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GREEN BUILDING EDUCATION PROGRAM

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1. INTRODUCTION

To inspire people to live more sustainably, using flexible and achievable standards for sustainable building and landscaping practices in such a way as it will protect our local and regional natural resources.

GREEN BUILDING CONCERNS: Public education is necessary to encourage green building practices in public programs, private development, and residential communities. The purpose of this innovative credit implemented by Shore Acres, is to encourage public education in green building projects and provide a strategy to meet that goal.

2. INTENT

To provide public education focusing on green building strategies and solutions.

3. PROGRAM REQUIREMENT

To take advantage of the educational value of the green building features of a project and to earn a LEED point, any approach should be actively instructional. **Two** of the following three elements must be included in the educational program:

A. **A comprehensive signage program built into the building's spaces to educate the occupants and visitors of the benefits of green buildings. This program may include windows to view energy-saving mechanical equipment or signs to call attention to water-conserving landscape features.**

B. **The development of a manual, guideline, or case study to inform the design of other buildings based on the successes of this project.**

C. **An educational outreach program or guided tour could be developed to focus on sustainable living, using the project as an example.**

a) Coordination with the local USGBC Chapter to share the building GREEN features and information, via tours and lectures.

b) Include a dedicated page on its website, explaining about the building and its green features, as well as with detailed information about the LEED rating system and links to further information about the building.

c) Install educational signage in the building.

d) Use the ARC program to help manage performance across five areas: energy, water, waste, transportation, and human experience. https://www.arcskoru.com/

A. Comprehensive Signage Program Outline:

INTEGRATIVE PROCESS

- *EARNED:* **Integrative Process** To support high-performance, cost-effective project outcomes the team participated in an early analysis of the interrelationships among systems.

LOCATION AND TRANSPORTATION

- *EARNED:* **Sensitive Land Protection**: To avoid the development of environmentally sensitive lands and reduce the environmental impact from the location of a building on a site this project is located on land that has been previously developed and is not considered sensitive land.
- *EARNED:* **High Priority Site**: To encourage project location in areas with development constraints and promote the health of the surrounding area this project was developed within an area defined as a "Difficult Development Area," by the U.S. Department of Housing and Urban Development (HUD).
- *EARNED:* **Bicycle Facilities:** To promote bicycling and transportation efficiency and reduce vehicle distance traveled. To improve public health by encouraging utilitarian and recreational physical activity.
- *EARNED:* **Reduced Parking Footprint**: To minimize the environmental harms associated with parking facilities, including automobile dependence, land consumption, and rainwater runoff this project provides a 62.75% less parking capacity than allowed by local code.

SUSTAINABLE SITES

- *PURSUING:* **Construction Activity Pollution and Prevention**: To reduce pollution from construction activities by controlling soil erosion, waterway sedimentation, and airborne dust this project implemented an erosion and sedimentation control plan for all construction activities associated with the project.
- *EARNED:* **Site Assessment**: To assess site conditions before design to evaluate sustainable options and inform related decisions about site design and in-depth Site Assessment was completed.
- *EARNED:* **Open Space**: To create exterior open space that encourages interaction with the environment, social interaction, passive recreation, and physical activities.
- *EARNED:* **Heat Island Reduction**: To minimize effects on microclimates and human and wildlife habitats by reducing heat islands. All hardscape has high Solar Reflective Index (SRI) ratings reducing the heat island effect (minimizing impacts on microclimates and human and wildlife habitats).

WATER EFFICIENCY

- *EARNED:* **Outdoor Water use reduction:** To reduce outdoor water consumption.

- *EARNED:* **Indoor water use reduction:** To reduce indoor potable water consumption and preserve no and low-cost potable water resources.
- *EARNED:* **Building-Level Water Metering:** To support water management and identify opportunities for additional water savings by tracking water consumption.
- *EARNED*: **Water Metering**: To support water management and identify opportunities for additional water savings by tracking water consumption by installing 4 submeters.

ENERGY & ATMOSPHERE

- *PURSUING*: **Fundamental Commissioning and Verification**: To support the design, construction, and eventual operation of the project that meets the owner's project requirements for energy, water, indoor environmental quality, and durability.
- *EARNED*: **Minimum Energy Performance:** To reduce the environmental and economic harms of excessive energy use by achieving a minimum level of energy efficiency for the building and its systems.
- *EARNED*: **Optimize Energy Performance**: To achieve increasing levels of energy performance beyond the prerequisite standard to reduce environmental and economic harms associated with excessive energy use. This project achieved 35% in total energy cost savings.
- *EARNED:* **Building Level Energy Metering**: To support energy management and identify opportunities for additional energy savings by tracking building-level energy use.
- *EARNED:* **Fundamental Refrigerant Management:** To reduce stratospheric ozone depletion.
- *PURSUING*: **Enhanced Commissioning:** To further support the design, construction, and eventual operation of a project that meets the owner's project requirements for energy, water, indoor environmental quality, and durability.
- *EARNED*: **Optimize Energy Performance**: To achieve increasing levels of energy performance beyond the prerequisite standard to reduce environmental and economic harms associated with excessive energy use.
- *EARNED:* **Renewable Energy Production:** To reduce the environmental and economic harms associated with fossil fuel energy by increasing self-supply of renewable energy.
- *EARNED:* **Enhanced Refrigerant Management:** To reduce ozone depletion and support early compliance with the Montreal Protocol while minimizing direct contributions to climate change.

MATERIALS & RESOURCES

- *EARNED:* **Storage and Collection of Recycles:** To reduce the waste that is generated by building occupants and hauled to and disposed of in landfills.
- *PURSUING*: **Construction and Demolition Waste Management**: To reduce construction and demolition waste disposed of in landfills and incineration facilities by recovering, reusing, and recycling materials.
- *PURSUING*: **Building Product Disclosure and Optimization- Environmental Product Declaration:** To encourage the use of products and materials for which life-cycle information is available and that have environmentally, economically, and socially preferable life-cycle impacts. To reward project

teams for selecting products from manufacturers who have verified improved environmental life-cycle impacts.

- *PURSUING*: **Building Product Disclosure and Optimization- Sourcing of Raw Material:** To encourage the use of products and materials for which life cycle information is available and that have environmentally, economically, and socially preferable life cycle impacts. To reward project teams for selecting products verified to have been extracted or sourced in a responsible manner

INDOOR ENVIRONMENTAL QUALITY

- *EARNED:* **Minimum Indoor Air Quality Performance:** To contribute to the comfort and well-being of building occupants by establishing minimum standards for indoor air quality (IAQ).
- *EARNED*: **Environmental Tobacco Smoke Control:** To prevent or minimize exposure of building occupants, indoor surfaces, and ventilation air distribution systems to environmental tobacco smoke.
- *EARNED*: **Enhanced Indoor Air Quality Strategies**: To promote occupants' comfort, well- being, and productivity by improving indoor air quality
- *PURSUING*: **Low-Emitting Materials:** To reduce concentrations of chemical contaminants that can damage air quality, human health, productivity, and the environment.
- *PURSUING*: **Construction Indoor Air Quality Management Plan:** To promote the well-being of construction workers and building occupants by minimizing indoor air quality problems associated with construction and renovation
- *PURSUING*: **Interior Lighting:** To promote occupants' productivity, comfort, and well -being by providing quality lighting.
- *EARNED*: **Quality Views:** To give building occupants a connection to the natural outdoor environment by providing quality views.

INNOVATION

- *PURSUING:* **Exemplary Performance: BPDO Environmental Product Declarations**
- *PURSUING*: **Green Building Education:** To provide public education focusing on green building strategies and solutions.
- *EARNED:* **Exemplary Performance: Renewable Energy Production**
- *PURSUING*: **[PILOT Credit] Assessment & Planning for Resiliency**
- *EARNED:* **Design for Active Occupants:**
- *PURSUING*: **LEED Accredited Professional:** To encourage the team integration required by a LEED project and to streamline the application and certification process, this project included SEQUIL Systems Inc as their LEED Accredited Professional.

REGIONAL PRIORITY

- *EARNED:* **Reduce Parking Footprint**

- *EARNED*: **Heat Island Reduction**
- *EARNED*: **Sensitive Land Protection**

B. Shore Acres Recreation Center

Welcome to Shore Acres Recreation Center, a **Green Recreation Center!**

The recreation center is designed and constructed to meet the U.S. Green Building Council's Leadership in Energy and Environmental Design (**LEED**) standards for new construction version

Shore Acres Recreation Center demonstrates environmental responsibility, guaranteed energy efficiency, promotes healthy interiors and resiliency. Signage throughout the recreation center identify many of these features and illustrate our commitment to Sustainability.

"WE ARE **LEED**ing THE WAY"

LOCATION AND TRANSPORTATION

Overview:

The Location and Transportation category rewards thoughtful decisions about building location, with credits that encourage compact development, alternative transportation, and connection with amenities, such as restaurants and parks.

Well-located buildings take advantage of existing infrastructure—public transit, street networks, pedestrian paths, bicycle networks, services and amenities, and existing utilities, such as electricity, water, gas, and sewage. By recognizing existing patterns of development and land density, project teams can reduce strain on the environment from the material and ecological costs that accompany the creation of new infrastructure and hardscape. In addition, the compact communities promoted by the LT credits encourage robust and realistic alternatives to private automobile use, such as walking, biking, vehicle shares, and public transit. These incremental steps can have significant benefits: a 2009 Urban Land Institute study concluded that improvements in land-use patterns and investments in public transportation infrastructure alone could reduce greenhouse gas emissions from transportation in the U.S. by 9% to 15% by 2050; globally, the transportation sector is responsible for about one-quarter of energy-related greenhouse gas emissions.

Shore Acres Recreation Center had implemented the following strategies for the Location and Transportation category:

- **Sensitive Land Protection**: To avoid the development of environmentally sensitive lands and reduce the environmental impact from the location of a building on a site.
  Shore Acres Recreation Center development footprint is located on a land that had been previously developed as a recreation center.
- **High Priority Site:** To encourage project location in areas with development constraints and promote the health of the surrounding area.
  Shore Acres is a priority site as designated by the U.S. Department of Housing and Urban Development's Difficult Development Area.

- **Bicycle Facilities:** To promote bicycling and transportation efficiency and reduce vehicle distance traveled. To improve public health by encouraging utilitarian and recreational physical activity.
  There are at least 10 diverse bicycle uses within a 3-mile radius, 6 short term & 12 long term bicycle storage spaces available to occupants. As well as 2 showers with changing facilities.

- **Reduced Parking Footprint:** To minimize the environmental harms associated with parking facilities, including automobile dependence, land consumption, and rainwater runoff.
  A 27.7% reduction in parking capacity from ITE Transportation Planning Handbook. There are 6 preferred parking spaces for carpool/vanpool.

SUSTAINABLE SITES

Overview:

The Sustainable Sites (SS) category rewards decisions about the environment surrounding the building, with credits that emphasize the vital relationships among buildings, ecosystems, and ecosystem services. It focuses on restoring project site elements, integrating the site with local and regional ecosystems, and preserving the biodiversity that natural systems rely on.

Earth's systems depend on biologically diverse forests, wetlands, coral reefs, and other ecosystems, which are often referred to as "natural capital" because they provide regenerative services. A United Nations study indicates that of the ecosystem services that have been assessed worldwide, about 60% are currently degraded or used unsustainably. The results are deforestation, soil erosion, a drop in water table levels, extinction of species, and rivers that no longer run to the sea. Recent trends like exurban development and sprawl encroach on the remaining natural landscapes and farmlands, fragmenting and replacing them with dispersed hardscapes surrounded by nonnative vegetation. Between 1982 and 2001 in the U.S. alone, about 34 million acres (13 759 hectares) of open space (an area the size of Illinois) was lost to development—approximately 4 acres per minute, or 6,000 acres a day. The rainwater runoff from these hardscape areas frequently overloads the capacity of natural infiltration systems, increasing both the quantity and pollution of site runoff. Rainwater runoff carries such pollutants as oil, sediment, chemicals, and lawn fertilizers directly to streams and rivers, where they contribute to eutrophication and harm aquatic ecosystems and species. A Washington State Department of Ecology study noted that rainwater runoff from roads, parking lots, and other hardscapes carries some 200,000 barrels of petroleum into the Puget Sound every year—more than half of what was spilled in the 1989 Exxon Valdez accident in Alaska.

Shore Acres Recreation Center implemented the following strategies for the Sustainable Sites category:

- **Construction Activity Pollution Prevention**: To reduce pollution from construction activities by controlling soil erosion, waterway sedimentation, and airborne dust.
  This project implemented an erosion and sedimentation control plan for all construction activities exceeding the requirements of the 2012 EPA's Construction General Permit. All stormwater controls

were installed in accordance with good engineering practices, including applicable design specifications. All erosion and sediment controls were inspected periodically, and any problems were be fixed immediately after discovery.

- **Site Assessment:** To protect the health of vulnerable populations by ensuring that the site is assessed for environmental contamination and that any environmental contamination has been remediated.

The following assessments were conducted at Shore Acres Recreational Center:

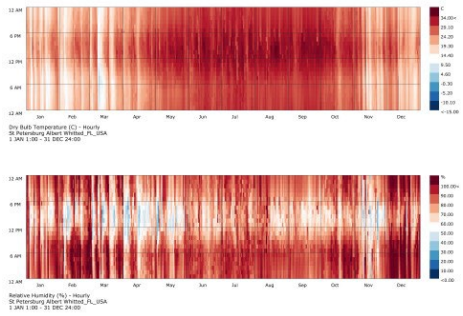
- **Topography:** There are minimal existing topographical contours as shown in the survey provided. The information was used to delineate subbasins internal to the site.
- **Hydrology:** The entire project is in the FEMA flood zone AE with a flood elevation of 9 feet. For increased resiliency, the finished floor elevation was set two (2) feet above the flood elevation. There are no existing surface water resources on the site.
- **Rainwater Infrastructure:** The project uses an underground stormwater vault and two dry retention ponds. The intent when looking at the project site was to utilize existing green areas for retention and the remaining treatment volume in an underground stormwater vault.
- **Climate: Solar exposure:** 62° March and September Equinox, 85° June solstice, 39° December solstice. Since the longest facade of the project are facing East and West, the project team decided to locate the non-occupied areas on these two orientations to reduce the solar heat gains, potential thermal discomfort and the glare. There are only two offices spaces facing east, and the study room facing west, so the project team ensured the window-to-wall ratio was reduced and blinds were provided.
- **Heat Island Effect:** A coating used in the existing asphalt pavement was used for the new asphalt in order to reduce heat island effect.
- **Prevailing Winds:** The project site experiences significant seasonal variation over the year in terms of hourly wind speed. The windier part of the year lasts for 7.8 months, from September to May, with average wind speeds of more than 8.6 miles per hour. The windiest day of the year is in early November 6, with an average hourly wind speed of 10.7 miles per hour.
  Since the site has winds from different orientation all year round, the project team included strategies to increase the natural ventilation. The design team provided enough openings on the east and west facade to create induced natural ventilation in the gym. Additionally, the pool area was protected by the building structure to create a wind barrier on the north side during the cold months. (From early November to mid-March)
- **Average Monthly Precipitation: 4.09 inches** (This information was used to calculate the runoff flow rates and volume for the existing and proposed conditions)
- **Significant Trees & Vegetation:** Large native trees were preserved to provide buffering around the site and to provide canopy coverage and maintain existing canopy.
- **Soils:** According to the NRCS Web Soil Survey the site is covered with Matlacha and St. Augustine soils and urban land. The soil type was used in run-off calculations for this project. The site consists of predeveloped or disturbed soils and it is considered to be well-drained.

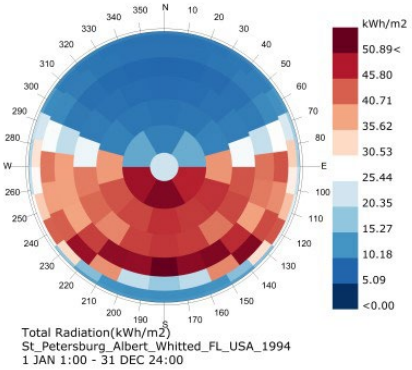
- **Human use:** Views to existing residential lots influenced the proposed buffer placement and plant material selection. There is existing pedestrian crosswalk connecting to the adjacent neighborhood, existing bike lane, and existing sidewalks along the property boundary.
- **Adjacent Properties:** There is residential property adjacent to the project. Appropriate screen and buffering have been provided.
- **Construction Materials:** Primally concrete and steel products, and the project mainly utilized concrete and steel for the structure. Since the project was developed next to an existing structure it was important for the team to create visual homonegativity.
- **The strategies utilized by the project team to reduce waste were the following:**
- Preserve existing sidewalks and a portion of the parking
- Utilize precast concrete to minimize wastage onsite
- Utilize fewer materials. (The project left many structural elements exposed to reduce the need for finishing materials).
- **Human health effects:** According to the psychrometric chart, the project has great potential to use thermal mass and night ventilation and internal heat gains to achieve thermal comfort without any mechanical assistance. The project team utilized concrete with high thermal inertia with openings so the project can be thermal comfortable without electricity in case of an emergency. (Especially the gymnasium) In the case of heatwaves and power outage during winter, the project has the capacity of providing heat via thermal inertia.
- **Adjacent Physical Activity Opportunities:** The project itself have physical activity opportunities and have direct access to a bike lane.

- **Heat Island Reduction:** To minimize effects on microclimates and human and wildlife habitats by reducing heat islands.
  Shore Acre Recreational Center reduce the Heat Island effect by installing High-Reflectance materials in roofing and hardscape areas. A coating used in the existing asphalt pavements was used for the new asphalt to reduce heat.

Climate

Climate classification : tropical monsoon climate.





Seasonal Sun Angles the sun altitude at noon in summer is 83.15° (21st June) and in Winter is 38.57 (21st December). Refer to the sun path.
In St. Petersburg, the temperature typically varies from 56°F to 89°F and is rarely below 46°F or above 93°F.
The summer (warm season) lasts for 4.6 months, from mid-May to early October, with an average daily high temperature above 85°F.
The hottest day of the year is July 22, with an average high of 89°F and low of 79°F.

The highest radiation is from 10:00 AM to 3:30 PM Southeast (150° sun azimuth) and Southwest (210° sun azimuth) with a sun altitude of 45°. = 50.89 kWh/sqm sun altitude of 83° (noon time) = 45.80 kWh/sqm.

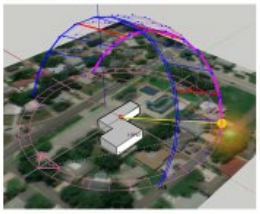
The building is elongated on the on the north-south axis, therefore the longest two façades are facing east and west.

Seasonal sun angles the sun altitude in summer is 83.15° (21st June) and in winter is 38.57° (21st December).

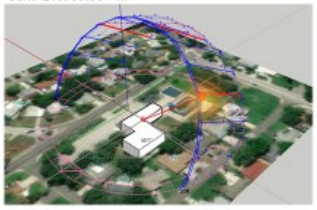
The higher radiation is at 3:00 PM on the west façade with a sun azimuth or 82° and a sun altitude of 45°.

Seasonal Angles

December 21st 04:00 PM



June 21st 03:00 PM



WATER EFFICIENCY

Overview:

The Water Efficiency (WE) section addresses water holistically, looking at indoor use, outdoor use, specialized uses, and metering. The section is based on an "efficiency first" approach to water conservation. As a result, each prerequisite looks at water efficiency and reductions in potable water use alone. Then, the WE credit additionally recognize the use of non-potable and alternative sources of water.

The conservation and creative reuse of water are important because only 3% of Earth's water is fresh water, and of that, slightly over two-thirds is trapped in glaciers. Typically, most of a building's water cycles through the building and then flows off-site as wastewater. In developed nations, potable water often comes from a public water supply system far from the building site, and wastewater leaving the site must be piped to a processing plant, after which it is discharged into a distant water body. This pass-through system reduces streamflow in rivers and depletes freshwater aquifers, causing water tables to drop and wells to go dry.

In addition, the energy required to treat water for drinking, transport it to and from a building, and treat it for disposal represents a significant amount of energy use not captured by a building's utility meter. Research in California shows that roughly 19% of all energy used in this U.S. state is consumed by water treatment and pumping.

In the U.S., buildings account for 13.6% of potable water use, the third-largest category, behind thermoelectric power and irrigation. Designers and builders can construct green buildings that use significantly less water than conventional construction by incorporating native landscapes that eliminate the need for irrigation, installing water-efficient fixtures, and reusing wastewater for non-potable water needs. The Green Building Market Impact Report 2009 found that LEED projects were responsible for saving an aggregate 1.2 trillion gallons (4.54 trillion liters) of water.

Shore Acres Recreation Center has implemented the following strategies for the Water Efficiency category:

- **Outdoor Water Use Reduction:** To reduce outdoor water consumption.
  The recreation center utilizes 100% irrigation that is provided using reclaimed city water.
- **Indoor water Use Reduction:** To reduce indoor water consumption.
  The total percentage of water reduction from baseline is 43.66% or a difference of 52,708 gallons of water saved annually. All eligible newly installed fixtures and fittings are Water Sense labeled.
- **Building Level Water Metering:** To support water management and identify opportunities for additional water savings by tracking water consumption.
  Shore Acres Rec Center has permanent water meters that measure the total potable water use for the building and associated grounds.
- **Water Metering:** To support water management and identify opportunities for additional water savings by tracking water consumption.
  Shore Acres Rec center operates with 3 meters: 1 for domestic water, 1 for the swimming pool and the one for the irrigation system. All of them cover 100% of the water used for each subsystem.

ENERGY & ATMOSPHERE

Overview:

The Energy and Atmosphere (EA) category approaches energy from a holistic perspective, addressing energy use reduction, energy-efficient design strategies, and renewable energy sources.

Energy efficiency in a green building starts with a focus on design that reduces overall energy needs, such as building orientation and glazing selection, and the choice of climate-appropriate building materials. Strategies such as passive heating and cooling, natural ventilation, and high-efficiency HVAC systems partnered with smart controls further reduce a building's energy use. The generation of renewable energy on the project site or the purchase of green power allows portions of the remaining energy consumption to be met with non–fossil fuel energy, lowering the demand for traditional sources.

The American Physical Society has found that if current and emerging cost-effective energy efficiency measures are employed in new buildings and in existing buildings as their heating, cooling, lighting, and other equipment is replaced, the growth in energy demand from the building sector could fall from a projected 30% increase to zero between now and 2030. The EA section supports the goal of reduced energy demand through credits related to reducing usage, designing for efficiency, and supplementing the energy supply with renewables.

Shore Acres Recreational Center implemented the following strategies for the Energy and Atmosphere category:

- **Fundamental Commissioning and Verification**: To support the design, construction, and eventual operation of the project that meets the owner's project requirements for energy, water, indoor environmental quality, and durability.
  SEQUIL Systems Inc was hired as the project's Commissioning Authority to verify the systems specified in the Owner's Project Requirements (OPR), Basis of Design (BOD), and construction documents are installed and operating as intended.
- **Minimum Energy Performance:** To reduce the environmental and economic harms of excessive energy use by achieving a minimum level of energy efficiency for the building and its systems.

The recreation center meets mandatory requirements of ASHRAE 90.1-2010. The project achieved a 64% improvement in energy performance.

- **Building Level Energy Metering**: To support energy management and identify opportunities for additional energy savings by tracking building-level energy use.
  Shore Acres Rec Center has permanently installed, building-level energy meters that account for all sources of energy delivered to the building by an external provider. The project owner commits to providing energy consumption data to USGBC.
- **Fundamental Refrigerant Management:** To reduce stratospheric ozone depletion.
  Shore Acres does not include any CFC-based refrigerants in any new mechanical cooling or refrigeration equipment serving the project.
- **Enhanced Commissioning:** To further support the design, construction, and eventual operation of a project that meets the owner's project requirements for energy, water, indoor environmental quality, and durability.
  SEQUIL Systems Inc. provided Enhanced Commissioning services which verifies the submittals which incorporates reviewing HVAC submittals, assisting in owner training, and providing a 10-month warranty visit.
- **Optimize Energy Performance**: To achieve increasing levels of energy performance beyond the prerequisite standard to reduce environmental and economic harms associated with excessive energy use.
  This project achieved the highest number of points (18 points) available in the LEED rating system for energy performance.
- **Renewable Energy Production:** To reduce the environmental and economic harms associated with fossil fuel energy by increasing self-supply of renewable
  The project utilizes photovoltaic panels as a renewable energy source to offset over 30% of proposed energy consumption. The building can off-set a total of $8,297 annually with renewables.
- **Enhanced Refrigerant Management**: To reduce ozone depletion and support early compliance with the Montreal Protocol while minimizing direct contributions to climate change.
  Refrigerants in HVAC&R systems minimize or eliminate the emission of compounds that contribute to ozone depletion and climate change. The combination of all new HVAC&R equipment that serve the project comply with the maximum threshold.

MATERIALS AND RESOURCES

Overview:

The Materials and Resources (MR) credit category focuses on minimizing the embodied energy and other impacts associated with the extraction, processing, transport, maintenance, and disposal of building materials. The requirements are designed to support a life-cycle approach that improves performance and promotes resource efficiency. Each requirement identifies a specific action that fits into the larger context of a life-cycle approach to embodied impact reduction.

Construction and demolition waste constitute about 40 percent of the total solid waste stream in the United States and about 25% of the total waste stream in the European Union. In its solid waste management hierarchy, the U.S. Environmental Protection Agency (EPA) ranks source reduction, reuse, recycling, and waste to energy as the four preferred strategies for reducing waste.

Source reduction appears at the top of the hierarchy because it avoids environmental harms throughout a material's life cycle, from supply chain and use to recycling and waste disposal. Source reduction encourages the use of innovative construction strategies, such as prefabrication and designing to dimensional construction materials, thereby minimizing material cutoffs and inefficiencies.

Recycling is the most common way to divert waste from landfills. In conventional practice, most waste is landfilled—an increasingly unsustainable solution. In urban areas landfill space is reaching capacity, requiring the conversion of more land elsewhere and raising the transportation costs of waste. Innovations in recycling technology improve sorting and processing to supply raw material to secondary markets, keeping those materials in the production stream longer.

LEED projects are responsible for diverting more than 80 million tons (72.6 million tons) of waste from landfills, and this volume is expected to grow to 540 million tons (489.9 million tons) by 2030.

Shore Acres Recreation Center had implemented the following strategies for the Materials and Resources category:

Storage and Collection of Recycles: To reduce the waste that is generated by building occupants and hauled to and disposed of in landfills.

The building has a thorough recycling sorting process. The following items are recycled on site and sorted separately:

- **Mixed paper, Corrugated cardboard, Glass, Plastics, Metals, E-waste & Batteries**

- **Construction and Demolition Waste Management Planning**: To reduce construction and demolition waste disposed of in landfills and incineration facilities by recovering, reusing, and recycling materials.
  The building implemented a Construction and Demolition Waste Management Plan in coordination with the waste hauler that includes five materials targeted for diversion, therefore diverting this waste from landfills and incinerators.
- **Building Product Disclosure and Optimization- Environmental Product Declaration:** To encourage the use of products and materials for which life-cycle information is available and that have environmentally, economically, and socially preferable life-cycle impacts. To reward project teams for selecting products from manufacturers who have verified improved environmental life-cycle impacts.
  The project team selected products from manufacturers who have verified improved environmental life-cycle impacts using Environmental Product Declarations.
- **Building Product Disclosure and Optimization- Sourcing of Raw Material:** To encourage the use of products and materials for which life cycle information is available and that have environmentally, economically, and socially preferable life cycle impacts. To reward project teams for selecting products verified to have been extracted or sourced in a responsible manner.
  The project team selected products verified to have been extracted or sourced in a responsible manner and contain recycled content.
- **Building Product Disclosure and Optimization-Materials Ingredients:**
  To encourage the use of products and materials for which life-cycle information is available and that have environmentally, economically, and socially preferable life-cycle impacts. To reward project teams for selecting products for which the chemical ingredients in the product are inventoried using an accepted methodology and for selecting products verified to minimize the use and generation of harmful substances. To reward raw material manufacturers who produce products verified to have improved life-cycle impacts.
  The project team selected products from manufacturers that demonstrate chemical inventory of the product to at least 0.1% using Health Product Declarations.
- **Construction and Demolition Waste Management:** To reduce construction and demolition waste disposed of in landfills and incineration facilities by recovering, reusing, and recycling materials.
  Shore Acres Rec Center project was able to divert more than 98% of construction waste from landfill.

INDOOR ENVIRONMENTAL QUALITY

Overview:

The Indoor Environmental Quality (EQ) category rewards decisions made by project teams about indoor air quality and thermal, visual, and acoustic comfort. Green buildings with good indoor environmental quality protect the health and comfort of building occupants. High-quality indoor environments also enhance productivity, decrease absenteeism, improve the building's value, and reduce liability for building designers and owners1. This category addresses the myriad design strategies and environmental factors—air quality, lighting quality, acoustic design, control over one's surroundings—that influence the way people learn, work, and live.

The EQ category combines traditional approaches, such as ventilation and thermal control, with emerging design strategies, including a holistic, emissions- based approach (Low-Emitting Materials credit), source control and monitoring for user-determined contaminants (Enhanced Indoor Air Quality Strategies credit), requirements for lighting quality (Interior Lighting credit), and advanced lighting metrics (Daylight credit).

Shores Acres Recreation Center implemented the following strategies for the Indoor Air Quality category:

- **Minimum Indoor Air Quality Performance:** To contribute to the comfort and well-being of building occupants by establishing minimum standards for indoor air quality (IAQ).
  The project meets the requirements of ASHRAE Standard 62.1-2010, Sections 4-7.
- **Environmental Tobacco Smoke Control:** To prevent or minimize exposure of building occupants, indoor surfaces, and ventilation air distribution systems to environmental tobacco smoke.
  Smoking is prohibited inside and outside the project building. The no-smoking policy applies to spaces outside the property line used for business purposes.
- **Enhanced Indoor Air Quality Strategies**: To promote occupants' comfort, well- being, and productivity by improving indoor air quality.
  This project included the following IAQ strategies: entryway systems, interior cross-contamination prevention where hazardous gases or chemicals may be present or utilized and mechanical ventilation utilizes MERV 13 level filtration.
- **Low-Emitting Materials:** To reduce concentrations of chemical contaminants that can damage air quality, human health, productivity, and the environment.

The project team selected products with reduced concentrations of chemicals contaminants by using interior paints and coatings with Low VOC meeting limits of the SCAQMD Rule 1113, Interior adhesives and sealants meeting VOC limits of SCAQMD Rule 1168 and the Composite Woods meeting the CARB ATCM for ultra-low emitting formaldehyde and General Emissions Evaluations.

- **Construction Indoor Air Quality Management Plan:** To promote the well-being of construction workers and building occupants by minimizing indoor air quality problems associated with construction and renovation.
  The project implemented a construction indoor air quality management plan that exceeded SMACNA IAQ Guidelines for Occupied Building under construction.
- **Interior Lighting:** To promote occupants' productivity, comfort, and well -being by providing quality lighting.
  The project has installed lighting controls for over 90% of individual occupant spaces and 100% to multi-occupant spaces.
- **Quality Views:** To give building occupants a connection to the natural outdoor environment by providing quality views.
  96.12% of regularly occupied spaces within the building have access to quality views to the outside.

INNOVATION

Overview:

Sustainable design strategies and measures are constantly evolving and improving. New technologies are continually introduced to the marketplace, and up- to-date scientific research influences building design strategies. The purpose of this LEED category is to recognize projects for innovative building features and sustainable building practices and strategies.

Occasionally, a strategy results in building performance that greatly exceeds what is required in an existing LEED credit. Other strategies may not be addressed by any LEED prerequisite or credit but warrant consideration for their sustainability benefits. In addition, LEED is most effectively implemented as part of a cohesive team, and this category addresses the role of a LEED Accredited Professional in facilitating that process.

Shores Acres Recreation Center implemented the following strategies for the Innovation category:

- **Exemplary Performance - BPDO Environmental Product Declarations:** A performance beyond the LEED credit requirements.
  The project exceeds the LEED requirements of EPD products by doubling the threshold.
- **Green Building Education:** To provide public education focusing on green building strategies and solutions.
  This document, physical signage onsite, and education on the Shore Acres Recreation Center website will help achieve this credit.
- **Exemplary Performance - Renewable Energy Production:** A performance beyond the LEED credit requirements.
  The project exceeds the LEED requirements for renewable energy more than double. The building is utilizing 31.19% renewable energy by cost.
- **[PILOT Credit] Assessment & Planning for Resiliency:** To encourage designers, planners and building owners/operators to proactively plan before design commences for the potential impacts of natural disasters or disturbances as well as address issues that impact long-term building performance such as changing climate conditions.

From early design the project team considered resiliency strategies in the design by identifying high risks associated with natural hazards affecting the project site and building function.

- **Design for Active Occupants:** Improve the health of building users through physical activity while reducing environmental impacts.
  The project team considered various accessible design strategies for active occupants.
- **LEED Accredited Professional:** To encourage the team integration required by a LEED project and to streamline the application and certification process.
  SEQUIL Systems Inc served as the LEED Accredited Professional for the project.

REGIONAL PRIORITY

Overview:

These Regional Priority credits encourage project teams to focus on their local environmental priorities.

USGBC established a process that identified six RP credits for every location and every rating system within chapter or country boundaries. Participants were asked to determine which environmental issues were most salient in their chapter area or country. The issues could be naturally occurring (e.g., water shortages) or man-made (e.g., polluted watersheds) and could reflect environmental concerns (e.g., water shortages) or environmental assets (e.g., abundant sunlight). The areas, or zones, were defined by a combination of priority issues—for example, an urban area with an impaired watershed versus an urban area with an intact watershed.

The goal of Regional Priority credits is to enhance the ability of LEED project teams to address critical environmental issues across the country and around the world.

The Shore Acres Recreation Center had implemented the following strategies for the Regional Priority category:

- **Reduce Parking Footprint**
- **Heat Island Reduction**
- **Sensitive Land Protection**