

Policies



Subject Metro Sustainable Buildings and Sites Policy
Section Sustainability, Capital Asset Management
Approved by Marissa Madrigal, Chief Operating Officer
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Policy Purpose: The purpose of the Metro Sustainable Buildings and Sites Policy is to set standards for design, construction, operations, and maintenance of Metro buildings and developed properties that support achievement of Metro’s five Sustainability goals and the Strategic Plan to Advance Equity, Diversity and Inclusion

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Section 1. Purpose and goals

- 1.1. The purpose of the Metro Sustainable Buildings and Sites Policy is to set standards for design, construction, operations, and maintenance of Metro buildings and developed properties that support achievement of Metro’s five Sustainability goals and the Strategic Plan to Advance Equity, Diversity and Inclusion.
- 1.2. This policy applies to all buildings owned and/or operated by Metro, including visitor venues. Different requirements of this policy apply to those buildings and sites, depending on whether they are owned, operated, or both by Metro.
 - 1.2.1. Buildings are defined as “A complete, permanent enclosed structure that is regularly occupied by people and contains conditioned space (heated or cooled)” (see Section 10.2 for full definition). Solid waste transfer stations are included in the policy, though they do not contain conditioned space.
 - 1.2.1.1. Some built structures do not meet the policy definition of “building”, and some buildings are operated—but not owned—by Metro. They may not require certification standards, however they are required to meet policy operational requirements (Section 5) to the degree allowed by lease agreements and set performance targets in alignment with the five Sustainability goals.
 - 1.2.1.2. Properties that are owned by Metro but have operations managed via contract or other agreement shall include operational requirements (Section 5) where feasible.
 - 1.2.2. Agricultural leases and residential buildings (houses) located on Metro natural area properties are specifically excluded from this policy.
 - 1.2.3. Requests for exemptions to this policy shall be submitted to the Capital Asset Management Director, who will make a recommendation to the Deputy Chief Operating Officer (DCOO) for final approval.
- 1.3. The Metro Council adopted the Sustainability Plan for Internal and Business Operations (Plan) through Resolution 10-4198 in October 2010¹ which included an action to adopt an agency-wide green building policy to set standards for new construction and operations of existing buildings. Council adopted a Green Building Policy in 2011. This policy update to the Green Building Policy was conducted in 2021 to recalibrate the policy requirements and procedures to support Metro goals.

¹ Metro Council Resolution 03-3338, “For the Purpose of Directing the Metro Chief Operating Officer to Establish a Sustainable Business Model for Metro Departments and Facilities and Undertake Related Duties,” 2003. <http://rim.oregonmetro.gov/webdrawer/rec/20828/>.

- 1.4. The Sustainability Plan (the Plan) also directs Metro to adopt sustainable site retrofit, development and management practices and standards for Metro’s parks to meet Salmon-Safe certification² and Gold-rated Sustainable SITES certification for new parks.³
- 1.5. The Plan outlines environmental goals for internal operations, which the Metro Council adopted through Resolution 03-3338 in May 2003. This Sustainable Buildings and Sites Policy supports implementation of building construction and maintenance practices that support achievement of the following five goals.
 - a. Reduce direct and indirect greenhouse gas emissions to 80 percent below 2008 levels by 2050.
 - b. Eliminate the use or emissions of persistent bioaccumulative toxics (PBTs) and other priority toxic and hazardous substances by 2025.
 - c. Recover all waste for recycling or composting and reduce overall generation of waste by 2025.
 - d. Reduce water use to 50 percent below 2008 levels by 2025.
 - e. Ensure that Metro’s parks, trails and developed properties positively contribute to healthy, functioning urban ecosystems and watershed health and that Metro’s natural areas are healthy, functioning ecosystems.

Section 2. Approach

- 2.1. The buildings in the Metro portfolio are highly varied and distinct from each other. Metro’s buildings range from large-scale venues (Oregon Convention Center, Expo Center) to a campus of many buildings and exhibits (Oregon Zoo) to solid waste processing buildings (Metro Central and South transfer stations) to office buildings (Metro Regional Center) to park buildings (Blue Lake Regional Park, Oxbow Regional Park).
- 2.2. Project teams will determine applicability of policy requirements that may be superseded by jurisdictional requirements specific to the project. Acknowledging the different building sizes and types in Metro’s portfolio, the policy incorporates flexibility and exemptions in standards. Each project’s unique attributes should be considered to inform the highest and best outcome in terms of advancing Metro’s sustainability, climate justice, and resilience goals.
- 2.3. This policy will undergo periodic review, no less than every three years after adoption, to assess the effectiveness of implementation, application of certification standards, and resource requirements. Subsequently, modifications will be made to the policy, and implementation plan, to improve performance and advancement of Metro’s sustainability goals.

Section 3. Equity

² Salmon-Safe is an independent 501(c)3 nonprofit focused on transformation of land management practices so Pacific salmon can thrive in West Coast watersheds.

³ SITES is a comprehensive rating system designed to distinguish sustainable landscapes, measure their performance and elevate their value administered by Green Business Certification Inc.

- 3.1. This policy goes beyond environmental performance to address the triple bottom line of sustainability: environment, economy, and social equity. Based on the racial equity goals in Metro’s Strategic Plan to Advance Racial Equity, Diversity and Inclusion⁴ and departmental equity plans, the Sustainable Buildings and Sites Policy strives to achieve the following racial equity outcomes:
 - a. Metro buildings provide healthy, accessible, welcoming spaces where staff and visitors can thrive.
 - b. Metro’s buildings contribute to climate and environmental justice outcomes in the region.
 - c. Metro’s capital investments in buildings create opportunities for COVID-certified firms and advance construction workforce diversity.

- 3.2 Sustainable building certification standards for new construction, major renovations, and operation and maintenance of existing buildings were analyzed and selected based on their ability to advance Metro’s sustainability goals and achieve racial equity outcomes. In addition to requirements in this policy, all new construction, major renovations, and existing building operations must adhere to the following requirements, as applicable:
 - a. Clean Air Construction (CAC) Standard
 - b. Construction Career Pathways Program
 - c. Administrative Rules for Equity in Contracting
 - d. Strategic Plan to Advance Racial Equity Diversity and Inclusion and respective departmental racial equity plans.

- 3.3 To further center and achieve policy equity outcomes, all new siting, design, construction, major renovation, and operation and maintenance of existing buildings will:
 - a. Prioritize sites that are served by public transit and are accessible by walking and biking.
 - b. Promote environmental justice by preventing and mitigating the negative impacts on adjacent communities related to siting and displacement, traffic, noise, and diesel emissions and other pollution from building and site construction.
 - c. Site and design buildings for climate adaptation and resiliency
 - d. Site and design buildings and landscapes to minimize urban heat island effect, including evaluation and pursuit of the following strategies where appropriate:
 - Urban heat island mitigation strategies in landscaping design
 - Cool roofs and green roofs (see Sustainable Roof Standards in Appendix B)
 - Cool pavement and wall strategies with potential considerations like accessibility and durability.
 - e. Ensure buildings and parks are welcoming to staff, the public, and all Metro constituents, including strategies like signage in multiple languages.
 - f. Ensure buildings and parks are accessible and inclusive to people of all abilities and include accessibility features for those with mobility, hearing, or vision needs.
 - g. Minimize the use of toxic building materials and require the use of non/low-toxic chemicals for operations and maintenance.
 - h. Ensure equity in contracting and advance workforce diversity.

⁴ <https://www.oregonmetro.gov/sites/default/files/2016/06/15/Steps-to-complete-the-Strategic-Plan-to-Advance-Racial-Equity-draft-2-04042016.pdf>

- i. Respect culturally significant areas and honor the history of the original inhabitants of the land.

3.4 As a best practice, Metro will add space in the project timeline to conduct early, meaningful, and inclusive engagement (as defined in Section 10.16) for projects subject to this policy, when appropriate, to inform, guide, or improve project outcomes. Decision-making processes should elevate the voices of those who are most impacted by projects and who have historically had the least amount of influence on, and access to, government decision-making processes. Projects should strive for outcomes that reduce negative impacts to people and the environment and benefit host community(ies).

- Recognizing communities and best practices for meaningful engagement evolve over time, each project will follow recommendations from the most current departmental racial equity plans, existing community engagement guides, the agency’s Racial Equity Framework and/or Metro’s Strategic Plan to Advance Racial Equity, Diversity and Inclusion to determine the level and extent of community engagement required for the project.
- Decisions about whether engagement is necessary or not, and the level of engagement appropriate for each project, could be informed by considering environmental justice, the cultural history of a site, the location of a site in proximity to vulnerable populations, and past or potential future impact to historically marginalized communities.
- Project team leads should consider the negative risks of not engaging with communities.

Section 4. Standards for New Construction and Major Renovations

4.1. The following standards apply to the new construction of Metro buildings and parks as well as all major renovations of buildings and parks Metro owns and operates.

4.2. New construction and major renovations of structures that meet the policy definition of a “building,” that are 2,000 square feet or more, and meet the threshold of \$1,000,000 in total project cost shall be built to meet at minimum the Core Green Building Certification standard and Zero Carbon Certification standard by the International Living Future Institute (ILFI).⁵

4.2.1. If the project sponsor believes that Core Green Building Certification and/or Zero Carbon Certification is not applicable for a specific project, they must submit an exemption form documenting why the project cannot meet Core Green Building Certification and/or Zero Carbon Certification to the Capital Asset Management Director, who will make a recommendation to the Deputy Chief Operating Officer (DCOO). If a Core Green Building Certification and/or Zero Carbon Certification exemption is approved, refer to the policy Appendix A for alternative sustainable building standards.

⁵ The Core Green Building CertificationSM (Core) is a framework that outlines the 10 best practice achievements that a building must obtain to be considered a green or sustainable building as certified by the International Living Future Institute.

- 4.2.2. New construction and major renovations under 2,000 square feet or \$1,000,000 in total project cost, and/or structures that do not meet the policy definition of “building” do not require certification by the aforementioned standards. However, they are required to meet operational requirements and set performance targets in alignment with the five sustainability goal areas of greenhouse gas emissions (including building energy), waste, toxics, water, and habitat.
- 4.3. All new construction and major renovation of Metro landscaped sites with constructed elements⁶ \$1,000,000 or more in total project cost shall achieve SITES Gold certification, at a minimum, while any construction and major renovation of park structure(s) 2,000 square feet or more and \$1,000,000 or more in total project cost, meeting the policy definition of “building” must achieve Core Green Building Certification and Zero Carbon Certification.
- 4.3.1. If the project sponsor believes that SITES certification is not applicable for a specific project, they must submit an exemption form documenting why the project cannot meet SITES certification to the Capital Asset Management Director, who will make a recommendation to the Deputy Chief Operating Officer (DCOO). If an exemption is approved the project must meet operational requirements and set performance targets in alignment with the five sustainability goal areas of greenhouse gas emissions (including building energy), waste, toxics, water, and habitat.
- 4.3.2. New construction and major renovations less than \$1,000,000 in total project cost, and/or projects that do not meet the baseline qualification standards for SITES certification do not require certification by the aforementioned standards. However, they are required to meet operational requirements and set performance targets in alignment with the five sustainability goal areas of greenhouse gas emissions (including building energy), waste, toxics, water, and habitat.
- 4.4. All new construction and major renovation projects shall meet the following additional requirements if applicable:
- 4.4.1. Project planning: Incorporate resources needed to comply with the requirements of this policy in the project budget, starting with the initial design phase. Resources shall include staff time necessary to complete documentation requirements for the certification standard applicable to the project. Integrated design practices should be utilized early in the design process.
- 4.4.2. Green Energy Technology: New buildings that meet the criteria outlined by the State of Oregon in the “1.5% for Green Energy Technology in Public Building Construction Contracts” rule are required to spend an amount equal to at least 1.5 percent of the total contract price of a public improvement contract for the construction,

⁶ Landscaped sites with constructed elements include parks, zoo exhibits, plazas, and gardens. Natural areas and conservation or environmental remediation projects are excluded from Policy requirements.

reconstruction, or major renovation of a public building for the inclusion of appropriate green energy technology in the building.⁷

- 4.4.3. Fossil fuel infrastructure: Exclude the use of fossil fuels and dedicated fossil fuel infrastructure and fossil gas combustion.⁸
- 4.4.4. Electrification infrastructure: Include vehicle electrification infrastructure consistent with requirements for the Core Green Building Certification.
- 4.4.5. Additional requirements in policy appendices: All new construction and major renovation shall follow the Bird-Friendly Design, Materials Carbon Reduction, Sustainable Roof, and Tree Replacement requirements in policy Appendix B during project design, procurement, contracting, and implementation.

Section 5. Standards for Operations and Maintenance of Existing Facilities

- 5.1. Through engagement with community stakeholders, pursue Salmon-Safe certification for identified sites within Metro Parks and Natural Areas system by 2025.
- 5.2. If an existing Metro building meets eligibility and prioritization criteria selected by Metro, the building shall apply for the LEED Rating System for Existing Buildings: Operations & Maintenance (LEED O+M) certification at the Silver level or higher. The most recently accepted version of the LEED standard for existing buildings shall be followed.
 - 5.2.1. For LEED-ineligible projects, facility operations managers will pursue other certifications best-suited to the specific project to meet Metro goals such as LEED Zero for water reduction, Zero Carbon for emissions reduction, Zero Energy for energy reduction, WELL for toxics reduction, Salmon-Safe for habitat and TRUE for waste reduction.
 - 5.2.2. For existing certified buildings, incrementally achieve higher certification, such as LEED Gold, Platinum or Zero (carbon, waste, energy, water), or Zero Carbon or Zero Energy with the International Living Future Institute.
- 5.3. Operational requirements: All Metro buildings, regardless of their eligibility for LEED O+M certification, shall meet the following sustainable operations requirements to the degree allowed by lease agreements and jurisdictional requirements.
 - 5.3.1. Recycling: All Metro buildings shall meet the following Business Recycling Requirements:⁹

⁷ Oregon Administrative Rules (OAR) 330-135-0010 to 330-135-0055, "1.5 Percent for Green Energy Technology in Public Building Construction Contracts. <https://secure.sos.state.or.us/oard/displayDivisionRules.action?selectedDivision=1113>

⁸ An exception may be made for low-carbon technologies such as anaerobic digestion, that can reduce carbon emissions from the fossil gas system, which Metro could use in combination with energy efficiency and other measures to accelerate decarbonization.

⁹ Metro requires all local governments in the region to adopt Business Recycling Requirements. <http://www.oregonmetro.gov/index.cfm/go/by.web/id=26294>

- 5.3.1.1. Separate all recyclable paper, cardboard, glass and plastic bottles and jars, and aluminum and tin cans for reuse or recycling.
- 5.3.1.2. Provide recycling receptacles for internal maintenance or work areas where recyclable materials may be collected, stored, or both; and post accurate signs where recyclable materials are collected, stored, or both that identify the materials that the business must separate for reuse or recycling and that provide recycling instructions.
- 5.3.2. Food Waste: All Metro buildings shall separate food waste where hauling services for these materials are available in accordance with local government requirements including:¹⁰
 - 5.3.2.1. Separate food waste from all other solid waste for collection.
 - 5.3.2.2. Recover food waste that is controlled by the business, agents, and employees. This requirement does not apply to food wastes controlled by customers or the public. At its discretion, facilities may also collect food waste from customers but must ensure that food wastes are free of non-food items.
- 5.3.3. Roofs: For all roofing projects that require a tear-off or full roof replacement, and/or buildings undergoing LEED O+M assessment per 6.17.1, complete sustainable roof assessment worksheet to evaluate the highest and best use of rooftop opportunities including solar generation, green roof installation, or solar reflectivity treatment, as well as some combination thereof, and comply with any jurisdictional requirements applicable to the project location such as the City of Portland's ecoroof requirement.¹¹ (See Appendix B.)
- 5.3.4. Lighting. During any renewal and replacement of lighting, all fluorescent light fixtures and lamps shall be replaced with high efficiency LED fixtures whenever feasible and comply with the bird-friendly design standard. Any remaining linear fluorescent lamps shall meet the standard set in the European Union Restriction on Hazardous Substances (RoHS) Directive for mercury levels in lamps. (See Appendix B.)
- 5.3.5. All new appliances and electronic equipment purchased shall achieve the highest Energy Star efficiency rating¹² where certified products are available. An alternative

¹⁰ Metro requires all local governments in the region to follow regional food waste policy. <https://www.oregonmetro.gov/sites/default/files/2021/03/30/Metro-Code-chapter-5-15-effective-20210310.pdf>

¹¹ Refer to ecoroof requirements 35.510.243 in Portland's Central City Plan at <https://www.portland.gov/sites/default/files/code/510-central-city.pdf>.

¹² The U.S. EPA certification program for energy efficient equipment and appliances is **Energy Star**. Find certified products at http://www.energystar.gov/index.cfm?fuseaction=find_a_product.

product can be chosen if an assessment demonstrates a better performance over the life of the product.

- 5.3.6. All water fixtures purchased shall be EPA Water Sense certified¹³ where certified products are available. An alternative product can be chosen if its lifecycle assessment demonstrates a better performance over time.
 - 5.3.7. Develop and adopt operational policies and procedures that reduce the use of and exposure to toxins, including but not limited to a green cleaning policy with requirements for the use of third-party certified cleaning products such as Green Seal or EPA Safer Choice,¹⁴ compliance with Metro's Integrated Pest Management Policy, and additional strategies to maximize the use of safe alternatives to toxic materials.
- 5.4. All occupied Metro buildings larger than 10,000 square feet shall have an Energy Efficiency Action Plan in place, which shall include, but not be limited to, the following measures:
- 5.4.1. Audits: Complete a comprehensive energy audit of the building using the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) standard for Energy Survey and Engineering Analysis. A Level I, Level II, or Level III audit shall be conducted based on the building need and upon progression from past audit completion. Funding for energy audits shall be built into the budgets for the building. If the Energy Trust of Oregon (ETO) provides funding for energy audits, the ETO audit process is acceptable. Energy audits should be completed every ten years, after a major renovation, or upon change to two or more systems.
 - 5.4.2. Compile a prioritized list of energy efficiency measures (EEM) appropriate to the building. Examples of EEM include upgrades or replacement of lighting, heating, ventilation and cooling (HVAC), insulation, motors or any custom measures unique to the facility as identified during an energy audit.
 - 5.4.3. Integrate the EEM into the building Capital Improvement Project (CIP) and Renewal and Replacement (R&R) project lists.
 - 5.4.4. Track utility usage through Metro's Energy Manager database.
 - 5.4.5. Manage plug load and occupant energy use through best practices for energy conservation including but not limited to implementation of building energy policies, installation of lighting sensors, automatic electrical outlet shutoffs, turning off all non-essential lights, computers, and monitors during non-business hours, reducing phantom or standby power use and restricting excessive use of personal appliances.

¹³ The U.S. EPA certification program for water efficient fixtures is **Water Sense**. Find certified products at <http://www.epa.gov/WaterSense/>.

¹⁴ The U.S. EPA Safer Choice program certifies products that meet stringent human health and environmental criteria reviewed by EPA scientists including requirements for performance, packaging, pH, and volatile organic compounds (VOCs). <https://www.epa.gov/saferchoice>. Other standards include [Green Seal](#), [UL Ecologo](#) and [Cradle to Cradle](#).

- 5.5. Electric Vehicle-Ready Infrastructure: Facilities shall plan for capital investment and installation of vehicle electrification infrastructure to meet requirements consistent with the Core Green Building Certification. At a minimum, renovation and system upgrades to infrastructure and/or parking projects must include pre-installation or installation of wiring and connections to support electric vehicle charging.
- 5.6. Fossil fuel use: Work to reduce the use of fossil fuels and fossil fuel combustion at existing facilities through efficiency and the replacement in part or in whole with less, or non-emitting renewable or low-carbon alternatives.
- 5.7. Renewable Energy: All Metro facilities must use 100 percent renewable electricity through onsite generation or the purchase of renewable energy offsite, based on what is most feasible and cost effective.
- 5.8. Policy requirements in Appendices: Follow the applicable Bird-Friendly Design, Materials Carbon Reduction, Sustainable Roof, and Tree Replacement requirements (Appendix B) during project procurement, contracting, and implementation of building operations.
- 5.9. Sustainability criteria for building systems upgrades
 - 5.9.1. Systems upgrades in Metro buildings shall require selection of most efficient options available and applicable for that system.
 - 5.9.2. Replacement or upgrade of lighting, HVAC equipment and domestic hot water equipment shall, at a minimum, require installation of energy efficient options for which financial incentives are available from the ETO Oregon Cash Incentives¹⁵ or other energy efficiency incentive resources. Project managers shall apply for any incentives available from ETO for energy efficient equipment at the start of a project. If options are available that conserve more energy than those that are incentivized by ETO, those may be selected.
 - 5.9.3. Sub-metering. At minimum, system upgrade projects shall be evaluated for the installation of submeters to provide energy use information to help optimize energy performance.
 - 5.9.4. Total cost of ownership and lifecycle assessment shall be used in the decision-making criteria for selection of retrofit or replacement projects, rather than simple comparison of the initial first costs.
- 5.10. Guidance for campus-wide upgrades. When multi-building redesign projects occur at a campus site, such as at the Oregon Zoo or Expo Center, a holistic approach to sustainable operations will be integrated into the design process to address the challenges and opportunities in campus projects towards achieving Metro sustainability goals. Design teams will explore economies of scale through shared or complementary systems. Sustainable building certification standards (International Living Future Institute, LEED)

¹⁵The Energy Trust of Oregon's current listing of Existing Buildings Oregon Cash Incentives is available online at <https://energytrust.org/commercial/existing-buildings-oregon-cash-incentives/>.

have guidance for going outside single building boundaries for better solutions that may reduce certification documentation requirements and costs.

Section 6. Implementation

- 6.1. This policy will be implemented by the groups of people identified in Section 7, Roles and Responsibilities.

New construction and major renovation

- 6.2. Capital Planning Oversight Committee (CPOC): Department CPOCs will review annual Sustainable Building and Sites Policy strategic investment recommendations and prioritize and integrate them into the annual Capital Improvement Plan, ensuring that project budgets reflect the requirements of this policy. (See Section 7).
- 6.3. Project consultation: The project sponsor and/or manager will participate in a policy initiation consultation for each new project, upon approval of annual department Capital Improvement Plans (CIPs). Consultation topics will include compliance with the policy and interpretation of policy requirements as well as review of required documentation for reporting.
- 6.4. Requirements: The project sponsor and project manager will review policy requirements related to their specific project and identify the appropriate sustainable building certification path.
 - 6.4.1. The project manager will identify Sustainable Buildings and Sites Policy outcomes including the intended pathway for sustainable building certification(s) and outline the required resources and steps the project will take to achieve them in the Project Management Plan.
- 6.5. Equity: The project manager and project sponsor will identify the relevant racial equity outcomes and guidelines in this policy, as well as the goals and actions in the Strategic Plan to Advance Racial Equity, Diversity and Inclusion and departmental equity plans requirements and outline the steps the project will take to achieve them in the Project Management Plan.
- 6.6. Energy Trust of Oregon incentives: The project manager will enroll applicable projects with Energy Trust of Oregon once it is funded.
- 6.7. Other funding opportunities: The project sponsor and project manager will consider various funding opportunities and resources listed in the Sustainable Building and Sites Policy resource library.
- 6.8. Solicitation: The project manager will work with Procurement to incorporate the appropriate procurement language into solicitations and final contracts in accordance with relevant Metro policies.
- 6.9. Community Engagement. Each project team will follow recommendations from departmental racial equity plans and/or Metro's Strategic Plan to Advance Racial Equity,

Diversity and Inclusion to determine the level and extent of community engagement required for the project.

- 6.10. Eco-Charette. The project manager will manage consultant teams to follow Sustainable Buildings and Sites Policy requirements including hosting an eco-charrette during the initial design phase to explore viable sustainability features to include in the final design.
- 6.11. Progress Tracking. The project manager will regularly report on the status and progress of meeting the policy requirements to ensure design is on track and reserve the right to follow up with teams and require narrative descriptions of strategies and project documents on a project-by-project basis as needed. At least two status reports are required at the following milestones: 50% design development phase and 100% construction documents/permit set phase. Reports shall include:
 - 6.11.1. Status of meeting relevant certification standards' requirements
 - 6.11.2. Status of meeting operational and additional policy requirements
 - 6.11.3. Resource needs, if any, to meet relevant policy requirements
- 6.12. Close-out. At the end of a project, the project manager will ensure policy reporting requirements are met in accordance with Section 9. The project manager will review and submit materials to Metro's Sustainability Program for reporting purposes.

Existing Properties & Operations

- 6.13. The Sustainability Program will work with facility staff to document the current performance of existing Metro properties in meeting environmental sustainability goal areas for energy usage, water usage, waste generation and recycling, toxics, habitat-friendly development practices and stormwater impact on an annual basis to identify areas for improvement. Sustainability accomplishments shall be shared with the Sustainability Program, as described in Section 9.
- 6.14. Metro facility operations managers will conduct an energy audit and create energy efficiency action plans as described in Section 5.
- 6.15. Facility managers and the Capital Planning Oversight Committee will evaluate the list of existing capital and renewal and replacement projects annually and identify opportunities to integrate Sustainable Buildings and Sites Policy requirements into these projects, with support from Sustainability Program staff.
- 6.16. Facility managers will implement LEED O+M certification for priority eligible buildings.
 - 6.16.1. Metro facility operations managers shall complete LEED O+M eligibility analysis with support from a LEED Accredited Professional (AP) and submit the analysis to the Sustainability Program. Buildings that are determined to be good candidates for LEED O+M certification shall be ranked in order of priority by the Sustainability Program and facility staff with certification pursued starting with the highest priority building or buildings first.

6.16.2. For existing LEED certified buildings, facility managers will scale operations to incrementally achieve higher certification, such as LEED Gold, Platinum or LEED Zero (carbon, waste, energy, water) as outlined in Section 5.2.

6.16.3. For LEED-ineligible projects, facility operations managers will pursue other relevant certifications to meet Metro sustainability goals such as Zero Carbon for emissions reduction, Zero Energy for energy reduction, WELL for toxics reduction, Salmon-Safe for habitat and TRUE for waste reduction as outlined in Section 5.2.

Section 7. Roles and Responsibilities

7.1. Deputy Chief Operating Officer

7.1.1. Review and grant exemptions from policy requirements as applicable.

7.2. Capital Asset Management Director

7.2.1. Assists project sponsors with interpretation of policy language, when required, to determine applicability.

7.2.2. Reviews requests for policy exemptions and makes recommendations regarding approval to DCOO.

7.2.3. Helps ensure consistent, successful policy implementation through support of Sustainability Program and CPMO and their subsequent outreach to Metro departments.

7.3. Directors

7.3.1. Department and facility directors will ensure Sustainable Buildings and Sites Policy requirements are incorporated into their annual CIP and budget proposals.

7.3.2. Appoint a Sustainable Buildings and Sites Policy Liaison for their department/venue.

7.3.3. As project executive sponsor, review and endorse requests for exemptions from policy requirements as applicable.

7.3.4. Hold department project sponsors, building operations managers and project managers accountable for implementation of the Sustainable Buildings and Sites Policy.

7.4. Building operations managers

7.4.1. Conduct assessments of building performance and energy efficiency action plans, as described in Section 6.

7.4.2. Implement all standards for operations and maintenance of existing buildings outlined in Section 6.

7.4.3. Complete LEED O+M eligibility assessments for buildings, as described in Section 6.

- 7.4.4. Ensure training for operations staff and project managers in sustainable building operations and maintenance.
- 7.5. Capital Planning Oversight Committee (CPOC)
 - 7.5.1. Review and prioritize annual Sustainable Building and Sites Policy strategic investment recommendations.
 - 7.5.2. Integrate annual Sustainable Buildings and Sites Policy strategic investment recommendations into the annual Capital Improvement Plan.
- 7.6. Construction Project Management Office (CPMO)
 - 7.6.1. Integrate requirements from this policy into the CPMO manual and project management tools and documentation.
 - 7.6.2. Ensure project managers complete training and education in order to apply policy requirements and sustainable building standards to their projects, as well as have access to training materials and tools for implementation of this policy.
 - 7.6.3. Hold CPMO project managers accountable for implementation of the Sustainable Building and Sites Policy. Encourage consistent application of the policy by project managers across departments.
- 7.7. Project sponsor
 - 7.7.1. Sponsor a project from beginning to end and ensure the integration of Sustainable Buildings and Sites Policy requirements into all new construction, major renovations and systems upgrades projects where required.
 - 7.7.2. Incorporate sustainable building requirements in the project budget starting with project initial design phase as described in Section 6.
- 7.8. Project managers
 - 7.8.1. Attend sustainable building trainings.
 - 7.8.2. Integrate Sustainable Buildings and Sites Policy requirements into all new construction and major renovations where required and reflect accordingly in the project management plan.
 - 7.8.3. For new construction and major renovation projects, submit the following to the Sustainability Program:

Projects working toward Core Green Building Certification or LEED-BD+C certification: submit Core imperatives or LEED checklist and review comments from the International Living Future Institute or Green Building Certification Institute at project completion indicating that the project has achieved Core imperatives and LEED credits.

7.8.3.1. Ensure post-occupancy tracking and documentation requirements for certification are met, as required.

7.8.4. For new construction of parks, submit the following:

7.8.4.1. Projects seeking SITES Gold certification: submit SITES credits checklist and review comments at project completion indicating that the project has achieved SITES Gold certification.

7.9. Sustainable Buildings and Sites Liaison

7.9.1. Appointed by Director as department/venue point person for Sustainable Buildings and Sites Policy coordination and implementation.

7.9.2. Meet with department and facility directors and Capital Planning Oversight Committee to provide guidance on how to integrate Sustainable Buildings and Sites Policy requirements into projects and annual budget proposals.

7.9.3. Support project sponsors and project managers in compliance with the policy, to include: review and interpretation of policy requirements and potential exemptions at project initiation; review of policy-related project documentation for reporting; and sharing information with the Sustainability Program for the annual sustainability report.

7.9.4. Participates in quarterly meetings with Sustainability Program and other agency Sustainable Buildings and Sites Liaisons to support successful policy implementation, training on sustainable building standards required by this policy, and training on the implementation of this policy.

7.10. Sustainability Steering Committee

7.10.1. The primary function of the Sustainability Steering Committee is to oversee implementation of the Metro Sustainability Plan for internal operations. The intention is that all departments and facilities are represented on the committee.

7.10.2. Provide accountability and policy reinforcement by identifying barriers to successful policy implementation and helping to develop strategies to overcome barriers while serving as a point of contact between venues and departments and the Sustainability Program.

7.10.3. Contribute to annual sustainability report by sharing key accomplishments related to implementation of this policy.

7.11. Finance

7.11.1. Revise and update all funding processes to be consistent with the Sustainable Buildings and Sites Policy as described in Section 8.

7.12. Procurement services

7.12.1. Align procurement policies and procedures to support Sustainable Buildings and Sites Policy requirements, including template language for solicitations and contracts.

7.12.2. Align new construction, major renovation, and existing building maintenance contracts in accordance with Sustainable Buildings and Sites Policy and other relevant Metro policies.

7.13. Sustainability Program

7.13.1. Ensure that staff with knowledge of Sustainable Buildings and Sites Policy requirements are in attendance at CPOC meetings.

7.13.2. Support Sustainable Building Policy Liaisons through training, quarterly meetings, and as needed. Provide training for policy awareness and implementation and maintain up-to-date policy resources.

7.13.3. Regularly review data from projects and annual sustainability reporting, audits, studies, as well as partnerships and grant opportunities, to make recommendations to CPOCs regarding which strategic opportunities Metro should pursue to advance sustainability across Metro's portfolio.

7.13.4. Meet with department and facility directors to provide guidance on how to integrate Sustainable Buildings and Sites Policy requirements into projects and budget proposals.

7.13.5. Evaluate and prioritize Metro buildings eligible for potential LEED O+M certification and recommend buildings for certification to respective Department Directors.

7.13.6. Develop and adopt operational policies and procedures that support the Sustainable Buildings and Sites Policy as needed.

7.13.7. Curate an accessible library of policy resources for project teams to use.

7.13.8. Report on progress toward implementing the Sustainable Buildings and Sites Policy in the annual Sustainability Report, as described in Section 9.

7.13.9. Lead periodic policy review and make recommendations to Chief Operating Officer on policy modifications to improve performance and advancement of Metro's sustainability goals.

Section 8. Funding Methods and Tools

8.1. Funding methods: Annually, departments identify project costs and funding sources as part of the Metro's Capital Improvement Plan process so that sustainability goals can be achieved. Project costs should include the total cost of the project, inclusive of any costs required by this policy. Funding sources should comply with any fund restrictions.

8.2. Return on investment (ROI): Projects which result in a measurable reduction in electricity, fossil (natural) gas or water consumption by increasing efficiency, and that will result in an avoided cost for ongoing operations, typically have a positive ROI to Metro. Energy efficiency projects which have a ROI of ten years or less will be prioritized for funding from Metro's various funding sources even if there is an up-front capital investment required.

8.2.1. ROI for energy efficiency projects is typically estimated by the Energy Trust of Oregon or its partner service providers.

- 8.3. Energy Trust of Oregon incentives: When incentive funds are available from the Energy Trust of Oregon for energy efficiency projects, project managers will apply these to their projects.
- 8.4. Total cost of ownership: Projects will use a total cost of ownership model to determine the best value for Metro over the expected life of the building or equipment, consistent with Metro's Sustainable Procurement Policy and Capital Asset Management Policy.

Section 9. Reporting Requirements

- 9.1. For new construction and major renovation projects as noted in section 6, at least two status reports are required at the following milestones: 50% design development phase and 100% construction documents/permit set phase. Reports shall include:
 - 9.1.1. Status of meeting relevant certification standards' requirements
 - 9.1.2. Status of meeting operational and additional policy requirements
 - 9.1.3. Resource needs, if any, to meet relevant policy requirements
- 9.2. At the completion of each new construction or major renovation project, the project manager is responsible for submitting the following information to the Sustainability Program: (1) amount of construction and demolition waste diverted from each project and reused on the job site (total tons, percent diverted, and list of primary materials diverted); (2) documentation of all Core imperatives and/or LEED credits that were incorporated in the project, (3) verification of certification for either Core, LEED, Sustainable SITES, and/or other third-party standards when available.
- 9.3. At the end of each fiscal year, operations managers are responsible for submitting a summary of key sustainable building operations and maintenance projects completed in the previous fiscal year including capital improvement projects as well as renewal and replacement projects that implement this policy. These summaries will include: (1) a one to two-paragraph summary of the project; (2) which of the Metro Sustainability goals the project addresses; (3) any anticipated resource or financial savings expected from the project.
- 9.4. Key accomplishments toward implementation of the Sustainable Buildings and Sites Policy will be included in the annual sustainability report prepared by the Sustainability Program.
- 9.5. Environmental sustainability performance of Metro buildings in the five goal areas of climate, toxics, waste, water and habitat/stormwater will be reported in absolute terms (e.g., total gallons or cubic feet of water consumed from a building in a given year) and in normalized terms (e.g. gallons consumed per visitor per year, per full-time equivalent worker per year, per square foot area per year, depending on building type).

Section 10. Definitions and Terms

For the purposes of this policy, the following terms and definitions apply:

- 10.1. **Bioswale:** Landscape elements designed to remove silt and pollution from surface runoff water. They consist of a swaled drainage course with gently sloped sides and often filled with vegetation.
- 10.2. **Building:** A complete, permanent enclosed structure that is regularly occupied by people (1 FTE or full-time equivalent minimum) and contains conditioned space (heated or cooled). Based on an 8-hour day, the building must be occupied by either one full-time staff, or a combination of part-time staff to equal eight hours.
- 10.3. **Core Green Building Certification:** The Core Green Building CertificationSM (Core) is a framework that outlines the 10 best practice achievements that a building must obtain to be considered a green or sustainable building as certified by the International Living Future Institute.
- 10.4. **Eco-charrette:** An eco-charrette is an intensive workshop where the project stakeholders and expert consultants convene to brainstorm on project sustainable design goals and objectives.
- 10.5. **Ecoroof:** An ecoroof consists of a layer of vegetation over a growing medium on top of a synthetic, waterproof membrane. According to the City of Portland Ecoroof program, an ecoroof significantly decreases stormwater runoff, saves energy, reduces pollution and erosion and helps preserve fish habitat.
- 10.6. **Energy Trust of Oregon (ETO):** An independent nonprofit organization dedicated to helping utility customers benefit from saving energy and generating renewable energy.
- 10.7. **Fossil Fuels:** Fossil fuels are made from decomposing plants and animals. These fuels are found in the Earth's crust and contain carbon and hydrogen, which when burned for energy contribute greenhouse gas emissions that cause climate change. Coal, oil, and natural gas are examples of fossil fuels.
- 10.8. **FSC certified:** Forest Stewardship Council certification is an independent standard for sustainable management of forests and forest products, developed and maintained by the Forest Stewardship Council.
- 10.9. **Green Business Certification Inc. (GBCI):** A third-party organization that provides independent oversight of professional credentialing and project certification programs related to green building. GBCI administers certifications and professional designations within the framework of the U.S. Green Building Council's LEED® Green Building Rating Systems™ and the SITES Rating System.
- 10.10. **IAQ:** Indoor air quality – the nature of air inside the space that affects the health and well-being of building occupants.
- 10.11. **International Living Future Institute (ILFI):** The International Living Future Institute is a nonprofit organization that seeks to lead the transformation toward a civilization that is socially just, culturally rich, and ecologically restorative. They offer several types of certification including Living Building Certification, Core Green Building Certification, Petal Certification, Zero Energy Certification, or Zero Carbon Certification.

- 10.12. **Integrated design:** Multidisciplinary collaboration, including key stakeholders and design professionals, from conception to completion of a building project, rather than the traditional series of hand-offs from owner to architect, from builder to occupant.
- 10.13. **LEED:** Leadership in Energy and Environmental Design, a green building certification standard and rating system developed and maintained by the U.S. Green Building Council.
- **LEED BD+C:** LEED for New Construction and Major Renovations, latest version available
 - **LEED O+M:** LEED for Existing Buildings Operations and Maintenance, latest version available
- 10.14. **Life Cycle Assessment:** Life cycle assessment (LCA) is an evaluation of the environmental impacts of a product or service across its life cycle, from extraction of raw materials through manufacturing and transportation to end of life. LCAs function like nutrition labels.
- 10.15. **Major renovation or retrofit:** Extensive alteration work in addition to work on the exterior shell of the building and/or primary structural components and/or the primary mechanical, electrical, and plumbing (MEP) and service systems and/or site work.
- 10.16. **Meaningful, inclusive engagement:** People have an opportunity to participate in decisions about activities that may affect their environment and/or health; the public's contribution can influence the regulatory agency's decision; community concerns will be considered in the decision-making process; and decision makers will seek out and facilitate the involvement of those potentially affected.
- 10.17. **Return on Investment:** Return on investment (ROI) is a simple formula that measures the gain or loss from an investment relative to the cost of the investment.
- 10.18. **RoHS:** The European Union Restriction on Hazardous Substances (RoHS) Directive restricts the use of six hazardous materials in the manufacture of various types of electronic and electrical equipment, including mercury levels in fluorescent lamps.
- 10.19. **Salmon-Safe Certification:** Salmon-Safe Certification involves a comprehensive evaluation of overall management policies and planning related to habitat and water quality protection.
- 10.20. **SITES:** Administered by Green Business Certification Inc., SITES offers a comprehensive rating system for projects on sites with or without buildings to enhance their sustainability, implement green infrastructure strategies and improve resilience.
- 10.21. **Solar Reflectance Index:** A measure of a material's ability to reject solar heat, as shown by a small temperature rise. It is defined so that a standard black (reflectance 0.05, emittance 0.90) is 0 and a standard white (reflectance 0.80, emittance 0.90) is 100. Materials with the highest SRI values are the coolest choices for roofing.
- 10.22. **Sustainability:** Metro adopted the State of Oregon's definition of sustainability in 2008, as defined in ORS 184.421(4), as the working definition that will be used at Metro:
"Sustainability' means using, developing and protecting resources in a manner that enables

people to meet current needs and provides that future generations can also meet future needs, from the joint perspective of environmental, economic and community objectives.”

- 10.23. **Total Cost of Ownership:** The comprehensive accounting of the total cost of an asset, including the initial costs, energy and operational costs, longevity and efficacy of service, and disposal costs.
- 10.24. **Total Project Cost:** The approved budget for a single project in the Capital Improvement Plan incorporating all associated project costs that will be coded to that specific project.

APPENDICES

APPENDIX A

Alternative standards for new construction and major renovation

If the project sponsor believes that Core Green Building Certification and/or Zero Carbon Certification is not applicable for a specific project, they must submit an exemption request documenting why the project cannot meet Core Green Building Certification and/or Zero Carbon Certification to the Metro Deputy Chief Operating Officer for approval.

If a Core Green Building Certification and/or Zero Carbon Certification exemption is approved, the LEED Rating System for Building Design + Construction (LEED BD+C) certification will be required instead. The most recent version of the LEED standard will be followed.

If LEED certification is pursued, project teams should attempt to achieve the highest level of certification possible. At minimum, the following LEED-BD+C credits are required to be incorporated into each project. Metro selected the following required credits due to their alignment with Metro's environmental sustainability goals for internal operations and racial equity goals.

- a. Location and Transportation: Access to Quality Transit
- b. Energy & Atmosphere: Optimize Energy Performance
- c. Energy & Atmosphere: Renewable Energy
- d. Water Efficiency: Outdoor Water Use Reduction
- e. Water Efficiency: Indoor Water Use Reduction
- f. Materials and Resources: Building Life-Cycle Impact Reduction
- g. Materials and Resources: Construction and Demolition
- h. Sustainable Sites: Rainwater Management, Quality Control
- i. Sustainable Sites: Heat Island Reduction – Roof
- j. Sustainable Sites: Light Pollution Reduction
- k. Indoor Environmental Quality: Low-Emitting Materials

The following credits (which closely align with Metro's sustainability goals) are preferred, but not required, for LEED-BD+C projects as applicable to each project and site. These credits align with Metro's environmental sustainability goals for internal operations and racial equity goals.

- a. Location and Transportation: High Priority Site and Equitable Development Credit
- b. Energy & Atmosphere: Enhanced Commissioning
- c. Energy & Atmosphere: Enhanced Refrigerant Management
- d. Materials and Resources: Environmental Product Declarations
- e. Materials and Resources: Sourcing of Raw Materials
- f. Materials and Resources: Material Ingredients
- g. Sustainable Sites: Protect or Restore Habitat
- h. Sustainable Sites: Heat Island Reduction – Non-Roof

APPENDIX B

Additional Bird-Friendly Design, Materials Carbon Reduction, Sustainable Roof, Tree Replacement Requirements for all applicable projects/operations

Bird-Friendly Design Standards

Background

Portland sits on the Pacific Flyway, a major north-south flight route extending from Alaska to South America. The region is home or a critical stopping point for more than 200 species of birds. Many of these bird species are in decline due to multiple risk factors. Structural hazards are a primary threat to both resident and migratory birds, ranked second as a mortality factor after habitat destruction.

Purpose

Implement bird-friendly requirements in new, existing, and renovated buildings to prevent bird injury and mortality from in-flight collisions with buildings.

Compliance

1. Meet Bird-Friendly Design Requirements, or
2. Achieve **LEED Pilot Credit 55: Bird Collision Deterrence**

Applicability

Bird friendly requirements apply if any of the following conditions are true:

- The project includes one or more structures with a footprint of more than 500 square feet
- The project includes one or more monopole structures
- The project includes one or more wind energy facilities
- The project involves a change to 25% of an existing building façade with exterior alterations
- The project involves installation of trail or building lighting, glass railings or exhibit windows, a glass corridor/walkway, etc.
- Exemptions are allowed when accidents, severe weather events, and other emergency situations require immediate replacement of existing glass and infrastructure

Bird-Friendly Design Requirements

Window Treatments

This section applies to projects with at least 10 percent exterior glass, exhibit windows, sky-bridges or atriums with exterior glazing, or glass railings. (All measures apply unless not applicable)

To reduce reflectivity and make exterior glass visible to birds, apply at least one of the following treatments to 100 percent of new windows or other exterior glass: a.) between the ground and 60 feet above the ground, and b.) for one story above a vegetated roof.

- Non reflective, opaque, or translucent glass
- Glass that reflects ultraviolet light (which some birds can see), such as Ornilux, effective for use in bright sunlit conditions (not recommended in backlit conditions or densely forested settings).
- Glass that has photovoltaic cells embedded, such as IQ Glass or Voltalux.

- ❑ Application of patterns (e.g., dots, stripes, images, abstract patterns) to exterior (first outside facing) glass surfaces. Patterns may be etched, fritted or in films. Spaces between pattern elements must be no more than two inches horizontally or two inches vertically, or both, i.e., patterns must conform to the "two by two" rule.
- ❑ External screens, decorative grills, interior screens, netting, louvers, shutters or exterior shades placed as close to the outside glass surfaces as possible cannot exceed a 9" maximum spacing between exterior elements including a 1:1 depth to spacing ratio (whether horizontal or vertical).

Reducing Light Attractants (all measures apply unless not applicable)

- ❑ Minimize exterior lighting.
- ❑ No up-lighting or light beams.
- ❑ Install full cut off, shielded, or directional lighting to minimize light spillage, glare, or light trespass.
- ❑ No lighting should be brighter than necessary to reduce glare off of adjacent surfaces.
- ❑ Install time switch control devices, motion-occupancy sensors, or non-emergency interior lights that can be programmed to turn off during non-work hours or otherwise designated hours.
- ❑ LED lighting must meet a rating of 3000 kelvin or below and 2700 kelvin in all natural areas including areas Metro defines as high value habitat.

Use best available science to select light intensity, color, and flash frequencies that reduce bird hazard if complying with federal aviation safety requirements.

Additions or exterior alterations to existing development, must comply with *Window Treatments* and *Reducing Light Attractants* requirements above by retrofitting existing windows or light fixtures if to do so will more effectively reduce hazards to birds.

Additional measures (all measures apply unless not applicable)

- ❑ Mirrored glass, exterior mirrors, or mirroring materials with exterior reflectivity greater than 15% are not allowed in building or landscape design.
- ❑ Minimize the number and co-locate rooftop antennas and other rooftop structures.
- ❑ Wind generators must appear solid when in motion.
- ❑ Tower structures must not include guy wires.
- ❑ Bird attractants (exterior/interior landscaped areas, vegetated roofs, water features) may not be placed where they could be reflected in, or be viewed through, exterior glass unless the glass incorporates bird-friendly treatments (see *Window Treatments* above).
- ❑ Free-standing glass for exhibits, railing, and signage must comply with *Reducing Light Attractants*.
- ❑ Trail lighting in parks and at Metro facilities must comply with *Reducing Light Attractants* guidelines.¹⁶
- ❑ Include methods to identify and document locations where repeated bird strikes occur, the number of collisions, the date, the approximate time, and features that may be contributing to collisions. List potential design solutions and provide a process for corrective action.

¹⁶For more information see the *Lighting Regional Trails Best Practices and Recommendations*, Lake McTighe 2016.

Best Management Practices (optional and encouraged)

The following BMPs are intended to promote bird safety through construction practices and building operation/site and management.

Avoid adversely affecting nesting birds (required per federal Migratory Bird Treaty Act)

- Schedule the timing of construction-related activities (e.g., vegetation removal, site preparation, demolition) during non-nesting season September 1 – January 31.
 - During early nesting season, February 1 – April 15, (March 30) apply best practices to avoid disturbance to vegetation, especially trees, and impact to local and migrating bird populations.
 - During primary nesting season, April 15 – July 31, avoid disturbance to vegetation.
 - Additional guidance can be found in the City of Portland’s Protecting Nesting Birds.¹⁷
 - Conduct nest searches if applicable.
- Extinguish nighttime non-security illumination during the spring (February 15 to May 31) and fall (August 15 to November 30) bird migration periods.
 - At minimum, exterior lighting should be programmed to be extinguished by 11 pm or midnight until 6 am unless necessary for safety and circulation.
 - Distribute educational materials on bird-friendly building and lighting practices to building managers and occupants.
- Install interior blinds, shades, or other window coverings in windows with clear glass on the ground floor, visible from the exterior, as part of the construction project contract, lease agreement or covenants, conditions, and restrictions *in addition to* following window treatment and lighting attractant guidelines.
- Install screens on windows that open *in addition to* following window treatment and lighting attractant guidelines.
- Request employees to turn off task lighting at workstations and draw office window coverings at end of the day.
 - Schedule maintenance activities to occur during the day, or conclude before 11 p.m. if possible, and avoid maintenance activities that could cause disturbance during nesting seasons.
- Modify mowing practices during bird nesting times in accordance with City of Portland’s Protecting Nesting Birds.
- If hosting bird feeders at a Metro site, follow best feeding practices to avoid creating unsafe situations for birds and wildlife.¹⁸
- When designing and constructing new buildings incorporate treatments into the design to deter bird congregation and prevent nuisance problems.

Glossary

- **Frit pattern** – a bird safe frit pattern involves the application of a uniform treatment over an entire window with a consistent element of any shape (lines, dots, other geometric figures, etc.) to reduce bird collisions. Birds can see the visual markers in the pattern and avoid a strike.

¹⁷ The City of Portland’s Protecting Nesting Birds provides guidance on the times of the year birds are more likely to be present or nesting in a project area within the Portland region and describes actions that minimize risk without stopping a project. Advanced planning can minimize problems later on. <https://www.portlandoregon.gov/bes/index.cfm?a=322164>

¹⁸ Audubon of Oregon recommends allowing feeders only in front of treated glass facades and/or placing feeders within 3 feet of glass (to reduce momentum of birds flushed off feeders) or placing them farther than 30 feet (absolute minimum) from facade.

- **High value habitat** - Areas that meet criteria of high ecological function, having structures to support wildlife and healthy plant diversity; Metro has documentation of these areas based on the Regional Conservation Strategy.

Materials Carbon Reduction Standards

Purpose

The intent is to reduce embodied carbon in materials and move Metro towards net-zero carbon status by 2050. Throughout their life cycle, building materials are responsible for nearly 40% of all global greenhouse gas emissions and many adverse environmental issues, including personal illness, habitat and species loss, pollution, and resource depletion.

Applicability

All new construction, major renovation, and existing buildings shall comply with the requirements of this standard, except as noted below:

- Any new construction or major renovation seeking ILFI Core Green Building Certification is exempt from Requirement 1 through 2029. Core Green Building Certification requires a 20% reduction as is. (Requirement 2, low-carbon concrete, still required.)
- Any new construction or major renovation seeking LEED v4.1 Materials Recovery Exemplary Performance credit for Building Product Disclosure and Optimization – Environmental Product Declaration (EPD) is exempt from Goal 1 through 2029. (Goal 2, low-carbon concrete, still required.)
- Non-applicable projects or existing buildings. If project or existing building-type doesn't seem applicable to the requirements of this standard, an explanation shall be submitted within a Sustainable Buildings and Sites Policy exemption form and submitted by the Project Manager (PM) or site Operations Manager to the project Executive Sponsor and Sustainable Buildings and Sites Policy (SBSP) Liaison in consultation with the Sustainability Program. Upon their approval the project will be exempt from requirements.

Requirements

1. All new construction and major renovation must demonstrate a 20% reduction in the embodied carbon of primary materials. Primary materials refer to the majority by cost of permanently installed components that make up the structural, foundation and enclosure systems of a building (i.e., concrete, steel, wood, roofing, cladding, glass and insulation).
 - The re-use of an existing building, or use of salvaged or reused primary materials contributes to meeting the reduction requirement by removing the embodied carbon impacts of the materials that would have otherwise been sourced new.
 - Future updates to this policy will include an incremental increase in embodied carbon reductions over time to achieve net zero carbon by 2050.
2. All projects utilizing concrete shall comply with the most recent version of the City of Portland's Concrete Embodied Carbon Thresholds.
3. Evaluate use of MetroPaint first before specifying finishes for any painted surfaces.
4. All existing buildings operated by Metro must meet the same incremental mandatory embodied carbon reductions as new construction for purchases such as new furniture, equipment, and interior finishes (wood trim, carpet, ceiling tile, gypsum wallboard, wall coverings, etc.).

Implementation

1. **For new construction/renovation.** Step one: Consultant and/or contractor use free, open-source software (Athena, Tally, GaBi, EC3, One Click LCA, etc.) to calculate embodied carbon baseline and reductions and deliver to Sustainable Buildings and Sites Liaison. Step two:

Follow up by providing Sustainable Buildings and Sites Liaison approved submittals validating that materials used in calculations were used on building, and/or substitutions (if any) matched same embodied carbon requirements. PM can forward the approved submittals from project team.

2. **For all projects using concrete.** PM ensures that consultants and contractors comply with specifications and documentation of City of Portland's Concrete Embodied Carbon Thresholds. All specifications, EPDs and approved submittals will be forwarded by the PM to the Sustainable Buildings and Sites Liaison.
3. **For existing buildings.** Step one: Consultant and/or contractor use free, open-source software (Athena, Tally, GaBi, EC3, One Click LCA, etc.) and/or carbon-neutral interiors' databases to calculate embodied carbon baseline and reductions and deliver to Sustainable Buildings and Sites Liaison. Step two: Follow up by providing Sustainable Buildings and Sites Liaison approved submittals or invoices validating that materials used in calculations were used on building, and/or substitutions (if any) matched same embodied carbon requirements. PM can forward the approved documentation from project team.
4. **For operations and maintenance purchases.** PM or site Operations Manager requests EPDs, contingent with purchase, and forwards them to Sustainable Buildings and Sites Liaison. Procurement will make EPDs mandatory for these "top 10%" purchases, and a condition of contract execution, in procurement documents.

Glossary

- **Embodied carbon** is the carbon dioxide (CO₂) emissions created during the extraction, manufacturing, and transport of building materials used in a construction project, or the carbon footprint of a building or infrastructure project before it becomes operational.
- **Primary materials** include wood, steel, and concrete and constitute the majority of materials used in a building or infrastructure project.
- **Low carbon concrete** uses a lower embodied carbon material as the binder such as fly ash or slag to produce a concrete that results in a less overall production of greenhouse gas emissions from the mining, refining, and transport of ingredients.
- **Global warming potential (GWP)** was developed to allow comparisons of the global warming impacts of different gases. Specifically, it is a measure of how much energy the emissions of 1 ton of a gas will absorb over a period of time, relative to the emissions of 1 ton of carbon dioxide (CO₂).
- **Environmental product declarations (EPD) or EPDS** are third-party verified reports of all the environmental impacts of a product or service across its life cycle. The life cycle analysis looks at every stage of that product's or service's life. They function like a nutrition label.

Sustainable Roof Standards

Purpose

Sustainable building rooftop technologies, such as low reflectance roofs, ecoroofs, and solar photovoltaic(s) (PV) panels, are becoming more common as a result of their associated environmental benefits. *The purpose of this policy standard is to maximize the environmental benefit of rooftops at new and existing Metro facilities.*

Requirements

Evaluate and implement sustainable rooftop technologies based on the hierarchy below to maximize environmental benefit.

1. Solar PV – highest priority due to clean energy generation
2. Ecoroof – next-highest priority to mitigate storm water, provide habitat and reduce heat island effect
3. High reflectance roof – third priority; reduces heat island effect but may contribute to higher heating costs in winter and higher maintenance needs (keeping clean)

Applicability

For the purposes of this policy the applicable roof area excludes roof area covered by mechanical equipment, skylights, and any other appurtenances.

1. All new Construction and Major Renovation projects, 1,000 sf or larger.
2. For all Existing Buildings, 1,000 sf or larger, analysis shall be completed along with LEED assessment, and for all roofing projects that require a tear-off or full roof replacement.
 - a. Existing building roofing projects will first consider roof restoration before tear-off due to the cost savings and environmental benefits.
 - b. If the roof does not have insulation or the existing insulation has damage, contact the Energy Trust of Oregon to see if this project is eligible for incentives.
3. Non-applicable building types must get an exemption approved by Sustainable Buildings and Sites Liaison and project Executive Sponsor using standard project exemption process.

Approach/Implementation

1. **For New Construction and Major Renovation projects:** design consultant works with PM and design team to complete the roof assessment worksheet to evaluate the highest and best use of rooftop opportunities including solar generation, ecoroof installation, or solar reflectivity treatment, as well as some combination thereof. The completed optimal roof opportunities worksheet is submitted to the Sustainable Buildings and Sites Liaison and Executive Sponsor.
 - Worksheet (included below) will include a calculation of project site's total solar resource fraction (TSRF) and help project team evaluate cost/benefit opportunities for solar generation, solar reflectivity, solar-ready infrastructure design, heat island effect mitigation, storm water treatment and mitigation, and ecoroof viability based on project-specific constraints and opportunities.
 - i. Energy Trust of Oregon (ETO) offers incentives for early design assistance, solar development assistance, solar-ready design and up to \$35,000 for solar

installation.¹⁹ These incentives should be incorporated to help fund assessment worksheet work as well as evaluation of installation costs.

- Develop a project-specific roof plan for the worksheet submittal that could incorporate solar-ready design, solar generation, an ecoroof, roof reflectivity, etc. or some combination of roof treatments to encourage maximum environmental benefit from roof area.
 - Submit plan for approval to Sustainable Buildings and Sites Liaison and Executive Sponsor.
 - If approved, PM ensures that roof plan requirements are included in design specifications. Approved submittals and summary narrative are provided by PM to the Sustainable Buildings and Sites Liaison to document compliance with policy.
 - If rejected, PM documents decision and ensures fallback roof storm water runoff mitigation requirements are met, documented, and reported.
2. **For Existing Building projects:** after restoration vs. tear-off replacement analysis of existing roof is complete, design consultant works with Building Operations Manager and/or PM to complete roof assessment worksheet to evaluate the highest and best use of rooftop opportunities including solar generation, ecoroof installation, or solar reflectivity treatment, as well as some combination thereof. The completed optimal roof opportunities worksheet is submitted to Sustainable Buildings and Sites Liaison and Executive Sponsor.
- If engineering and cost analysis shows work is feasible, the project moves forward pending a decision on practicality by the Executive Sponsor and Sustainable Buildings and Sites Liaison.
 - If approved, PM ensures that policy requirements are included in design specifications. Approved submittals and summary narrative are provided by PM to the Sustainable Buildings and Sites Liaison to document compliance with policy.
 - If rejected, PM documents decision and ensures roof storm water runoff mitigation requirements are met, documented, and reported.

Glossary

- **Ecoroof** – An ecoroof is intended to minimize the urban heat island effect, enhance urban habitats for wildlife, and reduce storm water runoff. An ecoroof consists of a layer of vegetation over a growing medium on top of a synthetic, waterproof membrane.
- **Total Solar Resource Fraction** – (TSRF) is the amount of sunlight the measured area will receive over the year. In more scientific terms, it is the ratio of insolation available accounting for both shading and Tilt and Orientation Factor (TOF), compared to the total insolation available at a given location at the optimum tilt and orientation and with no shading.

¹⁹ https://insider.energytrust.org/wp-content/uploads/Part_5_Solar_Development_Assistance.pdf

Sustainable Building Roof Assessment Worksheet

Sustainable building rooftop technologies, such as solar photo-voltaic(s) (PV) panels, ecoroofs, and high reflectance roofs are becoming increasingly implemented as a result of their associated environmental benefits. Multiple rooftop technologies may be employed on the same roof simultaneously. *The purpose of this worksheet is to maximize the environmental benefit of rooftops at new or existing Metro facilities by evaluating sustainable rooftop technologies based on the hierarchy below:*

1. **Solar power generation** – highest priority due to clean energy generation
2. **Ecoroof** – next-highest priority to mitigate storm water, provide habitat and combat heat island effect
3. **High reflectance roof** – lowest priority; combats heat island effect

General Information

Project Manager _____

Project Sponsor _____

Project Name/Description _____

Project Address/Location _____

Does project site zoning or historical designation affect the type of roof that can be used?

Yes

No

1. Solar Power Generation

What is the project site's total solar resource fraction (TSRF)? _____

Physical assessment Remote assessment

Projects with a TSRF greater than or equal to 75% with a Physical Assessment and 80% for a Remote Assessment are recommended for solar power installation.

Based on TSRF, does this project qualify? Yes No

If "yes" above, what is the minimum anticipated yearly output for project solar power _____ kWh

What are the anticipated yearly savings in electricity costs? _____

What is constraining the project's anticipated power output?

Size/area of project

Cost/budget

Other, describe _____

For existing buildings, is the weight-bearing capacity of the facility sufficient for solar power generation?

Yes

No

If "no", what upgrades are needed? _____

What is the estimated cost of the upgrades? _____

2. Ecoroof

Approximate size of the project site's total ecoroof area _____

What is constraining the project's ecoroof area?

- Size/area of project
- Cost/budget
- Other, describe _____

What is the primary purpose for project ecoroof?

- Manage storm water runoff
- Provide habitat
- Mitigate heat island effect
- Education/demonstration
- Aesthetics
- Other, describe _____

Why is an ecoroof the best strategy to address for this purpose for this project? _____

Are there/will there be resources (a maintenance plan, funding, trained staff and/or contractors) for ongoing maintenance of the ecoroof? Yes No

What is the estimated yearly cost to maintain ecoroof? _____

How will maintenance be funded? _____

For existing buildings, is the weight-bearing capacity of the facility sufficient for ecoroof?

Yes No

If "no", what upgrades are needed? _____

What is the estimated cost of the upgrades? _____

3. **High-Reflectance Roofing**

Ascertain solar reflectance index (SRI) from roofing product manufacturer.

Low-reflectance roofing shall meet the following requirements:

- Solar reflectance index (SRI) of Low-sloped (< or equal 2:12) roofs minimum SRI = 82
- Solar reflectance index (SRI) of Steep-sloped (> 2:12) roofs minimum SRI = 32

What is the approximate percentage of total applicable low-sloped project roof area? _____
_____ %

What is the SRI of the proposed roofing product for the low-sloped area? _____

Does the proposed roofing product meet the SRI requirements for low-sloped roof?

Yes No

What is the approximate percentage of total applicable steep-sloped project roof area? _____
_____ %

What is the SRI of the proposed roofing product for the steep-sloped area? _____

Does the proposed roofing product meet the SRI requirements for steep-sloped roof?

Yes No

If “no” for either, what is constraining the product choice?

- Aesthetics
- Cost/budget
- Specific product performance requirement
- Other, describe _____

What is the estimated yearly cost to maintain low-reflectance roof material? _____

For existing buildings, is this more or less than existing roof material?

More Less About the same

Roof Plan

Based on analysis of worksheet responses above, develop and attach a project-specific roof plan that briefly summarizes how the project will incorporate solar power generation, solar-ready design, an ecoroof, roof reflectivity, or some combination thereof, to maximize environmental benefit of project roof area. Include anticipated outcomes and cost/benefit of approach(es). Please identify anticipated grants, incentives and other resources contributing to the project’s success.

Submit completed worksheet, including roof strategic plan summary, to the Sustainable Buildings and Sites Policy Liaison and Project Executive Sponsor for approval.

Tree Replacement Standards

For all capital improvement projects on Metro property other than parks and natural areas*, avoid tree removal to the extent feasible. If live tree removal occurs, the following tree mitigation requirements apply unless local jurisdictional requirements exceed it:

- Trees less than 3" diameter: no replacement required
- 3" to <12" diameter: required to plant one tree for every tree removed
- 12" to <20" diameter: required to plant two trees for every tree removed
- 20" diameter and larger: required to plant three trees for every tree removed

When replacing live trees, the following applies:

- Prioritize planting native tree species, especially native conifers and Oregon white oak trees
- Tree planting to occur onsite, unless not feasible
- If unable to replant onsite, work with a regional partner to fund tree planting work at required ratios within urban developed areas

*This requirement does not apply to Metro parks and natural areas where site conservation plans and other mitigation and restoration efforts are used to promote healthy ecosystems and achieve desired future conditions.

APPENDIX C

Reporting template for new construction, major renovation and, operations and maintenance projects that support the Sustainable Building and Sites Policy

New construction and major renovation projects

At the end of each new construction or major renovation project, the project manager is responsible for submitting the following information to the Sustainability Program:

- (1) Report the amount of construction and demolition (C&D) waste diverted from each project and reused on the job site (total tons, percent diverted, and list of primary materials diverted).
- (2) Provide a summary of Core imperatives or all LEED credits, SITES credits that were incorporated in the project.
- (3) Provide a copy of certification document for either Core, LEED, or SITES when available.

Operations and maintenance projects

At the end of each fiscal year, operations managers are responsible for submitting a summary of sustainable building operations and maintenance projects completed in the previous fiscal year, including capital improvement projects and renewal and replacement projects that implement this policy.

- (1) Provide a one to two-paragraph summary of the project.
- (2) Note which of the Metro sustainability goals the project addresses and how.
- (3) Are there any anticipated resource or financial savings expected from the project? If so, please summarize.