

FY 2018 Energy Management Plan

Instructions: The FY 2018 Energy Management Plan is broken up into multiple sections. This plan represents a comprehensive approach to energy reduction - each section is completed with as much detail as possible.

Agency Specific Information																					
Name of Agency/Agency Contact. Include contact info.	Colorado Department of Corrections (CDOC) Facility Management Services P 719.226.4128 F 719.226.4605 1250 Academy Park Loop, Colorado Springs, CO 80910																				
Agency participation in energy goal: Exempt/Non-Exempt	CDOC is non-exempt.																				
# of buildings and total square footage subject to Executive Order (EO)..	EO Buildings: 204 Buildings 6,180,372 SF CDOC Total: 627 Buildings 7,546,569 SF (EnergyCAP tracks more buildings than EO minimums)																				
Total FY 2017 energy spend. Includes Electric, Natural Gas, and Propane.	<u>FY17 Energy Spend Summary Information:</u> Total FY2017 Floor Area: 7,433,260 SF Total FY2017 Energy Spend: 12,121,324 Average FY2017 Cost / Floor Area: \$ 1.63/SF																				
Facilities Ranked by Use per area.	<u>FY17 Energy Use Summary Information:</u> Total Floor Area: 7,433,260 SF Total Use in MMBtu: 1,014,512 MMBtu Use / Floor Area: 0.1365 MMBtu/SF <table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 80%;">Trinidad Correctional Facility</td><td style="text-align: right;">0.231 MMBtu/SF</td></tr> <tr><td>Sterling Correctional Facility</td><td style="text-align: right;">0.164 MMBtu/SF</td></tr> <tr><td>Denver Women's Correctional Facility</td><td style="text-align: right;">0.162 MMBtu/SF</td></tr> <tr><td>Arkansas Valley Correctional Facility</td><td style="text-align: right;">0.147 MMBtu/SF</td></tr> <tr><td>Delta Correctional Facility</td><td style="text-align: right;">0.146 MMBtu/SF</td></tr> <tr><td>Denver Receiving & Diagnostic Center</td><td style="text-align: right;">0.142 MMBtu/SF</td></tr> <tr><td>CO Territorial Correctional Facility</td><td style="text-align: right;">0.129 MMBtu/SF</td></tr> <tr><td>Limon Correctional Facility</td><td style="text-align: right;">0.125 MMBtu/SF</td></tr> <tr><td>Rifle Correctional Facility*</td><td style="text-align: right;">0.062 MMBtu/SF</td></tr> <tr><td>Buena Vista Correctional Complex*</td><td style="text-align: right;">0.047 MMBtu/SF</td></tr> </table> <p>* Rifle and Buena Vista have limited mechanical cooling (air-conditioning)</p> <p>Note: The East Cañon City Prison Complex is not ranked. It has a master electric meter and houses multiple prisons.</p>	Trinidad Correctional Facility	0.231 MMBtu/SF	Sterling Correctional Facility	0.164 MMBtu/SF	Denver Women's Correctional Facility	0.162 MMBtu/SF	Arkansas Valley Correctional Facility	0.147 MMBtu/SF	Delta Correctional Facility	0.146 MMBtu/SF	Denver Receiving & Diagnostic Center	0.142 MMBtu/SF	CO Territorial Correctional Facility	0.129 MMBtu/SF	Limon Correctional Facility	0.125 MMBtu/SF	Rifle Correctional Facility*	0.062 MMBtu/SF	Buena Vista Correctional Complex*	0.047 MMBtu/SF
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FY 2017 Results	
FY 2017 agency energy reduction/increase by square foot: <u>1.9% Decrease</u> Absolute: <u>4.1% Decrease</u> Compared to FY16 Compared to FY15	
Explain FY 2017 results including strategies and/or issues that influenced the reduction/increase: CDOC continues to implement energy efficiency measures through Energy Performance Contracting and smaller energy efficiency projects.	
List key strategies outlined in FY 2017 plan, progress to date, and lessons learned*	
Strategy 1	Strategy 1: Beginning in FY17, we will initiate a detailed feasibility process (something similar to the American Society of Heating, Refrigerating, and Air-Conditioning Engineers - ASHRAE Level I—Walk-Through Analysis using some aspects of a Level II—Energy Survey Analysis, along with a few other items that will assist the Department in our efficiency, conservation, and maintenance efforts). Progress: This effort will continue into FY18.
Strategy 2	Strategy 2: The Department of Corrections finalized implementation of the Energy Performance Contract Energy Conservation Measures at Arkansas Valley and Limon Correctional Facilities. Progress: Energy Performance Contracting projects have been implemented at five of our larger facilities. Lessons Learned: Energy Efficiency and Water Conservation measures need to be thoroughly understood, prior to selection and implementation. The department needs to understand if we will be able to actually measure the savings, or if the savings will be stipulated. Also, we need to be fully aware of the effort and cost required to maintain the operational savings that are projected.
Strategy 3	Strategy 3: The department worked with facilities to install smaller energy conservation measures, including light-emitting-diode (LED) lights and variable frequency drives. Progress: Smaller projects are implemented as funding is available from utility cost avoidance through energy use reduction.

FY 2018: Data Management	
	Notes/Comments
Explain the process your agency uses to manage EnergyCAP data Include information on the following: Do you use Bill CAPture? If so, who is responsible for uploading data and under what frequency? If your agency does not use Bill CAPture, how is data uploaded? For each person involved, please explain roles and responsibilities.	CDOC does not yet use Bill CAPture. The bulk of the data is entered into EnergyCAP manually by the Energy Analyst. The billing data is entered on a daily basis. The Utility Management Engineer, also enters a portion of the utility data. While both input utility / billing data, resolve billing errors, and coordinate with onsite maintenance staff, the Energy Analyst deals mainly with monthly utility invoices while Utility Management Engineer deals with solar photovoltaic, annual water, and energy/utility performance contract (EPC), and other special utility and utility-related invoices.

<p>Explain your process to analyze and act on energy data</p> <p>Explain your agency's process to review utility bills and rates including frequency and roles and responsibilities. How will billing errors or rate issues be addressed?</p>	<p>The process is as follows. CDOC receives a copy of the bill via mail or online portal. We save an electronic copy to the local drive. We put time and date received stamp on the invoice, enter the bill into EnergyCAP, and review the bill for usage abnormalities and billing errors. If there is a spike or drop in usage and it is deemed to be suspect, we check the weather / temperature pattern the number of days (short, normal, or long month) reflected on the invoice service period. If the usage pattern is deemed to be suspect (usage is outside of regular pattern for the period, or use per day appears abnormal), we escalate further by notifying the onsite building physical plant manager and / or maintenance staff. Onsite staff then checks on problem(s) (such as leaks, meter issues, etc.) and resolves, if at all possible. Facility Physical Plant staff might let us know that there was a change in building usage / occupancy / or number of events hosted so that we can notate the account going forward. If, on the other hand, there is a billing / accounting / utility meter issue with the bill, we contact the vendor to research the reason for the error, get it resolved, and also have a corrected bill issued. Once all of the billing issues are resolved, we complete the bill markup and approval stamp process within Adobe Pro and save the changes. We email the approved invoice to Accounting Technicians in our Accounts Payable department, who then process the bill for payment.</p>
<p>In this section provide any other information about EnergyCAP, utility data, or energy analysis that helps explain your agency's approach to data management. Include any challenges your agency experiences with EnergyCAP or data management.</p>	<p>EnergyCAP's summary graphs and tables provide quick, easy views to assist in analysis to determine if utility cost and use are reasonable.</p>

FY 2018: Capital Improvements	
	Notes/Comments
<p>List planned FY 2018 energy efficiency improvements, project budgets, and anticipated energy savings.</p>	<p>Location: Department-Wide Project: Building Automation System Controls Preliminary Estimate: \$8,000,000 in FY17 dollars Savings: TBD</p> <p>Based on a FY17 preliminary study, the department needs an estimated \$8,000,000 to upgrade existing deficiencies with the building automation system. Due to lack of sufficient funding to maintain and periodically upgrade control systems, the Department</p>

	<p>may need to take a phased approach and install a few hundred thousand dollars in improvements at a time.</p>
<p>List prioritized but unfunded energy efficiency improvements, budgets, and anticipated energy savings.</p>	<p>Location: East Cañon City Prison Complex Project: Fremont Correctional Facility Boiler Replacement, Economizer, & Controls Preliminary Estimate: \$1,100,000 Savings: TBD</p> <p>Location: East Cañon City Prison Complex Project: Fremont Correctional Facility New Controls for Boilers 1 & 4 Preliminary Estimate: \$230,000 Savings: TBD</p>
<p>Describe your agency’s process for identifying, prioritizing, and funding capital improvements.</p>	<p>An ongoing list of proposed planned projects for each Facility are maintained by the Department’s Facility Management Services (FMS) Architecture & Planning Group, based upon identified needs and issues that arise throughout the year. The potential solutions are presented to the Department’s Executive staff for review, prioritization and approval.</p>
<p>Have any of your buildings recently undergone a formal energy audit or are any planned? If so, for which buildings?</p>	<p>The most recent energy audits were part of our Energy Performance Contracting (EPC) projects several years ago. EPC projects involving energy measures were performed at the following correctional facilities:</p> <ul style="list-style-type: none"> Territorial (Cañon City, CO) Buena Vista (Buena Vista, CO) Sterling (Sterling, CO) Arkansas Valley (Crowley, CO) Limon (Limon, CO)
<p>Discuss your agency’s approach to replacing damaged or failing equipment. Is equipment replaced “like for like” or with higher efficiency equipment? Who makes the decision and what criteria is used to make the decision?</p>	<p>Currently, most equipment is replaced “like for like” at the facility level unless a project is planned that includes design and construction. However, newer equipment is often more energy efficient than the old, non-functioning, or failed equipment that is being replaced.</p> <p>Energy costs combined with equipment condition will drive decisions to prioritize energy efficiency projects.</p>
<p>Based on the feasibility study created for your agency by the Colorado Energy Office, what opportunities exist for energy performance contracting? What, if</p>	<p>The Colorado Energy Office (CEO) recommends that CDOC work to identify which of the sixteen (16) state owned and operated facilities, that have not previously implemented Energy Performance</p>

<p>any, barriers exist to implementing EPC in your facilities? How can CEO assist?</p>	<p>Contracting (EPC) projects, are best suited for Investment Grade Audits (IGA). CDOC has recently signed the EPC Memorandum of Understanding with the CEO. With the new EPC contracts available, as of August, 2017, CDOC plans to work with CEO to develop EPC projects, where feasible. Projects will be developed in a staged manner so that CDOC and CEO can thoroughly review and vet the proposed energy/utility conservation measures. Further, staged timing for construction and implementation of the projects is required due to staffing and housing constraints at our facilities. Facilities are currently at or near bed capacity, so construction projects place an even greater strain on the operation of facilities. Recruiting and maintaining complete staffing levels is a challenge as the generation of Baby Boomers retire, and as the economy improves.</p>
<p>If EPC is not feasible, what strategies are available to your agency to fund energy efficiency improvements?</p>	<p>Smaller energy efficiency, projects can be implemented, within a fiscal year, if cost avoidance can be applied to fund small projects, such as lighting replacements.</p>
<p>What other resources are needed to ensure that energy efficiency improvements are part of the strategy to reduce energy use in your facility?</p>	<p>Funding and staffing levels, ample and sufficient to evaluate, outline, plan, prioritize, procure, and implement operational improvements, are the two largest constraints. Not only must agencies be fully staffed, but staff members must also have the technical background, training, continuing education, and experience to plan, implement, operate, and maintain existing and new equipment as well as measures. Once installed, measures are only effective if they are properly operated and maintained.</p>
<p>In this section provide any other information about how your agency identifies, plans for, funds, and implements energy efficiency improvements.</p>	<p>Larger projects are ranked in the Capital Construction (CC) /Capital Renewal (CR) and Controlled Maintenance (CM) project requests. However, most of these projects are prioritized based on upon loss of use of the Facility and relocation of the offender populations if the systems fail. Energy efficiency projects are rarely ranked high enough on the list to secure funding in any given funding cycle. Energy Performance Contracting is typically the only way that large energy efficiency improvement projects can be funded.</p>

FY 2018: Operational Improvements

	Notes/Comments
<p>List planned FY 2018 operational improvements, project budgets, and anticipated energy savings.</p>	<p>CDOC plans to initiate a feasibility process that will assist the Department in our efficiency, conservation, and maintenance efforts. We anticipate this feasibility process will include some or all of the following activities: site tours and data collection, cursory modeling of energy use intensity, staff interviews, analysis of our identified Controlled Maintenance and Capital Renewal needs at each location, collecting data relevant to site- and centrally-identified energy/water conservation measures, and consideration of incorporating renewables. Pending the outcome of these feasibility studies, we anticipate we will be moving forward with one or more Investment Grade Audits and, ultimately, Energy Performance Contracts.</p>
<p>List prioritized but unfunded operational improvements, budgets, and anticipated energy savings.</p> <p>Operational improvements may also include small capital improvements such as building automation system upgrades including new servers, valves and actuators, and thermostats.</p>	<p>Location: Department-Wide Arkansas Valley Buena Vista Colorado Territorial Delta Colorado Correctional Center Centennial Limon Sterling Trinidad</p> <p>Project: Building Automation System Controls Preliminary Estimate: \$300,000 Savings: TBD</p> <p>Based on a FY17 preliminary study, the department needs an estimated \$8,000,000 to upgrade existing deficiencies with the building automation system. The study identified items considered the, "Best Bang for Your Buck", that the department needs to implement in the immediate future to keep systems up, running, and operational, until \$8 million in funds can be secured. Due to lack of sufficient funding, the Department may need to take a phased approach and install a few hundred thousand dollars in BAS improvements at a time.</p>
<p>Describe your agency's process for identifying and prioritizing operational improvements.</p>	<p>Routine and preventative maintenance is addressed primarily through Capital Outlay (maintenance budget line) funding. Each CDOC facility is designated a maintenance budget, administered by the Facility Management Services Assistant Director,</p>

	<p>that takes into consideration a number of factors including age of buildings/infrastructure, building square footage, building use and Facility Unique Physical Plant Expenses (FUPPEs). Facility-based projects including preventative maintenance are addressed on an annual basis through the Annual Physical Plant Assessment Process. Appropriations and associated budget allocations for the maintenance line over the past few years are inadequate to fully address routine scheduled maintenance needs. In FY 2017-18, the Department successfully submitted a Decision Item to OSPB for an increase to the maintenance budget. It is anticipated this will help the systems “to hold on” until replacement can occur.</p>
<p>Have any of your buildings recently undergone a formal retro-commissioning study or are any planned? If so, which ones?</p> <p>A retro-commissioning study identifies opportunities to ensure that existing systems run more efficiently.</p>	<p>CDOC facilities have undergone formal retro-commissioning studies under our Energy Performance Contracts, at the following correctional facilities:</p> <ul style="list-style-type: none"> Territorial (Cañon City, CO) Buena Vista (Buena Vista, CO) Sterling (Sterling, CO) Arkansas Valley (Crowley, CO) Limon (Limon, CO)
<p>Describe the role building operators play in supporting Greening Government goals and directives. Is there regular communication with the GGLC rep?</p>	<p>Facility Management Services staff members work with facility Physical Plan staff members on a daily basis. Greening Government goals are shared with staff members via the Green Team meetings, as well as the quarterly Physical Plant Manager Meetings.</p>
<p>What other resources are needed to ensure that operational improvements are part of your agency’s strategy to reduce energy use in your facility?</p>	<p>Funding and staffing, ample and sufficient to evaluate, outline, plan, prioritize, procure, and implement operational improvements, are the two largest constraints.</p>
<p>In this section provide any other information about how your agency identifies, plans for, funds, and implements operational improvements.</p>	<p>Many of the Department’s Controlled Maintenance proposed projects have been unfunded for numerous years and result in a Capital Renewal project submittal. Often, this is due to the cost of the project exceeding the \$2 million controlled maintenance top cap and the project requiring a single project phase, as opposed to two, because of the type of critical system improvements that must be completed. This requires reprioritization of the Capital Construction (CC) /Capital Renewal (CR) listing and allows other Controlled Maintenance (CM) projects to move up in priority.</p>

	All of the CM, CC, CR projects are ranked based upon loss of use of the Facility and relocation of the offender populations if the systems fail.
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FY 2018: Employee Engagement	
	Notes/Comments
<p>Discuss your agency's approach to engaging employees in reducing energy use in your facilities. Include employee education, communication including email blasts or newsletters, or any other strategies used by the agency to engage employees.</p>	<p>Employees of the CDOC are educated through newsletters and Champions across the department. Employees are also asked for sustainability ideas relating to their work areas along with active educational offender engagement.</p>
<p>Discuss agency policies that support energy reduction including flex time or teleworking.</p>	<p>Given the nature of the Department of Corrections' mission, flex time and teleworking are not programs that the Department currently includes as energy efficiency or water reduction policies.</p>
<p>Discuss resource needs or barriers to greater employee engagement.</p>	<p>CDOC facilities are spread across the state, which sometimes makes the sharing of ideas and engagement with all employees a challenge.</p> <p>Because of our mission, safety and security are generally a higher priority than energy efficiency or water reduction policies.</p>
<p>In this section provide any other information about employee engagement in your agency.</p>	<p>Our Green Team Champions consist of subject matter experts along with correctional staff committed to learning and dedicating time in the CDOC sustainability mission.</p>

FY 2018: General Comments	
	Notes/Comments
<p>The Colorado Energy Office is investigating enterprise energy reduction strategies including capital and operational improvements and renewable energy. Would your agency be interested participating/learning more?</p>	<p>The Colorado Energy Office is encouraged to share information on energy reduction strategies with the Department of Corrections</p>