



## **FORT CARSON 25-YEAR SUSTAINABILITY GOAL PLAN**

### **GOAL: SUSTAINABLE DEVELOPMENT (SD)**

#### **Goal Statement:**

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

#### **25 Year Vision**

Sustainable Development maximizes land use, resource efficiency, health, safety and productivity. The long term goal is to fully integrate sustainable planning and operation into all Master Planning for land use, MCA programs, and third-party construction on Fort Carson. The desired endstate is an installation that is developed and managed in accordance with sustainable principles. New development is coordinated with key installation stakeholders and partners. Projects complement each other and site work is coordinated to provide walkable areas that are linked to pedestrian and alternative vehicle corridors. Parking and access for traditional vehicles is provided in an attractive and functional way that emphasizes shared use and flexibility. An integrated approach to stormwater management onsite is taken, and opportunities for regional Low Impact Development and stormwater treatment are implemented. New buildings are constructed to a LEED Platinum standard, and the goal of NetZero Installation is realized in multiple facilities and complexes. Building renovations and additions are constructed to a LEED standard, and the best ideas for energy efficiency and compliance are incorporated into the designs and operation of these facilities. The goal of mixed-use development is advanced through legislation and guidance retooled to allow and promote such sustainable development. Education of Fort Carson residents and guests is deliberate and dynamic, with the goal to ensure that facilities and infrastructure are operated in a sustainable manner. Fort Carson continues to develop into a more livable, functional, sustainable installation, capable of supporting all military missions while taking care of families and serving the community.

#### **Ownership and Involvement (Resources, Roles and Authority)**

**Goal Proponent:** DPW

**Goal Lead & Fort Carson Partners:** DPW, BBC, DOL, GRM, AAFES, USACE, DECA, FFC8, MEDDAC, DENTAC, DFMWR, ISRO, COARNG, USARC

**Off-post Partners:** Military planners in area; City of Colorado Springs - Planning; Pikes Peak Area Council of Governments; Colorado Department of Transportation; El Paso County; Fountain Creek Watershed District, City of Fountain, Air Force Installations, SOCO USGBC

#### **Fort Carson SEMS – Significant Aspects and Impacts**

Fort Carson's Sustainability and Environmental Management System (SEMS) cites aspects of activities on the Installation that have significant negative impacts on sustainability. *All of the significant aspects listed in the Fort Carson Register of Significant Aspects and Impacts are affected by activities associated with this goal.* Many of the listed impacts on environment, society, economy and well-being of individuals, are directly or indirectly attributed to the physical layout of facilities and infrastructure on Fort Carson. Implementing sustainable development will assist in minimizing specific impacts by:

- Using planning principles that will consistently lead to transportation construction designed to reduce dependence on vehicles
- Efficiently using new and existing infrastructure related to business operations, waste management, demolition, construction and renovation

- Dedicating appropriated and non-appropriated funds to improve efficiency and conserve natural and financial resources in construction
- Including assessments of full life cycle costs to capture long-term benefits of sustainable real property master planning
- Including Low Impact Development and Form-based Code principles including stormwater infrastructure and transportation improvements to improve water quality and provide walkable sites.

### **Legal and Other Requirements**

- Energy Policy ACT (EPACT) 2005
- Energy Independence and Security Act (EISA) 2007
- National Environmental Policy Act (1970)
- Net Zero Energy Installation Initiative
- New Federal Executive Order 13514 - Oct 2009 "...The Executive Order builds on and expands the energy reduction and environmental requirements of Executive Order 13423...."
- EO 11988, Floodplain Management
- EO 11990, Protection of Wetlands
- EO 12088, Federal Compliance with Pollution Control Standards
- Clean Water Act (1972)
- (OACSIM Army Sustainable Design and Development Guidelines
- USACE Army LEED Implementation Guide
- High Performance and Sustainable Building
- SEMS goal - Sustainable Transportation
- SEMS goal - Energy & Water Resources
- SEMS goal - Air Quality
- SEMS goal - Sustainable Training Lands
- SEMS goal - Sustainable Procurement
- SEMS goal - Zero Waste
- Army Energy Security Implementation Strategy 2009
- EPA –National Pollutant Discharge Elimination System (NPDES)
- DoD Implementation of Storm Water Requirements under Section 438 of the Energy Independence and Security Act (EISA), 2010

### **Background**

The original goal from the Sept 2002 conference related to sustainable master planning was:: "Integrated, comprehensive Fort Carson Real Property Master Plan will be prepared and implemented (to include local stakeholders). Regular input to and modification of the plan will be conducted through Real Property Planning Board meetings. "

In the 2010 goal update, two goals were combined - master planning (SEMS goal 6) and high performance buildings (SEMS goal 7) to create a new goal, "Sustainable Development." This new goal will provide a more cohesive approach to sustainable development, and will use a multi-disciplinary approach by including components of stormwater management, transportation, master planning, and buildings.

The purpose of this goal is to enhance the long-term viability of the Installation and for Fort Carson planners to work in coordination with area planners to create a better region for all. The desire is directed growth in a coordinated and logical fashion that takes transportation, space

requirements, stormwater management, shrinking open space and other issues into consideration.

Desired end states related to sustainable master planning from the Sept 2002 conference, and the 2010 goal update sessions related to Sustainable Development, are as follows:

- Fort Carson staff actively working with local community planners.
- Improved walk-ability of Installation neighborhoods and developments.
- Improved vehicle and pedestrian circulation, with a focus on Low Impact Vehicles
- A master plan for Fort Carson that addresses Quality of Life issues
- Increasing and enhancing Green Infrastructure, and reducing stormwater impacts
- Site development as a major master planning consideration.
- Address aging infrastructure issues using sustainability principles
- All buildings integrated into the master plan
- Better integration of all Fort Carson Partners with respect to Sustainable Development
- Staff Fort Carson's Master Planning Office appropriately for the day-to-day workload generated by an Army installation of this size.

### **Challenges & Barriers**

- Embracing emerging technology
- Regulatory conflicts
- Equipment
- Balancing Army Standard Design vs. Installation preferences
- Meeting required pre-development hydrology due to existing infrastructure and natural challenges
- Availability and affordability of products and services
- Life cycle cost analysis is not consistently incorporated into design processes
- Inadequate reaction time to new customer requirement – short term solutions are sought for long-term customer needs (OMA vs. MILCON)
- Information sharing and communication
- Developing partnerships
- Aging infrastructure and facilities

### **Training**

SEMS Awareness Training  
LEED Certification

Stormwater Program Management provides Fort Carson specific training:

Contractors training

Specialized training to partners and stakeholder groups such as USACE and Neighborhood Mayors on an as-needed or requested basis

Environmental Protection Officer Certification Training

### **Communication**

Communication examples for this goal include:

Annual Report Update: written annual hardcopy product that is easy to share and provides concise updates on all sustainability goals. Good report to share with non-technical and lay-people.

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Garrison Commander Sustainability Breakfast: Each month the breakfast is targeted to update the status and provide discussion for one of the goals. A great community leader event that involves technical discussion as well.

Presentations to outside entities,: numerous opportunities to speak to technical and non-technical audiences. Local community groups, planning agencies, universities, and other governmental bodies.

### **Document Control**

All stormwater permit documents, SWMPS, and training logs are kept in the stormwater program office. These documents are also kept on Sharepoint  
<https://portal.carson.army.mil/sites/carson/usag/Decam/Stormwater/default.aspx>

Master planning maintains records of design charettes and other planning documents. Engineering division maintains records of project design meetings and decisions.

### **Operational Controls**

<https://portal.carson.army.mil/sites/carson/usag/Decam/Stormwater/default.aspx>  
DPW engineering maintains a library of LEED design documents and checklists.

### **Monitoring & Measurement**

DPW Environmental division – stormwater program maintains some limited stormwater records such as turbidity testing results or monitoring audits.

### **Nonconformity**

ECAT teams inspect and maintain records of recurring issues.  
Annual SEMS audit.

### **Control of Records**

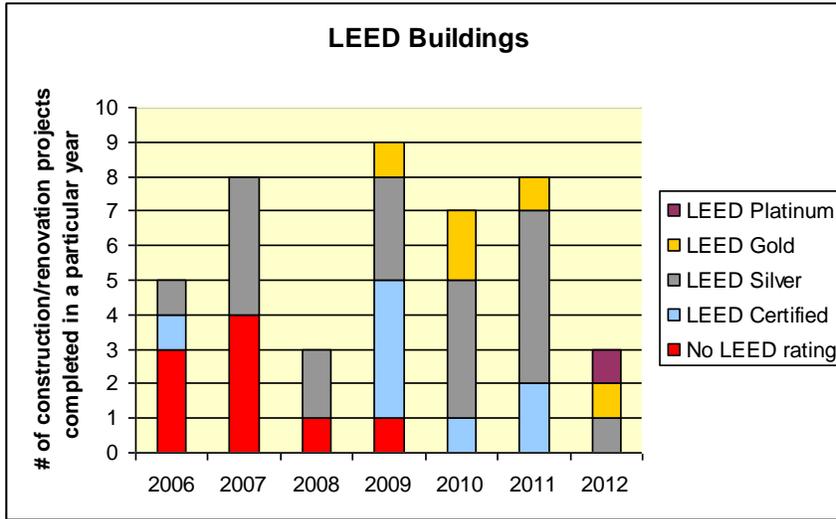
Records maintained by DPW in accordance with SEMS procedures.

### **Annual Review**

An annual report is generated. Various forums with community show progress and inform public. Presentations given to conferences or IPR, and monthly articles provided by the DPW supplement this effort.

**Goal Objectives and Targets**

**Objective SD1: All new facilities and major renovations of existing buildings on Fort Carson will be high-performance buildings that meet or surpass the Platinum Standard of LEED by 2027.**



**Target by FY12: All new facilities and major renovations of existing buildings on Fort Carson built through SRM funding will be high performance buildings that meet the Certified standard of LEED dependent on renovation or new construction. All MILCON construction meets LEED Silver or above.**

**Target by FY17: All new facilities and major renovations of existing buildings on Fort Carson will be high performance buildings that meet the Gold Standard of LEED.**

**Details on Objective SD1 Target Graph**

**Measure:** LEED Buildings

**Scope:** Fort Carson Cantonment area

**Source:** DPW

**Baseline:** Est. in 2009

**Limitations:** SRM and MILCON projects operate under differing standards

**Verification & Validation:** DPW and USACE

**Comment:**

**Initiatives in Support of Objective SD1 (FY10/FY11)**

**Initiative SD1.1:** Revise and update standard language in local design documents (planning, design, construction, remodel, repair, maintenance and contract) to encourage and permit design in accordance with LEED, Netzero, and Form-based Code principles.

Participants involved: DPW engineers, Master Planning, Environmental Division, and Directorate of Contracting.

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Recent plans and statements of work have been updated. Current projects are moving to sustainable design.

**Initiative SD1.2:** DPW personnel achieve LEED professional accreditation.  
Participants involved: DPW (engineers & architects) with Civilian Personnel Advisory Center (CPAC) Support

DPW engineering division has three LEED accredited professionals on staff, with three more projected to achieve accreditation in 2010.

**Initiative SD1.3:** Revise policies that restrict sustainable design to support and encourage sustainable design. ISRO and NEPA staffs participate in the planning process.  
Participants involved: DPW, ISRO, IMCOM, USACE

Many existing DOD/DOA policies are in conflict with sustainable development. Several examples are the prohibition on mixed-use developments and the restrictions of the AT/FP rules. Fort Carson proponents should join with the remainder of the DOD to work to resolve these issues and modify rules where possible.

**Initiative SD1.4:** Partner with the U.S. Army Corps of Engineers to require and encourage sustainable design at the working level. Identify for the ACOE and other design/construction agents a list of preferred LEED criteria that support this and other sustainability goals.  
Participants involved: DPW, Corps of Engineers

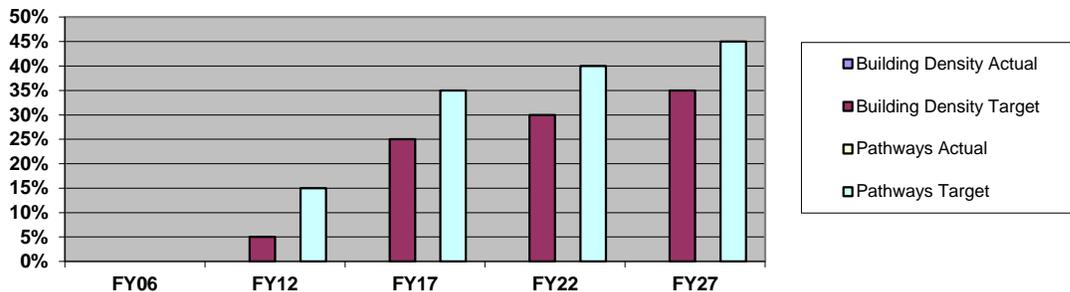
DPW is accepting LEED certified buildings and assuming maintenance and operation responsibility for these.

**Initiative SD1.5:** All construction/renovation projects are tracked from concept through construction and are certified to the sustainable level targeted.  
All MILCON construction is tracked as to LEED certification. SRM projects are in the process of pursuing these for limited buildings.

**Initiative SD1.6:** Develop and sustain O&M capability to service and maintain buildings with LEED and other sustainable systems and features.  
Participants involved: DPW, Corps of Engineers, users

Education and training is required of DPW operations staff, services contracts, and building occupants.

**Objective SD2: Integrate Form-Based Code principles through mixed-use development providing pedestrian friendly connections, building density, and carless mobility.**



**Target by FY12:**

- 1.) 5% increase in building density within targeted higher density zones from 2006 baseline Target non-operational areas.
- 2.) 15% increase in the total length of pathways (i.e., bike, jogging, etc.) available to support alternate, sustainable modes of transportation

**Target by FY17:**

- 1.) 25% increase in building density within targeted higher density zones from 2006 Baseline
- 2.) 35% increase in the total length of pathways (i.e., bike, jogging, etc.) available to support alternate, sustainable modes of transportation

**Details on Objective SD2 Target Graph**

**Measure:** Building Density and pathways

**Scope:** Fort Carson Cantonment area

**Source:** DPW

**Baseline:** Est. in 2009

**Limitations:** Codes and requirements often limit density achievable

**Verification & Validation:** DPW and USACE

**Comment:**

**Initiatives in Support of Objective SD2 (FY10/FY11)**

**Initiative SD2.1:** Incorporate sustainable master planning principles into planning and project programming decisions and update the Installation Design Guidance.

Participants involved: DPW

IDG is updated under contract with a local firm, and updates are continually generated and wrapped into new revisions.

**Initiative SD2.2:** Ensure that sustainability features are identified, considered, appropriately costed, and incorporated into MILCON project programming documents during planning charrettes, design reviews, and follow-on value engineering studies.

Participants involved: DPW, NEPA, ISRO

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**Initiative SD2.3:** Develop standards for walking, biking, and mass transit and place into the IDG.

Participants involved: DPW

**Initiative SD2.4:** Develop a useable building density map. Identify 'zones' within cantonment area for increased 'mixed use' building density based on smart growth principles. Program future development within these zones to achieve useable building density targets.

Participants involved: DPW

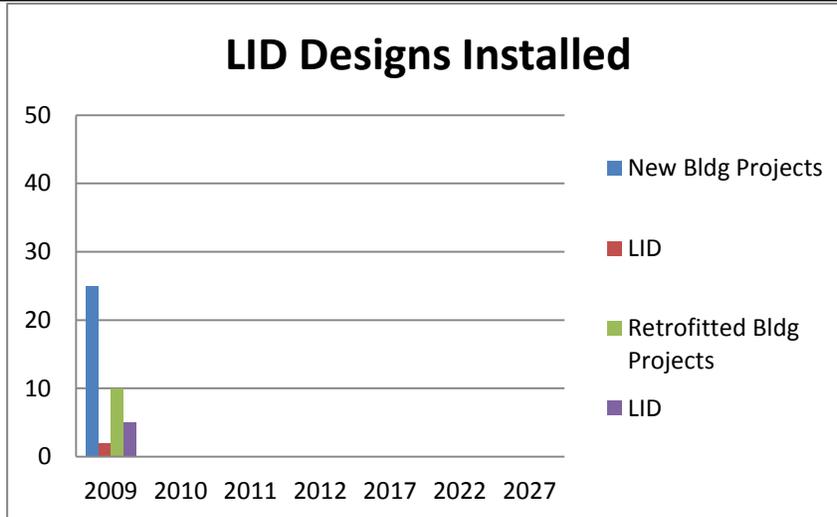
Status: Jan 10 performed Core Area Redevelopment Plan with these components.

**Initiative SD2.5:** All construction projects include walking, biking, and mass transit infrastructure IAW IDG.

Participants involved: DPW

DPW has developed annual running trails and sidewalks projects that address postwide connectivity issues. Reviews of connectivity are now part of the standard MILCON design review process.

**Objective SD3: Fort Carson will use Low Impact Development Concepts and other methods to mitigate stormwater impacts through best practices such as construction coordination, contractor education, permeable surfaces, living roofs, landscaping designs and other emerging technologies.**



**Target by FY12:**

1. 75% of all new development projects exceeding 5000 sqft will be designed to incorporate and implement LID criteria.
2. 75% of all retrofitted building projects of more than 5000 sqft will be designed to incorporate and implement LID Criteria.

**Target by FY17:**

1. 100% of all new development projects exceeding 5000 sqft will be designed to incorporate and implement LID criteria.
2. 100% of all retrofitted building projects of more than 5000 sqft. will be designed to incorporate and implement LID Criteria.

**Details on Objective SD3 Target Graph**

**Measure:** LID Designs Installed

**Scope:** Fort Carson Cantonment area

**Source:** DPW

**Baseline:** Est. in 2009

**Limitations:** Applies to buildings over 500 Sq Ft

**Verification & Validation:** DPW

**Comment:** New objective to updated goal

**Initiatives in support of objective SD3 (FY10/FY11)**

**Initiative SD3.1:** Provide Stormwater education on a regular basis to contractors, and on an as needed or requested basis to partners, and stakeholders providing services to Fort Carson.

Participants involved: USACE, DPW, AAFES, DECA, FFC8, MEDDAC, DENTAC, DFMWR, BBC

**Initiative SD3.2** Ensure that LID features are identified, considered, appropriately costed, and incorporated into MILCON project programming documents during planning charettes, design reviews, and follow-on development studies.

Participants involved: USACE, DPW

**Initiative SD3.3:** Provide pre and post development hydrologic modeling for development and redevelopment projects to support appropriate LID design.

Participants involved: USACE, DPW, AAFES, DECA, FFC8, MEDDAC, DENTAC, DFMWR, BBC

**Initiative SD3.4:** Develop a list of LID technologies and design criteria that are conducive to Fort Carson hydrologic variables and consistent with Fountain Creek watershed protection goals.

Participants involved: DPW

**Initiative SD3.5:** Maintain a list and map of stormwater Low Impact Development features and develop an inspection and maintenance schedule to ensure proper performance. .

Participants involved: DPW

**Initiative SD3.6:** Monitor surface water quality and quantity in the four upper drainages and make recommendation to improve stormwater discharge.

Participants involved: DPW