



Green Building and Sustainable Infrastructure Guidelines

Guidelines for Complying with the King County Green Building and Sustainable Development Ordinance

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This document was developed by the King County Solid Waste Division GreenTools Team with the guidance of the King County County-wide Green Building Team. Consultant assistance was provided by O'Brien & Company.



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Introduction

The Green Building and Sustainable Development Ordinance 16147, adopted on July 3, 2008 (<http://kingcounty.legistar.com/custom/king/legislation.htm>), requires that capital projects meet either the LEED Standard or integrate cost-effective sustainable development practices into infrastructure projects. In addition, it requires King County divisions ensure that capital projects staff obtain regular training in green building and sustainable development. Project teams are responsible for reporting on the green building strategies and training implemented.

Purpose

This document provides guidance to King County Divisions to meet the requirements of the Green Building and Sustainable Development Ordinance. It provides general guidance for all capital projects, as well as specific guidelines for non-LEED capital projects, including how to use a scorecard developed by the King County Green Team to track implementation of sustainable development practices for these projects, and specific guidance on achieving each of the actions included in the scorecard.

This document is not intended to replace green building scorecards developed or under development by individual Divisions to assist Division Project Managers in assessing sustainable development practices integrated into capital projects. In fact, those scorecards will be helpful in providing specifics for the summaries required by the ordinance. For that reason, the appendices of this document include the referenced scorecards.

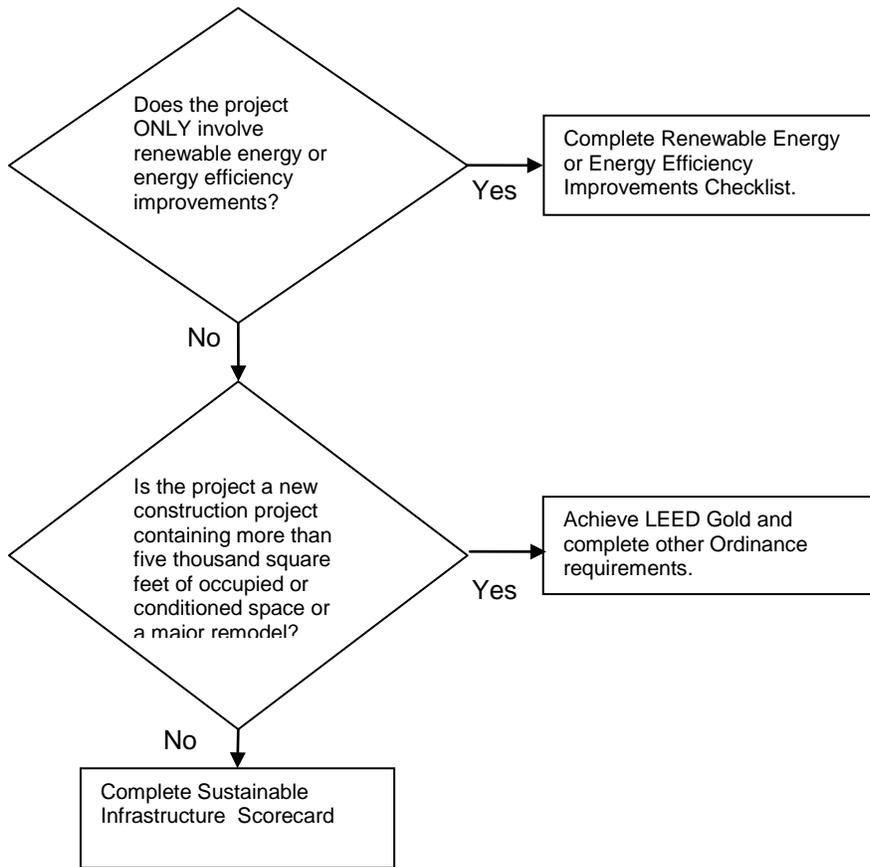


Figure 1: Decision Process to Determine Type of Capital Project

Defining Eligibility for Capital Projects

The ordinance defines a “LEED-eligible building” as a “new construction project larger than five thousand gross square feet of occupied or conditioned space as defined in the Washington state energy code, which is chapter 51-11 WAC, or a major building remodel or renovation project.” A major remodel or renovation is further defined as “work that demolishes space down to the shell structure and rebuilds it with new interior walls, ceilings, floor coverings and systems, when the work affects more than twenty-five percent of a LEED-eligible building’s square footage and the affected space is at least five-thousand square feet or larger.” See Appendix G for a list of items required of Project Managers working on LEED-eligible buildings.

A “non-LEED eligible” capital project, as defined in the ordinance, is a project “where the scope of the project or type of structure limits the ability to achieve LEED certification.” All projects that do not meet the definition of LEED-eligible are therefore mandated to follow the requirements of the “non-LEED eligible” or infrastructure portion of the ordinance. If the project only includes renewable energy or energy efficiency improvements, project managers must complete a smaller scope of requirements in lieu of the non-LEED checklist (Appendix H).

Non-LEED Eligible Capital Projects

The scorecard is intended to provide consistency across the Divisions for reporting purposes. King County Divisions’ capital projects, however, differ greatly in terms of type and scope. As a result, meeting the intent of the ordinance’s requirements and goals will vary from division to division. Several Divisions have already developed or are developing customized scorecards that contain appropriate LEED-credits as well as items that focus on non-LEED goals of sustainability, such as social equity and economic vitality. These scorecards are provided in Appendix B, which is organized by relevant King County Divisions.

Training

The Ordinance requires that all Project Managers receive training and yearly refreshers in LEED or sustainable development practices. For this part of the checklist, please provide a few sentences stating what applicable training you received over the past year. The type of training may be different between divisions. Examples of training include short sessions integrated into staff meetings, intensive day-long sessions, conferences, and on-line curriculum.

Future Updates

This is a living document that will be updated frequently, at least annually. Future versions will likely include revisions to the prerequisite and credit requirements, such as changes to performance thresholds, along with additional guidance, implementation examples and resources pertaining to prerequisites and credits. If there are updates to this document during the design and implementation of your project, you can continue to use the version that you started the project with OR you can elect to upgrade to the current version.

Reporting requirements

30% Design Requirements

The project manager must submit to the County-wide Green Building Team Division representative (see Appendix F for a list of representatives) a copy of the relevant scorecard (may be division-specific scorecard or the King County Sustainable Infrastructure Scorecard) when the project is at 30% design development.

Completion Requirements

The project manager must submit to the County-wide Green Building Team Division representative a copy of the relevant scorecard (may be division-specific scorecard or the King County Sustainable Infrastructure Scorecard) when the project is completed.

Annual Reporting Requirements

The project manager must submit information to the County-wide Green Building Team Division representative regarding green strategies, fiscal issues, and greenhouse gases information annually. The annual reporting form is available in Appendix C. Reporting elements are detailed below.

Green Strategies

Summary of green strategies employed

Document the sustainable development or “green” strategies used in this project. Provide either a list or paragraph summary. Project managers can use the same tools developed by the divisions to document relevant credits and sustainable development strategies that were used for the information submitted at 30% design development or at completion of the project.

Amount of construction materials diverted

Record the total amount of materials produced during demolition and construction. Provide the amount that was diverted from the landfill.

Summary of renewable resources used

List or describe in a paragraph the renewable resources used in the project. Include the use of renewable fuels or energy used during construction or operation, rapidly renewable materials, or other sustainably extracted materials.

Summary of green materials used

List or describe in a paragraph green materials used during construction. Example green material characteristics include high recycled content, locally manufactured or harvested, certified with a green industry standard, and low life cycle impact. Materials may overlap with previously noted green strategies.

Fiscal Issues

Operations and maintenance costs projected prior to construction

Provide the projected operations and maintenance costs for the project. Some divisions collect this information in the standard fiscal reporting form. If not, state the costs for operations and maintenance expected for the project post-completion.

A report of fiscal performance including project costs and benefits

Provide a summary of the costs and benefits that can be quantified over the life of the project. Use the standard provided by the division to calculate this information.

Greenhouse Gases

Reductions in greenhouse gas emissions

Report the projected greenhouse gas emissions for the project, with and without adopted mitigation strategies. If unable to quantify the greenhouse gas emissions, document the primary sources of emissions as well as the mitigation strategies adopted to reduce the climate change impact of the project.

How to Use This Guide

All projects not required to achieve LEED certification under the ordinance must complete both the Project Checklist (below) and a project scorecard. As noted earlier, projects may use the King County Sustainable Infrastructure Scorecard or a division-specific scorecard, if available. Project managers should check with your division County-wide Green Building Team member to determine which scorecard to use for your project. See the King County Sustainable Infrastructure Scorecard at Appendix A. For examples of division-specific scorecards, see Appendix B. For projects implemented as part of a program with construction costs less than \$750,000 each, project managers can complete one scorecard for the program rather than one for each project.

The project checklist is provided to help track requirements for infrastructure projects.

Project Checklist

Planning, when the Project Manager is assigned to the capital project

- Determine if the project is LEED-eligible.
- If determined non-LEED eligible, review checklist, scorecard and guidelines to see what will need to be recorded in the future.
- Review training taken in the past year to see if the content included sustainable development practices or LEED.
- If no training covering the above topics was taken, seek appropriate training.

Planning, prior to 30% Design Development:

- Identify relevant LEED credits.
- Identify other relevant sustainable development strategies to be integrated into project. The project scorecard can be a guide for this process.

Reporting, submit at the completion of 30% Design Development:

- A copy of the project scorecard to the County-wide Green Building Team Division representative.

Reporting, compile and submit at project completion:

- A copy of the project scorecard to the County-wide Green Building Team Division representative.

Reporting, complete annual reporting form (see Appendix C) by January 31 and return to County-wide Green Building Team Division representative (see Appendix F)

- Annual reporting form including:
 - Summary of green or sustainable development strategies implemented
 - Amount of construction waste recycled
 - List of renewable resources used
 - List of green materials used
 - Operations and maintenance costs projected prior to construction
 - A report of fiscal performance including project costs and benefits
 - Reductions in greenhouse gas emissions

Sustainable Infrastructure Scorecard

The Sustainable Infrastructure Scorecard was developed using concepts that are the basis of the LEED® rating system, adapted to more appropriately apply to non-LEED eligible infrastructure projects in King County. The resulting Scorecard includes nine sections, including a set of prerequisites, seven sets of credits (optional items) organized by key topics of sustainability, and an additional set of credits (also optional) for enhanced performance. This Guide provides information for achieving each prerequisite and credit. A copy of the Sustainable Infrastructure Scorecard is available in Appendix A.

For your reference, information about each prerequisite and credit is organized in the following standardized sections:

Intent:

Explains the main environmental, fiscal, and/or social goals of the prerequisite or credit.

Requirements:

Describes the criteria that fulfill the prerequisite or credit and the number of points available. The prerequisites must be achieved unless the requirements are outside the scope of the project type. There is a “Not-Applicable” (N/A) check box on the scorecard for prerequisites or credits that don’t apply to your project. For some credits, there are two or more options with cumulative points. For example, your project can earn up to 4 points for Credit 3: Reduce Energy Use with the first point earned for 20% energy reduction and additional points earned for 30%, 40%, and 50% energy reductions. Documentation for each prerequisite or credit is described within the requirements section.

Additional Guidance:

Provides recommendations for achieving the prerequisite or credit’s requirements. A project team is not obligated to follow the guidance. They may choose to develop a unique approach as long as it fulfills the prerequisite or credit’s requirements.

Implementation Examples:

Provides examples where the prerequisite or credit was used in a King County project along with the King County Project Manager’s name as a resource for information.

Implementation Resources:

Provides references and weblinks to external resources that can help the project team understand how to approach, implement, and document the prerequisite or credit’s requirements. For example, a web link to greenhouse gas calculators will help a team fulfill Prerequisite 3: Account and mitigate for greenhouse gas emissions.

Documentation Checklist

The purpose of the documentation checklist (see Appendix C) is to help organize and record your project’s fulfillment of the prerequisite and credit requirements and share your results with the King County Green Building Team for the benefit of continual learning and improvement. The documentation checklist parallels the structure of the Sustainable Infrastructure Scorecard. Submit the documentation checklist along with the supporting documentation and scorecard when your project and project documentation is complete.

Determining Your Score

The resulting Sustainable Infrastructure Scorecard includes nine sections, including a set of prerequisites, seven sets of credits organized by key topics of sustainability, and an additional set of credits for enhanced performance. There are a total of 55 points available for credits. In reviewing the scorecard,

you will notice that each credit is followed by three columns. The “Yes” (Y) column denotes credits that are likely to be achieved (at 30% reporting) or have been achieved (at 100% completions). The “No” (N) column denotes credits that are applicable to the project but that are not likely to be achieved or have not been achieved. The “Not Applicable” (N/A) column denotes credits that are not applicable to a particular project and will not be attempted.

To determine the score for your particular project, identify credits that are outside the scope of the project type and are thus deemed ‘Not Applicable’. The points for these credits are then eliminated from the total points, or the denominator. The score is then calculated based on how many of the remaining points are achieved. Then based on the percentage of the points achieved (see Table 1), determine the rating for the project. For example, if a maintenance facility project were pursuing and likely to achieve 20 out of the 40 points applicable to the project based on its scope, it would be considered by the County as on track to receive a Sustainable Infrastructure Scorecard Silver Rating.

Table 1: Sustainable Infrastructure Scorecard Ratings, Percent Points Achieved

Platinum	75% or above of total points
Gold	57% or above of total points
Silver	48% or above of total points
Bronze	38% or above of total points

Scorecard Implementation Guide

Following is a description of the prerequisites and credits included on the Sustainable Infrastructure Scorecard. A copy of the scorecard is available in Appendix A.

Required Elements for a Sustainable Development Project

Because the scorecard is designed to apply to a wide variety of projects, many projects will not be able to meet all of the following prerequisites. For example, a project that does not have an energy component will not be able to reduce energy use by 10%. All prerequisites that don't apply to a particular project type should be marked "N/A"

Prerequisite 1: Hold an eco-charrette or similar planning meeting

Intent

To educate the team participants about environmental and green building practices, to create a common language to explore these issues, to begin the collaborative approach necessary for successful integrative design, and to establish sustainable goals for the project. When sustainable goals are established collectively and early in the design process at an eco-charrette or similar event, the opportunity to develop synergistic and cost-effective solutions are optimized.

Requirements

An eco-charrette is a facilitated meeting for a project design team that explores sustainable and high performance themes and strategies that can be applied to a project. To meet this prerequisite, hold an eco-charrette or similar planning meeting in the early phases of project planning -- pre-design, no later than conclusion of the schematic phase. Participants in the meeting must include all design team members and selected stakeholders. A brief report of the eco-charrette or similar meeting, including summaries of the presentations and discussions, will be used to document completion of this prerequisite.

Additional Guidance

The project may employ a consultant to conduct the eco-charrette (recommended for large or complex projects). For smaller projects the meeting may be led by the project manager or other staff member. Eco-charrettes should include as many project stakeholders as possible and should address all aspects of the project.

Implementation Examples

Central Maintenance Facility, DNRP's Parks & Recreation Division: Planning for a new Central Maintenance Facility got underway in 2008 by holding an eco-charrette. The project team set a goal to achieve a LEED Gold rating for the building.

Project Manager: Chris Erickson

Atlantic/Central Base Operations Building: Due in part to the 2006 Executive Order regarding renewable energy and efficiency goals, it was determined that the Atlantic/Central Base Operations Building would seek a LEED Gold rating with an emphasis on energy efficiency. A series of LEED workshops were conducted with key transit staff to determine LEED strategies and to select suitable building systems to meet the Gold objectives.

Project Manager: Garrett Stronks

Factoria Recycling and Transfer Station: A new recycling and transfer station will replace the existing one onsite. The project team held an eco-charrette to gather information from all of the building's users.

Project Manager: Fred Bennett

South Park Bridge: Although the eco-charrette did not occur early in the design process, ideas that were discussed at the meeting were incorporated in the design. This project is not attempting a LEED certification.

Project Manager: Tim Lane

Implementation Resources

- The City of Seattle Department of Planning and Development website contains a section under “Design Tools & Strategies” that addresses the eco-charrette process, <http://www.cityofseattle.net/DPD/GreenBuilding/Commercial/DesignToolsStrategies/Eco-charrettes/default.asp>
- The Department of Ecology website provides information about eco-charrette facilitation, <http://www.ecy.wa.gov/programs/swfa/greenbuilding/Charrettes.html>
- The National Charrette Institute provides a wealth of resources and tools for charrette planning and facilitation, <http://www.charretteinstitute.org/>

Prerequisite 2: Use Life Cycle Cost Assessment (LCCA)

Intent

To select the most cost-effective design alternative over a particular time frame. LCCA is beneficial because it addresses future costs associated with maintenance, operation and replacement of a building or capital project, in addition to the first costs of design and construction. The methodology can be applied to a wide variety of decisions, including accepting or rejecting options, design and sizing, location, replacement, lease or buy options, system interdependence, budget allocation, and priority or ranking methodologies.

Requirements

LCCA is traditionally used to assess direct costs of a building such as energy costs, building renewal and replacement, and operation & maintenance (O&M) costs. LCCA can also be applied to indirect costs such as staff salaries, staff productivity, lost construction time, fire insurance, lost revenues due to downtime, and other costs that are not directly related to the cost of the building. While these indirect costs are often more difficult to estimate, they are significant and should be considered in the decision-making process. To meet the prerequisite, projects must use LCCA and have the LCCA report available for review.

Additional Guidance

None at this time.

Implementation Examples

None at this time.

Implementation Resources

- King County LCCA Guide. User guide designed to help King County Project Managers evaluate green building design options, http://your.kingcounty.gov/solidwaste/greenbuilding/documents/KC_LCCA_calculator-guide.pdf.
- National Institute of Building Sciences, <http://www.wbdg.org/resources/lcca.php>
- Whole Building Design Guide (Life-Cycle Costs Analysis), www.wbdg.org/resources/lcca.php

Prerequisite 3: Account and mitigate for greenhouse gas emissions

Intent

Mitigation of greenhouse gas (GHG) emissions is consistent with the County's Climate Change Response Comprehensive Plan Policy to reduce operational emissions to 6% below 2000 levels by 2010 and to collaborate with regional efforts to reduce regional emissions to 80% below 2007 levels by 2050. An accounting of emissions and emissions mitigation will help provide a baseline as well as document progress for the County and offers regional leadership.

Requirements

Projects must complete an accounting of embodied, operational and transportation related emissions. This accounting must include the amount of emissions reduction as a result of mitigation such as that resulting from meeting the Prerequisite 5 – Energy Reduction, as well as from achieving additional energy efficiency and alternative transportation credits. This prerequisite reflects County policy that all actions subject to the State Environmental Policy Act (SEPA) must account for greenhouse emissions in the environmental review process.

Additional Guidance

Under implementation resources follow the GHG calculators web link for instructions on how to calculate greenhouse gas emissions, a list of greenhouse gas calculators and the impact of various mitigation options. Please note that many sustainable strategies outlined in the scorecard, such as reducing energy usage, use of sustainable materials, and use of alternative fuels, result in reduced greenhouse gas emissions.

Implementation Examples

None at this time.

Implementation Resources

- Placeholder for link to GHG calculators
- ICLEI's Climate and Air Pollution Planning Assistant (CAPPA) tool: Launching in 2010, CAPPA is a downloadable Excel file to provide guidance on developing plans and implementing actions for reducing climate and air pollution. <http://www.icleiusa.org/action-center/tools/cappa-decision-support-tool/>
- U.S. EPA has developed [Greenhouse Gas Inventory Capacity Building](http://www.epa.gov/climatechange/emissions/) templates and software tools targeting key sources, emissions factors, good practices, institutional infrastructure and use of the latest IPCC guidelines on greenhouse gas inventories. <http://www.epa.gov/climatechange/emissions/>

Prerequisite 4: Implement erosion and sedimentation control best management practices

Intent

Protect and preserve wetlands, shorelines, buffers, and other critical areas by using erosion and sedimentation control to prevent stormwater runoff from disturbed areas during construction because of the ecosystem value these areas provide.

Requirements

Projects must implement best management practices for erosion and sediment control during construction. This prerequisite is identical to Washington State Code for creating and implementing a project-specific Temporary Erosion and Sedimentation Control Plan (TESC Plan).

Additional Guidance

None at this time.

Implementation Examples

Lower Tolt River Floodplain Reconnection Project: This project replaced a half-mile stretch of existing levee with a new one, located about 800 feet further back from the river channel. Because of its proximity to the river, extremely tight sedimentation and erosion controls were used.

Project Manager: Jon Hansen

Implementation Resources

- 1998 King County Surface Water Design Manual, Appendices C and D are available at the King County Water and Land Resources Division at 206-296-6519. Supporting documents and software can be downloaded <http://www.kingcounty.gov/environment/waterandland/stormwater/documents/surface-water-design-manual.aspx>
- "Stormwater Management: Environmentally Sound Approaches," Environmental Building News, Sept/Oct 1994. 802-257-7300 or www.buildinggreen.com
- Stormwater Management For Construction Activities: Developing Pollution Prevention Plans And Best Management Practices: Summary Guidance. EPA#833-R-92-001, October 1992, EPA Office of Wastewater Management, 401 M St. SW, Mail Code EN-336, Washington DC, 20460. 800-245-6510, 202-260-7786 or www.epa.gov/npdes/pubs/owm0307.pdf
- Stormwater Management Manual for Western Washington, Volume V, Runoff Treatment BMP's (Publication #9915). Washington State Department of Ecology, October 1999, Revised April 2005. Can be viewed online and you can request a copy at www.ecy.wa.gov/biblio/0510033.html or call 360-407-7472 to request a copy. For other information see www.ecy.wa.gov/programs/wq/stormwater
- International Erosion Control Association (IECA) provides technical assistance and an annual Erosion Control Products and Services Directory. IECA's Western Chapter addresses issues that are unique to the Western U.S. Can be reached at 800-455-4322 or www.ieca.org.
- The Municipal Research and Services Center of Washington lists several resources on Erosion and Sediment control at www.mrsc.org/Subjects/Environment/water/SW-erosion.aspx.

Prerequisite 5: Reduce energy use by 10% over local code

Intent

To support the county's energy planning goal to reduce energy use by 10% as of 2012. Reduced consumption benefits the County by reducing costs of operating buildings and other facilities over time. In the case of fossil fuel energy, reduced consumption has the added benefits of reducing global greenhouse emissions and protecting the County from volatile energy pricing.

Requirements

For new construction with conditioned space, or renovation projects that include major energy improvements, energy use must be reduced by at least 10% over local code (credits are available on the scorecard for additional reductions).

Additional Guidance

This prerequisite is primarily applicable to those projects with conditioned space, such as buildings and facilities. Infrastructure projects may have opportunities to reduce energy use, through improved efficiencies in exterior lighting, pumps, or other equipment. Projects without direct energy consuming equipment may consider opportunities to reduce indirect energy related with the project, such as minimizing vehicle impacts by providing amenities for public transportation, using alternative fuels during construction, or implementing on-site renewable energy to power nearby amenities, etc. See Planning and Designing for Sustainable Development Credit 4.0 and Construction Best Management Credit 3.0, and Reduce Energy Use and Promote the Use of Renewable Energy Credit 3.0.

Implementation Examples

Eastgate Public Health Direct Digital Control Heating, Ventilation, and Air Conditioning (HVAC)

Upgrades: Upgrades to the direct digital control HVAC system will provide 15 percent more efficiency than the American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE) minimum.

Project Manager: Mike Lozano

Regional Justice Center Detention HVAC Improvements: This project upgraded all 24 existing air handling unit motors at the RJC Detention Building's inmate areas, with new, energy-saving motors with variable frequency drives. The new system will be at least 15 percent more energy efficient than the existing one.

Project Manager: Stephen Swinburne

Carnation Treatment Plant Administration Building: The Administration Building performs 33 percent better than ASHRAE 90.1 – 1999 requirements using the LEED Energy Cost Budget methodology.

Project Manager: Jeff Lundt

Implementation Resources

- Advanced Buildings, Technologies and Practices online resource presents energy-efficient technologies, strategies for commercial buildings, and pertinent case studies, <http://www.advancedbuildings.org>.
- American Council for an Energy-Efficient Economy (ACEEE) is a non-profit organization dedicated to advancing energy efficiency as a means of promoting economic prosperity, energy security, and environmental protection, <http://www.aceee.org>.
- ENERGY STAR, <http://www.energystar.gov/>.

- New Buildings Institute (NBI) is a non-profit organization working to improve energy performance of commercial buildings. Works collaboratively with commercial building market players to remove barriers to energy efficiency, including advocating for advanced design practices, improved technologies, public policies and programs that improve energy efficiency. Provides Advanced Buildings™ tools and resources, <http://www.newbuildings.org>.
- The City of Seattle Department of Planning and Development website contains information about Commercial Incentives:
<http://www.cityofseattle.net/DPD/GreenBuilding/Commercial/IncentivesAssistance/default.asp>.

Prerequisite 6: Install water saving fixtures

Intent

To reduce indoor potable water use in county facilities, thereby reducing the burden on municipal water supply and wastewater systems. The use of low-flow fixtures is the most effective way to reduce potable water use in facilities.

Requirements

Projects that use potable water must install water saving fixtures to achieve a 20% reduction of building water use over the baseline for toilets, urinals, lavatory sinks, kitchen sinks, and showers. Install dual-flush, low-flow, or composting options for toilets, and waterless or low-flow urinals. Install new or upgrade lavatory sinks with touchless systems for faucets that include aerators. For this prerequisite, a low-flow fixture is defined as a fixture that has earned the EPA Water Sense label.

Additional Guidance

None at this time.

Implementation Examples

King County Correctional Facility Shower Replacement: Facilities Management Division (FMD) installed 92 high-efficiency shower valves, which earned the project \$180,000 in rebates from the City of Seattle at project completion in October 2007.

Project Manager: Stephen Swinburne

Black River Department of Development and Environmental Services (DDES) Building: FMD is installing high-efficiency faucets and flush valves to replace existing high volume fixtures.

Project Manager: Denise Thompson

Implementation Resources

- Seattle Public Utilities contains information about water conservation rebates. The Water Smart Technology Program (WSTP) offers cash incentives to commercial, industrial and institutional customers who replace water-wasting equipment or technologies with efficient ones. For more information:
http://www.seattle.gov/util/Services/Water/For_Commercial_Customers/WATERCONS_200311261707523.asp.
- The Resource Venture website contains information about available water rebates and incentives, <http://www.resourceventure.org/folder.2008-03-17.9966824527/rebates-and-incentives>.
- Saving Water Partnership is a group of local utilities that fund water conservation programs in Seattle and King County. The partnership offers financial incentives for installing water-efficient fixtures, appliances, and technologies, http://www.savingwater.org/business_construction.htm.
- The International Association of Plumbing and Mechanical Officials (IAPMO) works with government and industry to implement comprehensive plumbing and mechanical systems, <http://www.iapmo.org>.
- The International Code Council (ICC) develops the International Codes, or I-Codes, a complete set of comprehensive, coordinated building safety and fire prevention codes, <http://www.iccsafe.org>.
- <http://www.builtgreen.net>

- WaterWiser is a program of the American Water Works Association operated in cooperation with the U.S. Bureau of Reclamation. Their website provides information and resources including links for all aspects of outdoor and indoor water conservation, recycled water collection and reuse, irrigation, landscaping, and efficient fixtures and appliances, www.waterwiser.org.
- Plumbing Manufacturers Institute (PMI) is the national trade association of plumbing product manufacturers. Its member companies produce most of the nation's plumbing products, 847-884-9PMI (9764), www.pmihome.org.
- The American Water Works Association (AWWA) is an international nonprofit scientific and educational society dedicated to the improvement of drinking water quality and supply, Washington, DC, 202-628-8303 or www.awwa.org.
- Saving Water, Saving Dollars: Efficient Plumbing Products and the Protection of America's Waters by Edward Osann and John Young, April 1998, Washington, DC, Potomac Resources, Inc. Available from the American Council for an Energy Efficient Economy, 202-429-0063, www.aceee.org/pubs/h20.htm.
- U.S. EPA , How to Conserve Water and Use it Effectively. This document provides guidance for commercial, industrial, and residential water users on saving water and reducing sewage volumes, <http://www.epa.gov/OWOW/nps/chap3.html>.
- Water Sense is an EPA-sponsored partnership program that promotes water efficiency and enhances the market for water-efficient products, programs, and practices, <http://www.epa.gov/WaterSense/pp/index.htm>.
- Refer to LEED BD&C, p 165, to find baseline for water fixtures and p 175, 176 for resources.

Prerequisite 7: Implement Green Operations and Maintenance program, including a green cleaning program

Intent

To reduce health risks to custodial staff and building occupants, reduce cost, and increase occupant satisfaction. Green cleaning is a holistic approach to janitorial services. Green Cleaning takes into account the health, safety and the environmental risks of products and processes associated with cleaning, and balances this with maintenance needs. It involves the use of alternative products, application of the products in different ways, and evaluation and/or behavior shifts associated with how buildings are used to reduce risks, while maintaining a satisfactory level of cleanliness and disinfection.

Requirements

Customize and implement division-wide green cleaning policy to earn this prerequisite. For each project, written green cleaning procedures must be established. In addition, facility personnel must be trained in the procedures.

Additional Guidance

Consider regular ongoing maintenance and cleaning needs as well as periodic and restorative needs. The King County Green Operations and Maintenance Guidelines are available to assist project teams to develop programs suitable for the specific project type. The Guidelines document will be updated annually.

Implementation Examples

King Street Center: Achieved LEED-EB Credits EA 3.2 (Maintenance Contracts), EA 3.3 (Comprehensive Preventative Maintenance Program), IEQ 1 (Entryway), and IEQ 5.3 (High Volume Copying) , contributing to a Gold rating.

Property Manager: Francine Fielding, Wright Runstad

Ryerson Base Improvements: Earned an Innovation in Design credit under the LEED-NC rating system for implementing a green housekeeping plan.

Project Manager: Ron Moattar

Implementation Resources

- The King County Green Operations and Maintenance Guidelines are available to assist project teams in developing programs suitable for the particular project type. The guidelines include a policy template.
- Green Seal provides science-based environmental certification standards for green cleaning products, <http://www.greenseal.org>.

Planning and Designing for Sustainable Development

There are 8 possible points available under this category. Many of the decisions made during planning for the project affect the type and impact of sustainable development practices available to the project. Points available under this category award projects that use an integrative design process, incorporate green contract language and specifications, develop on brownfield sites, plan and design for alternative transportation as well as on-going project operations and maintenance, and include a number of construction efficiencies available through design, such as design for disassembly, using pre-fabricated components, and efficient construction delivery and staging.

PD Credit 1.0: Use an Integrative Design Process (1 point)

Intent

To achieve maximum building performance while achieving construction and operational savings. Integrative Design Process (IDP) is an effective way for creating cost effective, energy efficient, and environmentally responsible solutions that meet the specific needs of the intended users as well as the greater community. An integrative design approach takes into account interactions among all design variables and building systems and works with synergies and tradeoffs among them to arrive at the highest value for the project budget.

Requirements

One point may be achieved for projects that employ an IDP. To achieve this credit, the project team should establish IDP early in the process (pre-design or schematic design) with a project schedule that supports IDP. In addition, the team must agree to work in an iterative and multi-disciplinary fashion, testing assumptions and incorporating stakeholder feedback at multiple stages of the process i.e. conceptual design, design development, construction, and post-occupancy.

Additional Guidance

IDP is defined in the current ANSI Standard for Integrative Design presently entitled Whole Systems Integrated Process or WSIP. Improvements to this ANSI standard are in progress and will replace the current standard. As a national standard, the IDP ANSI Standard is intended to provide a common reference for all industry practitioners (owners, architects, builders, engineers, landscape architects, systems ecologists, manufacturers, and so on) in support of process changes needed to effectively realize cost savings, deepen understanding of human and environmental interrelationships, and improve the environment for all living systems.

Implementation Examples

Parks Department: Project Managers have taken Integrative Design Process Workshops.
Project Manager: Butch Lovelace

Factoria Recycling and Transfer Station: The project team for the Factoria RTS is using an integrative design process as they plan for the new station.
Project Manager: Fred Bennett

Implementation Resources

- <http://www.greenbuildingsbc.com/Portals/0/docs/IDP-FINAL.pdf>
- The proposed new ANSI Standard, that will replace the present ANSI Standard entitled, Whole Systems Integrated Process (WSIP), is based on the book by Bill Reed, President of the Integrative Design Collaborative <http://www.integrativedesign.net/> and 7 Group <http://www.sevengroup.com/> entitled the Integrative Design Guide to Green Building: Redefining the Practice of Sustainability http://www.amazon.com/gp/product/0470181109/ref=pd_lpo_k2_dp_sr_1?pf_rd_p=304485901&pf_rd_s=lpo-top-stripe-1&pf_rd_t=201&pf_rd_i=0071546014&pf_rd_m=ATVPDKIKX0DER&pf_rd_r=12ZN56M3CTMZ385AGKFJ.
- Better Bricks website provides information about the Integrative Design Process, <http://www.betterbricks.com/detailPage.aspx?ID=663>.
- New Buildings Institute (NBI) website contains a section that addresses the whole-building design process, “Engage the Integrated Design Approach,” http://www.wbdg.org/design/engage_process.php.
- Fundamentals of Integrated Design for Sustainable Building by Marian Keeler and Bill Burke is written for a broad audience—design professionals, engineers, land-use planners, resource and waste managers, and government officials—to educate about the importance of integrated building design. Topics include design processes, green building legislation, energy use and standards, energy efficiency, and water quality, among others. Available at Wiley Publishing, Inc, www.wiley.com.

PD Credit 2.0: Use “green” contract language and specifications (1 point)

Intent

To facilitate clear communication among the client, design team, and contractor for the development and construction of a green building project.

Requirements

Projects that include language in bid, contract, and specification documents that call out green building strategies and techniques, and expertise in green building strategies such as low impact development and IDP may claim this credit. Additional credits address specific materials or strategies that are specified and used (see Sustainable Materials credits 1.0 – 8.0).

Additional Guidance

None at this time.

Implementation Examples

Facilities Management Division Specifications Boilerplate: The Facilities Management Division revised their standard specification boilerplate to include “green” specifications.

Contact: Jason Rich

Implementation Resources

- To address the need for a comprehensive guide for procuring green building products and construction/renovation services within the Federal government, EPA has partnered with the Federal Environmental Executive and the Whole Building Design Guide (WBDG) to develop the Federal Green Construction Guide for Specifiers, <http://www.wbdg.org/design/greenspec.php>

PD Credit 3.0: Develop on brownfield sites (1 point)

Intent

Using brownfield sites both restores a polluted or damaged site and preserves existing open space for other uses. Cleaning up brownfield sites may also improve run-off quality and reduce negative impacts on surrounding eco-systems and water bodies.

Requirements

This credit may be claimed by projects that use a brownfield site. For the purpose of the credit a brownfield site is defined as a site that has been contaminated by previous development. Identify on-site contamination and document the remediation of the site.

Additional Guidance

The cost of mitigation varies, and should be based on a survey and sampling of potential pollutants.

Implementation Examples

Shoreline Recycling and Transfer Station: The new Shoreline RTS is partially built on a closed landfill. The landfill had to be excavated prior to construction of the building.

Project Manager: Lisa Williams

Implementation Resources

- King County Brownfields website, <http://your.kingcounty.gov/solidwaste/brownfields/index.asp>
- Brownfields Technology Support Center is a public center that provides technical support to federal, state, and local officials on issues related to site investigation and cleanup, <http://www.brownfieldstsc.org>.
- Environmental Law Institute, Brownfields Center provides information on brownfields cleanup and redevelopment, <http://www.brownfieldscenter.org/big/about.shtml>.
- U.S. EPA, Sustainable Redevelopment of Brownfields Program is a comprehensive website on brownfields that includes projects, initiatives, tools, tax incentives, and other resources, <http://www.epa.gov/brownfields>.

PD Credit 4.0: Plan and design for alternative transportation (1 point)

Intent

Providing separate lanes for bicycles provides a safe, zero-emission alternative to driving. Additionally, providing a system of connected sidewalks and crosswalks strengthens pedestrian connectivity between the site and its surrounding community and promotes walking as a safe and healthy mode of travel. Furthermore, bike and pedestrian accommodations support commuters who use a combination of transportation modes such as walking/riding the bus or biking/riding the light rail to reach their destination.

Requirements

Projects that accommodate alternative modes of transportation, such as, biking, walking, "green" vehicles, carpooling, and mass transit may claim this credit.

Additional Guidance

This credit is immediately applicable for projects that are inherently transportation related (roads, paths, bridges, etc.) It is also applicable to any project that has public or employee access. Alternative transportation to the project site can be encouraged by looking at pedestrian and bike friendly ingress/egress, connections to nearby community amenities accessible by foot, designing linkages to public transit, offering preferred parking for carpoolers and "green" vehicles or discounts for alternative transportation. Safety enhancements such as plantings, railings and low fences provide visual and physical separation between roads/drives and multi-use trails/sidewalks and, in turn, encourage walking and biking. For projects near schools, coordinate with the school's administrators to provide safe pedestrian and cyclist routes. At department facilities, add bike lockers or racks and consider adding shower/changing rooms.

Implementation Examples

Shoreline Recycling and Transfer Station: Achieved LEED Credit SS 4.1 and 4.2.

Project Manager: Lisa Williams

Ryerson Base Improvements: Achieved LEED NC Credit SS 4.3 by implementing alternative fuel refueling stations.

Project Manager: Ron Moattar

Implementation Resources

- Woodhull, J. 1992. How Alternative Forms of Development Can Reduce Traffic Congestion" Sustainable Cities; Concepts and Strategies for Eco-City Development, Ed. Bob Walter et al., Eco-Home Media, Los Angeles. Offers alternative approaches to traffic planning concentrating on "access" rather than mobility. Covers densification, parking, development patterns and offers solutions for pedestrian-friendly, transit-oriented development.
- U.S. EPA and Department of Transportation, Best Workplaces for Commuters. Program publicly recognizes employers who have exemplary commuter benefits programs. Provides tools, guidance, and promotions to help employers give commuter benefits, reap the financial gains, and achieve recognition, <http://www.bestworkplaces.org/about1/>.
- U.S. EPA, Office of Transportation and Air Quality provides information about the types and effects of air pollution associated with automobile use and links to resources for organizations interested in promoting commuter-choice programs, www.epa.gov/otaq.

- Commuting Guide for Employers outlines strategies for employers to encourage employees to commute by bicycle. Also includes quick facts sheets on commuting, urban planning and environmental statistics, as well as links to related sites, www.selfpropelledcity.com.
- Federal Highway Administration, Office of Human and Natural Environment, Bicycle & Pedestrian Program promotes access to and use and safety of bicycle and pedestrian traffic, www.fhwa.dot.gov/environment/bikeped.
- Pedestrian and Bicycle Information Center provides information and resources for issues related to bicycle commuting, www.bicyclinginfo.org.
- WalkScore ranks neighborhoods based on their walkability, www.walkscore.org/.

PD Credit 5.0: Plan and design for long-term maintenance (1 point)

Intent

Ensure that a project's maintenance needs are planned for during the design process, reducing the long term cost for maintenance as well as equipment replacement.

Requirements

To earn this credit, project teams must confer with representatives from the operations staff early on and throughout the design phase on the facility design and equipment selection.

Additional Guidance

This consultation ensures proper maintenance can be performed over the life of a facility and increases the likelihood that selected equipment will be maintained.

Implementation Examples

King Street Center: Achieved LEED EB EA Credit 3.2 for establishing Maintenance Contracts and EA Credit 3.3 for implementing a Comprehensive Preventative Maintenance Program.

Property Manager: Francine Fielding, Wright Runstad

Factoria Recycling and Transfer Station: Has involved operations and maintenance staff since the beginning of planning for the facility.

Project Manager: Fred Bennett

Implementation Resources

- The International Facility Management Association (IFMA) provides resources and tools on facility planning and on-going maintenance, <http://www.ifma.org/tools/index.cfm>

PD Credit 6.0: Design for Disassembly (1 point)

Intent

Design for disassembly (DfD) is a building design process that facilitates a longer life for a building and allows for the easy recovery of products, parts, and materials when a building is disassembled or undergoes renovation. The process is intended to maximize economic value and minimize environmental impacts through reuse, repair, remanufacture and recycling.

Requirements

Projects that incorporate key design principles that allow for disassembly at the end of the project's useful life may claim this credit.

Additional Guidance

Key design principles (summarized from Design for Disassembly in the Built Environment) include:

- Developing a deconstruction plan during the design/construction phase,
- Select materials that are durable and/or can be easily reused or recycled,
- Design connections that are accessible,
- Use bolted, screwed, and nailed connections,
- Separate mechanical, electrical and plumbing systems from the assemblies that host them,
- Design for the ease of removal/disassembly by standard mechanical equipment,
- Design for simplicity
- Design for interchangeability
- Design for safe deconstruction

Implementation Examples

None at this time.

Implementation Resources

- King County GreenTools website provides information about construction recycling including DfD, <http://your.kingcounty.gov/solidwaste/greenbuilding/construction-recycling/disassembly.asp>
- Design for Disassembly in the Built Environment is a guide prepared for the City of Seattle, King County, and Resource Venture, http://your.kingcounty.gov/solidwaste/greenbuilding/documents/Design_for_Disassembly-guide.pdf

PD Credit 7.0: Plan, design and build with pre-fabricated elements (1 point)

Intent

Pre-fabricated elements are made off-site in a controlled environment, where raw materials can be used more efficiently and waste can be easily recovered. This saves time and waste by minimizing the inefficiencies of on-site fabrication. Prefabricated elements may also increase the ease of disassembly.

Requirements

Projects that use pre-fabricated elements may claim this credit.

Additional Guidance

Specify elements that are easy to handle and assemble, and are delivered with minimal or no packaging.

Implementation Examples

None at this time.

Implementation Resources

- To learn more about structural insulated panels visit the Structural Insulated Panel Association website at <http://www.sips.org/>
- The Zero Energy Idea Home in Bellevue used structurally insulated panel (SIPs) construction <http://www.zeroenergyideahouse.com/>
- Tool Base Services provides an overview of panelized wall and roof systems and resources such as sample specifications and CAD details, <http://www.toolbase.org/Technology-Inventory/Whole-House-Systems/panelized-wall-roof-systems>
- ASTM-C902-09 specification covers the structural design and quality control of fabrication for load-bearing and non-load-bearing prefabricated masonry panels, <http://www.astm.org/Standards/C901.htm>

PD Credit 8.0: Plan for efficient construction delivery and staging (1 point)

Intent

Efficient delivery and staging can significantly reduce the area of disturbance on a construction site, and can prevent materials damage and waste.

Requirements

Projects can claim this credit by creating and implementing a construction plan for efficient delivery and staging.

Additional Guidance

Maintain a minimal boundary around the area of work, not to exceed 40'. Coordinate material deliveries with the construction schedule to minimize on-site storage. Optimize paths for vehicles while minimizing site entry and exit points.

Implementation Examples

Bow Lake Recycling and Transfer Station: Excavation for the new station is underway while the old station is still in operation. This requires careful staging during construction.

Project Manager: Tom Creegan

Implementation Resources

- *Sustainable Construction: Green Building Design and Deliver, Second Edition* guides construction and design professionals through the process of developing commercial and institutional high-performance green buildings from design through construction, <http://www.iccsafe.org/Store/Pages/Product.aspx?id=9536S2>

Construction Best Management

This category focuses on best practices to divert construction waste from the landfill, reduce transportation of construction materials, reduce carbon emissions resulting from operating construction equipment, improve indoor air quality for workers and building occupants, and reduce water used for cleaning and dust control. There are a total of 7 points possible in this category.

CM Credit 1.0: Recycle construction and demolition materials (up to 3 points)

Intent

To divert construction and demolition debris from disposal in landfills and incineration facilities. In addition, the intent is to redirect recyclable material back into the manufacturing process and reusable materials to second and appropriate use.

Requirements

To earn this credit, projects must specify and implement a construction waste management plan with a specified diversion rate. Projects can claim up to three points under this credit:

- CM credit 1.1 - 50% diversion rate = 1 point
- CM credit 1.2 - 75% diversion rate = 2 points
- CM credit 1.3 - 95% diversion rate = 3 points

In addition to addressing materials that can be recycled, the plan must address potential reuse, including opportunities to reuse building or site materials in the existing project or in new projects.

Additional Guidance

Seek qualified contractors that are experienced in construction and building removal materials diversion techniques. In King County, there should be no construction cost increase for recycling at least 75% of all construction and demolition (C&D) materials.

Implementation Examples

Mt. Si Bridge: When the Mt. Si bridge was replaced, as much material as possible was recycled. 22,500 tons of steel and 250 cubic yards of concrete were recycled.

Project Manager: Gwyn Lewis

South Treatment Plant Administration Building: 445.44 tons or 94.78% of the construction waste was diverted from the landfill.

Project Manager: Jacquelynn Roswell

Brightwater Treatment Plant: In 2008, construction activities for the Brightwater Treatment Plant diverted 725 tons of debris from landfills and reused 280,000 tons of material, keeping 28,000 trucks off the roadways with an estimated round-trip distance of 25 miles per truck. In addition, 7,700 tons of fly ash was recycled in the 2008 construction efforts.

Project Manager: Michael Popiwny

Implementation Resources

- Construction Recycling Directory for Seattle/King County provides tools and assistance for construction, demolition and deconstruction projects including jobsite waste guidelines, waste management plan template, sample waste recycling specifications, directory of local construction waste recyclers and more. To learn more, contact King County's construction recycling program at (206) 296-4434 or go to website <http://your.kingcounty.gov/solidwaste/greenbuilding/documents/CDLguide.pdf>
- King County Solid Waste Division provides guidance for recycling construction and demolition waste, <http://your.kingcounty.gov/solidwaste/wdidw/category.asp?CatID=17>.
- King County Materials Resource Reuse Database contains a directory listing of businesses and organizations that accept unwanted items from residents and businesses in King County, Washington, for reuse, recycling or proper disposal, <http://your.kingcounty.gov/solidwaste/wdidw/materials.asp>.
- King County LinkUp is a program that works to expand markets for selected recyclable and reusable materials by facilitating an interactive community of businesses, public agencies and other organizations. Includes information on local carpet re-processing project being implemented jointly by SPU and the King County LinkUp Program, www.kingcounty.gov/linkup.
- Resource Venture contains multiple resources on “Construction Recycling,” <http://www.resourceventure.org/green-your-business/green-building/construction-waste-management/construction-waste-management>.
- Carpet America Recovery Effort (CARE) is a joint industry-government effort to increase the amount of recycling and reuse of post-consumer carpet and reduce the amount of waste carpet going to landfills. Provides information about carpet reclamation partners in your area, www.carpetrecovery.org.
- By-Product Synergy Northwest offers resource for assisting Washington companies to identify and implement “synergies” that allow one company’s waste to become another company’s resource, www.pprc.org/synergy.
- Northwest Product Stewardship Council (NWPSC), www.productstewardship.net.

CM Credit 2.0: Use of on-site materials in construction (1 point)

Intent

To divert construction and demolition debris from disposal in landfills and incineration facilities. In addition, the intent is to redirect reusable materials to second and appropriate use.

Requirements

To earn this credit, projects must reuse 2.5% of building materials onsite.

Additional Guidance

Any onsite use of materials should be approved in advance, and should not compromise existing site amenities.

Implementation Examples

Lake Sammamish Master Trail – Redmond Segment: Renovation of the Lake Sammamish Master Trail in Redmond consisted of paving and widening a two-mile segment of the gravel trail. The project reused the existing gravel for widening the trail by 8 feet. 4,100 linear feet of split rail and 1,200 linear feet of chain link fence were reused.

Project Manager: Gina Auld

Water and Land Resources Division Coordinate Reduction of Waste (CROW) Program: The CROW program grinds up wood waste from projects and uses it as a soil amendment.

Project Manager: Leo Griffen

Lake Hills Interceptor & EBI 2 Rehabilitation: By using a new method to rehabilitate sewer pipes, water use during construction was reduced from 771,000 gallons to 3,800 gallons. The new method involves inserting a resin-impregnated fabric sock filled with hot water into the pipes. The hot water is circulated inside the sock until the sock cures and hardens into the new pipe. This project saved 767,200 gallons of water.

Project Manager: Crystal Fleet

Implementation Resources

- King County GreenTools Web page explains cost-saving salvage and deconstruction practices and provides local resources, <http://your.kingcounty.gov/solidwaste/greenbuilding/construction-recycling/deconstruction-salvage.asp>

CM Credit 3.0: Use alternative fuels in construction equipment (1 point)

Intent

To reduce air pollution during construction operations due to the use of fossil fuels. When using bio-gas, the intent is also to reduce odor and greenhouse gas emissions to the extent bio-gas offsets the use of fossil fuel.

Requirements

To earn this credit, the project must specify and use alternative fuels in construction operating equipment.

Additional Guidance

Retrofit existing vehicles, or purchase new vehicles that accept bio-diesel, low-sulfur diesel or natural gas. Most current diesel vehicles are compatible with bio-diesel--some may need fuel filter or hose replacements. Bio-diesel contains no petroleum, but it can be blended at any level with petroleum diesel to create a biodiesel blend. It may be purchased in different formulations, ranging from B-5 (5% bio-diesel + 95% diesel) to B-100 (100% bio-diesel). It can be used in compression-ignition (diesel) engines with little or no modifications.

In addition to the use of alternative fuels for daily construction operations, consider designating bio-diesel for backup energy rather than diesel, which may contribute to this credit.

Implementation Examples

None at this time.

Implementation Resources

- Clean Cities, Puget Sound Clean Cities Coalition Web page describes how alternative fuels are a valuable tool for reducing air pollution and greenhouse gases, protecting public health, and contributing to economic development and provides resources, web links, and local success stories, <http://www.pugetsoundcleancities.org/AlternativeFuelsAndVehicles.htm>

CM Credit 4.0: Implement indoor air quality construction management plan (1 point)

Intent

An indoor air quality construction management plan can help to ensure the comfort and well-being of construction workers and building occupants.

Requirements

To earn this credit, a project must specify and implement an indoor air quality construction management plan. The plan must describe methods to limit pollution sources, protect equipment and avoid contaminants during construction, as well as describe the means that will be used to monitor compliance.

Additional Guidance

None at this time.

Implementation Examples

South Treatment Plant New Administration Building: Achieved LEED IEQ 3.1 and 3.3.
Project Manager: Jacquelynn Roswell

Shoreline Recycling and Transfer Station: Achieved LEED IEQ 3.1 and 3.3.
Project Manager: Lisa Williams

Implementation Resources

- Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guideline for Occupied Buildings under Construction, 1995.
<http://www.smacna.org/technical/index.cfm?fuseaction=papers>
- "Construction IAQ Management: Job-site Strategies for Ensuring a Healthy Building," Environmental Building News, Vol. 11 No 5, May 2002. Provides a checklist based on the SMACNA guide. <http://www.buildinggreen.com/articles/IssueTOC.cfm?Volume=11&Issue=5>

CM Credit 5.0: Reduce water use for cleaning and dust control (1 point)

Intent

To limit or eliminate the use of potable water for cleaning and dust control, reducing the burden on municipal water supplies.

Requirements

To earn this credit, a project must specify and implement a plan to minimize water use for cleaning and dust control. The plan must describe methods that will be used on the site, and how these methods will be monitored.

Additional Guidance

Cover construction entrances or heavy traffic areas with rocks, crushed debris or blankets. This will minimize dust and dirt transfer, thus reducing the need for vehicle cleaning. When vehicle washing is necessary, it should be done in a station that uses a water reclamation system, such as those found in commercial car washes.

Implementation Examples

Shoreline Recycling and Transfer Station: This project implemented a system for harvesting rainwater for dust control and other uses.

Project Manager: Lisa Williams

Implementation Resources

- None at this time.

Preserve and Maintain Natural Site Amenities

This category has a total 8 points possible. It focuses on minimizing disturbance to the existing site, maintaining or enhancing the existing vegetation and soils, and preserving or creating wildlife corridors and habitat. Credits are also available in this category for reduction of light pollution from the project, for integrating vegetation through green roofs and covers, and for designing natural acoustic buffers.

SA Credit 1.0: Minimize development footprint (1 point)

Intent

Reducing the footprint of any project is the most effective way to minimize habitat disturbance.

Requirements

Projects that use a minimal footprint may claim this credit.

Additional Guidance

Design facilities with compact footprints, focusing on multi-story construction. Projects should size right-of-way corridors appropriately based on traffic loads, with minimal disturbance of adjacent land.

Implementation Examples

Marymoor Maintenance Facility: The facility is sited near a wetland in Marymoor Park. It was designed to minimize the footprint of the buildings and the area needed for the maintenance activities.

Project Manager: John McCarthy

Implementation Resources

- The City of Seattle Department of Planning and Development website contains information about the Density Bonus incentive for downtown buildings, http://www.cityofseattle.net/DPD/cms/groups/pan/@pan/@sustainablebldg/documents/web_informational/dpdp_018423.pdf.

SA Credit 2.0: Preserve existing native vegetation (1 point)

Intent

Trees and other dominant native plant species are important to local ecology, providing food and shelter to numerous species. Homogeneous plant material, such as turf grass, creates a monoculture that requires treatment and maintenance, and is vulnerable to insects, weeds and disease. Using a diversity of native plants emulates natural conditions, creates a natural defense against many pests, limits excessive growth, and reduces the need for weeding or maintenance.

Requirements

Projects that protect and preserve existing native vegetation may claim this credit.

Additional Guidance

Inventory existing vegetation and plan to remove as little native vegetation as possible. If removal is necessary, relocate to a nearby location. During construction, maintain a barrier around the base of trees and other plants to protect root systems.

Implementation Examples

West Point Digester Improvements: The West Point Digester Improvements project used trenchless methods such as microtunneling to avoid impacts to streams and wetlands in the project corridor.

Project Manager: Chris Okuda

District Court Southwest Landscaping: A new landscape design will increase the use of drought-tolerant plant species and maintain mature trees and plantings on-site.

Project Manager: Mike Lozano

Carnation Treatment Plant: The Plant is using an innovative treatment process (Membrane Bioreactors, or MBRs) to reclaim water to Class A level that is then being used enhance wetlands at the Chinook Bend Natural Area. The project is also designed so that the discharge pipe is located on the underside of the Carnation Farm Road Bridge instead of a trench in the riverbed, reducing construction impacts of the project. The 59-acre property is owned by King County and managed as an open space and habitat protection area by WLRD.

Project Manager: Jeff Lundt

Implementation Resources

- "Green Seattle Partnership 20-Year Strategic Plan" describes the current problems within Seattle's forested parklands, along with solutions and how it will be implemented, <http://greenseattle.org/20-year-strategic-plan>.
- Building Greener Neighborhoods: Trees as Part of the Plan (see Chapter 5: "The Construction Process"). Available from American Forests, Washington, DC, 202-955-4500 or www.amfor.org. Also available from NAHB, 800-223-2665 or www.builderbooks.com.
- Pacific Northwest Chapter, International Society of Arboriculture, provides a list of certified arborists in Washington counties, <http://www.pnwisa.org/>.

SA Credit 3.0: Retain or create open space and corridors (1 point)

Intent

As development increases in the County, preserving connections between habitat zones – particularly river corridors and wetlands- becomes more important.

Requirements

Projects that retain or create open space and corridors may claim this credit. Maintain a 100' no-build buffer zone around all sensitive areas, and do not build within the 100-year flood plain. In places where habitat was previously impacted, include remediation in project scope.

Additional Guidance

Design opportunities for wildlife to cross major transportation corridors without interfering with traffic. Coordinate crossings with natural corridors and hydrological flows to preserve existing migration paths.

Implementation Examples

Brightwater North Mitigation Area: This project restored approximately 1,350 feet of stream corridor and added an additional 350 feet of new stream corridor. It also created 29,000 square feet of pond habitat with an amphibian shelf and ladder that connects two open wetland systems, and constructed more than four acres of additional enhanced emergent and forested wetland habitat.

Project Manager: Michael Popiwny

Carnation Treatment Plant: The Plant reclaims secondary treated wastewater using Membrane Bioreactors (MBRs). MBRs produce Class A reclaimed water that is 10 times cleaner than typical reclaimed water. This non-potable reclaimed water is being used to enhance wetlands at the Chinook Bend Natural Area. The project is also designed so that the discharge pipe is located on the underside of the Carnation Farm Road Bridge instead of a trench in the riverbed, reducing construction impacts of the project. The 59-acre property is owned by King County and managed as an open space and habitat protection area by WLRD.

Project Manager: Jeff Lundt

Implementation Resources

- "Green Seattle Partnership 20-Year Strategic Plan", <http://greenseattle.org/20-year-strategic-plan>.
- Open Space Seattle 2100 is the collective effort of citizens from civic, environmental, business, neighborhood and community groups joined with the University of Washington to create a 100-year plan for Seattle's open spaces, <http://www.open2100.org/>

SA Credit 4.0: Reuse native soils on-site (1 point)

Intent

The reuse of native soils on-site reduces transportation trips from hauling purchased imported soil and disposing of excavated soil.

Requirements

Projects that reuse native soil on-site may claim this credit.

Additional Guidance

While reuse may require testing the native soil for gradation and performance, the overall cost will likely be less because you will not need to purchase imported soil or pay for the disposal of excavated soil. Amend native soil if necessary. Plan the grading design of your site to balance cut and fill on location. Follow the King County Post Construction Soil Standards.

Implementation Examples

White Center Field Upgrade: This field regrading was accomplished without exporting any soil from the site.

Project Manager: Jason Rich

Burke Gilman Trail Improvements: Approximately 1,290 cubic yards of the existing asphalt was recycled, and the existing subgrade gravel and fill will be reused when possible.

Project Manager: Gina Ault

Brightwater Treatment Plant: This project retained excavated soil on-site to significantly reduce truck trips, and using the excavated soil to create landforms and buffers that will attractively screen the facility's buildings.

Project Manager: Michael Popiwny

Lower Tolt River Floodplain Reconnection Project: This project replaced a half-mile stretch of existing levee with a new one, located about 800 feet further back from the river channel. The project reclaimed/reused about 4000 cubic yards of soil onsite.

Project Manager: Jon Hansen

Implementation Resources

- King County Post Construction Soil Standard:
<http://your.kingcounty.gov/solidwaste/greenbuilding/site/soil-standard.asp>

SA Credit 5.0: Use light-colored exterior surface treatments – roof and non-roof (1 point)

Intent

The intent of this credit is to reduce the “heat island” effect, where heavily paved areas re-radiate heat and can raise local temperatures up to 10 degrees above ambient.

Requirements

Projects that specify and use light colored surface materials may claim this credit.

Additional Guidance

Reduce the “heat island” effect by specifying light-colored surfaces such as concrete, gravel or stone for non-roof surfaces. These materials absorb less heat from the sun than darker surfaces such as asphalt. For roofs, specify light colored roof membrane materials.

Implementation Examples

South Treatment Plant Administration Building: This project achieved LEED SS 7.1 and 7.2.
Project Manager: Jacquelynn Roswell

Implementation Resources

- American Concrete Pavement Association contains an update on “Albedo: A Measure of Pavement Surface Reflectance,” <http://www.pavement.com/Downloads/RT/RT3.05.pdf>.
- Lawrence Berkeley National Laboratory website contains a section on heat island research and resources, <http://eetd.lbl.gov/HeatIsland/>.
- U.S. EPA website contains basic information about heat island effect, including strategies to minimize its impact, www.epa.gov/heatisland.

SA Credit 6.0: Integrate vegetated roofs and green areas (1 point)

Intent

Natural cover on horizontal surfaces helps to reduce temperatures, maintain air moisture levels, and provide natural air and stormwater filtration.

Requirements

Projects that integrate vegetated roofs and/or green (vegetated) areas may claim this credit.

Additional Guidance

Integrate vegetation into overpasses or medians, using plants that have tolerance to vehicle exhaust. Install greenroofs on facilities to improve energy performance and mitigate stormwater runoff.

Implementation Examples

Dexter Regulator Station: King County installed the green roof in 2002 to capture and retain stormwater runoff, reduce "heat island" effects, and provide wildlife habitat in an urban area,
<http://www.kingcounty.gov/environment/wtd/Construction/EnhanceEnvironment/GreenBuilding.aspx>.

Project Manager: Susan Michaud

Skyway Park Shelter: This project completed by the Parks and Recreation Division and students from the University of Washington restored about a half-acre of wetlands as well as designed and built a shelter and plaza. The shelter had a green roof designed to accept pre-planted trays of sedums. The trays were planted and grown off-site, and the plants were fairly mature when installed on the roof.

Project Manager: Butch Lovelace

Implementation Resources

- *Green Roof Feasibility Review for the King County Office Project* provides an overview to green roofs including a description of types of green roofs, a summary of cost and benefits and a review of eleven green roof projects in the Pacific Northwest Region,
http://your.kingcounty.gov/solidwaste/greenbuilding/documents/KCGreenRoofStudy_Final.pdf
- Green Roofs for Healthy Cities, <http://www.greenroofs.org/>
- World Changing, Green Roofs: the Urban Jungle's Upper Canopy,
<http://www.worldchanging.com/archives/010211.html>

SA Credit 7.0: Design lighting for reduced light pollution (1 point)

Intent

Reduce light pollution to limit development impacts on nocturnal ecosystems, preserve visual access to the night sky, and reduce energy costs through efficient lighting design.

Requirements

Projects that design exterior lighting so that light is not cast outside of the project boundary and up lighting is minimized or eliminated may claim this credit.

Additional Guidance

Projects should install full cut-off fixtures and use low-wattage lamps where possible. Use timers and daylight sensors to minimize light use.

Implementation Examples

South Treatment Plant Administration Building: This project achieved LEED SS 7.1 and 7.2.
Project Manager: Jacquelynn Roswell

King Street Center: This project achieved LEED SS 7.2.
Property Manager: Francine Fielding, Wright Runstad

Implementation Resources

- International Dark-Sky Association provides education and solutions to light pollution, www.darksky.org
- LEED BD+C, SS credit 8, Light Pollution Reduction, pgs. 129-142.

SA Credit 8.0: Design natural acoustic buffers (1 point)

Intent

Support the psychological and physical wellbeing offered by human and animal habitats by limiting acoustic disruption with natural barriers.

Requirements

Projects that use natural acoustic barriers may claim this credit.

Additional Guidance

Where feasible, entrench roads to reduce noise. Target a 200' buffer zone between major roads and residential areas. Rather than walls, projects should use earth berms or dense vegetation between roads and sensitive areas. Barriers should be sized to provide appropriate acoustic "shadow".

Implementation Examples

SE 304th Street at 124th Avenue SE in Auburn: The project team chose to replace an existing signalized intersection with a single-lane roundabout. Roundabouts provide a variety of environmental benefits: they decrease greenhouse gas emissions by decreasing the amount of time cars idle at the intersection, decrease noise by eliminating the need for cars to stop and then accelerate, and decrease energy use by eliminating the need for an electronic signal.

Project Manager: Don Bleasdale

Implementation Resources

- Federal Highway Administration has a web page devoted to highway traffic noise and natural noise attenuation solutions, <http://www.fhwa.dot.gov/environment/htnoise.htm>

Social Benefits

This category accounts for the positive impacts that a project may have on a community. It acknowledges efforts made by the project team to enhance or create a community amenity or for a project that achieves a division-specific goal relating to the surrounding community. There are a total of 2 points available under this category.

SB Credit 1.0: Create public amenity (1 point)

Intent

Public amenities provide a centralized location for a wide range of recreational and community activities, such as gatherings; can be an economic development tool; and can be a significant source of community pride, reducing the potential for crime and creating safer communities. It can also reduce pressures to develop multiple, private sector projects offering similar amenities to discrete, and possibly exclusive, populations.

Requirements

A project may claim this credit if a public amenity is created as a result of the project.

Additional Guidance

None at this time.

Implementation Examples

West Point Beach and Wetlands, Seattle: Landscape architect Angela Danadjieva, also known for her work designing Freeway Park and the Washington State Convention Center, made innovative use of native plants, trees and berms to create a stunning design that melds the West Point plant into Discovery Park. The project to expand West Point in the 1990s provided opportunities to add 26 acres of public shoreline and restore habitats and wetlands previously lost.

Implementation Resources

- Project for Public Spaces, a nonprofit urban planning and design organization, is dedicated to helping people create and sustain public places that build communities, <http://www.pps.org>

SB Credit 2.0: Meet Division-specific social equity goal (1 point)

Intent

In addition to environmental impact, social equity is a key element of sustainability. Social equity implies fair access to livelihood, education, and resources; full participation in the political and cultural life of the community; and self-determination in meeting fundamental needs.

Requirements

A project earns this credit if it meets a social equity goal explicitly identified by the Division. The point may also be earned if a social equity goal is identified for the project in planning documents.

Additional Guidance

Many King County projects serve the goal of social equity. King County projects may conduct special efforts to reduce negative social impacts of a project, such as nuisances due to odor, noise, or traffic.

Implementation Examples

None at this time.

Implementation Resources

- The King County Equity and Social Justice Initiative website describes the vision, mission, and guiding principles of the equity and social justice initiative and provides resources.
<http://www.kingcounty.gov/exec/equity.aspx>

Reduce Energy Use and Promote the Use of Renewable Energy

This category has a total of 8 possible points. It awards points for energy efficiency, for using efficient lamps, fixtures and motion-sensitive equipment, for installing on-site renewable energy, for the purchase of green power, and for using a commissioning process.

EN Credit 1.0: Install photocells and motion-sensitive switches where appropriate (1 point)

Intent

To reduce energy used for lighting. Even in the Northwest, where hydropower has been a popular form of electricity production, more and more electricity is generated by fossil fuel (gas and coal). Thus, reducing electricity use for lighting can result in reduced greenhouse emissions. Reducing electrical requirements can also decrease utility generation, transmission, and distribution requirements, resulting in a reduced demand for new infrastructure with its associated development impacts.

Lighting systems affect occupant productivity and well-being, contribute to a space's aesthetics, place a major load on your cooling system, and consume lots of electrical energy – approximately 37% of a building's energy use. Widespread use of efficient lighting would reduce the nation's demand for electricity by more than 10%, resulting in significant savings in ratepayer bills and pollution reduction from power plants. A well-designed lighting plan – one that balances the source, distribution, and controls – is an important strategy for optimizing energy use to save on electric costs and create a comfortable work environment.

Requirements

Projects using photocells and/or motion sensor switches may claim this credit.

Additional Guidance

Use photocells to turn lights on and off depending on daylight availability and seasonal variance. Consider turning primary exterior lights off at curfew hours, providing only for safety lighting.

Implementation Examples

Houghton Transfer Station Mitigation and Roof Replacement: To reduce energy consumption, timer controlled lighting is being installed.

Project Manager: Francis Gaspay

Implementation Resources

- BetterBricks contains a section under “Tools & Resources” that addresses lighting and thermal comfort controls, <http://betterbricks.com/DetailPage.aspx?ID=707>.
- Energy incentives: <http://www.kingcounty.gov/property/permits/info/SiteSpecific/green/Incentives.aspx#energy>

EN Credit 2.0: Reduce energy use from 20%-50% (up to 4 points)

Intent

To support the county's energy planning goal to reduce energy use by 10% as of 2012. Reduced consumption benefits the County by reducing costs of operating buildings and other facilities over time. In the case of fossil fuel energy, reduced consumption has the added benefits of reducing global greenhouse emissions and protecting the County from volatile energy pricing.

Requirements

Projects that used strategies to reduce energy consumption and that are at least 20% more efficient than local code may earn this credit. The more energy efficient the project is, the more points may be earned (up to 4 points):

- EN credit 2.1 - 20% efficiency = 1 points
- EN credit 2.2 - 30% efficiency = 2 points
- EN credit 2.3 - 40% efficiency = 3 points
- EN credit 2.4 - 50% efficiency = 4 points

Additional Guidance

None at this time.

Implementation Examples

South Treatment Plant Administration Building: Achieved LEED NC EA Credit 1 by reducing design energy cost compared to the energy cost budget for energy systems regulated by ASHRAE/IESNA Standard 90.1-1999 by 20%.

Project Manager: Jacquelynn Roswell

King Street Center: Achieved the maximum points for LEED EB EA Credit 1.

Property Manager: Francine Fielding, Wright Runstad

Implementation Resources

- The Resource Venture website contains information about available energy rebates and incentives, <http://www.resourceventure.org/folder.2008-03-17.9966824527/rebates-and-incentives>.
- Whole Building Design Guide (Equipment Reliability), www.wbdg.org/design/func_oper.php.
- HVAC Engineering web page on the online Whole Building Design Guide, www.wbdg.org/design/dd_hvaceng.php.
- BetterBricks contains a wealth of tools and resources related to energy-efficiency strategies, www.betterbricks.com.
- ENERGY STAR provides guides and resources for energy-efficient buildings, www.energystar.gov.
- King County Energy Plan, <http://your.kingcounty.gov/dnrp/measures/documents/pdf/KC-Energy-Plan-2008.pdf>
- Energy Efficiency Service Providers, www.neec.net.
- American Society of Heating, Refrigeration, and Air Conditioning Engineers, Inc. (ASHRAE) publishes numerous standards, guides, and technical papers related to HVAC issues, www.ashrae.org.

- Seattle City Light provides information about energy incentives programs from Seattle City Light, www.seattle.gov/light.
- U.S. Department of Energy website offers energy saving tips, rebates, and incentives, www.energy.gov.

EN Credit 3.0: On-site renewable energy (1 point)

Intent

To reduce the environmental and economic impacts associated with fossil fuel energy use, as well as reduce the need for new utility generation, transmission, and distribution infrastructure and the associated development impacts.

Requirements

A project that generates renewable energy may claim this credit. Site generated renewable energy must offset at least 2.5% of a project's energy costs and can be equipment mounted, serving one purpose, or building mounted, providing power for multiple purposes. Excess energy can be fed back to the utility grid (net metering).

Additional Guidance

On-site renewable energy options abound for different project types and can be added to the smallest of projects. Solar panels can be mounted to building or infrastructure roofs (even covered parking and bus shelters have roofs with available space), or free-standing mounts. The primary consideration for making this strategy successful and worth pursuing is ensuring that the solar access on your site is adequate. The Pacific Northwest has good solar and wind potential, but shading from trees, other buildings or infrastructure can hinder the productivity of panels or wind turbines. Even if you cannot install solar or wind turbines, a project can be designed to allow future installation.

Implementation Examples

Shoreline Recycling and Transfer Station: Installed solar panels at the facility for on-site energy generation.

Project Manager: Lisa Williams

Brightwater North Mitigation Area: Will build a 1,500-square-foot field house that includes solar panels.

Project Manager: Michael Popiwny

Juanita Bay Pump Station: Provision to install photovoltaic panels on the roof in the future by designing designated sections of roof for nominal photovoltaic panel loads, adding a spare conduit, and including space for a future inverter.

Project Manager: Chris Okuda

Implementation Resources

- Puget Sound Energy is committed to developing renewable energy resources, <http://www.pse.com/ENERGYENVIRONMENT/RENEWABLEENERGY4/Pages/energyRenewables.aspx>
- Renewable Northwest Project reports renewable energy projects in the Pacific Northwest <http://www.rnp.org/default.html>
- Washington Consumer Guide for Solar Electric Systems, <http://www.northwestsolarcenter.org/WAGuide2.pdf>

EN Credit 4.0: Purchase Green Power for two years for 100% of energy needs (1 point)

Intent

To encourage the development and use of grid-source, renewable energy technologies on a net-zero pollution basis.

Requirements

Projects that purchase certified green power -- as defined by the Center for Resource Solutions' Green-3 Energy product certification requirements -- for utility power needs may claim this credit. Project must purchase 100% of the project's power needs for at least 2 years in order to claim this credit. Use the County-wide green power contract with Puget Sound Energy (PSE) if the project is served by PSE.

Additional Guidance

To find out how to access the county's contract with PSE contact:

Heather Mulligan, PSE Renewable Energy Program Manager
Tel: 425.456.2916, Email: heather.mulligan@pse.com

Implementation Examples

Marymoor Maintenance Facility: This maintenance facility purchased green power for 100% of its power needs.

Project Manager: Butch Lovelace

Roads Services: The division purchases green power for its energy needs for street lights and traffic signals.

Contact: Fatin Kara

Implementation Resources

- Seattle City Light Green Power Program, www.cityofseattle.net/light/green/greenpower.
- Green Power Network provides news and information on green power markets and related activities, www.eere.energy.gov/greenpower/.
- Puget Sound Energy Green Power Program is certified by the Green-e Renewable Energy Program, <http://www.pse.com/energyEnvironment/renewableenergy4/Pages/GreenPowerProgram.aspx#>

EN Credit 5.0: Commissioning (1 point)

Intent

To verify the project's energy-related systems are installed, calibrated, and perform according to the owner's project requirements (OPR), basis of design and construction documents. The commissioning process ensures that equipment is operating as it is intended to. The process can help to optimize building operations. Benefits of Commissioning include reduced energy use, lower operational costs, reduced contractor callbacks, better building documentation, fewer occupant complaints, and the potential for improved occupant productivity.

Requirements

A project may claim this credit if the project team designates an engineer or a Commissioning Agent to review and comment on the owner's project requirements (OPR), basis of design, and construction documents (during the design phase), and to inspect and verify all mechanical and electrical systems to have been installed according to design specifications (during the construction phase).

Additional Guidance

Refer to the Building Commissioning Association's Guidelines for best practices (see Implementation Resources.)

Implementation Examples

Issaquah District Court: A new HVAC design and upgrade involved testing and balancing of the HVAC system that was not functioning properly. The goal was to design a new system that is 15 percent more efficient than current American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) standards.

Project Manager: Pat Zuberbuhler

Implementation Resources

- BetterBricks contains a section under "Tools & Resources" that contains a list of commissioning resources, <http://betterbricks.com/DetailPage.aspx?ID=789>.
- Building Commissioning Association, www.bcxa.org/resources/index.htm.
- Commissioning Provider Qualifications, www.bcxa.org/certification/ccps.htm.
- Energy Star's Retrocommissioning Chapter, www.energystar.gov/ia/business/EPA BUM CH5 RetroComm.pdf.
- ASHRAE Guideline 1-1996: The HVAC Commissioning Process.
- ASHRAE Guideline 4-1993: Preparation of Operations and Maintenance Documentation for Building Systems.
- PECI Commissioning Resource Center contains guidelines and tools of programs and processes, <http://www.peci.org/resources/commissioning.html>
- A Case Study of In-House Retro-commissioning at a DOE National Laboratory: http://www1.eere.energy.gov/femp/pdfs/om_retrocx.pdf

Water Management

This category emphasizes low impact development practices to handle stormwater, the use of low-flow water-saving fixtures, high efficiency irrigation, rainwater collection for watering purposes and the practice of installing native and drought-tolerant landscaping. There are a total of 6 points possible.

WM Credit 1.0: Meet stormwater requirements through Low Impact Development (LID) techniques (up to 3 points)

Intent

To reduce runoff volume by infiltrating rainfall water to groundwater, evaporating rainwater back to the atmosphere after a storm and finding beneficial uses for water rather than exporting it as a waste product down storm sewers – resulting in less surface runoff and less pollution damage to lakes, streams and coastal waters.

Requirements

Projects that use low impact development techniques to treat stormwater may claim up to 3 points:

- WM credit 1.1 -Treat 50% of stormwater on-site = 1 credit
- WM credit 1.2 - Treat 75% stormwater on-site=2 points
- WM credit 1.3 - Treat100% stormwater on-site= 3 points

Additional Guidance

Any project with any landscaping -- no matter how small -- can specify drought-tolerant native plants or small raingardens. Projects with greater landscaping needs or open space have the opportunity to design in more extensive strategies such as bioswales and large raingardens. All projects with pavement have an opportunity to use porous paving, or to look for ways to reduce the amount of impervious surface altogether. The combination of multiple LID strategies can add a strong aesthetic element to a project, and create an opportunity for demonstration and education. Examples of LID Techniques include:

- Permeable pavement, which allows direct infiltration into the ground. While most often applicable for parking surfaces, permeable pavement is suitable for roads, sidewalks and paths. Examples include grassed modular pavement, porous concrete and concrete pavers with gravel infill.
- Bio-retention swales or ponds (also called rain gardens) can provide a significant amount of contaminant uptake and runoff reduction. Design roads and parking lots to drain to localized systems rather than storm drains, to increase ground infiltration and evaporation. Specify drought-tolerant native plants that have the specific ability to absorb heavy metals.
- Open conveyance reduces stormwater volumes by allowing evaporation and ground infiltration. This type of conveyance can be integrated alongside road shoulders as grassy swales or integrated into sidewalks.

Implementation Examples

SE 304th Street at 124th Avenue SE project in Auburn: The Department of transportation - Road Services Division considers LID strategies for all capital projects. The SE 304th Street at 124th Avenue SE project in Auburn implemented LID strategies including using porous concrete cement for new sidewalks to minimize the impervious surfaces and planting the roundabout with native species. These efforts won an “Excellence in Building Green” award in 2008.

Project Manager: Don Bleasdale

Vashon Island Park & Ride: Water and Land Resources Division (WLRD) staff worked on the design for a retrofit and expansion of a park and ride lot on Vashon Island that uses permeable pavement and bioretention areas where stormwater is retained and filtered through vegetation. In addition, WLRD received two grants from Washington State Department of Ecology to study retrofitting two urbanized drainage basins to improve stormwater treatment. These grants are for a 3-year term and LID approaches will be evaluated in both these studies.

Project Manager: Don Althausen

Implementation Resources

- Low-Impact Development Technical Reference Manual for Puget Sound, Puget Sound Action Team and Washington State University Pierce County Extension, 2005. This manual provides technical data, specifications, and performance data for low-impact design strategies. http://www.psp.wa.gov/downloads/LID/LID_manual2005.pdf.
- Puget Sound Partnership LID Local Regulation Assistance Project, http://www.psparchives.com/our_work/stormwater/lid/lid_regs.htm.
- The Low Impact Development Center is a nonprofit organization dedicated to the advancement of Low Impact Development (LID) technology, <http://www.lowimpactdevelopment.org/>.
- The Low Impact Development (LID) Urban Design Tools website site provides guidance to local governments, planners, and engineers for developing, administering, and incorporating LID strategies into their aquatic resource protection programs, <http://www.lid-stormwater.net/>.
- Low Impact Development Guidance Manual: A Practical Guide to LID Implementation in Kitsap County. Designed as a “cookbook” for real estate developers, engineers, and community members interested in LID, as well as planning officials providing guidance on LID projects in Kitsap County. Not a regulatory document, the manual has been approved by the Washington State Department of Ecology as consistent with the State’s Stormwater Management Manual. <http://www.kitsaphba.com/LID/resources.html>

WM Credit 2.0: Install high efficiency irrigation systems (1 point)

Intent

To limit or eliminate the use of potable water for landscape irrigation, reducing the burden on municipal water supplies, and allowing for a broader plant species palette while still conserving potable water supplies.

Requirements

Projects that require irrigation and install water efficient systems such as drip irrigation may claim this credit.

Additional Guidance

Drip systems apply water slowly and directly to the roots of plants, using 30-50 percent less water than sprinklers. Projects should mulch to retain soil moisture and reduce evaporation and reduce the need for supplemental irrigation during dry periods. Install rain sensors to regulate flow and set timers to water early in the day or late at night.

Implementation Examples

Bellevue Pump Station: The Bellevue Pump Station installed a high-efficiency irrigation system that will use 50 percent less potable water. This, along with several other innovative sustainability strategies helped the project receive a number of awards and honors, including Grand Award – Project of the Year and Green Project of the Year from the Northwest Construction Consumer Council, as well as What Makes It Green? – Honorable Mention from the American Institute of Architects, Seattle Committee on the Environment.

Project Manager: Shahrzad Namini

Implementation Resources

- Saving Water Partnership is a group of local utilities that fund water conservation programs in Seattle and King County. The website contains information about irrigation rebates, http://www.savingwater.org/outside_sprinklers.htm.
- WaterWiser is a program of the American Water Works Association operated in cooperation with the U.S. Bureau of Reclamation. The website provides information and resources including links for all aspects of outdoor and indoor water conservation, recycled water collection and reuse, irrigation, landscaping, and efficient fixtures and appliances. Contact them at 202-628-8303 or www.waterwiser.org.

WM Credit 3.0: Install rainwater harvesting systems (1 point)

Intent

To limit or eliminate the use of potable water, thereby reducing the burden on municipal water supply and wastewater systems.

Requirements

A project may claim this credit if a rainwater collection system is installed. Rain collected from the roofs of facilities can be used to offset the water used for sewage conveyance, irrigation and process water use such as facility wash down or vehicle cleaning. To earn this credit the percentage of potable water saved annually over the baseline must be reported.

Additional Guidance

Tanks should be sized to provide year-round water availability, targeting the maximum percentage of water savings with the least amount of capacity.

Implementation Examples

Shoreline Recycling and Transfer Station: The Shoreline Recycling and Transfer Station installed a rainwater collection system to use for washing the floors and equipment

Project Manager: Lisa Williams

King Street Center: Green features in the building include a water reclamation system that uses rainwater collected on the roof to flush toilets in the building.

Property Manager: Francine Fielding, Wright Runstad

Marymoor Maintenance Facility: Rain is collected from the roofs of two buildings and saved in water storage tanks. Reclaimed water is used to clean lawn and trail maintenance equipment and no potable water is needed for irrigation on the site. In order to save water inside the building, the project installed low-flow fixtures and waterless urinals in the restrooms. It is estimated that the project uses 30% less water than the baseline case for the building.

Project Manager: John McCarthy

Implementation Resources

- LEED BD+C 2009, WE credit 1 Water Efficient Landscaping, see p. 189 for resources.
<http://www.usgbc.org>
- Rainwater Harvesting, Daniel Winterbottom, <http://your.kingcounty.gov/dnrp/library/archive-documents/wlr/pi/pdf/Rainwater-Harvesting.pdf>
- Saving Water in the Garden, <http://your.kingcounty.gov/dnrp/library/archive-documents/wlr/pi/pdf/cistern-water-saving.pdf>
- Washington Department of Ecology 'Focus on Rainwater Interpretive Policy' Factsheet – provides guidance on new interpretation of rainwater harvesting policy. Also see the Calculator available on Dept. of Ecology website <http://www.ecy.wa.gov/programs/wr/hq/rwh.html>.

WM Credit 4.0: Plant native and/or adapted plants to eliminate irrigation (1 point)

Intent

To reduce or eliminate the need for supplemental irrigation, thus reducing the burden on potable water supplies, as well as rainwater collection systems, if installed.

Requirements

Projects may claim this credit if they eliminate the need for permanent irrigation by planting native or drought-tolerant species. Newly landscaped areas may be irrigated for about two years or until the plants are established. Once established, however, landscaped areas must be irrigation-free.

Additional Guidance

Vegetation used alongside roads and near facilities should be selected from a native and drought-tolerant plant palette, to take advantage of their adaptation to local climate conditions. When watering and maintenance requirements of plants during establishment period can not be met by internal staff, consider requiring a two-year landscape maintenance contract as part of the project's specifications.

Implementation Examples

Carnation Treatment Plant Administration Building : With the use of drought-tolerant plant species, efficient irrigation, and planting design, a 62 % water use reduction was realized.
Project Manager: Jeff Lundt

Hidden Lake/Boeing Creek Trunk Project: The use of native drought-tolerant plants was designed into the new pump station.
Project Manager: David Dittmar

Implementation Resources

- Saving Water Partnership website contains a plant list that serves as a companion guide to the Choosing the Right Plants Natural Lawn & Garden Guide, <http://www.savingwater.org/docs/plantlist.pdf>.
- Northwest Native Plant Guide features plants native to Western Washington and native plant gardening tips, <http://green.kingcounty.gov/GoNative/Index.aspx>.
- "Going Native" brochure can be downloaded at <http://www.kingcounty.gov/environment/stewardship/nw-yard-and-garden/native-plant-resources-nw.aspx#gonative>.

Use of Sustainable Materials

This category has a total of 10 points possible. It awards points to projects for the use of materials that are more sustainable choices. Points can be attained for using low-emitting adhesives, sealants and paints, using materials that come from within 500 miles of the project, using high-content recycled materials, using Forest Stewardship Council certified wood, using renewable materials, using cement substitutes and using salvaged materials.

SM Credit 1.0: Use low-emitting materials for 100% of adhesives & sealants (1 point)

Intent

Using low-emitting adhesives and sealants reduces the quantity of air contaminants that are odorous, irritating and/or harmful to the comfort and well-being of installers and occupants.

Requirements

Projects that specify and use low-emitting adhesives and sealants may claim this credit. Adhesives and sealants used on the interior of the building (i.e. inside the weather barrier and applied on-site) should meet the South Coast Air Quality Management District (SCAQMD) Rule #1168 (as amended date of January 7, 2005).

Additional Guidance

None at this time.

Implementation Examples

South Treatment Plant Administration Building: This project achieved LEED IEQ 4.1 through 4.4.
Project Manager: Jacquelynn Roswell

Shoreline Recycling and Transfer Station: This project achieved LEED IEQ 4.1 through 4.4.
Project Manager: Lisa Williams

Implementation Resources

- South Coast Air Quality Management District (SCAQMD) Rule 1168. Refer to LEED BD&C, 2009 Edition, p 471, for table that list the Volatile Organic Compound (VOC) limits for adhesives and sealants per the SCAQMD Rule #1168 (as amended date of January 7, 2005).
<http://www.usgbc.org>
- Green Seal GS-36 establishes environmental requirements for commercial adhesives,
http://www.greenseal.org/certification/standards/commercial_adhesives_gs-36.pdf.

SM Credit 2.0: Use low-emitting materials, 100% of paints and coatings (1 point)

Intent

Using low-emitting adhesives and sealants reduces the quantity of air contaminants that are odorous, irritating and/or harmful to the comfort and well-being of installers and occupants.

Requirements

Projects that specify and use low-emitting paints and coatings may claim this credit. Paints and coatings used on the interior of the building (i.e. inside the weather barrier and applied on-site) should meet the following standards:

- Architectural Paints and coatings applied to interior walls and ceilings must not exceed the VOC content limits established in the Green Seal GS-11 Standard, Paints, 1st Edition, May 20, 1993
- Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates must not exceed the VOC content limit of 250g/L established in the Green Seal Standard GC-03, Anti-corrosive Paints, 2nd Edition, January 7, 1997
- Clear wood finishes, floor coatings, stains, primers, and shellacs applied to the interior building elements must not exceed the VOC content limits established in South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings, rules in effect on January 1, 2004.

Additional Guidance

None at this time.

Implementation Examples

South Treatment Plant New Administration Building: This project achieved LEED IEQ 4.1 through 4.4.
Project Manager: Jacquelynn Roswell

Implementation Resources

- Refer to LEED BD&C, 2009 Edition, p 482-483, for tables of VOC limits for paintings and coatings.
- Green Seal GS-11 establishes environmental requirements for paints and coatings including wall, anti-corrosive, and reflective coatings, floor paints and primers and undercoats, <http://www.greenseal.org/certification/standards/gs11paintscoatings.cfm>.

SM Credit 3.0: Use materials sourced regionally (1 - 3 points)

Intent

To increase demand for building materials and products that are extracted and manufactured locally, thereby encouraging the use of local resources and reducing the environmental impacts due to transportation.

Requirements

Projects that use building materials that are mined or manufactured within the region may earn up to 3 points for this credit.

- SM credit 3.1 - Materials sourced within a 500 miles radius of the product and comprise at least 10% (based on cost) of building materials = 1 point
- SM credit 3.2 - Source all heavy materials—such as concrete, steel, fill, sub-base and asphalt within 50 miles = 1 point
- SM Credit 3.3 – Source all plants grown within 250 miles = 1 point

Additional Guidance

If possible, use materials that are native to the region, such as specific rock types or wood species. Local materials for infrastructure projects are relatively easy to find and are often common practice.

Implementation Examples

South Treatment Plant New Administration Building: Achieved LEED MR 5.1 and 5.2 for sourcing and harvesting locally.

Project Manager: Jacquelynn Roswell

Implementation Resources

- Regional materials list of manufacturers and suppliers within 500 mile radius from Seattle, <http://your.kingcounty.gov/solidwaste/greenbuilding/toolkit/materials/regional-manufacturers.xls>
- Sustainable Sites Initiative, Credit 5.7 Use Regional Materials, p. 133. Guidelines and Performance Benchmarks are available for download at <http://www.sustainablesites.org/materials/>
- Living Building Challenge, Prerequisite Eight – Appropriate Materials/Services Radius, <http://ilbi.org/the-standard/lbc-v1.3.pdf>

SM Credit 4.0: Use high recycled-content materials (1 point)

Intent

To increase the demand for building products incorporating recycled content materials. This will reduce impacts resulting from extraction and processing of virgin materials.

Requirements

Projects that incorporate at least 10% high recycled-content (pre- and post-consumer waste) materials, based on cost, of the total project materials cost, may claim this credit.

Additional Guidance

Examples of recycled content materials include: crushed concrete or asphalt aggregate, fly ash and slag replacement for cement, steel made with a high post-consumer recycled content, or composite wood products with recycled content rather than virgin lumber.

In the project's specifications, note the percentage of pre- and post-consumer content for specific products to be used.

Implementation Examples

South Treatment Plant Administration Building: Achieved LEED MR 4.1 and 4.2.

Project Manager: Jacquelynn Roswell

DDES Black River Office Building: In 2007, all public areas in the Blackriver Office Building were re-carpeted with 997 square yards of recycled carpet tiles. The existing carpet was returned to the Lee's Carpet manufacturing plant to be recycled.

Project Manager: Robert Renouard

Implementation Resources

- The EPA Comprehensive Procurement Guidelines provides information on materials that are available with recycled content and recommended ranges, www.epa.gov/epaoswer/non-hw/procure/index.htm.
- Recycled-Content Products Database is a searchable recycled content products database, www.ciwmb.ca.gov/RCP/default.asp.

SM Credit 5.0: Use FSC certified sustainable wood (1 point)

Intent

To promote the practice of sustainable forestry.

Requirements

Projects that specify and use sustainably harvested wood that is certified by the Forest Stewardship Council (FSC) may claim this credit. A minimum purchase of 25% of the overall wood budget must be FSC certified wood or wood products for wood building components. Building components must be a permanent part of the project to be included.

Additional Guidance

None at this time.

Implementation Examples

Ryerson Base Improvements: Achieved LEED MR Credit 7 for use of FSC Certified wood.
Project Manager: Ron Moattar

Implementation Resources

- Metafore (formerly Certified Forest Products Council, CFPC) www.metafore.org is an independent nonprofit organization with a broad membership comprised of interested individuals and businesses, institutions and organizations that buy, sell, specify, manufacture or use third-party independently certified forest products.
- Forest Stewardship Council (FSC) is a certification system that provides internationally recognized standard-setting, trademark assurance and accreditation services to companies, organizations, and communities interested in responsible forestry, <http://www.fsc.org/>.

SM Credit 6.o: Use renewable materials (1 point)

Intent

To reduce the use of finite and long-cycle renewable materials by replacing them with renewable materials.

Requirements

A project that uses renewable materials made from plants (such as bamboo, cork, wool and cotton) for 2.5% of the project's materials cost may claim this credit.

Additional Guidance

None at this time.

Implementation Examples

None at this time.

Implementation Resources

- American Bamboo Society, www.americanbamboo.org/.
- Green Materials 101, http://your.kingcounty.gov/dnrp/summit/documents/Green_Materials-Southard-Beatty.pdf
- GreenSpec is BuildingGreen's premiere product information service. It contains detailed listings for more than 1,500 green building products with environmental data, manufacturer information, and links to additional resources, <http://www.greenspec.com/>

SM Credit 7.0: Use cement substitutes (1 point)

Intent

The use of cement substitutes such as fly ash or slag reduces the amount of greenhouse gas emissions associated with the manufacture and use of Portland cement.

Requirements

Projects that use cement substitutes may claim this credit. Concrete used should contain at least 5% cement substitute.

Additional Guidance

None at this time.

Implementation Examples

Houghton Transfer Station Roof Replacement & Site Improvements: For the site improvement work (not completed as of this writing), the contractor will be using ecology blocks, made from recycled concrete with 40 % fly ash as cement substitute.

Project Manager: Francis Gaspay

148th Avenue NE Pedestrian Improvements: The project used a high percentage of slag, a byproduct of iron production, in the cement mix (50/50), allowing Roads staff to test this material for strength and durability. As a cement substitute, it can replace a significant percent of the Portland cement used in concrete mixes, which reduces greenhouse gas emissions generated in the production of Portland cement. More than 1,250 feet of curb and gutter was constructed using the slag-cement mix, reducing greenhouse gas emissions by an estimated 14,300 pounds.

Project Manager: Frank Overton

Implementation Resources

- Greening Concrete, <http://www.pathnet.org/sp.asp?id=22603>
- ToolBase Services, description of cement substitutes, <http://www.toolbase.org/TechInventory/TechDetails.aspx?ContentDetailID=953&BucketID=6&CategoryID=13>

SM Credit 8.o: Reuse salvaged materials (1 point)

Intent

To reduce the use of virgin materials on projects and reduce the amount of materials needlessly disposed.

Requirements

Projects that use salvaged materials for 5% of the project's materials cost may claim this credit. Materials may be salvaged from the project or outside of the project.

Additional Guidance

None at this time.

Implementation Examples

Maury Island Marine Park Pier Removal: The project involved deconstruction of a 285-foot dilapidated pier and the salvage of reusable materials for future use on the site for a potential observation deck. 575 linear feet of rail system and 4,275 square feet of timber decking was salvaged. This Community Partnership Grant Project coordinated with the "Friends of Maury Island" community group.

Project Manager: Chris Erickson

Soos Creek Trailhead Phase IV: The trailhead was constructed within the footprint of an approximately 500-square-foot residential lot. All reusable materials from the existing house were salvaged. The existing well and septic system was used for the new trailhead restroom.

Project Manager: Kelly Donahue

Brightwater Treatment Plant: Met exceptionally high standards for recycling construction material waste, including salvaging and reusing approximately 75 tons of equipment, building materials, and complete structures, and diverting approximately 350,200 tons of construction and demolition (C&D) debris from landfill disposal.

Project Manager: Michael Popiwny

Implementation Resources

- King County Materials Resource Reuse Database contains a directory listing of businesses and organizations that accept unwanted items from residents and businesses in King County, Washington, for reuse, recycling or proper disposal, <http://your.kingcounty.gov/solidwaste/wdidw/materials.asp>.
- King County Green Tools website contains information about deconstruction and salvage practices, <http://your.kingcounty.gov/solidwaste/greenbuilding/construction-recycling/deconstruction-salvage.asp>.
- Second Use Building Materials, <http://www.seconduse.com>.
- The ReStore, <http://www.re-store.org>.
- Earthwise Salvage, <http://www.earthwise-salvage.com/>.

Enhanced Performance

There are 6 possible points available under this category. Points available under this category award projects that bring added value to the project during design, construction, and/or on-going operations and maintenance.

EP Credit 1.0: Performance Reporting (1-4 points)

Intent

Contribute to on-going learning of the Division and the County about what is performing as anticipated and what needs to be modified or replaced with a better solution.

Requirements

Projects that document and report the actual performance of prerequisites and/or credits will earn up to 4 points for this credit.

- EP credit 1.1 - Report the performance of Prerequisite 5 after one year of occupancy/opening
- EP credit 1.2 - Report the performance of Prerequisite 6 after one year of occupancy/opening
- EP credit 1.3 - Report the performance of Prerequisite 7 after one year of occupancy/opening
- EP credit 1.4 - Report the performance of any one or more credit after one year of occupancy/opening

Additional Guidance

Projects will not be penalized for report findings that show a system, material, practice or policy is under-performing.

Implementation Examples

None at this time.

Implementation Resources

None at this time.

EP Credit 2.0: Submit Documentation Checklist & Supporting Documentation (1 point)

Intent

Contribute to on-going learning of the Division and the County by sharing data and documentation of project prerequisites and credits.

Requirements

Projects that complete and submit the Sustainable Infrastructure Documentation Checklist with supporting documentation will earn 1 point.

Additional Guidance

Projects should begin completing the Sustainable Infrastructure Documentation Checklist and compiling supporting documentation during the design phase. Submit the checklist along with supporting documentation and scorecard when project documentation is complete.

Implementation Examples

None at this time.

Implementation Resources

None at this time.

EP Credit 3.0: LEED® Accredited Professional (1 point)

Intent

Build knowledge capacity of team members and provide a leadership role for team members who have earned the credential of LEED Accredited Professional.

Requirements

Projects that have a least one LEED AP on the team will earn one point.

Additional Guidance

None at this time.

Implementation Examples

None at this time.

Implementation Resources

- Green Building Certification Institute, www.GBCI.org

Appendix A: King County Sustainable Infrastructure Scorecard

To determine the score for the project:

1. Determine which credits are outside the scope of the project type and mark it "Not Applicable" (N/A). These credits are not counted in the total points.
2. Go through the remaining credits and determine which ones the project will be pursuing and mark those as "Yes" (Y). All remaining credits are a "No" (N).
3. To determine the rating, divide the number of Y credits by the total possible credits for the project type (Y + N credits). The resulting percent will correspond to a rating.

The project ratings are based on the following:

75% or above = platinum, 57% or above = gold, 48% or above = silver, and 38% or above = bronze

Required				
Y	N/A			
		Prerequisite 1	Hold an eco-charrette or similar meeting	
		Prerequisite 2	Use Life Cycle Cost Assessment	
		Prerequisite 3	Account and mitigate for greenhouse gas emissions	
		Prerequisite 4	Implement erosion and sedimentation control best management practices	
		Prerequisite 5	Reduce energy use by at least 10% over local code	
		Prerequisite 6	Install water saving fixtures	
		Prerequisite 7	Implement Green Operations and Maintenance program, including a green cleaning program	
Planning and Designing for Sustainable Development				
Y	N	N/A		Possible Points
				8
		PD credit 1.0	Use an integrative design process	1
		PD credit 2.0	Use "green" contract language and specifications	1
		PD credit 3.0	Develop on brownfield sites	1
		PD credit 4.0	Plan and design for alternative transportation	1
		PD credit 5.0	Plan and design for long-term maintenance	1
		PD credit 6.0	Design for Disassembly	1
		PD credit 7.0	Plan, design, and build with pre-fabricated elements	1
		PD credit 8.0	Plan for efficient construction delivery and staging	1
Construction Best Management				
Y	N	N/A		Possible Points
				7
		CM credit 1.1	Recycle construction and demolition materials : 50% diverted	1
		CM credit 1.2	Recycle construction and demolition materials : 75% diverted	1
		CM credit 1.3	Recycle construction and demolition materials :95% diverted	1
		CM credit 2.0	Use on-site materials in construction	1
		CM credit 3.0	Use alternative fuels in construction equipment	1
		CM credit 4.0	Implement indoor air quality construction management plan	1
		CM credit 5.0	Reduce water use for cleaning and dust control	1

Preserve and Maintain Natural Site Amenities					
Y	N	N/A		Possible Points	8
			SA credit 1.0	Minimize development footprint	1
			SA credit 2.0	Preserve existing native vegetation	1
			SA credit 3.0	Retain or create open space and corridors	1
			SA credit 4.0	Reuse native soils on-site	1
			SA credit 5.0	Use light-colored exterior surface treatments - roof and non-roof	1
			SA credit 6.0	Integrate vegetated roofs and green areas	1
			SA credit 7.0	Design lighting for reduced light pollution	1
			SA credit 8.0	Design natural acoustic buffers	1
Social Benefits					
Y	N	N/A		Possible Points	2
			SB credit 1.0	Create public amenity	1
			SB credit 2.0	Meet Division-specific social equity goal	1
Reduce Energy Use and Promote the Use of Renewable Energy					
Y	N	N/A		Possible Points	8
			EN credit 1.0	Install photocells and motion-sensitive switches where appropriate	1
			EN credit 2.1	Reduce energy use: 20% reduced	1
			EN credit 2.2	Reduce energy use: 30% reduced	1
			EN credit 2.3	Reduce energy use: 40% reduced	1
			EN credit 2.4	Reduce energy use: 50%reduced	1
			EN credit 3.0	Install on-site renewable energy	1
			EN credit 4.0	Purchase Green Power for two years for 100% of energy needs	1
			EN credit 5.0	Commissioning	1
Water Management					
Y	N	N/A		Possible Points	6
			WM credit 1.1	Treat 50% stormwater through LID techniques	1
			WM credit 1.2	Treat 75% stormwater through LID techniques	1
			WM credit 1.3	Treat 100% stormwater through LID techniques	1
			WM credit 2.0	Install high efficiency irrigation systems	1
			WM credit 3.0	Install rainwatercollection system	1
			WM credit 4.0	Plant drought resistant native species to eliminate need for irrigation	1
Use of Sustainable Materials					
Y	N	N/A		Possible Points	10
			SM credit 1.0	Use low-emitting materials, 100% of adhesives & sealants used	1
			SM credit 2.0	Use low-emitting materials, 100% of paints used	1
			SM credit 3.1	10% materials sourced from within 500 miles	1
			SM credit 3.2	Heavy materials sourced from within 500 miles	1
			SM credit 3.3	Plants sourced within 250 miles	1
			SM Credit 4.0	Use high recycled-content materials	1
			SM credit 5.0	Use FSC certified sustainable wood	1
			SM credit 6.0	Use renewable materials	1
			SM credit 7.0	Use cement substitutes	1
			SM credit 8.0	Reuse salvaged materials	1

Enhanced Performance					
Y	N	N/A		Possible Points	6
			EP credit 1.1	Performance Reporting of Prerequisite 5	1
			EP credit 1.2	Performance Reporting of Prerequisite 6	1
			EP credit 1.3	Performance Reporting of Prerequisite 7	1
			EP credit 1.4	Performance Reporting of Any Credit	1
			EP credit 2.0	Submit Supporting Documentation	1
			EP credit 3.0	LEED Accredited Professional	1
			Total points possible for project : _____ (Platinum 75%, Gold 57%, Silver 48%, Bronze 38%)		

Appendix B: King County Sustainable Infrastructure Documentation Checklist

Instructions:

1. Check the "Y" (Yes) box and fill in the data and documentation columns where appropriate, as you complete project prerequisites & credits.
2. Check the "N/A" (Not Applicable) box for any prerequisites or credits that are outside the scope of the project.
3. Check the "N" (No) box for credits that the project is not pursuing.
4. Submit this checklist along with the supporting documentation and scorecard when the project documentation is complete.

Required			Data	Documentation
Y	N/A			
		Prerequisite 1	Hold an eco-charrette or similar meeting	n/a attach charrette/meeting report
		Prerequisite 2	Use Life Cycle Cost Assessment	n/a attach LCCA report
		Prerequisite 3	Account and mitigate for greenhouse gas emissions	# tons of ghg reduced attach GHG calculations
		Prerequisite 4	Implement erosion and sedimentation control best management practices	n/a attach TESC Plan
		Prerequisite 5	Reduce energy use by at least 10% over local code	% of energy reduction attach energy calculations
		Prerequisite 6	Install water saving fixtures	% of water reduction attach water calculations
		Prerequisite 7	Implement Green Operations and Maintenance Program, including a green cleaning program	n/a attach green cleaning plan
Planning and Designing for Sustainable Development			Data	Documentation
Y	N	N/A		
			PD credit 1.0	Use an integrative design process n/a attach project schedule that supports IDP
			PD credit 2.0	Use "green" contract language and specifications n/a attach excerpts from bid, contract, and/or specifications with "green" contract language
			PD credit 3.0	Develop on brownfield sites n/a attach list of on-site contamination and how it was remediated
			PD credit 4.0	Plan and design for alternative transportation n/a list alt. transportation accommodations i.e. bike racks, showers, carpool parking, etc.
			PD credit 5.0	Plan and design for long-term maintenance n/a provide name(s) of building operations representatives consulted on the project
			PD credit 6.0	Design for Disassembly n/a describe key DfD principles employed
			PD credit 7.0	Plan, design, and build with pre-fabricated elements n/a list pre-fabricated elements used
			PD credit 8.0	Plan for efficient construction delivery and staging n/a attach site plan with construction boundary < 40', minimized points of access for vehicles, and on-site storage area

Construction Best Management				Data	Documentation
Y	N	N/A			
			CM credit 1.1 Recycle construction & demolition materials : 50% diverted	% of waste diverted	attach construction waste management plan
			CM credit 1.2 Recycle construction & demolition materials : 75% diverted	% of waste diverted	attach construction waste management plan
			CM credit 1.3 Recycle construction & demolition materials :95% diverted	% of waste diverted	attach construction waste management plan
			CM credit 2.0 Use on-site materials in construction	% reuse of on-site materials	attach list of on-site reused materials with quantities
			CM credit 3.0 Use alternative fuels in construction equipment	n/a	list type(s) of alternative fuels used
			CM credit 4.0 Implement indoor air quality construction management plan	n/a	attach IAQ management plan
			CM credit 5.0 Reduce water use for cleaning and dust control	n/a	attach construction water use management plan
Preserve and Maintain Natural Site Amenities				Data	Documentation
Y	N	N/A			
			SA credit 1.0 Minimize development footprint	n/a	describe strategies employed to minimize project footprint
			SA credit 2.0 Preserve existing native vegetation	n/a	attach site plan with preservation of existing native vegetation denoted
			SA credit 3.0 Retain or create open space and corridors	% of open space & corridors	attach site plan with any no-build buffer zones denoted
			SA credit 4.0 Reuse native soils on-site	# cubic yards of native soils	n/a
			SA credit 5.0 Use light-colored exterior surface treatments - roof and non-roof	n/a	list light-colored exterior surface treatments
			SA credit 6.0 Integrate vegetated roofs and green areas	n/a	attach site plan with vegetated roofs and green areas denoted
			SA credit 7.0 Design lighting for reduced light pollution	n/a	attach exterior lighting plan with photometric information
			SA credit 8.0 Design natural acoustic buffers	n/a	attach site plan with natural acoustic buffers denoted
Social Benefits				Data	Documentation
Y	N	N/A			
			SB credit 1.0 Create public amenity	n/a	describe project's public amenity or amenities
			SB credit 2.0 Meet Division-specific social equity goal	n/a	describe Division-specific social equity goal identified for the project
Reduce Energy Use and Promote the Use of Renewable Energy				Data	Documentation
Y	N	N/A			
			EN credit 1.0 Install photocells and motion-sensitive switches where appropriate	n/a	attach list of light fixtures with photocells and mention sensors
			EN credit 2.1 Reduce energy use: 20% reduced	% of energy reduction	attach energy calculations
			EN credit 2.2 Reduce energy use: 30% reduced	% of energy reduction	attach energy calculations
			EN credit 2.3 Reduce energy use: 40% reduced	% of energy reduction	attach energy calculations
			EN credit 2.4 Reduce energy use: 50%reduced	% of energy reduction	attach energy calculations
			EN credit 3.0 Install on-site renewable energy	% of renewable energy	describe project's renewable energy infrastructure i.e. photo voltaics, wind turbines, etc.
			EN credit 4.0 Purchase Green Power for two years for 100% of energy needs	n/a	attach green power contract
			EN credit 5.0 Commissioning	n/a	provide name of engineer or CxA

Water Management				Data	Documentation	
Y	N	N/A				
			WM credit 1.1	Treat 50% stormwater through LID techniques	% of stormwater treated	list of LID techniques employed
			WM credit 1.2	Treat 75% stormwater through LID techniques	% of stormwater treated	list of LID techniques employed
			WM credit 1.3	Treat 100% stormwater through LID techniques	% of stormwater treated	list of LID techniques employed
			WM credit 2.0	Install high efficiency irrigation systems	n/a	describe type of irrigation system
			WM credit 3.0	Install rainwater collection system	# gal of potable water saved annually	n/a
			WM credit 4.0	Plant drought resistant native species to eliminate need for irrigation	n/a	attach plant list with drought resistant species denoted
Use of Sustainable Materials				Data	Supporting Documentation	
Y	N	N/A				
			SM credit 1.0	Use low-emitting materials, 100% of adhesives & sealants used	n/a	attach list of adhesives & sealants with VOC levels
			SM credit 2.0	Use low-emitting materials, 100% of paints used	n/a	attach list of paints with VOC levels
			SM credit 3.1	10% materials sourced from within 500 miles	n/a	attach list of all materials and procurement location
			SM credit 3.2	Heavy materials sourced from within 500 miles	n/a	attach list of all heavy materials and procurement location
			SM credit 3.3	Plants sourced within 250 miles	n/a	attach list of all plants and procurement location
			SM Credit 4.0	Use high recycled-content materials	% of recycled-content materials	attach list of recycled-content materials
			SM credit 5.0	Use FSC certified sustainable wood	% of FSC certified wood	attach list of FSC certified wood materials
			SM credit 6.0	Use renewable materials	% of renewable materials	attach list of renewable materials
			SM credit 7.0	Use cement substitutes	% of cement substitutes in concrete	attach list of cement substitutes
			SM credit 8.0	Reuse salvaged materials	% of salvaged materials	attach list of salvaged materials
Enhanced Performance				Data	Documentation	
Y	N	N/A				
			EP credit 1.1	Performance Reporting of Prerequisite 5	n/a	attach performance report of Prereq 5
			EP credit 1.2	Performance Reporting of Prerequisite 6	n/a	attach performance report of Prereq 6
			EP credit 1.3	Performance Reporting of Prerequisite 7	n/a	attach performance report of Prereq 7
			EP credit 1.4	Performance Reporting of Any Credit	n/a	attach performance report of any credit
			EP credit 2.0	Submit Supporting Documentation	n/a	complete and submit this checklist
			EP credit 3.0	LEED Accredited Professional	n/a	LEED AP certificate for project team member

Appendix C: Division-Specific Scorecards

WTD Sustainability Scorecard

Process Score			
Y	?	N	
0	0	0	
Sustainable Sites			Possible Points 27
			Credit 1.1 Erosion & Sedimentation (Beyond Permit Requirements) 1
			Credit 1.2 Site Selection Process (Minimize Environmental Impacts) 3
			Credit 2.1 Process/Site Flow Analysis (Energy & Staff Efficiency) 3
			Credit 2.2 Reduce Impact on Site Characteristics 2
			Credit 2.3 Yard Operations Plan (Operations Efficiency and Safety) 1
			Credit 3 Control Site Contaminants (Reduce Use and Discharge) 1
			Credit 4.1 Minimize Transportation Impacts . Management Plan 1
			Credit 4.2 Minimize Transportation Impacts . On-Site Strategies 1
			Credit 4.3 Minimize Transportation Impacts . Emission Control 1
			Credit 5.1 Reduce Footprint , Retain or Create Open Space 2
			Credit 5.2 Reduce Footprint , Retain or Create Wildlife Habitat 2
			Credit 6.1 Site Hydrology , Return runoff to pre-construction conditions 1
			Credit 6.2 Site Hydrology , Restore Historic Riparian and Subsurface Watercourses 3
			Credit 7 Reduce Heat Island Effect 1
			Credit 8.1 Good Neighbor Targets . Minimize Light Pollution 1
			Credit 8.2 Good Neighbor Targets . Integrate Facility into Community 2
			Credit 8.3 Good Neighbor Targets . Connect Public Use Areas to Community 1
Water Efficiency			Possible Points 19
			Credit 1 Permacscape Design (Reduce or eliminate irrigation) 1
			Credit 2 Process Water Treatment to Allow Reuse (Beyond Permit Required) 5
			Credit 3.1 Reduce Potable Water Site Use . Reduce by 50% 3
			Credit 3.2 Reduce Potable Water Site Use . Reduce by 100% 5
			Credit 3.3 Water Recovery/ Reuse 5
Energy & Atmosphere			Possible Points 20
			Credit 1.1 Variable Capacity Design , Opt. Eff. Varying Load Conditions 3
			Credit 1.2 Optimize Energy Performance , by 15% 1
			Credit 1.3 Optimize Energy Performance , by 25% 2
			Credit 1.4 Optimize Energy Performance , by 30% 3
			Credit 2.1 On-Site Generation , Provide 25% 2
			Credit 2.2 On-Site Generation , Provide 50% 4
			Credit 3 Limit Greenhouse Gas Emissions thru Treatment Process Selection 2
			Credit 4 Measurement & Verification , of Energy Use 2
			Credit 5 Use of Green Power 1
Materials & Resources			Possible Points 25
			Credit 1 Durable, Adaptable Design 1
			Credit 2.1 Upstream Flow Reduction 3
			Credit 3.1 Minimize Waste Generation . Recycle Waste Products 1
			Credit 3.2 Minimize Waste Generation . Market Development 3
			Credit 4.1 Recycled Content , Specify 25% 1
			Credit 4.2 Recycled Content , Specify 50% 2
			Credit 5.1 Local/Regional Materials , 20% Manufactured Locally 2
			Credit 5.2 Local/Regional Materials , of 20% Above, 50% Harvested Locally 3
			Credit 6.1 Resource Reuse (Biosolids, Waste Heat, etc.), 25% 2
			Credit 6.2 Resource Reuse (Biosolids, Waste Heat, etc.), 50% 3
			Credit 6.3 Resource Reuse (Biosolids, Waste Heat, etc.), 75% 4

Building Score			
Y	?	N	
0	0	0	
Sustainable Sites			Possible Points 24
			Credit 1 Erosion & Sedimentation (Beyond Permit Requirements) 1
			Credit 2 Site Selection to Minimize Environmental Impacts 1
			Credit 3.1 Greyfield Redevelopment 3
			Credit 3.2 Brownfield Redevelopment 4
			Credit 4.1 Alternative Transportation , Public Transportation Access 1
			Credit 4.2 Alternative Transportation . Bicycle Storage & Changing Rooms 1
			Credit 4.3 Alternative Transportation , Alternative Fuel Refueling Stations 1
			Credit 4.4 Alternative Transportation , Parking to Accom. Alt. Transport 1
			Credit 5.1 Reduced Site Disturbance , Protect or Restore Open Space 3
			Credit 5.2 Reduced Site Disturbance , Development Footprint 2
			Credit 6.1 Storm water Management , Rate and Quantity 1
			Credit 6.2 Storm water Management , Advanced Treatment 2
			Credit 7.1 Landscape & Ext. Design to Reduce Heat Islands , Non-roof 1
			Credit 7.2 Landscape & Ext. Design to Reduce Heat Islands , Roof 1
			Credit 8.0 Light Pollution Reduction 1
Water Efficiency			Possible Points 5
			Credit 1.1 Water Efficient Landscaping . Reduce by 50% 1
			Credit 1.2 Water Efficient Landscaping , No Potable Use or No Irrigation 2
			Credit 2.1 Water Use Reduction , 20% Reduction 2
Energy & Atmosphere			Possible Points 26
			Credit 1.1 Optimize Energy Performance . 20% New Constr /10% Existing 1
			Credit 1.2 Optimize Energy Performance , 30% New Constr /20% Existing 2
			Credit 1.3 Optimize Energy Performance , 40% New Constr / 30% Existing 3
			Credit 1.4 Optimize Energy Performance , 50% New Constr / 40% Existing 4
			Credit 1.5 Optimize Energy Performance , 60% New Constr / 50% Existing 5
			Credit 2.1 Renewable Energy , 5% 1
			Credit 2.2 Renewable Energy , 10% 2
			Credit 2.3 Renewable Energy , 20% 3
			Credit 3 Additional Commissioning / Ongoing 1
			Credit 4.1 CFC Reduction/Advanced Phaseout in HVAC&R Equipment 1
			Credit 4.2 Ozone Depletion , Minimize 1
			Credit 5 Measurement & Verification of Energy Consumption 1
			Credit 6 Use of Green Power 1
Materials & Resources			Possible Points 42
			Credit 1.1 Storage & Collection of Recyclables 1
			Credit 1.2 Building Reuse , Maintain 75% of Existing Shell 3
			Credit 1.3 Building Reuse , Maintain 100% of Existing Shell 4
			Credit 1.4 Building Reuse , Maintain 10% of Existing Non-Shell 1
			Credit 1.5 Building Reuse , Maintain 25% of Existing Non-Shell 2
			Credit 1.6 Building Reuse , Maintain 50% of Existing Non-Shell 3
			Credit 2.1 Demolition Waste Management . Divert 25% 1
			Credit 2.2 Demolition Waste Management , Divert 50% 2
			Credit 2.3 Demolition Waste Management , Divert 75% 3
			Credit 2.4 Construction Waste Management , Divert 25% 1
			Credit 2.5 Construction Waste Management , Divert 50% 2
			Credit 2.6 Construction Waste Management , Divert 75% 3
			Credit 3.1 Resource Reuse . Specify 5% 1
			Credit 3.2 Resource Reuse . Specify 10% 2
			Credit 3.3 Resource Reuse . Specify 25% 3
			Credit 4.1 Recycled Product Content , Specify 25% 1
			Credit 4.2 Recycled Product Content , Specify 50% 2
			Credit 5.1 Local/Regional Materials , 20% Manufactured Locally 2
			Credit 5.2 Local/Regional Materials , of 20% Above, 50% Harvested Locally 3
			Credit 6 Rapidly Renewable Materials (Consider Growing Conditions) 1
			Credit 7 Certified Wood 1

continues

Y	?	N	Outdoor Environmental Quality	
0	0	0	Possible Points	4
			Credit 1.1 Monitor Environmental Quality Develop Strategy	1
			Credit 1.2 Monitor Environmental Quality Contingency EQ Plan	1
			Credit 2.1 Low-Emitting Materials , Exterior Adhesives & Sealants	1
			Credit 2.2 Low-Emitting Materials , Exterior Paints	1
			Credit 3 Limit Toxic By Products Leaving Site	3
			Credit 4 Minimize Waste Heat	1
			Credit 5 Passive Solar Site Design Maximizing Daylighting	2
			Credit 6.1 Good Neighbor Targets . View Corridor Preservation or Buffering	3
			Credit 6.2 Good Neighbor Targets . Minimize Fugitive Odor	2
			Credit 6.3 Good Neighbor Targets . Minimize Fugitive Noise	2
Y	?	N	Innovation & Design Process	
0	0	0	Possible Points	8
			Credit 1.1 Experimental Process Research Capabilities	1
			Credit 1.2 Create Public Amenity	3
			Credit 1.3 Provide Sustainability Education	2
			Credit 1.4 Other Innovation	1
			Credit 2 LEED Accredited Professional	1

Y	?	N	Indoor Environmental Quality	
0	0	0	Possible Points	17
			Credit 1 Carbon Dioxide (CO₂) Monitoring	1
			Credit 2 Increase Ventilation Effectiveness (Fresh Air Distribution)	1
			Credit 3.1 Construction IAQ Management Plan . During Construction	1
			Credit 3.2 Construction IAQ Management Plan , Before Occupancy	1
			Credit 4.1 Low-Emitting Materials , Adhesives & Sealants	1
			Credit 4.3 Low-Emitting Materials , Carpet	1
			Credit 4.4 Low-Emitting Materials , Composite Wood	1
			Credit 5 Indoor Chemical & Pollutant Source Control	1
			Credit 6.1 Controllability of Systems . Perimeter	1
			Credit 6.2 Controllability of Systems , Non-Perimeter	1
			Credit 7.1 Thermal Comfort , Comply with ASH RAE 55-1992	1
			Credit 7.2 Thermal Comfort , Permanent Monitoring System	1
			Credit 8.1 Daylight & Views , Daylight 75% of Occupied Spaces	2
			Credit 8.2 Daylight & Views , Views for 90% of Occupied Spaces	3
Y	?	N	Innovation & Design Process	
0	0	0	Possible Points	12
			Credit 1.1 Innovation in Design : Exemplary Water Efficiency	3
			Credit 1.2 Innovation in Design : Advanced Treatment Design	3
			Credit 1.3 Innovation in Design : Mixed Use	3
			Credit 1.4 Innovation in Design : Natural Auxiliary Approach	1
			Credit 1.5 Innovation in Design : Other	1
			Credit 2 LEED Accredited Professional	1

- Note 1** This scorecard is designed to be used when evaluating WTD Green Process construction projects that may include process improvement projects or building projects.
- Note 2** The evaluation terminology and approach that is used in this scorecard has been modeled after the LEED process, you can go to information provided in LEED Reference Guide for additional helpful information as you address each of the evaluation criteria presented in this scorecard.
- Note 3** The points allotted for each credit have been carefully developed but if you feel that your project warrants special consideration in any particular area please explain in detail and a revision for your project will be considered.

Appendix D: Annual Reporting Forms

Green Building and Sustainable Development Ordinance 2010 Project-specific Annual Reporting Form

Division: _____ Reporting Year: _____

Name of Project: _____

Location of Project: _____

Type of Project: _____

Brief description of project:

What phase is the project in (e.g.. 30%, 60% or 90% design, construction, etc) _____

Projected completion date: _____ Project budget: _____

For structures, what is square footage? _____ For other types of projects, what is size
of project?(i.e. # acres, linear feet, etc) _____

FOR PROJECTS PURSUING LEED CERTIFICATION

Is Project registered with LEED? _____ (Y/N) Attach LEED Scorecard if available
If Yes, what level of LEED certification is targeted? _____ (Certified, Silver, Gold or Platinum)?

Additional costs associated with achieving LEED certification:

FOR PROJECTS SUBJECT TO SUSTAINABLE BUILDING REQUIREMENTS

List sustainable building strategies that are/were used in this project:

FOR ALL PROJECTS

Estimated savings in greenhouse gas emissions:
Construction and materials-related emissions: _____

Lifetime energy and transportation-related emissions: _____

Amount of construction materials recycled:

Green and renewable resources used:

FOR COMPLETED PROJECTS

Projected and actual operations and maintenance costs:
Projected:

Actual:

Fiscal Performance, accounting of all project costs and benefits that can be quantified, documented and verified:

Appendix E: County-wide Green Building Team Division Representatives

King County Green Building Team

Bender, Sid	Sid.Bender@kingcounty.GOV	Budget
Burns, Bob	Bob.Burns@kingcounty.GOV – DNRP	Team Sponsor
Clark, Monica	Monica.Clark@kingcounty.gov	Parks
Crippen, Dave	Dave.Crippen@kingcounty.GOV	Transit
Erickson, Chris	Chris.Erickson@kingcounty.GOV	FMD
Faucette, Bobbie	Bobbie.Faucette@kingcounty.GOV -	Budget
Foley, Steve	Steve.Foley@kingcounty.GOV	WLRD
Fujii, Neil	Neil.Fujii@kingcounty.GOV	SWD
Gelb, Richard	Richard.Gelb@kingcounty.gov	DNRP Director's office
Kuhn, Greg	Greg.Kuhn@kingcounty.GOV	Safety & Claims Mgmt
Molyneaux, Gary	Gary.Molyneaux@kingcounty.gov	Airport
O'Rollins, Laird	Laird.O'Rollins@kingcounty.gov	WLRD
Overton, Frank	Frank.Overton@kingcounty.gov	Roads
Ricketts, Chris	Chris.Ricketts@kingcounty.GOV	DDES
Rodenhizer, David	David.Rodenhizer@kingcounty.gov	DNRP Energy Office
Roswell, Jacquelynn	Jacquelynn.Roswell@kingcounty.GOV	WTD
Smith, Jerry Edward	JerryEdward.Smith@kingcounty.GOV	Adult & Juvenile Detention
Sussex, Jim	Jim.Sussex@kingcounty.GOV	Roads
Usen, Mike	Mike.Usen@kingcounty.gov	Transit
VanHolde, David	David.VanHolde@kingcounty.gov	DNRP Energy Office
Willenbacher, John	John.Willenbacher@kingcounty.GOV	FMD

Solid Waste Division GreenTools Team

Beatty, Kris	Kris.Beatty@kingcounty.gov	LinkUp
Cochrane, Ric	Ric.Cochrane@kingcounty.gov	LEED and DDES technical assistance, grants
Deller, Kinley	Kinley.Deller@kingcounty.gov	CDL recycling, deconstruction and salvage
Humphreys, Beth	Beth.Humphreys@kingcounty.gov	County Green Building Team, and LEED assistance
Southard, Patti	Patti.Southard@kingcounty.gov	BuiltGreen and materials information

Appendix F: LEED-Eligible Checklist

A summary of the requirements for LEED-Eligible Projects listed in the Green Building Ordinance.

LEED-Eligible Projects (containing more than 5,000 SF of occupied or conditioned space or a major building remodel or renovation project.)

- Record that the project manager has attended appropriate LEED and sustainable development training and annual refresher courses.
- Register for LEED with the USGBC .
- Plan for and achieve LEED Gold Certification.
- Summarize how energy efficiency will be given the highest priority.
- At or before 30% design complete and submit:
 - Analysis of incremental costs for achieving LEED Gold that are quantifiable, documented, and verifiable by third-party review upon project completion and thereafter, which shall include:
 - Up-front incremental construction costs;
 - Up-front costs of registration and certification; and
 - Present value of operations and maintenance cost savings over the life of the asset.
 - LEED checklist with points the project team expects to achieve.
- At 30% design complete and submit:
 - Summary discussion of the LEED points that are being pursued.
 - Summary discussion of the LEED points that are technically not feasible.
 - If the project involves historic landmarks, summary of how natural daylighting and passive ventilation strategies have been maximized.
- At completion complete and submit:
 - LEED checklist
- By January 31, complete annual report form project progress during the previous year
 - Annual Report form including the following information:
 - Green Strategies
 - Summary of green strategies employed.
 - Amount of construction waste recycled.
 - Summary of renewable resources used.
 - Summary of green materials used.
 - Fiscal Issues
 - Operations and maintenance costs projected prior to construction.
 - A report of fiscal performance including project costs and benefits.
 - Greenhouse Gases
 - Reductions in greenhouse gas emissions.