

2. Federal Mandates Mapped to LEED

The Federal Mandates define the goals and objectives for sustainability and energy performance for the Department of Veterans Affairs. VA has three Administrations with different missions and building types. VA shall incorporate sustainability and energy reduction strategies wherever possible, as instructed in the VA Green Building Action Plan dated March 30, 2007.

VA is committed to design, construct, and operate energy efficient buildings. Because no guidance can cover all situations or opportunities that each project encounters, project teams and individuals are encouraged to apply creativity in finding solutions that save resources and energy. Solutions that require adjustments to VA standards and criteria will be considered but must be presented to the VA Central Office responsible for those standards for review and approval.

VA has chosen the LEED rating system as a tool to demonstrate compliance with the Federal Mandates, as it has become well known and accepted in the building industry. It should be emphasized that LEED is only a means to a larger end, and not the end in itself.

LEED is organized around building types. The following are most applicable to VA¹:

- **LEED – NC** (New Construction)² will apply to all stand alone buildings, substantial renovations, and other work as applicable (e.g., acute care, long-term care, new office buildings, build to suit lease projects, cemetery buildings and grounds, etc).
- **LEED – CI** (Commercial Interiors) will apply to new construction or renovation work that involves only building interiors. For VA lease projects, the evaluation of proposals should give additional points to those facilities that have a LEED rating, and the number of points should be scaled to the successive LEED levels.

Each LEED building type is organized around a series of categories (below). Within each category there is a list of credit strategies that outline the performance goals for that credit. Some of the credits are required to achieve the Federal Mandates and some will be selected by the design/construction team depending on the design. The categories are:

- SS – Sustainable Sites
- WE – Water Efficiency
- EA – Energy and Atmosphere
- MR – Materials and Resources
- EQ – Indoor Environmental Quality
- ID - Innovation & Design Process

¹ LEED for Healthcare is under development by the USGBC

² New enhanced use leases where new facilities are to be built shall apply either LEED – NC or LEED – CI as appropriate. State Home and State Cemetery Grant programs are encouraged, but not required, to apply this guidance.

LEED assigns points for each credit achieved. The more points achieved the higher designated level. The LEED levels are:

	LEED-NC	LEED-CI
Certified	26-32 Points	21-26 Points
Silver	33-38 Points	27-31 Points
Gold	39-51 Points	32-41 Points
Platinum	52-69 Points	42-57 Points

The use of the LEED rating program is required for VA projects construction projects as the methodology to achieve the sustainability and energy reduction Federal Mandates. The LEED methodology shall be used in whole or in part, depending on the scope of the construction project. A roof replacement, for instance, would use only those individual LEED credits which would be applicable (e.g. SS Credit 7.2). In the case where there is no specific LEED credit that applies, the *spirit* of sustainability should be kept in mind when selecting materials or options.

The VA goal is to obtain at least LEED Silver/Silver equivalency for most construction projects, which should be obtainable in the course of meeting VA criteria, the Federal Mandates, and the inclusion of a few additional low cost credits. VA encourages project teams to creatively strive to achieve the highest LEED level possible *given the project scope and budget*.

Although not required at this time, VA recommends the project team consider pursuing a third party review and formal LEED Certification with the U.S. Green Building Council. However, the decision on certification with the USGBC is currently to be made at the project team level.

At a minimum, major and minor program projects as listed in the table below will be registered with USGBC which will allow access to the LEED credit templates. Project teams will submit documentation, using the LEED templates, to VA as described in Section 3 for all LEED credits related to Federal Mandates.

Category	LEED Rating System	VA Goal
For the Major Program: (>\$10M)		
New construction, Facility renovation Build to suit w/ VBA lease	LEED – NC	LEED Silver/Silver equivalency or higher if stand-alone building or major renovation, or use LEED credits as appropriate
For the Minor Program: (<\$10M)		
New construction, Facility renovations	LEED – NC	LEED Silver/Silver equivalency or higher if stand-alone building or major renovation, or use LEED credits as appropriate
NRM (Non-Recurring Maintenance)	LEED – NC LEED – CI	Use LEED credits as appropriate, or spirit of sustainability in decision making
Cemetery Program	LEED – NC	LEED Silver/Silver equivalency or higher if stand-alone building or major renovation, or use LEED credits as appropriate
VA leased, enhanced-use lease, or renovations only to bldg interiors	LEED – CI	LEED Certified Level, higher if scope & budget available

2.1 INTEGRATED DESIGN

FEDERAL MANDATES: Use a collaborative, integrated planning and design process that:

- Initiates and maintains an integrated project team in all stages of a project's planning and delivery
- Establishes performance goals for siting, energy, water, materials, and indoor environmental quality along with other comprehensive design goals; and, ensures incorporation of these goals throughout the design and lifecycle of the building; and,
- Considers all stages of the building's lifecycle, including deconstruction.

Applicable LEED Requirements:

There are no specific requirements under LEED – NC or CI in this section, although compliance with the Mandates will generally be sufficient to achieve one or more of the LEED Innovation credits with either system.

Optional:

LEED – NC

- ID Credit 1.1 – 1.4: Innovation in Design
- ID Credit 2: LEED Accredited Professional

LEED – CI

- ID Credit 1.1 – 1.4: Innovation in Design
- ID Credit 2: LEED Accredited Professional

2.2 COMMISSIONING

FEDERAL MANDATES: Employ total building commissioning practices tailored to the size and complexity of the building and its system components in order to verify performance of the building components and systems and help ensure that design requirements are met. This should include a designated commissioning authority, inclusion of commissioning requirements in construction documents, a commissioning plan, verification of the installation and performance of systems to be commissioned, and a commissioning report

Applicable LEED Requirements:

LEED – NC

- EA Prerequisite 1: Fundamental Commissioning of the Building Energy Systems
- EA Credit 3: Enhanced Commissioning

LEED – CI

- EA Prerequisite 1: Fundamental Commissioning of the Building Energy Systems
- EA Credit 2: Enhanced Commissioning

2.3 OPTIMIZE ENERGY PERFORMANCE

The Federal Mandates defining methodology for energy metrics have not been standardized. In order to clarify instructions and to insure that the primary rating controlling design shall be consumption (BTUs/GSF/YR), and that energy costs (\$/GSF/YR) should be secondary drivers of the design, VA has defined the primary energy goal as:

To improve energy efficiency and reduce greenhouse gas emissions of the agency through reduction of energy consumption wherever possible given the project scope and budget.

In some cases to create energy efficiency, such as having a co-generation plant on site, or by using other energy efficient options, the actual on-site BTUs for the project will increase. VA does not intend to discourage these options if they make sense and are life-cycle cost effective. Although in general consumption should control design, it is important to balance consumption, efficiency, sensitive/mission critical needs, and energy costs when design decisions are being made to assure the best overall solution.

FEDERAL MANDATES³:

- *Establish a whole building consumption performance target to earn the Energy Star® targets where applicable.*
- *ASHRAE/ IESNA Standard 90.1 – 2004 Energy Standard, Appendix G shall be used to create the baseline building performance ratings. Projects using Building Information Modeling (BIM) software may also use software such as Green Building Studio or similar to access DOE-2 for early design energy evaluations.*
 - *For new construction, reduce the energy consumption by 30 percent if lifecycle cost effective compared to the baseline.*
 - *For major renovations, reduce the energy consumption cost budget by 20 percent below pre-renovations 2003 baseline if lifecycle cost effective compared to the baseline, providing building functions remain similar.*
 - *Energy modeling is required for new buildings over 8,000 GSF.*
- *For acute care buildings, 30 percent shall be used as the receptacle and process loads in determining the baseline building performance rating.*

³ As defined by VA

- *If the 30 percent energy reduction is not life-cycle cost effective (using OMB Circular Number A – 94 Guidelines and Discount Rates for Benefit – Cost Analysis of Federal Programs”), evaluate the cost-effectiveness of alternative designs at successive decrements below 30 percent (e.g., 25 percent, 20 percent, etc) in order to identify the most energy-efficient design that is life-cycle cost effective for that building.*
- *To the extent feasible and life-cycle cost effective, implement renewable energy generation and bioenergy projects on agency property for agency use.*
- *Where life-cycle cost effective, each agency shall implement distributed generation systems in new construction or retrofit projects, including renewable systems such as solar electric, solar lighting, geo (or ground coupled) thermal, small wind turbines, as well as other generation systems such as fuel cell, co-generation, or highly efficient alternatives. Projects are encouraged to use distributed generation systems when a substantial contribution is made towards enhancing energy reliability or security. Utilize products that have the Energy Star® rating identified by DOE and EPA and/or FEMP-designated energy-efficient products.*

Applicable LEED Requirements:

LEED – NC

- EA Prerequisite 2: Minimum Energy Performance
- EA 1.1 – 1.5: Optimize Energy Efficiency
- EA 2: On-site Renewable Energy
- SS 7-2: Heat Island Roof

Compliance with the Mandates and achievement of appropriate LEED – NC credits will require significant attention to all aspects of the design of the project. Many energy efficiency strategies can be incorporated into the project with little or no additional cost, provided they are addressed through an integrated design approach at the earliest possible stages in the project. Achievement of Energy and Atmosphere credits can be very dependent on regional factors and strategies will vary greatly by building type and climate. The use of analytical computer software tools, such as DOE-2, Energy Plus, Green Building Studio, Equest, etc. to evaluate preliminary energy performance is essential in determining early on in the design which concept solutions hold the most promise.

Optional:

- EA 6: Green Power

In addition to encouraging the use of onsite renewable energy, the Executive Order encourages the use of distributed generation systems such as fuel cells, cogeneration, combined heat and power systems, etc., where life-cycle cost effective. These measures can provide significant energy use reductions as well as improve the passive survivability of the facility. In addition, the systems can contribute to an overall reduction in source energy usage and carbon emissions.

LEED – CI

- EA Prerequisite 2: Minimum Energy Performance
- EA 1.1: Optimize Energy Efficiency, Lighting Power
- EA 1.2: Optimize Energy Efficiency, Lighting Controls
- EA 1.3: Optimize Energy Efficiency, HVAC
- EA 1.1: Optimize Energy Efficiency, Equipment and Appliances

Additional LEED credits which should be readily achievable:

LEED – NC

- SS 1: Site Selection
- SS 2: Development Density and Community Connectivity
- SS 4-1: Alternative Transportation – Public Transportation Access
- SS 4-2: Alternative Transportation – Bicycle Storage and Changing Rooms
- SS 5-1: Reduced Site Disturbance – Protect or Restore Habitat
- SS 5-2: Reduced Site Disturbance – Maximize Open Space
- SS 7-1: Heat Island Effect – Non-Roof

LEED – CI

- SS 2: Development Density and Community Connectivity
- SS 3-1: Alternative Transportation – Public Transportation Access
- SS 3-2: Alternative Transportation – Bicycle Storage and Changing Rooms

2.4 MEASUREMENT AND VERIFICATION

FEDERAL MANDATES:

- *To the maximum extent practicable, agencies should install building level utility meters in new major construction and renovation projects to track and continuously optimize performance to measure consumption of potable water, electricity, and thermal energy in Federal buildings and other facilities and grounds.*
- *For applicable facilities, agencies should meet Energy Star® Building criteria, and score the energy performance of buildings using the Energy Star® Portfolio Manager rating tool as part of comprehensive facility audits. Agencies may use the Energy Star® Portfolio Manager rating tool to track energy and water use in all facilities. (www.eere.energy.gov/femp/highperformance/index.cfm)*
- *Agencies should conduct energy and water audits of at least 10 percent of facility square footage annually and conduct new audits at least every 10 years thereafter. This audit requirement can be met by audits done in conjunction with ESPC or UESC projects.*
- *Agencies should consider inclusion of metering requirements in all ESPCs and UESCs, as appropriate.*

Applicable LEED Requirements:

LEED – NC

- EA 5: Measurement and Verification

LEED – CI

- EA 3: Energy Use, Measurement and Payment Accountability

In new construction, the following systems should be metered: electricity, natural gas, purchased chilled water and steam, VA produced chilled water and steam, water, and sewer. Further information regarding specific meter requirements will be available in the VA specifications.

2.5 PROTECT AND CONSERVE INDOOR WATER

FEDERAL MANDATES:

- *Employ strategies that in aggregate use a minimum of 20 percent less potable water than the indoor water use baseline calculated for the building, after meeting the EPA Act – 1992 fixture performance requirements.*
- *Beginning in FY 2008, reduce water consumption intensity, relative to the baseline of the agency's water consumption in FY 2007, through life-cycle cost effective measures by 2 percent annually through the end of FY 2015 or 16 percent by the end of FY 2015.*
- *Give preference, where applicable, to water-efficient products, including those meeting EPA's WaterSense standards.*

Applicable LEED Requirements:

LEED – NC

- WE 3-1: Water Use Reduction – 20 Percent Reduction

LEED – CI

- WE 3-1: Water Use Reduction – 20 Percent Reduction

Expected levels of achievement vary to some degree by building type or function. Higher levels of water efficiency can be more challenging in acute care and long-term care facilities where infection-control concerns are greater. For medical office buildings there may be greater opportunities for water efficiency, particularly in the area of water reclamation and reuse. Low-flow lavatories and toilets should be used wherever possible in all facilities.

2.6 PROTECT AND CONSERVE OUTDOOR WATER

FEDERAL MANDATES:

- *Employ design and construction strategies that reduce storm water runoff and polluted site water runoff.*
- *Use water efficient landscape and irrigation strategies, including water reuse and recycling, to reduce outdoor potable water consumption by a minimum of 50 percent.*
- *Give preference, where applicable, to water-efficient products, including those meeting EPA's WaterSense standards*
- *Choose irrigation contractors who are certified through a WaterSense labeled program.* (EPA's WaterSense program is a voluntary public-private partnership that identified and promotes high-performance projects and programs that help preserve the nation's water supply. More information can be found at www.epa.gov/watersense)

Applicable LEED Requirements:

LEED – NC

- SS Prerequisite 1: Construction Activity Pollution Prevention
- SS 6-1: Stormwater Management – Quantity Control
- SS 6-2: Stormwater Management – Quality Control
- WE 1-1: Water Efficient Landscaping – Reduce potable water by 50 Percent

Cemetery facilities have significantly different open site to building ratios and, in most cases, require extensive irrigation and grounds care use of water. Because potable water requires a substantial amount of energy, reductions or elimination of potable water use for grounds keeping can also reduce energy. Cemeteries should continue to review strategies to reduce the amount of potable water used for landscape watering to determine if there are appropriate alternatives, including wells, non-potable water, rainwater storage, etc.

LEED – CI

- SS 1: Site Selection

Additional LEED credits which should be readily achievable:

LEED – NC

Acute Care and Long Term Care

- WE 1-2: Water Efficient Landscaping – No Potable Use or No Irrigation

Medical Office Buildings

- WE 1-2: Water Efficient Landscaping – No Potable Use or No Irrigation
- WE 2: Innovative Wastewater Technologies

Cemetery Facilities

- WE 2: Innovative Wastewater Technologies

2.7 ENHANCE INDOOR ENVIRONMENTAL QUALITY

FEDERAL MANDATES:

- *Meet the current ASHRAE Standard 55-2004, Thermal Environmental Conditions for Human Occupancy, including continuous humidity control within established ranges per climate zone, and ASHRAE Standard 62.1-2004, Ventilation for Acceptable Indoor Air Quality.*
- *Establish and implement a moisture control strategy for controlling moisture flows and condensation to prevent building damage and mold contamination.*
- *Achieve a minimum of daylight factor of 2 percent (excluding all direct sunlight penetration) in 75 percent of all space occupied for critical visual tasks. Provide automatic dimming controls or accessible manual lighting controls, and appropriate glare control.*
- *Follow the recommended approach of the Sheet Metal and Air Conditioning Contractor National Association Indoor Air Quality Guidelines for Occupied Buildings under Construction, 1995. After construction and prior to occupancy, conduct a minimum 72-hour flush-out with maximum outdoor air consistent with achieving relative humidity no greater than 60 percent. After occupancy, continue flush-out as necessary to minimize exposure to contaminants from new building materials.*

Applicable LEED Requirements:

LEED – NC

- EQ Prerequisite 1 Minimum IAQ Performance
- EQ Prerequisite 2 Environmental Tobacco Smoke
- EQ 1: Outdoor Air Delivery Monitoring
- EQ 3.1 Construction IAQ Management Plan (During Construction)
- EQ 3.2 Construction IAQ Management Plan (Before Occupancy)
- EQ 4.1 Low-Emitting Materials (Adhesives and Sealants)
- EQ 4.2 Low-Emitting Materials (Paints)
- EQ 4.3 Low-Emitting Materials (Carpet)
- EQ 4.4 Low-Emitting Materials (Composite Wood and Agrifiber)
- EQ 5: Indoor Chemical and Pollutant Source Control
- EQ 7.1 Thermal Comfort (Design)

EQ 8.1 Daylight and Views (Daylight 75 percent of spaces) LEED – CI

- EQ Prerequisite 1 Minimum IAQ Performance
- EQ Prerequisite 2 Environmental Tobacco Smoke

- EQ 3.1 Construction IAQ Management Plan (During Construction)
- EQ 3.2 Construction IAQ Management Plan (Before Occupancy)
- EQ 4.1 Low-Emitting Materials (Adhesives and Sealants)
- EQ 4.2 Low-Emitting Materials (Paints)
- EQ 4.3 Low-Emitting Materials (Carpet)
- EQ 4.4 Low-Emitting Materials (Composite Wood and Agrifiber)
- EQ 4.5 Low-Emitting Materials (Systems Furniture and Seating)
- EQ 7.1 Thermal Comfort (Compliance)
- EQ 8.1 Daylight and Views (Daylight 75 percent of spaces)

Meeting the requirement for daylight and views can be very difficult in acute care facilities; however, new construction teams are encouraged to incorporate as much daylight as possible.

Additional LEED credits which should be readily achievable:

LEED – NC & CI

- EQ 2: Increase Ventilation
- EQ 6-1: Controllability of Systems – Lighting
- EQ 7-2: Thermal Comfort – Verification

2.8 REDUCE ENVIRONMENTAL IMPACT OF MATERIALS

FEDERAL MANDATES:

- **Recycled Content:** *Specify materials and products with low pollutant emissions, including adhesives, sealants, paints, carpet systems, and furnishings.*
- **Biobased Content:** *For USDA-designated products, use products meeting or exceeding USDA biobased content recommendations. For other products, use biobased products made from rapidly renewable resources and certified sustainable wood products.*
- **Construction Waste:** *During a project planning stage, identify local recycling and salvage operations that could process site related waste. Program the design to recycle or salvage at least 50 percent construction, demolition and land clearing waste, excluding soil, where markets or on-site recycling opportunities exist.*
- **Ozone Depleting Compounds:** *Eliminate the use of ozone depleting compounds during and after construction where alternative environmentally preferable products are available, consistent with either the Montreal Protocol and Title VI of the Clean Air Act Amendments of 1990, or equivalent overall air quality benefits that take into account life cycle impacts.*

Applicable LEED Requirements:

LEED – NC

- EA Prerequisite 3: Fundamental Refrigerant Management
- EA 4: Enhanced Refrigerant Management
- MR Prerequisite 1: Storage and Collection of Recyclables
- MR 2-1 and 2-2: Construction Waste Management
- MR 4-1: Recycled Content
- MR 6: Rapidly Renewable Materials
- MR 7: Certified Wood

LEED – CI

- EA Prerequisite 3: CFC Reduction in HVAC&R Equipment
- MR 2-1 and 2-2: Construction Waste Management
- MR 4-1: Recycled Content
- MR 6: Rapidly Renewable Materials
- MR 7: Certified Wood

Additional LEED credits which should be readily achievable:

LEED – NC & CI

- MR 5-1: Local/Regional Materials – 10 percent extracted, processed and manufactured regionally



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