

FY 2019 Energy Management Plan

Instructions: The FY 2019 Energy Management Plan is broken up into multiple sections. This plan represents a comprehensive approach to energy reduction - please complete each section with as much detail as possible. Note that directions listed under the Notes/Comments section may be deleted and replaced with agency comments. If your agency is exempt from the energy goal, complete only those sections for which opportunities exist such as employee engagement.

Agency Specific Information																																	
Name of Agency/Agency Contact.	Colorado Department of Corrections (CDOC) Facility Management Services 1250 Academy Park Loop, Colorado Springs, CO 80910																																
Agency participation in energy goal:	CDOC is non-exempt.																																
# of buildings and total square footage subject to EO.	<p>EnergyCAP tracks more buildings than EO minimums</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">EO Buildings:</td> <td style="width: 20%;">204 Buildings</td> <td style="width: 20%; text-align: right;">6,180,372 SF</td> </tr> <tr> <td>EnergyCAP Buildings</td> <td>625 Buildings</td> <td style="text-align: right;">7,062,523 SF</td> </tr> <tr> <td>CDOC Total:</td> <td>646 Buildings</td> <td style="text-align: right;">7,571,747 SF*</td> </tr> </table> <p>* These facts (as reported to the Office of the State Architect on 27 July 2018) include all Correctional Facilities, Leases, CCI Buildings and ICMTC Buildings.</p>	EO Buildings:	204 Buildings	6,180,372 SF	EnergyCAP Buildings	625 Buildings	7,062,523 SF	CDOC Total:	646 Buildings	7,571,747 SF*																							
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Total FY 2018 energy spend. EnergyCAP Budget Module is used for CDOC Energy Spend Data.	<p><u>FY 2018 Energy Spend Summary Information:</u></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">Total FY 2018 Floor Area in EnergyCAP:</td> <td style="text-align: right;">7,062,523 SF</td> </tr> <tr> <td>Total FY 2018 Energy Spend:</td> <td style="text-align: right;">\$11,715,269</td> </tr> <tr> <td>Average FY 2018 Cost / Floor Area:</td> <td style="text-align: right;">\$ 1.66/SF</td> </tr> </table>	Total FY 2018 Floor Area in EnergyCAP:	7,062,523 SF	Total FY 2018 Energy Spend:	\$11,715,269	Average FY 2018 Cost / Floor Area:	\$ 1.66/SF																										
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Buildings Ranked by Use per area. This information is available using EnergyCAP report AN-13.	<p><u>FY 2018 Energy Use Summary Information:</u></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">Total Floor Area:</td> <td style="text-align: right;">7,062,523 SF</td> </tr> <tr> <td>Total Use in MMBtu:</td> <td style="text-align: right;">1,018,110 MMBtu</td> </tr> <tr> <td>Use / Floor Area:</td> <td style="text-align: right;">0.144 MMBtu/SF</td> </tr> <tr> <td>Trinidad Correctional Facility</td> <td style="text-align: right;">0.234 MMBtu/SF</td> </tr> <tr> <td>Sterling Correctional Facility</td> <td style="text-align: right;">0.173 MMBtu/SF</td> </tr> <tr> <td>Denver Women's Correctional Facility</td> <td style="text-align: right;">0.165 MMBtu/SF</td> </tr> <tr> <td>Arkansas Valley Correctional Facility</td> <td style="text-align: right;">0.158 MMBtu/SF</td> </tr> <tr> <td>Delta Correctional Facility</td> <td style="text-align: right;">0.153 MMBtu/SF</td> </tr> <tr> <td>Colorado Correctional Center</td> <td style="text-align: right;">0.134 MMBtu/SF</td> </tr> <tr> <td>Denver Receiving & Diagnostic Center</td> <td style="text-align: right;">0.131 MMBtu/SF</td> </tr> <tr> <td>Limon Correctional Facility</td> <td style="text-align: right;">0.130 MMBtu/SF</td> </tr> <tr> <td>Colorado Territorial Correctional Facility</td> <td style="text-align: right;">0.126 MMBtu/SF</td> </tr> <tr> <td>Rifle Correctional Facility*</td> <td style="text-align: right;">0.058 MMBtu/SF</td> </tr> <tr> <td>Buena Vista Correctional Complex*</td> <td style="text-align: right;">0.039 MMBtu/SF</td> </tr> <tr> <td>La Vista Correctional Facility (CMHI-P)**</td> <td style="text-align: right;">0.078 MMBtu/SF</td> </tr> <tr> <td>San Carlos Correctional Facility (CMHI-P)**</td> <td style="text-align: right;">0.060 MMBtu/SF</td> </tr> </table> <p>* Rifle and Buena Vista have limited mechanical cooling ** Electric Only for SCCF & LVCF</p> <ul style="list-style-type: none"> • The East Cañon City Prison Complex is not ranked. It has a master electric meter that serves multiple prisons. • The facilities on the Pueblo Complex are not officially ranked. Heat is provided by the Colorado Mental Health Institute - Pueblo (CMHI-P) campus, for the two facilities listed (SCCF & LVCF), and all utilities are provided by CMHI-P for one of the facilities (Youthful Offender System - YOS) that is not listed. 	Total Floor Area:	7,062,523 SF	Total Use in MMBtu:	1,018,110 MMBtu	Use / Floor Area:	0.144 MMBtu/SF	Trinidad Correctional Facility	0.234 MMBtu/SF	Sterling Correctional Facility	0.173 MMBtu/SF	Denver Women's Correctional Facility	0.165 MMBtu/SF	Arkansas Valley Correctional Facility	0.158 MMBtu/SF	Delta Correctional Facility	0.153 MMBtu/SF	Colorado Correctional Center	0.134 MMBtu/SF	Denver Receiving & Diagnostic Center	0.131 MMBtu/SF	Limon Correctional Facility	0.130 MMBtu/SF	Colorado Territorial Correctional Facility	0.126 MMBtu/SF	Rifle Correctional Facility*	0.058 MMBtu/SF	Buena Vista Correctional Complex*	0.039 MMBtu/SF	La Vista Correctional Facility (CMHI-P)**	0.078 MMBtu/SF	San Carlos Correctional Facility (CMHI-P)**	0.060 MMBtu/SF
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	<p>Utility Management Engineer deals with solar photovoltaic contracts, annual water, and energy/utility performance contract (EPC), and other special utility and utility-related invoices.</p>
<p>Explain your process to analyze and act on energy data. 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>Explain your process to review building energy use and look for trends in how much energy is used including frequency and roles and responsibilities. How will billing or performance issues be addressed?</p>	<p>CDOC receives a copy of the utility invoice via mail or online portal. We save an electronic copy to the local drive. The Energy Analyst or Utility Management Engineer upload the invoice into Bill CAPture. To process the invoice for payment, we put time and date received stamp on the invoice and review the bill for usage abnormalities and billing errors. Once the data is uploaded into EnergyCAP, we check to see 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 the issue, if at all possible. Facility Physical Plant staff might let us know that there was a change in building usage / occupancy / or operations 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 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> <p>CDOC uses the Utility Budget Module on the installed EnergyCAP client to track and project monthly and annual utility costs, since EnergyCAP data is closer to real time than CORE (the State’s financial system).</p>

FY 2019: Capital Improvements	
	Notes/Comments
<p>List planned FY 2019 energy efficiency 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 energy efficiency improvements, budgets, and anticipated energy savings.</p>	<p>Location: Department-Wide</p> <ul style="list-style-type: none"> • Arkansas Valley • Buena Vista • Colorado Territorial • Delta • Colorado Correctional Center • Centennial • Limon • Sterling • Trinidad <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, prioritizing, and funding capital 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 with assistance from the Maintenance and Construction Manager. The algorithm for the allocation of funds considers a number of factors including age of buildings/infrastructure, building square footage,</p>

	<p>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 the Office of State Planning and Budget (OSP) for an increase to the maintenance budget. A variety of small, long-standing, maintenance needs were addressed in FY2018. It is anticipated the infusion of maintenance funds will assist facilities and help our systems “to hold on” until replacement can occur.</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>In FY2019, CDOC plans to initiate Facility Assessments on the following correctional facilities:</p> <ul style="list-style-type: none"> • Denver Reception & Diagnostic Center (DRDC) • Denver Women’s Correctional Facility (DWCF) • Trinidad Correctional Facility (TCF)
<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. 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 any, barriers exist to implementing EPC in your facilities? How can CEO assist?</p>	<p>The Colorado Energy Office (CEO) recommends that four (4) of CDOC’s fifteen (15) state owned and operated facilities, that have not previously implemented Energy Performance, have true potential for Energy Performance Contracting (EPC). The barriers that exist to implementing EPC in CDOC facilities are ongoing EPC financing costs, which limit the annual utilities budget to absorb a greater percentage of EPC financing. In addition, Senate Bill 17-267, may impact CDOC’s ability to leverage energy efficiency improvements using the EPC financing vehicle.</p>

	<p>How can CEO assist? 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 in Corrections is a challenge given that other employers are offering salary, benefits, and work-life balance packages to incentivize new employees and retain current employees in this low unemployment economy.</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. Utility service providers offer rebates and incentives through energy efficiency and demand side management programs which may to stretch available CDOC utility funds, and make some smaller projects possible.</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, which lists hundreds of projects to be funded. 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 2019: Operational Improvements	
	Notes/Comments
<p>List planned FY 2019 operational improvements, project budgets, and anticipated energy savings.</p> <p>Operational improvements can include changes in HVAC system schedules and building automation set points (i.e. heating/cooling setpoints).</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</p> <ul style="list-style-type: none"> • Arkansas Valley • Buena Vista • Colorado Territorial • Delta • Colorado Correctional Center • Centennial • Limon • Sterling • Trinidad <p>Project: Building Automation System Controls Preliminary Estimate: \$300,000 Savings: TBD</p> <p>Based on a preliminary study from June 2017, 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 (<i>escalated</i>) 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 CDOD facility is designated a maintenance budget, administered by the Facility Management Services Assistant Director, 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</p>

	<p>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? 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 Plant staff members on a daily basis. Greening Government goals are shared with staff members via the quarterly Physical Plant Manager Meetings.</p> <p>The Greening Government Leadership Council (GGLC) representative manages Sprocket, an enterprise management system for facility physical plant work orders and operations and maintenance (O&M) tracking. We continue to develop the program by adding O&M tasks in Sprocket which will help with energy efficiency and further other greening objectives.</p> <p>Facility Management Service is working with Physical Plant Managers and Facility staff to provide training and support services. Over the past two years, CDOC has offered Building Automation Controls (BAS) training and assistance. We also offer state-wide operations and maintenance support for chiller systems, generators, and elevators. We are considering adding a state-wide contract for Boilers in the next year or two.</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,</p>

	<p>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> <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.</p>
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FY 2019: Employee Engagement	
	Notes/Comments
<p>Discuss your agency's approach to engaging employees in reducing energy use in your facilities.</p> <p>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 includes as options for employees. Therefore they are not available to implement 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 2019: General Comments	
	Notes/Comments
<p>Please provide any other comments or feedback related to the Greening Government goal or your agency's efforts.</p>	
<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>

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