

# UESC Market Potential and FEMP Data Resources

New Utility Toolkit

June 2021



# Agenda

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- **Market Boundaries**
- **Market Potential**
- **Publicly available data**
- **Data Management & Reporting**
- **FEMP Data Resource Examples**

# UESC Market Boundaries

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- **Federal customers within a utility service territory are eligible for UESC contracts**
- **UESC projects are Life Cycle Cost effective**
- **UESC terms may not exceed 25 years**
- **Market potential for UESCs is the potential for energy conservation measures (ECMs), renewable energy projects, and associated energy services at federal facilities**

# Where does the FEMP data set come from?

- EISA 432 requires federal agencies to identify “covered facilities” that constitute at least 75% of their total energy use
- A comprehensive evaluation for each covered facility must be completed at least once every 4 years
- Potential life-cycle cost-effective ECMs and implementation costs are identified during evaluations and reported to the EISA 432 Compliance Tracking System (CTS)
- **Publicly Available Data from CTS is accessible:**
  - Agency aggregates, representing all reported data subject to the EISA 432 requirements
  - Facility-level detailed data that excludes information for facilities that have requested exemption from public disclosure for national-security purposes



## Key Resource

*EISA Federal Covered Facility Management and Benchmarking Data*

<https://www.energy.gov/eere/femp/eisa-federal-covered-facility-management-and-benchmarking-data>

# EISA 432 Evaluations – audit component

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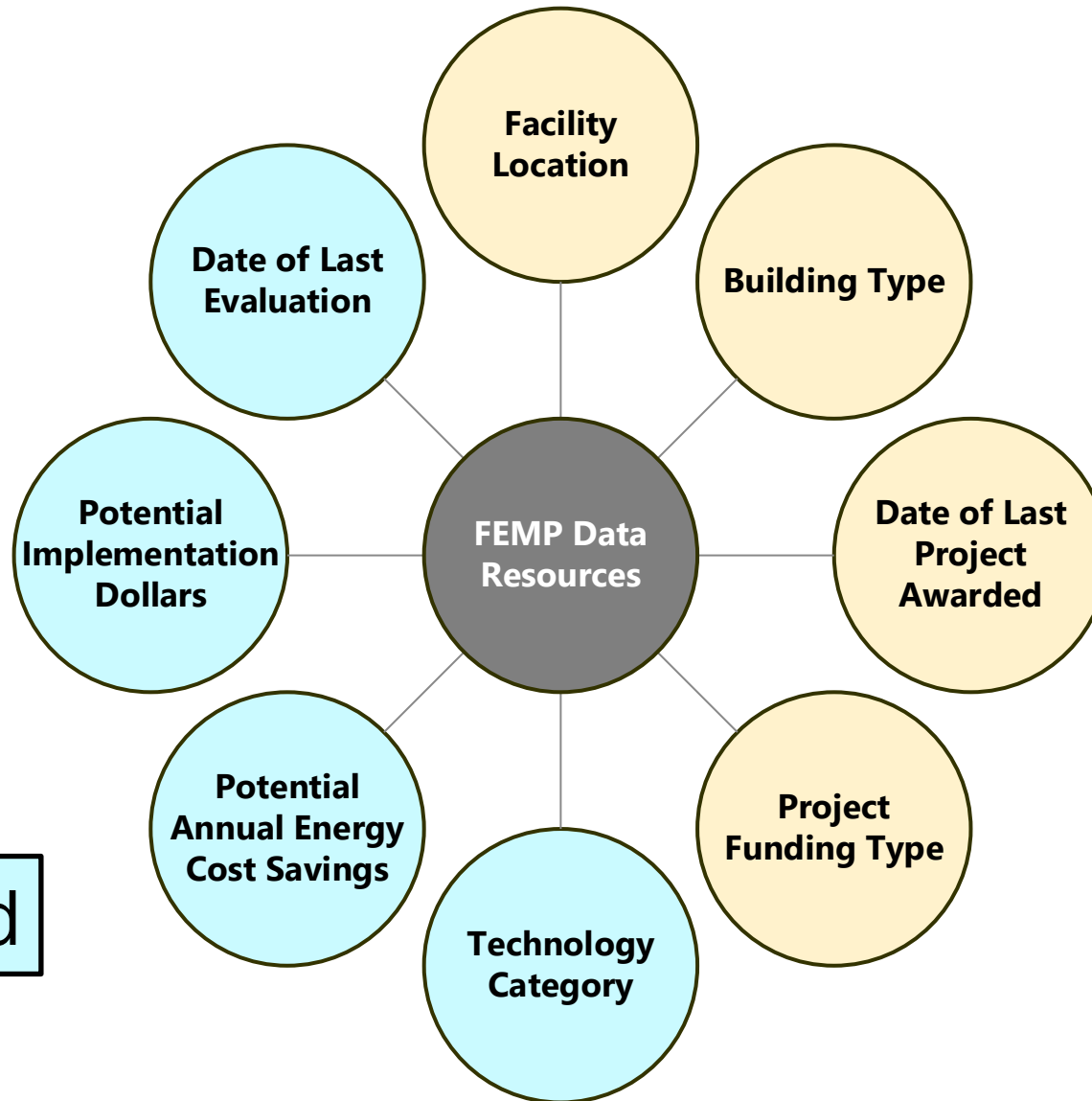
- EISA 432 comprehensive evaluations require a format based on ESPC preliminary assessment level audits
- A template for ESPC preliminary assessment reports can be found here in the link below:  
<https://www.energy.gov/eere/femp/downloads/2008-doe-idig-espc-preliminary-assessment-template>

# UESC Market Potential

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- **Several factors drive the market potential for ECMs and are supported by federal goals & mandates:**
  - Energy efficiency
  - Greenhouse gas reduction
  - High performance sustainable buildings
  - Resilience
  - Renewable energy
  - Water & waste management
  - Performance contracting (Energy Act of 2020)
  - Administration policy

# How to define UESC market potential with FEMP data



# Target Market Characteristics – (CTS Defined Fields)

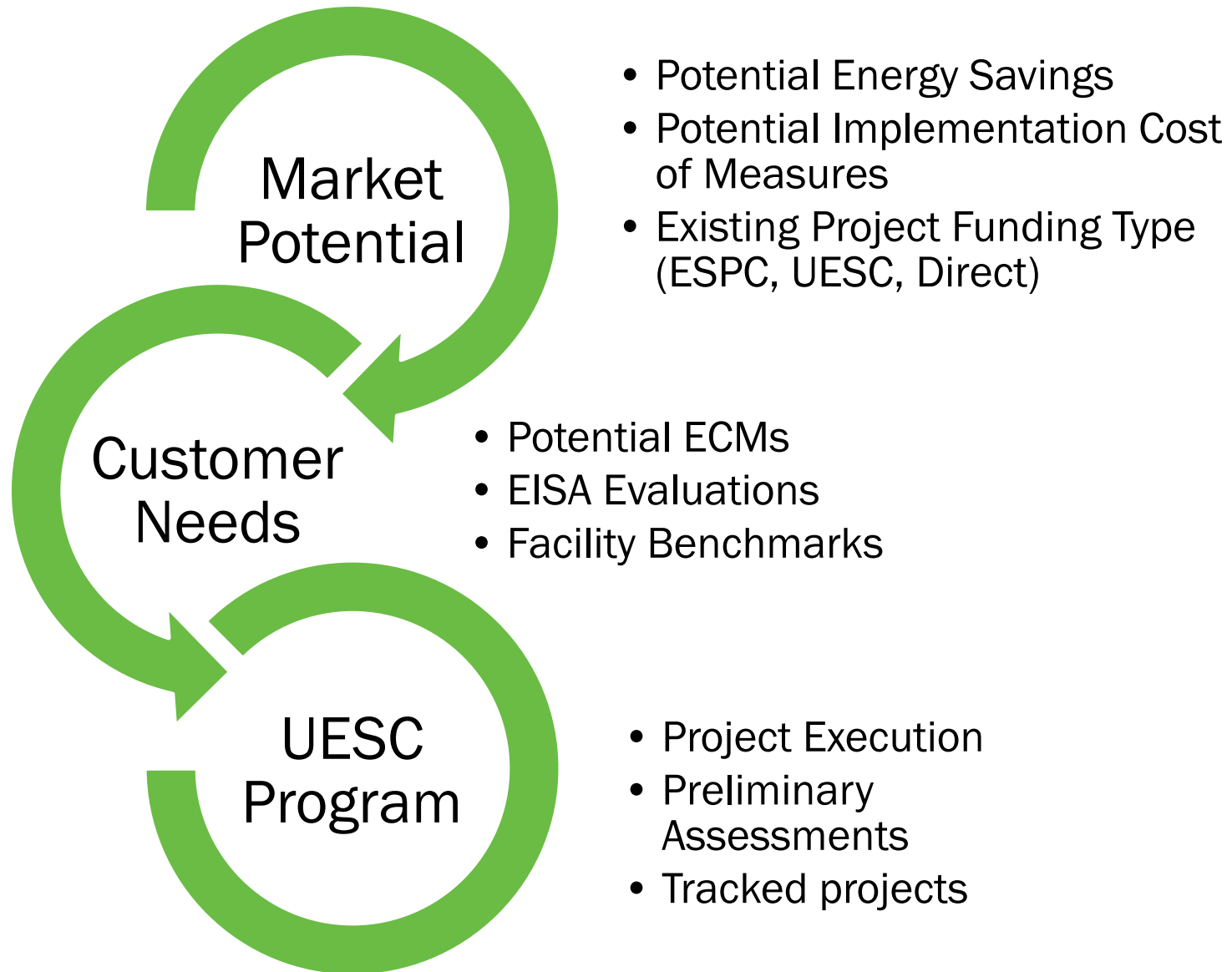
- **Facility Location**
  - Filter by facility name, city, state, and zip code as applicable to utility service territory
  - Some facilities (e.g. DOD) are exempt from facility level detail such as location
- **Building Type**
  - Use building type to understand make-up of locations, campuses, or geographic areas
- **Date of Last Project Awarded**
  - Can be associated with the **Date of Last Evaluation** to determine whether ECMs identified in the evaluation may have already been implemented
- **Project Funding Type**
  - Direct, ESPC, or UESC funding can indicate whether the location is familiar with performance contracting and the extent the funding type is utilized



# Demand Characteristics – (CTS Defined Fields)

- **Date of Last Evaluation**
  - Time-stamp indicating how recently the evaluation (and associated ECM details) were updated
- **Potential Implementation Dollars**
  - The estimated investment of direct funding to implement the ECMs identified in the evaluation
- **Potential Annual Energy Cost Savings**
  - The total estimated energy-related savings associated with the last evaluation - aggregate of all ECMs identified and all savings types (gas, electric, water, O&M)
- **Technology Category**
  - Type and count of ECMs identified in the evaluation - not indicative of the magnitude of energy and cost savings for each category type in the facility total

# What data can be relevant for UESC programs?



# Data Visualizations for Federal and Agency Aggregates



## Office of Federal Sustainability Website

- <https://www.sustainability.gov/performance.html>

- **Key Feature: Visualizations**
- **Recommended reports:**
  - Federal Government-Wide Investment in Facility Efficiency Improvements
  - Agency Progress Data, Annual Sustainability Report and Implementation Plans, and OMB Scorecards
    - Facility Energy Use
    - Water Use
    - Renewable Electricity
    - Facility Efficiency Investments
    - High Performance Sustainable Buildings
    - Fleet Petroleum and Alternative Fuels
    - Greenhouse Gas Emissions

# Energy Use, Cost, and Other Metric Reporting

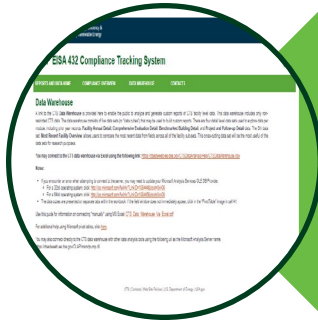


## Comprehensive Annual Energy Data and Sustainability Performance Website

- <https://ctsedweb.ee.doe.gov/Annual/Report/Report.aspx>

- **Key Feature: pre-configured table reports**
- **Recommended reports:**
  - G-1 Investment in Energy Efficiency and Renewable Energy
  - G-2 Agency Investment in Efficiency and Conservation Projects by Funding Type
  - A-8 Site Delivered Energy Use and Costs by End Use and Energy Type by Fiscal Year

# Facility Level Detail for Ad-Hoc Analysis

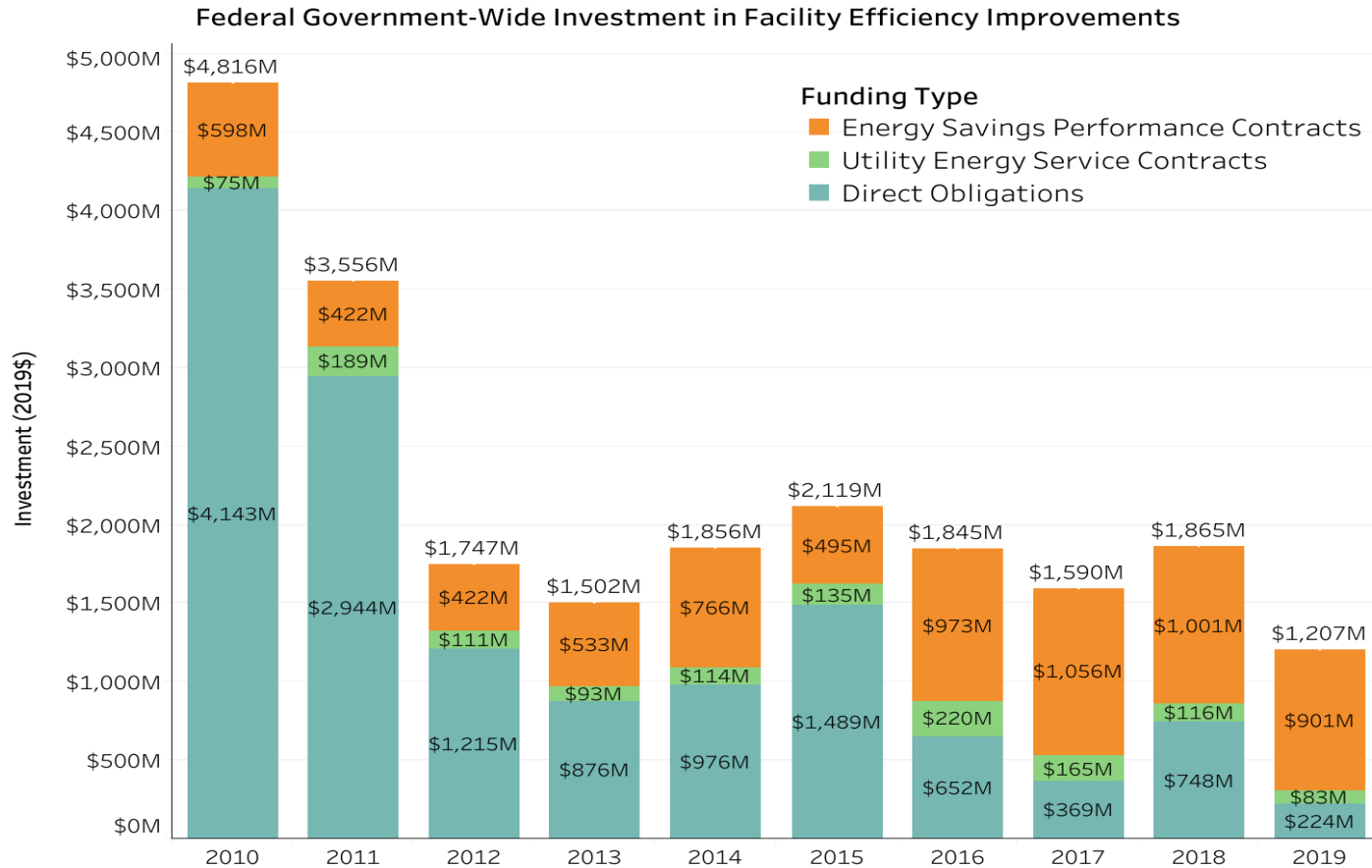


## FEMP EISA 432 Data Warehouse

- <https://ctsedwebweb.ee.doe.gov/CTSDDataAnalysis/DataAnalysisTool/DataAnalysisTool.aspx>

- **Key Feature: Raw data set**
- **User configurable excel pivot tables:**
  - Facility Annual Detail
  - Comprehensive Evaluation Detail
  - Benchmarked Building Detail
  - Project and Follow-up Detail

# Office of Federal Sustainability Website (example)



## FEMP Data Resource

[https://www.sustainability.gov/government\\_data.html#investment](https://www.sustainability.gov/government_data.html#investment)

# Comprehensive Annual Energy Data and Sustainability Performance Website (example)

Federal Facility Reporting and Data » Comprehensive Annual Energy Data and Sustainability Performance » Annual Data

Report Filter/Options

Fiscal Year: 2019

Agency: ---- All Agencies ----

Dollar Adjustment: Inflation Adjusted Dollars

Apply

Export To Excel

Investment in Energy Efficiency and Renewable Energy in FY 2019 (in Adjusted Constant FY 2019 Dollars)

Agency	Funding Mechanism			Total Investment (Thou. \$)
	Direct Obligations (Thou. \$)	ESPC (Thou. \$)	UESC (Thou. \$)	
Veterans Affairs	\$36,714	\$30,418	\$52,434	\$119,567
Energy	\$8,418	\$31,871	\$0	\$40,288
EPA	\$33,449	\$0	\$0	\$33,449
Justice	\$1,559	\$25,418	\$0	\$26,977
NASA	\$7,525	\$13,998	\$4,662	\$26,185
Interior	\$14,116	\$0	\$87	\$14,203
HHS	\$12,374	\$0	\$0	\$12,374
GSA	\$7,915	\$941	\$0	\$8,856
TVA	\$4,908	\$0	\$0	\$4,908
Agriculture	\$4,300	\$0	\$0	\$4,300
USACE	\$4,091	\$0	\$0	\$4,091
SSA	\$3,257	\$0	\$0	\$3,257
Transportation	\$2,788	\$0	\$0	\$2,788
State	\$0	\$0	\$1,700	\$1,700
Labor	\$1,619	\$0	\$0	\$1,619
Treasury	\$120	\$500	\$0	\$620
Smithsonian	\$312	\$0	\$0	\$312

Agency level detail table reports via excel export

## FEMP Data Resource

<https://ctsedweb.ee.doe.gov/Annual/Report/Report.aspx>

# FEMP EISA 432 Data Warehouse (example)

## FEMP EISA 432 Compliance Tracking System

REPORTS AND DATA HOME

COMPLIANCE  
OVERVIEW

DATA WAREHOUSE

CONTACTS

### Data Warehouse

A link to the CTS **Data Warehouse** is provided here to enable the public to analyze and generate custom reports of restricted CTS data. The data warehouse consists of five data sets (or "data cubes") that may be used to build custom reports, including prior year records: **Facility Annual Detail**, **Comprehensive Evaluation Detail**, **Benchmarked Building** set, **Most Recent Facility Overview**, allows users to compare the most recent data from fields across all of the facility's data sets for research purposes.

You may connect to the CTS data warehouse via Excel using the following link: <https://ctsedwwweb.ee.doe.gov/CTSD>.

#### Notes:

- If you encounter an error when attempting to connect to the server, you may need to update your Microsoft Analysis Services client:
  - For a 32bit operating system, click: <http://go.microsoft.com/fwlink/?LinkID=188444&clcid=0x409>
  - For a 64bit operating system, click: <http://go.microsoft.com/fwlink/?LinkID=188445&clcid=0x409>
- The data cubes are presented on separate tabs within the workbook. If the field window does not immediately appear,

Use this guide for information on connecting "manually" using MS Excel: [CTS\\_Data\\_Warehouse\\_Via\\_Excel.pdf](#)

For additional help using Microsoft pivot tables, click [here](#).

You may also connect directly to the CTS data warehouse with other data analysis tools using the following url as the Microsoft Office Data Connector:  
<https://ctsedwwweb.ee.doe.gov/OLAP/msmdpump.dll>

(Exempt facility information is excluded from publicly facing the Data Warehouse)

CTS Data  
Warehouse provides  
facility level detail in  
excel

Row Labels	Decentralized Operating Budget Funding - Dollars	Direct ABRA Funding - Dollars	Direct CTS Funding - Dollars
1 Department of Agriculture	0	4076991	
2 Department of Commerce	8289020	1415000	
3 Department of Energy	0	0	
4 Department of Health and Human Services	0	0	
5 Department of Homeland Security	0	0	
6 Department of Housing and Urban Development	0	0	
7 Department of Justice	0	0	
8 Department of Labor	0	2577693	
9 Department of the Interior	2367867	31973757	
10 Department of the Treasury	83626	18796378	
11 Department of Transportation	4217282	0	
12 Department of Veterans Affairs	8927668	89657888	
13 Environmental Protection Agency	0	0	
14 Federal Deposit Insurance Corporation	0	0	
15 General Services Administration	1124836	625992810	
16 National Aeronautics and Space Administration	1117700	0	
17 National Archives and Records Administration	0	0	
18 Nuclear Regulatory Commission	450000	0	

## FEMP Data Resource

<https://ctsedwwweb.ee.doe.gov/CTSDDataAnalysis/ComplianceOverview.aspx>



# Using CTS Data for Market Potential

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- CTS data can define trends in your service territory
- The following slides show examples of market potential analysis using CTS data

# Agency Data Example – Building Types

Department of Veterans Affairs	
Building Type	Annual Site Energy Use - MBtu
Hospital (General Medical & Surgical)	54,585,339
Hospital (General Medical and Surgical)	19,291,422
Medical Office	1,627,528
Other	36,634
Residential Care Facility	325,632
Urgent Care/Clinic/Other Outpatient	478,649

Department of Energy	
Building Type	Annual Site Energy Use - MBtu
Other	123,885,399
Office	9,481,997
Laboratory	3,293,242
Data Center	2,840,647
Other - Technology/Science	1,459,520
Other - (48 remaining types combined)	3,398,953

General Services Administration	
Building Type	Annual Site Energy Use - MBtu
Office	57,419,815
Courthouse	10,475,030
Other	1,627,191
Data Center	531,892
Non-Refrigerated Warehouse	387,105
Other - (6 remaining types combined)	556,250

- Building Types can be filtered by utility service territory
- Emphasize project experience based on agency building type

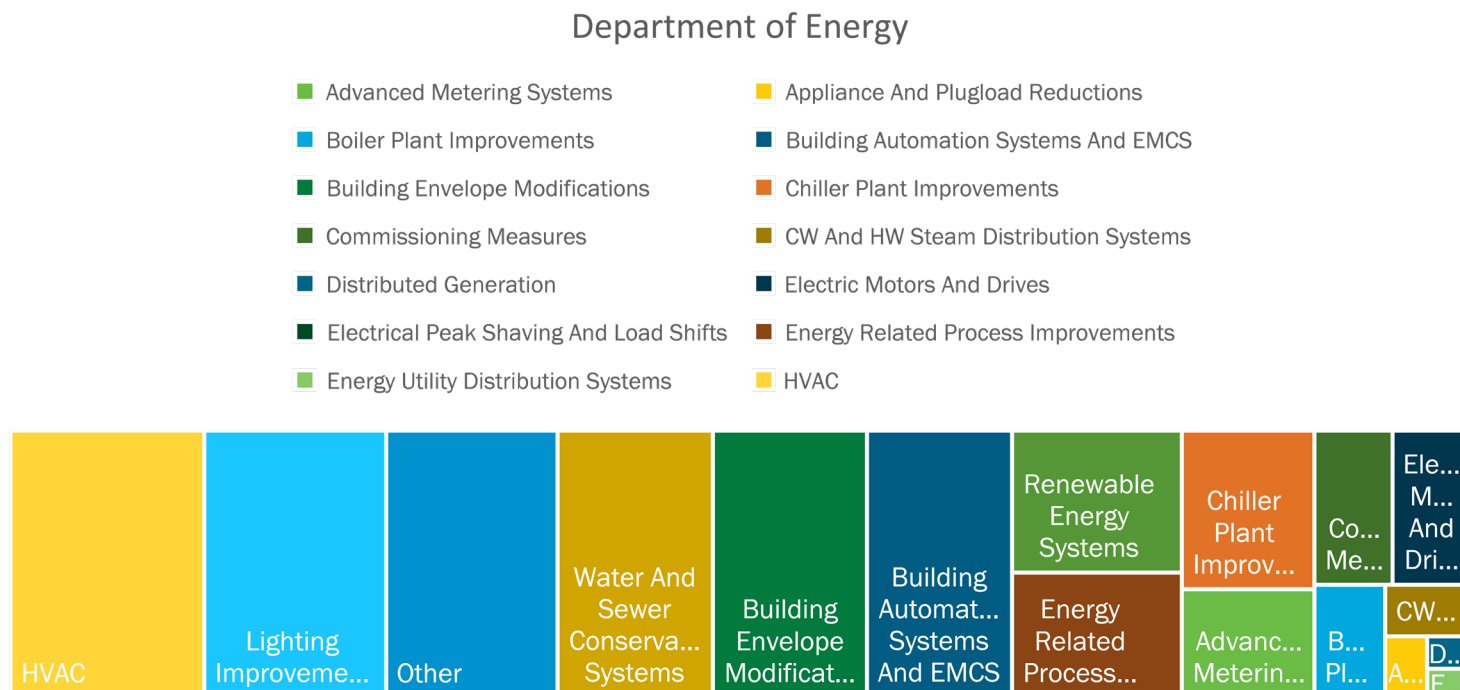
# Agency Data Example – VA Potential ECMs

## Department of Veterans Affairs



- EISA 432 comprehensive evaluations provide a count of ECMs by category
- Individual ECMs are not directly associated with magnitude of potential energy savings, implementation cost, or cost savings
- Most of the VA facilities are hospitals

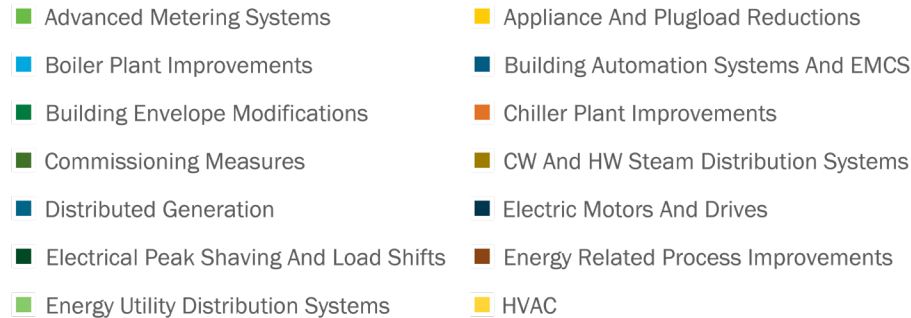
# Agency Data Example – DOE Potential ECMs



- Different agencies have different potential ECMs based on their facility operations
- For this example, no single ECM technology category dominates the potential opportunities for the DOE

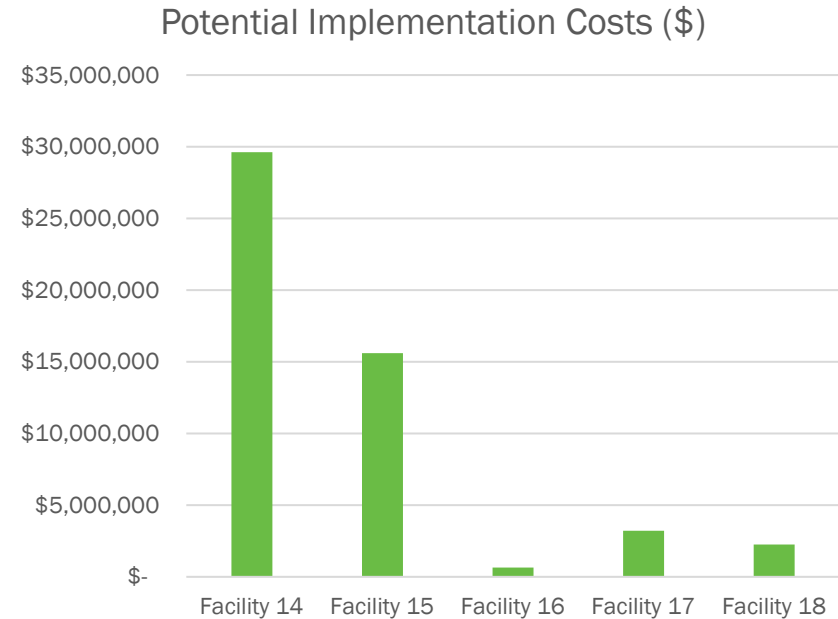
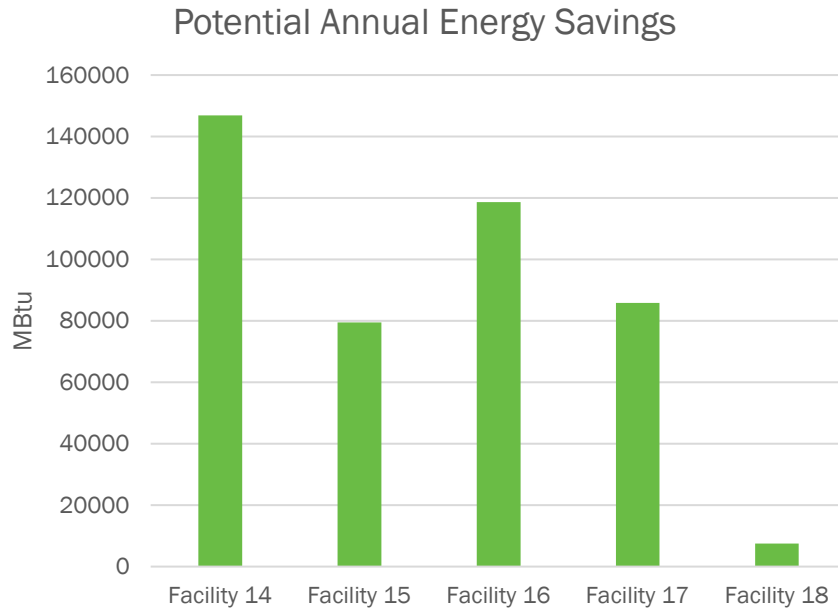
# Agency Data Example – GSA Potential ECMs

## General Services Administration



- The GSA owns and leases over 9,600 buildings (<https://www.gsa.gov/real-estate/gsa-properties>)
- Building Envelope Modifications is the most frequent potential ECM for the GSA
- Building Envelope Modifications reflect the most prominent building type in the GSA which is offices, but also may be due to the GSA having already implemented the more cost effective ECMs such as lighting

# Multiple Facility Analysis – data warehouse



- The date of the last evaluation will indicate how current the data is for each facility
- Facilities can be filtered by zip code, city, state, or address
- Consider offering your customer a UESC Preliminary Assessment that conforms with the required EISA Evaluation if they are due for a renewed evaluation

# Single Facility Analysis – data warehouse

Most Recent Facility Overview	2016-06-15
Potential Annual Energy Cost Savings - Dollars	\$ 50,477
Potential Annual Energy Savings - MBtu	545,305
Potential Annual Water Cost Savings - Dollars	\$ 174,300
Potential Annual Water Savings - Thou Gallons	131,951
Potential ECM - Advanced Metering Systems	1
Potential ECM - Building Envelope Modifications	3
Potential ECM - Commissioning Measures	1
Potential ECM - HVAC	2
Potential ECM - Lighting Improvements	1
Potential ECM - Other	3
Potential ECM - Water And Sewer Conservation Systems	5
Potential Implementation Cost Of Measures - Dollars	\$ 2,633,889

- Most recent facility overview was updated in 2016 and date of last project awarded was in 2014
- The facility is due to provide another cycle of the EISA 432 Evaluation reporting

Date of Last Project Awarded	2014-01-01
Energy Savings Performance Contract Funding - Dollars	\$ 77,225,284
Other Funding - Dollars	\$ 334,000
Total Project Implementation Cost - Dollars	\$ 77,559,284
Utility Energy Service Contract Funding - Dollars	0
Direct Centralized Capital Funding - Dollars	0

- Last project awarded in 2014 was a \$77M ESPC
- The facility is familiar with performance contracting and may be open to considering a UESC
- A preliminary assessment could be offered to cover the next required EISA Evaluation

# Final thoughts

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- Publicly available data can be accessed and used to assess market potential for ECMs
- Funding type will indicate whether performance contracting has been used in past ECM investments by agency, service territory, or location
- Depending on your UESC market, you can view broad trends by geography and agency, or assess individual facility details through the data warehouse
- For facilities exempt from public CTS reporting (such as DOD), agency level data can be used to characterize the market until site level detail is provided by customers