Leadership for Energy and Environmental Design:
Existing Building Operations and Maintenance
(LEED:EBOM)

Sustainable Building Operations and Maintenance
Guidelines
SECTION 1: INTRODUCTION

This document provides UC Davis with information on the variety of sustainable programs, policies and guidelines applicable to the UC Davis campus and the Leadership in Energy and Environmental Design for Existing Buildings: Operations and Maintenance (LEED EB:OM) certification program. This document also outlines basic LEED EB:OM information specific to UC Davis existing buildings. The LEED® green building certification program is the nationally accepted benchmark for the design, construction, and operation of green buildings.

PURPOSE

The purpose of this document is to outline the UC Davis sustainable operations and maintenance framework, provide background on sustainable operations and maintenance information for LEED EB:OM certification processes, and outline LEED EB:OM specific information on the approved UC Davis Master Site submittal.

SECTION 2: COMMITMENT TO SUSTAINABILITY

As of July 1 2004, University of California campuses adopted the University of California Sustainable Practices Policy. This policy “establishes goals in nine areas of sustainable practices: green building, clean energy, transportation, climate protection, sustainable operations, waste reduction and recycling, environmentally preferable purchasing, sustainable foodservice and sustainable water systems.” Further, UC is “committed to responsible stewardship of resources and to demonstrating leadership in sustainable business practices.”

Specifically, UC Sustainable Building Operations for Campuses guidelines are:

- Each campus will submit for certification of one pilot building at a LEED-EBOM “Certified” level or higher.
- Each campus shall register a master site to certify campus-wide LEED-EBOM credits and prerequisites to streamline the certification of multiple buildings through the LEED-EBOM rating system by July 1, 2014. Each campus shall certify their campus-wide credits as soon as possible after the master site has been registered.
- Each campus shall seek to certify as many buildings as possible through the LEED-EBOM rating system, within budgetary constraints and eligibility limitations.

As of February 2011, UC Davis instituted the LEED EB:OM group under the Environmental Stewardship and Sustainability (ESS) office to meet the UC Sustainable Building Operations for
Campuses portion of the University of California Sustainable Practices Policy. In June of 2013, the LEED EB:OM section was re-aligned under Facilities Management Energy Conservation Office to align LEED EB:OM efforts with building maintenance, energy conservation and other building operations and maintenance activities. Hand in hand, the Strategic Energy Plan and the LEED EB:OM programs, work to reduce energy usage on the campus through building tune-ups, upgrades to HVAC and lighting systems and education.

In addition, the following documents from the UC Davis Policy and Procedure Manual and Purchasing Guidance outline UC Davis specific sustainable practices guidance:


350-05, Waste Prevention and Recycling-
Standards and processes aimed at reducing waste at the source; encouraging the purchase and use of durable and reusable products; encouraging the purchase of high post-consumer content recycled products; increasing the total volume of waste materials diverted from landfills to recycling processes; and ensuring the long-term viability of campus recycling operations through appropriate educational programs, coordination, management, and oversight.

350-10, Procurement Authority-
Committed to purchase energy efficient equipment that meets EPA Energy Star requirements. These include but are not limited to personal computers, printers, copiers, faxes, laboratory equipment, lighting, refrigerators, and HVACs. Purchases shall meet present needs while promoting sustainable practices that support ecological, human, social and economic vitality and awareness for both the campus and the global community.

350-24, Equipment Screened and Sharing-
Screening and sharing requirements for the acquisition and utilization of equipment. The objective of the policy is to provide a formal, auditable method of verifying that the University makes maximum use of existing equipment prior to acquiring additional equipment.

350-80, Disposition of Excess Property-
Provides the policy and procedures for the disposal of property, including furniture, equipment, and supplies, that is unserviceable or no longer needed.

Also,
Supply items and active inventory that are excess to department needs may be disposed of by one of the following methods:

1. Trade-in on new equipment (see V.B, below).
2. Direct transfer to another department (see V.C, below).
3. Sale through or transfer to Bargain Barn (see V.D, below)
4. Parting out or cannibalizing parts to construct a new asset or make existing asset serviceable (see V.E, below).
Government property that becomes excess to the contract or grant for which it was provided must be screened against the needs of other government contracts or grants prior to being declared excess.

**Contracting Services** [http://purchasing.ucdavis.edu/sustainability/index.cfm](http://purchasing.ucdavis.edu/sustainability/index.cfm)

This guide outlines sustainable practices and purchasing resources, including the following: Environmentally Preferable Purchasing considerations, Energy Star website link, US EPA website link and the link to the Association for the Advancement of Sustainability in Higher Education.


Outlines UC Davis specific sustainable practices guidance for Design Construction Management, affiliated companies and UC Davis offices.

**Impacts on the surrounding site**

*Part II Design Requirements 13 (pgs 2-3)* – outlines specific information for site utilities, storm drainage, landscape, parking/circulation, lighting and electrical, waste collection, buildings, access to natural light, acoustics, human factors, indoor pollutant reduction and control, and more.

**Energy consumption**

*Part II Design Requirements 13 (pgs 12-14)* – outlines energy conservations measures that should be considered when designing a building in order to reach the campus energy conservation goal.

**Building-level energy metering**

*DIV 33 Utilities 13.pdf (pgs 5-9)* – Primary (building) level energy metering.

**Usage of environmentally preferable materials**

*DIV 06 Wood Plastics and Composites 13* – outlines campus guidelines for purchasing and using wood, plastic and composites that conform to the sustainable guidelines for Forest Stewardship Council Guidelines and that Material Safety Data Sheets (MSDS) should be provided to UCD Office of Environmental Health & Safety for all wood preservatives.

*DIV 09 Finishes 13.pdf* – outlines that flooring aerosol adhesives should not exceed the VOC limits specified in Green Seal Standard GS-36, non-aerosol adhesives and primers should not exceed the VOC limits specified in the South Coast Air Quality District Rule 1168, architectural coatings will comply with the GS-11 and the most current LEED requirements.

Also, carpet tile systems should not exceed the target emissions factors for the Carpet and Rug Institute’s following programs:

2. Carpet Cushion: Green Label Program and Testing Procedure

*Part II Design Requirements 13 (pg 1)* – outlines that sustainable materials, products and materials should be considered for use during projects.
Indoor environmental quality

*PART II DESIGN REQUIREMENTS 13 (pgs 6-11)*—outlines that buildings should be designed to maximize the interior day-lighting, acoustics, human factors and indoor pollutant reductions and control should be considered, and carpet systems should be low VOC.


Water consumption

*DIV 22 Plumbing 13.pdf*—outlines the guidelines for the Campus Domestic Water Distribution System and Agricultural Water Distribution system.

Building-level water metering

*DIV 33 Utilities 13.pdf (pgs 5-12)*—Primary (building) level energy metering.

**SECTION 3: CREDIT DISCUSSION/INFORMATION**

The following credits have been approved for Master Site use and are the core credits that we use for each LEED EBOM Submittal:

**Sustainable Sites:**
- Credit 2: Building Exterior and Hardscape Plan Management
- Credit 4: Alternative Communicating and Transportation
- Credit 6: Stormwater Quantity Control

**Materials and Resources:**
- Prerequisite 2: Solid Waste Management Policy

**Indoor Environmental Quality:**
- Prerequisite 2: Environmental Tobacco Smoke (ETS) Control
- Prerequisite 3: Green Cleaning Policy
- Credit 3.1: Green Cleaning-High Performance Cleaning Program

**Innovations in Operations:**
- Sustainable Sites, C5, Site Development-Protect or Restore Open Habitat-Exemplary Performance
- Sustainable Sites, C6, Stormwater Quantity Control-Exemplary Performance

**SECTION 4: TEAM MEMBERS**

To complete the LEED:EBOM certification of a building a variety of departments provide input, information and guidance:

**Facilities Management**

TEAM LEAD: Energy Conservation Office-LEED:EBOM Team
Building Maintenance Service
Custodial Services
Fleet Services
Safety
Administration Support Services

Utilities

Environmental Stewardship and Sustainability Office
Sustainability Officers
Waste Reduction and Recycling Office
STARS Team

Student Housing
Student Housing LEED Team

Design Construction Management

Grounds Maintenance
Groundskeepers
Roads

Building Specific Staff
Department Heads
Other leadership
Purchasing staff
Other staff as appropriate

CONTACTS
For more information on this document contact the Facilities Management, Energy Conservation Office- LEED office at 530-752-9699
Solid Waste Management Policy

LEED EBOM v2009
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I. Policy Scope

The UC Davis Solid Waste Management Policy (SWMP) is intended to provide operational guidance for the safe, responsible, and ecologically sound management of municipal solid waste. Solid waste management includes the practice of employing three basic strategies – reduction, reuse, and recycling – to decrease and divert the amount of landfill material generated by building operations and the portion of that waste that must be disposed of in a landfill. The SWMP supports the University of California Sustainable Practices Policy and UC Davis PPM 350-05 Waste Prevention and Recycling.

This document is intended to provide strategic recommendations to reduce waste as well as procedural instructions for campus personnel to dispose of recyclable and compostable materials. The purpose is to define standardized disposal methods for materials generated on campus that fall within the following categories: ongoing consumables, durable goods, facility alterations & additions, batteries and mercury containing lamps. The categories listed above are based on the LEED for Existing Buildings: Operations and Maintenance Solid Waste and Recycling requirements.

The SWMP describes handling procedures and disposal methods for items in each category. Because of the variety of items in each category and varying collection methods, it is essential to clearly state how materials are collected and measured.

II. Policy Goals

The University of California has established the ultimate goal of achieving zero waste by 2020. As stated in the UC Sustainable Practices Policy, zero waste is defined as:

For the purposes of measuring compliance with UC’s zero waste goal, campuses need to at least meet or exceed 95% diversion of municipal solid waste. Ultimately, UC’s zero waste goal strives for the elimination of all materials sent to the landfill by 2020.

This document is intended to provide additional information to campus personnel about what procedures should be followed in order to accomplish these goals.

III. Performance Metric

The success of this policy will be evaluated based on the diversion rate for a variety of consumables. UC Davis strives to reduce, reuse, recycle, or compost the following items at their respective levels:

A. At least 50% of the ongoing consumable waste stream (by volume or weight)
B. At least 75% of the durable goods waste stream (by volume, weight, or replacement value)
C. At least 70% of waste (by volume) generated by facility alterations and additions
D. At least 80% of discarded batteries (by volume or weight)
E. 100% of all mercury-containing lamps within the building and site management’s control
1IV. Responsible Parties

Waste Reduction & Recycling, Student Housing, Facilities Management, and Environmental Health & Safety are each responsible for supporting Solid Waste Management in their respective areas of expertise.

<table>
<thead>
<tr>
<th>Regarding</th>
<th>Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>For office and lab building waste reduction and recycling, campus recycling questions, issues about pipette tip box collection, and desk-side battery boxes.</td>
<td>Michelle La Coordinator of Waste Reduction &amp; Recycling Office of Environmental Stewardship and Sustainability 530-752-6970 <a href="mailto:mla@ucdavis.edu">mla@ucdavis.edu</a></td>
</tr>
<tr>
<td>For residence hall waste reduction and recycling, general inquiries regarding Student Housing sustainable practices, and resident hall organic waste collection pilot program.</td>
<td>Jenni Porter Sustainability Coordinator Student Housing 530-752-4265 <a href="mailto:jeporter@ucdavis.edu">jeporter@ucdavis.edu</a></td>
</tr>
<tr>
<td>For indoor recycling, indoor zero waste events, and office clean-outs.</td>
<td>Facilities Management 530-752-9053 <a href="mailto:custodial@ucdavis.edu">custodial@ucdavis.edu</a></td>
</tr>
<tr>
<td>For outdoor recycling, outdoor zero waste events, metal pickup, and wooden pallet pick-ups.</td>
<td>Tyson Mantor Grounds Supervisor Facilities Management 530-752-6741 <a href="mailto:tomantor@ucdavis.edu">tomantor@ucdavis.edu</a></td>
</tr>
<tr>
<td>For inquiries regarding outdoor recycling, primarily recycling carts, cardboard dumpsters and landfill dumpsters.</td>
<td>Michael Fan Senior Engineer Supervisor Utilities 530-752-7553 <a href="mailto:mmfan@ucdavis.edu">mmfan@ucdavis.edu</a></td>
</tr>
<tr>
<td>For inquiries regarding hazardous materials and hazardous waste management.</td>
<td>Environmental Health &amp; Safety 530-752-1493 <a href="mailto:hazwaste@ucdavis.edu">hazwaste@ucdavis.edu</a></td>
</tr>
</tbody>
</table>
UC Davis shall implement this policy in coordination with the appropriate organization personnel, including but not limited to: facility managers, custodial staff and any contracted waste haulers. UC Davis will coordinate training, education and outreach programs throughout the organization, with the aim of promoting and maintaining the goals of this policy. Employees will receive instruction and orientation regarding their responsibility to participate in campus recycling programs. Employees will be responsible for:

A. Ensuring that excess and surplus items are removed from premises (e.g., hallways, loading docks, and entryways) and recycled using campus Salvage Operations or Bargain Barn (see Section 350-80).

B. Working with the Waste Reduction and Recycling Program to develop effective waste reduction and recycling programs.

C. Developing steps to reduce excessive printing and copying.

All campus entities with printing or copying responsibilities (including Repro Graphics, ASUCD, and Information and Educational Technology) are responsible for providing education and support in the operation of all copying and printing devices to promote sustainable practices.

The groups and organizations below have the following responsibilities:

A. The Waste Reduction and Recycling Team is responsible for:
   1. Identifying excessive distribution of campus publications, and taking steps to educate publishers to reduce or eliminate excess distribution.
   2. Overseeing education aspects of the recycling program, including providing education to new employees and students as part of their orientation.
   3. Maintaining records of recycling activities.
   4. Implementing and evaluating recycling systems set up in offices and departments.

B. The Procurement Department is responsible for:
   1. Working with the UC Strategic Sourcing Initiative to establish contracts for paper products with the highest percentage of recycled content available.
   2. Working with suppliers to promote recycled offerings prominently in electronic ordering systems.

V. Equipment

Standardized equipment assists campus in achieving the diversion rate goals. Similarity among resources utilized around campus reinforces positive behavior and makes it easier for people to learn and continue waste diversion efforts.

A. Recycling Container Locations

   All building occupants should have accessibility to interior and exterior recycling stations.

B. Interior Recommendations

   Most centralized indoor recycling on campus utilizes the slim-jim type recycling
container. The slim-jim container is approximately 30 inches in height, 20 inches in length and 11 inches in width. The dimensions of the container are compatible with campus standard recycling cabinet design specifications as indicated in the UC Davis Campus Standard & Design Guide.

Office workstation recycling utilizes a 28-quart blue recycling bin designated for mixed paper with a small landfill saddle bin. Each workstation recycling set is labeled with campus standard labels indicating what materials shall go into what bin. For more information, please visit “Recycling from Your Desk” section of the campus sustainability website

C. Exterior Recommendations

1. Building collections

Buildings will have a designated outdoor centralized location to store outdoor collections of recyclable materials, and compostable material if applicable, at a nearby site (e.g., dumpster enclosure in nearby parking lot). A designated collection site may be utilized by more than one building.

The general configuration of an outdoor centralized collection site will include carts for mixed paper, cans and bottles, and compostable materials, and two 6-cubic yard dumpsters – one designated for cardboard recycling and the other for landfill materials (color coded tan and blue respectively). The recycling carts for outdoor collections of recyclable and compostable materials are generally 64 gallon carts.

2. Pathways and Open Spaces

Campus standard outdoor receptacles include two concrete receptacles, one for recyclables and another for landfill. These receptacles are generally at entrances, pathways, patio spaces, and most outdoor open areas.

VI. Strategies

The following section will describe strategies that will assist in achieving waste management goals, specifically source reduction and recycling:

A. Durable and Reusable Products

Whenever possible, departments and external contractors shall reduce the amount of non-recyclable materials and products used, and promote the use of durable and reusable products (e.g., using reusable silverware/dinnerware instead of disposable at catered events).

B. Copying and Printing

1. Paper office supplies should contain a minimum standard of 30% post-consumer waste (PCW) recycled content.

2. Copiers and printers should be set to default to two-sided copying or printing
when possible.

3. Outside suppliers and consultants shall be encouraged to print proposals and reports on both sides, using recycled content paper. The documents shall be clearly marked to indicate that they are printed on recycled content paper.

4. Whenever feasible, electronic correspondence should replace written correspondence. When printed documents are required, employees are encouraged to print using the minimum amount of paper necessary. Methods to accomplish this include reducing margin size, reducing font size and two-sided printing.

5. Forms should be made available to complete and submit electronically whenever possible.

6. Employees should reuse office paper that is printed on only one side whenever possible. Paper shall be recycled after reuse.

7. Departmental and course handouts should be distributed electronically whenever possible.

C. Publications and Mailing Lists

1. Campus newsletters, catalogs, magazines and other publications are encouraged to be printed using recycled content paper. When feasible, departments should use electronic publications in lieu of printing.

2. All print publications (newsletters, catalogs, magazines, etc.) should move toward an electronic publication alternative and a clear method for allowing subscribers to opt out of hard copy delivery.

3. Departments are encouraged to limit the receipt of multiple copies of print publications and instead route or publicly post a single copy for interested parties to review.

D. Telephone Directories

Telephone directories shall be made available electronically. If paper copies of directories are published, they shall be distributed only once per calendar year.

E. Vendor Catalogs

Vendors shall be discouraged from mass distribution of paper catalogs to the campus.

F. Environmentally Responsible Packaging

Packing materials purchased by UC Davis shall abide by one or more of the following criteria:

1. Made from 100% post-consumer recycled materials that is recyclable or reusable,

2. Non-toxic,

3. Biodegradable, and/or

4. Produced using minimal resources and sized as small as possible, while still
maintaining product protection during shipping. Unnecessary packing materials should be eliminated whenever possible.

G. Special Events

1. Recycling receptacles should be provided at all special events.
2. Biodegradable food service utensils, plates, cups, napkins, and containers to support zero-waste efforts are available through the Campus Center for the Environment. See the link below:

   http://cce.ucdavis.edu/zerowaste/

H. Pre- and Post-Consumer Compostable Materials

1. Centralized compost bins should be provided to some offices on campus for food and other organic waste. Offices without compost bins should dispose of food waste in the landfill bin unless directed otherwise.
2. Dining Commons shall serve food on reusable dishware. All pre- and post-consumer food waste should be composted.
3. On campus eateries and events should use compostable utensils and dishware, which are collected in the compostable waste stream.
4. Landscape trimmings should be collected and used in one of the following manners:
   a. Collected and reused,
   b. Repurposed for artwork, campus activities, etc.,
   c. Composted at an off-campus commercial composting facility, and/or
   d. Processed at an Anaerobic Biodigester.
5. Food service ware containing poly lactic acid (PLA) should be avoided.

2AII. Procedures

The following section will describe the general collection and handling procedure of recovered materials on the UC Davis campus:

A. Ongoing Consumables (not exclusive)

1. Glass, Plastics, and Aluminum (bottles and cans)

   Glass, plastic, and aluminum recyclables should be collected in centralized bins and hauled to an outside vendor for recycling. Labels and signage are provided to inform staff of the materials that belong in this stream.

2. Mixed Paper

   Mixed paper should be collected from centralized and desk side mixed paper recycling bins located in lobbies and offices respectively and hauled to an outside vendor for recycling. Labels and signage are provided to inform staff of materials that belong in the mixed paper stream.
   a. Confidential paper shredding is available upon request. The service is
provided by the campus Materiel Management Services. More information can be found here:

http://documentstorage.ucdavis.edu/howto/basics.cfm

b. Alternatively, confidential paper shredding is also offered through an off-campus vendor. More information can be found here:

http://sustainability.ucdavis.edu/action/moving/.

3. Cardboard

Cardboard should be collected in dumpsters around campus and hauled to an outside vendor for recycling.

4. Pre- and Post-Consumer Compostable Materials

Compostable material should be collected at centralized areas and shall be reused on campus or hauled to an off-campus commercial composter or processed in an anaerobic biodigester.

5. Metals

Scrap metal should be collected at centralized locations on campus and at the UC Davis Waste Water Treatment Plant site. Metal is sent to an outside vendor to be recycled.

6. Batteries

Batteries should be collected in bins around campus by Waste Reduction & Recycling staff and brought to the Environmental Health and Safety Department for storage to be shipped for processing.

7. Toner and Inkjet Cartridges

Cartridges should be collected around campus in departments and centralized locations. Toner and inkjet cartridge manufactured by companies with cartridge return programs will be sent back to the company for recycling or remanufacturing. Cartridges that are not returned to the manufacturing company should be sent to an outside vendor to be recycled or remanufactured.

8. Mercury Containing Lamps

Lamps and bulbs containing mercury shall be collected and disposed of by Facilities Management in a way that will not harm the environment.

B. Durable Goods

1. Furniture

Furniture should be brought to the Bargain Barn for resale (or salvage when property is deemed invaluable).

2. Electronic Waste

Used and broken electronics should be brought to the Bargain Barn. Working electronics should be resold. Broken electronics should be sent to an outside
a. Electronic waste includes computers, monitors, copiers, printers, scanners, fax machines, refrigerators, dish washers, water coolers, external power adapters, television, audiovisual equipment, wires, compact disks, etc.

3. Office Supplies

Office supplies in good condition should be brought to the Bargain Barn on campus to be resold.

a. Office supplies include binders, scissors, tape dispensers, white boards, paper racks, folders, etc.

C. Facility Alterations

1. Materials from alterations include wall studs, insulation, doors, windows, panels, drywall, trim, ceiling panels, carpet and other flooring material, adhesives, sealants, paints and coatings.

2. The materials that can be recovered should be recycled. Hazardous material should be disposed of responsibly so it does not harm the environment.

D. The following table describes in detail recyclable and compostable materials generated at the building site, the disposal methods, handling procedures, and current vendor or processing facility accepting the materials:

<table>
<thead>
<tr>
<th>Source/Consumables</th>
<th>Disposal Method</th>
<th>Handling Procedure</th>
<th>Vendor/Processing Facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardboard (CB)</td>
<td>• User receives CB and brings CB to outdoor dumpster where Solid Waste (SW) picks up dumpster. • User puts CB at centralized location/lobby and custodian brings CB down to dumpster where SW picks up dumpster.</td>
<td>SW picks up dumpsters and hauls recyclables to recycler on a regular basis.</td>
<td>Recycling Industries in North Highlands, CA</td>
</tr>
<tr>
<td>Cans &amp; Bottles (CRV) (#1-2 Only)</td>
<td>• User recycles CRV in centralized/lobby bin, custodian picks up daily and brings down to recycling carts at designated area. • User recycles CRV in outdoor recycling bins and Grounds empties containers into closest dumpster/recycling cart.</td>
<td>SW picks up recycling carts two times per week and hauls recyclables to vendors.</td>
<td>Recycling Industries in North Highlands, CA</td>
</tr>
<tr>
<td>Source/Consumables</td>
<td>Disposal Method</td>
<td>Handling Procedure</td>
<td>Vendor/Processing Facility</td>
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</tr>
<tr>
<td>Commingle Mixed Recyclables (MR)</td>
<td><em>Student Housing (SH)</em>: residents put MR into MR recycling cart in centralized area or recycling shoot, SH Custodial staff brings MR recycling cart/dumpster out to enclosure, and SW picks up MR cart and dumpsters.</td>
<td>SW picks up and hauls recyclables to vendors on a regular basis.</td>
<td>Recycling Industries in North Highlands, CA</td>
</tr>
<tr>
<td></td>
<td><em>West Village (WV)</em>: Residents recycle MR into dumpsters at enclosure, and SW picks up MR dumpsters.</td>
<td></td>
<td><strong>Recycling Industries in North Highlands, CA</strong></td>
</tr>
<tr>
<td></td>
<td><em>Memorial Union &amp; Coffee House</em>: Consumers/Occupants put MR in bins around MU and CoHo, student staff empty bins into MR dumpster at loading dock, and SW picks up MR cart and dumpsters.</td>
<td>SS picks up dumpsters and hauls recyclables to vendors on a regular basis.</td>
<td><strong>Recycling Industries in North Highlands, CA</strong></td>
</tr>
<tr>
<td>Mixed Paper (MP)</td>
<td><strong>User recycles MP in centralized/lobby bin, custodian picks up daily and brings down to recycling carts at dumpster enclosure.</strong></td>
<td><strong>SW picks up recycling two times per week and hauls recyclables to recyclers.</strong></td>
<td><strong>Davis Waste Removal in Davis, CA</strong></td>
</tr>
<tr>
<td></td>
<td><strong>User recycles MP in deskside recycling, custodial picks up MP recycling from individual office or cubicles 1x/week and brings down to recycling cart at dumpster enclosure.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>User recycles MP in outdoor recycling bins, Grounds empties containers into closest dumpster/recycling cart.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Source/Consumables</td>
<td>Disposal Method</td>
<td>Handling Procedure</td>
<td>Vendor/Processing Facility</td>
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<tr>
<td>Confidential Paper</td>
<td><em>In House:</em> Department puts confidential paper into box, box is picked up by Mail Distribution staff when mail is dropped off and brought back to Mail Distribution Center; documents are shredded at Mail Distribution and Proof of Destruction is issued to Department, and shredding is put into mixed paper recycling.</td>
<td>SW hauls MP recycling to Davis Waste Removal.</td>
<td>Davis Waste Removal in Davis, CA</td>
</tr>
<tr>
<td>Shredding</td>
<td><em>Off Campus Shredding Vendor:</em> Department creates an account with contracted vendor-Viking Shredding, department accumulates documents and contacts vendor for shredding service, and vendor will come to campus to shred and issue Proof of Destruction.</td>
<td>Waste is tracked and disposed by an authorized vendor, currently Viking Shred, to be recycled.</td>
<td>International Paper Recycling Plant in Sacramento, CA</td>
</tr>
<tr>
<td>Hardbound Book</td>
<td>Department submits Facilities work order for Custodial Services requesting a hardbound book recycling bin, custodial drops off and picks up recycling cart. Hardbound books are accumulated at Custodial Services, and vendor will pick-up and recycle hardbound books.</td>
<td>Tracked and disposed by recycler, currently International Papers, for recycling.</td>
<td>International Paper Recycling Plant in Sacramento, CA</td>
</tr>
<tr>
<td>Recycling</td>
<td>Users accumulate boxes in container provided by Waste Reduction and Recycling (WRR), which provides pick up service once per week.</td>
<td>Tracked and hauled away by SW for recycling.</td>
<td>Recycling Industries in North Highlands, CA</td>
</tr>
<tr>
<td>Pipette Tip Boxes</td>
<td>Users accumulate boxes in containers and boxes are backhauled by Fisher Scientific Staff.</td>
<td>Backhauled by Fisher Scientific Staff for recycling.</td>
<td>Santa Clara Facility in Santa Clara, CA</td>
</tr>
<tr>
<td>Source/Consumables</td>
<td>Disposal Method</td>
<td>Handling Procedure</td>
<td>Vendor/Processing Facility</td>
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</tbody>
</table>
| Metals            | • User drops off small metal pieces to be recycled at designated locations on campus  
|                   | • User drops off large metal pieces at metals recycling location at UCD Waste Water Treatment Plant. | Tracked and disposed of by authorized haulers for recycling. | Sims Metals or Metro Steel Recycling in Woodland, CA |
| Batteries         | Rechargeable:  
|                   | Users contact Call2Recycle for recycling container and accumulate rechargeable batteries. When container is full, user ships box with prepaid shipping label. | All batteries are tracked and rechargeable batteries are sent back to Call2Recycle. | Call2Recycle Contracted Sorting and Recycling Facility in Ellwood City, PA |
|                   | Non-Rechargeable:  
|                   | • Users accumulate batteries in desktop battery bin provided by WRR, and users intercampus mail to Environmental Services Facility (ESF) where batteries are stored.  
|                   | • Users recycle at WRR multi-bin units on campus, where WRR Student staff collects batteries. WRR coordinates with ESF to drop off/pick up batteries. | Tracked and taken away by authorized haulers for proper disposal. | AERC Recycling Solutions in Hayward, CA |
| Electronic Waste  | Compact Discs:  
|                   | Users recycle at WRR multi-bin units on campus and WRR Student staff collects and drop off material to Bargain Barn for recycling where the vendor picks it up. | Tracked and taken away by authorized haulers for recycling. | California Electronic Assets Recovery (CEAR) |
|                   | Small Electronics:  
<p>|                   | Users recycle at WRR multi-bin units on campus and WRR student staff collects and drop off electronics to Bargain | Tracked and taken away by authorized haulers for recycling. | California Electronic Assets Recovery (CEAR) |</p>
<table>
<thead>
<tr>
<th>Source/Consumables</th>
<th>Disposal Method</th>
<th>Handling Procedure</th>
<th>Vendor/Processing Facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barn for recycling.</td>
<td>Tracked and taken away by authorized haulers for recycling.</td>
<td>California Electronic Assets Recovery (CEAR)</td>
<td></td>
</tr>
<tr>
<td><strong>Large Electronics:</strong> Users recycle Campus Property large electronics at Bargain Barn.</td>
<td>Tracked and kept by WRR until local recycler is located.</td>
<td>TBD</td>
<td></td>
</tr>
<tr>
<td><strong>Cell Phones:</strong> Users recycle at WRR multi-bin units on campus and WRR Student staff collects cell phones from multi-bin locations.</td>
<td>Tracked and taken away by authorized haulers for recycling.</td>
<td>Cartridge World in Davis, CA</td>
<td></td>
</tr>
<tr>
<td><strong>Inkjets (Cartridges):</strong> Users recycle at WRR multi-bin units on campus and WRR Student staff collects the inkjets. Empty cartridges are picked up by the authorized vendor after each academic quarter.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Toners</strong></td>
<td>Users intercampus mail toners to Mail Distribution (specifically indicating &quot;Toner Recycling&quot;).</td>
<td>Tracked and sent to authorized vendors for recycling by Mail Distribution services (HP brand toners to Hewlett Packard and non HP brand toners to T3 Toner).</td>
<td>Hewlett Packard and T3 Toner</td>
</tr>
<tr>
<td><strong>Animal Bedding/Manure:</strong> Department of animal Science accumulates and warehouses animal bedding/manure on campus and Green belt Carriers picks up bedding/manure from campus.</td>
<td>Tracked and distributed to composters/farmers for direct application.</td>
<td>Green Belt Carriers</td>
<td></td>
</tr>
<tr>
<td><strong>Cooking Oil:</strong> Food prep areas and kitchens collect used cooking oil.</td>
<td>Tracked and taken away by authorized hauler for recycling.</td>
<td>Sacramento Rendering Company in Sacramento, Ca</td>
<td></td>
</tr>
<tr>
<td><strong>Dining Commons:</strong> Kitchen staff collect compost waste in 32 SW hauls to commercial composting facility for processing.</td>
<td></td>
<td>Zamora Composting Facility in Zamora, CA</td>
<td></td>
</tr>
<tr>
<td>Source/Consumables</td>
<td>Disposal Method</td>
<td>Handling Procedure</td>
<td>Vendor/Processing Facility</td>
</tr>
<tr>
<td>----------------------------</td>
<td>---------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------</td>
</tr>
<tr>
<td>Gallon compost cart and</td>
<td>Compostable materials from Zero Waste Events are collected by Custodial Services</td>
<td>SW hauls to Anaerobic Biodigester for processing</td>
<td>Zamora Composting Facility in Zamora, CA</td>
</tr>
<tr>
<td>bring compost carts to</td>
<td>or Grounds Services and brought to a compost compactor, usually at the Segundo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>compost compactor.</td>
<td>Dining Common area.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zero Waste Events:</td>
<td><strong>Retail Eateries (Coffee House, Silo Union):</strong> Users/visitors dispose compostable</td>
<td>SW hauls to commercial composting facility for processing.</td>
<td>Zamora Composting Facility in Zamora, CA</td>
</tr>
<tr>
<td>Compostable materials</td>
<td>waste at available bins in facility, CoHo staff service the bins and bring the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>from Zero Waste Events</td>
<td>compostable materials in bags to compactor at loading dock.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>are collected by Custodial</td>
<td><strong>Zero Waste Facilities:</strong> Building occupants dispose of compostable materials</td>
<td>SW hauls to commercial composting facility for processing.</td>
<td>Zamora Composting Facility in Zamora, CA</td>
</tr>
<tr>
<td>Services or Grounds Services</td>
<td>in centralized compost bin, Custodians services compost bin daily and empties into</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and brought to a compost</td>
<td>cart at loading dock/dumpster enclosure, and custodial services picks up cart and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>compactor.</td>
<td>empties it into compost compactor.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Straw and Shavings:</td>
<td><strong>Straw and Shavings:</strong> Straw and Shavings picked up by SW and dumped just</td>
<td>Tracked and taken away by outside vendor, DPS, Inc. for composting.</td>
<td>DPS, Inc. brings to composting site in Patterson, CA</td>
</tr>
<tr>
<td>Straw and Shavings</td>
<td>outside campus landfill.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Veterinary Medicine</td>
<td>Compostable material (mainly straws and shavings) are accumulated at Veterinary</td>
<td>SW tracks, picks up and hauls material to designated location where authorized</td>
<td>DPS, Inc. brings to composting site in Patterson, CA</td>
</tr>
<tr>
<td></td>
<td>Medicine Teaching Hospital.</td>
<td>hauler takes it to composter.</td>
<td></td>
</tr>
<tr>
<td>Green Waste</td>
<td><strong>Small Collections:</strong> Most green waste left on site as mulch.</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Source/Consumables</td>
<td>Disposal Method</td>
<td>Handling Procedure</td>
<td>Vendor/Processing Facility</td>
</tr>
<tr>
<td>--------------------</td>
<td>-----------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Large Collections</strong> (tree trunks/trimmings): Grounds brings material to UCD landfill green waste pile.</td>
<td>Woodland Biomass Plant in Woodland, CA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tracked and used by Grounds and SW. Grounds uses larger collections as landscape material and SW hauls materials to Woodland Biomass Plant where wood is used as fuel source.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other:</td>
<td>Grounds brings material to UCD Landfill green waste pile.</td>
<td>Yolo County Central Landfill</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tracked and hauled away by SW to Yolo County landfill to be disposed at green waste pile.</td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td>Construction</td>
<td>Construction workers accumulate material in large dumpster at construction site.</td>
<td>Recycling center chosen by contractor</td>
</tr>
<tr>
<td></td>
<td>workers</td>
<td>Authorized hauler brings material to recycling center for disposal</td>
<td></td>
</tr>
<tr>
<td>Demolition</td>
<td>Third party</td>
<td>Third party contracted hauler brings demolition material to recycling center for disposal.</td>
<td>Recycling center chosen by contractor</td>
</tr>
<tr>
<td></td>
<td>contracted</td>
<td>Third party hauler brings demolition material to recycling center for disposal.</td>
<td></td>
</tr>
<tr>
<td>Landfill</td>
<td>Indoor:</td>
<td>User disposes in landfill bin and Custodial Services empties the bin into outdoor centralized dumpster.</td>
<td>Yolo County Central Landfill</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SW hauls landfill material to landfill for disposal.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Outdoor:</td>
<td>User disposes in landfill bin and Grounds empties landfill bin into nearby centralized dumpster.</td>
<td>Yolo County Central Landfill</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SW hauls landfill material to landfill for disposal.</td>
<td></td>
</tr>
</tbody>
</table>

**VIII. Metrics.**

Measurements and records are kept for each category in the above listing. The listed categories above are not exclusive. When possible, weights of collected material shall be collected and recorded into the annual campus diversion data to track progress. All material data shall be recorded in either tonnage or pound measurements.

The data shall be used to calculate the total diversion rate at the end of the fiscal year (July 01 – June 30). Waste Reduction and Recycling shall be responsible for collecting, consolidating and submitting campus-wide data to the University of California, Office of the President annually.
Metrics can be obtained through multiple methods:

A. Receipts or reports from recycling facilities or vendors at point of transaction.

B. Weights reported by campus departments responsible for materials collected.

Campus personnel submitting metrics, although methods vary widely, shall attempt to record data as accurately as possible.

IX. Time Period

This Solid Waste Management Policy shall be effective starting May 15, 2012 and will continue indefinitely until it is replaced by a revised version. Compliance with the stated goals shall be measured by the figures stipulated under the “Performance Metrics” section and shall be monitored by the relevant groups defined under “Responsible Parties.”

X. References and Related Policies

A. Office of the President: Policy on Sustainable Practices

B. Policy and Procedure Manual (http://manuals.ucdavis.edu/PPM/about.htm):
   2. Section 350-10, Procurement Authority.
   4. Section 350-25, Procurement Through the Purchasing Department.
   5. Section 350-80, Disposition of Excess and Surplus Property.

C. Online Resources
   1. Waste Reduction and Recycling at UC Davis
   2. UCD Student Housing Waste Diversion
UC Davis Campus  
Building Exterior and Hardscape Management Plan  
April, 2012

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Related Document:  SSc2RunTime2012.xls
SECTION 1: SCOPE

This plan provides guidelines for maintaining the performance of the building exterior and hardscape at the UC Davis Campus. This plan covers the entire building exterior and hardscape at the project site. Annexes to this plan cover building and vendor specific information as necessary to meet the requirements outlined in the Leadership in Engineering and Environmental Design (LEED) Program.

SECTION 2: GOALS

- To minimize the impact of site management practices on the local ecosystem
- To reduce the exposure of building occupants and maintenance personnel to potentially hazardous chemical, biological, and particle contaminants.

The Plan addresses environmental best practices for:
- Maintenance equipment
- Cleaning of building exterior
- Paints and sealants used on the building exterior
- Cleaning of sidewalks, pavement and other hardscapes.

SECTION 3: RESPONSIBLE PARTIES

The Sr. Superintendent Campus Planning and Community Resources Supervisor with support from the Facility Management Superintendent, is responsible for developing and managing the implementation of the Building Exterior and Hardscape Management Plan. The Sustainability Manager assists with documenting sustainability criteria for equipment and best practices.

<table>
<thead>
<tr>
<th>Function</th>
<th>Primary Contact</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sr. Superintendent Campus Planning and Community Resources</td>
<td>Cary Avery</td>
<td>(530) 752-4206</td>
</tr>
<tr>
<td>Superintendent Facilities Management</td>
<td>John Zertuche</td>
<td>(916) 752-6806</td>
</tr>
<tr>
<td>Sustainability Manager</td>
<td>Allen Doyle</td>
<td>(530) 752-2075</td>
</tr>
</tbody>
</table>

Contractors involved with various elements of the Plan shall carry out their tasks according to their contracts and report all relevant activities to the aforementioned parties. On occasion, several contractors may be engaged simultaneously in various elements of the plan at the building and grounds. To ensure an effective and coordinated effort, the building staff responsible for overseeing the Plan shall review all proposed activities before implementation.

Building exterior and hardscape management strategies for the entire property shall include actions performed by the following contractors:

<table>
<thead>
<tr>
<th>Function</th>
<th>Company Name</th>
<th>Primary Contact</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>window, roof and gutter cleaning; building power wash</td>
<td>John Prychodzko, Owner</td>
<td>Universal Window Cleaning</td>
<td>916-363-2626</td>
</tr>
</tbody>
</table>
SECTION 4: QUALITY CONTROL PROCESS

The responsible party (ies) shall periodically evaluate the success of the Plan. This evaluation may include producing and providing a report on an annual basis to senior management. Whenever possible, the annual report shall include an evaluation of the performance, safety, cost and environmental and public health benefits achieved as a result of its implementation.

Prior to implementation, service providers involved in the building exterior and hardscape management program shall submit all proposed activities to the responsible parties listed in Section 3, either through detailed contractual language or addenda that establish protocols and products that will be used onsite. Contract language shall reflect the service providers’ duties as they relate to this Plan. Environmental best practices described below are incorporated into vendor contracts and SOP language as appropriate. Upon reviewing proposed activities, the responsible parties shall determine if the activities meet the criteria of the Plan and shall approve or deny action.

The responsible parties listed in Section 3, shall regularly communicate with all service providers, and conduct regular site inspections and evaluations to ensure that the Plan is in place and functioning as intended. In addition to ongoing quality control measures, the responsible parties will review all practices and products prior to contract renewal (typically annually) to identify opportunities for improvement and expansion of environmentally friendly practices.

SECTION 5: MAINTENANCE METHODS AND PERFORMANCE METRICS

Generally, manual methods of grounds management, electric equipment, or equipment with noise and emission controls shall be used in lieu of fossil-fuel-powered machinery, whenever possible, to reduce soil compaction, and noise and air pollution produced by gas-powered equipment.

PERFORMANCE METRICS
Successful implementation of this plan relating to maintenance equipment will be determined by evaluating the portion (percentage) of equipment runtime during which sustainable equipment is in use relative to non-sustainable equipment. Runtime logs and repair logs of major equipment currently provide estimates of all equipment usage, and will continue to do so into the future. For smaller equipment such as manual tools (rakes, shovels, etc.) and small motorized tools (chainsaws, pruners, etc) runtime estimates are necessary because use logs would burden groundskeepers and managers unnecessarily, and the logs would still likely be inaccurate. The percentage inventory of sustainable equipment for each category is multiplied by runtime estimates and added into total runtimes. On this campus both the inventory and runtime calculations are about the same and greatly exceed 40%.

PRACTICES TO OPTIMIZE SITE MAINTENANCE EQUIPMENT
- When power equipment must be used, electric equipment (battery or corded), instead of conventional gas-powered equipment, shall be used wherever practical. This measure will reduce the fossil fuel use and greenhouse gas emissions produced by conventional equipment.
  - When feasible, electrical equipment will be purchased when new equipment is needed.
- Mulching mowers shall be used on turf areas and shall return clippings back into the lawn to recycle nutrients.
- Low-smoke oil shall be used in all maintenance equipment.
- For equipment with two-cycle engines, models with advanced design features—such as direct fuel-injection engines and exhaust power valves—shall be used to reduce emissions, improve fuel efficiency, and decrease oil consumption compared to conventional two-cycle engines.
- During the annual site cleanup in the spring, maintenance personnel shall manually prune winter-killed plants; sweep parking lot curbs, turf areas, and corners by hand; and rake turf areas to remove debris as necessary. Manual landscape maintenance reduces the need for powered machinery and the demand for fossil fuels.
- Shrubs and ornamental trees shall be manually pruned.
- All mower blades will be sharpened until a new blade is required per the manufacturer’s specifications. Belts, bearings, and bushings shall be inspected according to the manufacturer’s specifications and changed as needed.
- Oil and filters on all equipment will be changed periodically based on equipment run/usage time and manufacturer’s specifications. All used oil shall be recycled.

**APPROVED EQUIPMENT LIST**
A list of all approved equipment is located in Annex A of this plan and updated on an annual basis. The equipment listed is approved for use onsite. Equipment beyond that listed here must be submittal for approval prior to use onsite.

<table>
<thead>
<tr>
<th>Building Cleaning and Maintenance Activity</th>
<th>Performance Metric</th>
<th>Implementation Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance Equipment Use</td>
<td>Percent of equipment usage by sustainable equipment as per equipment run-time</td>
<td>Utilize sustainable equipment 40% of the time</td>
</tr>
</tbody>
</table>

**SECTION 6: HARDSCAPE MAINTENANCE**

Hardscape maintenance shall be performed in a manner that minimizes the environmental impact of power equipment and cleaning chemicals.

**PERFORMANCE METRICS**
The practices listed below shall be implemented to the extent noted in the table. Where less than complete adoption occurs, the performance metrics indicated will be used to gauge performance against the implementation target.

<table>
<thead>
<tr>
<th>Site Management Products/Materials</th>
<th>Performance Metric</th>
<th>Implementation Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power washing equipment will be utilized with water only. If chemicals are added 100% water reclamation must be implemented.</td>
<td>Percent of equipment usage with water only</td>
<td>Utilize pressure and water 90% of the time</td>
</tr>
<tr>
<td>EQc3.4–3.6: Compliant Chemicals</td>
<td>Percent of applicable chemicals purchased based on cost which are compliant with sustainability criteria</td>
<td>90%</td>
</tr>
</tbody>
</table>
PRACTICES TO OPTIMIZE HARDSCAPE MAINTENANCE

- Hardscape cleaning is primarily performed with power sweepers and manual tools to maintain the walkways, pavement, and other hardscapes. The limited use of gas-powered equipment conserves fossil fuels and minimizes greenhouse gas emissions.
  - The Green Machine Sweeper will be utilized on all main walkways and sidewalks to the maximum extent possible when manual sweeping is not feasible.
  - Sidewalks will be accomplished with steam and pressure only to eliminate chemical use.
- Prior to use onsite, all chemical products shall be submitted to John Zertuche, Superintendent, Facilities Management for review and approval.
  - Chemical use for hardscape maintenance shall be minimal and, when necessary, should be based on products or practices that conserve water and utilize biodegradable, low-impact cleaning products. Environmentally safe cleaners prevent harmful chemical runoff and water pollution.
- When applicable, the minimum amount of cleaning product that is effective shall be used on the hardscape and shall meet the requirements of IEQc3.4–3.6: Green Cleaning, Sustainable Cleaning Products and Materials.
- If chemicals are utilized 100% water reclamation must be implemented.

SECTION 7: BUILDING EXTERIOR CLEANING

Exterior building cleaning and maintenance activities shall be performed to minimize the environmental impact of chemical pollutants. Toxic exterior maintenance products shall be eliminated and water and pressure should be utilized to the maximum extent possible.

PERFORMANCE METRICS

The practices listed below shall be implemented to the extent noted in the table. When less than complete adoption occurs, the performance metrics indicated will be used to gauge performance against the implementation target.

<table>
<thead>
<tr>
<th>Building Cleaning and Maintenance Activity</th>
<th>Performance Metric</th>
<th>Implementation Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleaning of building exterior and windows will be accomplished with a pressure washer and water. If chemicals are needed, follow the guidelines below</td>
<td>Percent of equipment usage with water only</td>
<td>Utilize pressure and water 90% of the time</td>
</tr>
<tr>
<td>EQc3.4–3.6: Compliant Chemicals</td>
<td>Percent of applicable chemicals purchased based on cost which are compliant with sustainability criteria</td>
<td>90%</td>
</tr>
</tbody>
</table>
PRACTICES TO OPTIMIZE BUILDING EXTERIOR CLEANING

- Suppliers shall provide Material Safety Data Sheets (MSDS) and Technical Bulletins for all exterior maintenance products. In case of emergency, each MSDS shall be easily accessible for reference.
- Prior to use onsite, all chemical products shall be submitted to John Zertuche, Superintendent, Facilities Management for review and approval.
- Window washing shall be performed with water and the pressure washer. If a chemical is needed, cleaning products must meet one or more of the following standards for the appropriate category:
  - Green Seal GS-37, for general-purpose, bathroom, glass and carpet cleaners use for industrial and institutional purposes
  - Environmental Choice CCD-110, for cleaning and degreasing compounds
  - Environmental Choice CCD-146, for hard surface cleaners
  - Environmental Choice CCD-148, for carpet and upholstery care
- Product types not covered by Green Seal or Environmental Choice shall comply with the California Code of Regulations maximum allowable VOC levels for the appropriate cleaning product category. This requirement will limit the opportunities for environmental exposure to harmful chemicals.
- Cleaning and maintenance personnel shall be properly trained in the use, maintenance, and disposal of exterior cleaning chemicals and equipment.

SECTION 8: PAINTS AND SEALANTS

All exterior paints and sealants shall be low-VOC, environmentally friendly products.

PERFORMANCE METRICS

This Plan shall govern all components of exterior painting and sealing at the project building. The practices identified in this Plan shall be wholly adopted and used in 100% of building exterior painting and sealing activities on UC Davis.

<table>
<thead>
<tr>
<th>Painting or Sealing Products</th>
<th>Performance Metric</th>
<th>Implementation Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Follow guidelines below</td>
<td>Performance will be assessed by analyzing the percentage of products meeting the sustainability criteria listed above purchased for use as paints, sealants, adhesives and sealants used as filler.</td>
<td>90% purchased items meeting the sustainable criteria</td>
</tr>
</tbody>
</table>

PRACTICES TO OPTIMIZE THE USE OF ENVIRONMENTALLY PREFERRED PAINTS AND SEALANTS

- UC Davis shall incorporate VOC limits for paints and sealants in contractor bid documents to ensure that external entities working onsite follow the requirements.
- All paints and sealants employed on the exterior of UC Davis Buildings are required to be low-VOC and environmentally friendly products.
- Adhesives and sealants must have a VOC content less than the current VOC content limits of SCAQMD Rule #1168.
- Sealants used as fillers must meet or exceed the requirements of the Bay Area Air Quality Management District Regulation 8, Rule 51.
- Paints and coatings must have VOC emissions not exceeding the VOC and chemical component limits of Green Seal's Standard GS-11 Requirements.
- A complete list of sustainability criteria related to paints, sealants and adhesives can be found in Appendix B.

SECTION 9: ENVIRONMENTAL BENEFITS OF IMPLEMENTED BEST PRACTICES

<table>
<thead>
<tr>
<th>Topics</th>
<th>Best Management Practices</th>
<th>Environmental Benefit Compared to Standard Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAINTENANCE</td>
<td>When power machinery must be used, the contractor shall use electric equipment (battery or corded) wherever practical instead of conventional gas powered equipment.</td>
<td>This measure reduces the fossil fuel use and green house gas emissions produced by conventional equipment.</td>
</tr>
<tr>
<td>EQUIPMENT</td>
<td>The Green Machine will be utilized on all large areas and walkways to clean debris.</td>
<td>This measure reduces the fossil fuel use and green house gas emissions produced by conventional equipment.</td>
</tr>
<tr>
<td></td>
<td>Mulching mowers shall be used on turf areas and shall return clippings back into the lawn and turf areas shall be hand weeded for crabgrass, dandelion and plantain broadleaf weeds.</td>
<td>Using mowers that return clippings into the lawn returns nutrients to the soil, minimizing the need for fertilizer. Hand-weeding reduces the use of herbicides and power equipment that emit harmful chemicals into the air and water.</td>
</tr>
<tr>
<td></td>
<td>Low-smoke oil shall be used in all maintenance equipment.</td>
<td>This measure minimizes the air pollution released by power equipment.</td>
</tr>
<tr>
<td></td>
<td>For equipment with two-cycle engines, the contractor shall use models with advanced design features, such as direct fuel injection engines and exhaust power valves.</td>
<td>This measure reduces emissions, improves fuel efficiency and decreases oil consumption compared to conventional two-cycle engines.</td>
</tr>
<tr>
<td></td>
<td>During the annual site cleanup in the spring, maintenance personnel shall manually prune winter killed plants; turf areas and corners by hand; and rake turf areas to remove debris as necessary.</td>
<td>Manual landscape maintenance reduces the need for pesticides, powered machinery and the demand for fossil fuels.</td>
</tr>
<tr>
<td></td>
<td>Shrubs and ornamental trees shall be manually pruned.</td>
<td>Manual landscape maintenance reduces the need for herbicides, powered machinery and the demand for fossil fuels.</td>
</tr>
<tr>
<td></td>
<td>All mower blades will be sharpened until a new blade is required per the manufacturer’s specifications. Belts, bearings, and bushings shall be inspected according to the manufacturer’s specifications and changed as needed.</td>
<td>Providing equipment maintenance according to the manufacturer’s specifications enhances the efficiency of equipment, thereby conserving energy and fuel and minimizing entire equipment replacements.</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th><strong>HARDSCAPE MAINTENANCE</strong></th>
<th>Oil and filters on all equipment will be changed periodically based on equipment run/usage time and manufacturer’s specifications. All used oil shall be recycled.</th>
<th>Regular oil changes and filter replacements reduce emissions. Recycling oil minimizes the use of fossil fuels.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grounds Keeping use only a power sweeper and manual tools to maintain the walkways, pavement and other hardscapes.</td>
<td>The limited use of powered equipment conserves fossil fuels and minimizes greenhouse gas emissions.</td>
<td></td>
</tr>
<tr>
<td>Chemicals are rarely used on site and when necessary, the vendor shall conserve water and utilize biodegradable and low-impact cleaning products whenever possible. If chemicals are needed, all products shall be submitted to John Zertuche, Superintendent, Facilities Management, for review and approval. 100% water reclamation will be used when any chemicals are added.</td>
<td>Environmentally-safe cleaners prevent harmful chemical runoff and water pollution. Water conserving equipment reduces the strain on finite water supplies.</td>
<td></td>
</tr>
<tr>
<td>When applicable, the minimum amount of cleaning products that is effective shall be used on the hardscape and shall meet the requirements of Indoor Environmental Quality Credit 3.3: Green Cleaning, Sustainable Cleaning Products and materials. If chemicals are needed, all products shall be submitted to John Zertuche, Superintendent, Facilities Management, for review and approval. 100% water reclamation will be used when any chemicals are added.</td>
<td>Limiting the amount of chemicals used on site protects vegetation and receiving waterways. Additionally, environmentally-safe cleaners prevent harmful chemical runoff and water pollution.</td>
<td></td>
</tr>
<tr>
<td>Water and steam will be utilized to clean walkways and sidewalks. If chemicals are needed, all products shall be submitted to John Zertuche, Superintendent, Facilities Management, for review and approval. 100% water reclamation will be used when any chemicals are added.</td>
<td>These requirements will limit the opportunities for environmental exposure to harmful chemicals.</td>
<td></td>
</tr>
<tr>
<td>Water and pressure will be utilized for exterior cleaning and window washing to the maximum extent possible. If chemicals are needed, all products shall be submitted to John Zertuche, Superintendent, Facilities Management, for review and approval. 100% water reclamation will be used when any chemicals are added.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
reclamation will be used when any chemicals are added. When needed, window washing cleaning products used on site shall qualify as low environmental impact products and shall comply with applicable Green Seal or Environmental Choice standards. Product types not covered by Green Seal or Environmental Choice shall comply with the California Code of Regulations maximum allowable VOC levels for the appropriate cleaning product category.

<table>
<thead>
<tr>
<th><strong>BUILDING EXTERIOR CLEANING</strong></th>
<th>Cleaning and maintenance personnel shall be properly trained in the use, maintenance and disposal of exterior cleaning chemicals and equipment.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>This measure ensures that in case of emergency, the MSDSs will be easily accessible for reference. This reduces the risk of harmful exposure to chemicals.</td>
</tr>
<tr>
<td></td>
<td>Only low-VOC paints and sealants shall be applied to the building exterior. Paints and sealants must comply with the VOC content limits of South Coast Air Quality Management District (SCAQMD) Rule #1168.</td>
</tr>
<tr>
<td></td>
<td>This measure will limit the opportunities for environmental exposure to harmful chemicals. VOCs contribute to the formation of smog as well as directly affecting the respiratory health of people. Selecting low-VOC products reduces or eliminates air pollutants.</td>
</tr>
<tr>
<td><strong>PAINTS AND SEALANTS</strong></td>
<td>Use approved products</td>
</tr>
<tr>
<td></td>
<td>Low VOC emissions and release into the water table.</td>
</tr>
</tbody>
</table>

**Annex A Equipment List**

See Spreadsheet UC Davis Exterior Equipment Sustainability Benefits and Runtime 2012
1. Adhesives and Sealants
Adhesives and sealants must have a VOC content equal to or less than the current VOC content of South Coast Air Quality Management District (SCAQMD) Rule #1168.

Sealants used as fillers will meet or exceed the requirements of the Bay Area Air Quality Management District Regulation 8, Rule 51.

**Table 1: South Coast Rule #1168 VOC Limits –Architectural Adhesives**

<table>
<thead>
<tr>
<th>Application</th>
<th>VOC Limit (g/L)</th>
<th>Application</th>
<th>VOC Limit (g/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indoor carpet adhesives</td>
<td>50</td>
<td>Carpet pad adhesives</td>
<td>50</td>
</tr>
<tr>
<td>Outdoor carpet adhesives</td>
<td>150</td>
<td>Wood Flooring adhesives</td>
<td>100</td>
</tr>
<tr>
<td>Rubber floor adhesives</td>
<td>60</td>
<td>Subfloor adhesives</td>
<td>50</td>
</tr>
<tr>
<td>Ceramic tile adhesives</td>
<td>65</td>
<td>VCT and asphalt tile</td>
<td>50</td>
</tr>
<tr>
<td>Drywall and panel adhesives</td>
<td>50</td>
<td>Cove base adhesives</td>
<td>50</td>
</tr>
<tr>
<td>Multipurpose construction</td>
<td>70</td>
<td>Structural glazing</td>
<td>100</td>
</tr>
</tbody>
</table>

**Table 2: South Coast Rule #1168 VOC limits –Specialty Applications**

<table>
<thead>
<tr>
<th>Application</th>
<th>VOC Limit (g/L)</th>
<th>Application</th>
<th>VOC Limit (g/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVC welding</td>
<td>285</td>
<td>CPVC welding</td>
<td>270</td>
</tr>
<tr>
<td>ABS welding</td>
<td>400</td>
<td>Plastic cement welding</td>
<td>250</td>
</tr>
<tr>
<td>Adhesive primer for plastic</td>
<td>250</td>
<td>Contact adhesive</td>
<td>80</td>
</tr>
<tr>
<td>Special purpose contact adhesive</td>
<td>250</td>
<td>Structural wood member adhesive</td>
<td>140</td>
</tr>
<tr>
<td>Sheet applied rubber lining</td>
<td>850</td>
<td>Top and trim adhesive</td>
<td>250</td>
</tr>
</tbody>
</table>

**Table 3: South Coast Rule #1168 VOC limits –Substrate-Specific Applications***

<table>
<thead>
<tr>
<th>Application</th>
<th>VOC Limit (g/L)</th>
<th>Application</th>
<th>VOC Limit (g/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metal to metal</td>
<td>30</td>
<td>Plastic foams</td>
<td>50</td>
</tr>
<tr>
<td>Porous material (except wood)</td>
<td>50</td>
<td>Wood</td>
<td>30</td>
</tr>
<tr>
<td>Fiberglass</td>
<td>80</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* If an adhesive is used to bond dissimilar substrates together, the adhesive with the highest VOC content must fall within the policy guidelines.
Sustainable Purchasing Policy
SECTION 1: POLICY SCOPE

This policy applies to the sustainable purchasing for UC Davis - Student Housing that includes the Cuarto, Segundo and Tercero Housing Areas.

This policy applies to sustainable purchasing of the following types of products:
- Ongoing Consumables.
- Durable goods
- Building materials used in facility alterations and additions
- Mercury-containing lamps

Food and beverages are not included in the scope of this policy.

SECTION 2: POLICY GOALS

To purchase ongoing consumables in a manner that will:
- protect the environment and public health
- conserve natural resources
- minimize waste, including landfilling and incineration, and reduce toxicity

SECTION 3: PERFORMANCE METRIC

Sustainable Purchasing of Ongoing Consumables

The term “ongoing consumables” refers to low-cost-per-unit materials that are regularly used and replaced through the course of daily business operations. These products may include, but are not limited to: printing and copying paper, notebooks, envelopes, business cards, sticky notes, paper clips, toner cartridges, and batteries. UC Davis - Student Housing’s goal is that at least 40% of the cost of goods purchased will comply with one or more of the following criteria:
- Contains at least 10% post-consumer and/or 20% post-industrial material
- Contains at least 50% rapidly renewable material (e.g., bamboo, cotton, cork, wool)
- Contains at least 50% materials harvested and extracted and processed within 500 miles of the facility
- Consists of at least 50% Forest Stewardship Council (FSC)-certified paper products
- Rechargeable batteries

UC Davis - Student Housing acknowledges the value of purchasing sustainable products and requires that vendor(s) support that effort when appropriate and/or possible. UC Davis - Student Housing requests that vendor(s) notify them of recycled content and reduced packaging options or alternative products that would comply with the above specifications. Nothing contained in this policy shall be construed as requiring UC Davis - Student Housing to procure products that do not perform adequately for their intended use, exclude adequate competition, or are not available at a reasonable price in a reasonable period of time.

Sustainable Purchasing of Durable Goods

The term “durable goods” refers to higher-cost-per-unit materials that are replaced infrequently and/or may require capital outlays to purchase. These products may include, but are not limited to: office equipment (such as computers, monitors, printers, copiers, fax machines), appliances (refrigerators, dishwashers, water coolers), external power adaptors, televisions, and furniture. The purchasing criteria for these products fall into the following two categories.

Electronics and Appliances

UC Davis - Student Housing goal is that at least 40% of the cost of goods purchased will comply with one or more of the following criteria:
- Energy Star labeled products, when available
- Electronic Product Environmental Assessment Tools (EPEAT) rated products (at least bronze level)
- The equipment replaces conventional gas-powered equipment, i.e. maintenance equipment and vehicles
Furniture
UC Davis - Student Housing goal is that at least 40% of the cost of goods purchased will comply with one or more of the following criteria:

- Contains at least 10% post-consumer and/or 20% post-industrial material
- Contains at least 70% salvaged material from off-site or outside the organization
- Contains at least 70% salvaged material from on-site through an internal materials and equipment reuse program
- Contains at least 50% rapidly renewable material (bamboo, cotton, cork, wool)
- Contains at least 50% materials harvested, extracted and processed within 500 miles of the facility/site
- Consists of at least 50% Forest Stewardship Council (FSC) certified wood

UC Davis - Student Housing acknowledges the value of purchasing sustainable products and requires that vendor(s) support that effort when appropriate and/or possible. UC Davis - Student Housing requests that vendor(s) notify them of Energy Star and sustainable furniture opportunities that would comply with the above specifications, as well as reduced packaging options.

Sustainable Purchasing: Facility Alterations and Additions
This policy covers materials that are permanently or semi-permanently attached to the building itself in the course of facility renovations, demolitions, refits and new construction additions. These products may include, but are not limited to: building components and structures (wall studs, insulation, doors, windows), panels, attached finishes (drywall, trim, ceiling panels), carpet and other flooring materials, adhesives, paints and coatings. UC Davis - Student Housing goal is that at least 50% of the cost of goods purchased will comply with one or more of the following criteria:

- Contains at least 10% post-consumer and/or 20% post-industrial material
- Contains at least 70% salvaged material from off-site or outside the organization
- Contains at least 70% salvaged material from on-site through an internal materials and equipment reuse program
- Contains at least 50% rapidly renewable material (bamboo, cotton, cork, wool)
- Contains at least 50% materials harvested, extracted and processed within 500 miles of the facility/site
- Consists of at least 50% Forest Stewardship Council (FSC) certified wood
- Adhesives and sealants comply with SCAQMD rules governing allowable VOC content
- Paints and coatings comply with Green Seal's GS-11 requirements governing VOC emission levels
- Finished flooring is FloorScore-certified and constitutes a minimum of 25% of the finished floor area
- Carpet and carpet cushion meets the requirements of the Carpet and Rug Institute (CRI) Green Label Plus carpet testing program
- Composite panels and agrifiber products contain no added urea-formaldehyde resins

UC Davis - Student Housing acknowledges the value of purchasing sustainable products and require that vendor(s) support that effort when appropriate and/or possible. UC Davis - Student Housing requests that vendor(s) notify them of potential opportunities that would comply with the above specifications, as well as reduced packaging options.

Sustainable Purchasing: Toxic Material Source Reduction – Reduced Mercury in Lamps
UC Davis - Student Housing seeks to reduce the amount of mercury brought into all sites through purchase of lamps for the buildings and associated grounds. UC Davis - Student Housing goal is that at least 90% of the number of lamps purchased will meet the following overall mercury-content target:

- No more than 90 picograms of mercury per lumen-hour

UC Davis - Student Housing representatives acknowledge the value of purchasing low-mercury lamps and require that vendors support that effort when appropriate and/or possible. UC Davis - Student Housing requests that vendor(s) notify them of specific lamps and other opportunities that would comply with the above specifications, as well as reduced packaging options.

SECTION 4: PERFORMANCE EVALUATION
UC Davis - Student Housing and/or vendor will record and track purchases on a monthly basis. UC Davis - Student Housing personnel and/or vendor responsible for purchasing will report UC Davis - Student Housing’s purchases to the appropriate UC Davis - Student Housing representative using the provided Materials Purchasing Worksheet. Vendor is required to track and report UC Davis - Student Housing’s purchases monthly. Vendor will use UC Davis - Student Housing Materials Purchasing Worksheet or a UC Davis - Student Housing approved alternative reporting method. Vendor is prepared to report the manner by which each product purchase meets the following purchasing criteria. Whenever possible, UC Davis - Student Housing personnel should include an evaluation of the environmental and public health benefits achieved through sustainable purchasing of the goods described under Section (3).
SECTION 5: RESPONSIBLE PARTY

UC Davis Student Housing management shall implement this policy within UC Davis - Student Housing in coordination with other appropriate organization personnel, including but not limited to, UC Davis - Student Housing’s Purchasing Officer, UC Davis - Student Housing employees, parties purchasing materials on UC Davis - Student Housing’s behalf and/or companies contracted to provide goods to UC Davis - Student Housing.

Contact Information for Responsible Party:

<table>
<thead>
<tr>
<th>Name</th>
<th>Jenni Porter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Title</td>
<td>Sustainability Coordinator, Student Housing</td>
</tr>
<tr>
<td>Phone</td>
<td>530.752.2759</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:jeporter@ucdavis.edu">jeporter@ucdavis.edu</a></td>
</tr>
<tr>
<td>Responsibility</td>
<td>Compliance of purchases, purchase tracking</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Lourdes Gomez</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Title</td>
<td>Budget Manager, Student Housing</td>
</tr>
<tr>
<td>Phone</td>
<td>530.752.2655</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:lhgomez@ucdavis.edu">lhgomez@ucdavis.edu</a></td>
</tr>
<tr>
<td>Responsibility</td>
<td>Supervise purchases, oversee purchase tracking</td>
</tr>
</tbody>
</table>

SECTION 6: PROCEDURES AND STRATEGIES

This policy covers purchases that are within the building and site management’s control. UC Davis - Student Housing personnel may use any qualifying vendor to procure the products described in Section (3), and are encouraged to also consider the following areas of interest:

Packaging
UC Davis - Student Housing desires to reduce waste generated through daily operations and recognizes that such reduction begins with the material that enters each facility/site. UC Davis - Student Housing will request that all items purchased be packaged and delivered with minimal packaging material. UC Davis - Student Housing reserves the right to request that vendors alter the packaging of goods delivered, when appropriate and/or possible.

Recycled Content
UC Davis - Student Housing requests that all vendors provide recycled content options for goods when available. If a product is available with recycled content, vendor will disclose that option to the appropriate UC Davis - Student Housing representative. Recycled content targets may be overridden at the discretion of UC Davis - Student Housing representatives if certain products with recycled content present themselves as cost-prohibitive.

SECTION 7: TIME PERIOD

This policy shall take effect on March 1st, 2011 and shall continue indefinitely or until amended and/or replaced by a subsequent sustainable purchasing policy.
Water Efficiency
Economic Policy
Policy Overview

The purpose of this policy is to ensure that a water efficiency economic assessment is performed at any buildings managed by UC Davis Student Housing for any future water fixture upgrades and that water use reduction strategies are explored.

Scope

This plan applies to all indoor potable water fixtures and fittings within any buildings managed by UC Davis Student Housing including, but not limited to, residence halls, offices, apartments, and dining facilities.

Goals

This policy mandates an economic assessment of conversion to high-performance plumbing fixtures and fittings as part of any future indoor plumbing renovations. Any replacement fixtures will meet or exceed the following UPC/IPC Standards and UC Davis Student Housing will strive to meet the following EPA WaterSense Standards wherever possible:

<table>
<thead>
<tr>
<th>Fixture</th>
<th>UPC/IPC Standards</th>
<th>EPA WaterSense Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Closet</td>
<td>1.6 GPF</td>
<td>1.28 GPF</td>
</tr>
<tr>
<td>Urinal</td>
<td>1.0 GPF</td>
<td>0.5 GPF</td>
</tr>
<tr>
<td>Public Lavatory Faucet</td>
<td>0.5 GPM</td>
<td></td>
</tr>
<tr>
<td>Private Lavatory Faucet</td>
<td>2.2 GPM</td>
<td>1.5 GPM</td>
</tr>
<tr>
<td>Kitchen/Janitorial Sink</td>
<td>2.2 GPM</td>
<td></td>
</tr>
<tr>
<td>Shower</td>
<td>2.5 GPM</td>
<td></td>
</tr>
</tbody>
</table>

Performance Metric

Water efficiency economic assessment shall be performed as part of any future indoor plumbing renovations, balancing economic analysis with water efficiency goals. Based on the USGBC LEED for Existing Buildings: Operations & Maintenance (LEED EB: O&M) water efficiency criteria and guidelines for performance measurement, UC Davis Student Housing has set a goal for a 20% reduction in indoor plumbing fixture and fitting potable water use from the LEED for Existing Buildings: O&M baseline.
Procedures and Strategies

Any water efficiency economic assessment will take into account the following first costs and operational savings:

1. Equipment costs
2. Installation labor
3. Water utility savings
4. Sewage utility savings
5. Potential maintenance costs
6. Hot water energy savings

Performance Evaluation

The best management practices described in this plan will be evaluated annually for compliance and the outcome submitted to senior management.

Responsible Parties

The Assistant Director for Maintenance Services and the Sustainability Coordinator are responsible for developing and managing the implementation of this policy.

<table>
<thead>
<tr>
<th>Title</th>
<th>Contact</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistant Director, Maintenance Services</td>
<td>Clyde Froehlich</td>
<td>530-752-4265</td>
</tr>
<tr>
<td>Sustainability Coordinator</td>
<td>Patrice Stafford</td>
<td>530-752-2759</td>
</tr>
</tbody>
</table>

Time Period

This policy was formally adopted on January 1, 2011 and will remain in place, with amendments and revisions, unless stated otherwise.