PD-17: Energy Efficiency

1-8 points

SCORECARDS: ☐ Paving ☑ Rural Basic ☑ Rural Extended ☑ Urban Basic ☑ Urban Extended

Goal: Reduce energy consumption of lighting systems through the installation of efficient fixtures and the creation and use of renewable energy.

Affected Triple Bottom Line Principles

Sustainability Linkage

Reduction of energy consumption and conversion to renewable energy sources support the environmental and economic sustainability principles by reducing the demand for fossil fuel generated energy, reducing emissions, and reducing in long-term energy costs.

Background and Scoring Requirements

Scoring Requirements

Requirement PD-17.1

1 point. Evaluate Energy Needs and Implement Alternatives

Evaluate energy needs for the project and implement alternatives to reduce power consumption while still meeting lighting and safety standards. These alternatives could include reduction of lighting; retrofit or installation of energy efficient luminaires, beacons, and traffic signal equipment and lamps; and installation of renewable energy sources.

Requirement PD-17.2

1-6 points. Reduce Total Energy Consumption

Reduce the energy consumption on the project through the installation of energy efficient lighting and signal fixtures (e.g. LED lighting, induction lighting, or other new technology that is Underwriters Laboratories Inc. (UL) Listed for the intended use) and through the installation of autonomous, on-site, renewable power sources (e.g., solar panels). All lighting facilities and systems considered for this criterion must be appropriate for the project. This means that installing pedestrian safety lighting on a project with no pedestrian accessibility will not be awarded credit. Similarly, lighting for new and/or improved driveways and parking lots are subject to the credits only if they are included within the project scope and budget boundaries.

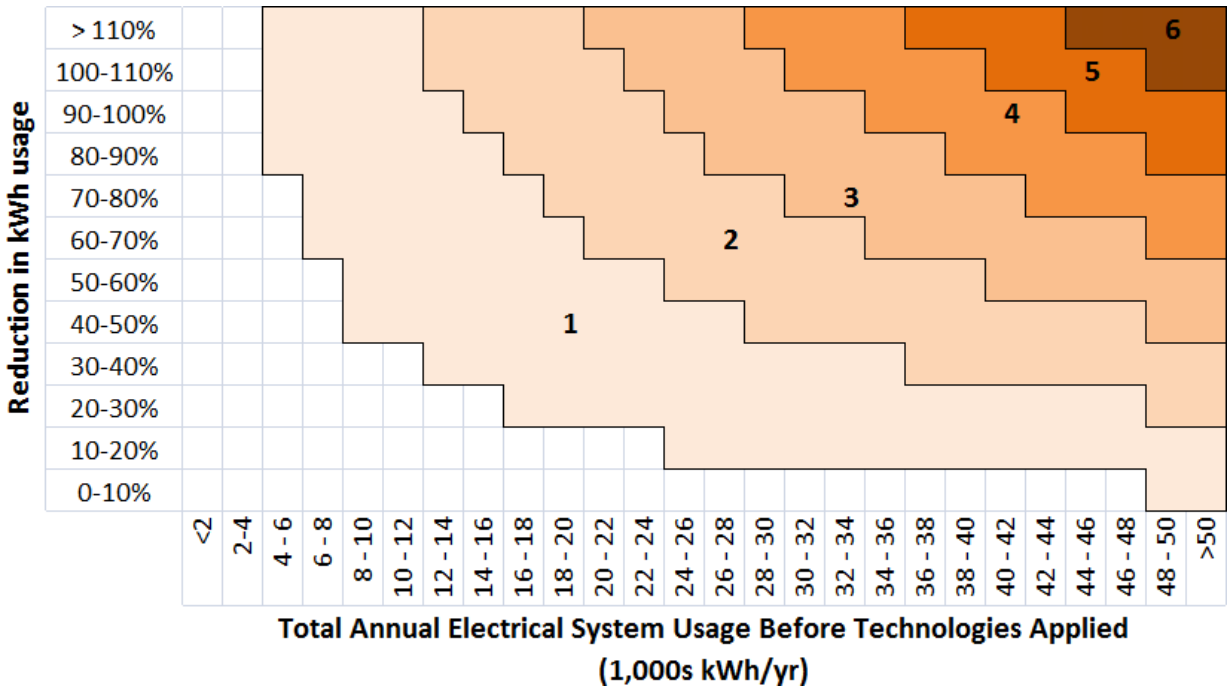
Points are awarded based on the percentage of reduced power use. To determine this reduction, compare the annual power consumption for the baseline condition to the power consumption for the energy efficient electrical system design. Calculations for power consumption should be based on the following assumptions:

- The baseline condition should be calculated using the existing electrical system and assuming new improvements were to be constructed with high-pressure sodium (HPS) luminaires with cut-off optics.
- The baseline condition should be based on the lighting system operating 12 hours/day and 7 days/week.
- The two designs must both meet the same lighting standards.
- Wattage used for energy consumption shall be based on luminaire "input wattage" not lamp wattage.

- Consider contributions by renewable energy sources as a reduction in the power required.
- Do not include power savings associated with daylight sensors and activity level sensors.

Use Table PD-17.2.A to calculate the number of points awarded based on these calculations.

TABLE PD-17.2.A. POINTS EARNED FOR ENERGY EFFICIENT ELECTRICAL SYSTEM DESIGN



Requirement PD-17.3

1 point. Establish Auditing Plan

Establish a plan for auditing energy use after the project is complete, as part of operations and maintenance.

Scoring Sources

The project is considered to have met this criterion if the requirements above can be reasonably substantiated through the existence of one or more of the following documentation sources (or equal where not available):

1. Documentation of energy usage evaluation and reduction plan.
2. Calculations documenting energy usage if the roadway project was to be constructed with high-pressure sodium (HPS) luminaires and fixtures, the expected energy usage as designed, and the resulting energy savings as a percentage of calculation no. 1.
3. Contract documents and/or cut sheets of the luminaires being installed on the project.
4. Sample cut sheets and specifications for each technology installed on the project that shows the expected wattage of the component(s) used or generated.
5. Documentation of plan for auditing energy use after construction.