LEED PERFORMANCE PROGRAM (LPP) #6 DESIGN DOCUMENTATION

Community Development 701 Laurel St., Menlo Park, CA 94025 tel 650-330-6702 planning@menlopark.org



LEED design documentation

The following is a summary of supporting documents that are required to be submitted to demonstrate LEED compliance for the project. As LEED is updated by Green Business Certification Inc., changes to the documentation or additional documentation may be requested by the LEED reviewer. Please refer to the submittal guidelines LPP 4.1, 4.2, and 4.3 to confirm what will be due during the various phases of the project. All documents below are to be submitted in addition to the LEED letter template for each credit. The LEED letter templates can be downloaded from the LEED Online web portal after the project has been registered. The US Green Building Council (USGBC) website provides detailed information for each credit. For additional information and descriptions of each item, utilize the LEED reference guide for Building Design and Construction (BD+C) or the LEED reference guide for Interior Design and Construction (ID+C). Please review the survey and criteria listed on the USGBC website at the following link for more information about the credits below that qualify for the CALGreen streamlined option through the USGBC.

Integrated Process (IP)

IPc1: Integrative process

- Integrative process worksheet
- Project team document
- Charrette results
- Integrated process narrative

Location and Transportation (LT)

LTc1: LEED for Neighborhood Development (ND) location

Documentation showing the project is located within a LEED-ND program.

LTc2: Sensitive land protection

- Site maps showing project boundary, development footprint, any previous development any sensitive areas, and any minor improvements in required buffers.
- Explanation of the previous development on the site.
- Description of how the project team verified prime farmland and sensitive habit criteria.

LTc3: High priority site

- Option 1
 - Vicinity map indicated previously developed land within 1/2 mile of project boundary.
 - Document from historic preservation entity confirming location in historic district.
- Option 2
 - Vicinity maps or other documentation confirming priority site designation.

LTc4: Surrounding density and diverse uses

- Option 1
 - Area plan or map showing project site and location of existing residential and non-residential buildings within 1/4 mile radius of project site.
 - Description of the impervious development of the site.
- Option 2
 - o Area plan or map showing the project site, location and type of each use, and walking routes.

LTc5: Access to quality transit

- Map showing project, project boundary, transit stop location, and walking routes and distance to those stops.
- Timetables or other service-level documentation.
- If applicable, documentation of planned transit or restoration of temporarily rerouted service.

LTc6: Bicycle facilities

- Vicinity map showing bicycle network and route and distance along network to eligible destination(s).
- Site plan showing bicycle storage locations.
- Calculations for storage and shower facilities.
- Description of programs to support bicycle use.

LTc7: Reduced parking footprint

- Site plan indicating parking areas and preferred parking spaces.
- Calculations demonstrating threshold achievement.

 Drawings or photographs of signage or pavement markings indicating reserved status of preferred parking areas.

LTc8: Green vehicles

- Parking or site plan indicating main building entrance, preferred parking spaces, and alternative-fuel fueling stations; calculations based on total parking capacity.
- For preferred parking spaces, photographs of signage pavement.
- For electric vehicle charging spaces, photographs of signage or pavement marking.
- For discounted parking rate, copy of communication to building occupants or photograph of signage.
- For electrical connectors, manufacturers' product specifications indicating charge level, compliance with relevant standard, and internet accessibility.

Sustainable Sites (SS)

SSp1: Construction activity pollution prevention

- Cal Green streamlined option available
- Verification of recycled material types.
- Narrative describing recycling storage and collection strategies.
- Floor plans indicating collection and storage areas.

SSc1 Site assessment

- Site survey or assessment plan or map.
- Site assessment worksheet or equivalent narrative.
- Phase I Environmental Site Assessment (ESA) per ASTM E1527-065.
- Phase II ESA (if contamination is found on site).
- Executive summary that indicated a Phase II ESA is required.
- Photos from site visit with descriptions.
- Site plan of areas affected.
- Description of remediation procedures taken.

SSc2 Site development - protect or restore habitat

- Both options:
 - o Greenfield area calculations
- Option 1: On-site restoration (2pts)
 - Native of adapted vegetation calculations
 - Site plan depicting project boundary, building footprint, preserved green area(s) (if applicable), previously developed area, restored area, native and adapted vegetation, plant species, other ecologically appropriate features and any other relevant site conditions.
 - Description of disturbed or compacted soils to be revegetated.
 - Reference soil characteristics and soil test results.
 - o Projects with vegetated roofs: provide the floor area ratio (FAR).
- Option 2: Financial support (1pt)
 - o Agreement with land trust or conservation organization.
 - Confirmation that land trust is accredited by Land Trust Alliance.

SSc3 Open space

- Site plan that indicates project boundary and campus or master plan boundary (if applicable) highlighting location and size of any open spaces, vegetated areas, plant species, wetlands or naturalistic man-made ponds (with side slopes noted), and vegetated roofs.
- Open space and vegetated space calculations.
- Description of how open space is physically accessible and meets area type criteria.
- FAR

SSc4 Rainwater management

- All projects:
 - o Rainfall data
 - o Rainfall events calculation or calculations for the chosen percentile storm.
 - Runoff volume calculations
 - Plan, details, or cross sections depicting site conditions and GI or LID strategies, highlighting topography, direction of water flow, and area of site that each facility addresses.
 - Narrative confirming measures qualify as GI or LID.
 - Calculations for volume of rainwater managed by GI or LID strategies.
 - Explanation for why 10 years of historic rainfall data are not available for the project location (if applicable).
 - Multitenant complex project projects only: summary of centralized approach and associated distributed techniques.
- Option 1, path 3
 - Description of conditions that make the project zero lot line.

- o FAR
- Option 2
 - Documents illustrating natural land cover conditions.

SSc5 Heat island reduction

- Non-roof and roof area calculations.
- Site Plan(s) with elements, and measurements, including LEED project boundary, building footprint, roof and hardscape area, area of each roof and non-roof measure, and the Solar Reflectance Index (SRI) values for each material.

SSc6 Light pollution reduction

- Cal Green streamlined option available.
- Site lighting plan with boundaries, elements, location of fixtures, and applicable measurements.
- Projects with internally laminated exterior signage only: provide maximum luminance data.
- Luminaire schedule showing up-light ratings.
- Luminaire schedule showing backlight and glare ratings and mounting heights.
- · Calculations for lumens per luminaire and lumens emitted above horizontal.
- Greatest vertical illuminance value for each vertical calculation plan at lighting boundary; calculation grid for one vertical plan with greatest vertical illuminance (worst-case scenario), highlighting point of greatest illuminance.

Water Efficiency (WE)

WEp1 Outdoor water use reduction

- Cal Green streamlined option available.
- Outdoor Water Use Reduction Calculator
- Site plan showing vegetated areas.
- Narrative for plant species and water requirements.
- Site plan showing location and size of landscape zones.

WEp2 Indoor water use reduction

- Cal Green streamlined option available.
- Indoor Water Use Reduction Calculator
- Product cut sheets/manufacturer's information
- Tenant lease agreement
- Tenant scope of work narrative

WEp3: Building-level water metering

- Meter declaration
- Sharing commitment from the owner.

WEc1 Outdoor water use reduction

- Cal Green streamlined option available.
- Alternative water source and controls calculations.

WEc2 Indoor water use reduction

- Cal Green streamlined option available.
- Alternative water source calculations (if applicable)
- Alternative water narrative (if applicable)

WEc3: Cooling tower water use

- Potable water analysis result
- Potable water analysis narrative
- Cycles of concentration calculations
- Non-potable water calculations
- Water treatment calculations
- Non-potable water analysis (if using 100% non-potable water)

WEc4: Water metering

- Water metering strategy narrative
- Water meter cut sheets
- Plumbing plan + irrigation plan showing the location of the water meters.

Energy and Atmosphere (EA)

EAp1: Fundamental commissioning and verification

- Cal Green streamlined option available.
- Commissioning agent (CxA) previous experience.
- Confirmation of owner's project requirements (OPR) and basis of design (BOD) contents.
- Commissioning (Cx) Plan.
- · List of systems to be commissioned.

- Verification of CxA activities and reviews.
- Documentation of testing and verification.

EAp2: Minimum energy performance

- Cal Green streamlined option available.
- Option 1:
 - o Minimum Energy Performance Calculator
 - o Appendix G energy modeling inputs
 - Input-output reports from modeling software
 - Exceptional calculations (if applicable)
 - o Energy consumption and demand for each building end use and fuel type.
 - Fuel Rates
 - Data center calculation (if applicable)
 - Retail process energy calculator (if applicable)
- Option 2:
 - o AEDG compliance tables
 - Target finder results summary
- Option 3:
 - o Confirmation that all aspects of CPG section 1 and 2 were met.
 - o Building configuration analysis
 - Building loads and mechanical system design capacity.
 - Insulation installation details
 - Domestic hot water efficiency
 - Narrative or calculations for CPG enhanced performance strategies.

EAp3 Building-level energy metering

- Cal Green streamlined option available.
- List of all advanced meters to be installed, including type, energy source metered.
- Manufacturer's cut sheets for all meters.
- Single line diagram and plumbing sheets showing location of meters.

EAp4 Fundamental refrigerant management

- Cal Green streamlined option available.
- All equipment
 - Confirmation that no new or existing equipment contains CFCs.
- Existing equipment
 - o Equipment type
 - Refrigerant type
 - o CFC conversion of replacement plan
 - o Refrigerant leakage rate, quantity
 - Phase-out completion date

EAc1: Enhanced commissioning

- List of all tasks completed as a part of the Cx activities.
- · Training outline and participation list
- Confirmation of systems manual delivery
- On-going Cx plan
- Inclusion of monitoring and tracking in Cx plan.
- Inclusion of envelope in Cx plan.
- Verification of additional reviews per data center requirements (data centers only).

EAc2: Optimize energy performance

- Cal Green streamlined option available.
- Option 1:
 - Appendix G energy modeling inputs
 - o Input and output reports from modeling software.
 - o Renewable energy (if applicable)
 - o Exceptional calculations (if applicable)
 - Target finder results and summary
 - o Energy consumption and demand for each building end use and fuel type.
 - o Fuels rate
- Option 2:
 - Target finder results and summary.
 - AEDG compliance tables
 - List of process equipment efficiencies (retail only)

EAc3: Advanced energy metering

- List of all advanced meters to be installed, including type, for energy sources metered.
- Manufacturer's cut sheets

EAc4: Demand response

- Proof of enrollment in demand response (DR) program.
- Evidence of ability to shed 10 percent of peak demand.
- Confirmation that system is capable of receiving and acting on external signal.
- Action plan for meeting reduction requirement during event.
- Inclusion of DR in CxA systems testing plan.

EAc5: Renewable energy production

- Renewable system rated capacity
- Calculations to determine energy generated.
- Equivalent cost of renewable energy produced.
- Documentation of annual energy costs
- Contract indicating duration

EAc6 Enhanced refrigerant management

- Option 1:
 - Confirmation that only no or low-impact refrigerants are used.
- Option 2:
 - o Equipment type
 - Refrigerant charge calculations (for variable refrigerant flow (VRF) systems only)
 - o Equipment cooling capacity
 - Refrigerant equipment schedule or Green Chill certification.
 - o Equipment quantity
 - o Refrigerant type
 - Refrigerant charge (plus supporting documentation, if applicable)
 - Equipment life (plus supporting documentation, if applicable)
 - Leak test results (commercial refrigeration systems only)

EAc7: Green power and carbon offsets

- Annual electricity and non-electricity energy use calculations.
- Calculations showing required renewable energy certificates (RECs), green power, or carbon offsets for targeting point threshold.
- Purchase contract or letter of commitment showing REC, green power, or carbon offsets for targeted point threshold.
- Green-e equivalency documentation (if not Green-e certified)

Materials and Resources (MR)

MRp1: Storage and collection of recyclables

- Floor plans indicating recycling storage and collection strategies.
- Narrative describing recycling storage and collection strategies.
- Verification of recycled material types.
- Methodology and results of waste stream study.

MRp2: Construction and demolition waste management planning

- Cal Green streamlined option available.
- Construction and Demolition Waste Calculator
- Construction waste management plan

MRc1: Building life-cycle impact reduction

- Option 1:
 - Documentation of historic designation status.
 - Narrative describing demolition (if any).
 - Documentation of how additions and alterations meet local review board requirements.
- Option 2:
 - Narrative describing abandoned or blighted status.
 - Reused elements table and calculations
- Option 3:
 - Reused elements table and calculations
- Option 4:
 - Description of life-cycle assessment (LCA) assumptions, scope, and analysis process for baseline building and proposed building.
 - Life-cycle impact assessment summary showing outputs of proposed building with percentage change from baseline building for all impact indicators.

MRc2: Building product disclosure and optimization: environmental product declarations

- Building Product Disclosure and Optimization Calculator
- Environmental product declaration (EPD) and LCA reports or compliant summary documents for 100% of products contributing toward credit.
- Documentation of compliance with USGBC-approved program.

MRc3: Building product disclosure and optimization: sourcing of raw materials

- Building Product Disclosure and Optimization Calculator
- Corporate sustainability reports for 100% of products contributing toward credit.
- Documentation of product claims for credit requirements or other USGBC-approved program.

MRc4: Building product disclosure and optimization: material ingredients

- Building Product Disclosure and Optimization Calculator
- Documentation of supply chain optimization.

MRc5: Construction and demolition waste management

- Cal Green streamlined option available.
- MR construction and demolition waste management calculator or equivalent tool, tracking total and diverted waste amounts and material streams.
- Documentation of recycling rates for commingled facilities (if applicable).
- Documentation of waste-to-energy facilities adhering to relevant standards (if applicable).
- Justification narrative for use of waste-to-energy strategy (if applicable).
- Total waste per area

Indoor Environmental Quality (EQ)

EQp1: Minimum indoor air quality performance

- <u>Cal Green streamlined option available</u>.
- Options 1 and 2 pathways provide:
 - Confirmation that project meets the minimum requirements of ASHRAE 62.1-2010, Sections 4-7, or CEN Standard 13779-2007.
 - o Confirmation that project has a MERV 11 or higher filters (if the project is in nonattainment area for PM2.5).
 - Ventilation rate procedure or CEN calculations and documentation of assumptions for calculation variables.
 - Controls drawing showing monitoring devices (outdoor airflow measuring device, current transducer, airflow switch, or similar monitoring, automatic indication device, carbon dioxide (CO2) sensor).
 - For naturally ventilated projects provide the following:
 - Confirmation that project meets minimum requirements of ASHRAE Standard 62.1-2010, section 7, and exhaust ventilation requirements of Section 6.5.
 - Documentation of CIBSE flow diagram process for project.
 - Natural ventilation procedure calculations and ventilation opening information.
 - Any natural ventilation exception from mechanical ventilation system (ASHRAE 62.1-2010, Section 6.4).
 - Any exception from authority having jurisdiction.
- For mixed-mode buildings, provide all documents listed above.

EQp2: Environmental tobacco smoke (ETS) control

- Cal Green streamlined option available.
- Scaled site plan or map showing the location of designated outdoor smoking and no-smoking areas, location of property line, and site boundary and indicating 25-foot (7.5-meter) distance from building openings.

EQc1: Enhanced indoor air quality strategies

- Option 1
 - Entryway systems:
 - Scaled floor plans showing locations and measurements.
 - o Interior cross-contamination prevention:
 - List of rooms, areas, exhaust rate, separation method
 - Filtration:
 - Mechanical schedules highlighting MERV or class ratings for all units that supply outdoor air.
 - Natural ventilation design:
 - Calculations and narrative demonstrating appropriate strategies per the reference standard.
 - Mixed mode design:
 - Calculations and narrative demonstrating appropriate strategies per the reference standard.
- Option 2
 - Exterior contamination prevention:
 - Narrative describing type of modeling; model output reports highlighting contaminant levels and required thresholds.
 - Increased ventilation:
 - Confirmation (calculations are documented under EQ pre-requisite Minimum IAQ performance)

- CO2 monitoring:
 - List of densely occupied spaces, space type, design CO2 concentrations, floor plan showing sensor locations, narrative describing CO2 set points.
- Additional source control and monitoring:
 - Description of likely air contaminants and how they were identified, description of materials handling plan, plans showing installed monitoring system.
- Natural ventilation:
 - Room-by-room calculations, narrative, and diagrams demonstrating effective natural ventilation per referenced standard.

EQc2: Low-emitting materials

- USGBC Low-Emitting Materials Calculator
- Product information (e.g., Material Safety Data Sheet (MSDS), third-party certifications, testing reports)

EQc3 Construction IAQ management plan

- Cal Green streamlined option available.
- IAQ management plan or detailed checklist, highlighting nonsmoking policy.
- Environmental Quality Management Plan (EQMP) or detailed checklist, highlighting nonsmoking policy.
- Narrative describing protection measures for absorbent materials.
- Annotated photographs of indoor air and environmental quality measures.
- Record of filtration media

EQc4: IAQ assessment

- Option 1: flush out report
- Option 2: air quality testing report

EQc5: Thermal comfort

- Description of weather data used to determine operative temperatures, relative humidity, outdoor temperatures.
- Plots of calculation results verifying that design parameters meet ASHRAE Standard 55-2010 for 80% acceptability (e.g. Psychometric chart; predicted mean vote (PMV) or predicted percentage dissatisfied (PPD) calculations; ASHRAE Thermal comfort tool results; copy of ASHRAE 55-2010, Figure 5.2.4.1, Figure 5.2.4.3, or Figure 5.2.4.4; or predicted worst-case indoor conditions for each month on copy of Figure 5.3).
- Documentation to verify thermally conditioned spaces meet ISO 7730 or EN 15251, as applicable (e.g for ISO, calculations based on Sections 4.1 or Annex H, computer program results based on Annex D, tables based on Annex E, or copy of Figures 2, 3, 4, A.1, A.2; for EN, documentation of worst-case indoor conditions for each month).
- List of spaces by type, quantity, and controls.
- List of regularly occupied bulk storage, sorting, and distribution areas.

EQc6: Interior lighting

- Option 1
 - o Table of individual occupant and multi-occupant spaces and lighting controls in each space.
- Option 2:
 - Table of regularly occupied spaces and associated lighting details.
 - Calculations of total connected lighting load.
 - Lighting details, including manufacturer and model, results of estimations, or in situ or laboratory photometric tests.
 - List of ceiling, wall, and floor surfaces and their associated surface reflectance values.
 - o List of work surfaces and movable partitions and their associated surface reflectance values.
 - Average surface reflectance calculations
 - List of work surfaces and illuminance values (lux).
 - List of wall or ceiling surfaces with illuminance values (lux).
 - Illuminance ratio calculations

EQc7: Daylight

- Floor plans highlighting regularly occupied spaces (for healthcare, regularly occupied perimeter area).
- List of compliant spaces with their annual summary values for Spatial Daylight Autonomy (SDA) and Annual Solar Exposure (ASE).
- · Geometric plots from simulations.
- Narrative or output file describing daylight simulation program, simulation inputs, and weather file.
- List of compliant spaces, with their calculated illuminance values.

EQc8: Quality views

- List of all regularly occupied spaces, qualifying floor area in each space, and view features.
- Sections, elevations, diagrams, renderings, or photos indicating sight lines to glazing do not encourage permanent interior obstructions.
- Floor plans or diagrams identifying regularly occupied spaces have:
 - o Multiple lines of sight for each regularly occupied space.

 Sight lines and exterior features labeled: provide multiple floor plans if view features change at varying building heights.

EQc9: Acoustic performance

- HVAC background noise
 - Occupied space sound level values
 - o Calculation, measurement narrative, or manufacturer's data
- Noise reduction narrative
- Sound isolation
 - Sound Transmission Class (STC) rating for space adjacencies.
- Reverberation time
 - Reverberation time criteria for each room.
- Sound reinforcement and masking systems
 - o List of all large conference rooms and auditoriums.
 - Explanation of sounds reinforcement technology (if installed).
 - o Explanation of sound reinforcement system components and specifications (if installed).

Innovation and Design Process (ID)

Innovation in Design credits are awarded based on the description of the implementation strategy credit and the requirements in the LEED Innovation in Design Credit catalog.

- Examples can include:
 - o Green Building Education
 - o LEED Operation and Maintenance (O+M) Starter Kit: Green Cleaning Policy
 - o Design for Active Occupants
- Exemplary performance credits can be earned by meeting the threshold requirements of credits with available pathways. The credits with available exemplary performance pathways:
 - o LTc3: Pursue option 2 in addition to option 1.
 - o LTc5: Double the highest transit service point threshold.
 - o LTc7: Choose the applicable option:
 - Case 1: Achieve a 60% parking reduction from the base ratios.
 - Case 2: Achieve an 80% parking reduction from the base ratios.
 - SSc4: Manage 100% of rainwater that falls within the project boundary.
 - SSc5: Achieve both options 1 and 2. Locate 100% of parking under cover.
 - WEc2: Achieve 55% water use reduction.
 - EAc2: Achieve at least 45% energy savings.
 - EAc5: Renewable energy must account of 15% of total energy. CS projects = 10%.
 - o MRc1: Choose the applicable option:
 - Option 1: Not available
 - Options 2: Not Available
 - Option 3: Reuse 95% of the building.
 - Option 4: Achieve any improvement over required credit thresholds in all six impact measures.
 - o MRc2: Choose the applicable option:
 - Option 1: Source at least 40 qualifying products from five manufacturers.
 - Option 2: Purchase 75%, by cost, of permanently installed building products that meet the required attributes.
 - o MRc3: Choose the applicable option:
 - Option 1: Source at least 40 products from five manufacturers.
 - Option 2: Purchase 50%, by cost, of the total value of permanently installed building products that meet the responsible extraction criteria.
 - o MRc5: Achieve both Option 1 (either Path 1 or Path 2) and Option 2.
 - EQc1: Achieve both Option 1 and Option 2 and incorporate an additional Option 2 strategy.
 - EQc2: Option 1: Earn all points and reach 100% of products.
 - EQc8: Meet the requirements for 90% of the regularly occupied spaces.

IDc2: LEED Accredited Professional (AP)

 Provide a certificate for the LEED AP working on the project with the cover letter provided with the supplemental report.

Regional Priority (RP)

Regional priority credits are awarded for achieving any of 6 points specific to the Menlo Park area identified below up to four points total:

- RP 1.1 Regional Priority Opt 1 EA: Optimize energy
- RP 1.2 Regional Priority Opt 2 SS: Access to quality transit
- RP 1.3 Regional Priority Opt 3 MR: Building life-cycle impact reduction

- RP 1.4 Regional Priority Opt 4 - Building product disclosure and optimization - sourcing of raw materials
- RP 1.5 Regional Priority Opt 5 - Rainwater management Regional Priority Opt 6 - Indoor water use reduction
- RP 1.6