

This is a guidance document with sample specification language intended to be inserted into project specifications on this subject as appropriate to the agency's environmental goals. Certain provisions, where indicated, are required for U.S. federal agency projects. Sample specification language is numbered to clearly distinguish it from advisory or discussion material. Each sample is preceded by identification of the typical location in a specification section where it would appear using the SectionFormat™ of the Construction Specifications Institute; the six digit section number cited is per CSI Masterformat™ 2004 and the five digit section number cited parenthetically is per CSI Masterformat™ 1995.

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**SECTION 01 81 30 (SECTION 13600) – GREEN POWER REQUIREMENTS**

**SPECIFIER NOTE:**

*resource management:* Once energy efficiency is maximized for a project, providing the required energy via clean, renewable resources is more sustainable than using fossil fuels which are finite in supply and incur environmental impacts throughout their lifecycle. The Federal Energy Management Program (FEMP) provides information on technologies that have been proven in field testing or recommended by reliable sources.

The US Federal Government is one of the largest energy users; it purchases \$10–20 billion in energy-related products annually. With ownership of more than 500,000 buildings, including 422,000 housing structures, the Federal Government has a tremendous interest in energy efficiency in buildings.

The Energy Policy Act of 1992 and Executive Order 13123 set goals for energy reduction and provide some guidelines for implementing conservation measures and renewable energy measures. Annual energy use in Federal buildings has dropped from 140,000 Btu/sq ft (1,600 MJ/m<sup>2</sup>) in 1985 to 116,000 Btu/sq ft (1,300 MJ/m<sup>2</sup>) in 1997. To meet the Executive Order 13123 requirements, annual energy use must drop to 90,800 Btu/sq ft (1,000 MJ/m<sup>2</sup>) by 2010. EO13123 also directs agencies to significantly increase the use of renewable energy and to install 20,000 solar energy systems by 2010. Agencies have set a goal of 2.5 percent of Federal energy use from renewables by 2010 from green power purchases, on-site renewable energy projects, or other projects developed on Federal land. Executive Order 13514; *Federal Leadership in Environmental, Energy, and Economic Performance*; was signed on October 5, 2009. <http://www.ofee.gov/execorders.asp> It expands upon the energy and environmental performance requirements of previous Executive Orders. In particular, it requires that all new Federal buildings, entering the design phase in 2020 or later, are designed to achieve zero net energy by 2030.

[http://www1.eere.energy.gov/femp/regulations/printable\\_versions/eo13423.html](http://www1.eere.energy.gov/femp/regulations/printable_versions/eo13423.html)

Refer to "Greening Federal Facilities: An Energy, Environmental, and Economic Resource Guide for Federal Facility Managers and Designers" <http://www.eere.energy.gov/femp/pdfs/29267-0.pdf> Renewables are characterized by a high initial cost and low operating cost, and are often designed to minimize life cycle cost.

*toxicity/IEQ:* Electric renewables systems include battery storage if off-grid, and safeguards should be taken while installing and maintaining the electrolyte and batteries shall be properly recycled at the end of their useful life.

While there are well-known concerns regarding the toxic components of batteries, overall the systems that utilize renewable energy sources are generally considered to be less hazardous to human health and environmental health because they do not involve the combustion of a fossil fuel.

*performance:* This is a rapidly changing field. DOE – Energy Efficiency and Renewable Energy (EERE) and the National Renewable Energy Laboratory (NREL) offer resources for renewable energy, green power, and high performance buildings. Refer to <http://www.nrel.gov/> and to <http://www.eere.energy.gov>

Other options for renewable energy include contracting for “green power” generated and supplied by a utility. Buying green power contributes to the renewable energy goals and encourages utilities to invest in these promising resources. With the deregulation of the electric utilities, many new procurement options are becoming available, including the possibility of buying green energy from nonpolluting, renewable sources. While many utilities charge a premium for green power, a trend is for regulators to require utilities to include wind power in their resource planning without a premium because it is not more expensive than conventional plants.

## PART 1 GENERAL

### 1.1 SUMMARY

- A. Section Includes:
1. Green Power contracting requirements.

### 1.2 DEFINITIONS

- A. Definitions pertaining to sustainable development: As defined in ASTM E2114 and as specified herein.

#### SPECIFIER NOTE:

“Green Power” as defined by Green-e means “eligible renewable electricity product” in the Green-e Renewable Electricity Certification program. Through this program, certified Green Power will meet the following requirements:

- 25% or more of the electricity supply comes from one or more of the eligible renewable resources
- if a portion of the electricity is non-renewable, the air emissions are equal to or lower than those produced by conventional electricity,
- there are no specific purchases of nuclear power

USGBC-LEED states that “Renewable sources are as defined by the Center for Resource Solutions (CRS) Green-e products certification requirements.”

- B. Green Power: Electrical power generated using renewable resources such as solar or wind.

#### SPECIFIER NOTE:

A renewable resource can be exhausted if improperly managed. However, a renewable resource can last indefinitely with proper stewardship. Examples include: trees in forests, grasses in grasslands, and fertile soil. USGBC-LEED uses the term in reference to plants.

- C. Renewable resource: a resource that is grown, naturally replenished, or cleansed, at a rate which exceeds depletion of the usable supply of that resource.
1. Rapidly renewable material: Material made from plants that are typically harvested within a ten-year cycle.

### 1.3 SUBMITTALS

- A. Product data. Unless otherwise indicated, submit the following for each type of product provided under work of this Section:

#### SPECIFIER NOTE:

USGBC-LEED™ v3 includes credit for using on-site renewable energy for minimum 1 percent of the building’s total annual energy. Credit is also offered for green power contracting. The contract must provide minimum 2-years of renewable energy for a minimum 35 percent of the building’s total energy.

FEMP references green power as per the Center for Resource Solutions Green-e program. USGBC-LEED™ v3 also cites the Center for Resource Solutions Green-e program. Refer to <http://www.green-e.org/>

1. Renewable Energy:
  - a. Baseline Energy Usage: Submit calculations for estimated electricity use per the U.S. Department of Energy (DOE) Commercial Buildings Energy Consumption Survey (CBECS) database or other program as acceptable to Owner.
  - b. Green Power Certification: Submit copy of certification for Green Power in accordance with the Center for Resource Solutions Green-e Standard for Electricity Products. Indicate type and percentage mix of renewable energy provided.

#### 1.4 QUALITY ASSURANCE

- A. Green Power: Arrange for Green Power sufficient to provide minimum **[35]** **[xxxx]** percent of the project's total energy needs.
- B. Comply with renewable energy requirements in accordance with the Center for Resource Solutions (CRS) Green-e Standard for Electricity Products.

#### 1.5 MAINTENANCE

- A. Green Power: Provide service contract for **[2]** **[xxxx]** years with options for annual renewal thereafter.
  1. Comply with the Center for Resource Solutions (CRS) Green-e Standard for Electricity Products for the duration of the contract. Comply with requirements of the CRS Green-e Annual Verification Protocol.
    - a. Immediately notify Owner if electricity product fails to comply with Green-e certification criteria during contract period.
  2. On an annual basis for during contract period, submit:
    - a. Annual report that includes data on the resources used to generate the past year's electricity purchased.
    - b. Disclosure statement lists the resources or fuel sources from which the electricity in the product will be generated in the following year.

### PART 2 PRODUCTS

#### SPECIFIER NOTE:

EO 13423 includes requirements for Federal Agencies to "... improve energy efficiency and reduce greenhouse gas emissions ... by (i) 3 percent annually through the end of fiscal year 2015, or (ii) 30 percent by the end of fiscal year 2015, relative to the baseline of ... year 2003" and to "...ensure that (i) at least half of the statutorily required renewable energy consumed ... comes from new renewable sources [sources of renewable energy placed into service after January 1, 1999] and (ii) ... the agency implements renewable energy generation ... for agency use"

Under EO 13423, renewable energy means "energy produced by solar, wind, biomass, landfill gas, ocean (including tidal, wave, current and thermal), geothermal, municipal solid waste, or new hydroelectric generation capacity achieved from increased efficiency or additions of new capacity at an existing hydroelectric project"

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## 2.1 EQUIPMENT

### SPECIFIER NOTE:

Decisions as to appropriateness of system requirements and design are dependent upon project goals and location. Coordinate with Divisions 22, 23, and 26 (15 and 16).

## PART 3 - EXECUTION

### 3.1 SITE ENVIRONMENTAL PROCEDURES

#### A. Resource Management:

1. Energy Efficiency: Verify equipment is properly installed, connected, and adjusted. Verify that equipment is operating as specified.

END OF SECTION