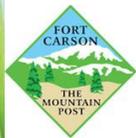


# BUILDING 1118

## SUSTAINABILITY ACTION PLAN

Project by Sustainable Fort Carson and Fort Carson Directorate of Public Works



**SUSTAINABLE  
FORT CARSON**  
RIGHT ACTIONS. RIGHT NOW!



Energy & Water Resources



Sustainable Transportation



Air Quality



Sustainable Development



Sustainable Procurement



Zero Waste



Sustainable Training Lands



# Acronym Dictionary

ACOM	Army Command
AT/FP	Anti Terrorism / Force Protection
CFC	Chlorofluorocarbon refrigerants
CPAC	Civilian Personnel Advisory Center
DA	Department of the Army
DGC	Deputy Garrison Commander
DoD	Department of Defense
DPW	Directorate of Public Works
EO	Executive Order
EMS	Environment Management System
EPA	Environmental Protection Agency
EPAS	Environmental Performance Assessment System
FMWR	Family, Morale, Welfare and Recreation
FMWRC	Family, Morale, Welfare and Recreational Command
FOUO	For Official Use Only
FY	Fiscal Year
GC	Garrison Commander
GHG	Greenhouse Gases
GIS	Geospatial Information System
HQDA	Headquarters Department of the Army
HVAC	Heating, Ventilating and Air Conditioning
IMCOM	Installation Management Command
IMCP	Installation Campaign Plan
LED	Light-emitting diode
LEED	Leadership in Energy and Environmental Design
LEED-EB	LEED-Existing Building
LEED-NC	LEED-New Construction
LEED-ND	LEED-Neighborhood Development
MWR	Morale, Welfare and Recreation
NGO	Non-Governmental Organizations
PAIO	Plans, Analysis and Integration Office
PAO	Public Affairs Office
POC	Point of Contact
POV	Privately Owned Vehicle
QC	Quality Control
SOV	Single-Occupant Vehicle
USACE	US Army Corps of Engineers
USO	United Services Organization

# Table of Contents

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1. Objectives of Document and Survey	4
2. Process	8
3. Recommendations	9
A. Energy & Water Resources	10
B. Sustainable Transportation	16
C. Air Quality	18
D. Sustainable Development	20
E. Sustainable Procurement	22
F. Zero Waste	24
4. Priorities	26
A. FY 2011	26
B. FY 2012	27
C. FY 2013—FY2015	28
Appendix A: Survey Results	30
Appendix B: Comments Generated from Survey	40

# Objectives of Document & Survey

## Project Description:

The purpose of this project is to provide a model for existing buildings at Fort Carson to become more efficient in terms of energy, water, waste and transportation. This project will be administered by John Olson, a contractor to Sustainable Fort Carson, who will provide an internet-based survey followed up with an optional interview of the building occupants regarding day-to-day routines in the building and comfort levels at existing conditions. The document will serve as a resource for the building energy monitor and the occupants of the building. Occupants will also have a quick guide for maximizing energy efficiencies, therefore reducing costs to produce energy to power their work spaces and applicable spaces outside of Fort Carson, such as private residences. Findings for building improvements will be provided to the Garrison Commander and the Directorate of Public Works (DPW) for execution in accordance with required procedures.

## Letter to Building 1118 Occupants (Wednesday, October 6, 2010):

Dear Building 1118 Occupants

This is your chance to tell me what you think about life in Building 1118.

Sustainable Fort Carson, in partnership with DPW, is conducting a survey of all building occupants.

Directors, please forward this email to your staff, and ask that they complete it today.

It takes just a few minutes.

We want to hear from everyone. Your valuable feedback will help us understand your needs as building occupants, so that we can make Building 1118 as pleasant and comfortable for you as possible, while meeting our sustainability goals.

Please cut and paste the following link into your web browser:

<http://www.surveymonkey.com/s/GZP75GY>

If you prefer to have the interview conducted in person, please contact John Olson, Sustainable Fort Carson, [john@johnwolson.com](mailto:john@johnwolson.com) directly.

Thank you!

Colonel Robert F. McLaughlin

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Building 1118 Sustainability Internet Survey Questions:

**General Information**

Please select the most appropriate response from your experiences.

1. Please enter your office room number:
  
2. Which of the following best describes your personal workspace?
  - A. Enclosed office, private
  - B. Enclosed office, shared with other people
  - C. Cubicle space
  - D. Workspace in an open office with no partitions

Optional Comments: \_\_\_\_\_

**Satisfaction Levels**

Please rate the following based on your level of satisfaction.

1. Please Rate Your Comfort Satisfaction Levels in your Personal Workspace (Scale 1-5; 1 =Unsatisfied; 3=Neutral; 5=Satisfied)
  - A. Temperature in Summer
  - B. Temperature in Winter
  - C. Cooling Policy of Thermostat Setting of 78°
  - D. Heating Policy of Thermostat Setting of 72°
  - E. Drafts from Open Windows
  - F. Overhead Light (Electric)
  - G. Ambient Light (Windows)
  - H. Light Glare
  - I. Visual Privacy



Optional Comments: \_\_\_\_\_

2. There are currently plans to install vacancy motion detectors in Building 1118. Please rate your level of favorability or opposition for this to occur. (The vacancy motion detector will automatically turn off the overhead lights when motion is not detected in a room for a duration of 15 or more minutes.) The energy savings per small office is estimated at approximately \$30 per year. (Scale 1 -5; 1 =Strongly Oppose; 3=Neutral; 5=Strongly in Favor)
  - A. Offices
  - B. Restrooms
  - C. Conference Rooms
  - D. Break Rooms
  - E. Hallways



Optional Comments: \_\_\_\_\_



3. Thermal Comfort Levels for Shared Spaces. (Scale 1-5; 1 =Unsatisfied Oppose; 3=Neutral; 5=Satisfied)

- A. Conference Rooms
- B. Hallways/Stairways
- C. Restrooms
- D. Overall Building

Optional Comments: \_\_\_\_\_



4. Lighting Satisfaction Levels for Shared Spaces (Scale 1-5; 1 =Unsatisfied; 3=Neutral; 5=Satisfied)

- A. Conference Rooms
- B. Hallways/Stairways
- C. Restrooms
- D. Overall Building

Optional Comments: \_\_\_\_\_



5. Other Building 1118 Items (Scale 1-5; 1 =Unsatisfied; 3=Neutral; 5=Satisfied)

- A. Availability/Quality of Shared Refrigerators
- B. Availability/Quality of Shared Coffee Makers
- C. Availability of Hot Water
- D. Availability of Cold Water
- E. Availability of Showers
- F. Availability and Type of Toilets/Urinals
- G. Hygiene Accommodations in Shared Spaces
- H. Building Stairs
- I. Bicycle Racks/Storage
- J. Recycling Accommodations

Optional Comments: \_\_\_\_\_

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## **Sustainable Transportation**

Please rate the following based on your experiences.

### **Definitions:**

**Car Sharing:** An Internet-based rental of a vehicle located in a designated parking space adjacent to the building by the hour.

**Bicycle Sharing:** An Internet-based or credit-card based rental of a bike or electric bike located adjacent to the building by the hour.

**Electric Bicycle:** A bicycle with an electric motor powered by a lithium-ion batter designated to go about 20 MPH, with a battery range of about 20 miles depending on the mix of pedaling and motor use.

1. Rate each of the following according to how likely you would use each in a way of decreasing single-occupant vehicle transportation on and off post. (Scale 1-5; 1 =Never; 3=Neutral; 5=Definitely)
  - A. Lunch Vendors In or Near Building 1118
  - B. Carpooling with Incentives
  - C. Carpooling without Incentives
  - D. Car Sharing
  - E. Bicycling
  - F. Bicycle Sharing
  - G. Electric Bicycle Sharing
  - H. Bus or Rapid Transit



Optional Comments: \_\_\_\_\_

2. How much would you be willing to pay to use/borrow the following? (Scale Options = \$0; \$1; \$3; \$5; \$8; \$10)
  - A. Preferred Auto parking with Carport Per Day
  - B. Bus/Shuttle Ticket (On-Post)
  - C. Bus/Shuttle Ticket (Colorado Springs Metro)
  - D. Bicycle Check-out Per Hour (Bike Share)
  - E. Electric Bicycle Check-out Per Hour (Bike Share)
  - F. Car Share Per Hour



Optional Comments: \_\_\_\_\_

3. I would like to schedule an interview with John Olson
  - A. Yes (Please provide an email address in the space below)
  - B. No

Email Address for Interview: \_\_\_\_\_

It is the responsibility of Fort Carson to meet the goals provided by Presidential Executive Orders. In particular, goals in EO13423 and EO 13514 that focus on energy and water sustainability measures. The goals were established for several reasons, yet primarily focused on economics, conservation and decreasing the country's dependence on foreign resources.

*Participation from the buildings estimated 120 occupants was very good, providing a 40% participation rate.*

Fort Carson's Garrison Commander, Colonel Robert McLaughlin with the guidance of Sustainable Fort Carson, established sustainability goals for Fort Carson with the intent of achieving the goals of EO 13514. The goals are Energy & Water Resources; Sustainable Transportation; Air Quality; Sustainable Development; Sustainable Procurement; Zero Waste; and Sustainable Training Lands. The Installation understand the impact that The Mountain Post's existing buildings and infrastructure have in the overall sustainable practices at Fort Carson. Building 1118, the home of the Garrison Commander, is a great opportunity to lead by example to achieve and measure successful retrofits.

The process in the development of the Building 1118 Sustainability Action Plan commenced with the creation of an occupant survey that was administered via internet to the building occupants. Participation from the buildings estimated 120 occupants was very good, providing a 40% participation rate. The survey asked for feedback on potential strategies and current satisfaction levels regarding comfort, sanitation and policies for Fort Carson buildings.

The results from the survey were analyzed as a major element in the creation of the following building strategies. The strategies were then again analyzed by the Sustainable Fort Carson Team and prioritized for implementation.

# Recommendations

The following are recommendations for Building 1118 modifications for energy efficiency and to improve the work environment of the building’s personnel. The items in bold are the strategy recommendations. The items in ***bold and italics*** are the recommendations identified in the appendix for the initial phases of implementation. The recommendations are categorized according to the most applicable goal of Sustainable Fort Carson. The Sustainability goals are as follows:

## **Energy & Water Resources**

Sustain all facility and mobility systems from renewable sources and reduce total water purchased from outside sources by 75% by 2027



## **Sustainable Transportation**

Reduce automobile dependency and provide balanced land use and transportation systems



## **Air Quality**

Reduce installation greenhouse gases (scope 1, 2 and 3) and other air pollutants to the lowest achievable emission rates



## **Sustainable Development**

Create a community that encourages social, civic and physical activity while protecting the environment



## **Sustainable Procurement**

All DoD and Fort Carson procurement actions support sustainability



## **Zero Waste**

Total weight of solid and hazardous waste disposed of is reduced to zero by 2027, and every year thereafter



## **Sustainable Training Lands**

Training ranges; maneuver lands; and associated air space capable of supporting current and future military training to standard while maintaining and sustaining training resources. *(This is the one goal for the purposes of this report that is not applicable).*



## Energy & Water Resources (EW)

According to the US Department of Energy: Buildings account for **40% of US Energy Consumption.**

According to the United States Department of Energy, buildings account for 40% of United States' Energy consumption. Many conditions contribute to this statistic, most of which are invisible to the building users. Water consumption is an ever-increasingly depleted resource in the United States, especially in the Mountain West region, where Fort Carson is located. Worldwide, buildings and building users consume 20% of the world's available water, according to the United Nations' Environmental Program. Fortunately, there are many opportunities to conserve water in a building like Building 1118.

**Sustainable Fort Carson Goal:** *Sustain all facility and mobility systems from renewable sources and reduce total water purchased from outside sources by 75% by 2027*



Belkin BG108000-04 Conserve Energy-Saving Surge Strip. Photo Source: Various Sources

“During summer, excessive Air Conditioning was being used to cool public areas like stairways and hallways too much.”

~ Respondent # 1

EW 1.0: ***Consider a Building Policy to Require Individual Office/Departments to Purchase and Use Belkin BG108000-04 Conserve Energy-Saving Surge Strip***

The surge strip has been promoted by IMCOM for energy savings when devices are plugged in and not being used. The mechanics of the device provide two outlets that remain on while the remaining outlets can be turned off manually or automatically turn off for 11 hours. This is helpful for non-essential devices such as computer monitors, printers and copy machines.

EW 2.0: ***Add Vacancy Detectors to the Lights for All Areas in Building 1118 with exception to Emergency Lights***

Vacancy motion detectors are planned to be installed for all offices, restrooms and conference rooms in Building 1118. Major savings are projected from this in Energy as many lights are unintentionally left on. The plans for the retrofit include an override switch to turn the lights off and vacancy detectors to be installed on the ceiling for unimpeded visibility of movement. (LEED EB—SS 8)



- EW 3.0: **Mitigate the Air Opening in the Building's Entrance Vestibule**  
 The primary entrance to Building 1118 has heating issues in its vestibule. This appendage to the building has apparently caused problems with the fire protection system. The building manager, Alice Doyle, was told to keep the heat on in the vestibule causing a very warm environment and excessive heating. Upon further investigation, it was noticed that there openings in the door of 1-inch or greater causing unnecessary heat loss/gain from the opening.
- EW 4.0: **Add Signage at All Thermostats in Shared Spaces**  
 Air Conditioning has been abused for some of the hallways, stairways, and other shared spaces in Building 1118. Education is the key component for the thermostats. A small sign shall be located above each of the thermostats stating the building policies.
- EW 5.0: **Seal All Windows in Building 1118**  
 Heat gain and loss is a primary contributor of increased energy costs. Windows should be sealed to decrease the heat gain and loss along with small particulates. This should be checked and re-sealed as necessary annually.
- EW 6.0: **Add Energy Film Insulation to the Windows Between the Months of November and March**  
 Energy film insulation is an easy, cost-effective improvement to decrease heat loss from the building envelope. Products for window film are available that are reusable and should be utilized for the windows in the building.
- EW 7.0: **Revise the Maintenance Standard, for Interior Illumination**  
 Interior light fixtures provide an excessive amount of illumination at their current state when all lamps are functioning. The maintenance standard should decrease the amount of lamps accordingly while maintaining the US Army lighting level standard of 50 foot candles at the desktop, 30 foot candles in other work areas and 10 foot candles in hallways.

“I am forever freezing at work... When you're the only one who is freezing, you lose. Recommend DPW control all thermostats so individuals can't deviate from the policy. What a waste of money!”  
 ~ Survey Respondent #22



Infrared Imaging of an unsealed window. Photo Source: [www.detect-a-leak.co.nz](http://www.detect-a-leak.co.nz)



The use of additional heating sources are commonly used to offset an excessively used air conditioner. Photo Source: [www.cartoonaday.com](http://www.cartoonaday.com)

Worldwide, buildings consume 20% of the world's available water according to the United Nations Environmental Program.



Aerators are quick, cheap retrofits that can save several gallons of water each year. Photo Source: [www.water2money.com](http://www.water2money.com)

- EW 8.0: **Evaluate Plug Loads for the Building**  
Plug loads in Building 1118 should be evaluated for improvements. There is an assumption that there are unnecessary and duplicated appliances throughout the building that could be shared for greater efficiencies. Examples of non-compliant appliances include coffee makers and space heaters.
- EW 9.0: **Monitor Energy Meters in Building**  
Measurements should be monitored between Building 1118 before and after implementation. In addition, measurements should be measured against the adjacent building, Building 1117. (LEED EB—EA 3.1—3.3)
- EW 10.0: **Provide a Blower Door Test for Building**  
A Blower Door Test can identify air leaks in the building. Energy loss from heat gain and loss can account for a large amount of energy in a building. This also has the tendency for discomfort of occupants who may sit near area where leakage occurs.
- EW 11.0: **Replace Restroom Fixtures and Aerators in the Building with Low-flow Devices**  
Typical Sink Aerators provide two or more gallons per minute. Retrofitted low-flow aerators should provide no more than one gallon per minute of water. Showerhead fixtures, where applicable, should also be replaced with low-flow shower head fixtures.
- EW 12.0: **Replace the Building's Emergency, Task and Spotlight Fixtures with LED's**  
Light-emitting diode (or LED) lighting technology has the greatest efficiency and longest life of current lighting technologies. LED's are best used for task lighting, spotlighting, emergency lighting or for difficult to reach fixtures for maintenance reasons.
- EW 13.0: **Retrofit Buildings' Toilets to Dual—Flush Capabilities**  
Building 1118's non-urinal toilets are currently flushing 1.6 gallons of water per flush. Dual-flush capabilities should be added to the toilets in the Women's Restrooms and the Men's Restroom on the east side of the 3rd Floor. (LEED EB—WE 2.1—2.3)



EW 14.0: **Increase the Solar Reflectivity Index of the Buildings Dark Roof to Minimize Heat Gain**  
By using one of, or a combination of, the following strategies of roof material remediation, the building's heat gain can be decreased. Each method of roof material retrofit varies in installation and maintenance costs. (LEED EB—SS 7.2)

The following list of alternatives that can be used exclusively or in conjunction with others.

- A. Add White Rock to the Roof (3 Inches Thick). White Rock provides a high-albedo, or high reflectivity to the roof reflecting the majority of the roof's heat.
- B. Replace the dark materials on the surface of the roof with white materials.
- C. Provide large canopy plant material with minimal footprints in containers on top of the roof. This will provide an additional level of shade to the roof, decreasing the heat gain in the building. Access for maintenance is a concern for plant material on the roof.

EW 15.0: **Replace Existing Windows and Exterior Doors with Energy Star Rated Replacements**  
To decrease heat loss/gain, the outdated windows and doors at Building 1118 should be replaced with Energy Star-rated replacements. Many of the windows in the building are out of alignment making it difficult to open and close windows. For all non-north facing windows, the replacement windows should also provide glare control.

EW 16.0: **Consider the Replacement of High Water-Use Plant Material Outside Building 1118**  
The landscape at Building 1118 has been modified in recent years where a decrease in turf was accomplished. However, Building 1118 still includes approximately 6,200 square feet of Kentucky Bluegrass. Considerations should be made to replace portions of the Kentucky Bluegrass with Blue Grama Grass as a trial and example for Fort Carson installations. Blue Grama is a low-water use turfgrass which creates a full groundcover that can be mowed or remain in its native state. (LEED-EB—SS5; WE 3.1—3.3)



A dark colored roof can be covered with a white surface with high reflectivity resulting in decreased energy loss from heat gain. *Photo Source: www.akarienergy.com*

*“Note: MCR is in need of window replacement. All the windows in Building 1118 are of poor quality and need to be upgraded.”*

*~ Survey Respondent #40*

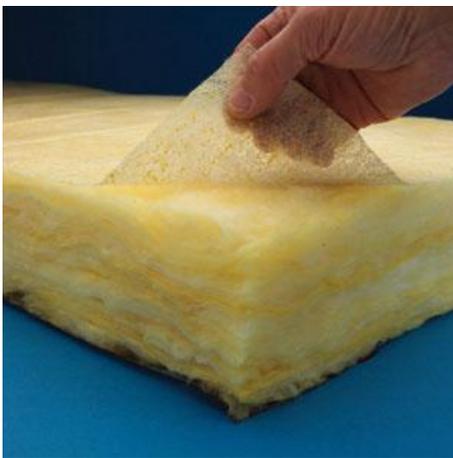


Blue Grama Grass makes for a great lawn and requires significantly less water than Kentucky Blue Grass. *Photo of Hacita Blue Grama Grass Source: High Country Gardens*

“Desk lighting should be required. Persons who are 60 years of age require 8 times more lighting than someone 25 years of age.”  
 ~ Survey Respondent #31



There are approximately 19,700 square feet on the roof of Building 1118. *Photo Source:*



Additional insulation within the building envelope decreases heat loss/gain. *Photo Source:* [www.mustknowhow.com](http://www.mustknowhow.com)

**EW 17.0: Replace the Existing Water Heater Instantaneous Water Heater (s)**  
 Savings in both water and energy can be accomplished with the replacement of the water heater with one or more instantaneous, or tankless, water heaters. A large instantaneous water heater can replace the existing water heater. Another option is to use individual water heaters for the sinks and showers. The disadvantage to this strategy is the increased locations of routine maintenance for the water heaters.

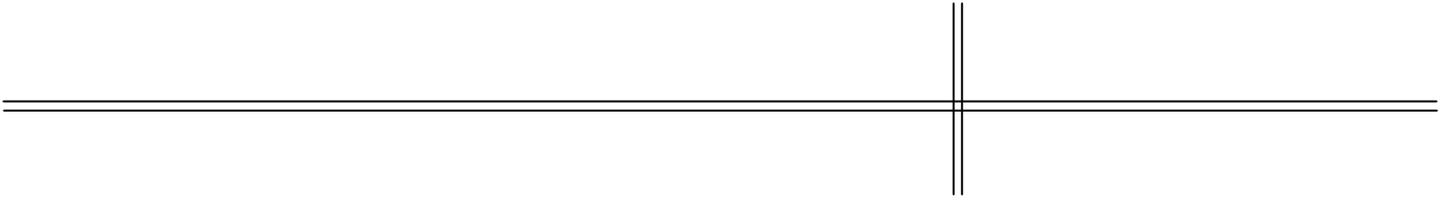
**EW 18.0: Commence a Program for the Addition of Task Lighting**  
 LED Task lighting should be provided for those occupants who request task lights. Solicitation to request task lighting should be offered after the vacancy detector system has been in effect for a minimum of one month. (LEED EB— EQ 2.2)

**EW 19.0: Consider the Use of the Building’s Roof as a Source of Real Estate for Renewable Energy**  
 As the supply of land at Fort Carson becomes increasingly low, consider utilizing the roofs of the Installation’s buildings for renewable resources such as Solar and Wind. (LEED EB— EA 4.1—4.4)

**EW 20.0: Consider Downgrading the Size of HVAC Equipment**  
 Typically HVAC Equipment is oversized which accounts for additional run time. Recommendation is to keep this in mind if and when the existing HVAC equipment needs replaced.

**EW 21.0: Consider Additional Insulation**  
 Similar to sealing windows, additional insulation assists in maintaining temperature levels within the building envelope by minimizing heat loss/gain. This strategy is low on the list of priorities due to the complexities in the replacements of the building insulation.





# Sustainable Transportation (T)

In the U.S., the transportation sector accounts for approximately 33% of total CO2 emissions from fossil fuel combustion. (EPA)



Yield Signs at Intersections assist in the safety of the pedestrians on Post. Photo Source: [www.mysafetylabels.com](http://www.mysafetylabels.com)

An EPA-conducted Inventory in 2007 shows that the transportation sector accounts for approximately 33% of the total carbon dioxide emissions from fossil fuel combustion. The EPA report states that this is the largest percentage of any end-use economic sector in 2007. This sector is broad in its inclusion including diesel fuel in heavy-duty vehicles and jet fuels in aircrafts, however 60% of the total is from gasoline consumption from personal vehicles. The following strategies are intended to decrease the dependence on the personal vehicle.

**Sustainable Fort Carson Goal:** *Reduce automobile dependency and provide balanced land use and transportation systems*

- T 1.0: ***Consider 'Yield for Pedestrians' Signs at the Intersection of Long Street and Wetzel***  
The pedestrian safety at the intersection of Long Street and Wetzel Street is a priority that should be alleviated. Stop Signs were previously located at this intersection, prior to the one-way conversions, allowing the pedestrian to safely cross the street. Considerations should be made for signage at this intersection that encourage vehicles to yield for the pedestrian.
- T 2.0: ***Create a Convenient System to Enable Carpooling***  
Provide an accessible carpooling map for the occupants of Buildings 1118 and 1117. The map should identify the location of the building occupants residences, at least for those who desire to participate. The map could be available via internet or as a physical printed map with pins indicating location of residences.
- T 3.0: ***Consider an Alternative Fuel Shuttle System at Fort Carson***  
Consider a fleet of vehicles that can travel in a fixed route loop that makes frequent stops (every 15 minutes) at a predictable schedule decreasing the dependence on the single-occupant vehicle (SOV). The former downtown Colorado Springs shuttle system, DASH, is a good model. The shuttle should make, at an absolute minimum, stops at two gates of Fort Carson. In lieu or partnership of a shuttle, consideration should be given to soliciting a privately-funded taxi service on Post.



T 4.0: **Consider a Car Sharing Program**  
A car sharing program should be considered initially with one or two destination locations from typical building users. Destinations could be the Elkhorn Conference Center and Building 1219, the new DPW Building. (LEED EB—SS4.1-4.4)

T 5.0: **Provide Bicycle Racks for Building 1118**  
Bicycle Racks should be provided in a location where users perceive as a safe location for bicycle storage. The location should be covered with a paved ground plane (pervious or impervious), well-lit, and visible to adjacent building occupants. In an ideal situation, the bicycle storage area should provide electrical outlet access for charging capabilities for the growing electric bicycle market. The electric outlets should be self-sustained by the Solar Canopy, photovoltaic panels, used as the roof. (LEED EB—SS4.1-4.4)

T 6.0: **Consider a Bicycle Sharing Program**  
A bicycle sharing program should be considered initially with one or two destination locations from typical building users. Destinations could be the Elkhorn Conference Center and Building 1219, the new DPW Building. (LEED EB—SS4.1-4.4)

T 7.0: **Solicit Proposals for Energy Star-Rated Vending Services**  
Food-dispensing and beverage vending machines have been requested by some during the initial survey of the building occupants. Providing these services would assist in a couple of concerns, including decreasing vehicular trips and opening up space in break room refrigerators. However, considerations must be given in the selection of vending services if it is to be pursued. Vending machines have the tendency to be high in energy consumption and waste generation. If a vending machine is to be installed at Building 1118, it should be Energy Star-rated and contain only items with minimal waste. For example, plastic bottles and individually plastic wrapped snacks should not be permitted.

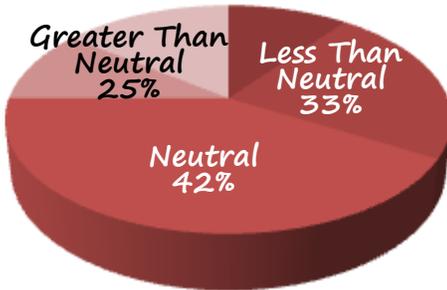


Solar Canopy in Portland.  
Photo Source: Dustin Eppers,  
EnzymePDX

*“I might ride my bike to work if they allowed me to ride in the oncoming traffic lane, without... a ticket... I would get run over riding a bike with all that traffic going the same way.”*  
~ Survey Respondent #39

Air Quality is dependent and typically a byproduct of many of the goals set forth by the Installation. Accomplishing many of the strategies in Energy and Water, Sustainable Transportation, Sustainable Development, Sustainable Procurement and Zero Waste will indirectly improve the air quality. Additional strategies are provided below that are specific to Air Quality including, but not limited to, health and safety.

**Satisfaction with Hygiene Accommodations in Shared Spaces:**



(1) Unsatisfied	5
(2)	11
(3) Neutral	20
(4)	5
(5) Satisfied	7



An Air Distribution Efficiency Test should be conducted. Photo Source: [thebuildingdoctors.com](http://thebuildingdoctors.com)



**Sustainable Fort Carson Goal:** *Reduce installation greenhouse gases (scope 1, 2 and 3) and other air pollutants to the lowest achievable emission rates*

Greenhouse Gas Emission Definitions from EPA.GOV  
**Scope 1 GHG's:** Emissions are direct GHG emissions from sources that are owned or controlled by the entity.

**Scope 2 GHG's:** Emissions are indirect GHG emissions resulting from the generation of electricity, heating and cooling, or steam generated off-site but purchased by the entity, and the transmission and distribution losses associated with some purchased utilities.

**Scope 3 GHG's:** Emissions include indirect GHG emissions from sources not owned or directly controlled by the entity but related to the entity's activities such as vendor supply chains, delivery services, outsourced activities, employee travel and commuting, transmission and distribution losses associated with purchased electricity, and site remediation activities.

**A 1.0: Analyze the Building for Mold, Ventilation, Carbon Dioxide, Carbon Monoxide and Radon**

These hidden items have adverse consequences to the health of the building occupants, the building and the environment and therefore should be monitored. (LEED EB-EQ 1.2)

**A 2.0: Conduct an Air Distribution Efficiency Test**

The efficiency of air distribution should be tested with a duct blaster for all air ducts in the building. This test can measure the air flow, temperature and how the air is distributed.

**A 3.0: Implement, or Re-issue, a Policy that Limits Intrusive Cleaning or Hygiene Materials**

To decrease the risk of hazardous chemicals or toxic material used at Building 1118, all cleaning chemicals and materials should be purchased through a central issue point.

A 4.0: **Implement a Policy to Purchase and Use Sustainable Cleaning Products and Materials**

To minimize the interaction and disposal of harmful chemicals for maintenance staff and building occupants, cleaning products and materials shall meet the following requirements (LEED EB—EQ 3.6):

- Green Seal GS-37 for general purpose cleaners
- Environmental Choice CCD-110 for cleaning compounds
- Environmental Choice CCD-146 for hard surface cleaners
- Environmental Choice CCD-148 for carpet and upholstery care
- Environmental Choice CCD-115 for odor control additives

A 5.0: **Enhance the Designated Smoking Area, provided it remains at least 50 Feet Away from Door and Window Openings for a Designated Smoking Area**

In order to decrease the interaction of building occupants and second-hand smoke, the designated smoking area (north and east of basketball courts) should be enhanced with natural or fabricated shelter and signage. This could be considered in conjunction with the redesign of a landscape. (LEED EB—EQ Pr 3)

A 6.0: **Consider Mitigation Techniques for the High Level of Pollutants Caused by Lawn Mowers Around Building 1118**

Option 1: Retrofit the landscape to decrease the amount of plant material requiring weekly mowing. Conventional Lawn Mowers individually produce equal amount of pollutants to 43 vehicles at 12,000 miles each annually. Low water use and low maintenance (or Xeriscape) plant material should replace the existing water- and maintenance- intensive turf.

Option 2: Purchase and Deploy an Alternately powered lawn mower for Buildings 1118 and 1117 maintenance.

For both options, Building 1118 and 1117 could serve as a pilot for Fort Carson that would decrease in air pollutants.

*“A lot of people complain about smokers near the building: Recommend a designated smoking area with shelter to protect from the elements.”*

*~ Survey Respondent #19*



Lawn Mowing is a time-intensive activity which results in greater air pollution in the United States than vehicles. *Photo Source: Unknown*

# Sustainable Development (SD)

Sustainable Development, in Building 1118, works in relationship to Sustainable Transportation. Decreased personal vehicle dependence can be accomplished with the strategies put forth in this section. Additional strategies relate to the features on the exterior of Building 1118.

**Sustainable Fort Carson Goal:** *Create a community that encourages social, civic and physical activity while protecting the environment*

“Lack of lunch options, including vending machines, in our building and/or area, is a significant issue.”  
~ Respondent # 31



Preferred parking spaces are a great incentive for fuel efficient vehicles. *Photo Source: recyclereminders.com*

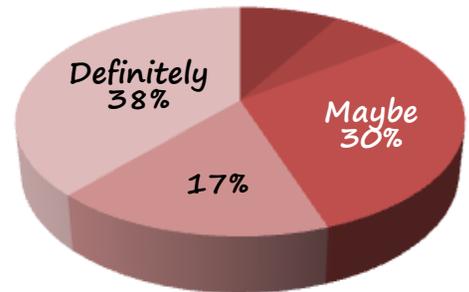
- SD 1.0: ***Solicit Food Vendors to Provide Catered, Locally-Grown Foods***  
A system can be set up similar to major corporations where five or more local caterers or restaurants offer to sell food in a central location to Building 1118 that can easily be accessed. It may be helpful to locate the vendor so that accessibility can also be attained from Building 1117. An example corporate program for this service may have the same vendor on the same day each week and provide a variety of cuisine throughout the week. For Fort Carson purposes, food should be locally grown and produced within a 100-mile radius of Fort Carson. (LEED EB—MR 5)
- SD 2.0: ***Provide Designated Parking Spaces for Motorcycles, Fuel-efficient Vehicles and Carpool Participants***  
Motorcycles, fuel-efficient vehicles and carpool participants should be provided covered and secured parking with electric plug-in access. A Solar Canopy, or photovoltaic panels, can be used as the ‘roof’ for the vehicles. For motorcycles, decreased parking stall sizes should be utilized, generally two per typical stall.



SD 3.0: **Provide Sufficient Outdoor Space for Dining**  
 Many people choose to enjoy their lunches at their desks, however there may be a desire to dine outside, away from their work, for the lunch hour.

SD 4.0: **Consider Retrofitting the Cobra Head Street Lights in the Parking Lot with LED Technology**  
 The survey showed pedestrian safety is a concern in the parking lot. A retrofit to the lamps with higher intensity lamps with lower energy costs, LED, would significantly assist. Alternative power sources could provide the lighting and conserve energy during the retrofit. As an Installation, we should attempt to make isolated electric objects self-sufficient with solar technology.

*Likelihood of Utilizing Lunch Vendors in or Near Building 1118:*



(1) Never	4
(2)	3
(3) Maybe	14
(4)	8
(5) Definitely	18

*“When leaving through the north doors to the back parking lot, it’s very dark and the little post lights don’t do much to help when you’re past them and into the lot.”*

*~ Respondent # 27*

# Sustainable Procurement (SP)

According to Energy Star, \$20 Billion would be saved in the United States if energy use was reduced by only 10% in all commercial and industrial buildings.

EO 13514 states that uncoated printing and writing paper purchases must contain at least 30 percent postconsumer fiber.



Sustainable Fort Carson Canisters provide a durable receptacle that decreases use of plastic or paper cups. *Original Photo Source: www.inhabitat.com*



Sustainable Procurement is another goal with synergies to the other goals of the Installation. Relationships can be inferred between Sustainable Procurement, Air Quality and Zero Waste. Purchasing policies can be established, or re-issued, that improve the air quality, cleanliness and decrease the hazardous waste.

**Sustainable Fort Carson Goal:** *All DOD and Fort Carson procurement actions support sustainability*

SP 1.0: **Implement a Building Policy to Purchase Energy Star-Rated Products**

Energy Star Products generally have a greater energy efficiency for purchasable products. In order to assure that the life cycle costs are conservatively accounted for, this policy should be in place. (LEED EB—EA 1)

SP 2.0: **Implement a Building Policy for Low Cost Per Unit Purchases**

A sustainable purchasing program should be in place for the low cost per unit purchases that are regularly used and replaced. The policy should encourage the purchase of recycled or renewable materials. Examples include but are not limited to paper and rechargeable batteries. (LEED EB—MR 1.1—1.3)

SP 3.0: **Implement a Building Policy to Require 'Green-Tipped' Bulbs in Building 1118**

For future purchases of lamps (light bulbs) in Building 1118, a policy should require Green-tipped bulbs as a means to decreasing the amount of Mercury. This will result in a decrease of the toxic material emitted from the lamp fixtures. (LEED EB—MR 4.2)

SP 4.0: **Purchase Reusable/Durable Dinnerware and Utensils for Each Break Room**

For the purposes of eliminating Styrofoam, plastic and paper plate usage in Building 1118, reusable and durable dinnerware and utensils should be purchased for the break rooms. Items could be purchased at a thrift store or donated.

SP 5.0: **Issue Reusable Water Bottle to Each Building Occupant**

To decrease the use of paper, plastic or aluminum drinking receptacles in Building 1118, a reusable water bottle should be issued to building occupants with instructions and expectation of the use within Building 1118.

SP 6.0: **Increase the Awareness of GC Policy #22 Regarding Sustainable Paper Use**  
Increase the awareness of the GC Policy issued on 30 August 2010 with signage and electronic mail.

SP 7.0: **Purchase of a Central Coffee Maker for the Break Rooms in Building 1118**  
Policy for Building 1118 does not permit individual coffeemakers for individual offices, however individual coffee makers are used in Building 1118. Central coffee makers should be chosen based on their energy efficiency and water savings. One option that puts the level of cleanliness on the individual consumer without adverse effects toward others is the Single Pod Coffee Maker.

SP 8.0: **Solicit Proposals for Alternative Hand Drying Apparatuses**  
Currently opportunities hand drying is limited in both break rooms and restroom facilities. In some of the locations, disposable paper towels are available. Potential apparatuses could include air blowers or a recirculating, washable towel system.

SP 9.0: **Replace Window Coverings with Durable Window Coverings**  
Replace the current plastic horizontal blinds with horizontal blinds that are much thicker, durable and can resist unnecessary summer heat, yet operable to allow ambient light and heat in the winter months.

SP 10.0: **Provide Way-Finding Signage**  
Way-Finding is difficult and can be disorienting in Building 1118. Signage should be provided for critical elements such as major departments, stairways and exits. Signage at rear doors would assist in safety features. Today, there are paper signs that can easily be misinterpreted.

SP 11.0: **Consider Replacing the Current Refrigerators in the Break Rooms with Energy Star Options**  
The refrigeration was a reoccurring avenue of comments in the survey. It can decrease the need for vehicular transportation over the lunch hour and save energy for the building. Energy Star Refrigerators have shown great decreases in energy in contrast to non-Energy Star Refrigerators. The Refrigerators should include ice and water dispensing capabilities, along with a water-filtration pitcher. (LEED EB—EA 5)

*“Suggest a quality single pod coffee maker in kitchen so it will actually get used. People can donate toward its cost when they get a cup of coffee using the honor system.”*  
~ Survey Respondent #2



Pod Coffee Makers Conserve Water and provide a variety of coffee flavors. *Photo Source: www.oncoffeemakers.com*

*“...Even Soldiers who you would expect have a good geographic memory, will say ‘how do I get to the stairs?’”*  
~ Survey Respondent #2

*In regards to refrigerator space: “In reality, if we all brought a lunch, they wouldn’t all fit.”*  
~ Respondent # 27

## Zero Waste (W)

### *Construction and Demolition Waste Diverted at Fort Lee is 96%!*

Zero Waste results from education, greater recycling, improved procurement policies and a social change in the consumer. When procurement policies favor durable products, non-toxics and cleaner technologies, waste will in turn be decreased. The following strategies outline educational mechanisms and increase conveniences for recycling.

**Sustainable Fort Carson Goal:** *Total weight of solid and hazardous waste disposed of is reduced to zero by 2027, and every year thereafter*

*“Break room recycling is incoherent and misused.”  
~ Respondent # 1*

W 1.0: ***Conduct a Solid Waste Stream Audit***  
To reduce the overall solid waste for Building 1118, it is important to understand the amounts and types of waste. (LEED EB—MR 6)

W 2.0: ***Provide a Small Trash & Recycling Receptacle for each Building User***  
Recycling is an element that many are in favor of doing, but without accessibility and the convenience of a recycling receptacle, many do not do it. Providing a recycling receptacle along with each trash receptacle as an option substantially increases recycling. Recycling receptacles should always be located near and adjacent to building printers, copy machines and entrances. (LEED EB—MR 7.1—7.2)

*“Recycling accommodations offer more questions than answers. Need explanations i.e. can I put cardboard in the bin? What if container had food in it? Milk/orange juice carton ok? What about batteries?”  
~ Respondent # 2*

W 3.0: ***Provide Recycling Receptacles at all Non-Emergency Entrances***  
Recycling receptacles should be located at all non-emergency entrances. Each area should include, at a minimum, plastic, aluminum and waste. Cardboard, paper and glass recycling receptacles are also important, however the need is higher at entrances and exits for plastics and aluminum from disposable drinking receptacles. (LEED EB—MR 7.1—7.2)

W 4.0: ***Provide Example Signage at Primary Recycling Receptacles***  
Educational signage facilitates good recycling procedures. Uncertain consumers are more likely to defer to disposing in waste rather than to risk error in using recycling bins for waste. Durable/laminated signage should be provided on the recycling receptacles in shared spaces.

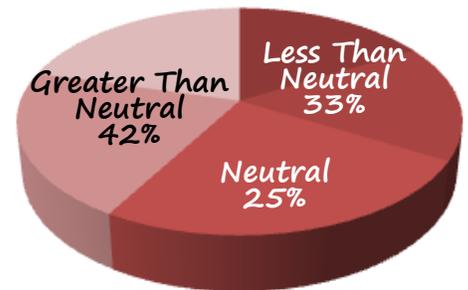
*“We could use a cardboard recycling receptacle at this building.”  
~ Respondent #8*



W 5.0: **Incorporate Cardboard and Glass Recycling**  
 Currently, cardboard recycling capabilities are non-existent in Building 1118. A larger glass recycling dumpster is available across the street from Building 1118, so a basic receptacle in the building could easily be transferred.

W 6.0: **Divert Compostable and Organic Material from the Waste Stream**  
 A joint compost pile can be supplied in a corner of the landscape that can be accessed and utilized by neighboring buildings. The organic compost material can eventually be used for a small garden at Building 1118 or by DPW for future landscape projects.

**Satisfaction Levels with Existing Recycling Accommodations:**



(1) Unsatisfied	8
(2)	8
(3) Neutral	12
(4)	10
(5) Satisfied	10

**recycling instructions**

**recycle the following at your building's recycling/waste area:**

**co-mingle**  
 rinsed recyclable glass, plastic (#1-7), aluminum and tin materials

**paper**  
 white & colored paper, junk mail, newspaper, food boxes, magazines

**corrugated cardboard**  
 FLATTENED corrugated cardboard (including clean pizza box tops)

**e-waste**  
 anything that uses an electric cord or batteries

**trash**  
 boxes that held freezer food, plastic wrap, greasy pizza box tops, bottoms of pizza boxes, napkins, paper towels, wax paper, carbon paper, 24-pack drink boxes, aluminum foil, to-go plates, and milk cartons

place e-waste on the ground under the e-waste sign

have a question? we've got answers! e-mail: [recycling@scu.edu](mailto:recycling@scu.edu)

**recycle the following at your building's service desk:**

please e-mail [recycling@scu.edu](mailto:recycling@scu.edu) when containers are full

cell phones & cell phone chargers

batteries

ink cartridges

CFLs

MISSION SUSTAINABLE



facebook group: [scu recycles!](#)

Sample of Recycling Instructions from Santa Clara University.

# Priorities for Implementation

The following is a list of priorities for the following years for implementation for Fort Carson Building 1118 in progress of meeting the goals set forth the Garrison Commander, Sustainable Fort Carson and Executive Order 13514.

The descriptions for the following strategies can be found in their corresponding section of this document.

## **FY 11 Strategy Priorities**

- EW 1.0: ***Consider a Building Policy to Require Individual Office/Departments to Purchase and Use Belkin BG108000-04 Conserve Energy-Saving Surge Strip***
- EW 2.0: ***Add Vacancy Detectors to the Lights for All Areas in Building 1118 with exception to Emergency Lights.***
- EW 3.0: ***Mitigate the Air Opening in the Building's Entrance Vestibule***
- EW 4.0: ***Add Signage at All Thermostats in Shared Spaces***
- EW 5.0: ***Seal All Windows in Building 1118***
- EW 6.0: ***Add Energy Film Insulation to the Windows Between the Months of November and March***
- EW 7.0: ***Revise the Maintenance Standard, for Interior Illumination***
- EW 8.0: ***Evaluate Plug Loads for the Building***
- EW 9.0: ***Monitor Energy Meters in Building***
- EW 10.0: ***Provide a Blower Door Test for Building***
- EW 11.0: ***Replace Restroom Fixtures and Aerators in the Building with Low-flow Devices***
- T 1.0: ***Consider 'Yield for Pedestrians' Signs at the Intersection of Long Street and Wetzel***
- T 2.0: ***Create a Convenient System to Enable Carpooling***
- A 1.0: ***Analyze the Building for Mold, Ventilation, Carbon Dioxide, Carbon Monoxide and Radon***
- A 2.0: ***Conduct an Air Distribution Efficiency Test***
- A 3.0: ***Implement, or Re-issue, a Policy that Limits Intrusive Cleaning or Hygiene Materials***
- A 4.0: ***Implement a Policy to Purchase and Use Sustainable Cleaning Products and Materials***

*55% of Survey Respondents would purchase food from food vendors if located in or near Building 1118.*

- 
- 
- SD 1.0: ***Solicit Food Vendors to Provide Catered, Locally-Grown Foods***
  - SP 1.0: ***Implement a Building Policy to Purchase Energy Star-Rated Products***
  - SP 2.0: ***Implement a Building Policy for Low Cost Per Unit Purchases***
  - SP 3.0: ***Implement a Building Policy to Require ‘Green-Tipped’ Bulbs in Building 1118***
  - SP 4.0: ***Purchase Reusable/Durable Dinnerware and Utensils for Each Break Room***
  - SP 5.0: ***Issue Reusable Water Bottle to Each Building Occupant***
  - SP 6.0: ***Increase the Awareness of GC Policy #22 Regarding Sustainable Paper Use***
  - W 1.0: ***Conduct a Solid Waste Stream Audit***
  - W 2.0: ***Provide a Small Trash & Recycling Receptacle for each Building User***
  - W 3.0: ***Provide Recycling Receptacles at all Non-Emergency Entrances***
  - W 4.0: ***Provide Example Signage at Primary Recycling Receptacles***

### **FY 12 Strategy Priorities**

- EW 12.0: ***Replace the Building’s Emergency, Task and Spotlight Fixtures with LED’s***
- EW 13.0: ***Retrofit Buildings’ Toilets to Dual—Flush Capabilities***
- EW 14.0: ***Increase the Solar Reflectivity Index of the Buildings Dark Roof to Minimize Heat Gain***
- EW 15.0: ***Replace Existing Windows and Exterior Doors with Energy Star Rated Replacements***
- T 3.0: ***Consider an Alternative Fuel Shuttle System at Fort Carson***
- T 4.0: ***Consider a Car Sharing Program***
- T 5.0: ***Provide Bicycle Racks for Building 1118***
- T 6.0: ***Consider a Bicycle Sharing Program***
- A 5.0: ***Enhance the Designated Smoking Area, provided it remains at least 50 Feet Away from Door and Window Openings for a Designated Smoking Area***

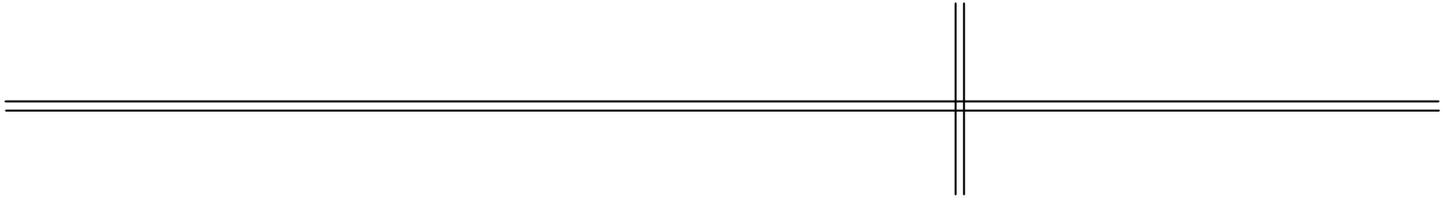
# Priorities for Implementation

- SD 2.0: **Provide Designated Parking Spaces for Motorcycles, Fuel-efficient Vehicles and Carpool Participants**
- SP 7.0: **Purchase of a Central Coffee Maker for the Break Rooms in Building 1118**
- SP 8.0: **Solicit Proposals for Alternative Hand Drying Apparatuses**
- W 5.0: **Incorporate Cardboard Recycling**

## **FY 13 Through FY 15 Strategy Priorities**

- EW 16.0: **Consider the Replacement of High Water-Use Plant Material Outside Building 1118**
- EW 17.0: **Replace the Existing Water Heater with One or More Instantaneous Water Heater (s)**
- EW 18.0: **Commence a Program for the Addition of Task Lighting**
- EW 19.0: **Consider the Use of the Building's Roof as a Source of Real Estate for Renewable Energy**
- EW 20.0: **Consider Downgrading the Size of HVAC Equipment**
- EW 21.0: **Consider Additional Insulation**
- T 7.0: **Solicit Proposals for Energy Star-Rated Vending Services**
- A 6.0: **Consider Mitigation Techniques for the High Level of Pollutants Caused by Lawn Mowers Around Building 1118**
- SD 3.0: **Provide Sufficient Outdoor Space for Dining**
- SD 4.0: **Consider Retrofitting the Cobra Head Street Lights in the Parking Lot with LED Technology**
- SP 9.0: **Replace Window Coverings with Durable Window Coverings**
- SP 10.0: **Provide Way-Finding Signage**
- SP 11.0: **Consider Replacing the Current Refrigerators in the Break Rooms with Energy Star Options**
- W 6.0: **Divert Compostable and Organic Material from the Waste Stream**

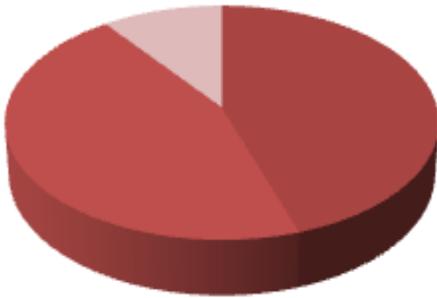
*Over 60% of of Survey Respondents are less than satisfied with the availability or quality of the building's refrigerators.*



# Appendix A: Survey Results

## General Information:

Which of the following best describes your personal workspace?



Enclosed Office, Private	22	■
Enclosed Office, Shared with Other People	22	■
Cubicle Space	0	■
Workspace in an open office with no partitions	5	■

## Satisfaction Levels:

1. Please Rate Your Comfort Satisfaction Levels in your Personal Workspace:

### Temperature in Summer



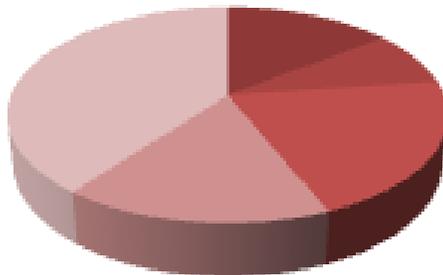
(1) Unsatisfied	2	■
(2)	3	■
(3) Neutral	13	■
(4)	6	■
(5) Satisfied	24	■

### Temperature in Winter



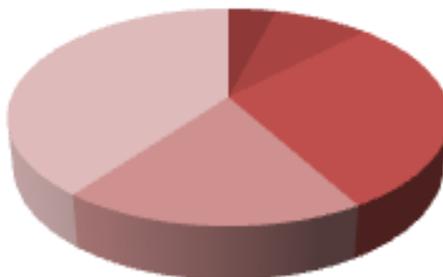
(1) Unsatisfied	1	■
(2)	4	■
(3) Neutral	16	■
(4)	6	■
(5) Satisfied	21	■

### Cooling Policy of Thermostat Setting of 78°



(1) Unsatisfied	7	■
(2)	4	■
(3) Neutral	10	■
(4)	8	■
(5) Satisfied	19	■

### Heating Policy of Thermostat Setting of 72°



(1) Unsatisfied	2	■
(2)	4	■
(3) Neutral	14	■
(4)	9	■
(5) Satisfied	19	■

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### Drafts from Open Windows

(1) Unsatisfied	3	■
(2)	3	■
(3) Neutral	17	■
(4)	5	■
(5) Satisfied	20	■



### Overhead Light (Electric)

(1) Unsatisfied	2	■
(2)	4	■
(3) Neutral	9	■
(4)	10	■
(5) Satisfied	23	■



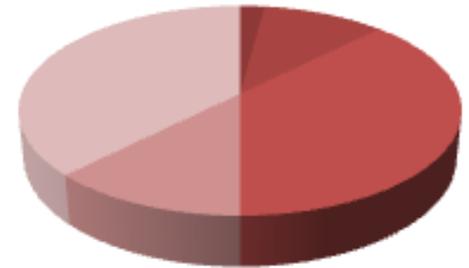
### Ambient Light (Windows)

(1) Unsatisfied	4	■
(2)	0	■
(3) Neutral	12	■
(4)	9	■
(5) Satisfied	23	■



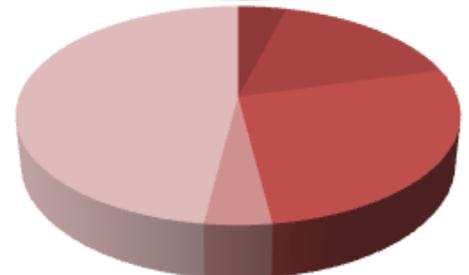
### Light Glare

(1) Unsatisfied	1	■
(2)	5	■
(3) Neutral	18	■
(4)	6	■
(5) Satisfied	18	■

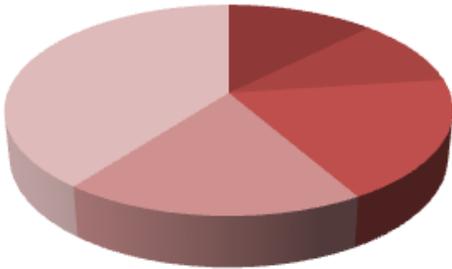


### Visual Privacy

(1) Unsatisfied	2	■
(2)	8	■
(3) Neutral	13	■
(4)	2	■
(5) Satisfied	23	■

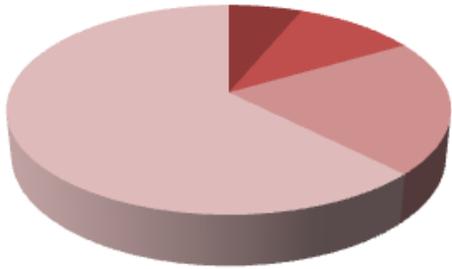


2. There are currently plans to install vacancy motion detectors in Building 1118. Please rate your level of favorability or opposition for this to occur. (The vacancy motion detectors will automatically turn off the overhead lights when motion is not detected in a room for a duration of 15 minutes or more minutes.) The energy savings per small office is estimated at approximately \$30 per year.



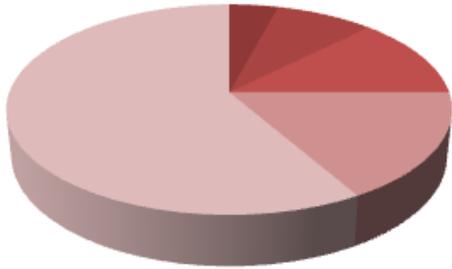
**Offices**

(1) Strongly Oppose	6	■
(2)	5	■
(3) Neutral	9	■
(4)	9	■
(5) Strongly in Favor	19	■



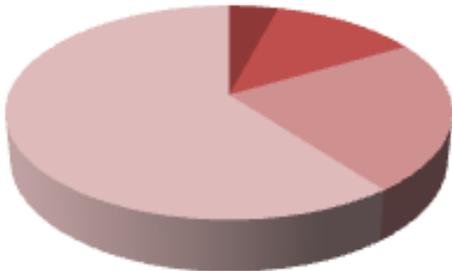
**Restrooms**

(1) Strongly Oppose	3	■
(2)	0	■
(3) Neutral	5	■
(4)	10	■
(5) Strongly in Favor	30	■



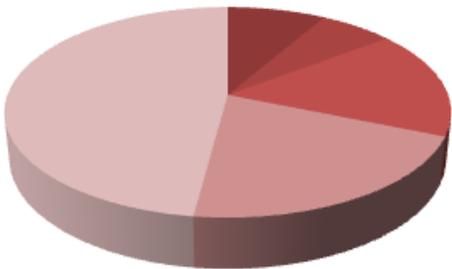
**Conference Rooms**

(1) Strongly Oppose	2	■
(2)	4	■
(3) Neutral	6	■
(4)	8	■
(5) Strongly in Favor	28	■



**Break Rooms**

(1) Strongly Oppose	2	■
(2)	0	■
(3) Neutral	6	■
(4)	11	■
(5) Strongly in Favor	29	■



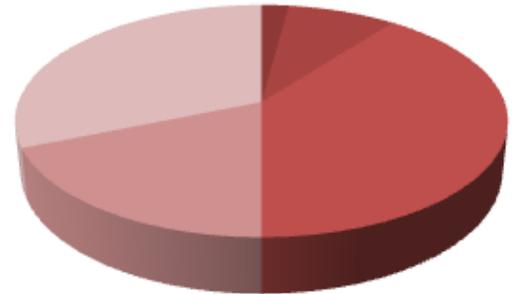
**Hallways**

(1) Strongly Oppose	4	■
(2)	3	■
(3) Neutral	8	■
(4)	10	■
(5) Strongly in Favor	23	■

### 3. Thermal Comfort Levels for Shared Spaces:

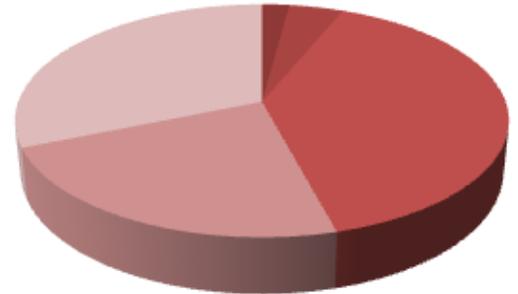
#### Conference Rooms

(1) Unsatisfied	1	■
(2)	4	■
(3) Neutral	19	■
(4)	9	■
(5) Satisfied	15	■



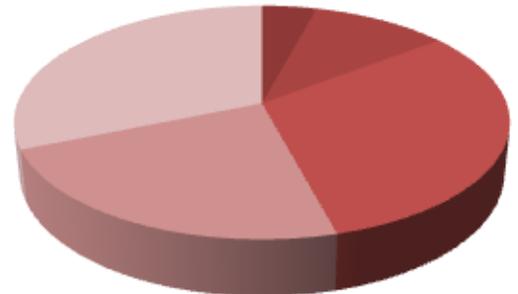
#### Hallways/ Stairways

(1) Unsatisfied	1	■
(2)	2	■
(3) Neutral	19	■
(4)	11	■
(5) Satisfied	15	■



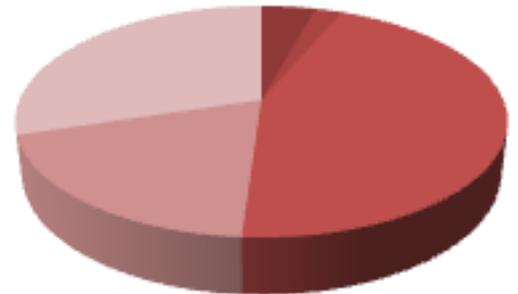
#### Restrooms

(1) Unsatisfied	2	■
(2)	5	■
(3) Neutral	15	■
(4)	11	■
(5) Satisfied	15	■



#### Overall Building

(1) Unsatisfied	2	■
(2)	1	■
(3) Neutral	21	■
(4)	9	■
(5) Satisfied	14	■

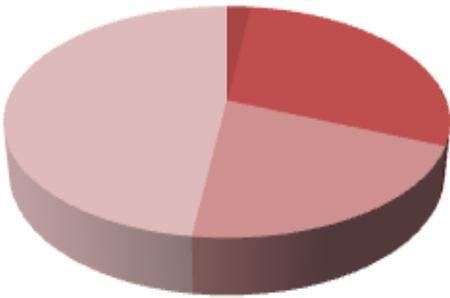


### 4. Lighting Satisfaction Levels for Shared Spaces:

#### Conference Rooms

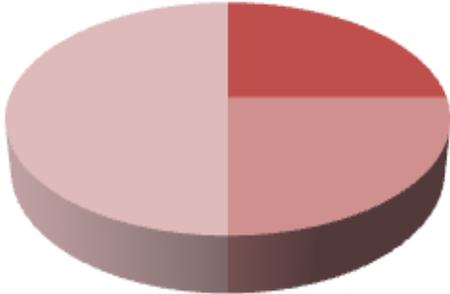
(1) Unsatisfied	0	■
(2)	1	■
(3) Neutral	14	■
(4)	10	■
(5) Satisfied	23	■





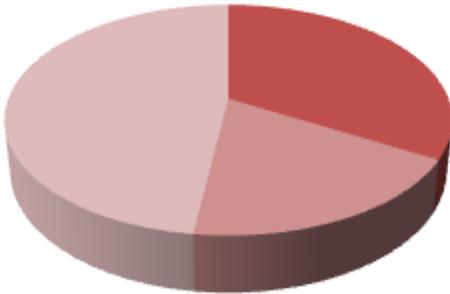
**Hallways/ Stairways**

(1) Unsatisfied	0	■
(2)	1	■
(3) Neutral	14	■
(4)	9	■
(5) Satisfied	24	■



**Restrooms**

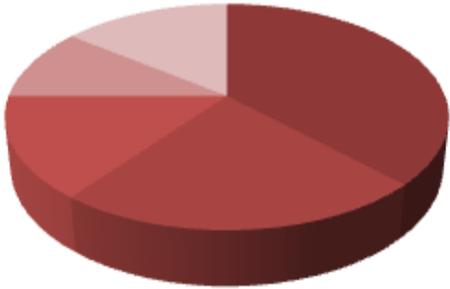
(1) Unsatisfied	0	■
(2)	0	■
(3) Neutral	12	■
(4)	12	■
(5) Satisfied	24	■



**Overall Building**

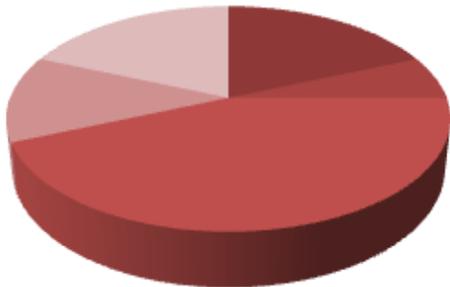
(1) Unsatisfied	0	■
(2)	0	■
(3) Neutral	16	■
(4)	9	■
(5) Satisfied	23	■

**5. Other Building 1118 Items:**



**Availability/Quality of Shared Refrigerators**

(1) Unsatisfied	18	■
(2)	11	■
(3) Neutral	7	■
(4)	5	■
(5) Satisfied	7	■



**Availability/Quality of Shared Coffee Makers**

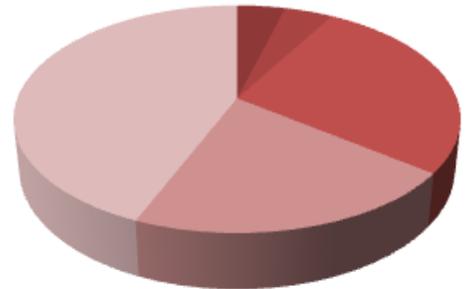
(1) Unsatisfied	9	■
(2)	3	■
(3) Neutral	21	■
(4)	6	■
(5) Satisfied	9	■

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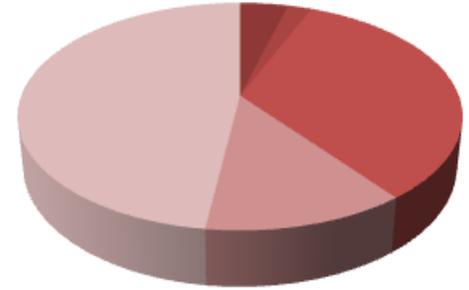
### Availability of Hot Water

(1) Unsatisfied	2	■
(2)	2	■
(3) Neutral	13	■
(4)	10	■
(5) Satisfied	21	■



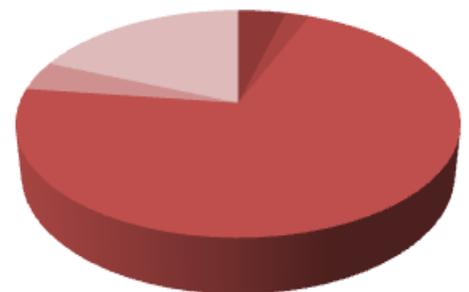
### Availability of Cold Water

(1) Unsatisfied	2	■
(2)	1	■
(3) Neutral	16	■
(4)	6	■
(5) Satisfied	23	■



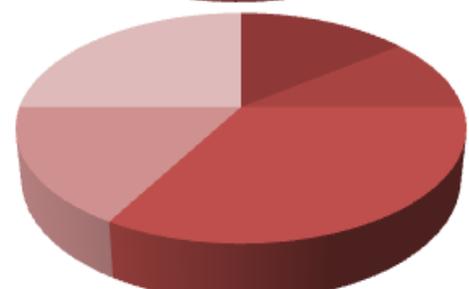
### Availability of Showers

(1) Unsatisfied	2	■
(2)	1	■
(3) Neutral	34	■
(4)	2	■
(5) Satisfied	9	■



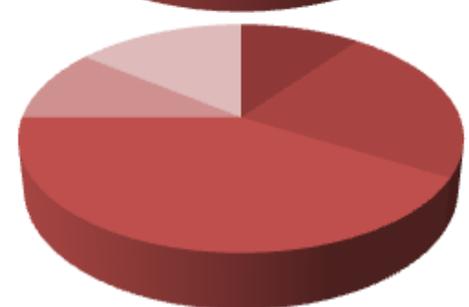
### Availability and Type of Toilets/Urinals

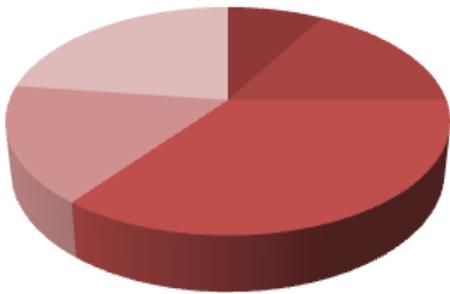
(1) Unsatisfied	7	■
(2)	5	■
(3) Neutral	16	■
(4)	8	■
(5) Satisfied	12	■



### Hygiene Accommodations in Shared Spaces

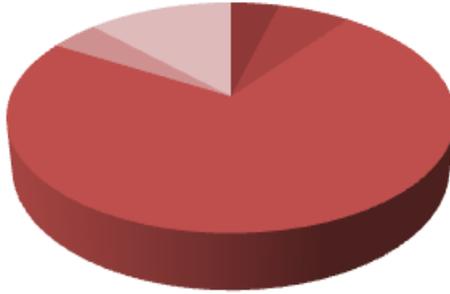
(1) Unsatisfied	5	■
(2)	11	■
(3) Neutral	20	■
(4)	5	■
(5) Satisfied	7	■





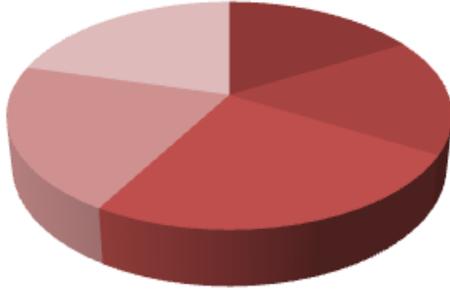
**Building Stairs**

(1) Unsatisfied	4	■
(2)	8	■
(3) Neutral	17	■
(4)	8	■
(5) Satisfied	11	■



**Bicycle Racks/ Storage**

(1) Unsatisfied	2	■
(2)	3	■
(3) Neutral	35	■
(4)	2	■
(5) Satisfied	6	■

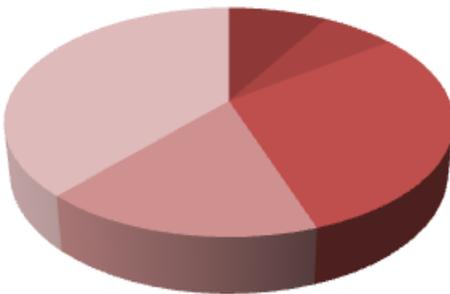


**Recycling Accommodations**

(1) Unsatisfied	8	■
(2)	8	■
(3) Neutral	12	■
(4)	10	■
(5) Satisfied	10	■

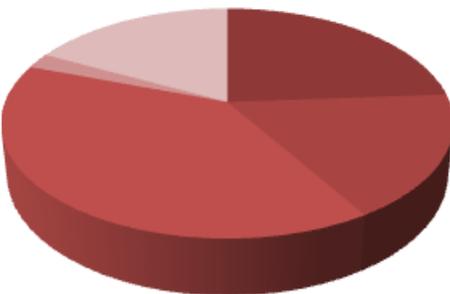
**Sustainable Transportation:**

1. Rate each of the following according to how likely you would use each in a way of decreasing single-occupant vehicle transportation on and off post:



**Lunch Vendors in or Near Building 1118**

(1) Never	4	■
(2)	3	■
(3) Maybe	14	■
(4)	8	■
(5) Definitely	18	■

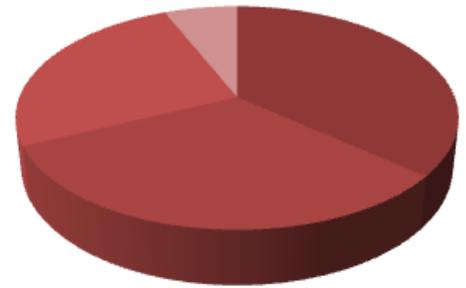


**Carpooling with Incentives**

(1) Never	11	■
(2)	8	■
(3) Maybe	18	■
(4)	1	■
(5) Definitely	8	■

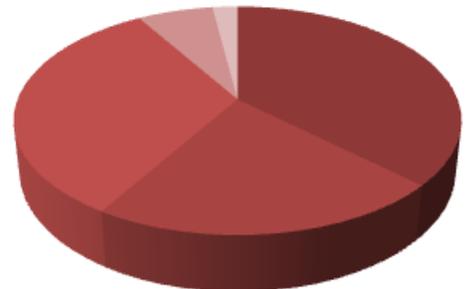
**Carpooling without Incentives**

(1) Never	17	■
(2)	15	■
(3) Maybe	12	■
(4)	3	■
(5) Definitely	0	■



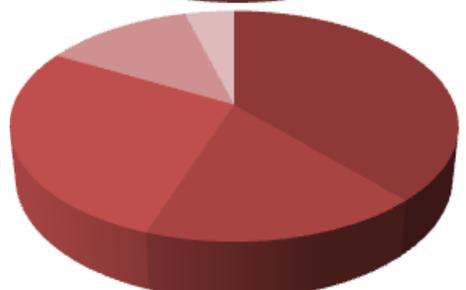
**Car Sharing**

(1) Never	17	■
(2)	10	■
(3) Maybe	15	■
(4)	3	■
(5) Definitely	1	■



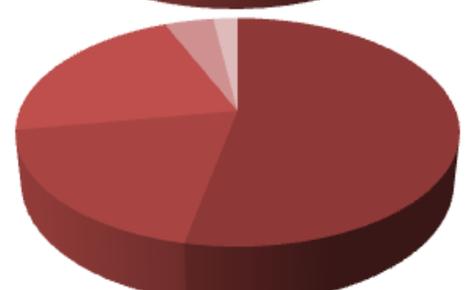
**Bicycling**

(1) Never	18	■
(2)	8	■
(3) Maybe	13	■
(4)	6	■
(5) Definitely	2	■



**Bicycle Sharing**

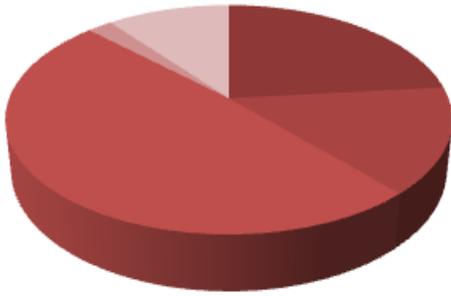
(1) Never	25	■
(2)	9	■
(3) Maybe	10	■
(4)	2	■
(5) Definitely	1	■



**Electric Bicycle Sharing**

(1) Never	20	■
(2)	10	■
(3) Maybe	12	■
(4)	2	■
(5) Definitely	3	■

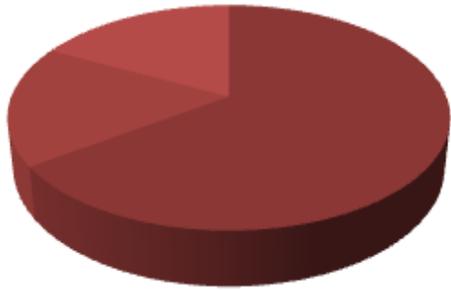




**Bus or Rapid Transit**

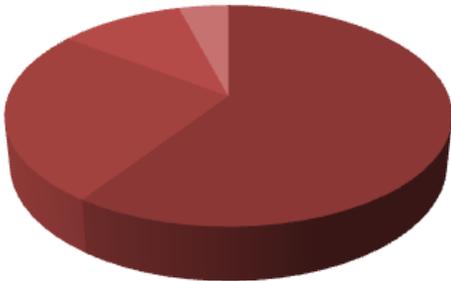
(1) Never	11	■
(2)	7	■
(3) Maybe	23	■
(4)	1	■
(5) Definitely	5	■

**2. How much would you be willing to pay to use/borrow the following:**



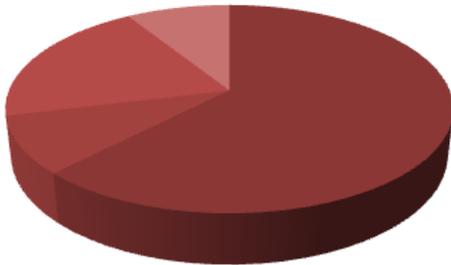
**Preferred Auto Parking with Carport Per Day**

(1) \$0	30	■
(2) \$1	8	■
(3) \$3	8	■
(4) \$5	0	■
(5) \$8	0	■
(6) \$10	0	■



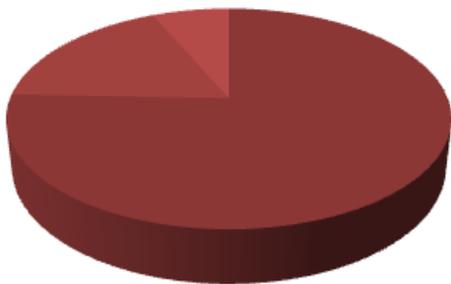
**Bus/ Shuttle Ticket (On Post)**

(1) \$0	28	■
(2) \$1	12	■
(3) \$3	5	■
(4) \$5	2	■
(5) \$8	0	■
(6) \$10	0	■



**Bus/ Shuttle Ticket (Colorado Springs Metro)**

(1) \$0	28	■
(2) \$1	4	■
(3) \$3	9	■
(4) \$5	4	■
(5) \$8	0	■
(6) \$10	0	■



**Bicycle Check-out Per Hour (Bike Share)**

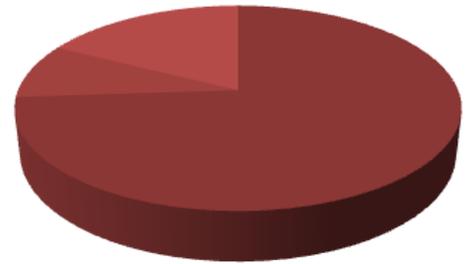
(1) \$0	34	■
(2) \$1	8	■
(3) \$3	3	■
(4) \$5	0	■
(5) \$8	0	■
(6) \$10	0	■

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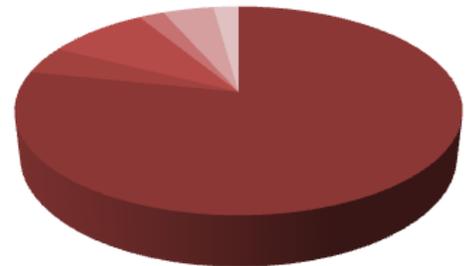
**Electric Bicycle Check-out Per Hour (Bike Share)**

(1) \$0	34	■
(2) \$1	4	■
(3) \$3	8	■
(4) \$5	0	■
(5) \$8	0	■
(6) \$10	0	■



**Car Share Per Hour**

(1) \$0	36	■
(2) \$1	2	■
(3) \$3	4	■
(4) \$5	1	■
(5) \$8	2	■
(6) \$10	1	■



# Appendix B: Comments Generated from Survey

\*\* Note: Comments are unedited & represented below as written by the respondent.

## General Information Comments

Respondent #2: I love my office

Respondent #5: I am currently in room 155, but will be relocating to room 160.

Respondent #6: (Bomb Shelter)

Respondent #12: I really appreciate having a private enclosed office with window

Respondent #15: The office has one outlet. I have extension cords running from that one outlet, to power other equipment in the office.

Respondent #26: Great office!

Respondent #29: Room has an adjoining door to Room 321

Respondent #33: Being able to open the window in my room for fresh air is the best part of building 1118. Very encouraged by the fact that we now have an exercise room....Helps morale tremendously.

Respondent #35: Office is very nice. However, the windows need to be sealed to keep out the sand particles.

Respondent #39: It gets noisy.

Respondent #40: Would like to have cubicles for a more effective working environment. There is currently a lot of back ground noise which interferes with ability to concentrate.

Respondent #12: Being able to open window, particularly when A/C is not operational, helps to maintain a pleasant temperature

Respondent #13: I work in a room that windows, nor blinds can be opened. I am not really able to comment on some comments. An option of N/A should be available.

Respondent #17: Summer temperature is high until they finally turn on the A/C. Winter temperature seems to not be controllable and the room is very hot unless you turn the heater off and on manually.

Respondent #21: In Spring 2010 we installed stand alone window ACs in Rooms 225 and 226. We will see this Fall, after the building AC is turned off, if the ACs are sufficient enough to keep the offices cool on warm days. This was necessary since both rooms are open storage areas and windows cannot be left opened.

Respondent #22: Our office does not adhere to the temperature policy. When the AC gets turned on my roommates set it for 72 degrees in the summer and 68 degrees in the winter. I am forever freezing at work. Brought this up to management and they tell us to work it out. When you're the only one who is freezing, you lose. Recommend DPW control all thermostats so individuals can't deviate from the policy. What a waste in money!

## Satisfaction Levels: Comfort in Work-space

Respondent #2: I don't like the overhead lights, and keep them turned off

Respondent #3: Since I will be moving to a different room I do not know what the conditions will be like in the other office.

Respondent #5: Currently occupying an office with 4 people and no windows. I'm looking forward to our move at the end of Oct. 10.

Respondent #27: It's rarely hot enough in the building to require full-on air-conditioner. Typically, an open window works better, saves \$, and provides for fresh air. When the air is on, I tend to have a constant sore-throat. 2 - Unfortunately, with everyone having "L-shaped" offices in corners, the lighting is not adequate. We all use desk lamps to illuminate the work space.

- Respondent #31: Desk lighting should be required. Persons who are 60 years of age require 8 times more lighting than someone 25 years of age
- Respondent #36: in the summer this room is very stuffy and the a/c unit does not work we have to use the unit that was installed when this was a coputer room.
- Respondent #39: can't open windows or shades due to the security concerns  
Need a selection for NA. I put Unsatisfied because there wasn't an NA and the program would not let me move on to the next page without filling in all the spaces...
- Respondent #40: We currnetly are unable to have windows or blinds open due to security reasons. We had window air conditions installed this summer which will make our working environment much more tolerable. Thank You!

- Respondent #16: While I think it is a good idea, wouldn't the cost of installation and maintenance be great than the \$30 a year savings?
- Respondent #21: Depending on the sensitivity of the motion detectors. In small offices personnel may be stationary at desks so if the motion detectors are not sensitive enough the lights may turn off while someone is working in the office.
- Respondent #27: Personally, I like the idea. Psychologically, it makes me believe we're saving tax dollars. But at just \$30 per year/office, how long will it take to actually see a savings over the installation cost?
- Respondent #31: Life Safety Code requirements for emergency egress including exit signs, egress pathways, exit points, and emergency lighting cannot be violated regardless of energy conservation or sustainability concerns.

**Satisfaction Levels: Vacancy Motion Detectors**

- Respondent #2: Great idea
- Respondent #8: I would think that the cost to install each of the detectors would be exponentially more than the cost savings that it would not be feasible.
- Respondent #12: We already keep many of the hallway and restroom lights off. When leaving my office for more than a few minutes, I generally turn off the overhead lights. When leaving the building after normal duty hours, I do the same with first floor lights on the west end if they are still on.
- Respondent #15: Don't waste money on this equipment. Most don't even turn on their office lights on. Everybody needs to turn off their lights when they leave their office. I know some people share office, but that can be work out among office personnel.

- Respondent #35: This will require the occupant in the office to get up and create movement or else they will be in darkness
- Respondent #39: can't open windows or shades due to the security concerns  
Need a selection for NA. I put Unsatisfied because there wasn't an NA and the program would not let me move on to the next page without filling in all the spaces...
- Respondent #40: I believe this is not a cost effective way to spend tax payer dollars. Please search for more effective ways to safe.
- Respondent #48: This would be satisfactory as long as the motion sensors do not turn off while I am at the computer with only my fingers moving!

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### **Satisfaction Levels: Thermal Comfort in Shared Spaces**

- Respondent #1: During summer, excessive AC was being used to cool public areas like stairways and hallways too much.
- Respondent #22: Our office does not adhere to the temperature policy. When the AC gets turned on employees set it for 72 degrees in the summer and 68 degrees in the winter. I am forever freezing at work. Recommend DPW control all thermostats so individuals can't deviate from the policy. What a waste in money!
- Respondent #26: Many times conference rooms are too cold in the summer, too hot in winter
- Respondent #27: Personally, I would turn off the air in the stairwells. A person is only in there for a few seconds so why waste that energy.
- Respondent #40: Note: MCR is in need of window replacement all the windows in building 1118 are of poor quality and need to be upgraded.

### **Satisfaction Levels: Lighting in Shared Spaces**

- Respondent #11: lighting in hallways is too dark when lights are turned off, especially when it's dark outside
- Respondent #27: Again, motion sensors would be good so the lights aren't left on at night, etc. I do have problems with the outside/external lighting. When leaving through the north doors to the back parking lot, it's very dark and the little post lights don't do much to help when you're past them and into the lot.

### **Satisfaction Levels: Other Building 1118 Items**

- Respondent #1: Stairs are sometimes awkward for moving big things, like bicycles. Look forward to elevator installation for such things. Break room recycling is incoherent and misused. Bike racks should be protected from weather and secure enough to leave bikes over nights and weekends.
- Respondent #2: Suggest a quality single pod coffee maker in kitchen so it will actually get used. People can donate toward its cost when they get a cup of coffee using honor system. re: building cleanliness, i wonder if anyone ever vacuumms or cleans countertops in kitchen. Building stars are often dusty. I notice that visitors to building cannot often find the stairs, as they are tucked away in a corner. Even Soldiers who you would expect have a good geographic memory, will say "how do I get to stairs?" re: Recycling, the accommodations offer more questions than answers. Need explanations i.e. can I put cardboard in the bin? what if container had food in it? milk / orange juice carton OK? what about batteries?
- Respondent #3: Our trash isn't taken out, we have to do that ourselves, sometimes our bathroom isn't very clean and using a bathroom that the public uses is nerve racking. You don't know what other's are like. Are they clean? In the mornings the bathrooms are so cold I can't sit on the toilet anyway so it's a good thing I don't.
- Respondent #7: we do not need showers.
- Respondent #8: We could use cardboard recycling receptacle at this building.

- 
- 
- Respondent #11: need more recycling accommodations - also need to empty more often stairs seem to stay dirty
- Respondent #12: Regarding the urinals, there needs to be some provision for periodic change of system filters or flushing to address the lingering odor. Although building stairs are good for a little exercise, having an elevator would be quite helpful when moving heavy items or for those with handicapping conditions.
- Respondent #14: Because our Bathrooms are freely accessible by all who enter the building, we sometimes have no control over how the bathroom appears. Some people have no bathroom etiquette (not changing toilet paper when roll is empty or just plain not flushing). We also had occurrences of our bathroom supplies coming up missing--toilet paper and paper towels.
- Respondent #15: People leave their stuff in the refrigerator for more than weeks at the time.
- Respondent #16: Not enough storage space. Some people bring a week's worth of food and drink, which consumes large areas, not leaving enough room for others to place one days lunch...people also forget about their items and then the stuff gets old and begins to stink!
- Respondent #17: Shared refrigerators are not great in that there is often no respect for a persons property. If you put a home container of food in the fridge it is okay but if you put a commercial packages food or beverage item in the fridge it may not be there when you want it. Recycling areas need to be larger and not be located in hallways like on the first floor at the base of the stairs.
- Respondent #18: It is difficult to conduct PT, take a shower, and store uniforms in a building that accommodates DA employees and personal office space.
- Respondent #19: A lot of people complain about smokers near the bldg: Recommend a designated smoking area with shelter to protect from the elements. Our office is more than adequate for an office but is becoming more of a storage area due to the lack of a storage room/closet for ceremony supplies.
- Respondent #22: Break rooms need to be larger to accommodate everyone, not sufficient space in room and need another refrigerator. Have to eat lunch at your desk. Need more bathroom stalls so you don't have to wait in line. Need an elevator to accommodate employees with disabilities. Need more recycling bins or pickup more often.
- Respondent #26: Break rooms are too small; the building should have an elevator
- Respondent #27: The breakroom/kitchen on the first floor doesn't have adequate space for all 1st floor occupants. The table holds 3 barely and the two fridges are constantly overloaded (ok, so some people need to clean out excess), but in reality, if we all brought a lunch, they wouldn't all fit. 2 - The ladies room on the east side is not adequate for the number of females in the CPAC. Two stalls for nearly 35 ladies? Then, if you're in the first (small) stall and someone opens the main door, you can see down the hall so that means someone can see in too. There should be a privacy "something" covering the stall cracks. 3 - Building stairs: Just plain filthy. 4 - With the number of occupants, we could use a whole room to hold recycling. Just one day of lunch could fill the plastic bin. If the bins were larger, I believe it would encourage more recycling.

Respondent #30: Too few options for refrigeration -- more than 50 people should not be sharing 2 refrigerators. Need larger recycling or more responsible occupants to throw away recycling

Respondent #34: The cleanliness of the building needs to be improved; the contract for the cleaning crew needs to be written so they take better care of the common areas, mop break rooms, remove trash, clean/dust the windows in the stairwells, clean the bathrooms more often and better. The contract also needs to include common area supplies like toilet paper and paper towels.

Respondent #35: Refrigerator - people over use it and leave articles in it for excessive period of time. Water coolers are used for rinsing out coffee cups/pots and are not cleaned. Health concern issues.

Respondent #37: The Refrigerator on 3rd floor is too small.

Respondent #38: Recycle bins should be on the outside of the building. There is always an abundant accumulation of recycled items in and around bins and makes the entrance in that area look trashy. There should be an elevator installed for those who have difficulty going up stairs and are handicapped.

Respondent #39: what bike racks and storage

Respondent #40: The building is in need of an elevator! Most of the employees of building 1118 are retired military who have a disability rating of 30%-90% . They are required to climb up and down stairs further causing more irritation to their existing injuries.

Respondent #45: The bathrooms are not kept in clean order. Not enough restrooms for women when you look at the number of females in the building. Bathroom window is not private enough. You can see

in the bathroom from the outside.

Respondent #47: More recycling areas are needed for a building of this size

Respondent #48: Bathroom stalls are not enough for females in Bldg 1118 first floor. Only two stalls in two bathrooms. Bathrooms are shared with customers/visitors/ joe public to the bldg. Have had too many unsanitary situations in the bathrooms. Larger break room is needed to accomodate large staff.

**Sustainable Transportation: Single-Occupancy Vehicle Dependence**

Respondent #1: Because of my unique situation, the factors that determine my SOV use or not are (1) Ability to get WiFi for my laptop in my office. Presently there is none unless I pay about \$60/month for universal service. So my lunch trips are sometimes combining food needs with internet needs. Vendors near the building would be part of the solution, but not unless they offer sustainable food options i.e. vegetarian, organic, local. Also because of my ever-changing and frequent in/out schedule and living out of town, and poor transit options for daytime meetings off-post, carpooling will be nearly impossible no matter the arrangements without highly convenient off-post transit. Incentives will help, but probably would not be enough to solve my situation. But shared cars or electric bikes could be used for such mtgs.

Respondent #2: don't want to be stuck without a way to get home

Respondent #3: I wouldn't mind the Bus in the summer but I don't like the cold.

Respondent #6: Post Shuttle service that can stop at the gates to pick up employees, soldiers that have no

- POV would be an excellent asset to Ft Carson and relieve alot of headaches for the folks that don't have a POV to get to work.
- Respondent #8: I would consider using a parking facility, if there was adequate and available bus transportation to and from the building from the parking facility.
- Respondent #9: Need more info on how Car Sharing would work (official use / unofficial use).
- Respondent #12: I am unlikely to serve here much longer, so the various options are rather moot.
- Respondent #16: We don't have any vendors (or machines) in or near 1118. I live in a remote area, carpooling is not an option.
- Respondent #19: Recommendations for parking areas near Bldg 1118: Designate parking spaces for Directors and Chiefs in front of bldg until lot is full to eliminate USO visitors parking there and designate motorcycle parking in rear parking lot to eliminate MCs parking one per car slot.
- Respondent #21: Dependant on the availability of bicycle lanes and the availability (times) and convenience of the pick up and drop off points.
- Respondent #26: Would use drink/snack machines if they were in the building
- Respondent #27: I would use the car-sharing when required to attend meetings on post. It's unfortunate that the installation doesn't have a taxi service.
- Respondent #31: Lack of lunch options, including vending machines, in our building and/or area, is a significant issue.
- Respondent #34: We need a vending machine, the CPAC has customer traffic that ask for vending machines often.
- Respondent #36: if I didnt have to take my child to the child care center then I would be intrested in carpooling.
- Respondent #39: I might ride my bike to work if

they allowed me to ride in the on-coming traffic lane, without giving me a ticket. Rush hour traffic is dangerous. Everyone is going the same way. I would get run over riding a bike with all that traffic going the same way.

- Respondent #40: Since I live in Woodland Park, a transit system would be a great savings.
- Respondent #48: Car pooling is not something that I would like to do. Reason - too many meetings in different locations. Unless there is an exceptional bus or rapid transit with limited walking to and from this would not work for me.

### **Sustainable Transportation: Amount Willing to Pay**

- Respondent #2: it is difficult to know these answers without comparison to my current costs.
- Respondent #11: shuttle would have to be frequent and on time to make it feasible
- Respondent #12: It is quite unlikely that I would take advantage of any of these options during the remainder of my time here. A bicycle checkout option comes the closest and then only during pleasant outside weather. Besides the vast majority of my duty time is spent in this building. When going elsewhere to meetings, I attempt to carpool with others also participating.
- Respondent #16: I live in a remote area, carpooling is not an option.
- Respondent #21: If the pick up and drop off points and times were convenient, I would be willing to pay \$5.00 a week to use it.
- Respondent #26: Not sure what "Preferred Auto Parking with Carport" means.

Respondent #27: Again, it's unfortunate the installation doesn't have a taxi service. My prior installation had federal employees who were Motor Vehicle Operators, WG-05s whose jobs were "taxi". We'd call to schedule a pickup and then return trip. It was used significantly. Personally, I would pay for it when required just to save wear/tear on my car and parking hassles.

Respondent #31: Unless it is of a personal nature, government should be providing transportation to meet mission requirements on post.

Respondent #35: Sounds good but unrealistic due to money constraints (economy).

Respondent #49: Will PPE be provided i.e bicycle helmet?



**SUSTAINABLE**  
**FORT CARSON**  
RIGHT ACTIONS. RIGHT NOW!

