

INTENT

To encourage the development of renewable generation sources and account for the contributions of operators and customers who may not have access to renewable generation.

REQUIREMENTS

Calculate the percentage of project electrical load met with renewable energy certificates (RECs) using the following formula:

$$REC \% = \frac{\text{Total generation represented by purchased RECs, MWh}}{\text{Project electrical load, MWh}}$$

Up to 10 points are available based on RECs as a percentage of the project electrical load (Table 1).

Table 1. Points for REC %

REC %	Points
<5	0
6-15	1
16-25	2
26-35	3
36-45	4
46-55	5
56-65	6
66-75	7
76-85	8
86-95	9
96+	10

District Energy

Credit Type	Criteria Type	Points		
		Campus	**City**	**Supply**
Bonus	Project Capability	Up to 2 points	Up to 2 points	Up to 3 points

INTENT

To recognize project sites with more energy efficient processes and encourage investment in systems for supplying heating and cooling to buildings that concentrate production at a central plant.

REQUIREMENTS

Have in place at least 1 district energy plant distributing heating and/or cooling to multiple buildings. Thermal output can be in the form of chilled water, hot water or steam. The district energy system must distribute energy to more than 1 building to be eligible.

Up to 2/2/3 (Campus/City/Supply) points are available based on the percentage of project heating and cooling loads served by the system(s) (Table 1).

Table 1. Points for District Energy

Criteria	Threshold	Points	
		Campus/City	**Supply**
Estimated % of project's cooling load supplied by district energy system	1% to 50%	0.5	0.75
	>50%	1.0	1.50
Estimated % of project's heating load supplied by district energy system	1% to 50%	0.5	0.75
	>50%	1.0	1.50

Local Cogeneration or CHP

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Bonus	Project Capability	Up to 2 points	Up to 2 points	Up to 3 points

INTENT

To recognize project sites that make more efficient use of fuel and encourage investment in local cogeneration and combined heat and power technologies for increased power generation efficiency.

REQUIREMENTS

Have in place a cogeneration or combined heat and power (CHP) system.

Up to 2/2/3 (Campus/City/Supply) points are available based on the percentage of project electric load served by the system(s) (Table 1).

Table 1. Points for CHP

Criteria	Threshold	Points	
		Campus/City	Supply
% of electric load supplied by local cogeneration and CHP	>0% & ≤5%	1.0	1.0
	>5%	2.0	3.0

PERFORMANCE EXCELLENCE IN ELECTRICITY RENEWAL

Local Renewable Generation

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Bonus	Project Capability	Up to 2 points	Up to 2 points	Up to 3 points

INTENT

To recognize project sites that install local renewable generation and encourage investment in sources such as wind, solar, and geothermal energy.

REQUIREMENTS

Have in place renewable generation sources within the project boundary. Calculate the percentage of total project electrical load served by each type of local renewable generation supplying the project using the following formula:

$$\text{Local Renewable Generation \%} = \frac{\text{Total local renewable generation, MWh}}{\text{Project electrical load, MWh}}$$

Up to 2/2/3 (Campus/City/Supply) points are available based on the percentage of electric load supplied with local renewable generation (Table 1).

Table 1. Points for Local Renewable Generation

Criteria	Threshold	Points	
		Campus/City	Supply
% of electric load supplied by local renewable generation	>0% & ≤5%	1	1
	>5%	2	3

Environmental Impacts

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Bonus	Design Consideration	Up to 5 points	Up to 5 points	Up to 2 points

INTENT

To create accountability for the environmental impact of the distribution infrastructure.

REQUIREMENTS

Have in place design requirements or procedures for addressing land use, tree trimming, animal protection, and other electricity distribution environmental impacts.

Undergrounding
Up to 3.75/3.75/1.5 (Campus/City/Supply) points are available based on the percentage of the electrical system that is underground, by length (Figure 1).
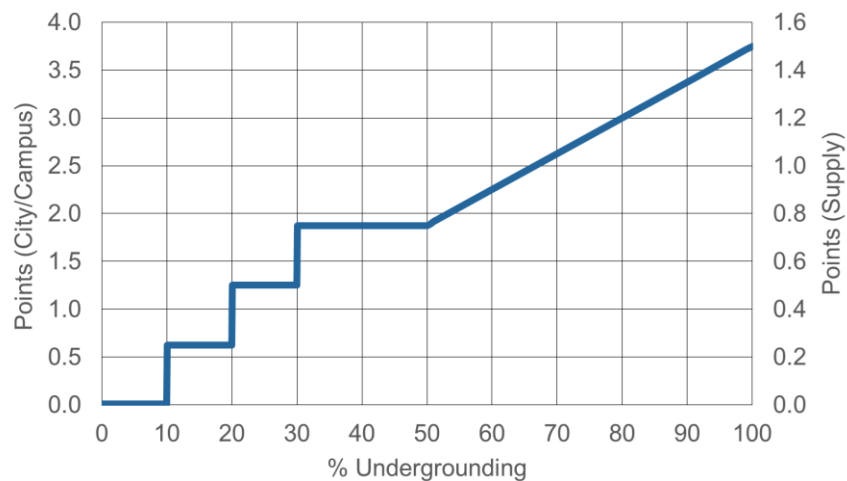
Figure 1. Points for % Undergrounding

Tree Trimming
Based on the percentage of the project electrical system that is underground, up to 0.625/0.625/0.25 (Campus/City/Supply) points are available for each of the following:

▶ Verifiable tree trimming policy

▶ Verifiable tree trimming performance

▶ Trees trimmed at least once every 2 years
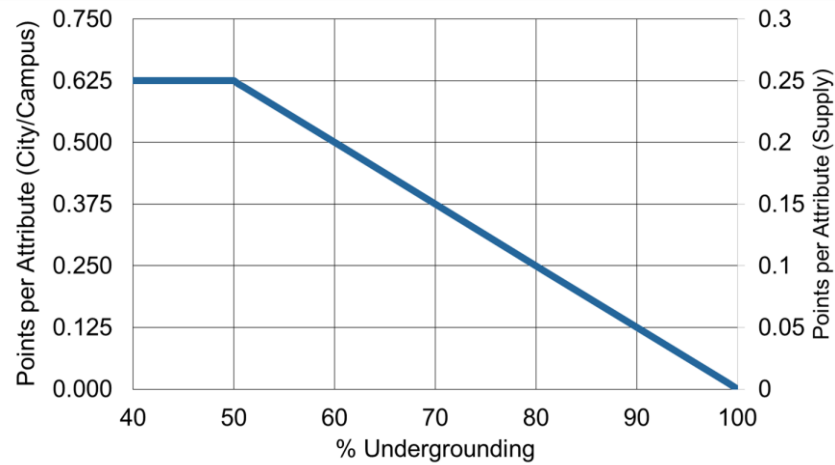
Figure 2. Points per tree trimming attribute by % undergrounding

Animal Protection

Additionally, 0.625/0.625/0.25 (Campus/City/Supply) points are available each of the following:

▸ Verifiable animal protection policy

▸ Animal protection performance measured/monitored

Energy Efficiency and Environment Innovations

Credit Type	Criteria Type	Points		
		Campus	**City**	**Supply**
Bonus	n/a	Up to 5 points	Up to 5 points	Up to 5 points

INTENT

To encourage projects to achieve exceptional or innovative performance.

REQUIREMENTS

Have in place a process or capability that demonstrates innovative energy efficiency or environmental performance. Points are based on the criteria outlined in Table 1.

Table 1. Points for Innovations

Points	Originality	Replicability	Measureable Impact	Customer Impact
0.25	Limited to exceptional performance in existing PEER criteria	Can only be implemented by limited portion of projects, > 10 years to implement	Impact of Innovation can only be described subjectively	Has subjective value that is not readily apparent to customers/operator
0.5	Includes performance metrics that are not PEER criteria	Can be implemented by most projects, requires > 10 years to implement		Has subjective value that is clearly appreciated by customers/operator
0.75	Includes process improvements that are not PEER criteria	Can be implemented by most projects in < 10 years; ROI is indeterminate or > 10%	Impact of innovation can be measured objectively using non-PEER metrics	Value to customers/operator can be objectively calculated as < $1/MWh
1	Includes design considerations that are not PEER criteria	ROI > 10%, but is not applicable to all project types	Impact of innovation can be measured objectively using PEER criteria metrics	Value to customers/operator can be objectively calculated as > $1/MWh
1.25	Includes process improvements & design considerations that are not PEER criteria	ROI > 10% and is applicable to all 3 project types	Impact is measured objectively using PEER metrics & worth > 10 PEER points	Value to customers/operator can be objectively calculated as > $10/MWh

Operational Effectiveness

Improvement Plan

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Prerequisite	Standard Process	Required	Required	Required

INTENT

To encourage a continuously improving electricity system that serves customers sustainably over the long term and provides an engine for local economic development.

REQUIREMENTS

For Existing Projects Only
Have in place a project grid improvement plan that addresses 3 years at a minimum and includes goals that would contribute towards PEER credit achievement.

For New Construction Projects Only
Establish an improvement process that periodically or continuously establishes improvement plans for the project over at least a 3 year horizon.

Load Duration Curve

Credit Type	Criteria Type	Points		
		Campus	**City**	**Supply**
Core	Standard Process	Up to 20 points	Up to 15 points	Up to 20 points

INTENT

To encourage investment in solutions that flatten load profiles and lower supply and distribution costs over time.

REQUIREMENTS

Calculate the project's annual hourly demand, in kW, for purchased power and power delivered to customers downstream of the customer meters.

Calculate the annual load duration as a percentage of peak using the following formula:

$$\text{Load Duration \% of Peak} = \frac{\text{Total annual purchased electricity, kWh}}{\text{Peak annual demand, kW} * 8760 \text{ hours}}$$

Note: The peak annual demand is based on purchased electricity

Points are available based on the load duration as a percentage of peak (Figure 1).
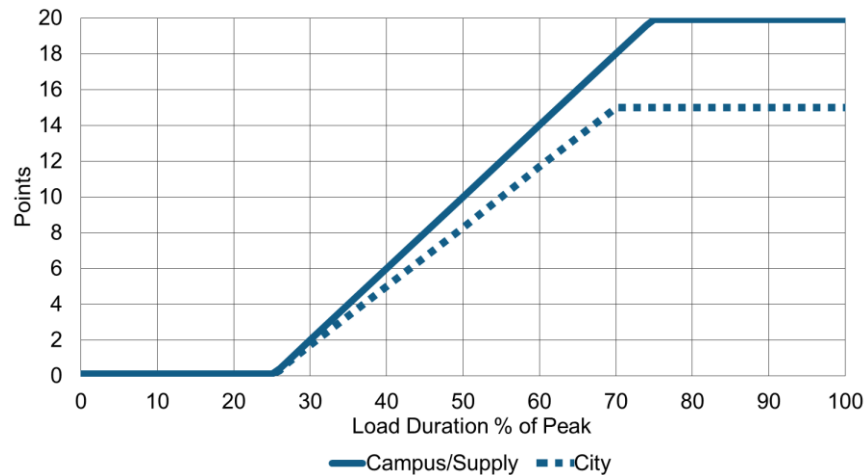
Figure 1. Points for Load Duration % of Peak

System Energy Efficiency

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Bonus	Performance Outcome	Up to 3 points	N/A	Up to 3 points

INTENT

To reduce fossil fuel consumption and encourage investments that capture wasted energy, use higher-efficiency technologies, procure renewable energy and lower operating costs for the entire energy delivery system including electricity, cooling, and heating.

REQUIREMENTS

Calculate the project system energy efficiency (SEE) using the following formula:

$$SEE = \frac{\text{Total energy delivered to customers, MMBtu}}{\text{Total energy delivered to the site, MMBtu}}$$

Where:

Total energy delivered to customers, MMBtu = CL + HL + EL

Total energy delivered to the site, MMBtu = (PE * Bulk SEI) + PF + PT

And:

CL = Annual cooling load delivered to all customers, MMBtu
Convert tons of cooling to MMBtu using a conversion factor of 0.012 MMBtu/ton-hr

HL = Annual heating load delivered to all customers, MMBtu

EL = Annual electric load delivered to all customers, MMBtu
Convert MWh of electricity to MMBtu using a conversion factor of 3.412 MMBtu/MWh

PE = Annual purchased electricity for the project, MWh

Bulk SEI = Utility supply or state average source energy intensity, MMBtu/MWh

PF = Annual purchased non-renewable fuel for heating, cooling, and local generation, MMBtu

PT = Annual purchased non-renewable thermal energy including steam, hot water and chilled water, MMBtu
Convert tons of cooling to MMBtu using a conversion factor of 0.012 MMBtu/ton-hr

Note, the customer cooling load, customer heating load, and electric load should be based on the energy delivered to metered customers or loads, not the project load. The annual purchased electricity should be based on the electricity purchased from offsite suppliers. The annual purchased fuel should be based on the fuel used within the project for generating, electricity, heating, or chilled water.

PERFORMANCE EXCELLENCE IN ELECTRICITY RENEWAL

Waste Identification and Elimination

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Core	Standard Process	Up to 20 points	Up to 25 points	Up to 20 points

INTENT

To identify and eliminate financial waste using continuous improvement processes.

REQUIREMENTS

All Projects

▸ 2/2.5/2 (Campus/City/Supply) points are available to projects with a preventative maintenance program.

▸ 4/5/4 (Campus/City/Supply) points are available to projects with a condition monitoring (predictive maintenance) program.

▸ 4/5/4 (Campus/City/Supply) points are available to projects with a life cycle cost approach to purchasing new major equipment.

For Existing Projects Only
Have in place processes for identifying and eliminating financial waste, including corrective maintenance and detailed tracking of spending.

Additionally, 2/2.5/2 (Campus/City/Supply) points are available for each cost tracking element included in the current operating budget.

Demonstrate the ability to roll up actual costs to these budget categories.

For New Construction Projects Only
Have in place a cost tracking system that supports waste identification and elimination by differentiating maintenance and operating costs.

2/2.5/2 (Campus/City/Supply) points are available for each of the following capabilities:

▸ Tree trimming costs tracked separately from other preventive maintenance costs

▸ Meter reading costs tracked separately from other operations costs

▸ Outage recovery costs tracked separately from other corrective maintenance costs

▸ Maintenance on overhead lines tracked separately from maintenance on underground lines

▸ Maintenance costs on transmission and distribution circuits differentiated by circuit voltage level

▸ Substation maintenance costs differentiated from non-substation costs

Failure Identification and Elimination

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Core	Standard Process	Up to 20 points	Up to 20 points	Up to 20 points

INTENT

To reduce repair costs and improve equipment reliability by eliminating repetitive failures that impact performance.

REQUIREMENTS

Implement processes for reporting failure of critical equipment and performing root cause assessments, corrective actions to prevent recurrence, and effectiveness reviews.

Failure Tracking

▸ 1 point is available for identifying critical components and including these components in preventative and predictive maintenance programs.

▸ 2 points are available for a formal procedure for failure tracking and trending.

▸ 2 points are available if the project requires causal analysis of all critical component failures, independent of consequence.

Root Cause Analysis

▸ 2 points are available for a formal procedure for failure cause analysis.

▸ 3 points are available for projects that require root cause analysis based on consequence and cause uncertainty.

Corrective Actions

▸ 5 points are available for projects that require corrective actions to prevent recurrence for high consequence failures.

Effectiveness Review

▸ 5 points are available for a formal procedure for monitoring effectiveness of corrective actions.

Demand Response Capability

Credit Type	Credit Type	Points		
		Campus	City	Supply
Core	Project Capability	Up to 20 points	Up to 5 points	Up to 20 points

INTENT

To develop the capacity to generate profits or lower operating costs through demand or load response.

REQUIREMENTS

Calculate the project's demand response (DR) capability as a percentage of the total peak demand, calculated using the following formula:

$$\text{DR \% of Peak} = \frac{\text{Total demand response capacity, kW}}{\text{Total peak annual demand, kW}}$$

Where:

Total demand response capacity, kW	=	Sum of on-site generation rated capacity for local generators, local storage and load shedding
Total peak annual demand, kW	=	Maximum aggregate coincident peak demand of customers during the last 3 years of service

Up to 20/5/20 (Campus/City/Supply) points are available based on the demand response as a percentage of peak (Figure1).
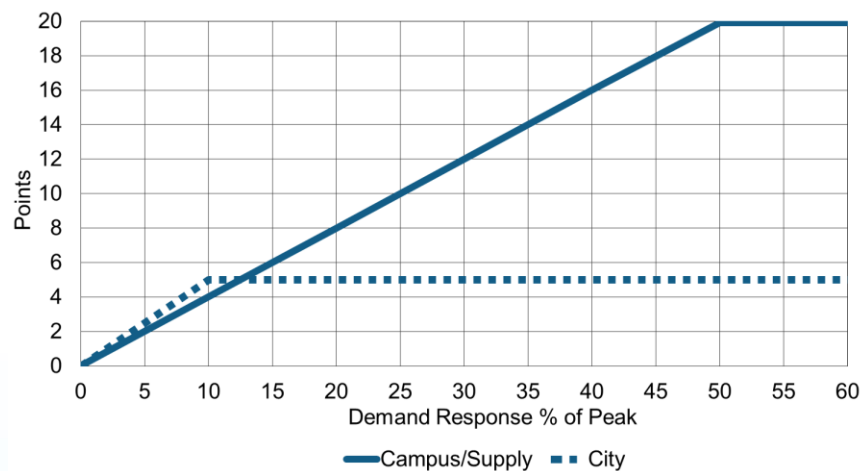
Figure 1. Points for Demand Response % of Peak

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Electricity Energy Efficiency Savings

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Core	Performance Transparency	Up to 5 points	Up to 9 points	Up to 5 points

INTENT

To determine investment returns from project improvements and identify additional investment opportunities by estimating and tracking savings from improved electricity generation efficiency and heat recovery.

REQUIREMENTS

Calculate electricity energy efficiency savings for the project based on the following:

▶ Total electricity consumption, in MWh

▶ Source energy intensity (SEI) for the project and bulk grid, in MMBtu/MWh

▶ Average annual cost of fuel for local generation, in $/MMBtu

Electricity Cost Savings

Credit Type	Criteria Type	Points		
		Campus	**City**	**Supply**
Core	Performance Transparency	Up to 5 points	Up to 9 points	Up to 5 points

INTENT

To quantify investment returns from project improvements and support the identification of additional investment opportunities by estimating and tracking savings from alternative rate options, improved load profiles, and local generation.

REQUIREMENTS

Calculate electricity cost savings for the project based on the following:

▸ Total current electricity consumption, in MWh

▸ Load response annual usage savings, in MWh

▸ Source energy intensity (bulk, local, and project), in MMBtu/MWh

▸ Average annual cost of fuel for local generation, in $/MMBtu

▸ Total operating costs for local generation and load response, in $/year

▸ Baseline and current electricity rate tariffs, in $/MWh; this includes both energy costs and transmission and distribution but does not include demand charges for peak usage or credits for ancillary services

Operations and Maintenance Efficiency Value

Credit Type	Criteria Type	Points		
		Campus	**City**	**Supply**
Bonus	Performance Transparency	Up to 3 points	Up to 5 points	Up to 3 points

INTENT

To quantify investment returns from project improvements and support the identification of additional investment opportunities by estimating and tracking savings from improved operations and maintenance efficiency.

REQUIREMENTS

Calculate the project's operations and maintenance efficiency value based on spending in operations and maintenance categories including, at a minimum:

- ▶ Repair costs
- ▶ Corrective maintenance
- ▶ Unplanned costs

Compare this value to the baseline case to determine the project's achieved value.

0.5/0.83/0.5 (Campus/City/Supply) points are available for each cost category that is tracked.

Reliability and Power Quality Value

Credit Type	Criteria Type	Points		
		Campus	**City**	**Supply**
Core	Performance Transparency	Up to 5 points	Up to 9 points	Up to 5 points

INTENT

To quantify investment returns from project improvements and identify additional investment opportunities by estimating and tracking the value of delivering high reliability and power quality to customers.

REQUIREMENTS

Use the Lawrence Berkeley National Laboratory Interruption Cost Estimate (LBNL ICE) Calculator (or local equivalent) to calculate the reliability and power quality value for the project based on the following:

▸ Baseline SAIFI and SAIDI

▸ Project SAIFI and SAIDI

▸ Total number of customers, non-residential and residential, within the project site

Demand Charge Reduction Savings

Credit Type	Criteria Type	Points		
		Campus	**City**	**Supply**
Core	Performance Transparency	Up to 5 points	Up to 8 points	Up to 5 points

INTENT

To quantify investment returns from project improvements and identify additional investment opportunities by estimating and tracking savings from reduced peak demand and associated charges.

REQUIREMENTS

Calculate demand charge reduction savings for the project based on the following:

▸ Total annual peak demand, including demand based on customer meters and at utility supply meters

▸ Total demand reduction achieved by project through demand response and local generation

▸ Total annual charges related to demand response, including demand charges, capacity charges, and standby charges

▸ Total operating costs of assets responsible for reducing demand charges

Compare this value to the baseline case to determine the project's achieved value.

Ancillary Service Revenue

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Bonus	Performance Transparency	Up to 3 points	N/A	Up to 3 points

INTENT

To quantify investment returns from project improvements and identify additional investment opportunities by tracking revenue and profits generated by providing ancillary services.

REQUIREMENTS

Calculate the project's ancillary service revenue based on the following detailed data:

- Event dates for event-based demand response
- Revenue, in $/MWh
- Total operating costs of assets responsible for ancillary services, $/MWh
- Ancillary service description including, if applicable, duration and capacity, in MW

Electricity Energy Efficiency Opportunity Cost

Credit Type	Criteria Type	Points		
		Campus	**City**	**Supply**
Bonus	Performance Transparency	Up to 2 points	Up to 1 point	Up to 2 points

INTENT

To encourage investment in electricity energy efficiency improvements by quantifying the gap between current performance and the upper limit of performance.

REQUIREMENTS

Calculate the electricity energy efficiency opportunity cost for the project by determining the following parameters for the upper limit scenario:

▸ Total electricity consumption, in MWh

▸ Project source energy intensity, in MMBtu/MWh

▸ Average annual cost of fuel, in $/MMBtu

Electricity Price Opportunity Cost

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Bonus	Performance Transparency	Up to 1 point	Up to 1 point	Up to 1 point

INTENT

To encourage investment in electricity cost reductions by quantifying the gap between current electricity supply costs and available opportunities for load shaping, local generation, alternative rates, and other means for lowering costs.

REQUIREMENTS

Calculate the electricity price opportunity cost for the project by determining the following parameters for the upper limit scenario:

▸ Total electricity consumption and generator output

▸ Total operating costs

▸ Total annual charges, including both electricity and transmission and distribution

▸ Annual flat load duration curve opportunity cost

▸ Alternative rate options opportunity cost

Operations and Maintenance Opportunity Cost

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Bonus	Performance Transparency	Up to 2 points	Up to 4 points	Up to 2 points

INTENT

To encourage investment in project operating cost reductions by quantifying the gap in operations and maintenance spending when current performance is compared to the upper limit of performance.

REQUIREMENTS

Calculate the operations and maintenance opportunity costs for the project by determining the following parameters for the upper limit scenario:

▸ Repair costs

▸ Corrective maintenance

▸ Unplanned costs

0.33/0.67/0.33 (Campus/City/Supply) points are available for each cost category that is tracked.

Reliability and Power Quality Opportunity Cost

Credit Type	Criteria Type	Points		
		Campus	**City**	**Supply**
Bonus	Performance Transparency	Up to 1 point	Up to 4 points	Up to 1 point

INTENT

To encourage investment in reliability and power quality improvements by quantifying the gap in reliability and power quality costs when current performance is compared to the upper limit of performance.

REQUIREMENTS

Use the Lawrence Berkeley National Laboratory Interruption Cost Estimate (LBNL ICE) Calculator (or local equivalent) to calculate the reliability and power quality opportunity cost for the project by determining the following parameters for the upper limit scenario:

▶ Project SAIFI and SAIDI

▶ Total number of customers, non-residential and residential, within the project site boundary

Demand Charge Opportunity Cost

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Bonus	Performance Transparency	Up to 1 point	Up to 1 point	Up to 1 point

INTENT

To encourage investigation and investment by quantifying the gap in costs associated with electric peak demand when current performance is compared to the upper limit of performance.

REQUIREMENTS

Calculate the demand and/or capacity charge opportunity cost for the project by determining the following parameters for the upper limit scenario:

▸ Total electricity consumption, in kWh

▸ Total annual peak demand, including demand based on utility supply meters, in kW

▸ Total annual demand charges, in $/kW

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Ancillary Service Opportunity Cost

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Bonus	Performance Transparency	Up to 1 point	Up to 1 point	Up to 1 point

INTENT

To encourage investment in project grid improvements by quantifying the gap in ancillary service revenue when current performance is compared to the upper limit of performance.

REQUIREMENTS

Calculate the project's potential net revenue from ancillary services available in the service territory but not used by the project by determining the following parameters for the upper limit scenario:

▸ Revenue, either actual or estimated, in $/MWh

▸ Total operating costs of assets responsible for ancillary services, in $/MWh

▸ Description including, if applicable, duration and capacity, in MW

Operational Effectiveness Innovations

Credit Type	Criteria Type	Points		
		Campus	**City**	**Supply**
Bonus	n/a	Up to 5 points	Up to 5 points	Up to 5 points

INTENT

To encourage projects to achieve exceptional or innovative performance.

REQUIREMENTS

Have in place a process or capability that demonstrates innovative operational effectiveness or related performance. Points are based on the criteria outlined in Table 1.

Table 1. Points for Innovations

Points	Originality	Replicability	Measureable Impact	Customer Impact
0.25	Limited to exceptional performance in existing PEER criteria	Can only be implemented by limited portion of projects, > 10 years to implement	Impact of Innovation can only be described subjectively	Has subjective value that is not readily apparent to customers/operator
0.5	Includes performance metrics that are not PEER criteria	Can be implemented by most projects, requires > 10 years to implement		Has subjective value that is clearly appreciated by customers/operator
0.75	Includes process improvements that are not PEER criteria	Can be implemented by most projects in < 10 years; ROI is indeterminate or > 10%	Impact of innovation can be measured objectively using non-PEER metrics	Value to customers/operator can be objectively calculated as < $1/MWh
1	Includes design considerations that are not PEER criteria	ROI > 10%, but is not applicable to all project types	Impact of innovation can be measured objectively using PEER criteria metrics	Value to customers/operator can be objectively calculated as > $1/MWh
1.25	Includes process improvements & design considerations that are not PEER criteria	ROI > 10% and is applicable to all 3 project types	Impact is measured objectively using PEER metrics & worth > 10 PEER points	Value to customers/operator can be objectively calculated as > $10/MWh

Customer Contribution

Advanced Metering Infrastructure

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Prerequisite	Design Consideration	Required	Required	N/A

INTENT

To enable customer contribution to grid performance and management of electricity usage and costs.

REQUIREMENTS

All Projects
Provide advanced metering infrastructure (AMI) with secure, interoperable data transfer and maintenance. Meters must be capable of power demand and consumption measurement and must be remotely readable.

For Campus Projects Only
Meter the project at all utility connections to the project and measure total project loads.

For City Projects Only
Demonstrate that at least 5% of customers are served with advanced meters and at least 50% of customers will be served with advanced meters within 2 years.

Additionally, meet at least 1 of the following criteria:

1. Advanced meter selection addresses at least 7 of the following considerations:

   ‣ Data collection rate and compatibility with multiple dynamic pricing options and customer classifications

   ‣ Safety of the meter as well as safe installation of the meter

   ‣ Accuracy of the meter and acceptable accuracy limits

   ‣ Wireless versus hardwired communications to the utility/operator interface as well as to the customer

   ‣ Customer real time access to consumption data

   ‣ Customer access to price data

   ‣ Customer interface options

   ‣ Local versus central storage for customer interval data

   ‣ Scalability of data processing for all customer sizes

   ‣ Power interruptions detection

   ‣ High speed control for load shedding and other grid support services

2. Advanced meters are net metering compatible.

3. Advanced meters provide bi-directional communication between customer and service provider.

PERFORMANCE EXCELLENCE IN ELECTRICITY RENEWAL

Data Privacy

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Prerequisite	Standard Process	Required	Required	N/A

INTENT

To ensure that customers have control over how and when their electricity usage data is shared with third parties, and to ensure that customers are confident in the confidentiality of their data.

REQUIREMENTS

All Projects

Have in place policies and practices ensuring data privacy. Policies and practices must allow customers of all classes to choose whether to share data with third parties and control which data may be shared.

Provide at least 2 of the following data security measures:

▸ Opt-in data sharing policy

▸ Customer data sharing agreement

▸ Separate communication pathways policy for sending data

For Campus Projects Only

If a campus does not have individual customers with rights to data privacy, then the requirements of this prerequisite are met.

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Cyber Security

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Prerequisite	Standard Process	Required	Required	N/A

INTENT

To protect electric grid technologies and networks from cyber-attack, and to ensure consumer confidence in grid modernization efforts.

REQUIREMENTS

Have in place policies and practices ensuring data security at all interfaces, devices, data operations and, if data is shared, at the point of transmission with third parties.

Policies and practices must address at least 2 of the following:

- Access control for all physical, wireless, and virtual access points, including physical protections and limited access to substations, routers, servers, firewalls and bridges
- Data encryption
- Periodic security audits of access points and potential vulnerabilities
- Automatic breach detection
- Threat and vulnerability assessment and standard responses in case of breach

PERFORMANCE EXCELLENCE IN ELECTRICITY RENEWAL

Consumer Engagement Programs

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Prerequisite	Standard Process	Required	Required	N/A

INTENT

To improve consumer satisfaction, trust, and engagement with energy services.

REQUIREMENTS

All Projects

Have in place a multi-channel consumer engagement program that communicates grid modernization developments to consumers and informs them how to best use the capabilities available.

The consumer engagement program must demonstrate at least 2 of the following attributes:

▸ Explanation of the pricing options for consumers*

▸ Explanation of rebates, incentives, and/or financing options*

▸ Explanation of potential impacts on consumer's energy consumption and ways to reduce energy use

▸ Explanation of payment options

▸ Explanation of the data or reports available to consumer

▸ Explanation of the technology basics related to the service or program and how this technology benefits the operator and/or consumer

▸ Success stories or case studies highlighting the benefits of the service or program*

* Campus projects that do not divide the cost of electricity between consumers are not eligible to use these attributes to demonstrate prerequisite compliance.

For Existing Projects Only

Track and record consumer issues related to programs, services and capabilities.

For New Construction Projects Only

Have in place a plan to track and record consumer issues related to programs, services and capabilities.

PERFORMANCE EXCELLENCE IN ELECTRICITY RENEWAL

Access to Real-Time Data

| Credit Type	Criteria Type	Points		
		Campus	City	Supply
Core	Standard Process	Up to 10 points	Up to 10 points	N/A

INTENT

To support customer energy management and enable third party applications for energy conservation and energy use optimization.

REQUIREMENTS

Have in place programs available to all customer classes that provide direct access to real-time usage data either online or through an in-home device. Data must follow a standard format to ensure they are usable by both consumers and third-party devices or software.

Up to 10 points are available based on the percentage of customers with access to real-time data. Alternately, up to 2 points are available based on the percentage of customers with access to next day data (Figure 1).
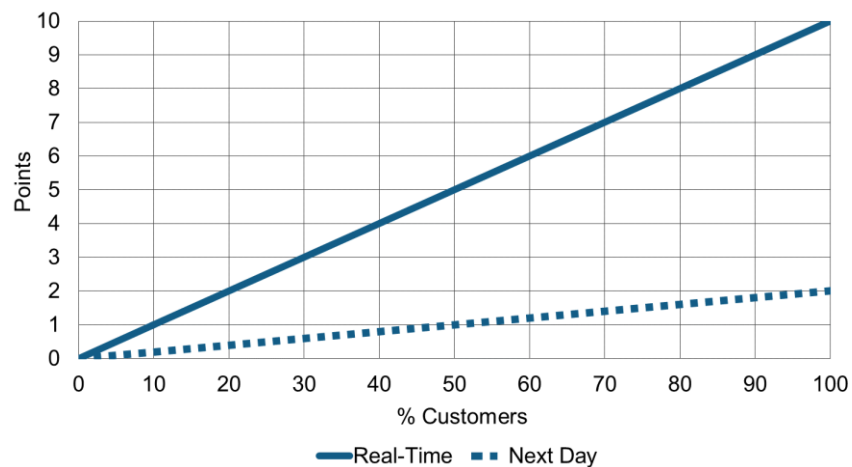
Figure 1. Points for % Customers with Access to Real-Time or Next Day Data

Next day data is customer electricity usage in 15 minute intervals that can be downloaded by customers in a standard format. At least one year's worth of data must be available for download.

Access to Dynamic Pricing

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Core	Standard Process	Up to 5 points	Up to 25 points	N/A

INTENT

To reduce system and customer costs by encouraging consumers to limit peak power use and shift electricity usage to lower cost off-peak periods.

REQUIREMENTS

Have in place programs that provide access to either market- or event-based dynamic pricing. Rate structures must be clearly defined, communicated to consumers in a standard format, and easily accessible.

1/5 (Campus/City) points are available for each of the following:

▶ Project design supports dynamic pricing.

▶ Regulatory approvals are in place to implement dynamic pricing (pilot or full-scale).

▶ Dynamic pricing is offered on pilot or full-scale basis to customers

Additional, up to 2/10 (Campus/City) points are available for a dynamic pricing program that is accessible to the majority of customers. Points are based on the program type (Table 1).

Table 1. Points for Dynamic Pricing Program

Program Type	Campus	City
Event based pricing	0.4	2
Time of use (TOU) pricing	1	5
Real-time or advanced TOU pricing	2	10

HEMS/EMS Choice

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Core	Standard Process	Up to 15 points	Up to 10 points	N/A

INTENT

To promote the development of a competitive, open, transparent, and innovative marketplace for energy management systems.

REQUIREMENTS

For Campus Projects Only

Have in place programs and policies enabling consumer choice in building automation systems (BAS) or energy management systems (EMS) capable of interfacing with the project's smart metering and project communication system.
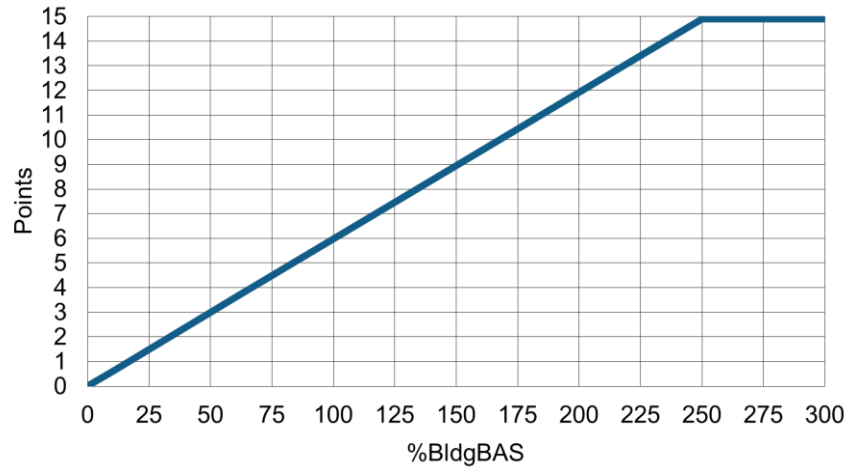
Up to 15 points are available based on the following formula:

$$\%BldgBAS = \%TypeA + \%TypeB + \%TypeC$$

Where:

▶ %TypeA: Percentage of buildings with a BAS-EMS capable of controlling interior lighting scheduling and automatic shutoff

▶ %TypeB: Percentage of buildings with a BAS-EMS capable of optimizing heating and cooling system performance with the following minimum capabilities:

    o   Direct Digital Control

    o   Programmability for energy conservation and system optimization (setpoint reset, optimized start/stop, night setback)

    o   Advanced scheduling (Sun-Sat; Holiday)

▶ %TypeC: Percentage of buildings with a BAS-EMS, capable of reducing HVAC and lighting loads in response to remote signals from the project operator, with the following minimum capabilities:

    o   Notification for alarms and system events

    o   Remote real-time monitoring of key set points related to asset operation
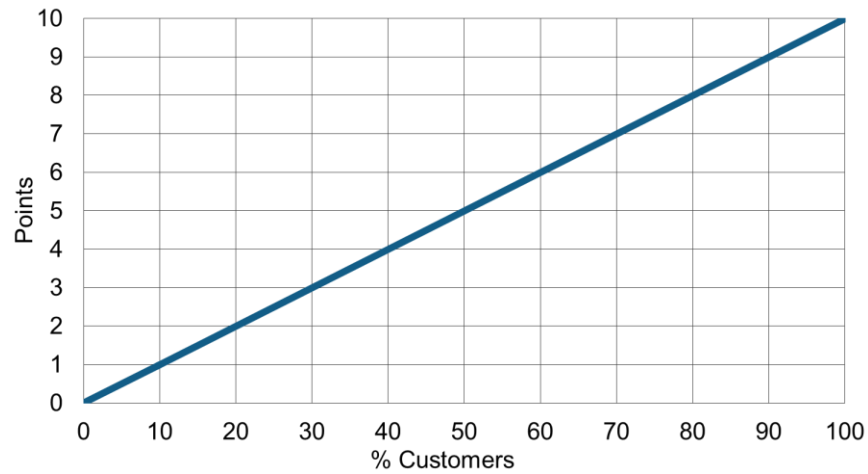
Points are shown in Figure 1.

Figure 1. Points for %BldgBAS

For City Projects Only

Have in place programs and policies enabling consumer choice in home energy management systems (HEMS).

Up to 10 points are available based on the percentage of customers with a choice of HEMS capable of interfacing with the smart metering system (Figure 2).

Figure 2. Points for % Customers with HEMS Choice

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Interconnection Standards

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Core	Standard Process	N/A	Up to 10 points	N/A

INTENT

To encourage a streamlined and lower cost process for customers to interconnect distributed generation to the local grid.

REQUIREMENTS

Have in place standards for interconnection.

1.54 points are available for each of the following attributes that apply to the interconnection standard:

▶ Applicable to all customer classes

▶ Applicable to all generator types

▶ Does not have system output limitations

0.77 points are available for each of the following that apply to the interconnection standard(s) and process(es):

▶ Timelines for each process step are in accordance with industry best practices.

▶ Interconnect engineering fees are fixed.

▶ Protection requirements for generators are standardized.

▶ Interconnection standard is consistent with IEEE 1547 and UL 1741.

▶ Screening process is consistent with FERC standards.

▶ Interconnection agreement is standardized.

▶ A dispute resolution process exists.

Additionally, 0.38 points are available for each of the following that are publicly provided:

▶ Average approval times

▶ Average interconnect process costs

▶ Prior interconnect studies

Net Metering

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Core	Standard Process	N/A	Up to 10 points	N/A

INTENT

To ensure customers receive full value for the services provided by local generation.

REQUIREMENTS

Have in place policies that enable net metering.

2 points are available for each of the following that applies to the net metering policy:

▶ Allows rollover of excess net metering

▶ Does not include per kW standby charges on customer generation, metering fees, or other fees based on customer's net metering status

In addition, 1 point is available for each of the following conditions that are met:

▶ Net metering is applicable to all customer classes.

▶ Net metering is applicable to all generator types.

▶ Policy does not limit system output below 1 MW.

▶ Policy allows third party ownership of generation assets.

▶ Policy allows physical or virtual meter aggregation.

▶ Policy includes feed-in tariffs, or retail rates higher than wholesale rates, for renewable and clean power technologies.

▶ Policy awards ownership of any renewable energy credits (RECs) to the owner of the generation asset.

Electricity Supply Choice

| Credit Type	Criteria Type	Points		
		Campus	City	Supply
Core	Standard Process	Up to 5 points	Up to 5 points	N/A

INTENT

To provide consumers with a range of electricity supply options from which they can choose.

REQUIREMENTS

Have in place programs that enable customers of all classes to choose from a range of supply options.

Up to 3 points are available based on the percentage of customers with at least 2 power supply choices (Figure 1).
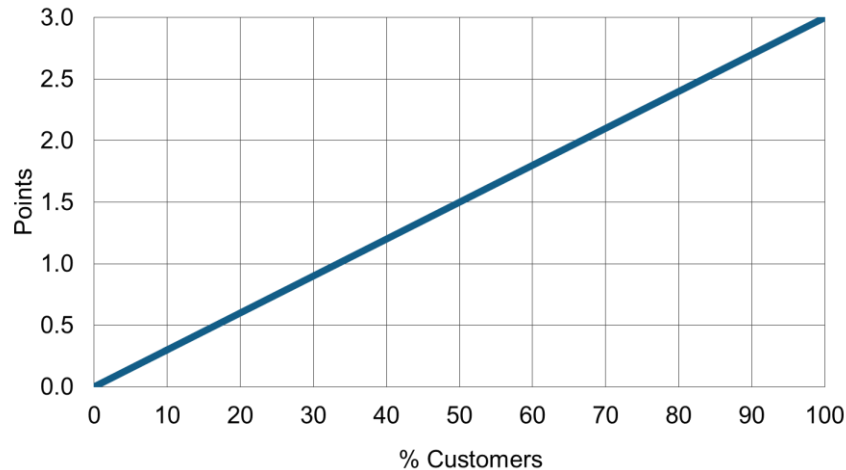
Figure 1. Points for % Customers with Supply Choice

Additionally, up to 1 point is available, based on the percentage of customers with access, for each of the following:

▶ At least 1 option with a lower PEER Power Supply Performance Index greater than the default supply

▶ More than 2 supply choices

▶ At least 1 option for power quality higher than the default supply
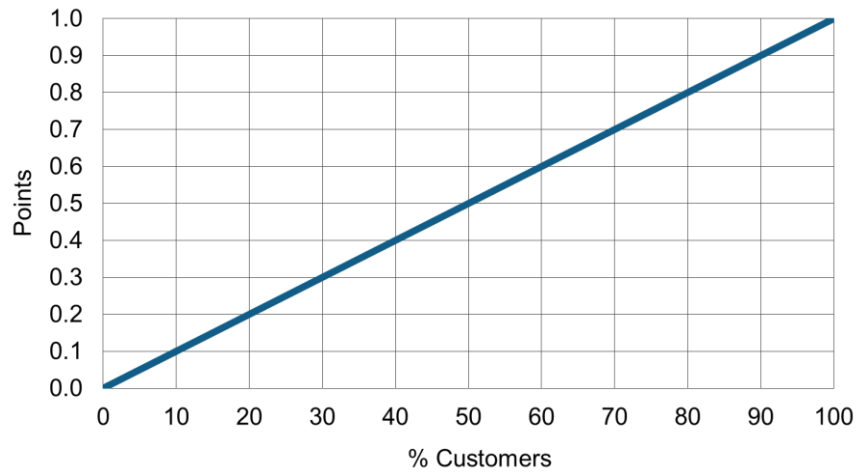
Figure 2. Points for % Customers with Additional Options

Financial Incentive Programs

Credit Type	Criteria Type	Points		
		Campus	**City**	**Supply**
Bonus	Standard Process	Up to 5 points	Up to 5 points	N/A

INTENT

To increase investment in clean generation, innovative technology, and local retrofitting industries, and to leverage the consumer as a partner in grid improvements.

REQUIREMENTS

All Projects
Have in place programs available to all customer classes that provide financial incentives or payments for ancillary services.

Points are available for each of the following financing attributes, based on the number of customer classes to which these attributes are applicable:

- ▶ An interest rate within 2 points of the prime rate

- ▶ Term greater than 5 years

- ▶ Application process can be completed in 4 weeks or less

- ▶ Program applies to more than 1 technology solution

Additionally, points are available for the each of the following based on the number of customer classes to which these programs are available:

- ▶ Ancillary service programs

- ▶ Other financial incentive programs

For Campus Projects Only
Points for each attribute and program are shown in Table 1.

Table 1. Points for Financial Incentives - Campus

# of Applicable Customer Classes	Financing Attributes	Ancillary Service Programs	Other Financial Incentive Programs
1	0.4	0.5	1
2	0.8	1	2
Max points by category	**3**	**2**	**2**

Eligible customer classes include residential and commercial/industrial.

For City Projects Only
Points for each attribute and program are shown in Table 2.

Table 2. Points for Financial Incentives - City

# of Applicable Customer Classes	Financing Attributes	Ancillary Service Programs	Other Financial Incentive Programs
1	0.2	0.25	0.5
2	0.4	0.5	1
3	0.6	0.75	1.5
4	0.8	1	2
Max points by category	**3**	**2**	**2**

Eligible customer classes include residential, commercial, small industrial and large industrial.

Aggregation

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Bonus	Standard Process	Up to 15 points	Up to 5 points	N/A

INTENT

To improve access to power purchasing pools, thereby increasing customer leverage to lower costs and procure cleaner, more efficient power.

REQUIREMENTS

All Projects
Have in place programs for meter aggregation, physical or virtual, to allow groups of customers or buildings to procure electricity in competitive markets or provide ancillary services back to the grid.
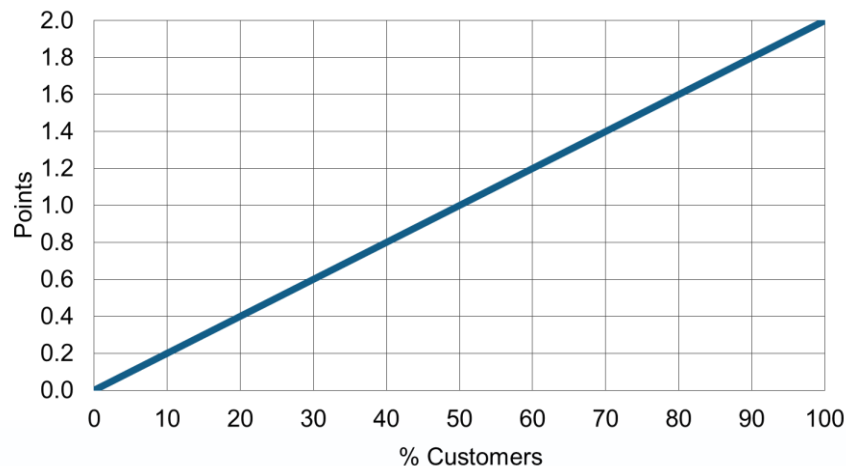
For Campus Projects Only
7.5 points are available for each of the following:

▸ Supplier meters project at all points of connection.

▸ Project purchases bulk power as a single customer.
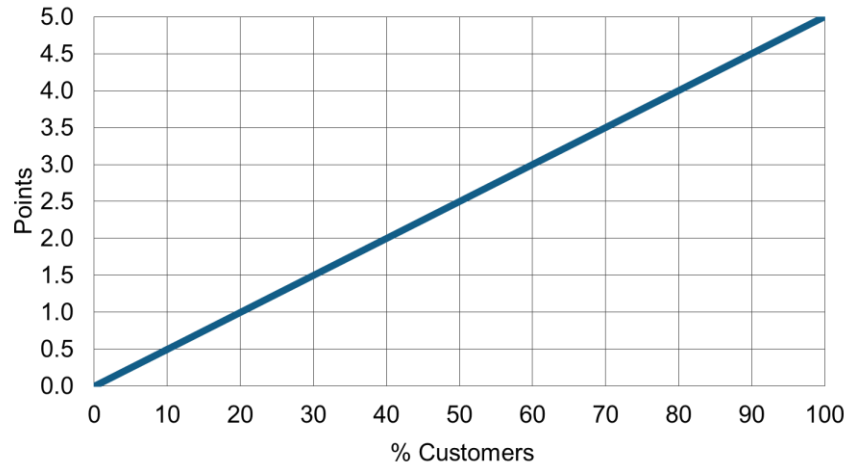
For City Projects Only
Up to 2 points are available based on the percentage of customers with community choice aggregation (Figure 1).

Figure 1. Points for Customers with CCA

Additionally, up to 5 points are available, based on the percentage of customers that participate, for each of the following:

▸ Physical meter aggregation

▸ Virtual aggregation

Figure 2. Points for Physical Meter and/or Virtual Aggregation

Programs that automatically enroll all local residents must include an opt-out provision for those who actively choose not to participate.

Local Renewable Generation Capability

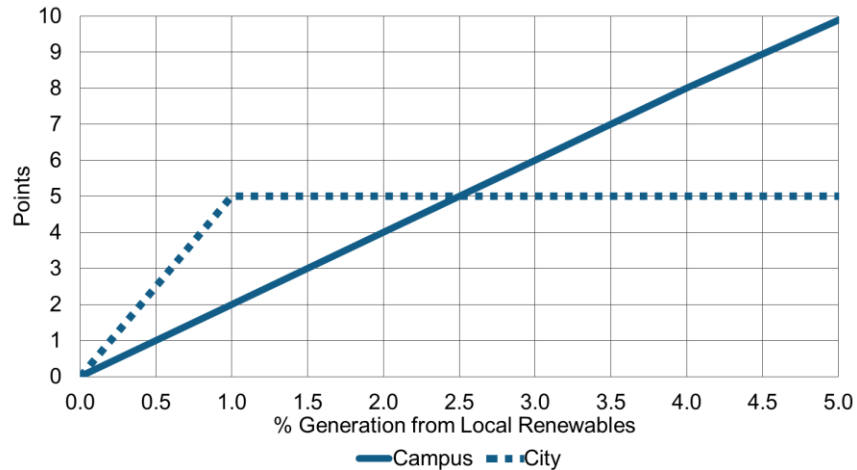| Credit Type	Criteria Type	Points		
		Campus	City	Supply
Core	Project Capability	Up to 10 points	Up to 5 points	N/A

INTENT

To quantify the contributions of customers and encourage investment in local renewable generation.

REQUIREMENTS

Determine the amount of local renewable generation on the customer side of the meter by type.

Up to 10/5 (Campus/City) points are available based on local renewable generation as a percentage of the total project electrical load (Figure 1).

Figure 1. Points for % Generation from Local Renewables

Local Cleaner Power Capability

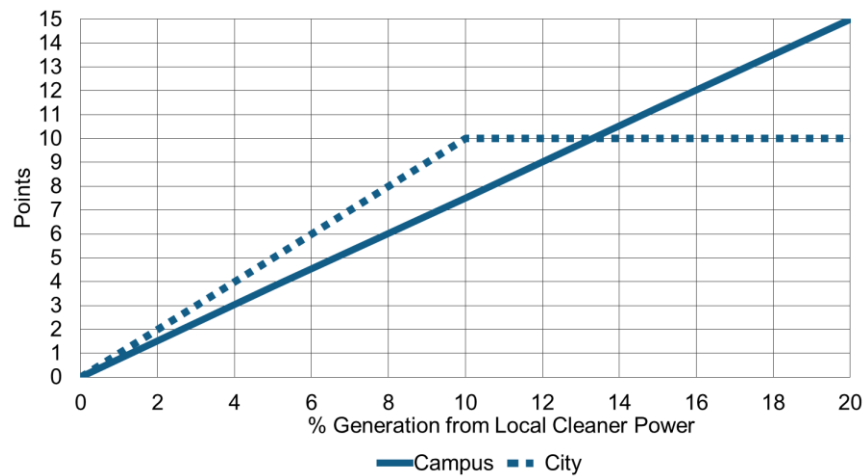| Credit Type	Criteria Type	Points		
		Campus	City	Supply
Core	Project Capability	Up to 15 points	Up to 10 points	N/A

INTENT

To quantify the contributions of customers and encourage investment in local cleaner power.

REQUIREMENTS

Determine the amount of local generation on the customer side of the meter that is cleaner than bulk generation sources, based on the PEER Power Supply Performance Index.

Up to 15/10 (Campus/City) points are available based on local cleaner power generation capability as a percentage of the total project electrical load (Figure 1).

Figure 1. Points for % Generation from Local Clean Power

Local Demand Response Capability

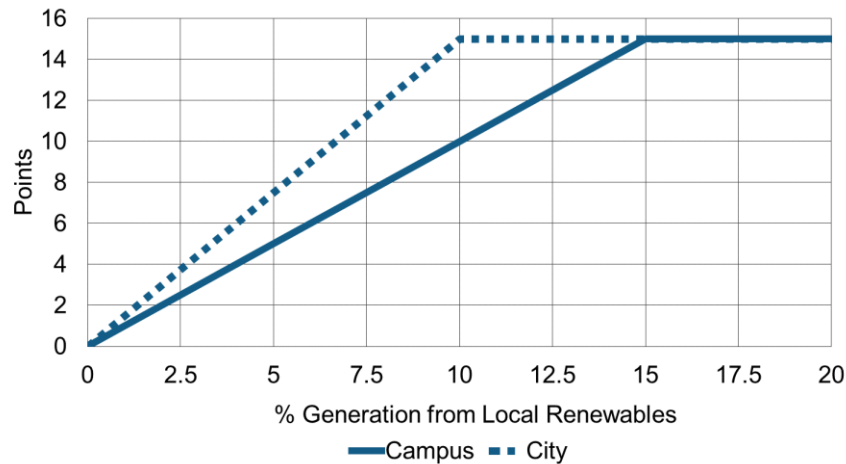| Credit Type	Criteria Type	Points		
		Campus	City	Supply
Core	Project Capability	Up to 15 points	Up to 15 points	N/A

INTENT

To temporarily reduce demand at peak times to mitigate involuntary service interruptions, improve power reliability, and reduce grid operating costs.

REQUIREMENTS

Determine the demand response capability on the customer side of the meter.

Up to 15 points are available based on local demand response capability as a percentage of total peak project electrical load (Figure 1).

Figure 1. Points for % Peak Demand with Local Demand Response

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Customer Contribution Innovations

Credit Type	Criteria Type	Points		
		Campus	City	Supply
Bonus	N/A	Up to 15 points	Up to 10 points	N/A

INTENT

To encourage projects to achieve exceptional or innovative performance.

REQUIREMENTS

Have in place a process or capability that demonstrates innovative customer participation or investment in grid performance. Points are based on the criteria outlined in Table 1.

Table 1. Points for Innovations

Points		Originality	Replicability	Measureable Impact	Customer Impact
Campus	City				
0.75	0.5	Limited to exceptional performance in existing PEER criteria	Can only be implemented by limited portion of projects, > 10 years to implement	Impact of Innovation can only be described subjectively	Has subjective value that is not readily apparent to customers/operator
1.5	1	Includes performance metrics that are not PEER criteria	Can be implemented by most projects, requires > 10 years to implement	n/a	Has subjective value that is clearly appreciated by customers/operator
2.25	1.5	Includes process improvements that are not PEER criteria	Can be implemented by most projects in < 10 years; ROI is indeterminate or > 10%	Impact of innovation can be measured objectively using non-PEER metrics	Value to customers/operator can be objectively calculated as < $1/MWh
3	2	Includes design considerations that are not PEER criteria	ROI > 10%, but is not applicable to all project types	Impact of innovation can be measured objectively using PEER criteria metrics	Value to customers/operator can be objectively calculated as > $1/MWh
3.75	2.5	Includes process improvements & design considerations that are not PEER criteria	ROI > 10% and is applicable to all 3 project types	Impact is measured objectively using PEER metrics & worth > 10 PEER points	Value to customers/operator can be objectively calculated as > $10/MWh