

SWIRE COLD STORAGE VIETNAM – BAC NINH BRANCH

PREREQUISITES & CREDITS INFORMATIONS

SUSTAINABLE SITES

✦ Ss p1: Construction Activity Pollution Prevention Required

Intent

To reduce pollution from construction activities by controlling soil erosion, waterway sedimentation and airborne dust generation.

Requirements

Create and implement an erosion and sedimentation control plan for all construction activities associated with the project. The plan must conform to the erosion and sedimentation requirements of the 2003 EPA Construction

General Permit OR local standards and codes, whichever is more stringent. The plan must describe the measures implemented to accomplish the following objectives:

- To prevent loss of soil during construction by storm water runoff and/or wind erosion, including protecting topsoil by stockpiling for reuse.
- To prevent sedimentation of storm sewers or receiving streams.
- To prevent pollution of the air with dust and particulate matter.

The EPA's construction general permit outlines the provisions necessary to comply with Phase I and Phase II of the National Pollutant Discharge Elimination System (NPDES) program. While the permit only applies to construction sites greater than 1 acre, the requirements are applied to all projects for the purposes of this prerequisite. Information on the EPA construction general permit is available at <http://cfpub.epa.gov/npdes/stormwater/cgp.cfm>.

Potential technologies & Strategies

Create an erosion and sedimentation control plan during the design phase of the project. Consider employing strategies such as temporary and permanent seeding, mulching, earthen dikes, silt fencing, sediment traps and sediment basins.

Project Compliance

The project has implemented an Erosion and Sedimentation Control (ESC) Plan that conforms to the 2003 EPA Construction General Permit (CGP).

SS c1: Site Selection

Intent

To avoid the development of inappropriate sites and reduce the environmental impact from the location of a building on a site.

Requirements

Do not develop buildings, hardscape, roads or parking areas on portions of sites that meet any of the following criteria:

- Prime farmland as defined by the U.S. Department of Agriculture in the United States Code of Federal Regulations, Title 7, Volume 6, Parts 400 to 699, Section 657.5 (citation 7CFR657.5).
- Previously undeveloped land whose elevation is lower than 5 feet above the elevation of the 100-year flood as defined by the Federal Emergency Management Agency (FEMA).
- Land specifically identified as habitat for any species on federal or state threatened or endangered lists.
- Land within 100 feet of any wetlands as defined by the U.S. Code of Federal Regulations 40 CFR, Parts 230-233 and Part 22, and isolated wetlands or areas of special concern identified by state or local rule, OR within setback distances from wetlands prescribed in state or local regulations, as defined by local or state rule or law, whichever is more stringent.
- Previously undeveloped land that is within 50 feet of a water body, defined as seas, lakes, rivers, streams and tributaries that support or could support fish, recreation or industrial use, consistent with the terminology of the Clean Water Act.
- Land that prior to acquisition for the project was public parkland, unless land of equal or greater value as parkland is accepted in trade by the public landowner (park authority projects are exempt).

Potential technologies & Strategies

During the site selection process, give preference to sites that do not include sensitive elements or restrictive land types. Select a suitable building location and design the building with a minimal footprint to minimize disruption of the environmentally sensitive areas identified above.

Project Compliance

The project does not meet any of the prohibited criteria.

✚ SS c4.1: alternative transportation—public transportation access

Intent

To reduce pollution and land development impacts from automobile use.

Requirements

Option 1. Rail Station Proximity

Locate the project within 1/2-mile walking distance (measured from a main building entrance) of an existing or planned and funded commuter rail, light rail or subway station.

OR

Option 2. Bus Stop Proximity

Locate the project within 1/4-mile walking distance (measured from a main building entrance) of 1 or more stops for 2 or more public, campus, or private bus lines usable by building occupants.

Potential technologies & Strategies

Perform a transportation survey of future building occupants to identify transportation needs. Locate the building near mass transit.

Project Compliance

There is a shuttle bus from the warehouse to nearby public bus stop of 01 routes public bus and 1 Private bus:

- Phu Khe – VSIP Industrial Zone (Public bus)
- Shuttle bus provided by Swire

=> To promote the Company staff to use public bus transportation, reduce pollution and land development impacts from automobile use.

✚ SS c4.2: alternative transportation—Bicycle Storage and Changing rooms.

Intent

To reduce pollution and land development impacts from automobile use.

Requirements

Case 1. Commercial or institutional Projects

Provide secure bicycle racks and/or storage within 200 yards of a building entrance for 5% or more of all building users (measured at peak periods)

Provide shower and changing facilities in the building, or within 200 yards of a building entrance, for 0.5% of full-time equivalent (FTE) occupants.

Case 2. Residential Projects

Provide covered storage facilities for securing bicycles for 15% or more of building occupants.

Potential technologies & Strategies

Design the building with transportation amenities such as bicycle racks and shower/changing facilities.

Project Compliance

Design the building with transportation amenities such as bicycle racks and shower/ changing facilities.

- Total bicycle storage spaces: 8 spaces.
- Total showers/ changing rooms: 2 rooms

=> To reduce pollution and land development impacts from automobile use.

🚦 SS c4.3: Alternative Transportation - Low-emitting and Fuel-efficient Vehicles

Intent

To reduce pollution and land development impacts from automobile use.

Requirements

Option 1

Provide preferred parking 1 for low-emitting and fuel-efficient vehicles 2 for 5% of the total vehicle parking capacity of the site. Providing a discounted parking rate is an acceptable substitute for preferred parking for low-emitting/fuel-efficient vehicles. To establish a meaningful incentive in all potential markets, the parking rate must be discounted at least 20%. The discounted rate must be available to all customers (i.e., not limited to the number of customers equal to 5% of the vehicle parking capacity), publicly posted at the entrance of the parking area and available for a minimum of 2 years.

OR

Option 2

Install alternative-fuel fueling stations for 3% of the total vehicle parking capacity of the site. Liquid or gaseous fueling facilities must be separately ventilated or located outdoors.

OR

Option 3

Provide low-emitting and fuel-efficient vehicles 1 for 3% of full-time equivalent (FTE) occupants.

Provide preferred parking 2 for these vehicles.

OR

Option 4

Provide building occupants access to a low-emitting or fuel-efficient vehicle-sharing program. The following requirements must be met:

- One low-emitting or fuel-efficient vehicle must be provided per 3% of FTE occupants, assuming that 1 shared vehicle can carry 8 persons (i.e., 1 vehicle per 267 FTE occupants). For buildings with fewer than 267 FTE occupants, at least 1 low emitting or fuel-efficient vehicle must be provided.
- A vehicle-sharing contract must be provided that has an agreement of at least 2 years.
- The estimated number of customers served per vehicle must be supported by documentation.
- A narrative explaining the vehicle-sharing program and its administration must be submitted.
- Parking for low-emitting and fuel-efficient vehicles must be located in the nearest available spaces in the nearest available parking area. Provide a site plan or area map clearly highlighting the walking path from the parking area to the project site and noting the distance.

Potential technologies & Strategies

Provide transportation amenities such as alternative-fuel refueling stations. Consider sharing the costs and benefits of refueling stations with neighbors.

Project Compliance

- Total parking spaces: 09 spaces.
- Parking for Low emission & Fuel Efficient Vehicles: 01 space.
=> To reduce pollution and land development impacts from automobile use

✚ SS c4.4: alternative transportation—parking Capacity

Intent

To reduce pollution and land development impacts from automobile use.

Requirements

Case 1. Non-residential Projects

Option 1

Size parking capacity to meet but not exceed minimum local zoning requirements.
Provide preferred parking for carpools or vanpools for 5% of the total parking spaces.

OR

Option 2

For projects that provide parking for less than 5% of full-time equivalent (FTE) building occupants: Provide preferred parking for carpools or vanpools, marked as such, for 5% of total parking spaces. Providing a discounted parking rate is an acceptable substitute for preferred parking for carpool or vanpool vehicles. To establish a meaningful incentive in all potential markets, the parking rate must be discounted at least 20%. The discounted rate must be available to all customers (i.e., not limited to the number of customers equal to 5% of the vehicle parking capacity), publicly posted at the entrance of the parking area, and available for a minimum of 2 years.

OR

Option 3

Provide no new parking.

Case 2. Residential Projects

Option 1

Size parking capacity to meet but not exceed minimum local zoning requirements

Provide infrastructure and support programs to facilitate shared vehicle use such as carpool drop-off areas, designated parking for vanpools, car-share services, ride boards and shuttle services to mass transit.

Option 2

Provide no new parking.

Case 3. Mixed use (residential with Commercial/retail) Projects

Option 1

Mixed-use buildings with less than 10% commercial area must be considered residential and adhere to the residential requirements in Case 2. For mixed-use buildings with more than 10% commercial area, the commercial space must adhere to non-residential requirements in Case 1 and the residential component must adhere to residential requirements in Case 2.

OR

Option 2

Provide no new parking.

Potential technologies & Strategies

Minimize parking lot/garage size. Consider sharing parking facilities with adjacent buildings. Consider alternatives that will limit the use of single occupancy vehicles.

Project Compliance

- Total parking spaces: 09 spaces.
 - Parking for vanpool: 01 space.
- => To reduce pollution and land development impacts from automobile use.

🚧 SS c5.1: Site Development—Protect or restore habitat

Intent

To conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity.

Requirements

Case 1. Greenfield sites

Limit all site disturbance to the following parameters:

- 40 feet beyond the building perimeter;
- 10 feet beyond surface walkways, patios, surface parking and utilities less than 12 inches in diameter;
- 15 feet beyond primary roadway curbs and main utility branch trenches;
- 25 feet beyond constructed areas with permeable surfaces (such as pervious paving areas, storm water detention facilities and playing fields) that require additional staging areas to limit compaction in the constructed area.

Case 2. Previously Developed areas or Graded sites

Restore or protect a minimum of 50% of the site (excluding the building footprint) or 20% of the total site area (including building footprint), whichever is greater, with native or adapted vegetation³. Projects earning SS Credit 2: Development Density and Community Connectivity may include vegetated roof surface in this calculation if the plants are native or adapted, provide habitat, and promote biodiversity.

Potential technologies & Strategies

Preserve and enhance natural site elements, including existing water bodies, soil conditions, ecosystems, trees, and other vegetation. Identify opportunities for site improvements that would increase the area of native and adapted vegetation or other ecologically appropriate features.

Restoration and maintenance activities might include removing unnecessary paved areas and replacing them with landscaped areas, or replacing large lawns with native or adapted plantings to promote biodiversity and provide habitat to native animals. If possible, connect protected or restored areas to habitat corridors adjacent to the project site.

During the construction process, establish clearly marked construction and disturbance boundaries and note the site protection requirements in construction documents. The contractor should delineate lay-down, recycling, and disposal areas and use paved areas for staging activities. Erecting construction fencing around the dripline of existing trees will protect them from damage and soil compaction by construction vehicles. Consider the costs and benefits of contractual penalties if protected areas outside the construction boundaries are destroyed. The contractor should coordinate infrastructure construction to minimize the disruption of the site and work with existing topography to limit cut-and-fill efforts for the project.

Project Compliance

Site area restored or protected (Green area): 9,230 m²

=> To conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity.

🚧 SS c5.2: Site Development—Maximize open Space

Intent

To promote biodiversity by providing a high ratio of open space to development footprint.

Requirements

Case 1. Sites with Local Zoning open space requirements

Reduce the development footprint and/or provide vegetated open space within the project boundary such that the amount of open space exceeds local zoning requirements by 25%.

Case 2. Sites with No Local Zoning requirements (e.g. some university campuses, military bases)

Provide a vegetated open space area adjacent to the building that is equal in area to the building footprint.

Case 3. Sites with Zoning ordinances but No open space requirements

Provide vegetated open space equal to 20% of the project site area.

All Cases

For projects in urban areas that earn SS Credit 2: Development Density and Community Connectivity, vegetated roof areas can contribute to credit compliance.

For projects in urban areas that earn SS Credit 2: Development Density and Community Connectivity, pedestrian-oriented hardscape areas can contribute to credit compliance. For such projects, a minimum of 25% of the open space counted must be vegetated.

Wetlands or naturally designed ponds may count as open space and the side slope gradients average 1:4 (vertical: horizontal) or less and are vegetated.

Potential technologies & Strategies

Perform a site survey to identify site elements and adopt a master plan for developing the project site. Select a suitable building location and design the building footprint to minimize site disruption. Strategies include stacking the building program, tuck-under parking and sharing parking facilities with neighbors to maximize the amount of open space on the site.

Project Compliance

Site area restored or protected (Green area): 9,230 m²

=> To promote biodiversity by providing a high ratio of open space to development footprint.

🚧 SS c7.1: Heat island effect—Non roof

Intent

To reduce heat islands to minimize impacts on microclimates and human and wildlife habitats.

Requirements

Option 1

- Use any combination of the following strategies for 50% of the site hardscape (including roads, sidewalks, courtyards and parking lots):
- Provide shade from the existing tree canopy or within 5 years of landscape installation. Landscaping (trees) must be in place at the time of occupancy.
- Provide shade from structures covered by solar panels that produce energy used to offset some nonrenewable resource use.

- Provide shade from architectural devices or structures that have a solar reflectance index 2 (SRI) of at least 29.
- Use hardscape materials with an SRI of at least 29.
- Use an open-grid pavement system (at least 50% pervious).

OR

Option 2

Place a minimum of 50% of parking spaces under cover 3. Any roof used to shade or cover parking must have an SRI of at least 29, be a vegetated green roof or be covered by solar panels that produce energy used to offset some nonrenewable resource use.

Potential technologies & Strategies

Employ strategies, materials and landscaping techniques that reduce the heat absorption of exterior materials. Use shade (calculated on June 21, noon solar time) from native or adapted trees and large shrubs, vegetated trellises or other exterior structures supporting vegetation. Consider using new coatings and integral colorants for asphalt to achieve light-colored surfaces instead of blacktop. Position photovoltaic cells to shade impervious surfaces.

Consider replacing constructed surfaces (e.g., roof, roads, sidewalks, etc.) with vegetated surfaces such as vegetated roofs and open grid paving or specify high-albedo materials, such as concrete, to reduce heat absorption.

Project Compliance

Parking under cover, and 100% of the base building on-site parking is located underground or under cover.

- Total parking spaces: 09 spaces
- Parking spaces under cover: 09 spaces
- Qualifying parking spaces: 100%
- Roof materials of Parking: SRI = 84

=> To reduce heat islands to minimize impacts on microclimates and human and wildlife habitats

SS c7.2: heat island effect—roof

Intent

To reduce heat islands to minimize impacts on microclimates and human and wildlife habitats.

Requirements

Option 1

Use roofing materials with a solar reflectance index (SRI) equal to or greater than the values in the table below for a minimum of 75% of the roof surface.

Roofing materials having a lower SRI value than those listed below may be used if the weighted rooftop SRI average meets the following criteria:

$$\frac{\text{Area Roof Meeting Minimum SRI}}{\text{Total Roof Area}} \times \frac{\text{SRI of Installed Roof}}{\text{Required SRI}} \geq 75\%$$

Roof Type	Slope	SRI
Low-sloped roof	≤ 2:12	78
Steep-sloped roof	> 2:12	29

OR

Option 2

Install a vegetated roof that covers at least 50% of the roof area.

OR

Option 3

Install high-albedo and vegetated roof surfaces that, in combination, meet the following criteria:

$$\frac{\text{Area Roof Meeting Minimum SRI}}{0.75} + \frac{\text{Area of Vegetated Roof}}{0.5} \geq \text{Total Roof Area}$$

Roof Type	Slope	SRI
Low-sloped roof	≤ 2:12	78
Steep-sloped roof	> 2:12	29

Potential technologies & Strategies

Consider installing high-albedo and vegetated roofs to reduce heat absorption. Default values will be available in the LEED Reference Guide for Green Building Design and Construction, 2009 Edition. Product information is available from the Cool Roof Rating Council Web site at <http://www.coolroofs.org/> and the ENERGY STAR Web site at <http://www.energystar.gov/>.

Project Compliance

- Roof materials of Workshop and Canteen, low-sloped (SRI = 84)
- Total area of qualifying high-albedo roof: 6,467.25 m²
- Total roof area, excluding mechanical equipment, photovoltaic panels, and skylights : 6,395.14 m²
- Percentage of high-albedo roof: 93.9 %

=> To reduce heat islands to minimize impacts on microclimates and human and wildlife habitats.

✚ SS c8: Light pollution reduction

Intent

To minimize light trespass from the building and site, reduce sky-glow to increase night sky access, improve nighttime visibility through glare reduction and reduce development impact from lighting on nocturnal environments.

Requirements

Project teams must comply with 1 of the 2 options for interior lighting AND the requirement for exterior lighting.

For Interior Lighting

Option 1

Reduce the input power (by automatic device) of all nonemergency interior luminaires with a direct line of sight to any openings in the envelope (translucent or transparent) by at least 50% between 11 p.m. and 5 a.m.

After-hours override may be provided by a manual or occupant-sensing device provided the override lasts no more than 30 minutes.

OR

Option 2

All openings in the envelope (translucent or transparent) with a direct line of sight to any nonemergency luminaires must have shielding (controlled/closed by automatic device for a resultant transmittance of less than 10% between 11 p.m. and 5 a.m.).

For Exterior Lighting

Light areas only as required for safety and comfort. Lighting power densities must not exceed ANSI/ASHRAE/IESNA Standard 90.1-2007 (with errata but without addenda 1) for the classified zone. Meet exterior lighting control requirements from ANSI/ASHRAE/IESNA Standard 90.1-2007 (with errata but without addenda 1) Exterior Lighting Section, without amendments.

Classify the project under 1 of the following zones, as defined in IESNA RP-33, and follow all the requirements for that zone:

LZ1: Dark (developed areas within national parks, state parks, forest land and rural areas)

Design exterior lighting so that all site and building-mounted luminaires produce a maximum initial illuminance value no greater than 0.01 horizontal and vertical foot candles at the site boundary and beyond.

Document that 0% of the total initial designed fixture lumens (sum total of all fixtures on site) are emitted at an angle of 90 degrees or higher from nadir (straight down).

LZ2: Low (primarily residential zones, neighborhood business districts, light industrial areas with limited nighttime use and residential mixed-use areas)

Design exterior lighting so that all site and building-mounted luminaires produce a maximum initial illuminance value no greater than 0.10 horizontal and vertical foot candles at the site boundary and no greater than 0.01 horizontal foot candles 10 feet beyond the site boundary. Document that no more than 2% of the total initial designed fixture lumens (sum total of all fixtures on site) are emitted at an angle of 90 degrees or higher from nadir (straight down).

LZ3: Medium (all other areas not included in LZ1, LZ2 or LZ4, such as commercial/ industrial, and high-density residential)

Design exterior lighting so that all site and building-mounted luminaires produce a maximum initial illuminance value no greater than 0.20 horizontal and vertical foot candles at the site boundary and no greater than 0.01 horizontal foot candles 15 feet beyond the site. Document that no more than 5% of the total initial designed fixture lumens (sum total of all fixtures on site) are emitted at an angle of 90 degrees or higher from nadir (straight down).

LZ4: High 2 (high-activity commercial districts in major metropolitan areas)

Design exterior lighting so that all site and building-mounted luminaires produce a maximum initial illuminance value no greater than 0.60 horizontal and vertical foot candles at the site boundary and no greater than 0.01 horizontal foot candles 15 feet beyond the site. Document that no more than 10% of the total initial designed fixture lumens (sum total of all fixtures on site) are emitted at an angle of 90 degrees or higher from nadir (straight down).

LZ2, LZ3 and LZ4 - For site boundaries that abut public rights-of-way, light trespass requirements may be met relative to the curb line instead of the site boundary.

For All Zones

Illuminance generated from a single luminaire placed at the intersection of a private vehicular driveway and public roadway accessing the site is allowed to use the centerline of the public roadway as the site boundary for a length of 2 times the driveway width centered at the centerline of the driveway.

Potential technologies & Strategies

Adopt site lighting criteria to maintain safe light levels while avoiding off-site lighting and night sky pollution.

Minimize site lighting where possible, and use computer software to model the site lighting. Technologies to reduce light pollution include full cutoff luminaires, low-reflectance surfaces and low-angle spotlights.

Project Compliance

- Light using: PHILIPS BVP506 110W; PHILIPS BVP506 46W
- LEED requirement:
 - o At the boundary: no greater than 0.2 fc
 - o 15 feet beyond the site: 0.01 fc
- Performance:
 - o At the boundary: 0.19 fc
 - o 15 feet beyond the site: 0.01 fc

=> To reduce development impact from lighting on external environments.

WATER EFFICIENCY

WEp1: We prerequisite 1: Water Use reduction

Intent

To increase water efficiency within buildings to reduce the burden on municipal water supply and wastewater systems.

Requirements

Employ strategies that in aggregate use 20% less water than the water use baseline calculated for the building (not including irrigation).

Calculate the baseline according to the commercial and/or residential baselines outlined below. Calculations are based on estimated occupant usage and must include only the following fixtures and fixture fittings (as applicable to the project scope): water closets, urinals, lavatory faucets, showers, kitchen sink faucets and prerinse spray valves.

Commercial Fixtures, Fittings, and Appliances	Current Baseline
Commercial toilets	1.6 gallons per flush (gpf)* Except blow-out fixtures: 3.5 (gpf)
Commercial urinals	1.0 (gpf)
Commercial lavatory (restroom) faucets	2.2 gallons per minute (gpm) at 60 pounds per square inch (psi), private applications only (hotel or motel guest rooms, hospital patient rooms) 0.5 (gpm) at 60 (psi)** all others except private applications 0.25 gallons per cycle for metering faucets
Commercial prerinse spray valves (for food service applications)	Flow rate \leq 1.6 (gpm) (no pressure specified; no performance requirement)

Residential Fixtures, Fittings, and Appliances	Current Baseline
Residential toilets	1.6 (gpf)***
Residential lavatory (bathroom) faucets	2.2 (gpm) at 60 psi
Residential kitchen faucet	
Residential showerheads	2.5 (gpm) at 80 (psi) per shower stall****
<p>* EPAct 1992 standard for toilets applies to both commercial and residential models.</p> <p>** In addition to EPAct requirements, the American Society of Mechanical Engineers standard for public lavatory faucets is 0.5 gpm at 60 psi (ASME A112.18.1-2005). This maximum has been incorporated into the national Uniform Plumbing Code and the International Plumbing Code.</p> <p>*** EPAct 1992 standard for toilets applies to both commercial and residential models.</p> <p>**** Residential shower compartment (stall) in dwelling units: The total allowable flow rate from all flowing showerheads at any given time, including rain systems, waterfalls, bodysprays, bodyspas and jets, must be limited to the allowable showerhead flow rate as specified above (2.5 gpm) per shower compartment, where the floor area of the shower compartment is less than 2,500 square inches. For each increment of 2,500 square inches of floor area thereafter or part thereof, an additional showerhead with total allowable flow rate from all flowing devices equal to or less than the allowable flow rate as specified above must be allowed. Exception: Showers that emit recirculated nonpotable water originating from within the shower compartment while operating are allowed to exceed the maximum as long as the total potable water flow does not exceed the flow rate as specified above.</p>	

The following fixtures, fittings and appliances are outside the scope of the water use reduction calculation:

- Commercial Steam Cookers
- Commercial Dishwashers
- Automatic Commercial Ice Makers
- Commercial (family sized) Clothes Washers
- Residential Clothes Washers
- Standard and Compact Residential Dishwashers

Potential technologies & Strategies

Water Sense-certified fixtures and fixture fittings should be used where available. Use high-efficiency fixtures (e.g., water closets and urinals) and dry fixtures, such as toilets attached to composting systems, to reduce potable water demand. Consider using alternative on-site sources of water (e.g., rainwater, storm water, and air conditioner condensate) and graywater for non-potable applications such as custodial uses and toilet and urinal flushing. The quality of any alternative source of water used must be taken into consideration based on its application or use.

Project Compliance

Water use reduction: 46.72 %

WEc1: Water efficient landscaping

Intent

To limit or eliminate the use of potable water or other natural surface or subsurface water resources available on or near the project site for landscape irrigation.

Requirements

Option 1. Reduce by 50%

Reduce potable water consumption for irrigation by 50% from a calculated midsummer baseline case.

Reductions must be attributed to any combination of the following items:

- Plant species, density and microclimate factor
- Irrigation efficiency
- Use of captured rainwater
- Use of recycled wastewater
- Use of water treated and conveyed by a public agency specifically for non-potable uses

Groundwater seepage that is pumped away from the immediate vicinity of building slabs and foundations may be used for landscape irrigation to meet the intent of this credit. However, the project team must demonstrate that doing so does not affect site storm water management systems.

OR

Option 2. No Potable water use or irrigation

Meet the requirements for Option 1.

AND

Path 1

Use only captured rainwater, recycled wastewater, recycled graywater or water treated and conveyed by a public agency specifically for non-potable uses for irrigation.

OR

Path 2

Install landscaping that does not require permanent irrigation systems. Temporary irrigation systems used for plant establishment are allowed only if removed within 1 year of installation.

Potential technologies & Strategies

Perform a soil/climate analysis to determine appropriate plant material and design the landscape with native or adapted plants to reduce or eliminate irrigation requirements. Where irrigation is required, use high-efficiency equipment and/or climate-based controllers.

Project Compliance

- Effective rainwater collection: 7,349 m³ (whole years); 1,198 m³ (in July)
- Average irrigation demand in dry day: 1,103 m³ (whole years); 62 m³ (in July)

=> Don't need potable water for irrigation

=> To promote landscape designs which incorporate native species and limit the use of domestic water for irrigation.

WE c2: Innovative wastewater technologies

Intent

To reduce wastewater generation and potable water demand while increasing the local aquifer recharge.

Requirements

Option 1

Reduce potable water use for building sewage conveyance by 50% through the use of water-conserving fixtures (e.g., water closets, urinals) or non-potable water (e.g., captured rainwater, recycled graywater, on-site or municipally treated wastewater).

OR

Option 2

Treat 50% of wastewater on-site to tertiary standards. Treated water must be infiltrated or used on-site.

Potential technologies & Strategies

Specify high-efficiency fixtures and dry fixtures (e.g., composting toilet systems, non-water-using urinals) to reduce wastewater volumes. Consider reusing storm water or graywater for sewage conveyance or on-site mechanical and/or natural wastewater treatment systems. Options for on-site wastewater treatment include packaged biological nutrient removal systems, constructed wetlands and high-efficiency filtration systems.

Project Compliance

- Total volume of water demand for flushing toilet: 492.745 L (whole years)
- Effective rainwater collection: 249.925 L (whole years)

=> Don't need portable water for sewage conveyance.

- All irrigation water and flushing toilet water would be used from Rainwater harvesting.

=> To reduce wastewater generation and potable water demand while increasing the local aquifer recharge.

WE c3: Water Use reduction

Intent

To further increase water efficiency within buildings to reduce the burden on municipal water supply and wastewater systems.

Requirements

Employ strategies that in aggregate use less water than the water use baseline calculated for the building (not including irrigation). The minimum water savings percentage for each point threshold is as follows:

Percentage Reduction	Points
30%	2
35%	3
40%	4

Calculate the baseline according to the commercial and/or residential baselines outlined below. Calculations are based on estimated occupant usage and must include only the following fixtures and fixture fittings (as applicable to the project scope): water closets, urinals, lavatory faucets, showers, kitchen sink faucets and pre-rinse spray valves.

Commercial Fixtures, Fittings, and Appliances	Current Baseline
Commercial toilets	1.6 gallons per flush (gpf)* Except blow-out fixtures: 3.5 (gpf)
Commercial urinals	1.0 (gpf)
Commercial lavatory (restroom) faucets	2.2 gallons per minute (gpm) at 60 pounds per square inch (psi), private applications only (hotel or motel guest rooms, hospital patient rooms) 0.5 (gpm) at 60 (psi)** all others except private applications 0.25 gallons per cycle for metering faucets
Commercial pre-rinse spray valves (for food service applications)	Flow rate \leq 1.6 (gpm) (no pressure specified; no performance requirement)

Residential Fixtures, Fittings, and Appliances	Current Baseline
Residential toilets	1.6 (gpf)***
Residential lavatory (bathroom) faucets	2.2 (gpm) at 60 psi
Residential kitchen faucet	
Residential showerheads	2.5 (gpm) at 80 (psi) per shower stall****

Residential Fixtures, Fittings, and Appliances	Current Baseline
<p>* EPAct 1992 standard for toilets applies to both commercial and residential models.</p> <p>** In addition to EPAct requirements, the American Society of Mechanical Engineers standard for public lavatory faucets is 0.5 gpm at 60 psi (ASME A112.18.1-2005). This maximum has been incorporated into the national Uniform Plumbing Code and the International Plumbing Code.</p> <p>*** EPAct 1992 standard for toilets applies to both commercial and residential models.</p> <p>**** Residential shower compartment (stall) in dwelling units: The total allowable flow rate from all flowing showerheads at any given time, including rain systems, waterfalls, bodysprays, bodyspas and jets, must be limited to the allowable showerhead flow rate as specified above (2.5 gpm) per shower compartment, where the floor area of the shower compartment is less than 2,500 square inches. For each increment of 2,500 square inches of floor area thereafter or part thereof, an additional showerhead with total allowable flow rate from all flowing devices equal to or less than the allowable flow rate as specified above must be allowed. Exception: Showers that emit recirculated nonpotable water originating from within the shower compartment while operating are allowed to exceed the maximum as long as the total potable water flow does not exceed the flow rate as specified above.</p>	

Project Compliance

Water use reduction: 46.72 %

ENERGY AND ATMOSPHERE

EA p1: Fundamental Commissioning of Building energy Systems

Intent

To verify that the project's energy-related systems are installed, and calibrated to perform according to the owner's project requirements, basis of design and construction documents.

Benefits of commissioning include reduced energy use, lower operating costs, fewer contractor callbacks, better building documentation, improved occupant productivity and verification that the systems perform in accordance with the owner's project requirements.

Requirements

The following commissioning process activities must be completed by the project team:

- Designate an individual as the commissioning authority (CxA) to lead, review and oversee the completion of the commissioning process activities.
- The CxA must have documented commissioning authority experience in at least 2 building projects.
- The individual serving as the CxA must be independent of the project design and construction management, though the CxA may be an employee of any firm providing those services. The CxA may be a qualified employee or consultant of the owner.
- The CxA must report results, findings and recommendations directly to the owner.
- For projects smaller than 50,000 gross square feet, the CxA may be a qualified person on the design or construction team who has the required experience.
- The owner must document the owner's project requirements. The design team must develop the basis of design. The CxA must review these documents for clarity and completeness. The owner and design team must be responsible for updates to their respective documents.
- Develop and incorporate commissioning requirements into the construction documents.
- Develop and implement a commissioning plan.
- Verify the installation and performance of the systems to be commissioned.
- Complete a summary commissioning report.

Commissioned systems

Commissioning process activities must be completed for the following energy-related systems, at a minimum:

- Heating, ventilating, air conditioning and refrigeration (HVAC&R) systems (mechanical and passive) and associated controls
- Lighting and daylighting controls
- Domestic hot water systems
- Renewable energy systems (e.g., wind, solar)

Potential technologies & Strategies

Engage a CxA as early as possible in the design process. Determine the owner's project requirements, develop and maintain a commissioning plan for use during design and construction and incorporate commissioning requirements in bid documents. Assemble the commissioning team, and prior to occupancy verify the performance of energy consuming systems. Complete the commissioning reports with recommendations prior to accepting the commissioned systems.

Owners are encouraged to seek out qualified individuals to lead the commissioning process. Qualified individuals are identified as those who possess a high level of experience in the following areas:

- Energy systems design, installation and operation
- Commissioning planning and process management
- Hands-on field experience with energy systems performance, interaction, start-up, balancing, testing, troubleshooting, operation and maintenance procedures
- Energy systems automation control knowledge

Owners are encouraged to consider including water-using systems, building envelope systems, and other systems in the scope of the commissioning plan as appropriate. The building envelope is an important component of a facility that impacts energy consumption, occupant comfort and indoor air quality. While this prerequisite does not require building envelope commissioning, an owner can achieve significant financial savings and reduce risk of poor indoor air quality by including it in the commissioning process.

The LEED Reference Guide for Green Building Design and Construction, 2009 Edition provides guidance on the rigor expected for this prerequisite for the following:

- Owner's project requirements
- Basis of design
- Commissioning plan
- Commissioning specification
- Performance verification documentation
- Commissioning report

EA p2: Minimum energy performance

Intent

To establish the minimum level of energy efficiency for the proposed building and systems to reduce environmental and economic impacts associated with excessive energy use.

Requirements

Option 1. Whole Building Energy simulation

Demonstrate a 10% improvement in the proposed building performance rating for new buildings, or a 5% improvement in the proposed building performance rating for major renovations to existing buildings, compared with the baseline building performance rating.

Calculate the baseline building performance rating according to the building performance rating method in

Appendix G of ANSI/ASHRAE/IESNA Standard 90.1-2007 (with errata but without addenda) using a computer simulation model for the whole building project.

Appendix G of Standard 90.1-2007 requires that the energy analysis done for the building performance rating method include all energy costs associated with the building project. To achieve points using this credit, the proposed design must meet the following criteria:

- Comply with the mandatory provisions (Sections 5.4, 6.4, 7.4, 8.4, 9.4 and 10.4) in Standard 90.1-2007 (with errata but without addenda).
- Include all energy costs associated with the building project.
- Compare against a baseline building that complies with Appendix G of Standard 90.1-2007 (with errata but without addenda). The default process energy cost is 25% of the total energy cost for the baseline building. If the building's process energy cost is less than 25% of the baseline building energy cost, the LEED submittal must include documentation substantiating that process energy inputs are appropriate.

For the purpose of this analysis, process energy is considered to include, but is not limited to, office and general miscellaneous equipment, computers, elevators and escalators, kitchen cooking and refrigeration, laundry washing and drying, lighting exempt from the lighting power allowance (e.g., lighting integral to medical equipment) and other (e.g., waterfall pumps).

Regulated (non-process) energy includes lighting (for the interior, parking garage, surface parking, façade, or building grounds, etc. except as noted above), heating, ventilation and air conditioning (HVAC) (for space heating, space cooling, fans, pumps, toilet exhaust, parking garage ventilation, kitchen hood exhaust, etc.), and service water heating for domestic or space heating purposes.

Process loads must be identical for both the baseline building performance rating and the proposed building performance rating. However, project teams may follow the exceptional calculation method (ANSI/ASHRAE/IESNA Standard 90.1-2007 G2.5) to document measures that reduce process loads. Documentation of process load energy savings must include a list of the assumptions made for both the base and the proposed design, and theoretical or empirical information supporting these assumptions.

Projects in California may use Title 24-2005, Part 6 in place of ANSI/ASHRAE/IESNA Standard 90.1-2007 for Option 1.

OR

Option 2. Prescriptive Compliance Path: ASHRAE advanced Energy Design Guide

Comply with the prescriptive measures of the ASHRAE Advanced Energy Design Guide appropriate to the project scope, outlined below. Project teams must comply with all applicable

criteria as established in the Advanced Energy Design Guide for the climate zone in which the building is located.

Path1. ASHRAE advanced Energy Design Guide for small office Buildings 2004

The building must meet the following requirements:

- Less than 20,000 square feet.
- Office occupancy.

Path1. ASHRAE advanced Energy Design Guide for small retail Buildings 2006

The building must meet the following requirements:

- Less than 20,000 square feet.
- Retail occupancy.

Path 3. ASHRAE advanced Energy Design Guide for small warehouses and self-storage Buildings 2008

The building must meet the following requirements:

- Less than 50,000 square feet.
- Warehouse or self-storage occupancy.

OR

Option 3. Prescriptive Compliance Path: advanced Buildings Core Performance Guide

Comply with the prescriptive measures identified in the Advanced Buildings Core Performance Guide developed by the New Buildings Institute. The building must meet the following requirements:

- Less than 100,000 square feet.
- Comply with Section 1: Design Process Strategies, and Section 2: Core Performance Requirements.
- Office, school, public assembly, and retail projects less than 100,000 square feet must comply with Section and Section 2 of the Core Performance Guide.
- Other project types less than 100,000 square feet implement the basic requirements of the Core Performance Guide.
- Health care, warehouse and laboratory projects are ineligible for this path.

Potential technologies & Strategies

Design the building envelope and systems to meet baseline requirements. Use a computer simulation model to assess the energy performance and identify the most cost-effective energy efficiency measures. Quantify energy performance compared with a baseline building.

If local code has demonstrated quantitative and textual equivalence following, at a minimum, the U.S. Department of Energy (DOE) standard process for commercial energy code determination, then the results of that analysis may be used to correlate local code performance with ANSI/ASHRAE/IESNA Standard

90.1-2007. Details on the DOE process for commercial energy code determination can be found at http://www.energycodes.gov/implement/determinations_com.stm.

Project compliance

The project complies with Option 1: Whole building energy simulation and achieved an energy cost saving of 34.6%.

✚ EA p3: Fundamental refrigerant Management

Intent

To reduce stratospheric ozone depletion.

Requirements

Zero use of chlorofluorocarbon (CFC)-based refrigerants in new base building heating, ventilating, air conditioning and refrigeration (HVAC&R) systems. When reusing existing base building HVAC equipment, complete a comprehensive CFC phase-out conversion prior to project completion. Phase-out plans extending beyond the project completion date will be considered on their merits.

Potential technologies & Strategies

When reusing existing HVAC systems, conduct an inventory to identify equipment that uses CFC-based refrigerants and provide a replacement schedule for these refrigerants. For new buildings, specify new HVAC equipment in the base building that uses no CFC-based refrigerants.

Project compliance

The LEED Form states that there are no CFC-based refrigerants serving the project building.

✚ EA c1: Optimize energy performance

Intent

To achieve increasing levels of energy performance beyond the prerequisite standard to reduce environmental and economic impacts associated with excessive energy use.

Requirements

Select 1 of the 3 compliance path options described below. Project teams documenting achievement using any of the 3 options are assumed to be in compliance with EA Prerequisite 2: Minimum Energy Performance.

Option 1. Whole Building Energy simulation

Demonstrate a percentage improvement in the proposed building performance rating compared with the baseline building performance rating. Calculate the baseline building performance according to Appendix G of ANSI/ASHRAE/IESNA Standard 90.1-2007 (with errata but without addenda) using a computer simulation model for the whole building project. The minimum energy cost savings percentage for each point threshold is as follows:

New Buildings	Existing Building Renovations	Points
12%	8%	1
14%	10%	2
16%	12%	3
18%	14%	4
20%	16%	5
22%	18%	6
24%	20%	7
26%	22%	8
28%	24%	9
30%	26%	10
32%	28%	11
34%	30%	12
36%	32%	13
38%	34%	14
40%	36%	15
42%	38%	16
44%	40%	17
46%	42%	18
48%	44%	19

Appendix G of Standard 90.1-2007 requires that the energy analysis done for the building performance rating method include all the energy costs associated with the building project. To achieve points under this credit, the proposed design must meet the following criteria:

- Compliance with the mandatory provisions (Sections 5.4, 6.4, 7.4, 8.4, 9.4 and 10.4) in Standard 90.1-2007 (with errata but without addenda).
- Inclusion of all the energy costs within and associated with the building project.
- Comparison against a baseline building that complies with Appendix G of Standard 90.1-2007 (with errata but without addenda). The default process energy cost is 25% of the total energy cost for the baseline building. If the building's process energy cost is less than 25% of the baseline building energy cost, the LEED submittal must include documentation substantiating that process energy inputs are appropriate.

For the purpose of this analysis, process energy is considered to include, but is not limited to, office and general miscellaneous equipment, computers, elevators and escalators, kitchen cooking and refrigeration, laundry washing and drying, lighting exempt from the lighting power allowance (e.g., lighting integral to medical equipment) and other (e.g., waterfall pumps).

Regulated (non-process) energy includes lighting (e.g., for the interior, parking garage, surface parking, façade, or building grounds, etc. except as noted above), heating, ventilating, and air conditioning (HVAC) (e.g., for space heating, space cooling, fans, pumps, toilet exhaust, parking garage ventilation, kitchen hood exhaust, etc.), and service water heating for domestic or space heating purposes.

For this credit, process loads must be identical for both the baseline building performance rating and the proposed building performance rating. However, project teams may follow the exceptional calculation method (ANSI/ASHRAE/IESNA Standard 90.1-2007 G2.5) to document measures that reduce process loads.

Documentation of process load energy savings must include a list of the assumptions made for both the base and proposed design, and theoretical or empirical information supporting these assumptions.

Projects in California may use Title 24-2005, Part 6 in place of ANSI/ASHRAE/IESNA Standard 90.1-2007 for Option 1.

OR

Option 2. Prescriptive Compliance Path: ASHRAE advanced Energy Design Guide

Comply with the prescriptive measures of the ASHRAE Advanced Energy Design Guide appropriate to the project scope, outlined below. Project teams must comply with all applicable criteria as established in the Advanced Energy Design Guide for the climate zone in which the building is located.

Path 1. ASHRAE advanced Energy Design Guide for small office Buildings 2004

The building must meet the following requirements:

- Less than 20,000 square feet.
- Office occupancy.

Path 2. ASHRAE advanced Energy Design Guide for small retail Buildings 2006

The building must meet the following requirements:

- Less than 20,000 square feet.
- Retail occupancy.

Path 3. ASHRAE advanced Energy Design Guide for small warehouses and self-storage Buildings 2008

The building must meet the following requirements:

- Less than 50,000 square feet.
- Warehouse or self-storage occupancy.

OR

Option 3. Prescriptive Compliance Path: advanced Buildings Core Performance Guide

Comply with the prescriptive measures identified in the Advanced Buildings Core Performance Guide developed by the New Buildings Institute. The building must meet the following requirements:

- Less than 100,000 square feet.
- Comply with Section 1: Design Process Strategies, and Section 2: Core Performance Requirements.
- Health care, warehouse or laboratory projects are ineligible for this path.
- Points achieved under Option 3 (1 point):
- 1 point is available for all projects (office, school, public assembly, and retail projects) less than 100,000 square feet that comply with Sections 1 and 2 of the Core Performance Guide.
- Up to 2 additional points are available to projects that implement performance strategies listed in Section 3, Enhanced Performance. For every 3 strategies implemented from this section, 1 point is available.
- The following strategies are addressed by other aspects of LEED and are not eligible for additional points under EA Credit 1:
 - 3.1 — Cool Roofs
 - 3.8 — Night Venting
 - 3.13 — Additional Commissioning

Potential technologies & Strategies

Design the building envelope and systems to maximize energy performance. Use a computer simulation model to assess the energy performance and identify the most cost-effective energy efficiency measures. Quantify energy performance compared with a baseline building.

If local code has demonstrated quantitative and textual equivalence following, at a minimum, the U.S. Department of Energy (DOE) standard process for commercial energy code determination, the results of that analysis may be used to correlate local code performance with ANSI/ASHRAE/IESNA Standard 90.1-2007. Details on the DOE process for commercial energy code determination can be found at http://www.energycodes.gov/implement/determinations_com.stm.

Project compliance

The project complies with Option 1: Whole building energy simulation and achieved an energy cost saving of 34.6%.

✚ EA c2: on-site renewable energy

Intent

To encourage and recognize increasing levels of on-site renewable energy self-supply to reduce environmental and economic impacts associated with fossil fuel energy use.

Requirements

Use on-site renewable energy systems to offset building energy costs. Calculate project performance by expressing the energy produced by the renewable systems as a percentage of the building's annual energy cost and use the table below to determine the number of points achieved.

Use the building annual energy cost calculated in EA Credit 1: Optimize Energy Performance or the U.S. Department of Energy’s Commercial Buildings Energy Consumption Survey database to determine the estimated electricity use.

The minimum renewable energy percentage for each point threshold is as follows:

Percentage Renewable Energy	Points
1%	1
3%	2
5%	3
7%	4
9%	5
11%	6
13%	7

Potential technologies & Strategies

Assess the project for nonpolluting and renewable energy potential including solar, wind, geothermal, low-impact hydro, biomass and bio-gas strategies. When applying these strategies, take advantage of net metering with the local utility.

Project compliance

The project complies with Option 1: Whole building energy simulation and project has offset 34.6% of the total energy cost through renewable energy generated on-site

EA c3: Enhanced Commissioning

Intent

To begin the commissioning process early in the design process and execute additional activities after systems performance verification is completed.

Requirements

Implement, or have a contract in place to implement, the following additional commissioning process activities in addition to the requirements of EA Prerequisite 1: Fundamental Commissioning of Building Energy Systems and in accordance with the LEED Reference Guide for Green Building Design and Construction, 2009 Edition:

- Prior to the start of the construction documents phase, designate an independent commissioning authority (CxA) to lead, review and oversee the completion of all commissioning process activities.
- The CxA must have documented commissioning authority experience in at least 2 building projects.
- The individual serving as the CxA:
 - Must be independent of the work of design and construction.
 - Must not be an employee of the design firm, though he or she may be contracted through them.
 - Must not be an employee of, or contracted through, a contractor or construction manager holding construction contracts.
 - May be a qualified employee or consultant of the owner.
- The CxA must report results, findings and recommendations directly to the owner.

The CxA must conduct, at a minimum, 1 commissioning design review of the owner's project requirements basis of design, and design documents prior to the mid-construction documents phase and back-check the review comments in the subsequent design submission.

The CxA must review contractor submittals applicable to systems being commissioned for compliance with the owner's project requirements and basis of design. This review must be concurrent with the review of the architect or engineer of record and submitted to the design team and the owner.

The CxA or other project team members must develop a systems manual that gives future operating staff the information needed to understand and optimally operate the commissioned systems.

The CxA or other project team members must verify that the requirements for training operating personnel and building occupants have been completed.

The CxA must be involved in reviewing the operation of the building with operations and maintenance (O&M) staff and occupants within 10 months after substantial completion. A plan for resolving outstanding commissioning-related issues must be included.

Potential technologies & Strategies

Although it is preferable that the CxA be contracted by the owner, for the enhanced commissioning credit the CxA may also be contracted through the design firms or construction management firms not holding construction contracts.

The LEED Reference Guide for Green Building Design and Construction, 2009 Edition provides detailed guidance on the rigor expected for the following process activities:

- Commissioning design review
- Commissioning submittal review
- Systems manual.

✚ EA c4: Enhanced refrigerant Management

Intent

To reduce ozone depletion and support early compliance with the Montreal Protocol while minimizing direct contributions to climate change.

Requirements

Option 1

Do not use refrigerants.

OR

Option 2

Select refrigerants and heating, ventilation, air conditioning and refrigeration (HVAC&R) equipment that minimize or eliminate the emission of compounds that contribute to ozone depletion and climate change. The base building HVAC&R equipment must comply with the following formula, which sets a maximum threshold for the combined contributions to ozone depletion and global warming potential:

$$\text{LCGWP} + \text{LCODP} \times 10^5 \leq 100$$

Calculation definitions for $\text{LCGWP} + \text{LCODP} \times 10^5 \leq 100$
$\text{LCODP} = [\text{ODPr} \times (\text{Lr} \times \text{Life} + \text{Mr}) \times \text{Rc}] / \text{Life}$
$\text{LCGWP} = [\text{GWPr} \times (\text{Lr} \times \text{Life} + \text{Mr}) \times \text{Rc}] / \text{Life}$
LCODP: Lifecycle Ozone Depletion Potential (lb CFC 11/Ton-Year)
LCGWP: Lifecycle Direct Global Warming Potential (lb CO ₂ /Ton-Year)
GWPr: Global Warming Potential of Refrigerant (0 to 12,000 lb CO ₂ /lbr)
ODPr: Ozone Depletion Potential of Refrigerant (0 to 0.2 lb CFC 11/lbr)
Lr: Refrigerant Leakage Rate (0.5% to 2.0%; default of 2% unless otherwise demonstrated)
Mr: End-of-life Refrigerant Loss (2% to 10%; default of 10% unless otherwise demonstrated)
Rc: Refrigerant Charge (0.5 to 5.0 lbs of refrigerant per ton of gross ARI rated cooling capacity)
Life: Equipment Life (10 years; default based on equipment type, unless otherwise demonstrated)

For multiple types of equipment, a weighted average of all base building HVAC&R equipment must be calculated using the following formula:

$$\frac{\sum (\text{LCGWP} + \text{LCODP} \times 10^5) \times \text{Qunit}}{\text{Qtotal}} \leq 100$$

Calculation definitions for $[\sum (\text{LCGWP} + \text{LCODP} \times 10^5) \times \text{Qunit}] / \text{Qtotal} \leq 100$
Qunit = Gross ARI rated cooling capacity of an individual HVAC or refrigeration unit (Tons)
Qtotal = Total gross ARI rated cooling capacity of all HVAC or refrigeration

Small HVAC units (defined as containing less than 0.5 pounds of refrigerant) and other equipment, such as standard refrigerators, small water coolers and any other cooling

equipment that contains less than 0.5 pounds of refrigerant, are not considered part of the base building system and are not subject to the requirements of this credit.

Do not operate or install fire suppression systems that contain ozone-depleting substances such as CFCs, hydro-chlorofluorocarbons (HCFCs) or halons.

Potential technologies & Strategies

Design and operate the facility without mechanical cooling and refrigeration equipment. Where mechanical cooling is used, utilize base building HVAC&R systems for the refrigeration cycle that minimize direct impact on ozone depletion and global climate change. Select HVAC&R equipment with reduced refrigerant charge and increased equipment life. Maintain equipment to prevent leakage of refrigerant to the atmosphere. Use fire suppression systems that do not contain HCFCs or halons.

Project compliance

The refrigerant impact calculation indicates that the total refrigerant impact of the LEED project is 9.9 per kW, which is less than the maximum allowable value of 13.

EA c5: Measurement and Verification

Intent

To provide for the ongoing accountability of building energy consumption over time.

Requirements

Option 1

Develop and implement a measurement and verification (M&V) plan consistent with Option D: Calibrated Simulation (Savings Estimation Method 2) as specified in the International Performance Measurement & Verification Protocol (IPMVP) Volume III: Concepts and Options for Determining Energy Savings in New Construction, April 2003.

The M&V period must cover at least 1 year of post-construction occupancy.

Provide a process for corrective action if the results of the M&V plan indicate that energy savings are not being achieved.

OR

Option 2

Develop and implement a measurement and verification (M&V) plan consistent with Option B: Energy Conservation Measure Isolation, as specified in the International Performance Measurement & Verification Protocol (IPMVP) Volume III: Concepts and Options for Determining Energy Savings in New Construction, April 2003.

The M&V period must cover at least 1 year of post-construction occupancy.

Provide a process for corrective action if the results of the M&V plan indicate that energy savings are not being achieved.

Potential technologies & Strategies

Develop an M&V plan to evaluate building and/or energy system performance. Characterize the building and/or energy systems through energy simulation or engineering analysis. Install the necessary metering equipment to measure energy use. Track performance by comparing predicted performance to actual performance, broken down by component or system as appropriate. Evaluate energy efficiency by comparing actual performance to baseline performance.

While the IPMVP describes specific actions for verifying savings associated with energy conservation measures (ECMs) and strategies, this LEED credit expands upon typical IPMVP M&V objectives. Measurement & verification activities should not necessarily be confined to energy systems where ECMs or energy conservation strategies have been implemented. The IPMVP provides guidance on M&V strategies and their appropriate applications for various situations. These strategies should be used in conjunction with monitoring and trend logging of significant energy systems to provide for the ongoing accountability of building energy performance.

MATERIALS AND RESOURCES

MR p1: Storage and Collection of recyclables

Intent

To facilitate the reduction of waste generated by building occupants that is hauled to and disposed of in landfills.

Requirements

Provide an easily-accessible dedicated area or areas for the collection and storage of materials for recycling for the entire building. Materials must include, at a minimum: paper, corrugated cardboard, glass, plastics and metals.

Potential technologies & Strategies

Designate an area for recyclable collection and storage that is appropriately sized and located in a convenient area.

Identify local waste handlers and buyers for glass, plastic, metals, office paper, newspaper, cardboard and organic wastes. Instruct occupants on recycling procedures. Consider employing cardboard balers, aluminum can crushers, recycling chutes and other waste management strategies to further enhance the recycling program.

Project Compliance

Project has provided appropriately sized dedicated areas for the collection and storage of materials for recycling.

✚ MR c2: Construction waste Management

Intent

To divert construction and demolition debris from disposal in landfills and incineration facilities. Redirect recyclable recovered resources back to the manufacturing process and reusable materials to appropriate sites.

Requirements

Recycle and/or salvage nonhazardous construction and demolition debris. Develop and implement a construction waste management plan that, at a minimum, identifies the materials to be diverted from disposal and whether the materials will be sorted on-site or comingled. Excavated soil and land-clearing debris do not contribute to this credit.

Calculations can be done by weight or volume, but must be consistent throughout. The minimum percentage debris to be recycled or salvaged for each point threshold is as follows:

Recycled or Salvaged	Points
50%	1
75%	2

Potential technologies & Strategies

Establish goals for diversion from disposal in landfills and incineration facilities and adopt a construction waste management plan to achieve these goals. Consider recycling cardboard, metal, brick, mineral fiber panel, concrete, plastic, clean wood, glass, gypsum wallboard, carpet and insulation. Construction debris processed into a recycled content commodity that has an open market value (e.g., wood derived fuel [WDF], alternative daily cover material, etc.) may be applied to the construction waste calculation. Designate a specific area(s) on the construction site for segregated or comingled collection of recyclable materials, and track recycling efforts throughout the construction process. Identify construction haulers and recyclers to handle the designated materials. Note that diversion may include donation of materials to charitable organizations and salvage of materials on-site.

Project Compliance

- Total waste: 24.86 tons
- Total diverted waste: 11.42 tons

=> Total percentage of construction waste diverted from landfill: 77.35 %

The project has diverted 77.35 % of the on-site generated construction waste from landfill.

✚ MR c4: Recycled Content

Intent

To increase demand for building products that incorporate recycled content materials, thereby reducing impacts resulting from extraction and processing of virgin materials.

Requirements

Use materials with recycled content 1 such that the sum of postconsumer 2 recycled content plus 1/2 of the pre consumer 3 content constitutes at least 10% or 20%, based on cost, of the total value of the materials in the project.

The minimum percentage materials recycled for each point threshold is as follows:

Recycled or Salvaged	Points
10%	1
20%	2

The recycled content value of a material assembly is determined by weight. The recycled fraction of the assembly is then multiplied by the cost of assembly to determine the recycled content value.

Mechanical, electrical and plumbing components and specialty items such as elevators cannot be included in this calculation. Include only materials permanently installed in the project. Furniture may be included if it is included consistently in MR Credit 3: Materials Reuse through MR Credit 7: Certified Wood.

Potential technologies & Strategies

Establish a project goal for recycled content materials, and identify material suppliers that can achieve this goal.

During construction, ensure that the specified recycled content materials are installed. Consider a range of environmental, economic and performance attributes when selecting products and materials.

Project Compliance

- Project use friendly construction material: material made from Recycled/ Salvage materials (of course, it always ensure the product quality)
- Cost of material with recycled content of total: 28.81% compared with total construction cost.

MR c5: Regional Materials

Intent

To increase demand for building materials and products that are extracted and manufactured within the region, thereby supporting the use of indigenous resources and reducing the environmental impacts resulting from transportation.

Requirements

Use building materials or products that have been extracted, harvested or recovered, as well as manufactured, within 500 miles of the project site for a minimum of 10% or 20%, based on cost, of the total materials value. If only a fraction of a product or material is extracted, harvested, or recovered and manufactured locally, then only that percentage (by weight) can contribute to the regional value. The minimum percentage regional materials for each point threshold is as follows:

Recycled or Salvaged	Points
10%	1
20%	2

Mechanical, electrical and plumbing components and specialty items such as elevators and equipment must not be included in this calculation. Include only materials permanently installed in the project. Furniture may be included if it is included consistently in MR Credit 3: Materials Reuse through MR Credit 7: Certified Wood.

Potential technologies & Strategies

Establish a project goal for locally sourced materials, and identify materials and material suppliers that can achieve this goal. During construction, ensure that the specified local materials are installed, and quantify the total percentage of local materials installed. Consider a range of environmental, economic and performance attributes when selecting products and materials.

Project Compliance

Use local construction material (or called Regional material)

Total cost of Regional materials compared with total construction materials cost): 31.18 %.

(Local materials: Rebar steel, steel structure, concrete, insulation, gypsum, bricks, cement, aluminum, sands, stones, wire mesh, glass).

Use regional material to supporting the regional economy and reducing the environmental impacts resulting from transportation.

31.18 % of the total building materials value includes materials and products that have been manufactured and extracted within 500 miles of the project site or materials or products shipped by rail or water that have been extracted, harvested, or recovered, as well as manufactured, within a 500 miles (800 kilometers).

Total travel distance from the project site using a weighted average determined through the following formula: $(\text{Distance by rail}/3) + (\text{Distance by inland waterway}/2) + (\text{Distance by sea}/15) + (\text{Distance by all other means})$, which is less than or equal to 500 miles (800 kilometers).

INDOOR ENVIROMENT QUALITY

🚧 IEQ p1: Minimum indoor air Quality performance

Intent

To establish minimum indoor air quality (IAQ) performance to enhance indoor air quality in buildings, thus contributing to the comfort and well-being of the occupants.

Requirements

Meet the minimum requirements of Sections 4 through 7 of ASHRAE Standard 62.1-2007, Ventilation for Acceptable

Indoor Air Quality (with errata but without addenda).

AND

Case 1. Mechanically ventilated spaces

Mechanical ventilation systems must be designed using the ventilation rate procedure or the applicable local code, whichever is more stringent.

Case 2. Naturally ventilated spaces

Naturally ventilated buildings must comply with ASHRAE Standard 62.1-2007, Paragraph 5.1 (with errata but without addenda).

Potential technologies & Strategies

Design ventilation systems to meet or exceed the minimum outdoor air ventilation rates as described in the ASHRAE standard. Balance the impacts of ventilation rates on energy use and indoor air quality to optimize for energy efficiency and occupant comfort. Use the ASHRAE Standard 62.1-2007 user manual (with errata but without addenda 1) for detailed guidance on meeting the referenced requirements.

✚ IEQ p2: Environmental tobacco Smoke (ETS) Control

Intent

To prevent or minimize exposure of building occupants, indoor surfaces and ventilation air distribution systems to environmental tobacco smoke (ETS).

Requirements

Case 1. All Projects

Option 1

Prohibit smoking in the building.

Prohibit on-property smoking within 25 feet of entries, outdoor air intakes and operable windows. Provide signage to allow smoking in designated areas, prohibit smoking in designated areas or prohibit smoking on the entire property.

OR

Option 2

Prohibit smoking in the building except in designated smoking areas.

Prohibit on-property smoking within 25 feet of entries, outdoor air intakes and operable windows. Provide signage to allow smoking in designated areas, prohibit smoking in designated areas or prohibit smoking on the entire property.

Provide designated smoking rooms designed to contain, capture and remove ETS from the building. At a minimum, the smoking room must be directly exhausted to the outdoors, away from air intakes and building entry paths, with no recirculation of ETS-containing air to nonsmoking areas and enclosed with impermeable deck-to-deck partitions. Operate exhaust sufficient to create a negative

pressure differential with the surrounding spaces of at least an average of 5 Pascals (Pa) (0.02 inches of water gauge) and a minimum of 1 Pa (0.004 inches of water gauge) when the doors to the smoking rooms are closed.

Verify performance of the smoking rooms' differential air pressures by conducting 15 minutes of measurement, with a minimum of 1 measurement every 10 seconds, of the differential pressure in the smoking room with respect to each adjacent area and in each adjacent vertical chase with the doors to the smoking room closed. Conduct the testing with each space configured for worst-case conditions of transport of air from the smoking rooms (with closed doors) to adjacent spaces.

Case 2. Residential and Hospitality Projects only

Prohibit smoking in all common areas of the building.

Locate any exterior designated smoking areas, including balconies where smoking is permitted, at least 25 feet from entries, outdoor air intakes and operable windows opening to common areas.

Prohibit on-property smoking within 25 feet of entries, outdoor air intakes and operable windows. Provide signage to allow smoking in designated areas, prohibit smoking in designated areas or prohibit smoking on the entire property.

Weather-strip all exterior doors and operable windows in the residential units to minimize leakage from outdoors.

Minimize uncontrolled pathways for ETS transfer between individual residential units by sealing penetrations in walls, ceilings and floors in the residential units and by sealing vertical chases adjacent to the units.

Weather-strip all doors in the residential units leading to common hallways to minimize air leakage into the hall way.

Demonstrate acceptable sealing of residential units by a blower door test conducted in accordance with ANSI/ASTM-E779-03, Standard Test Method for Determining Air Leakage Rate by Fan Pressurization.

Use the progressive sampling methodology defined in Chapter 4 (Compliance through Quality Construction) of the Residential Manual for Compliance with California's 2001 Energy Efficiency Standards (http://www.energy.ca.gov/title24/residential_manual). Residential units must demonstrate less than 1.25 square inches leakage area per 100 square feet of enclosure area (i.e., sum of all wall, ceiling and floor areas).

Potential technologies & Strategies

Prohibit smoking in commercial buildings or effectively control the ventilation air in smoking rooms. For residential buildings, prohibit smoking in common areas and design building envelope and systems to minimize ETS transfer among dwelling units.

Project Compliance

- Employees and visitors not allowed to smoke within the project site.

IEQ p2: Increased Ventilation

Intent

To provide additional outdoor air ventilation to improve indoor air quality (IAQ) and promote occupant comfort, well-being and productivity.

Requirements

Case 1. Mechanically ventilated spaces

Increase breathing zone outdoor air ventilation rates to all occupied spaces by at least 30% above the minimum rates required by ASHRAE Standard 62.1-2007 (with errata but without addenda) as determined by IEQ

Prerequisite 1: Minimum Indoor Air Quality Performance.

Case 2. Naturally ventilated spaces

Design natural ventilation systems for occupied spaces to meet the recommendations set forth in the Chartered

Institution of Building Services Engineers (CIBSE) Applications Manual 10: 2005, Natural Ventilation in Non-domestic Buildings. Determine that natural ventilation is an effective strategy for the project by following the flow diagram process shown in Figure 2.8 of the CIBSE Applications Manual 10.

AND

Option 1

Use diagrams and calculations to show that the design of the natural ventilation systems meets the recommendations set forth in the CIBSE Applications Manual 10: 2005, Natural Ventilation in Non-domestic Buildings, CIBSE AM 13 (Mixed Mode Ventilation), or natural ventilation/mixed mode ventilation related sections of the CIBSE Guide B2 (Ventilation and Air Conditioning).

OR

Option 2

Use a macroscopic, multi-zone, analytic model to predict that room-by-room airflows will effectively naturally ventilate, defined as providing the minimum ventilation rates required by ASHRAE 62.1-2007 Chapter 6 (with errata but without addenda 1), for at least 90% of occupied spaces.

Potential technologies & Strategies

For mechanically ventilated spaces: Use heat recovery, where appropriate, to minimize the additional energy consumption associated with higher ventilation rates.

For naturally ventilated spaces, follow the 8 design steps described in the Carbon Trust Good Practice Guide 237:

- Develop design requirements.
- Plan airflow paths.

- Identify building uses and features that might require special attention.
- Determine ventilation requirements.
- Estimate external driving pressures.
- Select types of ventilation devices.
- Size ventilation devices.
- Analyze the design.

Use public domain software such as NIST's CONTAM, Multi-zone Modeling Software, along with Loop DA, Natural Ventilation Sizing Tool, to analytically predict room-by-room airflows.

✚ IEQ c3.1: Construction indoor air Quality Management plan - During Construction

Intent

To reduce indoor air quality (IAQ) problems resulting from construction or renovation and promote the comfort and well-being of construction workers and building occupants.

Requirements

Develop and implement an IAQ management plan for the construction and preoccupancy phases of the building as follows:

- During construction, meet or exceed the recommended control measures of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for occupied buildings under construction, 2nd Edition 2007, ANSI/SMACNA 008-2008 (Chapter 3).
- Protect stored on-site and installed absorptive materials from moisture damage.
- If permanently installed air handlers are used during construction, filtration media with a minimum efficiency reporting value (MERV) of 8 must be used at each return air grille, as determined by ASHRAE Standard 52.2-1999 (with errata but without addenda 1). Replace all filtration media immediately prior to occupancy.

Potential technologies & Strategies

Adopt an IAQ management plan to protect the heating, ventilating and air conditioning (HVAC) system during construction, control pollutant sources and interrupt contamination pathways. Sequence the installation of materials to avoid contamination of absorptive materials, such as insulation, carpeting, ceiling tile and gypsum wallboard. Coordinate with IEQ Credit 3.2: Construction IAQ Management Plan — Before Occupancy and IEQ

Credit 5: Indoor Chemical & Pollutant Source Control to determine the appropriate specifications and schedules for filtration media.

If possible, avoid using permanently installed air handlers for temporary heating/cooling during construction.

Consult the LEED Reference Guide for Green Building Design and Construction, 2009 Edition for more detailed information on how to ensure the well-being of construction workers and building occupants if permanently installed air handlers must be used during construction.

IEQ c4.1: Low-emitting Materials—adhesives and Sealants

Intent

To reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well-being of installers and occupants.

Requirements

All adhesives and sealants used on the interior of the building (i.e., inside of the weatherproofing system and applied on-site) must comply with the following requirements as applicable to the project scope:

- Adhesives, Sealants and Sealant Primers must comply with South Coast Air Quality Management District (SCAQMD) Rule #1168. Volatile organic compound (VOC) limits listed in the table below correspond to an effective date of July 1, 2005 and rule amendment date of January 7, 2005.

Architectural Applications	VOC Limit (g/L less water)	Specialty Applications	VOC Limit (g/L less water)
Indoor carpet adhesives	50	PVC welding	510
Carpet pad adhesives	50	CPVC welding	490
Wood flooring adhesives	100	ABS welding	325
Rubber floor adhesives	60	Plastic cement welding	250
Subfloor adhesives	50	Adhesive primer for plastic	550
Ceramic tile adhesives	65	Contact adhesive	80
VCT and asphalt adhesives	50	Special purpose contact adhesive	250
Drywall and panel adhesives	50	Structural wood member adhesive	140
Cove base adhesives	50	Sheet applied rubber lining operations	850
Multipurpose construction adhesives	70	Top and trim adhesive	250
Structural glazing adhesives	100		
Substrate Specific Applications	VOC Limit (g/L less water)	Sealants	VOC Limit (g/L less water)
Metal to metal	30	Architectural	250
Plastic foams	50	Nonmembrane roof	300
Porous material (except wood)	50	Roadway	250
Wood	30	Single-ply roof membrane	450
Fiberglass	80	Other	420
Sealant Primers	VOC Limit (g/L less water)		
Architectural, nonporous	250		
Architectural, porous	775		
Other	750		

- Aerosol Adhesives must comply with Green Seal Standard for Commercial Adhesives GS-36 requirements in effect on October 19, 2000.

Aerosol Adhesives	VOC Limit
General purpose mist spray	65% VOCs by weight
General purpose web spray	55% VOCs by weight
Special purpose aerosol adhesives (all types)	70% VOCs by weight

Potential technologies & Strategies

Specify low-VOC materials in construction documents. Ensure that VOC limits are clearly stated in each section of the specifications where adhesives and sealants are addressed. Common products to evaluate include general construction adhesives, flooring adhesives, fire-stopping sealants, caulking, duct sealants, plumbing adhesives and cove base adhesives. Review product cut sheets, material safety data (MSD) sheets, signed attestations or other official literature from the manufacturer clearly identifying the VOC contents or compliance with referenced standards.

Project Compliance

The LEED Form states that all adhesive and sealant products used on the interior of the building (inside of the weatherproofing system and applied on site) have been included in the tables and comply with the VOC limits of the referenced standards for this credit.

✚ IEQ c4.2: Low-emitting Materials—paints and Coatings

Intent

To reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well-being of installers and occupants.

Requirements

Paints and coatings used on the interior of the building (i.e., inside of the weatherproofing system and applied on-site) must comply with the following criteria as applicable to the project scope:

- Architectural paints and coatings applied to interior walls and ceilings must not exceed the volatile organic compound (VOC) content limits established in Green Seal Standard GS-11, Paints, 1st Edition, May20, 1993.
- Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates must not exceed the VOC content limit of 250 g/L established in Green Seal Standard GC-03, Anti-Corrosive Paints, 2nd Edition, January7, 1997.
- Clear wood finishes, floor coatings, stains, primers, and shellacs applied to interior elements must not exceed the VOC content limits established in South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings, rules in effect on January 1, 2004.

Potential technologies & Strategies

Specify low-VOC paints and coatings in construction documents. Ensure that VOC limits are clearly stated in each section of the specifications where paints and coatings are addressed. Track the VOC content of all interior paints and coatings during construction.

Project Compliance

All paint and coating products used on the interior of the building (inside of the weatherproofing system and applied on site) have been included in the tables and comply with the VOC limits of the referenced standards for this credit.

IEQ c4.3: Low-emitting Materials—flooring Systems

Intent

To reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well-being of installers and occupants.

Requirements

Option 1

All flooring must comply with the following as applicable to the project scope:

- All carpet installed in the building interior must meet the testing and product requirements of the Carpet and Rug Institute Green Label plus 1 program.
- All carpet cushion installed in the building interior must meet the requirements of the Carpet and Rug Institute Green Label program.
- All carpet adhesive must meet the requirements of IEQ Credit 4.1: Adhesives and Sealants, which includes a volatile organic compound (VOC) limit of 50 g/L.
- All hard surface flooring must be certified as compliant with the Floor-score 2 standard (current as of the date of this rating system, or more stringent version) by an independent third-party. Flooring products covered by Floor Score include vinyl, linoleum, laminate flooring, wood flooring, ceramic flooring, rubber flooring and wall base.
- An alternative compliance path using Floor Score is acceptable for credit achievement: 100% of the non-carpet finished flooring must be Floor Score-certified and must constitute at least 25% of the finished floor area. Examples of unfinished flooring include floors in mechanical rooms, electrical rooms and elevator service rooms.
- Concrete, wood, bamboo and cork floor finishes such as sealer, stain and finish must meet the requirements of South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings, rules in effect on January 1, 2004.
- Tile setting adhesives and grout must meet South Coast Air Quality Management District (SCAQMD) Rule 1168. VOC limits correspond to an effective date of July 1, 2005 and rule amendment date of January 7, 2005.

OR

Option 2

All flooring elements installed in the building interior must meet the testing and product requirements of the California Department of Health Services Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers, including 2004 Addenda.

Potential technologies & Strategies

Clearly specify requirements for product testing and/or certification in the construction documents. Select products that are either certified under the Green Label Plus program or for which testing has been done by qualified independent laboratories in accordance with the appropriate requirements.

Project Compliance

All flooring elements installed in the building interior have been met the testing and product requirements of the referenced standards for this credit.

✚ IEQ c4.4: Low-emitting Materials—Composite wood and Agrifiber products

Intent

To reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well-being of installers and occupants.

Requirements

Composite wood and agrifiber products used on the interior of the building (i.e., inside the weatherproofing system) must contain no added urea-formaldehyde resins. Laminating adhesives used to fabricate on-site and shop-applied composite wood and agrifiber assemblies must not contain added urea-formaldehyde resins.

Composite wood and agrifiber products are defined as particleboard, medium density fiberboard (MDF), plywood, wheat-board, strawboard, panel substrates and door cores. Materials considered fixtures, furniture and equipment (FF&E) are not considered base building elements and are not included.

Potential technologies & Strategies

Specify wood and agrifiber products that contain no added urea-formaldehyde resins. Specify laminating adhesives for field and shop-applied assemblies that contain no added urea-formaldehyde resins. Review product cut sheets, material safety data (MSD) sheets, signed attestations or other official literature from the manufacturer

Project Compliance

Composite wood and agrifiber products used on the interior of the building (i.e., inside the weather proofing system) have been contained no added urea-formaldehyde resins. Laminating adhesives used to fabricate on-site and shop-applied composite wood and agrifiber assemblies have not been contained added urea-formaldehyde resins.

INNOVATION IN DESIGN

✚ ID c1: Innovation in Design

Intent

To provide design teams and projects the opportunity to achieve exceptional performance above the requirements set by the LEED Green Building Rating System and/or innovative performance in Green Building categories not specifically addressed by the LEED Green Building Rating System.

Requirements

Credit can be achieved through any combination of the Innovation in Design and Exemplary Performance paths as described below:

Path 1. Innovation in Design

Achieve significant, measurable environmental performance using a strategy not addressed in the LEED 2009 for New Construction and Major Renovations Rating System.

One point is awarded for each innovation achieved. No more than 5 points under IDc1 may be earned through Path 1—Innovation in Design.

Identify the following in writing:

- The intent of the proposed innovation credit.
- The proposed requirement for compliance.
- The proposed submittals to demonstrate compliance.
- The design approach (strategies) used to meet the requirements.

Path 2. Exemplary Performance

Achieve exemplary performance in an existing LEED 2009 for New Construction and Major Renovations prerequisite or credit that allows exemplary performance as specified in the LEED Reference Guide for Green Building Design & Construction, 2009 Edition. An exemplary performance point may be earned for achieving double the credit requirements and/or achieving the next incremental percentage threshold of an existing credit in LEED.

One point is awarded for each exemplary performance achieved. No more than 3 points under IDc1 may be earned through Path 2— Exemplary Performance.

Potential technologies & Strategies

Substantially exceed a LEED 2009 for New Construction and Major Renovations performance credit such as energy performance or water efficiency. Apply strategies or measures that demonstrate a comprehensive approach and quantifiable environment and/or health benefits.

Project Compliance

The project achieves exemplary performance for:

- SS Credit 7.1: Heat Island Effect – Non roof - 100% parking roof complied with SRI requirement
- WE Credit 2: Innovative Wastewater Technologies - Potable water use for sewage conveyance as a percentage of baseline flush fixture water use (%): 100% reduction.
- MR Credit 5: Regional Materials – Regional materials as a percentage of total materials cost: 31.18%
- ID Credit 1.4: Education program.

✚ ID c2: LEED accredited professional

Intent

To support and encourage the design integration required by LEED to streamline the application and certification process.

Requirements

At least 1 principal participant of the project team shall be a LEED Accredited Professional (AP).

Potential technologies & Strategies

Educate the project team members about green building design and construction, the LEED requirements and application process early in the life of the project. Consider assigning integrated design and construction process facilitation to the LEED AP.