Sustainability Roadmap 2018-2019: Energy

Progress Report and Plan Update
on Meeting the Governor's Sustainability Goals
for State Departments

California Department of Food and Agriculture

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California Department of Food & Agriculture Sustainability Roadmap 2018-2019: Energy

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Acronyms

ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers
CalEPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
CDFA	California Department of Food and Agriculture
DRP	Demand Response Program
DGS	California Department of General Services
Elec.	Electric
EMCS	Energy Management Control System
EO	Executive Order
EPP	Environmentally Preferable Purchasing
ESCO	Energy Service Contractor/Company
ESPM	Energy Star Portfolio Manager
EUI	Energy Use Intensity (kBTU/sq. ft.)
FT^2	Square Feet
GHGe	Greenhouse Gas Emissions
HVAC	Heating, Ventilation, and Air Conditioning
IEQ	Indoor Environmental Quality
kBTU	Thousand British Thermal Units (unit of energy)
KWH	Kilowatt Hour
MBCx	Monitoring Based Building Commissioning
MM	Management Memo
PPA	Power Purchase Agreement
PUE	Power Usage Effectiveness
SAM	State Administrative Manual
SMUD	Sacramento Municipal Utilities District
UC	University
ZEV	Zero Emission Vehicle
ZNE	Zero Net Energy

EXECUTIVE SUMMARY

Over 98 years ago, the California Legislature created the California Department of Food and Agriculture (CDFA) to serve the citizens of California by promoting and protecting a safe, healthy food supply, and enhancing local and global agricultural trade, through efficient management, innovation, and sound science, with a commitment to environmental stewardship. Currently organized in seven Divisions and located at more than 100 locations throughout the State, CDFA's employees work with its federal and county partners in striving to support and advance the success of those that have made California agriculture the recognized leader of food and agricultural products in the world.

With direction from the Governor's Office and the Department of General Services (DGS), CDFA was tasked with preparing a Road Map document to describe the status and steps CDFA is taking to meet the requirements of the Governor's Executive Orders (EO) B-18-12, B-16-12, and other water and energy conservation policies. This document is intended to outline the requirements and describe what next steps CDFA will take to comply with each EO.

CDFA currently owns 22 facilities throughout the State. These facilities provide a vast array of purposes for the Department. From greenhouses in Arvin to the 16 Border Protection Stations along California's borders, every facility is critical to meeting CDFA's mission. CDFA seeks guidance from DGS for all property management needs related to these facilities, from construction to minor maintenance repairs.

CDFA reduced natural gas use by 64% from 2010 to 2016 and reduced Greenhouse Gas Emissions (GHGe) by 20% from 2010 to 2016. CDFA recognizes the importance of energy efficiency and reduction of GHGe. To ensure CDFA's goals are achieved, CDFA has made it a priority to purchase environmentally preferable products, when possible. CDFA has also made it a priority to significantly reduce its fleet and purchase Zero Emission Vehicles (ZEV). CDFA currently has 21 electric vehicles, 24 hybrid vehicles, and five charging stations (ten ports); joining other State agencies in leading the movement toward reducing fleet energy consumption and gas emissions.

CDFA is committed to meeting the requirements set forth in EO B-18-12, B-16-12, and other water and energy conservation policies. I look forward to working closely with staff to achieve our goals through the execution of this Road Map.

Yours truly,

Kevin Masuhara
for

Karen Ross
Secretary

SUSTAINABILITY GOALS

The Governor has directed California State Agencies to demonstrate sustainable operations and to lead the way by implementing sustainability policies set by the state. Sustainability includes the following general initiatives:

- GHGe Reductions
- Building Energy Efficiency and Conservation
- Indoor Environmental Quality (IEQ)
- Water Efficiency and Conservation
- Monitoring Based Building Commissioning (MBCx)
- Environmentally Preferable Purchasing (EPP)
- Financing for Sustainability
- ZEV Fleet Purchases
- Electric Vehicle Charging Infrastructure
- Monitoring and Executive Oversight

The Governor has issued numerous EOs directing sustainable state operations. The orders relevant to energy are:

EO B-18-12

EO B-18-12 and the companion Green Building Action Plan require state agencies to reduce the environmental impacts of state operations by reducing GHGe, managing energy and water use, improving indoor air quality, generating onsite renewable energy when feasible, implementing environmentally preferable purchasing, and developing the infrastructure for electric vehicle charging stations at state facilities. The Green Building Action Plan also established two oversight groups, the staff level Sustainability Working Group and the executive level Sustainability Task Force, to ensure these measures are met.

EO B-30-15

EO B-30-15 declared climate change to be a threat to the well-being, public health, natural resources, economy, and environment of California. It established a new interim statewide GHGe reduction target of 40 percent below 1990 levels by 2030, and reaffirms California's intent to reduce GHGe by 80 percent below 1990 levels by 2050. To support these goals, this order requires numerous state agencies to develop plans and programs to reduce emissions.

State Administrative Manual and Management Memos

The following sections of the State Administrative Manual (SAM), and associated Management Memos (MM), currently impose sustainability requirements on the Department under the Governor's executive authority:

- SAM Chapter 1800-1835.7: Sustainability
- SAM Chapter 3420.10: Purchased Tangible Assets
- SAM Chapter 3420.30: Energy Efficiency Projects
- MM 15-06: State Buildings and Grounds Maintenance and Operation
- MM 15-04: Energy Use Reduction for New, Existing, and Leased Buildings
- MM 15-03: Minimum Fuel Economy Standards Policy
- MM 14-05: Indoor Environmental Quality: New, Renovated, And Existing Buildings
- MM 14-07: Standard Operating Procedures For Energy Management In State Buildings
- MM 14-09: Energy Efficiency in Data Centers and Server Rooms

ENERGY REPORT

This Energy Report demonstrates to the Governor and the public the progress the Department has made toward meeting the Governor's sustainability goals related to energy. This report identifies successful accomplishments, ongoing efforts, and outstanding challenges.

Department Mission and Built Infrastructure

The mission of CDFA is to serve the citizens of California by promoting and protecting a safe, healthy food supply, and enhancing local and global agricultural trade, through efficient management, innovation and sound science, with a commitment to environmental stewardship.

CDFA consists of seven Divisions that operate at more than 100 locations throughout the state. These locations include 49 leased properties with a total of 442,043 square feet and 22 owned properties with a total of 134,164 square feet. These Divisions provide valuable services to producers, merchants and the public. Many of the functions are conducted in partnership with local county offices.

To meet the Governor's sustainability goals and the EOs implementing those goals, CDFA has made several steps toward building the infrastructure required to support the 20% reduction of CDFA's consumption and purchased energy (electricity, natural gas, and propane) by 2018 and 50% of all buildings becoming Zero Net Energy (ZNE) by 2025:

- Increase employee awareness: CDFA continues to encourage employees to reduce energy use by not using department outlets for personal devices; turning off computers at night instead of just logging out; turning off lights when not in the room; using power strips; and unplugging devices from chargers when fully charged.
- Demand Response Programs (DRP)s: CDFA enrolled all facilities over 10,000 square feet in Automated DRPs.
- Decrease load use: CDFA has decreased air conditioning use in server rooms; set all computers, copiers and printers to utilize their Energy Saver mode when inactive; purchased Energy Star rated equipment where practical; and set Heating, Ventilation, and Air Conditioning (HVAC) building controls for a two degree fluctuation.
- Campaign: CDFA partnered with the State of California Energy Commission, participating in the CalEclipse "One Thing for the Sun" campaign, encouraging employees to reduce energy use leading up to and during the solar eclipse.

Table 1: Total Purchased Energy 2016

Purchased Utility	Quantity	Cost ($)
Electricity	6,212,121 Kilowatt Hours (kWh)	$ 819,894.21
Natural Gas	117,628 Therms	$ 114,424.14
Propane	0 Gallons	$ 0
TOTAL COST	---	**$ 934,318.35**

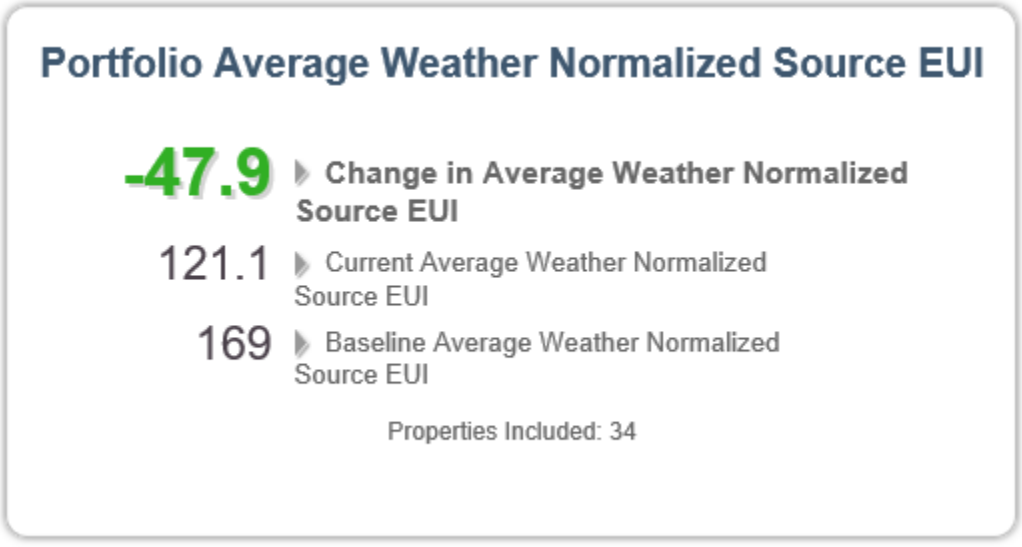
The information in the above table was pulled from CDFA's bill history.

Table 2: Properties with Largest Energy Consumption

Building Name	Floor Area (ft^2)	Site Energy (kBTU)	Source Energy (kBTU)	Source EUI ($kBTU/ft^2$-yr)
BENTON AGRICULTURE INSPECTION STATION	3,814	48,761	166,975	137.5
BLYTHE AGRICULTURE INSPECTION STATION	620	84,299	288,267	1459.9
DORRIS AGRICULTURE INSPECTION STATION	722	55,685	575,156	1380.8
FRESNO (2895 N Larkin)	11,010	95,026	Unavailable	Unavailable
HORNBROOK AGRICULTURE INSPECTION STATION	784	87,903	895,182	1979.1
MEADOWVIEW	101,238	5,120,382	29,634,164	668.8
NEEDLES AGRICULTURE INSPECTION STATION	497	84,824	283,279	1789.7
TRUCKEE AGRIC INSPECTION STATION - NEW	1,308	257,764	118,264	283.9
WINTERHAVEN AGRICULTURE INSPECTION STATION	1,719	64,713	215,405	393.5
YERMO AGRICULTURE INSPECTION STATION	1,730	120,424	412,775	749.2
Total for Buildings in This Table	123,442 ft^2	6,019,781 kBTU	32,589,467 kBTU	---
Total for All Department Buildings	134,164 ft^2	6,212,121 kBTU	39,761,851 kBTU	---
% of Totals	92.01 %	97 %	82 %	---

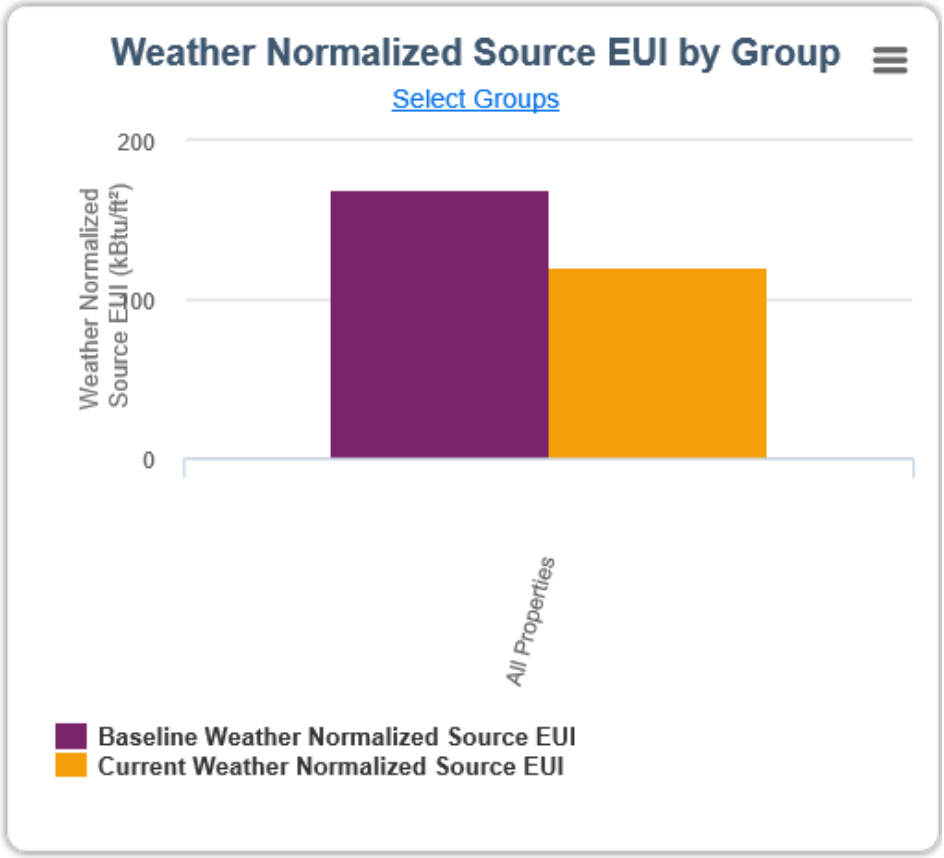
The information in the above table (Thousand British Thermal Units (kBTU), Square Feet (ft^2), Energy Use Intensity (EUI)) was pulled from CDFA's bill history.

Data Block A: Average Weather for CDFA Properties



The information in the above data block can be found at https://portfoliomanager.energystar.gov/pm/reports

Graph 1: Baseline to Present Weather Comparison



The information in the above graph can be found at https://portfoliomanager.energystar.gov/pm/reports

CDFA worked with DGS from 2013 through 2015 to develop a project plan for the installation of solar panels at the Meadowview facility. This would have generated over 50% of the department-wide energy. In 2015, CDFA engaged in an agreement with the United States Department of Agriculture to have the land leased and a laboratory built. This development prompted CDFA to begin exploring different options to meet the ZNE requirements set forth in the Governor's EO and energy sustainability goals. Since most of CDFA's owned facilities are Inspection Stations on the highway with rights only to the land the booth is on, not the surrounding area (251-8,880 square feet, with an average of 1,557 square feet); and since most of these Inspection Station booths are located in areas with snow and low light (located in Alturas, Dorris, Hornbrook, Chilcoot [Long Valley], Tahoe Paradise [Meyers], Crescent City [Redwood], Smith River, Topaz, Truckee, Canby [Tulelake]) for at least half the year, it has been difficult for CDFA to find viable locations for solar panels to be effective; therefore, CDFA has struggled to find a new project to meet the ZNE goals. The Inspection Stations were built from 1900 to 2007 with the average building being at least 57 years old.

CDFA has been working with the California Environmental Protection Agency (CalEPA), DGS' Office of Sustainability, and the Climate Registry to determine the best course of action. CDFA has performed an internal energy use audit and will consider having utilities perform more in-depth energy audits. CDFA will also evaluate incentive programs which may supplement project costs. CDFA continues to explore energy reduction options which include, but may not be limited to, solar panel installation, energy audits, demand response for additional locations, and/or additional purchased renewable energy. CDFA is also developing plans for increasing

use of current strategies in the future for additional GHGe reductions. CDFA is evaluating options to meet ZNE requirements by 2020.

ZNE

The Governor has set forth the following milestones for state ZNE buildings:

- 2020 – 50% of new construction and major renovations will be ZNE
- 2025 – 100% of new construction and major renovations will be ZNE
- 2025 – 50% of total existing buildings will be ZNE

CDFA currently has two new building construction projects (South Valley Animal Health Laboratory in Tulare and Mountain Pass Border Protection Station in Yermo) and no new renovation projects. Both projects were deemed exempt from the ZNE requirements per DGS and California Department of Transportation (Caltrans). These are the only new construction projects currently in the works. Currently, CDFA has a total of 134,164 square feet (22 buildings). Including these anticipated additions, CDFA will have 203,034 square feet.

Tulare South Valley Animal Health Laboratory (47,517 square feet total)
The new Tulare South Valley Animal Health Laboratory will provide 29,426 assignable square feet of laboratory and administrative space for CDFA veterinary diagnostic testing laboratories adjacent to the existing Veterinary Medicine Teaching and Research Center in Tulare County. The facility will accept avian and livestock sample submissions for complex diagnostic procedures to support ongoing food production, food safety and animal welfare programs. This project will continue the long-term partnership between CDFA and UC Davis in protecting human and animal health. The 47,517 gross square feet building is a single story with a partial basement and an interstitial penthouse floor to house mechanical equipment. In addition to the laboratory and office space, the project will include a cremator and effluent decontamination system to support the laboratory functions, a back-up generator, on-site domestic water well, a storm water retention pond, and a new septic system for the disposal of wastewater.

The Tulare Lab was deemed exempt because it is being constructed by University (UC) on UC owned land. It is a UC project, subject to the rules and regulations set forth by the UC Regents. As such, it is not subject to DGS rules nor is it subject to any of the EOs that effect CDFA. Labs also require such a high amount of energy due to specialized equipment that it would not be feasible to create enough energy to make a lab ZNE.

Yermo Mountain Pass Border Protection Station (21,353 square feet total)
This project constructs a new Agricultural Border Inspection Station on Interstate 15 at Mountain Pass, California, providing six vehicle lanes and four truck lanes. Project scope includes the following: a 10,277 square foot inspection structure over the vehicle lanes with a ventilation system to exhaust vehicle emissions; six inspection booths with air conditioning; a 2,904 square foot office building with restroom facilities; a 582 square foot containment building; a 6,900 square foot truck detention canopy with two truck inspection booths; a 167 square foot fire pump and well hose; a 421 square foot trash enclosure; a 684 square foot domestic water well; facility lighting; emergency generator (30 KW); and frangible cartridge-type

safety barriers (nine each); signage; incinerator; regrade site and a four-lane bridge for the auto lanes. The existing station located near Yermo will be demolished and the roadway patched and restriped and site regraded.

The Yermo Border Station is a Caltrans property until it is completed and is exempt because:

- It was designed prior to 2020 (interim implementation year) and 2025 (full implementation year) by which ZNE State building construction is required.
- There was a 2013 pilot project requirement to identify one building for ZNE design and that project was already selected in one of Caltrans' northern districts. It should be noted this project follows the 2013 California Green Building Code as both Caltrans and CDFA agreed upon as a standard. The final design has incorporated various energy savings items. These features include high value insulation in the roofing and walls, a high efficiency HVAC system, LED lighting and low flow water fixtures.

CDFA will continue to achieve the Governor's ZNE goals for state buildings, ensuring 50% of applicable new building area beginning construction after 2020 is ZNE, and all new buildings beginning construction after 2025 will be ZNE. CDFA will also continue to pursue solutions for converting 50% of existing building area to ZNE.

Table 3: ZNE Buildings

Status of ZNE Buildings	Number of Buildings	Floor Area (ft^2)
Under Construction or Completed	0	0
Building In Design (Yermo)	0	0
Building Proposed for Before 2025 (but not yet in design)	0	0
Totals for ZNE Buildings	0	0
Totals for All Department Buildings	22	134,164
% ZNE	0	0

The information in the above table was pulled from CDFA's internal historical data.

All values above are zero because Tulare is under construction and Yermo is in design but neither are ZNE buildings because they are being constructed by the UC and Caltrans and are therefore exempt. There are currently no other construction projects. CDFA is evaluating options to meet ZNE requirements by 2025.

New Construction Exceeds Title 24 by 15%

All new state buildings and major renovations beginning design after July 1, 2012, must exceed the current California Code of Regulations (CCR) Title 24, energy requirements by 15% or more.

CDFA is not currently involved in planning, or considering any new building construction or renovation projects exceeding Title 24 (over 5,000 square feet area) at this time other than the above exempt projects; however, CDFA is considering the feasibility of methods to convert current properties to ZNE.

Table 4: New Construction Exceeding Title 24 by 15%

Buildings Exceeding Title 24 by 15%	Number of Buildings	Floor Area (ft^2)
Completed Since July 2012	0	0
Under Design or Construction	0	0
Proposed Before 2025	0	0

All values above are zero because Tulare is being constructed by the UC, Yermo is being constructed by Caltrans (so both are exempt), and there are currently no other construction projects. CDFA is evaluating options to meet ZNE requirements by 2025.

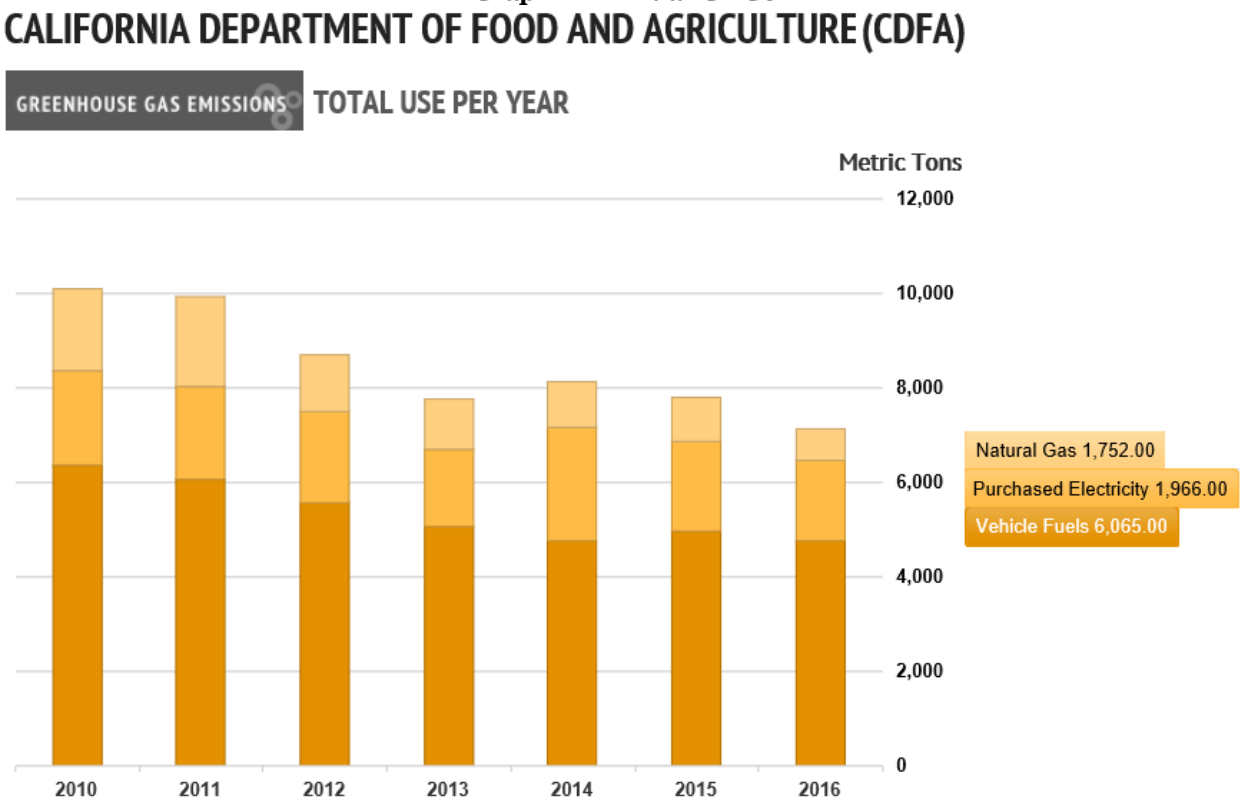
CDFA will continue to work with DGS Real Estate Services Division or appropriate entity on all new construction and major renovations.

Reduce Grid-Based Energy Purchased by 20% by 2018

EO B-18-12 requires state agencies to reduce grid-based energy purchased by 20% by 2018, compared with a 2003 baseline.

CDFA continues to utilize the leased facility, 2800 Gateway Oaks, which installed solar panels prior to CDFA leasing it.

Graph 2: Annual GHGe



The information in the above graph can be found at
http://green.ca.gov/Buildings/department/CDFA#chartanchor

CDFA enrolled in a "Demand Response" program to purchased renewable energy for:

- Owned: 3288-3294 Meadowview Road, Sacramento, California – 101,238 square feet.
- Leased: 1220 N Street, Sacramento, California – 78,604 square feet.
- Leased: 2800 Gateway Oaks Drive, Sacramento, California – 63,826 square feet.

100% of CDFA owned buildings over 10,000 square feet and 25% of leased facilities over 10,000 square feet are currently enrolled in a DRP. Looking at the square footage, 50% of the square footage for leased properties over 10,000 square feet and 63% of the square footage for all CDFA leased and owned buildings over 10,000 square feet are currently enrolled in a DRP.

CDFA continues to explore options in reaching the goals set forth in the Governor's EOs. Some strategies CDFA is considering employing to meet the 2020 reduction target include solar panels, energy audits, demand response for additional locations, and/or additional purchased renewable energy. CDFA is also developing plans for increasing use of the above strategies in the future for additional GHGe reductions. CDFA is evaluating options to meet ZNE requirements by 2020.

CDFA has partnered with Sacramento Municipal Utilities District (SMUD) on various projects at CDFA's Center for Analytical Chemistry Laboratory in Sacramento, California. CDFA participates in SMUD's Energy Rebate Program for the replacement of HVAC chillers.

CDFA has installed energy efficiency projects, including:

- CDFA began using the Verdiem Surveyer power management software in 2008 to control and reduce power usage by desktop computers.
- CDFA has reduced its use of stand-alone Windows servers from 60 prior to 2010, to approximately five, by consolidating and virtualizing the systems and functions they served into two virtualized multi-blade chassis.
- Server room energy reduction: Installed April 2012. Estimated annual kWh savings is unknown. CDFA has not received a baseline usage reading or any kind of measurement from DGS in the past five years.
- CDFA has made strides to ensure computers, copiers and printers are set to utilize their Energy Saver mode during periods of inactivity wherever possible.
- CDFA ensures that data centers are operated at the base maximum temperature allowed by equipment manufacturers.

CDFA met with CalEPA to discuss solutions, audited usage, and continues to correspond with CalEPA and reach out to other departments to discuss viable options.

Department of Technology Basic Policy State Administrative Manual (SAM) Section 4819.31 item 12:

CDFA has performed the specific efforts necessary to fully comply with Department of Technology Basic Policy State Administrative Manual (SAM) Section 4819.31 item 12, such as: implementing power management practices on all computers, printers, copiers, scanners and monitors; and ensuring that during normal business hours devices which are not in use for 30 minutes automatically go into an energy-saving mode.

CDFA will continue to work with DGS on possible projects to reduce energy usage at its State-owned facilities. CDFA will continue to seek partnerships with utilities for energy efficient projects for all facility system upgrades.

Department of Technology's Basic Policy 4819.31, item 13:
Per the Department of Technology's Basic Policy 4819.31, item 13, CDFA has implemented power management practices on all desktop and laptop computing devices, thin client devices, printers, copiers, scanners, and monitors. Devices shall be shut down at the end of the normal business day. During hours of normal operation, devices which are not in use for 30 minutes shall automatically go into an energy-saving mode.

CDFA Employees receive reminders several times every year to shut down their computers every night. Every time Information Technology updates are needed, an email is sent to all employees instructing them to shut down their computer every night instead of just logging off. When CDFA partnered with the State of California Energy Commission, participating in the CalEclipse "One Thing for the Sun" campaign, CDFA notified all employees to set air conditioners to 78 degrees, turn off unnecessary lights during the event, reduce overhead lighting as much as possible without creating unsafe conditions, and power down any equipment not in use (copiers, laboratory equipment, monitors etc.).

All printers, copiers, computers, etc. come with factory default setting to go into energy saving mode after 30 minutes. CDFA uses this default setting to ensure all computers, copiers and printers are set to utilize their Energy Saver mode during periods of inactivity. This power management software comes with all Hewlett Packard, Sharp, and Canon products.

MM 14-07: Per MM 14-07 "Standard Operating Procedures for Energy Management in State Buildings" and the associated Standard Operating Procedures, CDFA ensures all lights and equipment are turned off at the end of each work day. Where feasible, CDFA has installed motion sensor lights that automatically shut off when areas are not in use. CDFA also educates employees, training them to turn off lights at the end of each workday. Some offices assign specific employees to ensure lights are off every night while other offices train their employees with the practice of the lights being turned off by the last employee to leave the office for the night. Energy Star rated equipment is purchased whenever practical and all vending units are Energy Star rated.

CDFA works with DGS to ensure lighting and HVAC electric usage is minimized outside of normal building hours. Building HVAC controls are set to allow for a +2 or -2 degree fluctuation from the temperature set point for all Energy Management Control System (EMCS)s, thermostats, and economizers. Night flush cycles are also utilized where feasible.

MM 14-09: Per MM 14-09, CDFA's Information Technology office ensures data centers are operated at the maximum temperature allowed by equipment manufacturers. Information Technology staff has adjusted temperatures per regulations where applicable. CDFA ensures that data centers are operated at the base maximum temperature allowed by equipment manufacturers.

CDFA works with DGS to ensure domestic hot water systems are not set hotter than 105 degrees, HVAC (ducts, filters and equipment) are inspected and maintained at maximum effectiveness, all boilers are tuned up (including a combustion efficiency check) at least twice per year, and all light levels are appropriate.

Energy Star rated equipment is purchased whenever practical and all vending units are Energy Star rated.

CDFA issued a message to all employees instructing them to unplug any personal devices to assist with energy conservation; and employees have been made aware that all equipment in employee kitchens and break rooms must have an Energy Star rating.

All vending machines on-site are certified to Energy Star version 3.0, section 3(B) or are equipped with after-market occupancy sensor or sales based energy management hardware.

All equipment is turned off, including coffee makers, when not in use, where feasible. Employees are allowed to determine their own cleaning schedules for kitchen, break room, and lunch room equipment and there have been no problems with it being cleaned regularly and maintained to optimize efficiency.

Per the MM 14-09 "Energy Efficiency in Data Centers and Server Rooms", all applicable CDFA data centers and server rooms greater than 200 square feet are operated within the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE)-TECHNICAL COMMITTEE 9.9, Class A1-A4 guidelines, including operating at temperatures between 73-81 degrees Fahrenheit. CDFA has one server/network room greater than 200 square feet located at CDFA Headquarters, 1220 N Street, Sacramento. CDFA does not own any data centers over 1,000 square feet; therefore CDFA is not required to follow reporting and reduction regulations connected with this size.

All purchases of network switches and routers meet the Energy Efficient Ethernet IEEE 802.3-2012 Section 6 standard. Virtualization options have been considered when refreshing server equipment or standing up new systems.

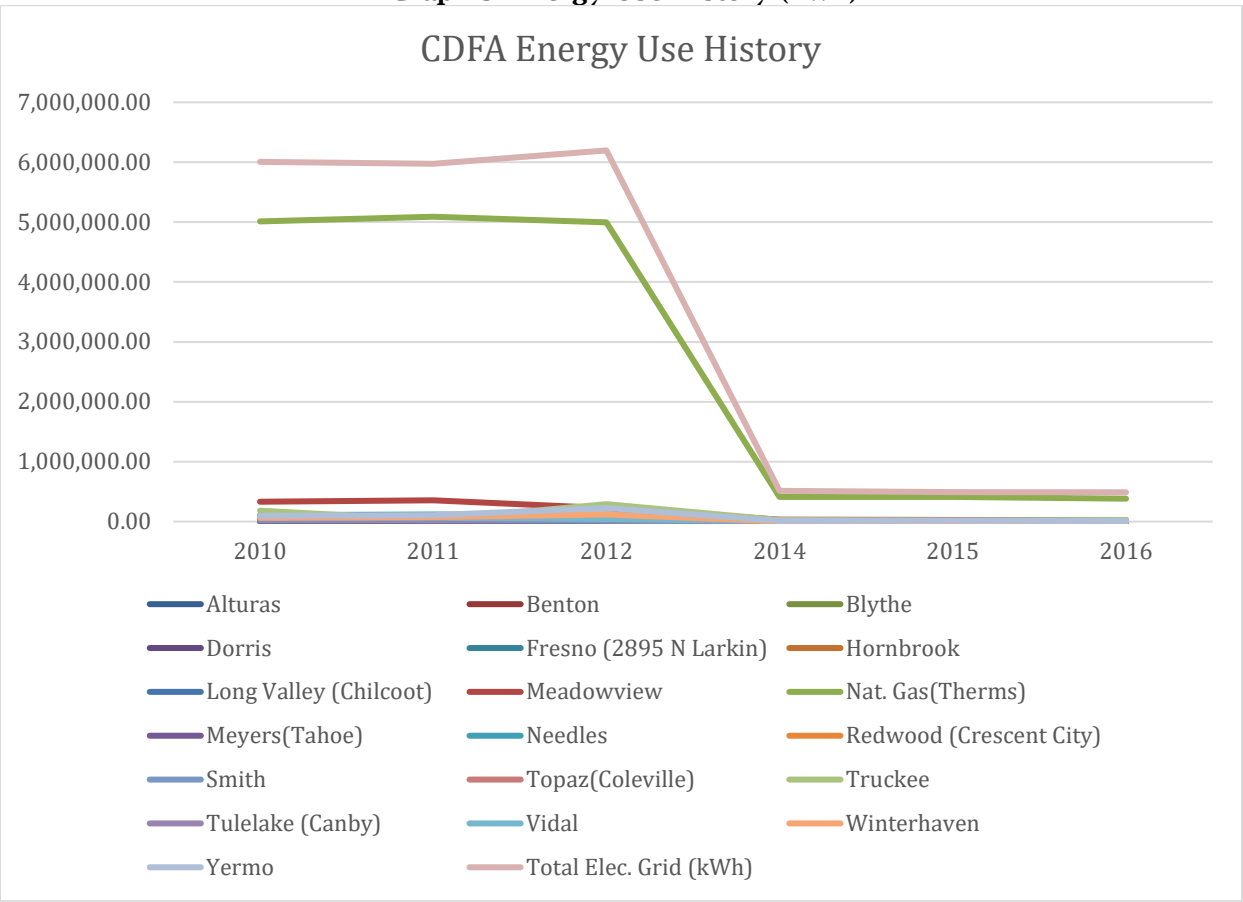
CDFA tracks energy use for 19 properties that make up a total of 238,970 square feet, using about six million kilowatt hours per year. As shown below, CDFA's facility energy use and overall energy use has reduced considerably since the benchmark year.

Table 5: Annual Energy Use (kWh/Therms)

Location / Energy Units	2010	2011	2012	2013	2014	2015	2016
Alturas (kWh)	26,992.00	24,464.00	24,464.00	17,394.00	792.00	781.09	523.00
Benton (kWh)	5,958.00	3,978.00	3,385.00	31,038.00	4,879.00	4,379.00	4,491.00
Blythe (kWh)	8,180.00	7,736.00	8,757.00	79,456.00	6,230.00	5,611.00	5,838.00
Dorris (kWh)	71,076.00	61,384.00	46,193.00	59,133.00	6,734.00	4,633.91	5,348.00
Fresno (**Therms**)	**620.00**	**869.00**	**754.00**	**2,480.00**	**557.00**	**1,380.00**	**513.00**
(kWh)	55,049.00	107,901.00	80,040.00	84,479.00	6,244.00	82,742.00	7,345.00
Hornbrook (kWh)	88,712.00	95,523.00	72,316.00	83,664.00	11,357.00	6,368.00	11,196.00
Long Valley – Chilcoot (kWh)	36,681.00	49,093.00	38,266.00	41,634.00	6,163.00	4,492.00	4,411.00
Meadowview (**Therms**)	**329,504.00**	**355,021.00**	**222,352.00**	**202,452.00**	**33,750.00**	**29,080.00**	**24,377.00**
(kWh)	5,010,047.00	5,089,536.00	4,995,351.00	4,087,918.00	409,783.00	410,923.00	382,381.00
Meyers - Tahoe (kWh)	19,564.00	9,781.00	16,786.00	16,501.00	1,583.00	1,066.82	1,699.00
Needles (kWh)	108,679.00	116,192.00	117,313.00	100,995.00	5,720.00	6,957.00	7,001.00
Redwood – Crescent City (kWh)	46,556.00	44,020.00	20,478.00	52,044.00	1,435.00	907.00	1,562.00
Smith (kWh)	43,648.00	23,753.00	14,998.00	19,489.00	1,232.00	1,947.36	4,125.00
Topaz – Coleville (kWh)	56,757.00	47,018.00	42,635.00	27,703.00	1,206.40	2,786.00	2,381.00
Truckee (kWh)	179,382.00	27,993.00	290,600.00	55,746.00	29,192.00	17,699.18	29,008.00
Tulelake – Canby (kWh)	22,678.00	21,374.00	38,601.00	39,826.00	1,624.00	1,003.00	927.00
Vidal (kWh)	63,313.00	62,397.00	41,293.00	46,430.00	3,867.00	3,664.00	3,316.00
Winterhaven (kWh)	62,160.00	72,840.00	118,380.00	53,629.00	3,480.00	5,936.00	4,340.00
Yermo (kWh)	98,886.00	109,005.00	226,764.00	125,612.00	12,435.00	14,803.00	12,998.00
Total kWh	**6,004,318.00**	**5,973,988.00**	**6,196,620.00**	**5,022,691.00**	**513,956.40**	**493,957.36**	**488,890.00**

The information in the above table (electric grid - kilowatt hours [kWh] and natural gas - Thermal Units [Therms]) was pulled from CDFA's internal historical data and www.cris4.org.

Graph 3: Energy Use History (kWh)



The information in the above graph can be found in Table 5.

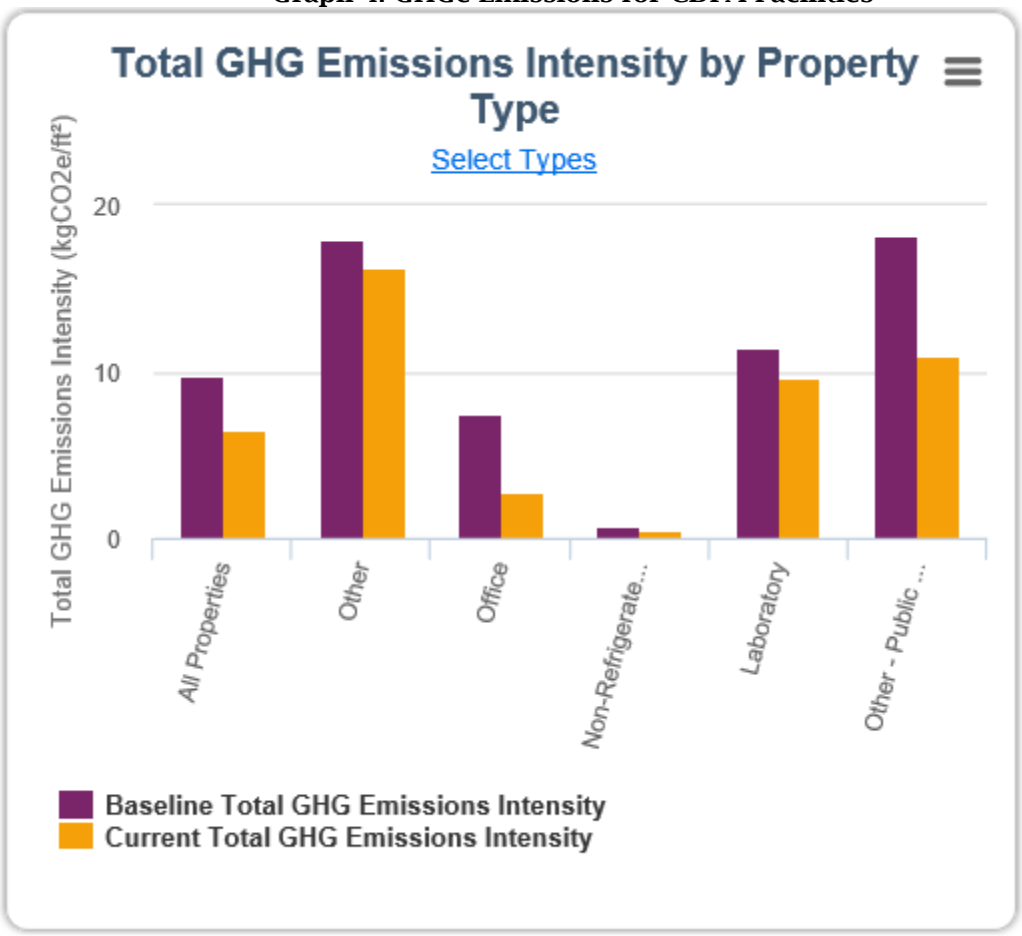
Table 6: Department Wide Energy Trends

Year	Floor Area (ft^2)	Total kBTU Consumption	Department Average EUI
Baseline Year	238,970	7,953,103	33.2807591
2012	238,970	8,239,643	34.4798217
2013	238,970	6,777,115	28.3596895
2014	238,970	7,707,988	32.2550446
2015	238,970	6,362,482.4	26.6246073
2016	238,970	Approx. 6,100,000	Approx. 25.52622
2018 Goal	238,970	6,362,482.4	26.6246073

The information in the above table can be found at www.cris4.org.

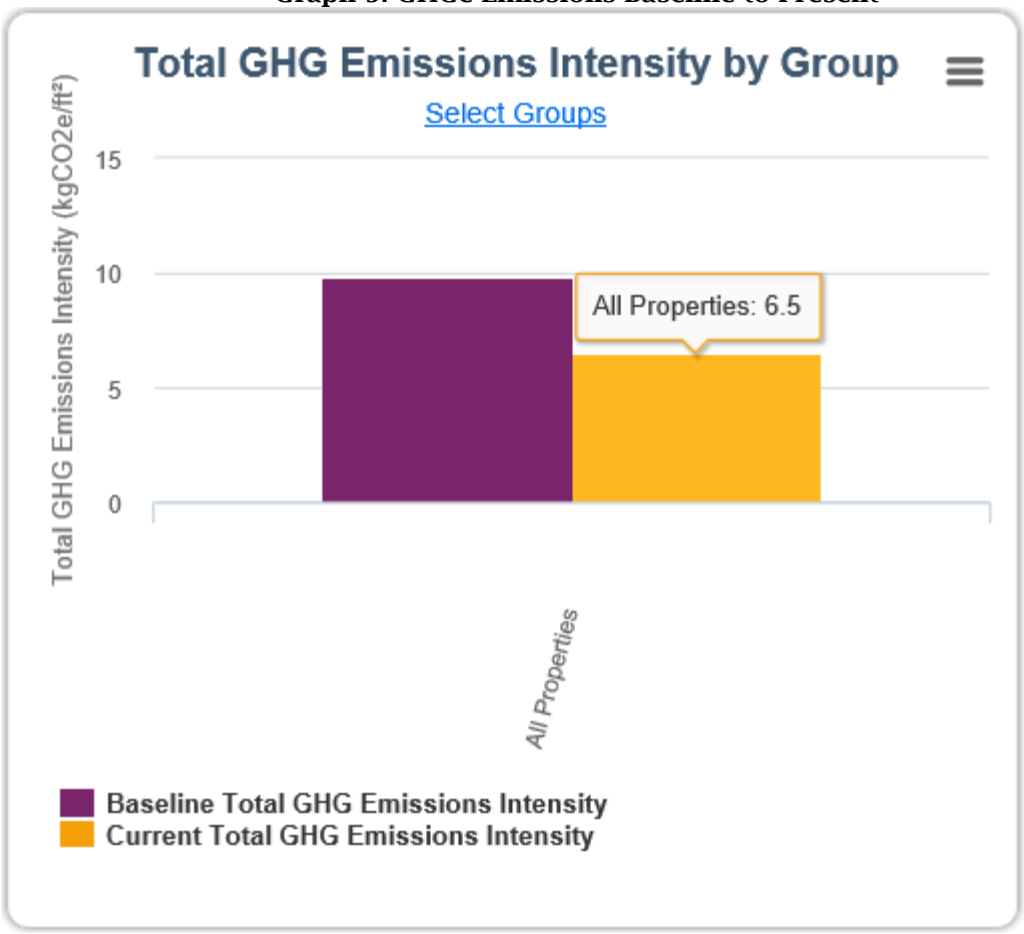
As shown above, CDFA has exceeded the reduction requirements set forth by the Governor's EOs.

Graph 4: GHGe Emissions for CDFA Facilities



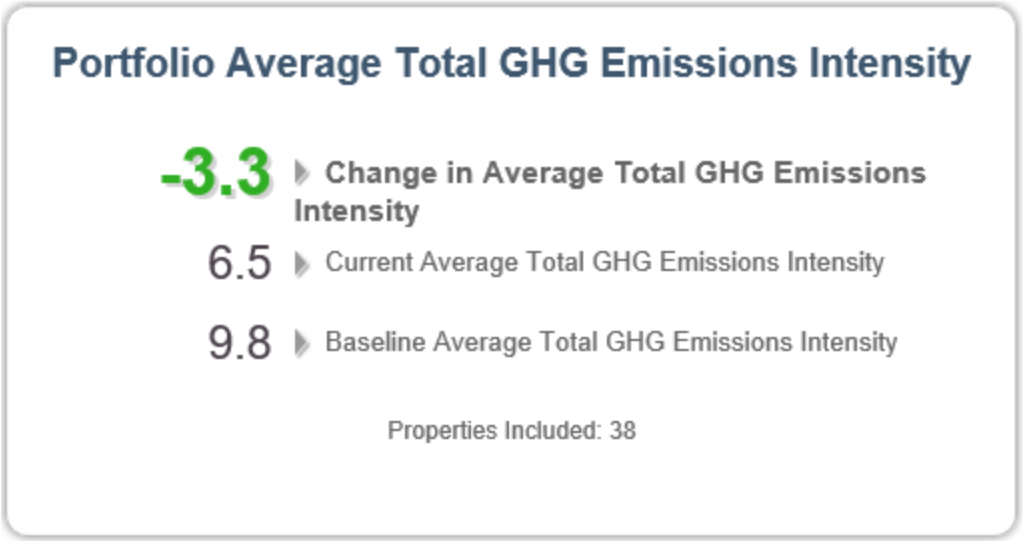
The information in the above graph can be found at https://portfoliomanager.energystar.gov/pm/reports

Graph 5: GHGe Emissions Baseline to Present



The information in the above graph can be found at
https://portfoliomanager.energystar.gov/pm/reports

Data Block B: GHGe Emissions Baseline to Present



The information in the above data block can be found at
https://portfoliomanager.energystar.gov/pm/reports

The energy use reductions show in this document were a result of CDFA's various efforts, including:

- CDFA reduced energy use and GHGe at its State-owned facilities by partnering with Sacramento Municipal Utilities District (SMUD) on various projects, including participating in the DRP at various locations, participating in energy conservation projects at CDFA's Center for Analytical Chemistry Laboratory in Sacramento, California, and participating in SMUD's Energy Rebate Program for the replacement of HVAC chillers.
- CDFA installed energy efficiency projects, including:
  - CDFA began using the Verdiem Surveyer power management software in 2008 to control and reduce power usage by desktop computers.
  - CDFA has reduced its use of standalone Windows servers from 60 prior to 2010, to approximately five, by consolidating and virtualizing the systems and functions they served into two virtualized multi-blade chassis.
  - Server room energy reduction: Installed April 2012. Estimated annual kWh savings is unknown. CDFA has not received a baseline usage reading or any kind of measurement from DGS in the past five years.
  - CDFA has made strides to ensure computers, copiers and printers are set to utilize their Energy Saver mode during periods of inactivity wherever possible.
  - CDFA ensures that data centers are operated at the base maximum temperature allowed by equipment manufacturers.
- Furloughs reducing demand and usage (2008-2012).
- CDFA partnered with the statewide energy conservation campaign to reduce energy use in 2017. CDFA encouraged all employees to reduce energy consumption by powering off computers every night, using power strips, unplugging charging devices once fully charged, and turning off the lights when room(s) are not in use.

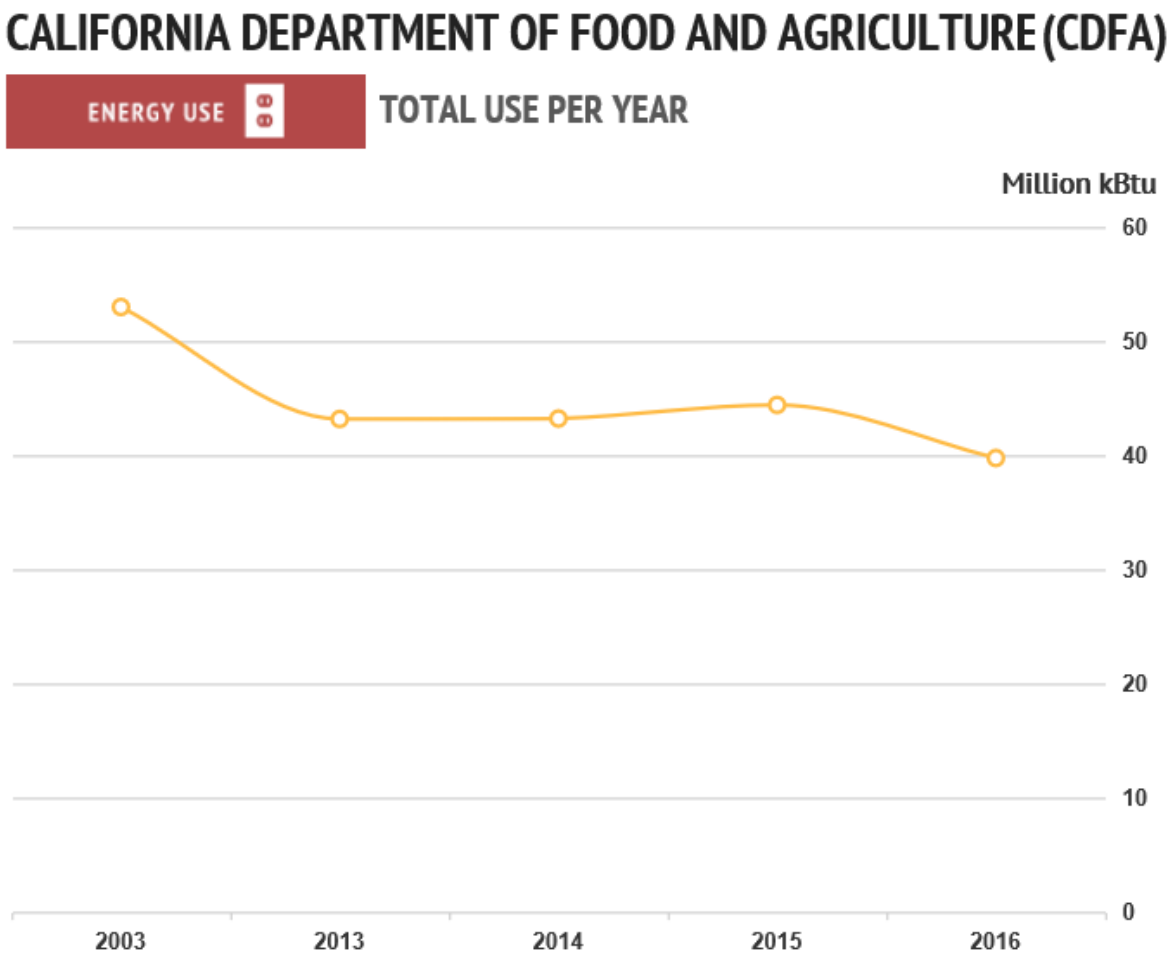
Table 7: Energy Reductions Achieved

Purchased Energy Compared to Baseline	Number of Buildings	Floor Area (ft^2)	Current Year Energy Use	Percent of Total Energy
20% Reduction Achieved	18	238,970	Approx. 6,100,000	100
Less than 20% Reduction	0	0	0	0
Baseline	18	238,970	7,953,103	-
Totals	18	238,970		100%
Department-Wide Reduction				

The information in the above table, from DGS, can be found at www.energystar.gov.

As shown above, CDFA has exceeded the reduction requirements set forth by the Governor's EOs.

Graph 6: Annual Energy Use (kBtu)



The information in the above graph can be found at
http://green.ca.gov/Buildings/department/CDFA#chartanchor

Demand Response

EO B-18-12 directed all state Departments to participate in available DRPs and to obtain financial incentives for reducing peak electrical loads when called upon, to the maximum extent cost-effective.

CDFA enrolled in a "Demand Response" program to purchased renewable energy for:

- Owned: 3288-3294 Meadowview Road, Sacramento, California – 101,238 square feet.
- Leased: 1220 N Street, Sacramento, California – 78,604 square feet.
- Leased: 2800 Gateway Oaks Drive, Sacramento, California – 63,826 square feet.

100% of CDFA owned buildings over 10,000 square feet and 25% of leased facilities over 10,000 square feet are currently enrolled in a DRP. Looking at the square footage, 50% of the square footage for leased properties over 10,000 square feet and 63% of the square footage for all CDFA leased and owned buildings over 10,000 square feet are currently enrolled in a DRP.

CDFA continues to explore options in reaching the goals set forth in the Governor's EOs. Some strategies CDFA is considering employing to meet the 2020 reduction target include solar panels, energy audits, demand response for additional locations, and/or additional purchased

renewable energy. CDFA is also developing plans for increasing use of the above strategies in the future for additional GHGe reductions. CDFA is evaluating options to meet ZNE requirements by 2020.

Renewable Energy

New or major renovated state buildings over 10,000 square feet must use clean, on-site power generation, and clean back-up power supplies, if economically feasible. Facilities with available open land must consider large scale distributed generation through various financing methods, including, but not limited to, third party Power Purchase Agreements (PPAs).

Although there are no specific kW goals for renewable energy, renewable energy does count towards meeting: (1) ZNE goal for 2025 and; (2) 20% grid based energy use reduction by 2018.

CDFA does not have or plan having any new or major renovated state buildings over 10,000 square feet at this time.

CDFA has been working with the California Environmental Protection Agency (CalEPA), DGS' Office of Sustainability, and the Climate Registry to determine the best course of action for renewable energy efforts and energy use reductions. CDFA has performed an internal energy use audit and will consider having utilities perform more in-depth energy audits. CDFA will also evaluate incentive programs which may supplement project costs. CDFA continues to explore energy reduction options which include, but may not be limited to, solar panel installation, energy audits, demand response for additional locations, and/or additional purchased renewable energy. CDFA is also developing plans for increasing use of current strategies in the future for additional GHGe reductions. CDFA is evaluating options to meet ZNE requirements by 2020.

Monitoring Based Commissioning (MBCx)

New and existing state buildings must incorporate Monitoring Based Commissioning (MBCx) to support cost effective and energy efficient building operations, using an EMCS. State agencies managing state-owned buildings must pursue MBCx for all facilities over 5,000 square feet with EUIs exceeding thresholds described in MM 15-04.

This is not applicable at this time. CDFA will continue to work with DGS to follow applicable regulations.

Financing

State agencies are required to pursue all available financing and project delivery mechanisms to achieve these goals including, but not limited to: state revolving loan funds, utility On-Bill Financing, PPAs, Golden State Financial Marketplace, Energy Service Contractors, or other available programs

CDFA has pursued various options but has not found any appropriate alternate funding sources at this time. CDFA will continue to pursue alternate funding opportunities as appropriate.

DEPARTMENT STAKEHOLDERS

ZNE	
Administrative Services, Building and Property Management	Mari McNeill, Energy Conservation Liaison

New Construction Exceeds Title 24 by 15%	
Administrative Services, Building and Property Management	Mari McNeill, Energy Conservation Liaison

Reduce Grid-Based Energy Purchased by 20% by 2018	
Administrative Services, Building and Property Management	Mari McNeill, Energy Conservation Liaison

Demand Response	
Administrative Services, Building and Property Management	Mari McNeill, Energy Conservation Liaison

Renewable Energy	
Administrative Services, Building and Property Management	Mari McNeill, Energy Conservation Liaison

Monitoring Based Commissioning (MBCx)	
Administrative Services, Building and Property Management	Mari McNeill, Energy Conservation Liaison

Financing	
Administrative Services, Building and Property Management	Mari McNeill, Energy Conservation Liaison