

Massachusetts Port Authority

Capital Programs and Environmental Affairs Department

**Sustainability and Resiliency Design Standards and Guidelines
(SRDSGs)**

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1 Introduction

1.1 Intended Use of the Sustainability and Resiliency Design Standards and Guidelines (SRDSGs)

The SRDSGs are intended to be used by architects, engineers, planners and contractors working on capital projects for Massport. The SRDSGs apply to both new construction and rehabilitation projects (building and non-building) of any square footage or monetary value. This document should also be used by architects, engineers, planners and contractors working on tenant alterations or development projects on Massport property.

The SRDSGs apply to all projects — even those that intend to seek Leadership in Energy and Environmental Design (LEED)[®] certification or other third-party verifications. Follow the project flow chart in the **User Guide** section to determine a project’s appropriate path.

The SRDSGs are intended to set minimum standards (where applicable) that all Massport projects must attain. In addition, the SRDSGs outline guidelines and goals that frame Massport’s priorities to make a project more Sustainability and Resiliency and to meet its ambitious sustainability goals. These guidelines are not meant to be all inclusive; rather, they serve as a starting point for the integration of sustainability concepts within a project.

This document is meant to be used in coordination with and not to supersede any other standards, codes, or regulations applicable to Massport capital projects.

Massport’s Standard Professional Services Agreement and Capital Programs – Manual II – Guidelines for Consultants have been updated to reflect the development and implementation of the SRDSGs on all Capital Projects.

Policy Context

The SRDSGs and sustainability initiatives discussed above reflect the extensive state and local policy context for sustainability, motivated by the desire to reduce environmental impacts and adapt to an already changing climate. Massachusetts’ 2008 Global Warming Solutions Act (GWSA) established greenhouse gas emissions limits, and Executive Order (EO) 484 of 2007 specifically established energy targets for buildings and requires that new construction at state agencies attain the Mass LEED Plus standard. This standard requires that new state buildings over 20,000 square feet meet LEED certification and that all projects achieve an energy performance 20% better than state energy code. Green building requirements are also specified under Boston Zoning Code Article 37 (although Massport properties are not required to meet these requirements). Resiliency standards and guidelines for Massport properties are shaped by local and state level policies and initiatives, including Climate Ready Boston, Boston’s Climate Action Plan, and Governor Baker’s Executive Order 569 *Establishing an Integrated Climate Change Strategy for the Commonwealth*.

1.2 Sustainability at Massport

In 2015, Massport released the Logan Airport Sustainability Management Plan (SMP) to serve as a roadmap for prioritizing initiatives and moving goals forward along the path toward a more Sustainable Massport. The SMP guides Massport’s sustainability practices at Logan Airport and provides a framework for Massport-wide initiatives to support the Authority’s continued commitment to sustainability.

Defining Sustainability

Massport's Sustainability Vision:

"Massport will maintain its role as an innovative industry leader through continuous improvement in operational efficiency, facility design and construction, and environmental stewardship while engaging passengers, employees, and the community in a sustainable manner."

Massport is taking a broad view of sustainability that considers the airport-specific context. It is extremely important to understand what sustainability is, and is not, regarding the formulation of these SRDSG's. Consistent with the Airports Council International – North America's (ACI-NA) [definition of Airport Sustainability](#), Massport is focused on a holistic approach to managing its properties and operations to ensure Economic viability, Operational efficiency, Natural resource conservation, and Social responsibility (EONS). Beyond its airports, Massport is expanding the use of the ACI-NA EONS concept as a foundation for all of its assets – airports, maritime, and real estate.



Sustainability Goals

As part of the SMP, Massport committed to several performance goals including:

- **Reducing Energy Consumption** – for Massport-operated buildings
- **Reducing Greenhouse Gas Emissions** – for Massport facility operations
- **Reducing Water Use** – for Massport-operated buildings
- **Increasing Construction and Demolition (C&D) Waste Recycling and Reuse**
- **Increasing Recycling** – of municipal solid waste in building operations
- **Initiating a Composting Program** – at Massport facilities
- **Implementing Resiliency Measures** – at Massport facilities
- **Promoting Passenger and Employee Well-Being** – at Massport-operated buildings
- **Minimizing Pollutant Discharges** – from Massport facilities

2 User Guide

2.1 Summary of Updates to These SRDSGs

The SRDSGs ensure a minimum standard of sustainability for all Massport projects by codifying the sustainability practices that Massport and the construction industry are already striving to achieve. The revised SRDSGs introduce several simplifications to streamline processes and facilitate compliance with standards, including a three-pathway model based on project type to guide SRDSG users.

Massport's **Sustainability and Resiliency Design Standards ("Standards")** set the minimum requirements that must be met for all Massport projects. Further, these **Sustainability and Resiliency Design Guidelines ("Guidelines")** introduce recommended measures for advanced achievement.

Massport Requirements for All Projects:

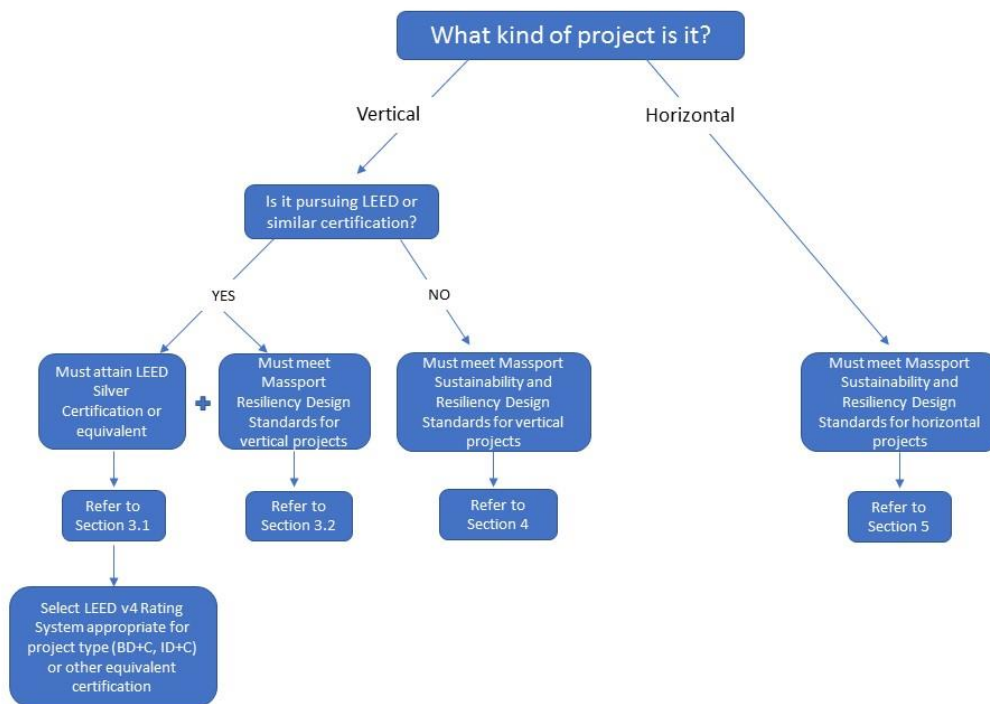
- All projects must pursue LEED and meet the prerequisites and credits for a Silver Certification or higher, pursue another LEED analogous program decided upon early in the project definition phase, *or* meet the **Sustainability and Resiliency Design Standards** as outlined herein, wherever applicable.
- For projects pursuing LEED, **U.S. Green Building Council LEED Silver Certification or higher is required**. This requirement applies to buildings eligible for LEED for Building Design and Construction (including major renovations) (BD+C), as well as LEED for Interior Design and Construction (ID+C).
- Projects pursuing pathways for LEED certification or an analogous program **must also** comply with the **Resiliency Standards** that have been incorporated into this update.
- For projects not pursuing LEED or an analogous program, the **Sustainability and Resiliency Design Standards** must be met.

Massport Guidelines for All Projects:

- The **Guidelines** introduce advanced sustainability and resiliency measures enable project design teams to go above and beyond Massport **Standards** within specific sustainability categories.
- The updated SRDSG process enables project teams to identify a simple pathway for compliance with sustainability and resiliency **Standards**, while providing guidance and flexibility for more advanced levels of sustainability performance.
- Project teams should work closely with Massport's Sustainability and Resiliency Team to incorporate innovations into their project.

2.2 How to Use This Document

Project Teams must first determine which of three pathways outlined in the SRDSGs to follow, based on project type and consultation with the Massport Sustainability and Resiliency Team. The following decision tree guides SRDSG users through use of this document.



There are two mechanisms for advancing sustainability within the projects under each pathway:

- 1) **Sustainability and Resiliency Design Standards and LEED (LEED-eligible buildings)** – these are standards that are *required* for all Massport projects.
- 2) **Sustainability and Resiliency Design Guidelines** – these are recommended guidelines for more advanced levels of sustainability achievement or performance. These are encouraged, but not required.

All projects must adhere to one of the three pathways:

1. **The Project is eligible for LEED certification or equivalent.** It should reference the applicable **LEED v4 rating** system and pursue certification at a minimum **Silver level**. Additionally, the project must comply with **Resilient Design Standards**, wherever applicable, and consider **Resilient Design Guidelines** wherever feasible. Refer to Section 3 for additional guidance.
2. **The Project is a building project, but is not a building type that is eligible for LEED certification or equivalent**, such as a parking garage. These projects must comply with **all Sustainability and Resiliency Design Standards** described in Section 4 and should consider meeting additional **Guidelines** wherever feasible.
3. **The Project is a non-building project.** It should comply with **all Sustainability and Resiliency Design Standards** for infrastructure described in Section 5 and should consider meeting additional **Guidelines** wherever feasible.

All projects must meet the requirements of the **Standards**, including, where applicable, the requirements of the LEED certification process or equivalent. All projects are encouraged, but not required, to pursue the **Guidelines**, where applicable. Each of the pathways specifies both **Standards** and **Guidelines** within topical categories.

2.3 Procedures

Evaluation

During the initial or pre-design phase for a project, the project team must meet with Massport's Sustainability and Resiliency Team in Capital Programs and Environmental Affairs to:

- 1) Determine project type and LEED or equivalent eligibility (where applicable);
- 2) For building projects not pursuing LEED or equivalent and infrastructure projects, review the **Standards** to make sure all items are included in project definition and to identify which, if any, items aren't applicable to the project;
- 3) Review applicability of the **Guidelines** to the project scope; and
- 4) Identify potential sustainability opportunities or innovations to incorporate within project design above and beyond the **Standards** and **Guidelines**.¹

Sustainability and Resiliency Design Standards

Depending on project type, Massport requires project teams to complete applicable checklists. After the evaluation meeting with Massport's Sustainability Project Manager, the Project Team will submit one of the following to the Sustainability Project Manager for approval:

- **If pursuing LEED or equivalent:** Preliminary **LEED or equivalent Checklist** and **Resilient Standards Checklist**.
- **All other projects:** Sustainability and Resiliency Design Standards Checklist.

The initial **Sustainability and Resiliency Standards Checklist** submittal will be at the beginning of the design process to ensure that the project team is designing to Massport requirements. If there are significant changes during the design and construction process to the **Standards Checklist**, please notify the Sustainability Project Manager for approval.

At the completion of the project, a final **LEED Checklist**, **Resilient Standards Checklist**, and/or **Sustainability and Resiliency Standards Checklist** must be submitted to the Sustainability Project Manager. Backup materials for the **Checklists** should be kept with the project files and are to be provided upon request to the Sustainability Project Manager or other Massport employees.

Sustainability and Resiliency Design Guidelines

In addition to the required checklists for documenting compliance with LEED and/or design **Standards**, the Project Team will identify additional opportunities for advanced sustainability performance as provided in the **Guidelines**, or recommended actions. The Project Team will document the intent, or lack thereof, to meet additional **Guidelines** in a memorandum during the pre-design phase of the project. If nothing additional will be done the decision logic must be memorialized and kept with the file documentation. If additional measures will be pursued, the Project Manager must document

¹ There are many approaches to construction and operation that are considered sustainable. The SRDSGs are a starting point to consider sustainability and are not all inclusive. Massport welcomes new and innovative solutions to sustainability that are within the scope of a project.

implementation throughout, and submit a final memorandum summarizing achievements at project completion.

3 Buildings – Pursuing LEED or Similar Certification

3.1 Determination of LEED Eligibility

If the building project falls into any of the types listed in the top portion of the table below, it is eligible to pursue LEED Silver Certification, or higher.

LEED-Eligible Building Projects	
<ul style="list-style-type: none">• Terminals (Airport, Cruiseport)• Rental Car Facilities• New Commercial Office/Administrative Space• Hotels• Interior Renovation and Building Addition Projects (over \$10,000,000)	<ul style="list-style-type: none">• Airport Hangars• Retail or Restaurant Space within a larger project seeking LEED• Residential and Mixed-Use Buildings• Warehouse Spaces or Storage Facilities (if occupied)• All other building projects over \$10,000,000
Non-LEED Eligible Building Projects	
<ul style="list-style-type: none">• Parking Garages• Small Interior Renovation and Building Addition Projects (\$10,000,000 or less)	<ul style="list-style-type: none">• Retail or Restaurant Space not within a larger project seeking LEED• Warehouse Spaces or Storage Facilities (if unoccupied)• Transit stations/ (bus, train, MBTA)• Unoccupied Mechanical or Equipment Space such as Ventilation Facilities

LEED eligible building projects should refer to the most current version of the LEED rating system and certification procedures, as found in:

- LEED vx Building Design + Construction (BD+C) rating system
- LEED vx Interior Design + Construction (ID+C) rating system

The most current LEED version, at the time of the publication of this version of the DRDGs is v4.

In addition to following all Prerequisites within the appropriate LEED rating system and submitting required documentation for a Silver level of certification, the Project *must also comply with the Resiliency Standards* described in the following section and pursue **Resiliency Guidelines** wherever feasible. Documentation of LEED pursuit and Certification as well as compliance with the **Resiliency Standards and Guidelines** will be submitted to the Massport Sustainability Project Manager in accordance with the procedures outlined in *Section II - Procedures*.

3.2 Resilient Design Standards and Guidelines

Intent

To account for the current and future implications of climate change.

As part of the Logan Airport SMP, Massport has committed to a number of objectives for Logan Airport including the following performance goals:

- **Implementing Resiliency Measures** – at Massport facilities

Massport’s **Resilient Design Standards and Guidelines** aim to protect Massport properties, facilities, and passengers from anticipated extreme weather impacts in Massachusetts². These impacts generally fall into the following categories:

- **Sea Level Rise (SLR):** under an intermediate-high scenario, relative SLR projections for Boston are 1.2 feet by 2050 and 3.9 feet by 2100;³ Under such conditions, Massport’s coastal properties, particularly Logan Airport and properties in South Boston, will be even more vulnerable to flooding from storm surge and high tide.
- **Precipitation/extreme storms:** projected increase of frequency and intensity of heavy precipitation events will increase the risk of damage from flooding, power outages, and storm debris. An 8% increase in extreme precipitation events is predicted in the northeastern U.S. by 2050, and a 13% increase by 2100.
- **Temperature increase:** overall hotter temperatures and increases in heat wave (more than three consecutive days at or above 90°F) frequency present risks to public health and stress energy sources. Northeastern cities are projected to see 60 or more days above 90°F under a high-emissions scenario⁴ by the end of the century.

Since buildings and infrastructure at Massport are being built today that will still be in use decades from now, it is essential that they are designed and constructed to withstand impacts from today’s extreme weather conditions, as well as future conditions.

Standards (Required)

Floodproofing

Meet requirements set forth in the Massport Floodproofing Design Guide (2015),⁵ including, but not limited to:

- Design Flood Elevation (DFE): 17 feet (NAVD 88) for critical new facilities at Logan Airport or in South Boston as specified in the Massport Floodproofing Design Guide; DFE used to determine design elements (loads, structural calculations, elevations for floodproofing of critical infrastructure).
- Floodproofing strategies: Dry or wet floodproofing techniques will be employed for all new construction; allowable uses of each technique limited to cases described in Massport Floodproofing Design Guide Chapter 5.
- Floodproofing of critical equipment: all critical equipment must be dry or wet floodproofed in accordance with requirements outlined in Massport Floodproofing Design Guide Chapter 6.

² For more information on anticipated impacts in Massachusetts, see <https://www.mass.gov/service-details/climate-change-in-massachusetts-and-its-impacts>

³ For Boston SLR projections, see <https://www.mass.gov/files/documents/2016/08/vp/slr-guidance-2013.pdf>

⁴ Defined by the IPCC as a world atmospheric CO2 reaches 970ppm

⁵ See <https://www.massport.com/media/1149/massport-floodproofing-design-guide-revised-april-2015.pdf>

Suggested documentation:

In accordance with Massport Floodproofing Design Guide (2015).

Standards (cont.)

Back-up power

All critical buildings/facilities must have back-up power sources (generators and/or alternative energy options such as solar panels, wind turbines) and battery storage capability in the event of power loss during an extreme storm.⁶

Energy load

All buildings must have the following to reduce stress on Massport's power supply:

- Energy control systems.
- High efficiency air conditioning units.

Debris-protection

Building exteriors must contain design features that protect structures from air-borne storm debris, extreme winds, and water:

- Materials must resist potential damages, to the most practical extent possible.
- Roof must be constructed in accordance with FEMA Wind Zone II velocities.
- Windows, doors, and other openings must be water intrusion resistant.

Guidelines (Recommended)

Debris-protection

Design building exteriors (roof, windows, etc.) to withstand FEMA Wind Zone III velocities or higher.⁷

Monitoring system

Establish a cloud-based monitoring system for critical building operations that provides warnings when operations are stressed or projected to be stressed in the near future. Ensure system has a backup power source in case of power loss.

Backup power supply

Backup power sources, such as generators, should be fueled from reliable, dependable sources. However, if possible, the use of renewable or alternative fuel sources to power emergency generators should be examined.

⁶ See RELi Action List + Credit Catalog, retrieved at: <http://online.anyflip.com/zygc/ojoi/mobile/index.html#p=30>

⁷ Ibid.

4 Buildings – Not Pursuing LEED

4.1 Project Types

If the building project falls into any of the non-eligible types listed in the table below, it is not eligible for LEED or similar certification, and should instead follow the **Standards** and **Guidelines** described throughout this section.

LEED-Eligible Building Projects	
<ul style="list-style-type: none">• Terminals (Airport, Cruiseport)• Rental Car Facilities• New Commercial Office/Administrative Space• Hotels• Interior Renovation and Building Addition Projects (over \$10,000,000)	<ul style="list-style-type: none">• Airport Hangars• Retail or Restaurant Space within a larger project seeking LEED• Residential and Mixed-Use Buildings• Warehouse Spaces or Storage Facilities (if occupied)• All other building projects over \$10,000,000
Non-LEED Eligible Building Projects	
<ul style="list-style-type: none">• Parking Garages• Small Interior Renovation and Building Addition Projects (\$10,000,000 or less)	<ul style="list-style-type: none">• Retail or Restaurant Space not within a larger project seeking LEED• Warehouse Spaces or Storage Facilities (if unoccupied)• Transit stations/ (bus, train, MBTA)• Unoccupied Mechanical or Equipment Space such as Ventilation Facilities

4.2 Energy and Emissions

Intent

As part of the Logan Airport SMP, Massport has committed to a number of objectives for Logan Airport including the following performance goals:

- **Reducing Energy Consumption** – for Massport-operated buildings
- **Reducing Greenhouse Gas Emissions** – for Massport facility operations

To support progress in meeting these goals, it is essential that new projects are designed and constructed to be as energy efficient as possible and use energy sources that minimize greenhouse gas emissions.

Standards (Required)

The following standards are required for all building projects that are non-LEED eligible.

Energy Efficiency

Target building energy efficiency of 20% below current Massachusetts Energy Code or 10% below existing energy consumption for renovation projects.⁸

Suggested Documentation

Suggested documentation of improvement over code is a narrative describing energy efficient equipment and energy efficiency measures with estimates for performance improvement.

Lighting - Interior and Exterior

Install high efficiency lighting systems, notably LED lighting, for all light uses.

Maximum candela value of all interior lighting must fall within the building and exterior lighting must fall within site limits.

Suggested Documentation

A photometric plan is required to demonstrate compliance.

Lighting – Sensors

- Evaluate opportunity for photo and/or motion sensors on all interior and exterior non-emergency lighting.
- Dimming lights may be used to maintain security and/or meet operational requirements where appropriate.

Refrigerant Management

Use non-CFC and non-HCFC based refrigerants in mobile and stationary AC equipment.

Suggested Documentation

- List of refrigerants used in HVAC equipment and vehicles.
- Replacement, recharge, and disposal procedures that minimize leak potential.

HVAC Systems

All pumps and fans must operate on variable frequency drives.

⁸ Massachusetts Energy Code - International Energy Conservation Code (IECC) 2015 which references ASHRAE 90.1-2013; Exec Order 484 and MA Leading By Example

Standards (cont.)

Energy Use Metering

- Install metering and sub-metering for electrical, water and heating/cooling distribution in accordance with Massport specifications;
- For renovation projects, install pre-construction metering (where needed) to capture project savings.⁹

3rd Party Commissioning

Hire an independent Commissioning Agent to verify energy and HVAC systems have been installed, calibrated, and perform according to design specifications at project completion and 10 months post-occupancy.¹⁰

Guidelines (Recommended)

The following guidelines are recommended for all building projects.

Onsite Renewable Distributed Energy

Conduct a feasibility analysis for onsite renewable energy that meets a minimum of 2.5% of a project's projected energy requirements for building projects over 20,000 sq. ft.

and/or

Conduct a feasibility analysis for onsite distributed energy generation.

Suggested Documentation

- List of refrigerants used in HVAC equipment and vehicles.
- Replacement, recharge, and disposal procedures that minimize leak potential.

Greenhouse Gas Emissions Impacts

For projects over \$10 million, report the estimated greenhouse gas emission impacts from both project construction and the first year of full operation of facility. Incorporate the greenhouse gas impact reporting throughout the project's design and construction in order to understand how design and construction decisions impact greenhouse gas emissions.

Greenhouse gas emissions for scope 1 and scope 2 should only be considered. Greenhouse gas emissions associated with locally assembled or prepared materials, such as concrete, asphalt and precast concrete should also be included.

Include:

⁹ LEED v4 Prerequisite- Building-Level Energy Metering; LEED v4 Credit- Advanced Energy Metering; [Metering Best Practices Guide, FEMP](#)

¹⁰ LEED v4 requirements for Fundamental Commissioning and Verification; Commissioning Report with test results and any corrective actions documented

- Emissions from electricity, heating and cooling associated with the facility.
- Fuel and electricity used by onsite construction vehicles, machinery and other items. Includes fuel used to transport machinery back and forth to the construction site.

This analysis is not intended to include life cycle costs of construction materials.

Suggested Documentation

Greenhouse gas emissions by source and scope. Energy related emissions may be documented as part of energy and/or transportation models. An online calculator may support quantification of additional project sources.

4.3 Water Consumption

Intent

As part of the Logan Airport SMP, Massport has committed to the following performance goals at Logan Airport:

- **Reducing Water Use** – for Massport-operated buildings

Standards (Required)

The following standards are required for all building projects that are Non-LEED Eligible.

Indoor Water Use

Target water use reduction by 20% below Massachusetts plumbing code.¹¹

Suggested Documentation

Water use calculations.

Water Use Metering

- Install metering and sub-metering for electrical, water and heating/cooling distribution in accordance with Massport specifications.
- For renovation projects, install pre-construction metering (where needed) to capture project savings.¹²

Outdoor Water Use

Maximize landscaped area and use native plant materials that require less use of irrigation/watering where appropriate with the goal of reducing irrigation water by 50%.¹³

Suggested Documentation

Irrigation water use calculations.

¹¹ LEED v4 Water Efficiency: Indoor Water Use Reduction; Exec Order 484 and MA Leading By Example

¹² LEED v4 Prerequisite- Building-Level Water Metering; LEED v4 Credit- Water Metering

¹³ Exec Order 484 and MA Leading By Example

Guidelines (Recommended)

The following guidelines are recommended for all building projects.

Rainwater Capture

Conduct feasibility analysis for rainwater capture and reuse for landscaping and/or a gray water system for building projects over 20,000 sq. ft.

Suggested Documentation
Feasibility analysis report.

4.4 Materials, Waste Management, and Recycling

Intent

To reduce the consumption of virgin materials, assure high-quality indoor environments from an occupant health perspective, and support a circular economy through the purchase and installation/use of environmentally preferable building materials, furniture, and fixtures.

To support a high diversion rate and prevent contamination of the recycling stream through the incorporation of best waste handling, storage, and disposal practices in building design, construction, and operation.

As part of the Logan Airport SMP, Massport has committed to the following performance goals at Logan Airport:

- **Increasing Recycling** – of municipal solid waste in building operations
- **Initiating a Composting Program** – at Massport facilities
- **Increasing C&D Waste Recycling and Reuse**

Standards (Required)

The following standards are required for all building projects that are non-LEED eligible.

Materials Selection

Recycled material/ content

A minimum of 20% (by weight, volume, or cost) of construction materials are reused, repurposed, or have recycled content.¹⁴

Suggested Documentation

List of materials with those being reused or repurposed and recycled content value of new materials.

¹⁴ ISO 14021

Standards (cont.)

Material composition/durability

Give preference to durable materials (for example, silica fume as a replacement for 5 to 7% of Portland cement or recycled wood/plastic composite lumber), which may have higher first costs but are likely to have lower long-term costs due to their longer life-expectancy.

Waste Management

Waste management plan

Develop a waste management plan, and at a minimum, divert 75% or more of four material streams of construction waste. The waste management plan should identify roles and responsibilities, along with an estimate of waste to be generated by waste type, actions to reduce waste, and actions to avoid waste going to a landfill.

Suggested Documentation

Documented waste management plan.

State regulatory compliance: waste bans

Comply with 310 CMR 19.017, *Solid Waste Management – Waste Bans*, which restricts or prohibits the disposal, or transfer for disposal, of certain components of the solid waste stream, including but not limited to: asphalt pavement, brick, and concrete; metal; wood; and clean gypsum wallboard.

Collection, storage, and disposal

Ensure dedicated and appropriately-sized collection, storage, and disposal areas for mixed recycling, food waste/organics, and trash that are convenient and safe to access for building occupants and waste service providers (i.e., janitorial staff and waste haulers).

Where feasible and appropriate, provide trash and recycling chutes and elevator access to exterior haul containers.

Co-location of waste containers

Ensure the building design supports the co-location of trash and recycling, along with organics - as applicable, interior bins and exterior haul containers.

Specialized waste streams

Provide for the safe collection, storage, and disposal of specialized waste streams, such as universal, electronic, and hazardous wastes, as applicable.

Guidelines (Recommended)

The following guidelines are recommended for all building projects.

Materials Selection

Sustainably-sourced wood

Use sustainably-sourced wood such as Forest Stewardship Council (FSC)-certified products and, to the extent practicable, rapidly renewable materials such as agriboard and cotton-batting insulation in temporary and permanent construction.

Product declarations

Where feasible, utilize materials that have Environmental Product Declarations (EPDs)¹⁵ or documented material ingredients (e.g., Health Product Declarations, Cradle to Cradle certification, or similar).

Suggested Documentation

Copies of EPDs for materials used on the project.

Locally-sourced material

Source materials manufactured or prepared within Massachusetts or the larger New England region to reduce greenhouse gas emissions associated with material/product transport and support the local and regional economies.

Life-cycle cost assessment

A life-cycle cost assessment would support related decision-making, as it would quantify total costs including those related to material purchase, installation, maintenance, and eventual replacement.

Waste Management

Construction and demolition waste

Strive for 100% recycled or salvaged materials from construction waste.

Waste coordinator

Designate a waste coordinator to facilitate the waste management plan and provide waste management training for all construction personnel.

Prefabrication

Design out waste by utilizing prefabrication and other off-site construction techniques to the greatest extent practicable. These processes reduce waste generation through factory-controlled and more efficient construction processes.

On-site earthwork

Keep all removed earthwork on-site to reduce off-site hauling or work with Massport to identify potential reuse opportunities among its inventory of facilities and properties.¹⁶

Take-back programs for unused materials

To the extent practicable, work with suppliers that have a take-back program for unused building materials; where no take-back program exists, consider reusing or donating materials that would otherwise be disposed upon project completion (for example, unused paint to local graffiti removal programs).

¹⁵ [UL – Environmental Product Declarations](#)

¹⁶ Envision v3, Resource Allocation Credit RA1.5 Balance Earthwork On Site

Material reuse

- Identify reuse opportunities for existing materials that do not pose a contamination or health risk prior to any demolition activities (for example, crushed concrete).
- If such materials cannot be reused on the project, coordinate with other Massport projects or with Massport departments for creative reuses (for example, using crushed, unreinforced concrete in swales, rip-rap, and drainage).¹⁷

4.5 Indoor Environmental Quality

Intent

To support employees' and passengers' health, safety, comfort, and experience of physical space by maintaining indoor and ambient air quality, minimizing chemical exposure from building and furnishing materials, and providing sufficient light and visibility to the outdoors.

As part of the Logan Airport SMP, Massport has committed to the following performance goals at Logan Airport:

- **Promoting passenger and employee well-being** – at Massport-operated buildings

Standards (Required)

The following standards are required for all building projects that are non-LEED eligible.

Low-Emitting Materials

Use low-VOC (or, where applicable, no-VOC) sealants, adhesives, paints, coatings, carpet systems, composite wood and agrifiber products.

Specify that all shop finished materials are to be low- or no-VOC, including where applicable, primed steel, finished metals including aluminum, finished millwork and finished steel and wood doors, frames and windows.

Specify wood and agrifiber products with no added urea-formaldehyde resins.

Environmental Tobacco Smoke Control

Prohibit smoking inside the building.

Prohibit smoking outside the building except in designated smoking areas located 25 feet from all entries, outdoor air intakes and operable windows.

Guidelines (Recommended)

The following guidelines are recommended for all building projects.

¹⁷ Envision v3 Leadership Credit LD1.4 Pursue By-Product Synergies

Daylight

Provide manual or automatic (with manual override) glare-control devices for all regularly occupied spaces.

Design to allow daylight into occupied spaces in order to connect building occupants with the outdoors and reduce the use of electrical lighting.¹⁸

Quality Views

Give building occupants a connection to the natural outdoor environment by providing quality views. Achieve a direct line of sight to the outdoors via vision glazing for 75% of all regularly occupied floor area.¹⁹

4.6 Surrounding Site

Intent

To promote an environmentally conscious building site that integrates physical structures into their surroundings by making them accessible, adaptable, and compatible with broader sustainability measures.

As part of the Logan Airport SMP, Massport has committed to the following performance goals at Logan Airport:

- **Promoting Passenger and Employee Well-Being** – at Massport-operated buildings
- **Reducing Energy Consumption** – for Massport-operated buildings
- **Reducing Greenhouse Gas Emissions** – for Massport facility operations

Standards (Required)

The following standards are required for all building projects that are non-LEED eligible.

Lighting – Exterior

- Maximum candela value of all interior lighting must fall within the building and exterior lighting must fall within site limits.
- A photometric plan is required to demonstrate compliance.

Standards (cont.)

Heat Island Reduction

Use light-colored and reflective materials on roofs and exposed surface areas, e.g., parking lots, unless otherwise precluded by FAA regulation.²⁰

Suggested Documentation

SRI value of roof and other surface areas.

¹⁸ LEED v4 Indoor Environmental Quality: Daylight

¹⁹ LEED v4 Indoor Environmental Quality: Quality Views

²⁰ LEED v4 Sustainable Sites: Heat Island Reduction

Walking Paths

Ensure that all projects have safe pedestrian pathways to all primary building entrances from public sidewalks, parking facilities or adjacent properties (where applicable).

Alternative Fuel Vehicle Infrastructure

Designate at least 1% of all parking spaces as hybrid/alternative fuel parking at all parking facilities with over 100 spaces. Level 3 spaces should be restricted to short term parking, e.g. cell phone lot/TNC.

Reserve at least one parking space for electric vehicles in all parking facilities over 50 spaces and install a Level 1 or Level 2 electric vehicle charging station.

Guidelines (Recommended)

The following guidelines are recommended for all building projects.

Heat Island Reduction

Use light-colored and reflective materials on airport ramps unless otherwise precluded by FAA regulation.

Healthy Communities

Incorporate strategies for improved environmental health for Massport passengers/customers, employees and surrounding community.²¹

Recommended for building projects over 10,000 sq. ft., for parks and landscaping or for connection projects.

Public Education

Incorporate public education around sustainability and/or healthy communities through signage, interactive displays or recurring programming.

Rainwater Management Onsite

For open spaces and building projects with site area, where feasible, strive for maximum onsite rainwater infiltration.²²

Alternative Fuel Vehicle Infrastructure

Outfit 10% of all handicap parking spaces with alternative fuel infrastructure.

Bike Storage

Include bike racks for passengers/customers and/or employees, where appropriate.

²¹ See Urban Land Institute's "Building Healthy Places" toolkit.

²² LEED v4 Rainwater Management: Manage stormwater runoff on site for the 95th percentile of regional or local rainfall events using low-impact development and green infrastructure requirements.

4.7 Resilient Design Standards and Guidelines

The Resilient Design Standards and Guidelines for Non-LEED projects, including all related references and requirements, are identical to those identified in Section 3.2 for LEED or similar certification building requirements. Please see that section for reference.

5 Infrastructure

5.1 Project Types

Infrastructure Project Types
Roadways, Bridges, and Tunnels
Runways/Taxiways
Marine Structures (Piers, Docks)
Surface Parking Lots (see Buildings Section for Parking Garages)
Parks / Open Space
Utility Construction and Upgrades
Other Linear Infrastructure

5.2 Energy and Emissions

With the exceptions noted below, the Energy and Emissions Standards and Guidelines for Infrastructure projects, including all related references and requirements, are identical to those identified in Section 4.2 for Buildings – Not Pursuing LEED. Please see that section for further reference.

Standards (Required)

Airport Ramp Electrification

Accommodate infrastructure needs for:

- Ground Power Units (GPU) and pre-conditioned air (PCA) on jet bridges for parked aircraft.
- Charging stations for electric Ground Service Equipment (eGSE).

Guidelines (Recommended)

Reduce Idling

Design roadways and curbside layout to minimize wait times/the need for idling. Install anti-idling signage.

Vehicle Pollution Filters

Strive to have all non-road pre-2007 construction equipment retrofitted with pollution control devices, such as Diesel Oxidation Catalysts (DOC) or Diesel Particulate Filters (DPF).

5.3 Water Consumption

With the exceptions noted below, the Water Consumption Standards and Guidelines for Infrastructure projects, including all related references and requirements, are identical to those identified in Section 4.3 for Buildings – Not Pursuing LEED. Please see that section for further reference.

Standards (Required)

Reduce Potable Water Use

Reduce overall potable water consumption on the project and encourage the use of greywater, recycled water, and/or stormwater to meet water use needs.²³

Suggested Documentation

Water use calculations.

5.4 Materials, Waste Management, and Recycling

With the Guideline exceptions noted below, the Materials, Waste Management, and Recycling Standards and Guidelines for Infrastructure projects, including all related references and requirements, are identical to those identified in Section 4.4 for Buildings – Not Pursuing LEED. Please see that section for further reference.

Guidelines (Recommended)

Materials Selection

Material composition/ durability

Give preference to durable materials (for example, silica fume as a replacement for 5 to 7% of Portland cement or recycled wood/plastic composite lumber), which may have higher first costs but are likely to have lower long-term costs due to their longer life-expectancy.

A life-cycle cost assessment would support related decision-making, as it would quantify total costs including those related to material purchase, installation, maintenance, and eventual replacement.

Third-party verified materials

Procure project materials, supplies, and equipment based on product environmental and social performance as demonstrated through a third-party verified sustainability program such as FSC, Green Seal, EcoLogo, Cradle to Cradle, Concrete Sustainability Council, etc. Consider supporting such an effort through a written sustainable procurement policy.²⁴

Suggested Documentation

Copies of EPDs for materials used on the project.

²³ Envision v3 RA 3.2 Reduce Potable Water Consumption

²⁴ [UL – Environmental Product Declarations](#)

Locally-sourced material

Source materials manufactured or prepared within Massachusetts or the larger New England region to reduce greenhouse gas emissions associated with material/product transport and support the local and regional economies.

Waste Management

Construction and demolition waste

Strive for 100% recycled or salvaged materials from construction waste.

Waste coordinator

Designate a waste coordinator to facilitate the waste management plan and provide waste management training for all construction personnel.

Prefabrication

Design out waste by utilizing prefabrication and other off-site construction techniques to the greatest extent practicable. These processes reduce waste generation through factory-controlled and more efficient construction processes.

On-site earthwork

Keep all removed earthwork on-site to reduce off-site hauling or work with Massport to identify potential reuse opportunities among its inventory of facilities and properties.²⁵

Material reuse

- Identify reuse opportunities for existing materials that do not pose a contamination or health risk prior to any demolition activities (for example, crushed concrete);
If such materials cannot be reused on the project, coordinate with other Massport projects or with Massport departments for creative reuses (for example, using crushed, unreinforced concrete in swales, rip-rap, and drainage), or donate materials to local organizations where appropriate.

5.5 Natural Resource Protection, Water Quality/Stormwater, and Site Design

Intent

Massport's goal is to protect and restore natural resources and water quality near its facilities.

Standards (Required)

Lighting – Exterior

- Maximum candela value of all interior lighting must fall within the building and exterior lighting must fall within site limits.
- A photometric plan is required to demonstrate compliance.

²⁵ Envision v3 RA1.5 Balance Earthwork On Site

Heat Island Reduction

Use light-colored and reflective materials on roofs and exposed surface areas, e.g. parking lots or airport ramps.²⁶

Standards (cont.)

Warm Mix Asphalt

Utilize 100% warm-mix asphalt (WMA) in place of hot-mix asphalt (HMA) in order to improve conditions for workers, protect neighborhood air quality and reduce use of fossil fuel.

Protect Wetlands, Floodplains and Water Bodies

Protect, buffer, enhance and restore areas designated as wetlands, shorelines, and water bodies.²⁷

Guidelines (Recommended)

Permeable Pavement

Maximize the use of permeable paving materials to reduce stormwater run-off and decrease pollution of local water bodies, increase ground water infiltration and lessen the potential for heat island impacts.²⁸

Rainwater Management Onsite For open spaces and building projects with site area, where feasible, strive for maximum onsite rainwater infiltration.²⁹

5.6 Resilient Design Standards and Guidelines

With the exceptions noted below, the Resilient Design Standards and Guidelines for Infrastructure projects, including all related references and requirements, are identical to those identified in Section 4.4 for Buildings – Not Pursuing LEED. Please see that section for further reference.

Standards (Required)

Project Siting

The Project Team must identify siting hazards, including, but not limited to, unstable slopes or areas prone to flooding, and assess and report alternatives.

²⁶ LEED v4 Sustainable Sites: Heat Island Reduction

²⁷ Envision v3 NW1.2 Protect Wetlands and Surface Water

²⁸ ACRP Research Report 178, Guidance for Usage of Permeable Pavement at Airports

²⁹ LEED v4 Rainwater Management: Manage stormwater runoff on site for the 95th percentile of regional or local rainfall events using low-impact development and green infrastructure requirements.

Protect pervious surfaces

Identify and protect any natural buffers (wetlands, undeveloped floodplains) and maintain any other pervious surfaces, where an infrastructure project interferes with such surfaces, which could mitigate impacts through retention/filtration of stormwater runoff during a flooding event and by providing a buffer during ocean water-based flooding events. Viable permeable pavement options must be used. Add locally-appropriate vegetation to otherwise undeveloped areas.³⁰

Standards (cont.)

Minimize utility work disruption

Coordinate life cycles of utilities and pavement and use technologies that minimize disruption during utility work.³¹

Guidelines (Recommended)

Pursue Envision requirements for Climate and Resilience (CR) – Resilience

Consider activities associated with credits CR2.1-CR2.6 within the Envision rating system to further enhance resiliency of the project.³²

³⁰ PANYNJ Sustainable Infrastructure Guidelines IS-6, IS-7, IS8. Retrieved at: <http://www.panynj.gov/about/pdf/Sustainable-infrastructure-guidelines.pdf>

³¹ PANYNJ Sustainable Infrastructure Guidelines IS-12: Coordinate Utility Work. Retrieved at: <http://www.panynj.gov/about/pdf/Sustainable-infrastructure-guidelines.pdf>

³² Envision rating system credits CR2.1-CR2.6