DoD Business Process Reengineering

Enterprise Energy Information Management

Capability Requirements Document
PUBLIC RELEASE VERSION

Office of the Deputy Under Secretary of Defense
(Installations & Environment)
Business Enterprise Integration Directorate

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Executive Summary

Federal agencies have a continual need to identify ways to operate more efficiently and securely. The Department of Defense is pursuing an aggressive facility energy strategy to reduce the cost and improve the security of energy used on our fixed installations. The building block of such a strategy is comprehensive, accurate, near real-time data on facility energy use and related costs. Thus, at the request of the Deputy Under Secretary of Defense for Installations and the Environment (DUSD (I&E)), DoD was tasked with developing a standard information structure for use in measuring, managing and reporting its energy programs and performance. This data structure, known as the Enterprise Energy Information Management (EEIM) capability, will ensure that timely, accurate energy data is available to energy managers at every level of the Department.

> ### *Vision*
>
> *"The building block to [an effective facility energy program] is comprehensive, accurate, near real-time data on facility energy use and related costs."*
>
> Dr. Dorothy Robyn, EEIM Vision, June 26, 2012

The DUSD(I&E) established the EEIM Vision,[1] which states:

"Although DoD collects a large amount of energy-related data, it lacks the standardized processes and integrated systems needed to systematically track, analyze, and report facility energy and water use and related costs. Further, information regarding improvements in energy efficiency is currently managed only to the extent that it is required for external reporting. The absence of comprehensive energy use and investment data hinders the Department's ability to improve facility operations and to make informed investments in new, energy efficient technology.

"To improve the Department's facility energy management reporting capability, the Office of the DUSD (I&E) analyzed several potential solutions, including the complete replacement of the data reporting systems the Components currently use. They concluded, however, that the optimal solution is to allow the Components to maintain and refine their current reporting systems, while the data those systems generate is integrated and retained within a single, enterprise EEIM system.

"Executed at the level of the OSD, the EEIM system will assimilate and house standard energy consumption and investment data. In addition, it will provide a suite of advanced analytical tools that allow DoD energy professionals to interpret and leverage that data to improve facility operations, identify cost-effective investments, quantify the production and purchase of renewable energy, and compile internal and external management reports.

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[1] DUSD (I&E) Memorandum, Enterprise Energy Information Management Vision, June 26, 2012. See: http://www.acq.osd.mil/ie/bei/energy.shtml

"Significant advantages of the EEIM capability include:

- **Automated Data Collection**
  Manual data collection and input is extremely time-consuming and highly susceptible to human error. Further, while much of the building asset information needed to fully implement EEIM is already available in the OSD real property registry, data on DoD energy use at the building level is neither reliably collected nor consolidated. Thus, a great deal of critically valuable information is not currently available for analysis or reporting. In conjunction with DoD's Automated Metering Initiative, data will be automatically collected across the enterprise and consolidated within the EEIM, thereby establishing a central repository for critical energy data, while dramatically reducing collection times and increasing data accuracy.

- **Structured Energy Data Requirements**
  Each Component currently uses a different IT solution to collect facility energy data, and there is no method to correlate standard information. One of the most essential functions of the EEIM capability is to structure standard data culled from disparate sources. Structuring data ensures that information may be entered once and subsequently used many times in multiple locations, without diminished quality or additional workload. Additionally, EEIM will be able to produce highly detailed, accurate results in response to queries.

- **Information Risk Management**
  To make sound efficiency analyses and energy investment decisions based on EEIM-generated information, and to defend against potential misuse of facility-energy information, it is essential that data within the EEIM be secure. To that end, the Department's EEIM system will fully integrate comprehensive Information Assurance and Operations Security measures into its design, mitigating exploitation and inadvertent data spillage. Because an attack could start from any point between the Internet and a meter/control device, standardized layers of defense and regular vulnerability assessments will be implemented across the enterprise to protect against multiple threat vectors.

- **The End Result: Advanced Analytic Capability**
  Because EEIM will house comprehensive, verified, standard energy data, end users will be able to generate highly customized and dynamic queries based on near real-time information. This advanced analytic capability allows energy professionals to understand facility energy use, to pinpoint anomalies, to track trends, to benchmark building or installation performance, and to identify effective savings opportunities."

To-Be Capabilities

DoD implementation of the requirements outlined in this document will further enable the following capabilities by transforming data into meaningful information, improving awareness

of energy efficiency goals and expectations, and supporting identification of the most effective opportunities for facility energy savings:

- Managing Facility Energy Consumption
- Managing Facility Energy Conservation Improvement
- Managing Production of Renewable Energy
- Managing the Purchase of Renewable Energy

Capability Implementation Phasing

A suggested implementation phasing of various capabilities and associated information requirements is provided in Appendix L. The EEIM-WG recognized the level of effort and potential investments needed to fulfill the vision of the EEIM capability. Therefore, they developed this phasing approach to demonstrate how various functionalities enabled by the EEIM can be rolled out across the enterprise considering current processes, systems and planned IT investments.

Next Step

- Develop and execute an implementation strategy

Purpose

Current handling of energy management information at DoD installations has become too burdensome and does not deliver the quality of information needed for effective installation energy management. DoD needs to transform the way installations manage facility energy consumption, improvement, and renewable energy production data to maintain energy consuming facilities at optimal performance levels.

Collection of facility energy consumption, renewable energy generation and energy efficiency project data through integrated processes and using a standard data structure will facilitate trend analysis, performance comparison and improvement across facilities and DoD Components. This EEIM requirements document defines that standard data structure; four to-be facility energy capabilities for DoD; the processes through which these capabilities may be achieved; and the specific data elements necessary to support the capabilities.

Executed at the level of the OSD, the EEIM system will assimilate and house standardized energy consumption and investment data. In addition, it will provide a suite of advanced analytical tools that allow DoD energy professionals to interpret and leverage that data to improve facility operations, identify cost-effective investments, quantify the production and purchase of renewable energy, and compile internal and external management reports. At an installation level, the implementation of the EEIM capability will improve facility energy management by:

- Facilitating development of timely, reliable and consistent facility energy information, and

- Establishing sustainable business processes and management controls to improve the accuracy of enterprise facility energy information.

If successfully implemented, these improvements will give DoD the information needed to optimize a strategy for decreasing its dependence on external energy sources to power its installations.

What's at Stake

Implementing an agency-wide strategy to manage facility energy is critical: energy use in DoD facilities exceeded 221 *trillion* British Thermal Units (Btus) in FY2010, which represents well over half of the energy consumed that year in all facilities owned and operated by the US Government.[2] The management of facility energy on our installations is important for two key reasons:

- Facilities energy represents a significant cost. In 2009, DoD spent $3.8 billion to power its facilities — down from $3.96 billion in 2008. Energy needs for DoD facilities in the United States will likely increase as soldiers return from current deployments.

- Facility energy management is key to mission assurance. According to the Defense Science Board, DoD's reliance on a fragile commercial grid to deliver electricity to its installations places the continuity of critical missions at serious and growing risk.[3] Most installations lack the ability to manage their demand for and supply of electrical power, and are thus vulnerable to intermittent and/or prolonged power disruption due to natural disasters, cyber attacks, and sheer overload of the grid.

The current energy management environment at DoD has evolved almost exclusively in response to local needs, resources, and constraints – with little or no consideration of department-wide or national needs or impacts. As such, DoD has limited access to facility energy information of sufficient quality to make optimal energy funding and policy decisions. Without standardized data, coordination between installation functions is hampered, and at higher levels, DoD cannot compare performance across facilities and across the DoD Components.

In addition to establishing common metrics across the department, standardizing data is also necessary for building enterprise-wide information technology systems to support facility energy management. Since DoD lacks such systems, it must resort to frequent manual data calls to respond to increasing requirements for facility energy reporting.   These efforts are consuming an increasing number of energy management man hours in DoD, at the expense of resources intended to identify and pursue improvements in facility energy performance. Though information needed for the implementation of strategies, phasing, or IT system solutions is not a part of the information structure discussed herein, the information gathered by this structure will begin to outline the information needed for future DoD energy management, and is an important preliminary step.

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[2] As reported by the Department of Defense in the Department of Energy's Compliance Tracking System for FY2010.
[3] "More Fight-Less Fuel," Report of the Defense Science Board Task Force on DoD Energy Strategy, February 2008.

The End Result: Advanced Analytic Capability

Because EEIM will house comprehensive, verified, standard energy data, end users will be able to generate highly customized and dynamic queries based on near real-time information. This advanced analytic capability allows energy professionals to understand facility energy use, to pinpoint anomalies, to track trends, to benchmark building or installation performance, and to identify effective savings opportunities.

What is EEIM?

EEIM is a capability designed to inform decision-making through the systematic collection, integration and analysis of facility energy use, production and project data. This capability is comprised of common business language and integrated facility management practices that provides the foundation for a comprehensive DoD energy information capability. This information supports business analytics across the DoD enterprise while streamlining external reporting. EEIM transforms data into actionable and integrated information for energy managers to perform meaningful trend analyses, benchmarking of assets, identification of opportunities for improvement, and tracking of progress against both internal and external performance goals.

The EEIM capability receives some of its data from Energy Management Systems (EnMS) and integrates it with other facility and business information to provide a more complete understanding of installation energy use/production and investments. EnMS, also known as Industrial Control Systems (ICS) are systems that control, monitor, optimize and report performance of systems and appliances in facilities and utility systems.

Scope

The focus of this document is to identify and define information needed for facility energy[4] management. This includes information related to facility energy consumption, energy efficiency projects, and renewable energy generation and purchase - all at various levels of aggregation, including building, the individual project, installation, geographic region, or Military Department level. A matrix showing the relevance and use of information at various levels of the DoD is developed and provided in Appendix K.

The information outlined in this document represents the functional requirements for facility energy management. Business analytical specifications and integration with other standards such as Industry Foundation Classes (IFC) and Spatial Data Standards for Facilities, Infrastructure and Environment (SDSFIE) - will be defined later in the implementation phase.

The EEIM-WG did not address energy consumption and performance of DoD vehicles or military equipment.

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[4] For the purposes of this Initiative, the term 'Facility Energy' includes water.

Methodology

The EEIM requirements were developed over the course of fifteen months that began in September 2010. The Business Enterprise Integration Directorate team, in coordination with ODUSD(I&E)'s Facilities Energy Directorate, developed a notional draft of recommended processes and information requirements, which were refined by the EEIM-WG during a series of working sessions. The following specific tasks were performed during the initiative:

- Defined scope of initiative by identifying four major capabilities for facility energy management:
  - Managing Facility Energy Consumption
  - Managing Facility Energy Conservation Improvement
  - Managing Production of Renewable Energy
  - Managing the Purchase of Renewable Energy

- Identified specific objectives for delivering facility energy capabilities:

  - Reviewed and outlined statutory, regulatory, and policy requirements as well as DoD mission needs for facility energy management

- Identified DoD enterprise data needed to deliver the four energy capabilities:

  - Developed standard data elements with definitions and associated business rules, using existing enterprise data standards where possible

- Identified processes for collecting, maintaining and reporting facility energy performance data, using existing enterprise business processes wherever possible

- Utilized DoD's standard Real Property Inventory and Lifecycle Management framework and data standards where appropriate

At the conclusion of these working sessions, the EEIM-WG presented the proposed sets of EEIM requirements to the DoD Installations and Environment Investment Review Board for formal acceptance.

How to Use this Document

The EEIM-WG developed standard capabilities, identified objectives for achieving key aspects of each capability, and developed business processes and data elements for managing facility energy information. The appendices are organized to show the alignment of the detailed requirements. A numbering system is used to cross-reference the capabilities and objectives to the processes, data elements, and information exchanges that are required to achieve the capabilities. Following are illustrations of the information presented in this document and how it works together.

Figure 1 depicts one example of an objective. The objectives are listed in the Capabilities section of this document. The figure shows objective number 1.1.17 which falls under Capability 1.1, "Managing Facility Energy Consumption." The EEIM data elements needed to achieve this objective – and support the capability – are also listed. The EEIM data elements groupings and their interrelationships are presented in the data model (Appendix A).

Figure 1. Objectives and Required Data Elements

Each of the four capabilities may be accomplished through interaction among the 22 EEIM processes. Appendix B presents four process models showing how the 22 processes interact and provides a diagram of the overall hierarchy of the EEIM processes, with Appendix C providing a definition for each process.

Figure 2 is one of the four of the process models in Appendix B. It depicts the EEIM processes that are used to manage facility energy consumption. The numbers on the arrows represent information exchanges. An information exchange is a package of data elements that is "exchanged" between a source process and a destination process to accomplish some aspect of the capability/objective. For example, information exchange 20 is "Facility Consumption Information."
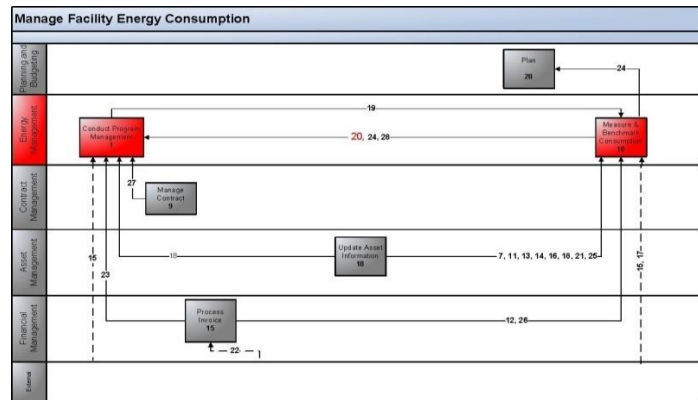
Figure 2. Process Diagram

The four scenarios in Appendix D demonstrate how the processes and information exchanges work together to achieve desired results. Each step in each scenario includes a diagram and table, like Figure 3 below, which illustrates the interaction of information during the step. Note that information exchange #20 is depicted in Figure 3 in association with Scenario Step 1.4, "Measure Consumption and Benchmark Facilities."

IE Number	Information Exchange Name
20	Facility Consumption Information

Figure 3. Information Exchanged in Scenario Step 1.4

The information exchanges are presented in Appendix E with the objectives that they support and the EEIM data elements that make up the package. Figure 4 shows a row from Appendix E

that presents information exchange #20, "Facility Consumption Information," as a standard package of the EEIM data elements that is needed to achieve objective 1.1.17. This information exchange is an output of process 10, "Measure & Benchmark Consumption," and an input to process 1, "Conduct Program Management".

Enterprise Energy Information Exchange (IE) Mapping						
IE #	IE Name	Process Model	Source Process	Destination Process	Data Element Mapping	Objective Mapping
20	Facility Consumption Information	Manage Facility Energy Consumption	10	1	Date Date Type Energy Role Energy Type Real Property Unique Identifier Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type	1.1.17

Figure 4. Information Exchange Mapping

As shown in Figure 4, information exchange #20 is comprised of nine separate data elements. As an integrated package, these data elements describe an amount of a specific type of energy consumed at a given building during a specified period of time.

Appendix F identifies the process(es) in which EEIM data elements are created, updated, or used. Appendix G provides the EEIM data element definitions and any necessary pick lists, and indicates whether it is a new or existing standard. Appendix H provides business rules that provide guidance as to the interdependence and controls of the data elements. Appendix I provide the definition for pick list values of select data elements. Appendix J provides the energy types as defined by the EEIM. Appendix K illustrates possible levels of aggregation of information and use in various organizations in the DoD Enterprise. Additionally, it illustrates the requirements that the objective supports. Appendix L illustrates the implementation phasing of the EEIM capabilities in the DoD Enterprise. Finally, Appendix M lists the current laws, regulations, policies, guidance, and industry standards governing installation energy management.

Capabilities

The EEIM-WG determined that DoD requires four capabilities to understand and manage facility energy. Following are each of those capabilities with their definition, current deficiencies, the objectives that enable the capability and the data needed for each objective.

Managing Facility Energy Consumption

- **Definition:** This capability entails measurement and collection of facility energy consumption information and as well as analysis of those factors that contribute to consumption at the constructed asset level. The collection of this information allows facility managers and installation commanders to make operational decisions and to meet reporting requirements will use this information.

- **Current deficiency: Inability to accurately measure and benchmark facility consumption**

  A key cause for this deficiency is the lack of meters or actual consumption data for all DoD facilities that consume energy. This limitation results in a building or structure's energy consumption being estimated rather than measured. Buildings without their own meter cannot be benchmarked according to common protocols such as EPA's Energy Star® program.   Until this limitation is resolved, DoD will not have reliable information upon which to base its decisions about facility operations and use. Furthermore, comparison of building consumption against benchmarks or past performance is not meaningful without hard data, thus problems – as well as achievements – will likely go undetected.

Objectives and Data Requirements for Capability

Objective Number	Objective	Data Element Mapping
1.1.1	Ability to identify real property asset, type, location, condition, size, age (year built), owner, reimbursable users, non-reimbursable users, interest type, operational status, and construction type and material.	Address Street Direction Code Address Street Name Address Street Number Address Street Type Code Asset Allocation Current Use FAC Code Asset Allocation Size Unit of Measure Code Asset Allocation Size Quantity Asset Allocation User Organization Code Building Module Identifier Building Module Type City Code Construction Material Code Construction Type Code Country Code Date Date Type Energy Reimbursement Percentage Facility Number Facility Physical Quality Rate Geospatial Feature Location Directions Text Postal Code Real Property Unique Identifier RPA Command Claimant Code RPA Interest Type Code RPA Name RPA Operational Status Code RPA Predominant Current Use FAC Code RPA Total Unit of Measure Code RPA Total Unit of Measure Quantity RPA Type Code State or Country Primary Subdivision Code
1.1.3	Ability to identify (by type) the number of meters planned to be installed by reporting entity and by year, and the planned cost amount.	Dollar Amount Dollar Amount Type Energy Conservation Measure Identifier Energy Conservation Measure Category Energy Reporting Organization Code Energy Type Meter Type Value Accuracy Type
1.1.4	Ability to identify real property asset and site metering types and locations.	Energy Type Meter Identifier Meter Location Meter Location Description Meter Type Real Property Site Unique Identifier Real Property Unique Identifier

Objective Number	Objective	Data Element Mapping
1.1.5	Ability to identify temperature (UOM, UOM Code) and degree days by site.	City Code Climate Zone Code Cooling Degree Days Country Code Date Date Type Geospatial Feature Heating Degree Days Installation Code Installation Name Postal Code Real Property Site Unique Identifier Site Name Site Operational Status Code State or Country Primary Subdivision Code Temperature Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity
1.1.6	Ability to identify the reporting inclusion classifications (e.g., EISA 432 Covered Facility, Energy Intensity Goal Excluded) at the constructed asset level.	Energy Reporting Category Energy Reporting Category Reason Energy Reporting Organization Code Real Property Unique Identifier RPA Operational Status Code
1.1.7	Ability to identify data associated with energy consuming equipment and systems by system type, age, capacity, manufacturer, and energy performance rating.	Date Date Type Energy Performance Type Code Energy Performance Value Facility Number Real Property Unique Identifier RPA Operational Status Code System Capacity System Manufacturer System Type Unique Item Identifier
1.1.8	Ability to identify facility hours of operation and workload.	Facility Number Facility Use Days Per Week Real Property Unique Identifier RPA Operational Status Code Time Time Type Workload Utilization Type Workload Quantity

Objective Number	Objective	Data Element Mapping
1.1.9	Ability to determine energy consumption and calculate intensity by type at the site level (from utility bill) and at constructed asset level and/or at the asset allocation FAC code level.	Asset Allocation Current Use FAC Code Asset Allocation Size Unit of Measure Code Asset Allocation Size Quantity Asset Allocation User Organization Code Conversion Factor Conversion Factor Role Date Date Type Energy Reimbursement Percentage Energy Role Energy Type Facility Number Federal Support Indicator Federal Support Percentage Real Property Unique Identifier RPA Operational Status Code RPA Predominant Current Use FAC Code RPA Total Unit of Measure Code RPA Total Unit of Measure Quantity RPA Type Code Time Time Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Utility Provider Customer Account Number Utility Provide Invoice Number Utility Provider Organization Name Utility Provider Type Value Accuracy Type
1.1.10	Ability to compare energy consumption by type to historical data at the constructed asset level and/or at the asset allocation FAC code level.	Asset Allocation Current Use FAC Code Asset Allocation Size Unit of Measure Code Asset Allocation Size Quantity Asset Allocation User Organization Code Conversion Factor Conversion Factor Role Date Date Type Energy Reimbursement Percentage Energy Role Energy Type Facility Number Federal Support Indicator Federal Support Percentage Real Property Unique Identifier RPA Operational Status Code RPA Predominant Current Use FAC Code RPA Total Unit of Measure Code RPA Total Unit of Measure Quantity RPA Type Code

Objective Number	Objective	Data Element Mapping
		Time Time Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type
1.1.11	Ability to compare all types of energy consumption by real property FAC code and/or by asset allocation FAC code and associated size.	Asset Allocation Current Use FAC Code Asset Allocation Size Unit of Measure Code Asset Allocation Size Quantity Asset Allocation User Organization Code Conversion Factor Conversion Factor Role Date Date Type Energy Reimbursement Percentage Energy Role Energy Type Facility Number Federal Support Indicator Federal Support Percentage Real Property Unique Identifier RPA Operational Status Code RPA Predominant Current Use FAC Code RPA Predominant Design Use FAC Code RPA Total Unit of Measure Code RPA Total Unit of Measure Quantity RPA Type Code Time Time Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type
1.1.12	Ability to track energy consumption by location and climate zone.	City Code Climate Zone Code Cooling Degree Days Conversion Factor Conversion Factor Role Country Code Date Date Type Energy Role Energy Type Geospatial Feature Heating Degree Days Installation Code Installation Name Postal Code Real Property Site Unique Identifier Site Name

Objective Number	Objective	Data Element Mapping
		Site Operational Status Code State or Country Primary Subdivision Code Temperature Type Time Time Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type
1.1.13	Ability to measure the amount of energy consumed in a constructed asset by meter.	Date Date Type Energy Role Energy Type Meter Identifier Meter Location Meter Location Description Meter Type Real Property Unique Identifier RPA Operational Status Code Time Time Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type
1.1.14	Ability to derive Source energy amount from a Site-Delivered amount of energy.	Conversion Factor Conversion Factor Role Energy Role Energy Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity
1.1.15	Ability to establish internal targets and monitor energy consumption against those targets at the component/ installation/ constructed asset level.	Conversion Factor Conversion Factor Role Date Date Type Energy Reporting Organization Code Energy Role Energy Type Installation Code Installation Name Meter Identifier Meter Location Meter Location Description Meter Type Real Property Unique Identifier RPA Operational Status Code RPA Type Code Time Time Type

Objective Number	Objective	Data Element Mapping
		Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type
1.1.16	Ability to report performance against external energy consumption targets at the Component and/or installation level.	Conversion Factor Conversion Factor Role Date Date Type Energy Reporting Category Energy Reporting Category Reason Energy Reporting Organization Code Energy Role Energy Type Installation Code Installation Name Real Property Unique Identifier RPA Operational Status Code Time Time Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type
1.1.17	Ability to forecast facility energy consumption based on a) historical consumption in that facility, b) climate history data for the facility location from an authoritative source, or c) consumption data from similar facilities (e.g., same building use, size, climate zone, age, etc.).	Capital Improvement Reason Code Climate Zone Code Cooling Degree Days Construction Material Code Construction Type Code Date Date Type Energy Role Energy Type Facility Number Facility Physical Quality Rate Heating Degree Days Postal Code Real Property Site Unique Identifier Real Property Unique Identifier RPA Operational Status Code RPA Predominant Current Use FAC Code RPA Total Unit of Measure Code RPA Total Unit of Measure Quantity RPA Type Code Temperature Type Time Time Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type

Objective Number	Objective	Data Element Mapping
1.1.18	Ability to determine actual and/or projected total utility costs for an energy provider(s) by energy type and by location (site and installation).	City Code Country Code Date Date Type Dollar Amount Dollar Amount Type Energy Reimbursement Percentage Energy Role Energy Type Geospatial Feature Installation Code Installation Name Postal Code Real Property Site Unique Identifier Site Name Site Operational Status Code State or Country Primary Subdivision Code Time Time Type Utility Provider Customer Account Number Utility Provider Invoice Number Utility Provider Organization Name Utility Provider Rate Schedule Code Utility Provider Type Value Accuracy Type
1.1.19	Ability to account for reimbursable vs. non-reimbursable utility costs at the constructed asset level.	Asset Allocation Current Use FAC Code Asset Allocation Size Quantity Asset Allocation Size Unit of Measure Code Asset Allocation User Organization Code Dollar Amount Dollar Amount Type Energy Reimbursement Percentage Energy Role Energy Type Facility Number Federal Support Indicator Federal Support Percentage Real Property Unique Identifier RPA Operational Status Code RPA Predominant Current Use FAC Code RPA Total Unit of Measure Code RPA Total Unit of Measure Quantity RPA Type Code Value Accuracy Type

Objective Number	Objective	Data Element Mapping
1.1.20	Ability to identify peak demand and hours at the site level (from the utility bill) and the constructed asset level (from meters).	Date Date Type Energy Role Energy Type Meter Identifier Meter Type Peak Demand Type Real Property Site Unique Identifier Real Property Unique Identifier RPA Operational Status Code Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Utility Provider Customer Account Number Utility Provider Invoice Number Utility Provider Organization Name Utility Provider Rate Schedule Code Utility Provider Type
1.1.21	Ability to access utility provider information (i.e., vendor identification, tariff information).	Date Date Type Duration of Acquisition Mechanism Energy Role Energy Type Procurement Instrument Description Text Procurement Instrument Identification Number Real Property Site Unique Identifier Site Name Utility Provider Customer Account Number Utility Provider Organization Name Utility Provider Rate Schedule Code Utility Provider Type
1.1.22	Ability to identify reporting entity for energy consumption, production, or purchase.	Energy Reporting Organization Code Energy Role Energy Type
1.1.23	Ability to generate a load profile based on advanced meter information at the real property asset or site level.	Date Date Type Energy Role Energy Type Meter Identifier Meter Type Real Property Site Unique Identifier Real Property Unique Identifier RPA Operational Status Code Time Time Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity

Managing Facility Energy Conservation Improvement

- **Definition:** This capability entails identification and analysis of building/structure energy evaluations and resulting conservation measures. This identification and analysis will deliver a wide range of benefits, including dollar savings, infrastructure improvements, reduced pollutant emissions, related maintenance, and improved building/structure energy reliability and security. Some of this information will also be used to meet reporting requirements for energy conservation improvements.

- **Current deficiency: Lack of understanding of how building or structure systems impact the efficiency of the building or structure as a whole**
The ability to execute effective building or structure energy conservation depends upon the level of understanding that DoD personnel possess about energy efficiency. Ideally, key personnel should possess detailed knowledge about energy systems and technologies that can reduce or conserve building/structure energy, along with a thorough understanding of the capabilities available for purchase in the energy consulting marketplace.

    DoD needs practical, tailored advice about how to reduce facility energy consumption in a way that makes effective change both easy and lasting. This applies both to efficiency investments such as building conservation improvements, proper maintenance and operation of facility systems, and to behavioral changes among facility users such as powering down electronics overnight and reducing personal energy usage. To develop and use information needed to support investments of money, time, and effort toward energy conservation, it is important to understand the impact of conservation measures on consumption. Ensuring that DoD personnel have a defined minimum level of training and education about energy efficiency will greatly facilitate DoD efforts to improve overall efficiency.

Objectives and Data Requirements for Capability

Objective Number	Objective	Data Element Mapping
1.2.1	Ability to identify the standard(s) that a facility is measured against.	Efficiency Standard Target Real Property Unique Identifier RPA Operational Status Code
1.2.2	Ability to determine the level of achievement of the facility relative to the standard(s).	Date Date Type Efficiency Standard Achievement Value Efficiency Standard Target Real Property Unique Identifier RPA Operational Status Code

Objective Number	Objective	Data Element Mapping
1.2.3	Ability to identify inclusion in the FEMP High Performance Buildings Database (http://eere.buildinggreen.com)	Date Date Type Efficiency Standard Achievement Value Efficiency Standard Target RPA Type Code Real Property Unique Identifier RPA Operational Status Code
1.2.4	Ability to benchmark and track benchmarking results for a constructed asset, including asset size (area), type, consumption, and Energy Star or similar rating information.	Asset Review Type Date Date Type Efficiency Standard Achievement Value Efficiency Standard Target Energy Role Energy Star Building Type Energy Type Real Property Unique Identifier RPA Operational Status Code RPA Total Unit of Measure Code RPA Total Unit of Measure Quantity RPA Type Code Time Time Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type
1.2.5	Ability to track completed energy evaluations at the constructed asset level (commissioning and audit).	Date Date Type Asset Review Type Code Real Property Unique Identifier RPA Operational Status Code
1.2.6	Ability to identify all ECMs associated with each real property facility (RPUID) and to aggregate and report all ECMs by location (RPSUID and Installation Code).	Energy Conservation Measure Identifier Energy Conservation Measure Category Installation Code Installation Name Real Property Site Unique Identifier Real Property Unique Identifier RPA Operational Status Code Site Name
1.2.8	Ability to provide information needed to assess the contribution of an ECM to site or facility energy security.	Energy Conservation Measure Identifier Energy Conservation Measure Category Installation Code Installation Name Real Property Site Unique Identifier Real Property Unique Identifier Site Name
1.2.9	Ability to track status of each ECM at the constructed asset level.	Date Date Type Energy Conservation Measure Identifier Energy Conservation Measure Status Code

Objective Number	Objective	Data Element Mapping
		Energy Conservation Measure Category Real Property Unique Identifier
1.2.11	Ability to identify the estimated cost of ECMs at the constructed asset level.	Date Date Type Dollar Amount Dollar Amount Type Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Real Property Unique Identifier Value Accuracy Type
1.2.12	Ability to identify and track the type of acquisition (e.g., in-house, ESPC) associated with each ECM being implemented.	Acquisition Mechanism Date Date Type Dollar Amount Dollar Amount Type Duration of Acquisition Mechanism Energy Conservation Measure Fund Code Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Procurement Instrument Description Text Procurement Instrument Identification Number Procurement Instrument Type Code Value Accuracy Type
1.2.13	Ability to identify estimated annual and life-cycle energy consumption and cost avoidance by energy type and cost avoidance type (Btus and O&M), based on historical consumption data or benchmarking associated with each ECM at the constructed asset level.	Date Date Type Dollar Amount Dollar Amount Type Energy Conservation Measure Estimated Life Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Energy Role Energy Type Lifecycle Cost Avoidance Type Real Property Unique Identifier Technology Type Time Time Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type
1.2.14	Ability to identify the Savings-to-Investment Ratio (SIR) and Pay Back Period -- based on historical consumption data or benchmarking -- associated with each ECM.	Date Date Type Dollar Amount Dollar Amount Type Energy Conservation Measure Estimated Life Energy Conservation Measure Identifier

Objective Number	Objective	Data Element Mapping
		Energy Conservation Measure Status Code Energy Conservation Measure Category Lifecycle Cost Avoidance Type Payback Period Real Property Unique Identifier RPA Operational Status Code Savings to Investment Ratio Time Time Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type
1.2.15	Ability to identify the measurement and verification date and methodology for each implemented ECM.	Date Date Type Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Measurement and Verification Method Type
1.2.16	Ability to measure and verify actual energy savings/cost avoidance generated by each implemented ECM.	Date Date Type Dollar Amount Dollar Amount Type Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Energy Role Energy Type Measurement and Verification Method Type Real Property Unique Identifier Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type
1.2.17	Ability to identify the name, number, type, technology type, associated RPUID(s), status, and actual or estimated status date for the project implementing each ECM.	Date Date Type Dollar Amount Dollar Amount Type Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Measurement and Verification Method Type Project Description Text Project Name Project Number Project Status Code Project Type Code Real Property Unique Identifier Technology Type Value Accuracy Type

Objective Number	Objective	Data Element Mapping
1.2.18	Ability to track project estimated and/or actual total cost amount and project status to date, fund code(s), funding organization(s), appropriation/funding year, award date(s) (*Project Status and Date*), programmed/appropriation amount, and obligation amount(s).	Acquisition Mechanism Date Type Dollar Amount Dollar Amount Type Duration of Acquisition Mechanism Project Detail Fund Code Project Detail Fund Organization Code Project Name Project Number Project Status Code Project Type Code Real Property Unique Identifier Value Accuracy Type
1.2.19	Ability to upload and link documents (e.g., DD1391) to project information.	Date Date Type Document Type Code Project Name Project Number Project Status Code Technology Type Project Type Code Value Accuracy Type
1.2.20	Ability to identify and obtain contact, certification/ accreditation, and training information for the energy managers.	Date Date Type Energy Certification Energy Training Credit Hours Energy Training Type Installation Code Installation Name Person Contact Information Person First Name Person Identifier Person Last Name Person Role Code
1.2.21	Ability to quantify persons obtaining energy training each year, and the associated cost at a given installation/site, to include both energy managers and other personnel.	Date Date Type Dollar Amount Dollar Amount Type Energy Training Credit Hours Energy Training Type Installation Code Installation Name Person Identifier Person Role Real Property Site Unique Identifier Site Name Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type

Managing Production of Renewable Energy

- **Definition:** This capability entails identification and collection of information about energy produced from renewable resources on DoD land or DoD owned assets. This information will be used by management to evaluate renewable resource opportunities and manage existing initiatives to provide benefits such as energy savings, reduction in dependence on foreign energy, and increasing energy security. This information will also be used to meet reporting requirements for renewable energy production.

- **Current deficiency: Lack of DoD enterprise strategy for renewable energy development** DoD installations span the spectrum of geographic and climatic conditions. Some are able to produce large amounts of several types of renewable energy, while others may have no viable resources. However, goals for achieving an increasing percentage of consumption of energy produced from renewable sources apply across the DoD. Without a coordinated portfolio approach to renewable energy production, opportunities for leveraging resources where available may be ignored and progress toward the DoD goal of achieving greater independence from the commercial grid may be limited.

Objectives and Data Requirements for Capability

Objective Number	Objective	Data Element Mapping
2.1.2	Ability to identify each renewable project by energy type and location.	Address Street Direction Code Address Street Name Address Street Number Address Street Type Code City Code Country Code Energy Role Energy Type Geospatial Feature Installation Code Installation Name Location Directions Text Postal Code Project Description Text Project Name Project Number Project Type Real Property Site Unique Identifier Real Property Unique Identifier RPA Operational Status Code Renewable Energy Classification Site Name State or Country Primary Subdivision Code Technology Type

Objective Number	Objective	Data Element Mapping
2.1.3	Ability to link renewable energy projects to the renewable energy producing asset and the DoD platform asset on or in which the project is being implemented.	Date Date Type Ownership Type Project Name Project Number Project Status Code Project Type Code Renewable Energy Classification Technology Type Unique Item Identifier Value Accuracy Type
2.1.4	Ability to identify RE project name, number, type, status, and technology type.	Date Date Type Dollar Amount Dollar Amount Type Measurement and Verification Method Type Procurement Instrument Identification Number Project Name Project Number Project Status Code Project Type Code Renewable Energy Classification Technology Type Value Accuracy Type
2.1.5	Ability to identify and track the acquisition mechanism (e.g., in-house, ESPC) associated with each RE project at the ECM level.	Acquisition Mechanism Date Date Type Dollar Amount Dollar Amount Type Duration of Acquisition Mechanism Energy Conservation Measure Fund Code Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Procurement Instrument Description Text Procurement Instrument Identification Number Procurement Instrument Type Code Project Number Value Accuracy Type
2.1.6	Ability to identify a renewable energy RE project's Ownership Type (DoD Platform/DoD Producing Asset, DoD Platform/Other Entity Producing Asset, Other Entity Platform/Other Entity Producing Asset).	Ownership Type Project Description Text Project Name Project Number Unique Item Identifier
2.1.7	Ability to identify renewable projects that supply energy to DoD that is not transmitted by or contributing to a commercial electrical grid.	Energy Role Energy Type Project Name Project Number Project Type

Objective Number	Objective	Data Element Mapping
		Technology Type
2.1.8	Ability to track RE project estimated and/or actual total cost amount, fund code(s), fund organization(s), appropriation/funding year, award date(s) (*Project Status and Date*), programmed/appropriation amount(s), and obligation amount(s).	Date Date Type Dollar Amount Dollar Amount Type Measurement and Verification Method Type Project Detail Fund Code Project Detail Fund Organization Code Project Name Project Number Project Status Code Project Type Code Real Property Unique Identifier Renewable Energy Classification Value Accuracy Type
2.1.9	Ability to measure units of renewable energy consumed from each RE project by time period, location (site), and climatic conditions.	Climate Zone Code Cooling Degree Days Date Date Type Energy Conservation Measure Identifier Energy Role Energy Type Heating Degree Days Postal Code Project Name Project Number Project Type Real Property Site Unique Identifier Renewable Energy Classification Site Name Technology Type Temperature Type Time Time Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type
2.1.10	Ability to measure units of renewable energy actually produced from each RE project by time period, location (site), and climatic conditions.	Climate Zone Code Cooling Degree Days Date Date Type Energy Role Energy Type Heating Degree Days Postal Code Project Name Project Number

Objective Number	Objective	Data Element Mapping
		Project Type Real Property Site Unique Identifier Renewable Energy Classification Site Name Technology Type Temperature Type Time Time Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type
2.1.11	Ability to determine estimated units of renewable energy to be produced from each RE project by time period, location (site), and climatic conditions.	Address Street Direction Code Address Street Name Address Street Number Address Street Type Code City Code Climate Zone Code Cooling Degree Days Date Date Type Country Code Energy Role Energy Type Geospatial Feature Heating Degree Days Installation Code Installation Name Location Directions Text Postal Code Project Name Project Number Project Type Real Property Site Unique Identifier Real Property Unique Identifier Renewable Energy Classification Site Name Site Operational Status Code State or Country Primary Subdivision Code Technology Type Temperature Type Time Time Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type
2.1.12	Ability to measure performance of RE project relative to estimated performance.	Date Date Type Energy Role

Objective Number	Objective	Data Element Mapping
		Energy Type Measurement and Verification Method Type Project Name Project Number Project Status Code Project Type Real Property Site Unique Identifier Real Property Unique Identifier Site Name Technology Type Time Time Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type
2.1.13	Ability to account for Renewable Energy Certificates (RECs) retained from each renewable energy project implemented on DoD controlled land.	Date Date Type Energy Reporting Organization Code Energy Role Energy Type Ownership Type Project Name Project Number Project Status Code Project Type Real Property Site Unique Identifier Real Property Unique Identifier Site Name Technology Type Time Time Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type
2.1.14	Ability to identify DoD real property assets or DoD platform assets that produce renewable energy. .	Real Property Unique Identifier RPA Predominant Current Use FAC Code Unique Item Identifier
2.1.15	Ability to account for all renewable energy that is produced on a DoD platform but not consumed by DoD, by location.	City Code Date Date Type Energy Reporting Organization Code Energy Role Energy Type Ownership Type Postal Code Project Number Project Status Code Project Type

Objective Number	Objective	Data Element Mapping
		Real Property Unique Identifier State or Country Primary Subdivision Code Technology Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type
2.1.16	Ability to determine the feasibility and impact of potential renewable energy projects by technology type on an installation's mission requirements.	Energy Role Energy Type Installation Code Installation Name Real Property Site Unique Identifier Renewable Energy Analysis Category Renewable Energy Analysis Category Rating Site Name Value Accuracy Type
2.1.17	Ability to estimate the amount of yearly renewable energy potential at each installation by technology type.	Renewable Energy Analysis Category Renewable Energy Analysis Category Rating Renewable Energy Potential Amount Energy Role Energy Type Installation Code Installation Name Real Property Site Unique Identifier Site Name Value Accuracy Type
2.1.18	Ability to determine the difference between the amount of renewable energy produced by DoD (Scope 1) and the amount purchased by DoD (Scope 2) during a specific period of time.	Conversion Factor Conversion Factor Role Date Date Type Energy Role Energy Type Ownership Type Project Name Project Number Project Type Real Property Site Unique identifier Real Property Unique Identifier Site Name Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type

Managing the Purchase of Renewable Energy

- **Definition:** This capability entails identification and collection of information about energy purchased by the DoD that is produced from renewable resources on non-DoD land or by non-DoD assets. This information will be used by management to evaluate renewable resource opportunities and manage existing initiatives to provide benefits such as energy savings, reduction of dependence on foreign energy, and increased energy security. This information will also be used to meet reporting requirements for renewable energy purchases.

- **Current deficiency: Lack of DoD enterprise strategy for renewable energy purchase** Some installations are able to purchase large amounts of renewable energy at a competitive cost due to their location, while others may have only very expensive and limited options. However, goals for achieving an increased percentage of consumption of energy produced from renewable sources apply across the DoD. Without a coordinated portfolio approach to renewable energy purchasing, opportunities for leveraging resources where available may be ignored, and progress toward the DoD goal of achieving greater independence from the commercial grid may therefore be limited.

Objectives and Data Requirements for Capability

Objective Number	Objective	Data Element Mapping
2.2.1	Ability to account for the type, units, and cost of renewable energy purchased.	Date Date Type Dollar Amount Dollar Amount Type Duration of Acquisition Mechanism Energy Reporting Organization Code Energy Role Energy Type Installation Code Installation Name Procurement Instrument Identification Number Procurement Instrument Type Time Time Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Utility Provider Customer Account Number Utility Provider Organization Name Utility Provider Type Value Accuracy Type
2.2.2	Ability to identify the production location (i.e., energy role, postal code) and consumption location for purchased renewable energy.	City Code Country Code Duration of Acquisition Mechanism Energy Role Energy Type

Objective Number	Objective	Data Element Mapping
		Geospatial Feature Postal Code Procurement Instrument Identification Number Real Property Site Unique Identifier Renewable Energy Classification Site Name State or Country Primary Subdivision Code Utility Provider Customer Account Number Utility Provider Organization Name Utility Provider Type
2.2.3	Ability to account for the type, units and total cost of RECs purchased by each DoD Component.	Date Date Type Dollar Amount Dollar Amount Type Duration of Acquisition Mechanism Energy Role Energy Type Installation Code Installation Name Procurement Instrument Identification Number Procurement Instrument Type Real Property Site Unique Identifier Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Utility Provider Customer Account Number Utility Provider Organization Name Utility Provider Type Value Accuracy Type
2.2.4	Ability to forecast the type, units, and cost of renewable energy *planned to be* purchased.	Date Date Type Dollar Amount Dollar Amount Type Energy Role Energy Type Installation Code Installation Name Real Property Site Unique Identifier Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Utility Provider Customer Account Number Utility Provider Organization Name Utility Provider Type Value Accuracy Type
2.2.5	Ability to forecast the type, units, and cost of RECs *planned to be* purchased.	Date Date Type Dollar Amount Dollar Amount Type

Objective Number	Objective	Data Element Mapping
		Energy Role
		Energy Type
		Installation Code
		Installation Name
		Real Property Site Unique Identifier
		Unit of Measure Code
		Unit of Measure Role
		Unit of Measure Value Quantity
		Utility Provider Customer Account Number
		Utility Provider Organization Name
		Value Accuracy Type

APPENDICES

# Appendix A: Summary EEIM Data Model
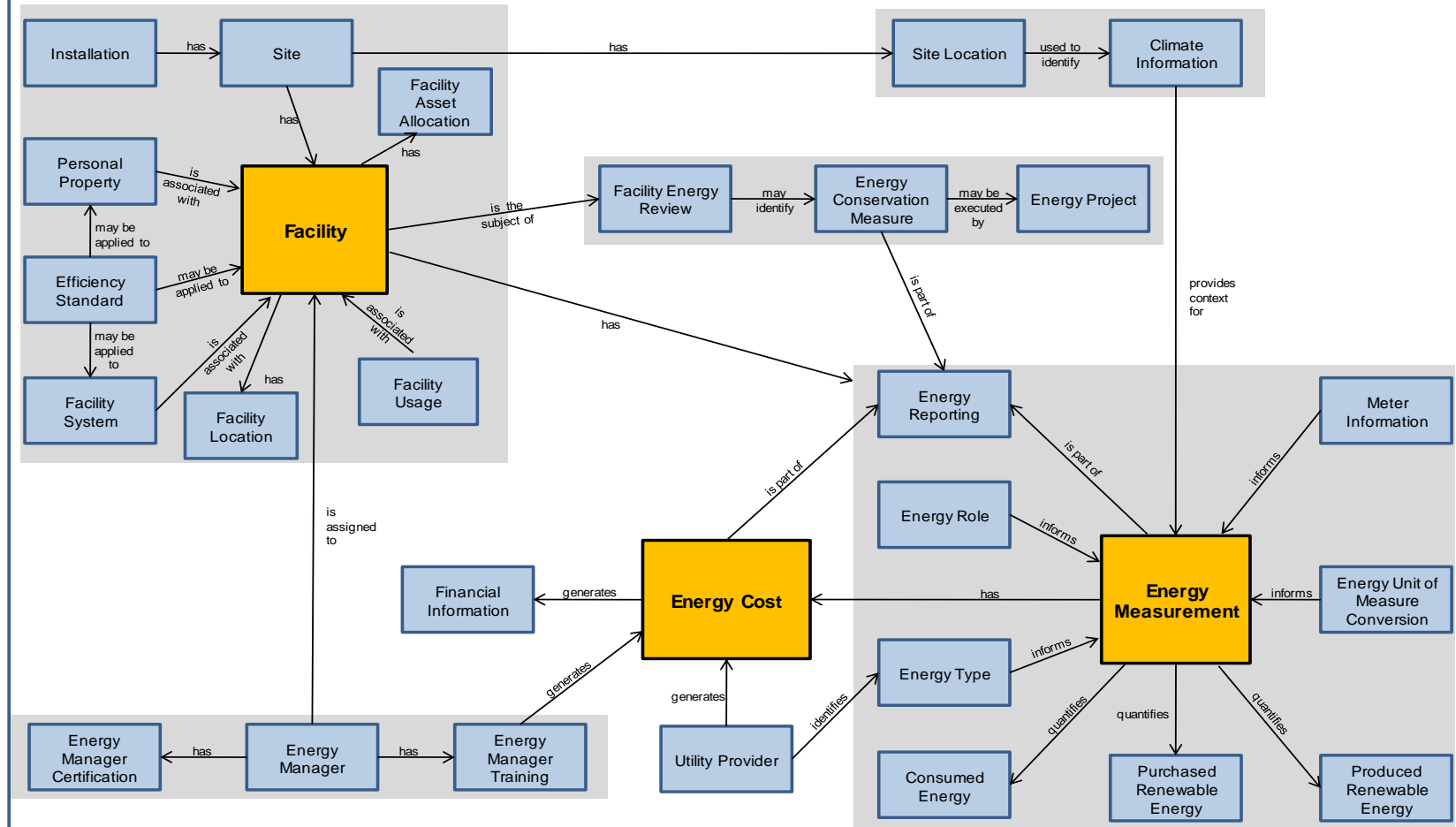
Appendix B: Enterprise Energy Information Management Process Models

Various combinations of the 22 Enterprise Energy Information Management business processes are utilized in the four main business areas of Facility Energy Management: Manage Facility Energy; Manage Facility Energy Consumption; Manage Facility Energy Conservation Improvement; and Manage Renewable Energy. Each of these business areas represents a functional business capability that may be executed at various organizational levels, and is presented in one of the process model diagrams that follows. These diagrams depict the processes utilized in each business area, as well as the flows of information between the processes. For clarity, the first diagram depicts processes involved in overall facility energy management, and the last three depict processes involved in achieving the four facility energy capabilities.

Each process model is divided into business "swim lanes," which are labeled along the left margin, and   each individual process is shown as a named and numbered box. For definitions of each process, use the name or number to look up the process in Appendix C. Arrows connect the processes and the numbers on the arrows represent information exchanges. Solid arrows connect processes within the model; dashed arrows are used to show information flowing from external sources. For a description of the specific information exchanges, use the numbers along the arrows to look them up in Appendix E.

Manage Facility Energy Process Model

This process model diagram describes a high-level vision of how DoD processes interact during performance of facility energy management in the "To Be" information environment.   Although this process diagram is not specifically referenced in the Scenarios (Appendix D), this model contains general process interactions that occur alongside each of the other three process models, which are more specific to the capabilities they depict.
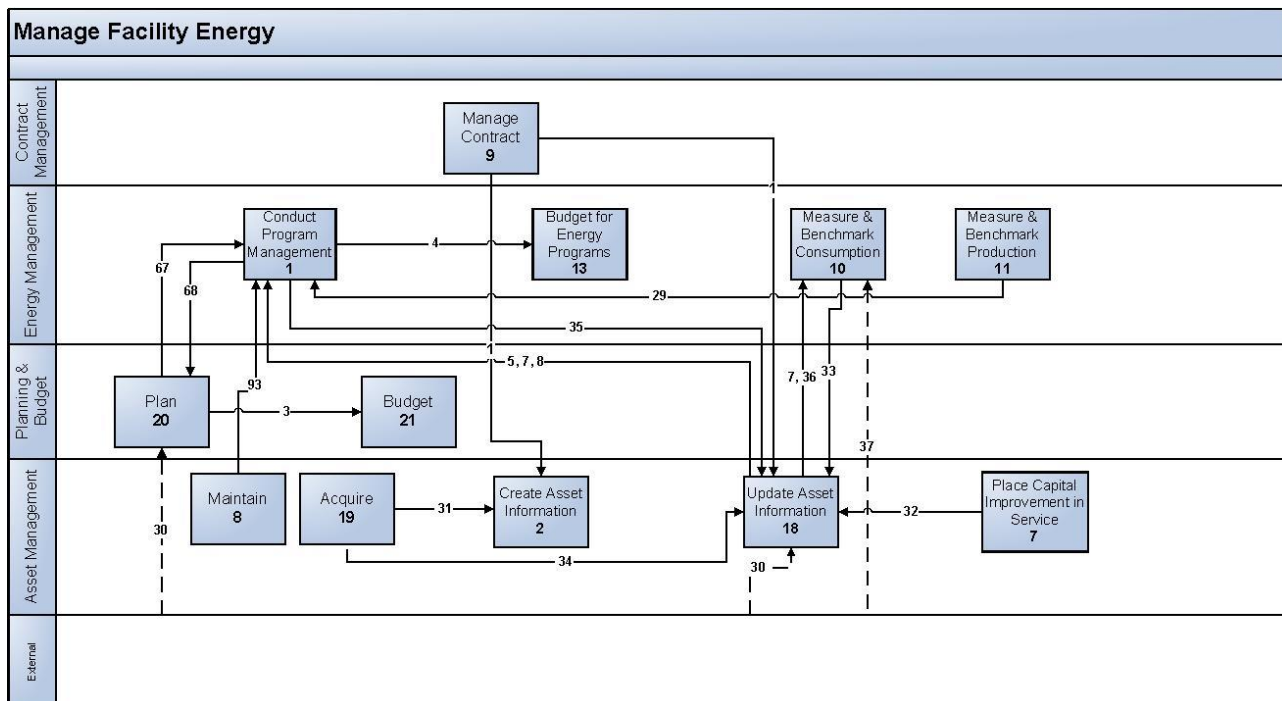
Manage Facility Energy Consumption Process Model

This process model diagram describes a high-level vision of how DoD processes interact during performance of energy consumption management in the "To Be" information environment. Note that some of the more general process interactions involved in managing energy consumption – such as planning, budgeting, and contract management – are depicted above in the *Manage Facility Energy* process model.

Manage Facility Energy Consumption

Planning and Budgeting		Plan **20** —24—
Energy Management	Conduct Program Management **1** —19— Measure & Benchmark Consumption **10**	20, 24, 28
Contract Management	Manage Contract **9** —18—	
Asset Management	15 93 27 23 Maintain **8** Update Asset Information **18** —11, 13, 14, 16, 18, 21, 25—	15, 17-
Financial Management	Process Invoice **15** —12, 26— — 22- —	
External		
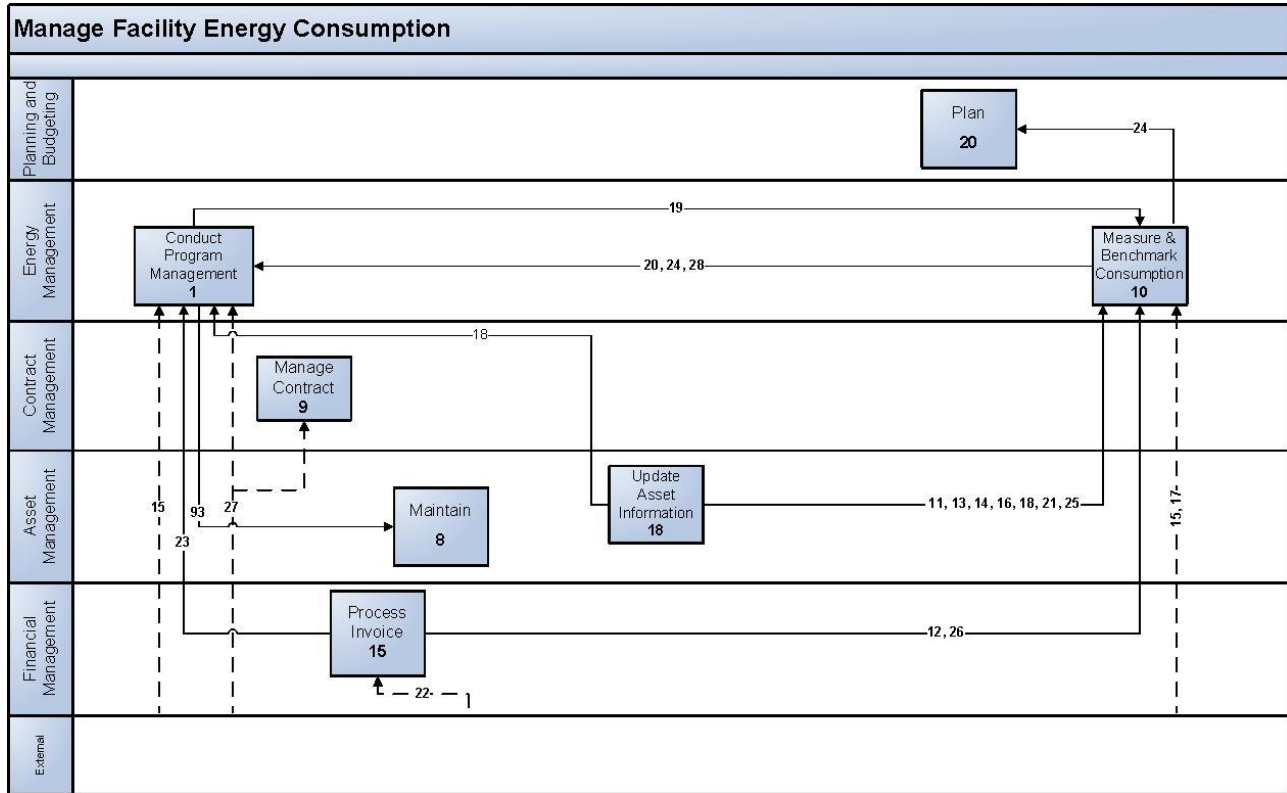
Manage Facility Energy Conservation Improvement Process Model

This process model diagram describes a high-level vision of how DoD processes interact during management of building/structure energy conservation improvement efforts in the "To Be" information environment. Note that some of the more general process interactions involved in managing building or structure energy conservation improvement – such as planning, budgeting, and contract management – are depicted above in the *Manage Facility Energy* process model.
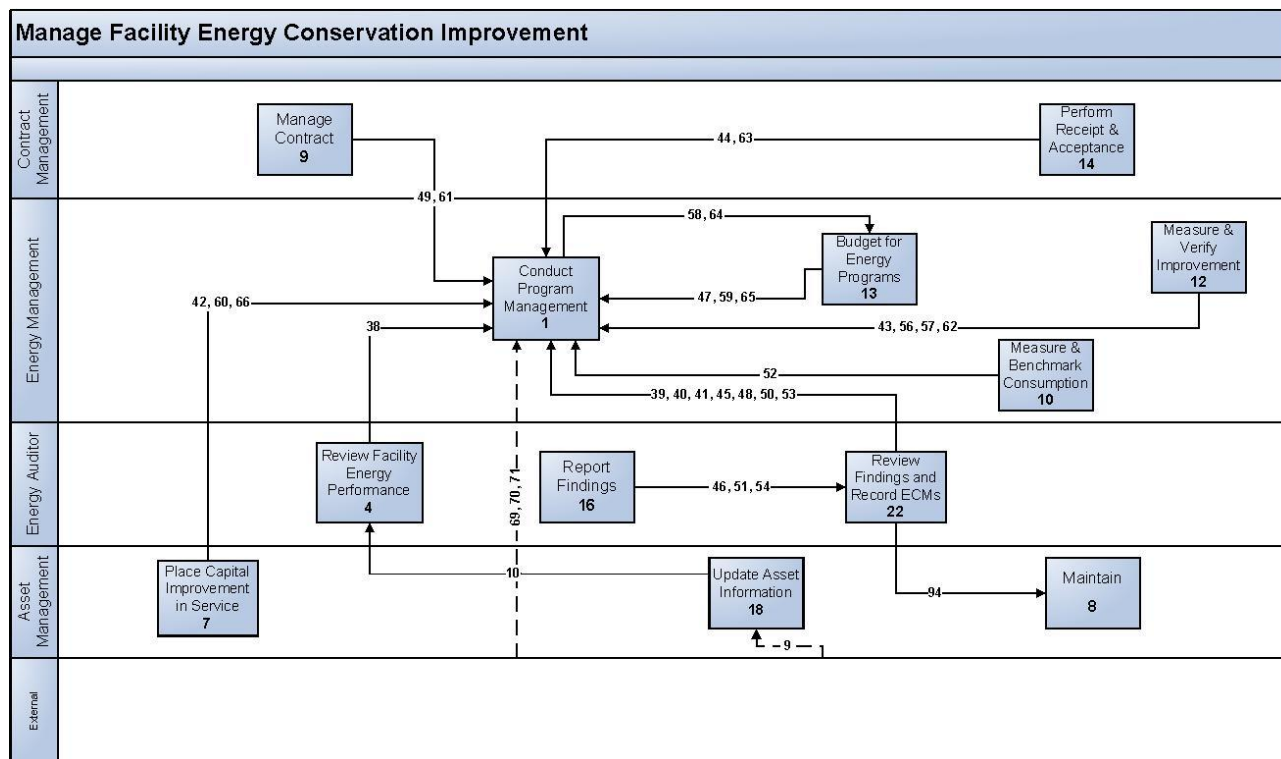
Manage Renewable Energy Process Model

This process model diagram describes a high-level vision of how DoD processes interact during performance of renewable energy, both purchase and production, management in the "To Be" information environment. Note that some of the more general process interactions involved in managing renewable energy – such as planning, budgeting, and contract management – are depicted above in the *Manage Facility Energy* process model.
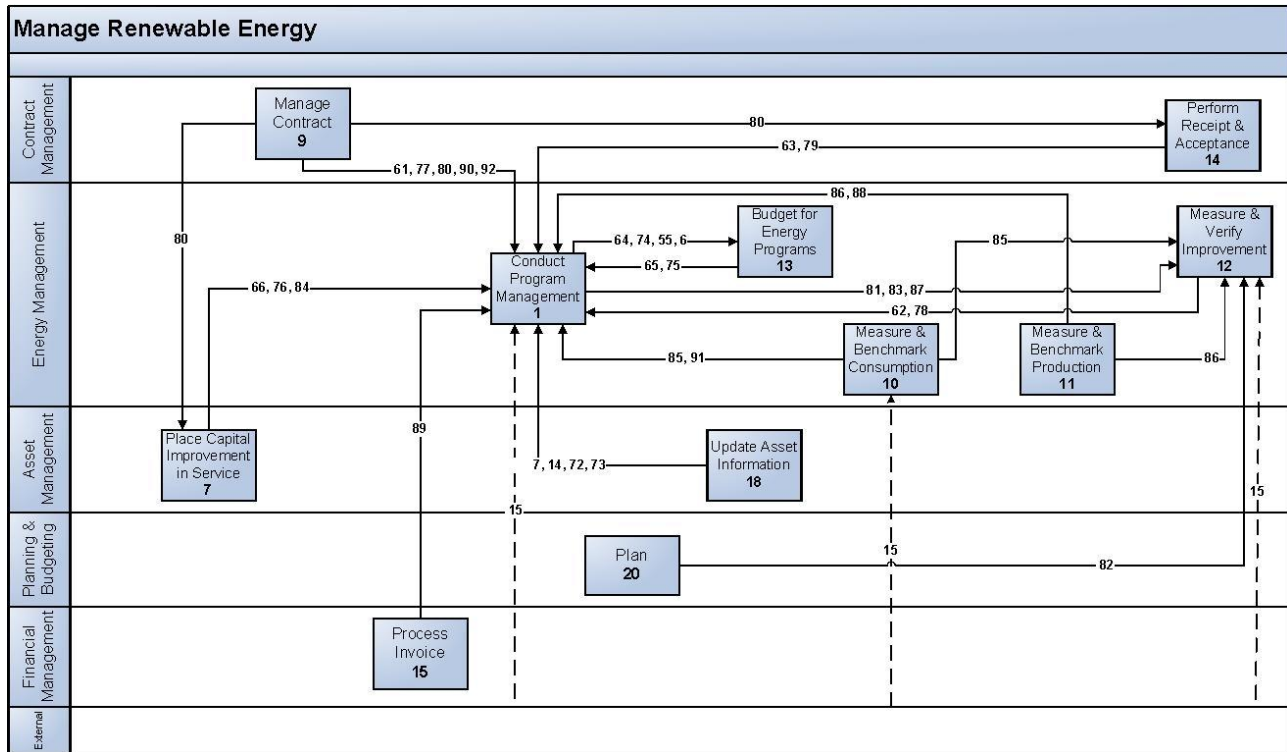
Appendix C: Processes and Definitions[5]

The EEIM requirements define 22 discrete functional processes, which deliver facility energy management capabilities throughout the standard real property asset lifecycle processes (Figure 5). The individual processes are shown as named and numbered boxes, which correspond to the table below the figure, though it does not depict the sequence in which these processes occur, nor the hierarchy of organizations involved. Following Figure 5 is a table that contains the definitions of each of the numbered processes.
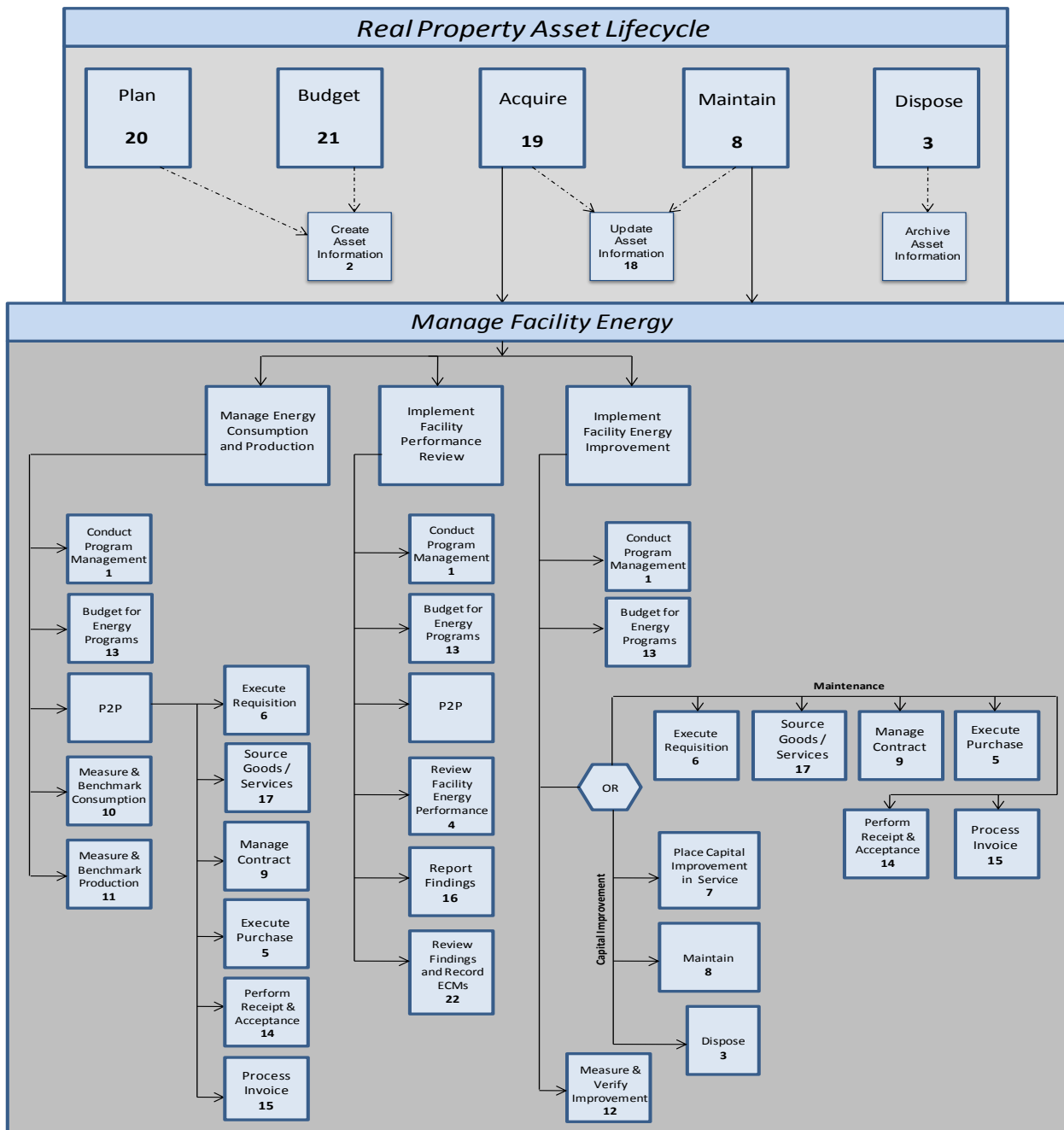

Figure 5. Facility Energy Processes associated with the DoD Real Property Asset Lifecycle

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[5] Derived from http://dcmo.defense.gov/products-and-services/business-enterprise-architecture/9.0/index.htm, under BEA DoDAF Models, AV-2 Integrated Dictionary, BPM Process Definitions.

Process No.	Process Name	Process Definition
1	Conduct Program Management	This activity exercises designated authority and responsibility for planning, organizing, staffing, controlling and leading the combined efforts of participating/assigned civilian and military personnel organizations for the management of programs or specific defense acquisition throughout the lifecycle.
2	Create Asset Information	The Create Asset Information process establishes an entry based on the execution of a contract or order, or real estate instrument, or the performance of a physical inventory which results in identification of an asset which is not recorded in the inventory system.
3	Dispose	This process addresses the actions required to properly dispose or resale property or materiel that has been authorized for disposal or resale as it is beyond economical repair, not covered by a valid warranty, and is not required for use by any other Government organization per the disposal authorization instruction. This process also addresses the actions to dispose of real property to include but not limited to demolition or transfer.
4	Review Facility Energy Performance	This process covers the actual conduct of a building or structure energy review, to include the site visit (e.g., energy survey, audit, etc.) and any research needed to identify potential building/structure energy conservation improvements.
5	Execute Purchase	Execute Purchase may include, but is not limited to the final preparation and approval of purchasing documentation, the legal obligation of funds, and the execution of the purchase order with the external vendor or internal DoD trading partner. Purchase activities occur as a result of internally sourced goods and services (e.g. DLA), competitive solicitations, and through simplified acquisitions in accordance with FAR/DFAR guidelines.
6	Execute Requisition	Execute Requisition consists of requesting goods and/or services, which includes, but is not limited to the following activities: generating the request; receiving the appropriate approvals from management indicating the validity of the request; validating that funds are available; reserving the funds necessary for the request via a financial commitment transaction; and routing the request to the buyer with the information necessary for final approval and sourcing.
7	Place Capital Improvement in Service	This process involves all activities required to take a Capital Improvement that has been accepted (both interim and final) for delivery from the vendor and make that improvement fully operational. This may include distribution, assembly, installation, and testing of improvement to ensure that the improvement meets predefined internal and external specifications.
8	Maintain	This process is associated with maintaining plant, property, and equipment assets in standard working condition, and or extending their capacity, capability, or useful life.

Process No.	Process Name	Process Definition
9	Manage Contract	Manage Contract encompasses procurements made beyond what can be accomplished under the FAR/DFAR simplified acquisition guidelines, which requires a sealed bidding or competitive acquisition process. Also included are issued purchase orders of interest that require monitoring or surveillance. Some of the distinguishing factors may include, but are not limited to, dollar value, provisions of service, contract time frame, or the complexity of goods or services being procured. The contracting process may also include a technical liaison, the review and acceptance of deliverables, monitoring of contractor performance, and issuance of contract or purchase order modifications.
10	Measure & Benchmark Consumption	This process covers measuring energy consumption in a building or structure, setting benchmarks, and verifying those measurements against benchmarks (EnergyStar, LEED, ASHRAE, etc.), historical consumption, or projected building/structure energy consumption. This process would also include the task of accounting for utility costs as they relate to reimbursable versus non-reimbursable costs.
11	Measure & Benchmark Production	This process determines the energy output of the system/project for a specified timeframe using appropriate meters. This information can be used to develop a performance baseline and to compare against benchmarks such as expected/planned energy output, energy output of similar systems/projects, or prior time period energy output of the system/project.
12	Measure & Verify Improvement	This process covers measuring energy consumption in a building or structure where an energy conservation improvement has been implemented and determining -- either through in-house analysis or by 3rd-party review -- how well the conservation improvement is performing compared with historical or projected energy consumption.
13	Budget for Energy Programs	The budgeting activity provides a platform for a detailed review of a program's pricing, phasing, and overall capability to be executed on time and within budget. The budgeting process addresses the years to be justified in the President's Budget and provides a forum to develop the Secretary's budget position. Budgeting also prepares the programs to be developed into appropriations.
14	Perform Receipt & Acceptance	Perform Receipt & Acceptance involves confirming that goods and/or services were delivered as ordered, any errors were resolved, and formal acceptance of delivery was rendered by the government. This process may also include the generation of a receiving document, which draws down any pre-existing outstanding obligation and accrues a liability and expenditure.

Process No.	Process Name	Process Definition
15	Process Invoice	The Process Invoice process includes the approval of the request for payment by the commercial vendor or government trading partner for goods or services rendered. This process includes two, three, or four-way matching of the invoice against other transaction artifacts based on the pre-determined workflow for the transaction in question. In the case of transactions requiring two-way matching, the invoice is matched against the order. In the case of transactions requiring three-way matching, the invoice is matched against the order and the receipt. In the case of transactions requiring four-way matching, the invoice is matched against the order, the receipt, and the evidence of acceptance. Upon completion of the matching process the transaction is authorized for payment.
16	Report Findings	This process includes preparing and delivering a facility energy performance review report.
17	Source Goods / Services	Source Goods and Services is initiated as a review of sourcing alternatives for the goods and/or services being requested to determine the range of products and services that will best meet the requirement, the alternative sources of supply, available contractual vehicles, standard commercial terms and conditions, opportunities for leveraging buying power, and the appropriate range of costs.
18	Update Asset Information	This process updates asset records with information based on a change to the quantity, condition or interest of ownership of an asset. For Real Property this includes, but is not limited to, actions such as construction, restoration, modernization, disposal, purchase, transfer, in-grants, out-grants, donation, or exchange. For Personal Property this includes, but is not limited to, actions such as the purchase, transfer, make, issuance, repair and overhaul, return, sale, or disposal.
19	Acquire	This process encompasses steps taken to add a real property asset to DoD's real property inventory. This includes acquisition of an asset by construction, purchase, lease, or reversion.
20	Plan	This process involves analyses and other steps undertaken to determine whether it is necessary to construct, purchase, lease, transfer, modernize, or dispose of a real property asset.
21	Budget	The ability to develop, review, evaluate and support financial forecasts, plans, programs and budgets and to integrate them with appropriate performance indicators to achieve effective business operations and program goals.
22	Review Findings and Record ECMs	This process involves reviewing the results of the facility energy review (e.g., energy survey/audit report), and the selection of suggested ECMs for further action. Information about these ECMs is recorded (e.g., entered into an energy information management system) whether or not they are actually implemented.

Appendix D: Facility Energy Management Scenarios

Introduction

The Facility Energy Management Scenarios are identified in the table below along with the EEIM capability that is the main focus of the scenario.

Scenario	Capability
Scenario 1 – DoD consumes energy in an existing building, and monitors and analyzes consumption.	1.1 Manage Facility Energy Consumption
Scenario 2 – DoD performs a building or structure energy assessment, identifies conservation improvements, and puts conservation improvement projects in place.	1.2 Manage Facility Energy Conservation Improvement
Scenario 3 – DoD implements a renewable energy production project (conservation improvement) on a DoD platform (land, building, structure, or linear structure) and monitors/verifies performance.	2.1 Manage Production of Renewable Energy
Scenario 4 - DoD purchases renewable energy produced using a non-DoD energy-producing asset.	2.2 Manage Purchase of Renewable Energy

Each scenario begins with an overview that identifies and describes major steps that each scenario entails, as well as the principal actors/roles and key outcomes. Each of the step descriptions is followed by a diagram that depicts EEIM information (numbered on the information flow arrows) that is exchanged among the EEIM processes (defined in Appendix C) as each of the scenario steps unfolds, as well a table that identifies those packages of information. Note that the EEIM data elements "contained" in each of the packages, or information exchanges, is identified in Appendix E.

Scenario 1 – Energy Consumption

Overview

A DoD Component must understand certain parameters about energy consumption in its facilities in order to execute its missions efficiently, identify areas where improvement may be necessary, and report on its performance toward facility energy consumption goals. Steps must be taken to determine the types and levels of information needed to support these needs, put tools in place to generate, gather, and access this information, and apply the tools to measure and compare facility energy consumption.

This scenario consists of the following steps:

1.1   Identify parameters of energy consumption in DoD buildings that require understanding

1.2   Put tools in place to measure and analyze energy consumption

1.3   Consume energy

1.4   Measure and verify energy consumption and benchmark facilities.

Actors/Roles

- Energy Manager
- Facility Manager
- Facility Users
- Utility Service Providers

Key Outcomes

- The Component has identified building energy consumption measurements and analyses that need to be performed.
- A DoD building or structure is equipped with necessary systems/services to measure and analyze facility energy consumption.
- Energy is consumed and information that can be used to describe facility consumption dynamics is captured.
- Facility energy consumption is measured and is analyzed against site conditions and similar facilities.

Scenario 1 Steps

Step 1.1: Identify parameters of energy consumption in DoD buildings that require understanding

This step covers the Component's efforts to identify the measurements and analyses needed to achieve the desired understanding about energy consumption in one of its buildings. This will pertain to information about the building or structure needed for benchmarking purposes or to demonstrate compliance with efficiency standards or goals. However, some DoD buildings present unusual energy demands due to building materials, hours of operation, location, or special equipment, systems, etc. that do not align well with existing building or structure benchmarks and standard analytical tools such as the Environmental Protection Agency's EnergyStar® Portfolio Manager. In such cases, an installation may need to generate a unique set of information to support customized analyses and achieve building-specific goals.

IE	Information Exchange Name
3	Planned Meter Information
8	Facility Reporting Category Information
9	System Performance Information
11	Facility Hours of Operation Information
17	Site/Source Energy Information
19	Asset Consumption Target Information
21	Facility Information
30	Facility Standards
68	Energy Program Planning Information
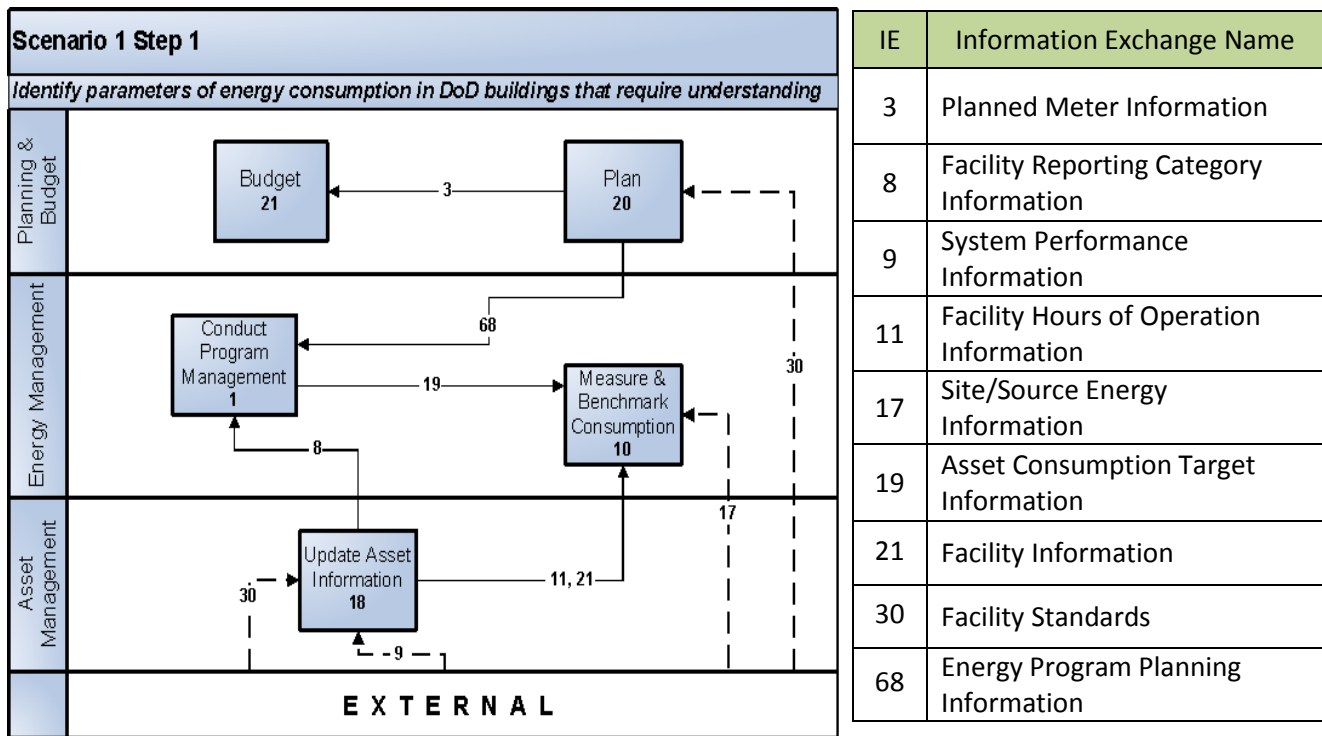
Step 1.2: Put tools in place to measure and analyze energy consumption

Components must plan, budget for, and put in place energy monitoring systems, equipment, service contracts, and management processes that support development of the desired type and level of information about energy consumption. This includes information needed to establish and report performance against building/structure energy consumption targets, to pinpoint reimbursable consumption, and to optimize energy efficiency based on the utility structure.

IE	Information Exchange Name
4	New Meters for Existing Facilities Information
5	Real Property Meter Information
13	Asset Allocation Information
15	Climate Information
16	Meter Information
23	Energy Cost Information
24	Reimbursable Utility Cost Information
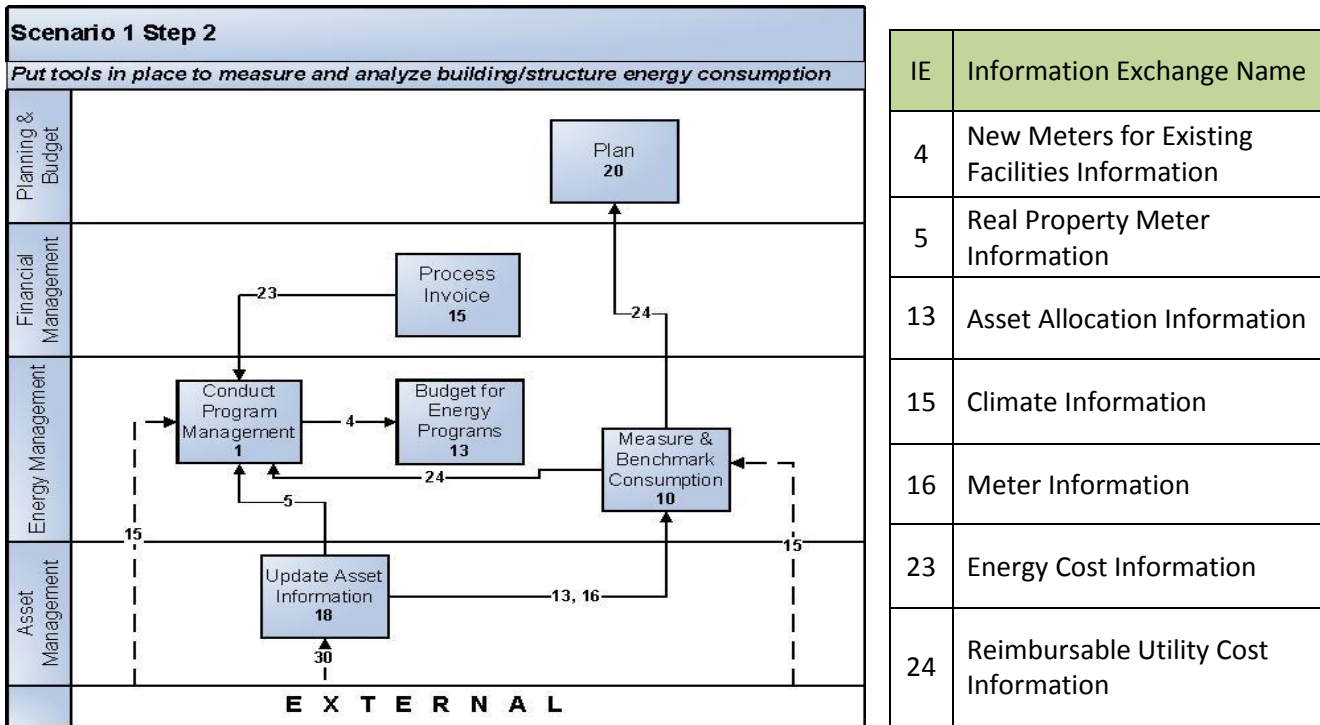
Step 1.3: Consume energy

Facility users consume energy throughout the day, and building systems (heating, lighting, etc.) consume energy even when the building/structure is not occupied or used. Site condition information such as temperature that can be used to explain the dynamics of building or structure energy consumption is collected by the Energy Manager, contractors, and automated systems.
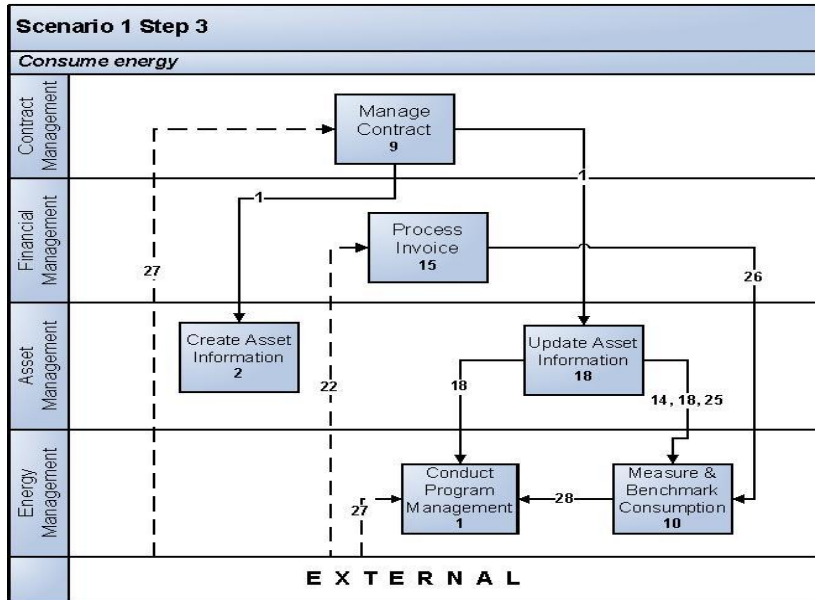
IE	Information Exchange Name
1	Utility Reimbursement Information
14	Site Location Information
18	Installation and Asset Information
22	Utility Invoice Information
25	Peak Meter information
26	Utility Provider Peak Information
27	Utility Provider Information
28	Consumption Reporting Information

Step 1.4: Measure and verify energy consumption and benchmark facilities

The Energy Manager, in consultation with the Facility Manager, ensures that utility consumption can be measured or reliably estimated, and that a baseline is established for electricity, gas, and water consumption in the building or structure. Variations in building or structure energy consumption and intensity can be analyzed/verified against the site conditions information collected in the previous step. The results of this analysis are incorporated into periodic benchmarking of the building or structure against similar facilities or historic consumption. This information may also be used to forecast future consumption, and shared with building or structure energy Assessment Contractors as described in Scenario 2.
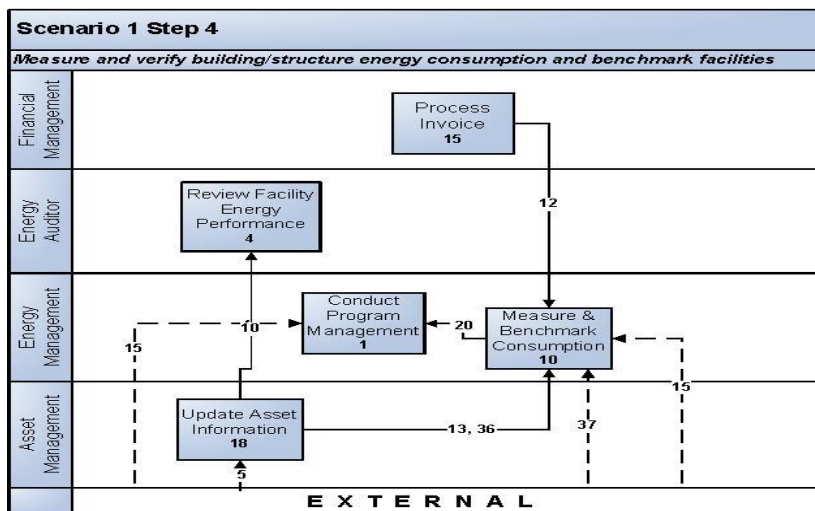
IE	Information Exchange Name
10	Facility System Information
12	Utility Bill Information
13	Asset Allocation Information
15	Climate Information
20	Facility Consumption Information
36	Asset Benchmark Information
37	Efficiency Standard Information

Scenario 2 – Energy Conservation Improvements

Overview

Once a Component has tools in place to measure energy consumption in its buildings and structures, those facilities may be evaluated to identify ways to achieve energy savings. Many possible conservation improvements may be identified, but only a few may offer savings that justify the up-front expenditure. Once conservation improvements are identified, the Component must assess the return on investment, feasibility, and operational impacts of a potential conservation improvement and select proposed projects from among the most promising alternatives. Once planning and budgeting are complete and funds are received, the projects that deliver the selected conservation improvement in building or structure energy consumption are executed. The installation then ensures that appropriate tools are in place to monitor how well the conservation improvement performs, and compares actual performance with the performance level projected during the conservation improvement selection process. The outcomes of this periodic analysis are documented as lessons learned for future facility energy conservation improvement efforts.

This scenario pertains to an existing building and consists of the following steps:

2.1 Plan a building/structure energy review
2.2 Execute the building/structure energy review
2.3 Receive a list of potential ECMs with estimated costs and savings
2.4 Obtain appropriate level of selection/approval
2.5 Prioritize ECMs, and plan and budget for ECM implementation
2.6 Execute energy conservation improvement project
2.7 Operate energy conservation improvement
2.8 Measure and verify energy conservation improvement performance
2.9 Document measurement & verification findings

Actors/Roles

➢ Budget Staff
➢ Contracting Staff
➢ Decision Authority
➢ Energy Evaluator (in-house or contract)
➢ Energy Manager
➢ Facility Manager
➢ Facility Users
➢ Master Planning Office

Key Outcomes

➢ All actions to prepare for a building or structure energy assessment (contracting actions notwithstanding) have been completed.
➢ A building or structure energy assessment is completed per to EISA (2007) Section 432.

- Results of a building/structure energy assessment are understood and provide the basis for building or structure energy conservation improvement decisions.
- A prioritized scheme for funding and implementing ECMs is in place.
- Building/structure energy conservation improvement is in place and operational.
- Performance of energy conservation improvement is monitored and documented.

Scenario 2 Steps

Step 2.1: Plan a building/structure energy review

The Energy Manager determines whether each of the buildings under their purview is "covered" under the Energy Independence and Security Act (2007) Section 432 requirements for federal building or structure energy assessments. If the building or structure is "covered", the Energy Manager will determine when in the recurring four-year assessment cycle the building or structure will first be assessed. In this step, the Energy Manager, in coordination with the Facility Manager, the Master Planning Office, and Budgeting Staff will estimate, budget for, and schedule an assessment, notify occupants/users of the building or structure as needed, and ensure that the Energy Evaluator has access to all necessary building information and elements. These steps may entail meeting with an Energy Evaluator to understand the scope and requirements for assessing a specific building or structure.
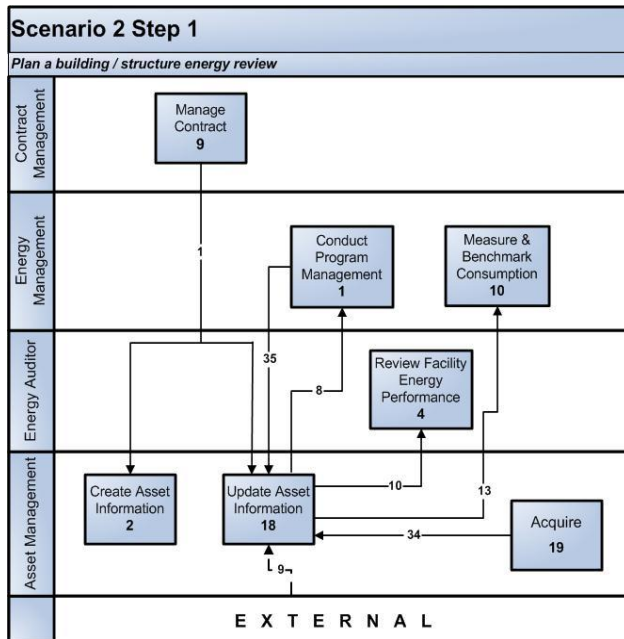
IE	Information Exchange Name
1	Utility Reimbursement Information
8	Facility Reporting Category Information
9	System Performance Information
10	Facility System Information
13	Asset Allocation Information
34	FEMP Database Inclusion for a New Facility
35	FEMP Database Inclusion for an Existing Facility

Step 2.2: Execute the building/structure energy review

In this step, the Energy Manager works with Contracting Staff to complete all contracting actions needed to enter or utilize existing contracts to obtain qualified building or structure energy assessment services. The Energy Evaluator receives energy consumption and benchmarking information for the building or structure, completes the building or structure energy review, and prepares and submits a report of findings to the Energy Manager (usually through the Contracting Officer for the assessment). During this phase, the installation also collects baseline energy consumption measurements for the building or structure to be improved if that information is not already available. The principal finding of the review is a list of energy conservation measures (ECMs) that, if implemented, are expected to improve the building or structure's energy efficiency.

IE	Information Exchange Name
11	Facility Hours of Operation Information
12	Utility Bill Information
13	Asset Allocation Information
19	Asset Consumption Target Information
30	Facility Standards
31	Efficiency Standard for New Facility
33	Efficiency Standard for Existing Facility
52	Energy Consumption and Cost Information
67	Program Planning Information
68	Energy Program Planning Information

Step 2.3: Receive a list of ECMs with estimated costs and savings

In step 2.3, the Energy Manager receives the report of findings from the building or structure facility energy review. The cost of implementation (including routine maintenance costs) and expected savings for each ECM are included. The Energy Manager will discuss the findings with the Master Planning Office and the Facility Manager to review potential impacts to operations, and to verify estimated ECM implementation costs and feasibility. Based on these reviews, the Energy Manager may eliminate one or more potential ECMs from further consideration in this step.
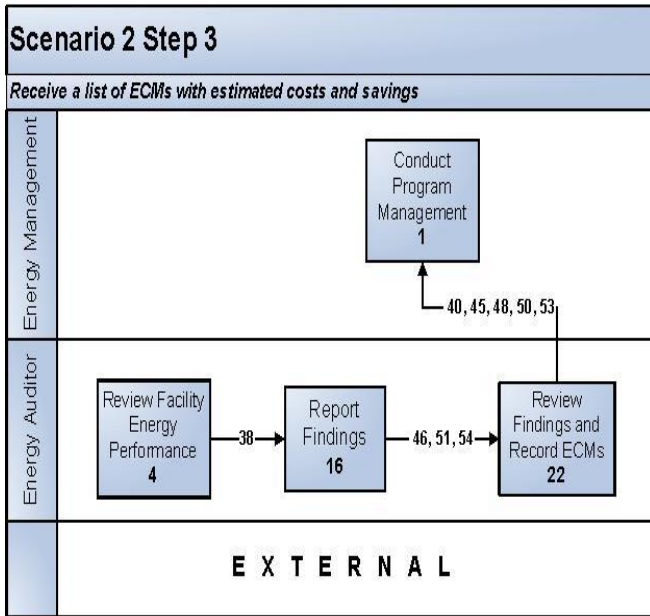
IE	Information Exchange Name
38	Energy Evaluation Information
40	Energy Conservation Measure Location Information
45	Energy Conservation Measure Status Information
46	Potential ECM Information
48	ECM Information to be Recorded
50	ECM Cost Avoidance Information
51	Potential ECM Cost Avoidance Information
53	ECM Savings to Investment Ratio Information
54	Potential Savings to Investment Ratio Information

Step 2.4: Obtain appropriate level of selection/approval

The installation seeks the selection and approval of ECMs to be executed from the appropriate decision authority.

[Note: No table for this step]

Step 2.5: Prioritize ECMs and plan and budget ECM implementation

In this step, the Energy Manager bundles ECMs into projects where it makes sense, ranks the projects according to preference, and sums the implementation costs. The Energy Manager requests funding for implementing all ECMs for a building or structure, and engages throughout the budget process as needed to substantiate the request. If less than the requested amount is provided, the Energy Manager will allocate the funds received to implement ECMs according to priority based on payback, SIR, and ease of implementation.
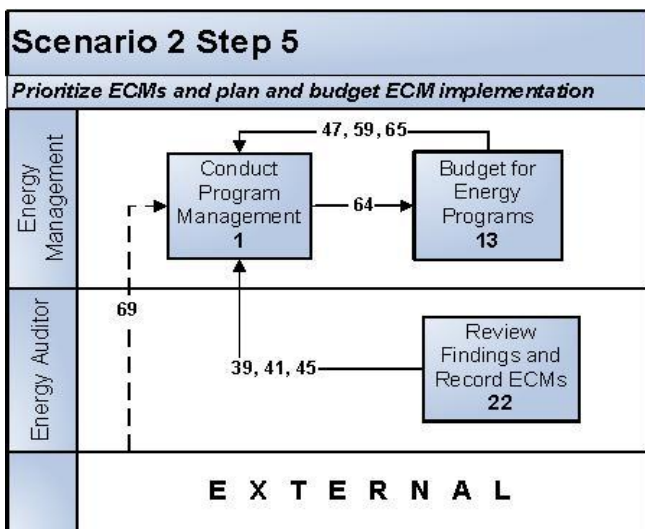
IE	Information Exchange Name
39	Energy Conservation Measure Information
41	Energy Conservation Measure Mission Information
45	Energy Conservation Measure Status Information
47	ECM Budget Information
59	Project and EM Budget Information
64	Project Estimation Information
65	Project Budget Information
69	Approval Document Information

Step 2.6: Execute energy conservation improvement project

In this step, the Energy Manager works with Contracting Staff to develop contracts or utilize existing contracts for executing building or structure energy conservation improvement projects to construct, install, or initiate ECMs. The Energy Manager will ensure that the contract includes provision to develop a Measurement and Verification (M&V) Plan for use in validating conservation improvement savings. Once the contracted action is complete and the building/Structure energy conservation improvement is in place, the Energy Manager works with Installation Facility Manager to train maintenance & operations employees and users to implement and monitor the conservation improvement, where necessary. This includes ensuring that appropriate M&V equipment, systems, and services are installed in order to implement the M&V Plan for the conservation improvement.
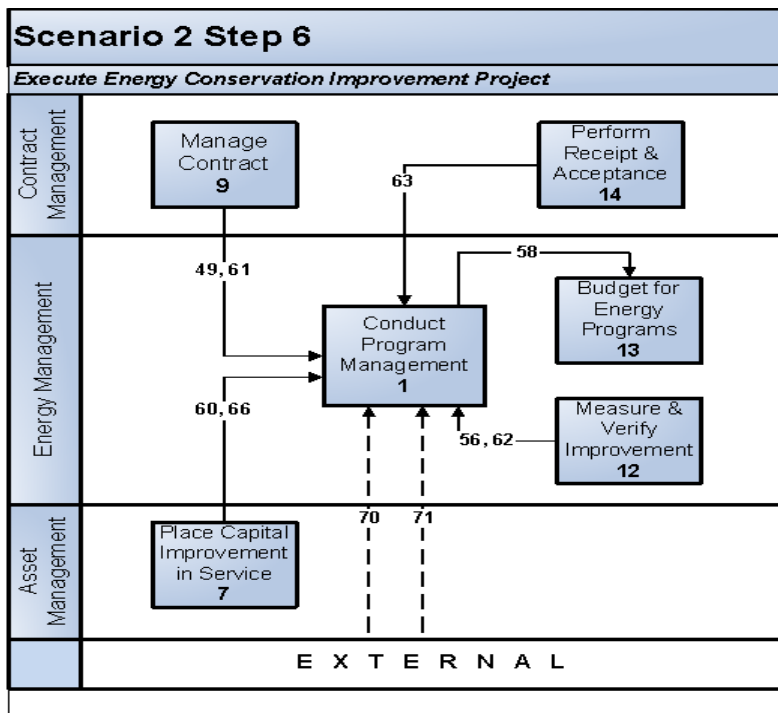
IE	Information Exchange Name
49	Acquisition Type Information
56	Measurement & Verification Method Information
58	Project Information
60	Project or ECM Status Information
61	Project Contract Information
62	Project or ECM Measurement and Verification Status Information
63	Project or ECM Receipt & Acceptance Status Information
66	Project Improvement Status Information
70	Energy Manager Training Information
71	Energy Training Information

Step 2.7: Operate energy conservation improvement

In this step, the conservation improvement is operated and its status is tracked.
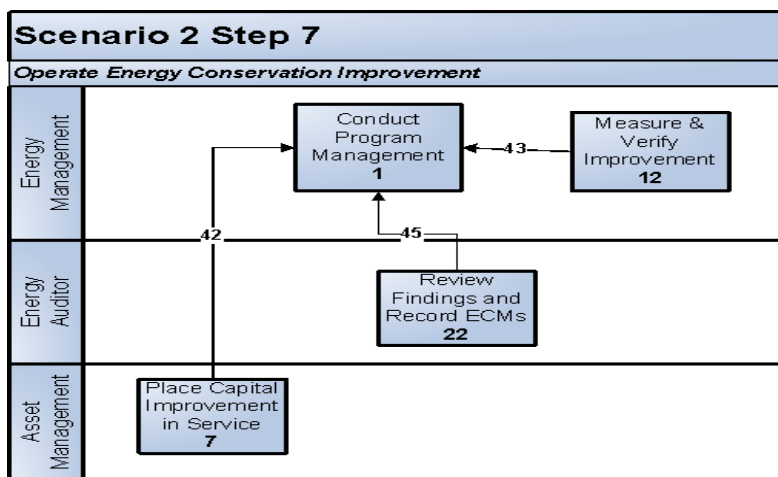
IE	Information Exchange Name
42	Improvement Status Information
43	Measurement and Verification Status Information
45	Energy Conservation Measure Status Information

Step 2.8: Measure and verify energy conservation improvement performance

In this step, the Energy Manager works with the Facility Manager to implement the Measurement and Verification Plan for the conservation improvement. This includes collecting building/structure energy consumption measurements and comparing them to the baseline (pre-improvement) consumption information and to projected performance estimates.
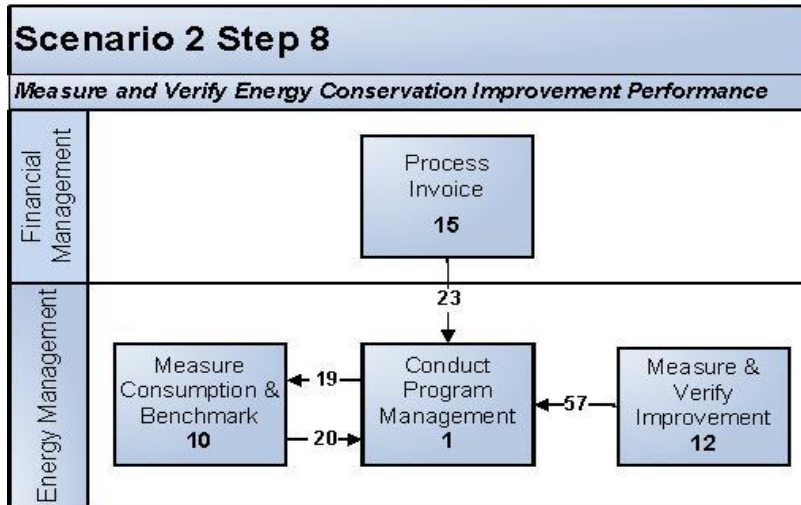
IE	Information Exchange Name
19	Asset Consumption Target Information
20	Facility Consumption Information
23	Energy Cost Information
57	Verified Energy Savings Information

Step 2.9: Document measurement & verification findings

During this process, the Energy Manager ensures the conservation improvement performance information is collected for future reference.
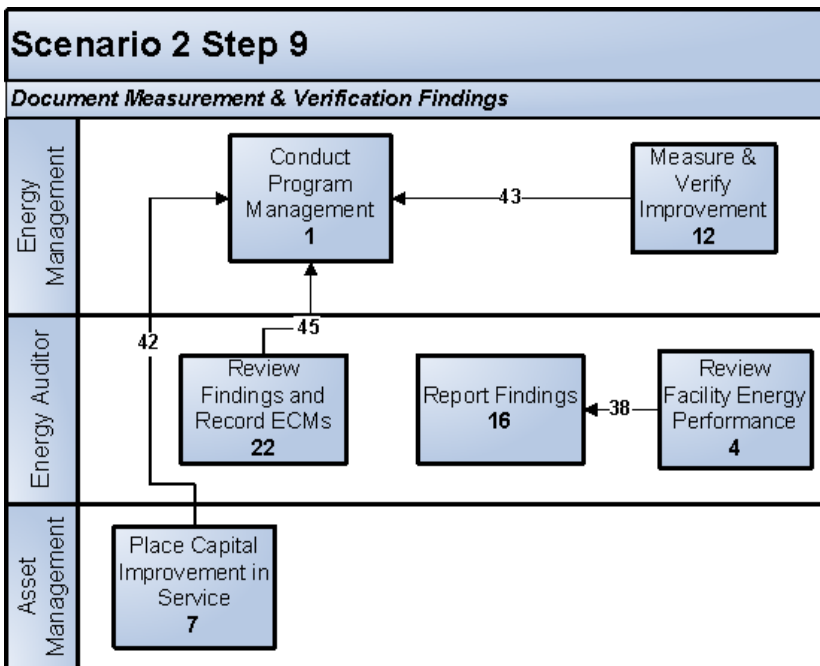
IE	Information Exchange Name
38	Energy Evaluation Information
42	Improvement Status Information
43	Measurement and Verification Status Information
45	ECM Status Information

Scenario 3 – Renewable Energy Production

Overview

This scenario describes a Component's efforts to discover and evaluate opportunities for developing renewable energy projects on installation land using DoD energy production assets. The purpose of these efforts is to take prudent steps toward decreasing dependence external energy sources, especially fossil fuels, by increasing reliance on alternative energy, especially that produced by DoD. This scenario includes steps for enabling continuous improvement of DoD renewable energy production capabilities by measuring and documenting renewable project performance against projected outcomes. This scenario consists of the following steps:

3.1 Identify potential opportunities for renewable energy project development

3.2 Estimate energy production project cost, output, and cost avoidance based on expected consumption and cost

3.3 Obtain appropriate level of selection/approval

3.4 Plan and budget for renewable energy project

3.5 Contract for renewable energy project construction

3.6 Place the asset(s) in service and begin production

3.7 Measure actual production and compare against the estimate

Actors/Roles

➢ Budget Staff
➢ Contracting Staff
➢ Decision Authority
➢ Energy Evaluator (in-house or contract)
➢ Energy Manager
➢ Master Planning Staff

Key Outcomes

➢ The Component completes a survey of its potential renewable energy resources
➢ The Component understands how much energy a given renewable project is expected to generate, how much the project will cost, and how much it is expected to save in terms of utility costs and greenhouse gas emissions.
➢ The Component is prepared to execute the renewable energy project upon receipt of funding.
➢ Contracting action is complete and construction of the renewable energy project is underway.
➢ The renewable energy project is in place. Consumption of renewable energy produced by this project has begun.
➢ The Component understands how actual renewable energy production compares with the level expected when the budget request was approved, and has identified possible remedies for under-performance.

Scenario 3 Steps

Step 3.1: Identify potential opportunities for renewable energy project development

A DoD Component reviews its performance in meeting goals for increasing the percentage of renewable energy it consumes relative to its non-renewable energy consumption. This is done to determine whether it needs to produce or purchase renewable energy in order to meet the renewable goals. This includes goals such as net-zero status or other targets intended to promote uninterrupted energy supply. Depending on the outcome, the Component may then perform a survey of renewable energy resources available for potential development. Viable options for renewable energy production projects are identified.
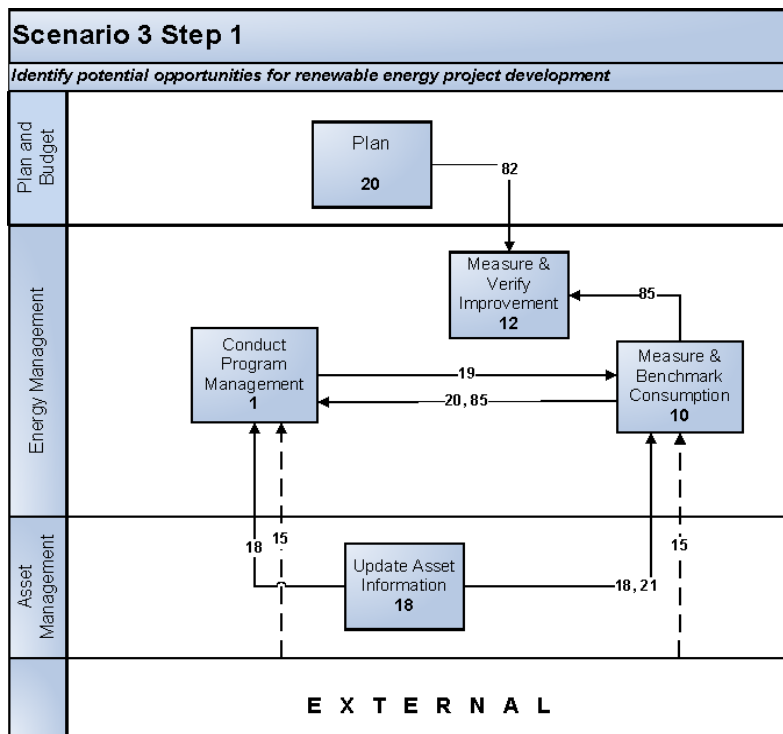
IE	Information Exchange Name
15	Climate Information
18	Installation and Asset Information
19	Asset Consumption Target Information
20	Facility Consumption Information
21	Facility Information
82	Planned Renewable Energy Project Information
85	Renewable Energy Consumption Information

Step 3.2: Estimate energy production project cost, output, and cost avoidance based on expected consumption and cost

The return on investment of each potential project is estimated based on historical average and peak energy usage/costs for the Component. The survey may reveal that the upfront investment for developing wind and geothermal resources, for example, is quite high compared to their long payback period. On-going commitments to maintenance and to the land required for those projects, as well as disruption of site activities during construction and maintenance, are other considerations. The survey may also reveal options such as adequate roof space for solar panels to generate up to ten percent of the installation's average peak demand for electricity, and as much as forty percent of its average non-peak demand. Considering criteria such as relatively low initial investment and minimal disruption of installation activities, the Component may decide to install solar panels on several buildings and to convert that energy into electricity for the installation's use.
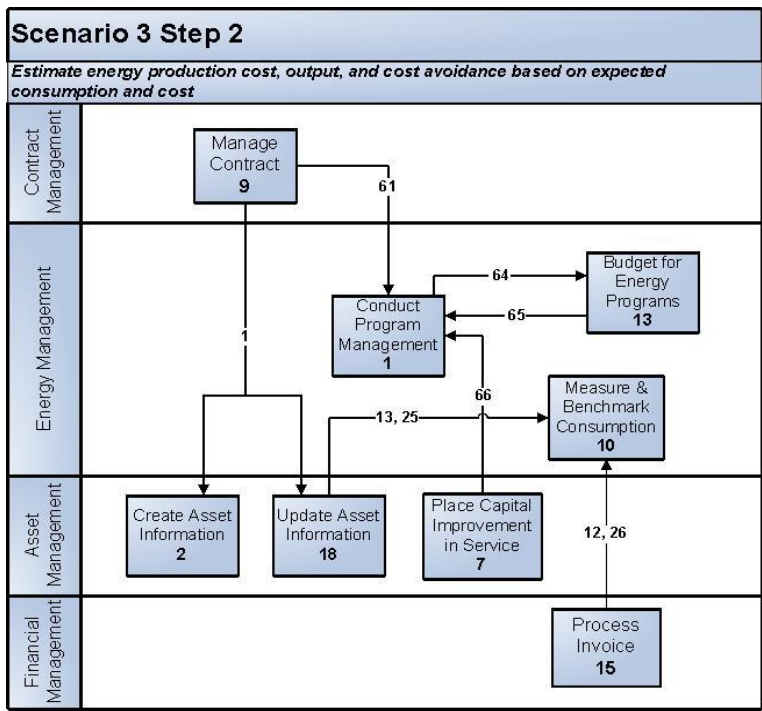
IE	Information Exchange Name
1	Utility Reimbursement Information
12	Utility Bill Information
13	Asset Allocation Information
25	Peak Meter Information
26	Utility Provider Peak Information
61	Project Contract information
64	Project Estimation Information
65	Project Budget Information
66	Project Improvement Status Information

Step 3.3: Obtain appropriate level of selection/approval

The installation seeks the selection and approval of renewable energy projects to be executed from the appropriate decision authority.

[Note: No table for this step]

Step 3.4: Plan and budget for the renewable energy project

The Component submits a budget request to cover the costs of the solar energy project and completes preliminary engineering design for a renewable energy production project.

IE	Information Exchange Name
59	Project and ECM Budget Information
64	Project Estimation Information
73	Property Information
74	Renewable Energy Information
75	Renewable Energy Budget Information
76	Renewable Energy Improvement Information
77	Renewable Energy Contract Information
78	Renewable Energy Measurement and Verification Information
79	Renewable Energy Receipt and Acceptance Information
80	Renewable Energy Acquisition Information
81	Renewable Project Ownership Information
82	Planned Renewable Energy Project Information

Step 3.5: Contract for renewable energy project construction

Once the Component receives approval of the budget request, they can begin solicitation and source selection for the renewable energy project. When funding is received, the Component completes the contracting process and initiates the project.
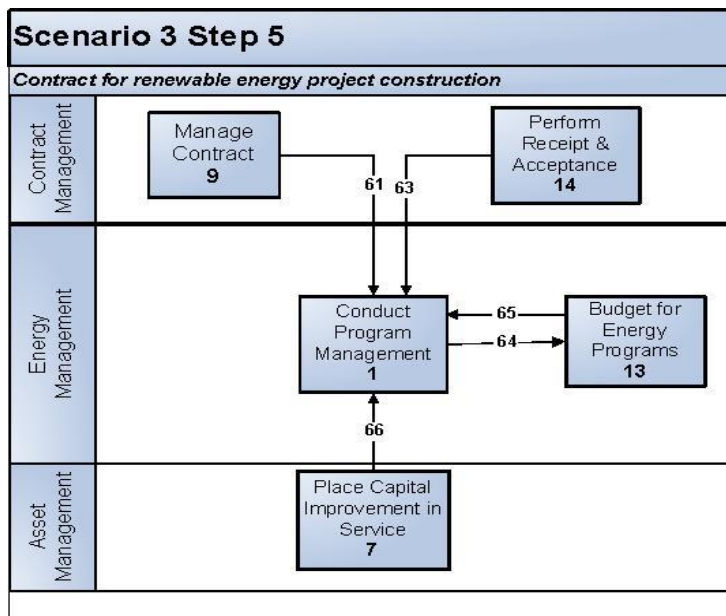
IE	Information Exchange Name
61	Project Contract information
63	Project or ECM Receipt & Acceptance Status Information
64	Project Estimation Information
65	Project Budget Information
66	Project Improvement Status Information

Step 3.6: Place the asset(s) in service and begin production

The Component completes construction of the renewable energy project in accordance with the terms of the contract. This may include the installation of solar panels and any supporting engineering elements, as well as development of a system to convert and distribute produced energy for consumption. Once the Component formally accepts the completed construction project, new assets are placed in service and production of renewable energy may begin.
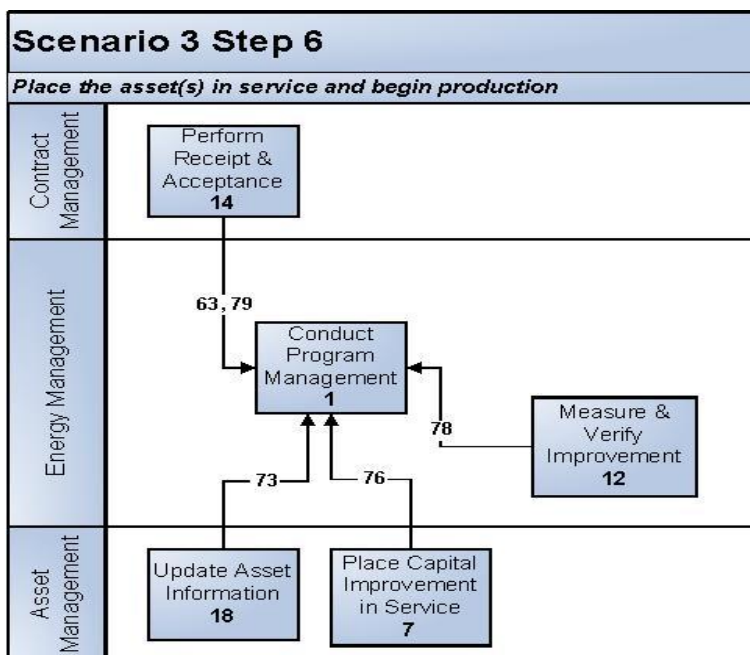
IE	Information Exchange Name
63	Project or ECM Receipt & Acceptance Status Information
73	Property Information
76	Renewable Energy Improvement Information
78	Renewable Energy Measurement & verification Information
79	Renewable Energy Receipt & Acceptance Information

Step 3.7: Measure actual production and compare against the estimate

Once production begins, the Component measures renewable energy output. This information is compared with the expected production level identified in Process Step 2. If the project is producing less energy than expected, the Component examines possible reasons and/or fixes to bring the project back to its estimated return on investment. Projects performing significantly better or worse than expected are documented as a consideration in assessing similar projects.
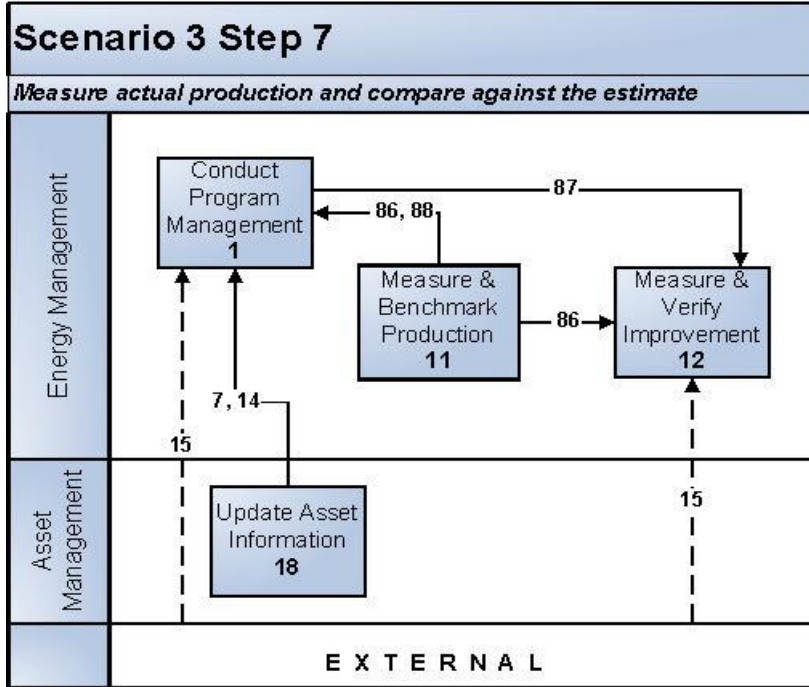
IE	Information Exchange Name
7	Address Information
14	Site Location Information
15	Climate Information
86	Renewable Energy Production Information
87	Renewable Energy Measurement Request Information
88	Renewable Energy Certificate Retention Information

Scenario 4 – Renewable Energy Purchase

Overview

This scenario addresses DoD efforts to meet its goal for increasing use of renewable energy – as a percentage of overall energy consumption – when on-post production falls short of that mark. The installation determines whether purchase of renewable energy from non-DoD sources is needed, and if it is required, what quantity must be acquired. It also covers development of information pertaining to potential vendors and other market conditions necessary for managing renewable energy purchase and contracting activities.

This scenario consists of the following steps:

4.1 Determine whether the Component needs to purchase non-DoD renewable energy, and if so, how much

4.2 Identify potential non-DoD producers of renewable energy and investigate rates

4.3 Obtain appropriate level of selection/approval

4.4 Estimate cost, plan, and budget for renewable energy purchase

4.5 Negotiate a contract for purchase of renewable energy

4.6 Periodically evaluate service delivery and need to continue or modify contract.

Actors/Roles
- Decision Authority
- Energy Manager
- Facility Manager
- Facility Users
- Master Planning Office
- Utility Service Providers

Key Outcome
- The Component knows whether it needs to investigate non-DoD sources of renewable energy for possible purchase, and if so, how much.
- The Component knows how much its renewable energy purchase will cost and is ready to negotiate a service contract.
- The Component is ready to enter a service contract for purchase of renewable energy.
- The Component knows whether the terms of a renewable energy purchase service contract are being fulfilled.
- On-going renewable energy purchase agreements are correctly scoped.

Scenario 4 Steps

Step 4.1: Determine whether a Component needs to purchase non-DoD renewable energy, and if so, how much.

This scenario begins with a Component assessing its performance in meeting the goal to increase the percentage of energy consumed that is generated from renewable sources. The Energy Manager evaluates what percentage of total energy consumption[6] is renewable energy; they also determine how much DoD production of renewable energy is occurring, and how much is planned. Since renewable goals may be aggregated at the DoD Service or Agency level, this assessment may include the need to exploit off-post renewable energy sources available to one installation in order to 'make up' for installations where renewable energy resources are not readily available. Once this determination is made, the Component evaluates the percentage of the energy consumed that is generated from renewable sources and compares this value with the goal for the target fiscal year. The difference is used in conjunction with expected energy consumption for that period to determine how much renewable energy must be purchased in order to meet the goal.
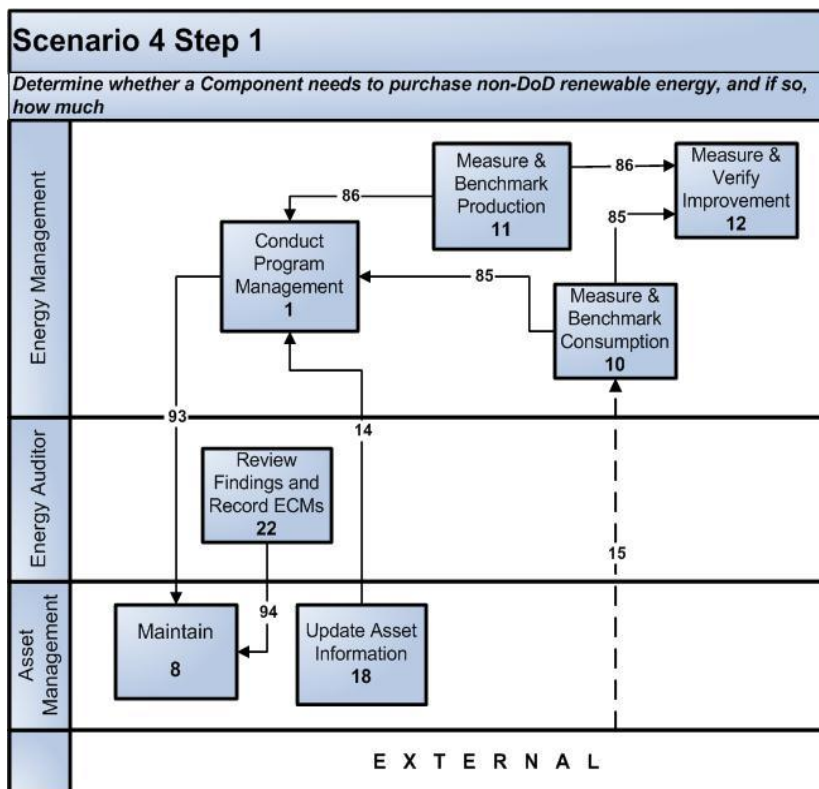
IE	Information Exchange Name
14	Site Location Information
15	Climate Information
85	Renewable Energy Consumption Information
86	Renewable Energy Production Information
93	Planned Renewable Energy Purchase Information
94	Planned Renewable Energy Credit Purchase Information

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[6] This evaluation includes consumption of renewable energy that is produced by a 3rd party producer. The bottom line remains: determine whether additional RE needs to be purchased from an off-post producer in order to achieve the goal for renewable energy consumption as a percentage of total consumption.

Step 4.2: Identify potential non-DoD producers of renewable energy and investigate rates

In this step, the Component surveys non-DoD facilities where renewable energy is produced and marketed. As part of this survey, the installation investigates the rate ($/kWh) and rate structure for each vendor in order to better understand their potential renewable energy costs, as well as conditions that may influence those costs.
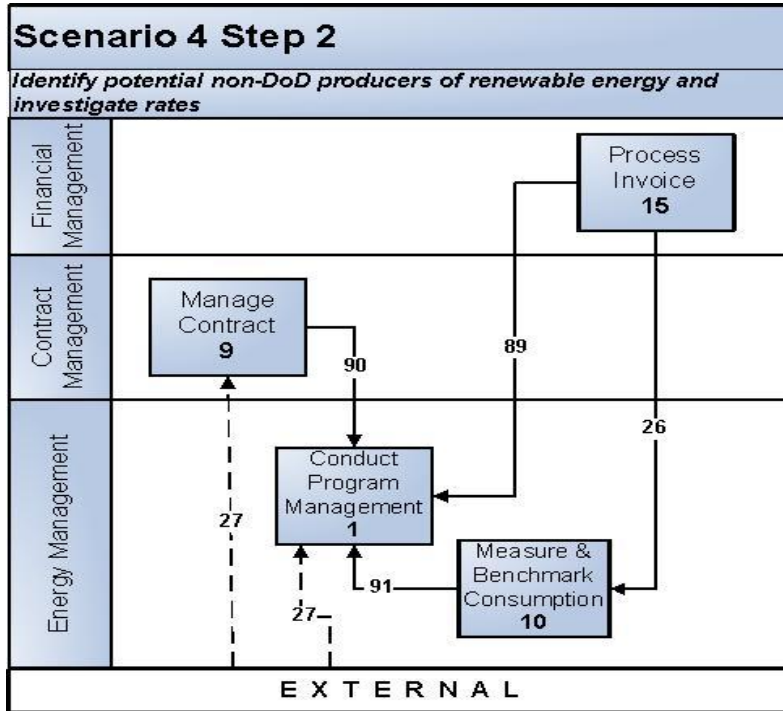
IE	Information Exchange Name
26	Utility Provider Peak Information
27	Utility Provider Information
89	Renewable Energy Purchase Information
90	Renewable Energy Production Location Information
91	Renewable Energy Consumption Location Information

Step 4.3: Obtain appropriate level of selection/approval

The installation seeks the selection and approval of renewable energy projects to be executed from the appropriate decision authority.

[Note: No table for this step]

Step 4.4: Estimate cost, plan, and budget for renewable energy purchase

In this step, the Component estimates its monthly purchase cost for renewable energy (based on the rate information obtained in Step 4.2) and expected energy usage for that period and submits a budget request for that amount.
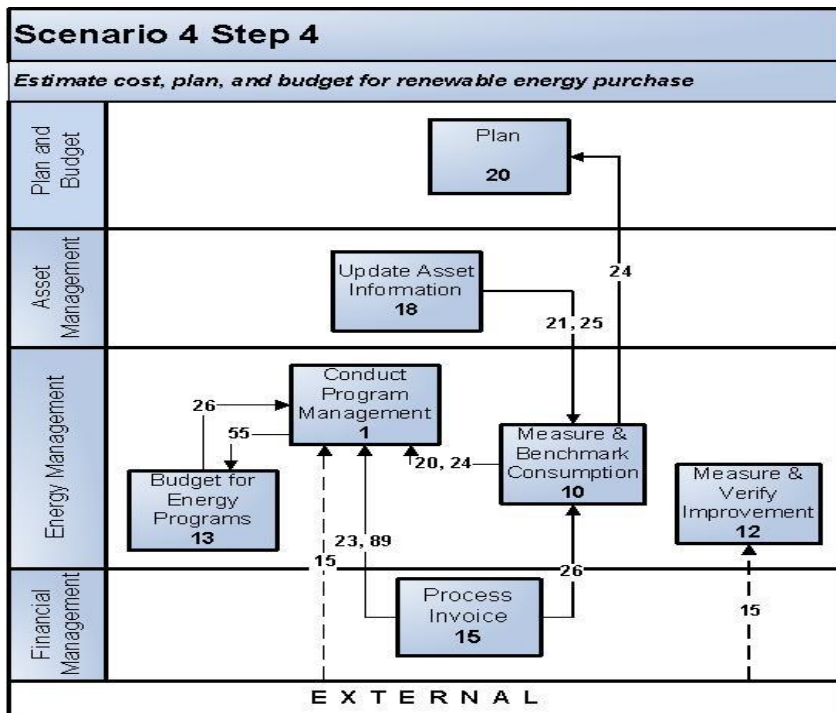
IE	Information Exchange Name
15	Climate Information
20	Facility Consumption Information
21	Facility Information
23	Energy Cost Information
24	Reimbursable Utility Cost Information
25	Peak Meter information
26	Utility Provider Peak Information
55	Planned Renewable Energy Purchases Information
89	Renewable Energy Purchase information

Step 4.5: Negotiate a contract for purchase of renewable energy

In step 4.5, the Component discusses elements of the vendor's rate structure to develop a modified structure, where feasible, to best serve the interests of the DoD. This step may include involvement with higher headquarters to utilize utilities contracting expertise that they may have, and to ensure that overall organization needs are represented.
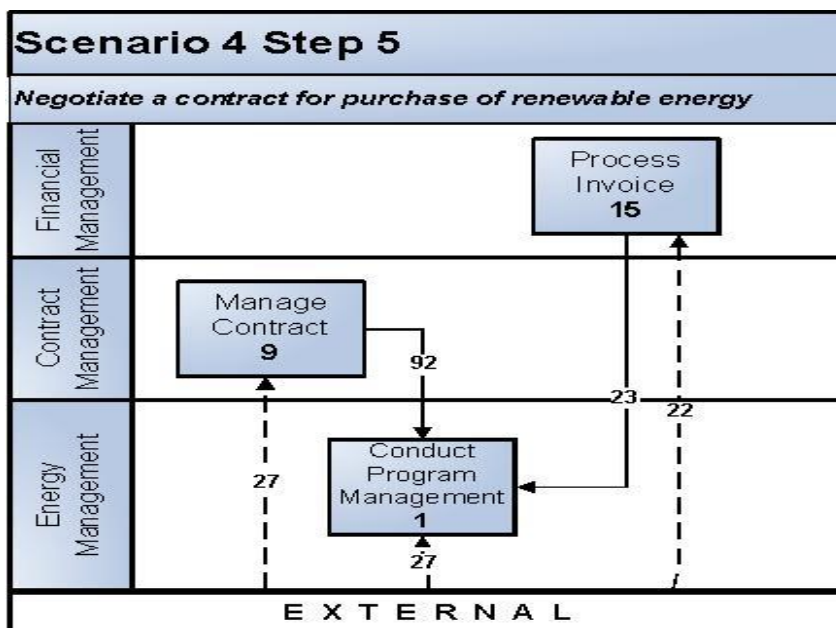
IE	Information Exchange Name
22	Utility Invoice Information
23	Energy Cost Information
27	Utility Provider Information
92	Renewable Energy Credit Purchase Information

Step 4.6: Periodically evaluate service delivery and need to continue or modify contract

The last step in this scenario is the periodic effort by the Component to ensure the terms of its renewable energy /REC purchase contract are being fulfilled and remain necessary. The latter part of this step involves reevaluating renewable energy consumption in relation to overall energy consumption to ensure that existing service contracts are correctly aligned with renewable energy purchase needs. Again, since renewable goals may be aggregated at the DoD Service or Agency level, this periodic reevaluation may involve input from higher headquarters.
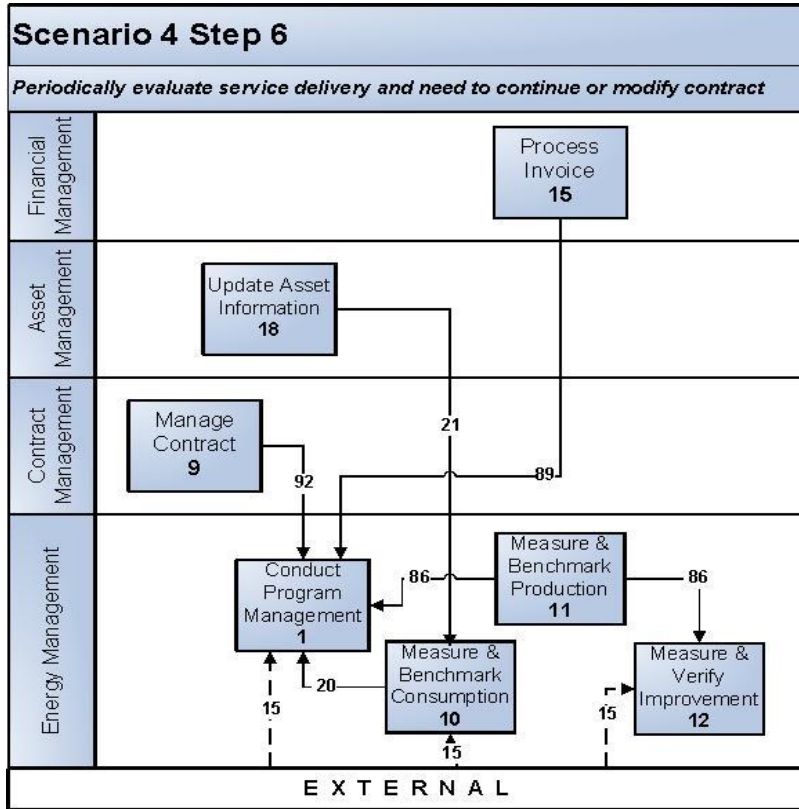
IE	Information Exchange Name
15	Climate Information
20	Facility Consumption Information
21	Facility Information
86	Renewable Energy Production Information
89	Renewable Energy Purchase information
92	Renewable Energy Credit Purchase information

Appendix E: Information Exchanges

The process models in Appendix B include flows of information between the various processes that make up the overall EEIM requirements. The numbers on the arrows represent information exchanges. An information exchange is a package of data elements that is "exchanged" between a source process and a destination process to accomplish some aspect of the capability/objective. The following table presents the EEIM information exchanges by number, name, capability mapping, source process, destination process, the data element mapping, and name of the process model in which the exchange occurs.

IE #	IE Name	Process Model	Source Process	Destination Process	Data Element Mapping	Objective Mapping
1	Utility Reimbursement Information	Manage Facility Energy	9	2, 18	Energy Reimbursement Percentage Energy Reporting Organization Code Real Property Unique Identifier	1.1.1
3	Planned Meter Information	Manage Facility Energy	20	21	Date Date Type Dollar Amount Dollar Amount Type Energy Type Energy Reporting Organization Code Meter Type	1.1.3
4	New Meters for Existing Facilities Information	Manage Facility Energy	1	13	Date Date Type Dollar Amount Dollar Amount Type Energy Conservation Measure Identifier Energy Conservation Measure Category Energy Reporting Organization Code Energy Type Meter Type Real Property Unique Identifier	1.1.3
5	Real Property Meter Information	Manage Facility Energy	18	1	Energy Type Meter Identifier Meter Location Meter Location Description Meter Type Real Property Site Unique Identifier Real Property Unique Identifier	1.1.4
6	Planned Renewable Energy Credit Purchases Information	Manage Renewable Energy	1	13	Date Date Type Dollar Amount Dollar Amount Type Energy Role Energy Type Installation Code Installation Name Real Property Site Unique Identifier Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Utility Provider Customer Account Number Utility Provider Organization Name Value Accuracy Type	2.2.5

IE #	IE Name	Process Model	Source Process	Destination Process	Data Element Mapping	Objective Mapping
7	Address Information	Manage Facility Energy	18	1, 10	Address Street Direction Code Address Street Name Address Street Number Address Street Type City Code Country Code Geospatial Feature Installation Code Installation Name Location Directions Text Postal Code Real Property Site Unique Identifier Site Name Site Operational Status Code State or Country Primary Subdivision Code	1.1.1 2.1.2
7	Address Information	Manage Renewable Energy	18	1	Address Street Direction Code Address Street Name Address Street Number Address Street Type City Code Country Code Geospatial Feature Installation Code Installation Name Location Directions Text Postal Code Real Property Site Unique Identifier Site Name Site Operational Status Code State or Country Primary Subdivision Code	2.1.11
8	Facility Reporting Category Information	Manage Facility Energy	18	1	Energy Reporting Category Energy Reporting Category Reason Energy Reporting Organization Code Real Property Unique Identifier RPA Operational Status Code	1.1.6
9	System Performance Information	Manage Facility Energy Conservation Improvement	EXT	18	Date Date Type Energy Performance Type Code Energy Performance Value System Capacity System Manufacturer System Type	1.1.7
10	Facility System Information	Manage Facility Energy Conservation Improvement	18	4	Date Date Type Energy Performance Type Code Energy Performance Value Facility Number Real Property Unique Identifier RPA Operational Status Code System Capacity System Manufacturer System Type Unique Item Identifier	1.1.7

Enterprise Facility Energy Information Exchange (IE) Mapping

				Enterprise Facility Energy Information Exchange (IE) Mapping		
IE #	IE Name	Process Model	Source Process	Destination Process	Data Element Mapping	Objective Mapping
11	Facility Hours of Operation Information	Manage Facility Energy Consumption	18	10	Facility Daily Use End Time Facility Daily Use Start Time Facility Number Facility Use Days Per Week Real Property Unique Identifier RPA Operational Status Code Workload Quantity Workload Utilization Type	1.1.8
12	Utility Bill Information	Manage Facility Energy Consumption	15	10	Conversion Factor Conversion Factor Role Date Date Type Energy Role Energy Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Utility Provider Customer Account Number Utility Provider Invoice Number Utility Provider Organization Name Value Accuracy Type	1.1.9
13	Asset Allocation Information	Manage Facility Energy Consumption	18	10	Asset Allocation Current Use FAC Code Asset Allocation Size Unit of Measure Code Asset Allocation Size Quantity Asset Allocation User Organization Code Facility Number Federal Support Indicator Federal Support Percentage Real Property Unique Identifier RPA Operational Status Code RPA Predominant Current Use FAC Code RPA Total Unit of Measure Code RPA Total Unit of Measure Quantity RPA Type Code	1.1.9; 1.1.10; 1.1.11; 1.1.19
14	Site Location Information	Manage Facility Energy Consumption	18	10	City Code Country Code Geospatial Feature Installation Code Installation Name Postal Code Real Property Site Unique Identifier Site Name Site Operational Status Code State or Country Primary Subdivision Code	1.1.5 1.1.12 1.1.18
14	Site Location Information	Manage Renewable Energy	18	1	City Code Country Code Geospatial Feature Installation Code Installation Name Postal Code Real Property Site Unique Identifier Site Name Site Operational Status Code State or Country Primary Subdivision Code	2.1.11

Enterprise Facility Energy Information Exchange (IE) Mapping						
IE #	IE Name	Process Model	Source Process	Destination Process	Data Element Mapping	Objective Mapping
15	Climate Information	Manage Facility Energy Consumption	EXT	10, 1	Climate Zone Code Cooling Degree Days Date Date Type Heating Degree Days Postal Code Temperature Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity	1.1.5; 1.1.12; 1.1.17
15	Climate Information	Manage Renewable Energy	EXT	1, 10, 12	Climate Zone Code Cooling Degree Days Date Date Type Geospatial Feature Heating Degree Days Postal Code Temperature Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity	2.1.9 2.1.10 2.1.11
16	Meter Information	Manage Facility Energy Consumption	18	10	Energy Type Meter Identifier Meter Location Meter Location Description Meter Type Real Property Unique Identifier RPA Operational Status Code	1.1.13
17	Site/Source Energy Information	Manage Facility Energy Consumption	EXT	10	Energy Role Energy Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity	1.1.14
18	Installation and Asset Information	Manage Facility Energy Consumption	18	1,10	Installation Code Installation Name Meter Identifier Meter Location Meter Location Description Meter Type Real Property Site Unique Identifier Real Property Unique Identifier RPA Operational Status Code RPA Predominant Current Use FAC Code RPA Total Unit of Measure Code RPA Total Unit of Measure Quantity RPA Type Code Site Name Site Operational Status Code	1.1.15

					Enterprise Facility Energy Information Exchange (IE) Mapping		
IE #	IE Name	Process Model	Source Process	Destination Process	Data Element Mapping	Objective Mapping
19	Asset Consumption Target Information	Manage Facility Energy Consumption	1	10	Conversion Factor Conversion Factor Role Date Date Type Energy Reporting Category Energy Reporting Category Reason Energy Reporting Organization Code Energy Role Energy Type Installation Code Installation Name Real Property Unique Identifier RPA Operational Status Code Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type	1.1.16
20	Facility Consumption Information	Manage Facility Energy Consumption	10	1	Date Date Type Energy Role Energy Type Real Property Unique Identifier Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type	1.1.17
21	Facility Information	Manage Facility Energy Consumption	18	10	Capital Improvement Reason Code Construction Material Code Construction Type Code Date Date Type Facility Number Facility Physical Quality Rate Postal Code Real Property Site Unique Identifier Real Property Unique Identifier RPA Operational Status Code RPA Predominant Current Use FAC Code RPA Total Unit of Measure Code RPA Total Unit of Measure Quantity RPA Type Code	1.1.17
22	Utility Invoice Information	Manage Facility Energy Consumption	EXT	15	Date Date Type Dollar Amount Dollar Amount Type Energy Role Energy Type Installation Code Installation Name Real Property Site Unique Identifier Site Delivered/Source Energy Indicator Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Utility Provider Customer Account Number Utility provider Invoice Number Utility Provider Organization Name Value Accuracy Type	1.1.18

					Enterprise Facility Energy Information Exchange (IE) Mapping		
IE #	IE Name	Process Model	Source Process	Destination Process	Data Element Mapping	Objective Mapping
23	Energy Cost Information	Manage Facility Energy Consumption	15	1	Date Date Type Dollar Amount Dollar Amount Type Energy Cost Type Energy Role Energy Type Installation Code Installation Name Real Property Site Unique Identifier Site Name Utility Provider Customer Account Number Utility Provider Organization Name Value Accuracy Type	1.1.18
24	Reimbursable Utility Cost Information	Manage Facility Energy Consumption	10	20, 1	Dollar Amount Dollar Amount Type Energy Cost Type Energy Role Energy Type Federal Support Indicator Federal Support Percentage Real Property Unique Identifier	1.1.19
25	Peak Meter Information	Manage Facility Energy Consumption	18	10	Meter Identifier Meter Type Real Property Unique Identifier RPA Operational Status Code	1.1.20
26	Utility Provider Peak Information	Manage Facility Energy Consumption	15	10	Date Date Type Energy Role Energy Type Peak Demand Type Real Property Site Unique Identifier Real Property Unique Identifier Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Utility Provider Customer Account Number Utility Provider Organization Name Utility Provider Rate Schedule Code	1.1.20 1.1.23
27	Utility Provider Information	Manage Facility Energy Consumption	EXT	1, 9	Date Date Type Energy Role Energy Type Procurement Instrument Description Text Procurement Instrument Identification Number Real Property Site Unique Identifier Site Name Utility Provider Organization Name Utility Provider Customer Account Number Utility Provider Rate Schedule Code	1.1.21
28	Consumption Reporting Organization	Manage Facility Energy Consumption	10	1	Energy Reporting Organization Code Energy Role Energy Type	1.1.22

IE #	IE Name	Process Model	Source Process	Destination Process	Data Element Mapping	Objective Mapping
				Enterprise Facility Energy Information Exchange (IE) Mapping		
29	Production Reporting Organization	Manage Facility Energy	11	1	Energy Reporting Organization Code Energy Role Energy Type	1.1.22
30	Facility Standards	Manage Facility Energy	EXT	20, 18	Efficiency Standard Target	1.2.1
31	Efficiency Achievement for New Facility	Manage Facility Energy	19	2	Date Date Type Efficiency Standard Achievement Value Efficiency Standard Target Real Property Unique Identifier RPA Operational Status Code	1.2.2
32	Efficiency Achievement from Capital Improvement	Manage Facility Energy	7	18	Date Date Type Efficiency Standard Achievement Value Efficiency Standard Target Real Property Unique Identifier RPA Operational Status Code	1.2.2
33	Efficiency Achievement for an Existing Facility	Manage Facility Energy	10	18	Date Date Type Efficiency Standard Achievement Value Efficiency Standard Target Real Property Unique Identifier RPA Operational Status Code	1.2.2
34	FEMP Database Inclusion for a New Facility	Manage Facility Energy	19	18	Date Date Type Efficiency Standard Achievement Value Efficiency Standard Target RPA Type Code Real Property Unique Identifier RPA Operational Status Code	1.2.3
35	FEMP Database Inclusion for an Existing Facility	Manage Facility Energy	1	18	Date Date Type Efficiency Standard Achievement Value Efficiency Standard Target RPA Type Code Real Property Unique Identifier RPA Operational Status Code	1.2.3
36	Asset Benchmark Information	Manage Facility Energy	18	10	Asset Review Type Date Date Type Efficiency Standard Achievement Value Efficiency Standard Target Energy Star Building Type Real Property Unique Identifier RPA Operational Status Code RPA Total Unit of Measure Code RPA Total Unit of Measure Quantity RPA Type Code	1.2.4
37	Efficiency Standard Information	Manage Facility Energy	EXT	10	Efficiency Standard Target Energy Star Building Type	1.2.4
38	Energy Evaluation Information	Manage Facility Energy Conservation Improvement	4	16	Asset Review Type Code Date Date Type Real Property Unique Identifier RPA Operational Status Code	1.2.5

IE #	IE Name	Process Model	Source Process	Destination Process	Data Element Mapping	Objective Mapping
					Enterprise Facility Energy Information Exchange (IE) Mapping	
39	Energy Conservation Measure Information	Manage Facility Energy Conservation Improvement	22	1	Energy Conservation Measure Identifier Energy Conservation Measure Category Real Property Unique Identifier RPA Operational Status Code	1.2.6
40	Energy Conservation Measure Location Information	Manage Facility Energy Conservation Improvement	22	1	Energy Conservation Measure Identifier Energy Conservation Measure Category Installation Code Installation Name Real Property Site Unique Identifier Site Name	1.2.6
41	Energy Conservation Measure Mission Information	Manage Facility Energy Conservation Improvement	22	1	Energy Conservation Measure Identifier Energy Conservation Measure Category Installation Code Installation Name Real Property Site Unique Identifier Real Property Unique Identifier Site Name	1.2.8
42	Improvement Status Information	Manage Facility Energy Conservation Improvement	7	1	Date Date Type Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Real Property Unique Identifier	1.2.9
43	Measurement & Verification Status Information	Manage Facility Energy Conservation Improvement	12	1	Date Date Type Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Real Property Unique Identifier	1.2.9
44	Receipt & Acceptance Status Information	Manage Facility Energy Conservation Improvement	14	1	Date Date Type Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Real Property Unique Identifier	1.2.9
45	Energy Conservation Measure Status Information	Manage Facility Energy Conservation Improvement	22	1	Date Date Type Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Real Property Unique Identifier	1.2.9
46	Potential ECM Information	Manage Facility Energy Conservation Improvement	16	22	Date Date Type Dollar Amount Dollar Amount Type Energy Conservation Measure Status Code Energy Conservation Measure Category Real Property Unique Identifier	1.2.11
47	ECM Budget Information	Manage Facility Energy Conservation Improvement	13	1	Date Date Type Dollar Amount Dollar Amount Type Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Real Property Unique Identifier	1.2.11

IE #	IE Name	Process Model	Source Process	Destination Process	Data Element Mapping	Objective Mapping
48	ECM Information to be Recorded	Manage Facility Energy Conservation Improvement	22	1	Date Date Type Dollar Amount Dollar Amount Type Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Real Property Unique Identifier	1.2.11
49	Acquisition Type Information	Manage Facility Energy Conservation Improvement	9	1	Acquisition Mechanism Dollar Amount Dollar Amount Type Duration of Acquisition Mechanism Energy Conservation Measure Identifier Procurement Instrument Description Text Procurement Instrument Number Procurement Instrument Type Code	1.2.12
50	ECM Cost Avoidance Information	Manage Facility Energy Conservation Improvement	22	1	Date Date Type Dollar Amount Dollar Amount Type Energy Conservation Measure Estimated Life Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Energy Cost Type Energy Role Energy Type Lifecycle Cost Avoidance Type Real Property Unique Identifier Technology Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type	1.2.13
51	Potential ECM Cost Avoidance Information	Manage Facility Energy Conservation Improvement	16	22	Date Date Type Dollar Amount Dollar Amount Type Energy Conservation Measure Estimated Life Energy Conservation Measure Status Code Energy Conservation Measure Category Energy Cost Type Energy Role Energy Type Lifecycle Cost Avoidance Type Real Property Unique Identifier Technology Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type	1.2.13

Enterprise Facility Energy Information Exchange (IE) Mapping

IE #	IE Name	Process Model	Source Process	Destination Process	Data Element Mapping	Objective Mapping
		Enterprise Facility Energy Information Exchange (IE) Mapping				
52	Energy Consumption and Cost Information	Manage Facility Energy Conservation Improvement	10	1	Date Date Type Dollar Amount Dollar Amount Type Energy Cost Type Energy Role Energy Type Real Property Unique Identifier Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type	1.2.13; 1.2.14
53	ECM Savings to Investment Ratio Information	Manage Facility Energy Conservation Improvement	22	1	Date Date Type Dollar Amount Dollar Amount Type Energy Conservation Measure Estimated Life Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Energy Cost Type Energy Role Energy Type Lifecycle Cost Avoidance Type Payback Period Real Property Unique Identifier Savings to Investment Ratio Value Accuracy Type	1.2.14
54	Potential Savings to Investment Ratio Information	Manage Facility Energy Conservation Improvement	16	22	Date Date Type Dollar Amount Dollar Amount Type Energy Conservation Measure Estimated Life Energy Conservation Measure Status Code Energy Conservation Measure Category Energy Cost Type Energy Role Energy Type Lifecycle Cost Avoidance Type Payback Period Real Property Unique Identifier Savings to Investment Ratio Value Accuracy Type	1.2.14
55	Planned Renewable Energy Purchases Information	Manage Renewable Energy	1	13	Date Date Type Dollar Amount Dollar Amount Type Energy Role Energy Type Installation Code Installation Name Real Property Site Unique Identifier Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Utility Provider Customer Account Number Utility Provider Organization Name Value Accuracy Type	2.2.4

					Enterprise Facility Energy Information Exchange (IE) Mapping	
IE #	IE Name	Process Model	Source Process	Destination Process	Data Element Mapping	Objective Mapping
56	Measurement & Verification Method Information	Manage Facility Energy Conservation Improvement	12	1	Date Date Type Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Measurement and Verification Method Type	1.2.15
57	Verified Energy Savings Information	Manage Facility Energy Conservation Improvement	12	1	Date Date Type Dollar Amount Dollar Amount Type Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Energy Cost Type Energy Role Energy Type Measurement and Verification Method Type Real Property Unique Identifier Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type	1.2.16
58	Project Information	Manage Facility Energy Conservation Improvement	1	13	Date Date Type Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Project Description Text Project Name Project Number Project Status Code Project Type Code Real Property Unique Identifier Technology Type Value Accuracy Type	1.2.17
59	Project and ECM Budget Information	Manage Facility Energy Conservation Improvement	13	1	Date Date Type Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Project Description Text Procurement Instrument Number Project Name Project Number Project Status Code Project Type Code Real Property Unique Identifier Technology Type Value Accuracy Type	1.2.17

IE #	IE Name	Process Model	Source Process	Destination Process	Data Element Mapping	Objective Mapping
					Enterprise Facility Energy Information Exchange (IE) Mapping	
60	Project and ECM Improvement Status Information	Manage Facility Energy Conservation Improvement	7	1	Date Date Type Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Project Name Project Number Project Status Code Project Type Code Real Property Unique Identifier Technology Type Value Accuracy Type	1.2.17
61	Project Contract Information	Manage Facility Energy Conservation Improvement	9	1	Acquisition Mechanism Date Date Type Duration of Acquisition Mechanism Procurement Instrument Identification Number Project Number Project Status Code Value Accuracy Type	1.2.17; 1.2.18
61	Project Contract Information	Manage Renewable Energy	9	1	Acquisition Mechanism Date Date Type Dollar Amount Dollar Amount Type Duration of Acquisition Mechanism Procurement Instrument Identification Number Project Number Project Status Code Value Accuracy Type	2.1.8
62	Project or ECM Measurement & Verification Status Information	Manage Facility Energy Conservation Improvement	12	1	Date Date Type Dollar Amount Dollar Amount Type Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Energy Cost Type Measurement and Verification Method Type Project Detail Fund Code Project Detail Fund Organization Code Project Name Project Number Project Status CodeProject Type Code Real Property Unique Identifier Technology Type Value Accuracy Type	1.2.17 1.2.18 2.1.8
63	Project or ECM Receipt & Acceptance Status Information	Manage Facility Energy Conservation Improvement	14	1	Date Date Type Dollar Amount Dollar Amount Type Energy Cost Type Energy Conservation Measure Identifier Procurement Instrument Identification Number Project Number Project Status Code Project Type Code	1.2.17 1.2.18 2.1.8

IE #	IE Name	Process Model	Source Process	Destination Process	Data Element Mapping	Objective Mapping
					Real Property Unique Identifier Value Accuracy Type	
64	Project Estimation Information	Manage Facility Energy Conservation Improvement	1	13	Date Date Type Dollar Amount Dollar Amount Type Energy Cost Type Project Name Project Number Project Status Code Project Type Code Real Property Unique Identifier Technology Type Value Accuracy Type	1.2.18
64	Project Estimation Information	Manage Renewable Energy	1	13	Date Date Type Dollar Amount Dollar Amount Type Project Name Project Number Project Status Code Project Type Code Real Property Unique Identifier Technology Type Value Accuracy Type	2.1.8
65	Project Budget Information	Manage Facility Energy Conservation Improvement	13	1	Date Date Type Dollar Amount Dollar Amount Type Energy Cost Type Project Name Project Number Project Status Code Project Type Code Real Property Unique Identifier Technology Type Value Accuracy Type	1.2.18
65	Project Budget Information	Manage Renewable Energy	13	1	Date Date Type Dollar Amount Dollar Amount Type Project Name Project Number Project Status Code Project Type Code Real Property Unique Identifier Technology Type Value Accuracy Type	2.1.8
66	Project Improvement Status Information	Manage Facility Energy Conservation Improvement	7	1	Date Date Type Dollar Amount Dollar Amount Type Energy Cost Type Project Detail Fund Code Project Detail Fund Organization Code Project Name Project Number Project Status Code Project Type Code	1.2.18

Table header: **Enterprise Facility Energy Information Exchange (IE) Mapping**

IE #	IE Name	Process Model	Source Process	Destination Process	Data Element Mapping	Objective Mapping
					Real Property Unique Identifier Value Accuracy Type	
66	Project Improvement Status Information	Manage Renewable Energy	7	1	Date Date Type Dollar Amount Dollar Amount Type Project Detail Fund Code Project Detail Fund Organization Code Project Name Project Number Project Status Code Project Type Code Real Property Unique Identifier Value Accuracy Type	2.1.8
67	Program Planning Information	Manage Facility Energy	1	20	Date Date Type Dollar Amount Dollar Amount Type Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Energy Reporting Organization Code Energy Type Meter Identifier Meter Location Meter Location Description Meter Type Real Property Site Unique Identifier Real Property Unique Identifier Technology Type	1.1.3
68	Energy Program Planning Information	Manage Facility Energy	20	1	Capital Improvement Reason Code Construction Material Code Construction Type Code Date Date Type Facility Daily Use End Time Facility Daily Use Start Time Facility Number Facility Use Days Per Week Facility Number Facility Physical Quality Rate Postal Code Real Property Site Unique Identifier Real Property Unique Identifier RPA Operational Status Code RPA Predominant Current Use FAC Code RPA Total Unit of Measure Code RPA Total Unit of Measure Quantity RPA Type Code System Capacity System Manufacturer System Type Unique Item Identifier Workload Quantity Workload Utilization Type	1.1.1
69	Approval Document Information	Manage Facility Energy Conservation	EXT	1	Document Type Code Project Description Text Project Name Project Number	1.2.19

IE #	IE Name	Process Model	Source Process	Destination Process	Data Element Mapping	Objective Mapping
		Improvement				
70	Energy Manager Training Information	Manage Facility Energy Conservation Improvement	EXT	1	Date Date Type Energy Certification Energy Training Credit Hours Energy Training Type Installation Code Installation Name Person Contact Information Person First Name Person Identifier Person Last Name Person Role Code	1.2.20
71	Energy Training Information	Manage Facility Energy Conservation Improvement	EXT	1	Date Date Type Dollar Amount Dollar Amount Type Energy Training Credit Hours Energy Training Type Installation Code Installation Name Person Identifier Person Role Code Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity	1.2.21
72	Site and Asset Information	Manage Renewable Energy	18	1	City Code Country Code Installation Code Installation Name Postal Code Real Property Site Unique Identifier Real Property Unique Identifier RPA Operational Status Code Site Name State or Country Primary Subdivision Code	2.1.2
73	Property Information	Manage Renewable Energy	18	1	Real Property Unique Identifier Unique Item Identifier	2.1.3
74	Renewable Energy Information	Manage Renewable Energy	1	13	Date Date Type Project Name Project Number Project Status Code Project Type Code Technology Type Value Accuracy Type	2.1.4
75	Renewable Energy Budget Information	Manage Renewable Energy	13	1	Date Date Type Dollar Amount Dollar Amount Type Project Name Project Number Project Status Code Project Type Code Technology Type	2.1.4

IE #	IE Name	Process Model	Source Process	Destination Process	Data Element Mapping	Objective Mapping
					Value Accuracy Type	
76	Renewable Energy Improvement Information	Manage Renewable Energy	7	1	Date Date Type Project Name Project Number Project Status Code Project Type Code Renewable Energy Classification Technology Type Value Accuracy Type	2.1.4
77	Renewable Energy Contract Information	Manage Renewable Energy	9	1	Acquisition Mechanism Date Date Type Duration of Acquisition Mechanism Procurement Instrument Identification Number Project Number Project Status Code Value Accuracy Type	2.1.4
78	Renewable Energy Measurement & Verification Information	Manage Renewable Energy	12	1	Date Date Type Measurement and Verification Method Type Project Number Project Status Code Value Accuracy Type	2.1.4
79	Renewable Energy Receipt & Acceptance Information	Manage Renewable Energy	14	1	Date Date Type Procurement Instrument Identification Number Project Number Project Status Code Value Accuracy Type	2.1.4
80	Renewable Energy Acquisition Information	Manage Renewable Energy	9	1, 7, 14	Acquisition Mechanism Dollar Amount Dollar Amount Type Duration of Acquisition Mechanism Energy Conservation Measure Identifier Procurement Instrument Description Text Procurement Instrument Identification Number Procurement Instrument Type Code Project Number	2.1.5
81	Renewable Project Ownership Information	Manage Renewable Energy	1	12	Ownership Type Project Description Text Project Number Project Type Code Real Property Unique Identifier	2.1.6
82	Planned Renewable Energy Project Information	Manage Renewable Energy	20	12	Ownership Type Project Description Text Project Number Real Property Unique Identifier	2.1.6

IE #	IE Name	Process Model	Source Process	Destination Process	Data Element Mapping	Objective Mapping
				Enterprise Facility Energy Information Exchange (IE) Mapping		
85	Renewable Energy Consumption Information	Manage Renewable Energy	10	12, 1	Date Date Type Energy Conservation Measure Identifier Energy Role Energy Type Project Name Project Number Project Type Real Property Site Unique Identifier Renewable Energy Classification Site Name Technology Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type	2.1.9
86	Renewable Energy Production Information	Manage Renewable Energy	11	1, 12	Date Date Type Energy Role Energy Type Project Name Project Number Project Type Real Property Site Unique Identifier Renewable Energy Classification Site Name Technology Type Value Accuracy Type	2.1.10 2.1.11
87	Renewable Energy Measurement Request Information	Manage Renewable Energy	1	12	Date Date Type Energy Role Energy Type Project Name Project Number Project Status Code Project Type Real Property Site Unique Identifier Real Property Unique Identifier Site Name Technology Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type	2.1.12
88	Renewable Energy Certificate Retention Information	Manage Renewable Energy	11	1	Date Date Type Energy Reporting Organization Code Energy Role Energy Type Ownership Type Project Number Real Property Site Unique Identifier Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type	2.1.13

					Enterprise Facility Energy Information Exchange (IE) Mapping	
IE #	IE Name	Process Model	Source Process	Destination Process	Data Element Mapping	Objective Mapping
89	Renewable Energy Purchase Information	Manage Renewable Energy	15	1	Date Date Type Dollar Amount Dollar Amount Type Energy Reporting Organization Code Energy Role Energy Type Installation Code Installation Name Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Utility Provider Customer Account Number Utility Provider Organization Name Value Accuracy Type	2.2.1
90	Renewable Energy Production Location Information	Manage Renewable Energy	9	1	City Code Country Code Energy Role Energy Type Geospatial Feature Postal Code Procurement Instrument Identification Number Renewable Energy Classification State or Country Primary Subdivision Code Utility Provider Customer Account Number Utility Provider Organization Name	2.2.2
91	Renewable Energy Consumption Location Information	Manage Renewable Energy	10	1	Geospatial Feature Real Property Site Unique Identifier Renewable Energy Classification Site Name	2.2.2
92	Renewable Energy Credit Purchase Information	Manage Renewable Energy	9	1	Acquisition Mechanism Dollar Amount Dollar Amount Type Duration of Acquisition Mechanism Energy Role Energy Type Installation Code Installation Name Procurement Instrument Identification Number Procurement Instrument Type Real Property Site Unique Identifier Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Utility Provider Customer Account Number Utility Provider Organization Name Value Accuracy Type	2.2.3
93	Facility Maintenance Information	Manage Facility Energy Consumption	1	8	Asset Review Type Date Date Type Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Real Property Unique Identifier RPA Operational Status Code RPA Type Code	1.1.10

Enterprise Facility Energy Information Exchange (IE) Mapping						
IE #	IE Name	Process Model	Source Process	Destination Process	Data Element Mapping	Objective Mapping
94	Maintenance Review Information	Manage Facility Energy Conservation Improvement	22	8	Asset Review Type Date Date Type Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Real Property Unique Identifier RPA Operational Status Code RPA Type Code	1.2.2

Appendix F: Facility Energy Data Creation Source

In the table below each data element has been mapped to the process(es) in which the data is created, updated or used. Processes mapped to the 'Used' column are any additional processes that the data is used in other than those processes where the data was created or updated.

Data Element Name	Created	Modified	Used
Acquisition Mechanism	1 Conduct Program Management	1 Conduct Program Management	
Address Street Direction Code	18 Update Asset Information	18 Update Asset Information	1 Conduct Program Management 9 Manage Contract 10 Measure & Benchmark Consumption
Address Street Name	18 Update Asset Information	18 Update Asset Information	1 Conduct Program Management 9 Manage Contract 10 Measure & Benchmark Consumption
Address Street Number	18 Update Asset Information	18 Update Asset Information	1 Conduct Program Management 9 Manage Contract 10 Measure & Benchmark Consumption
Address Street Type Code	18 Update Asset Information	18 Update Asset Information	1 Conduct Program Management 9 Manage Contract 10 Measure & Benchmark Consumption
Asset Allocation Current Use FAC Code	18 Update Asset Information	18 Update Asset Information	10 Measure & Benchmark Consumption
Asset Allocation Size Unit of Measure Code	18 Update Asset Information	18 Update Asset Information	10 Measure & Benchmark Consumption
Asset Allocation Size Quantity	18 Update Asset Information	18 Update Asset Information	10 Measure & Benchmark Consumption
Asset Allocation User Organization Code	18 Update Asset Information	18 Update Asset Information	10 Measure & Benchmark Consumption
Asset Review Type Code	18 Update Asset Information	18 Update Asset Information	1 Conduct Program Management 4 Review Facility Energy Performance 8 Maintain
Capital Improvement Reason Code	18 Update Asset Information	18 Update Asset Information	1 Conduct Program Management 7 Place Improvement in Service 10 Measure & Benchmark Consumption
City Code	18 Update Asset Information	18 Update Asset Information	1 Conduct Program Management 9 Manage Contract 10 Measure & Benchmark Consumption 15 Process Invoice
Climate Zone Code	EXT (ASHRAE and EIA/CBECS)	EXT (ASHRAE and EIA/CBECS)	1 Conduct Program Management 10 Measure & Benchmark Consumption 12 Measure & Verify Improvement
Construction Material Code	2 Create Asset Information	18 Update Asset Information	1 Conduct Program Management 10 Measure & Benchmark Consumption
Construction Type Code	2 Create Asset Information	18 Update Asset Information	1 Conduct Program Management 10 Measure & Benchmark Consumption
Conversion Factor	EXT (DoE FEMP)	EXT (DoE FEMP)	1 Conduct Program Management 10 Measure & Benchmark Consumption
Conversion Factor Role	EXT (DoE FEMP)	EXT (DoE FEMP)	1 Conduct Program Management 10 Measure & Benchmark Consumption

Data Element Name	Created	Modified	Used
Cooling Degree Days	EXT (NOAA or local DoD weather source)	EXT (NOAA or local DoD weather source)	1 Conduct Program Management 10 Measure & Benchmark Consumption
Country Code	18 Update Asset Information	18 Update Asset Information	1 Conduct Program Management 9 Manage Contract 10 Measure & Benchmark Consumption 15 Process Invoice
Date	Various	Various	1 Conduct Program Management 4 Review Facility Energy Performance 7 Place Improvement in Service 8 Maintain Asset 9 Manage Contract 10 Measure & Benchmark Consumption 11 Measure & Benchmark Production 12 Measure & Verify Improvement 14 Perform Receipt & Acceptance 15 Process Invoice 16 Report Findings 19 Acquire 22 Review Findings and Record ECMs
Date Type	Various	Various	1 Conduct Program Management 4 Review Facility Energy Performance 7 Place Improvement in Service 8 Maintain Asset 9 Manage Contract 10 Measure & Benchmark Consumption 11 Measure & Benchmark Production 12 Measure & Verify Improvement 14 Perform Receipt & Acceptance 15 Process Invoice 16 Report Findings 19 Acquire 22 Review Findings and Record ECMs
Date Type Pick List Values			
Capital Improvement Placed in Service Date	18 Update Asset Information	18 Update Asset Information	1 Conduct Program Management 7 Place Improvement in Service 10 Measure & Benchmark Consumption
Cooling Degree Days End Date	EXT (NOAA or local DoD weather source)	EXT (NOAA or local DoD weather source)	1 Conduct Program Management 10 Measure & Benchmark Consumption
Cooling Degree Days Start Date	EXT (NOAA or local DoD weather source)	EXT (NOAA or local DoD weather source)	1 Conduct Program Management 10 Measure & Benchmark Consumption
Efficiency Standard Achievement Date	19 Acquire (new buildings: all except Energy Star®) 10 Measure & Benchmark Consumption (existing buildings) 7 Place Capital Improvement in Service (standards except Energy Star®)	10 Measure & Benchmark Consumption (existing buildings)	1 Conduct Program Management
Energy Certification Expiration Date	EXT (Personnel & Readiness)	EXT (Personnel & Readiness)	1 Conduct Program Management
Energy Conservation Measure Status Date	22 Review Findings and Record ECMs	1 Conduct Program Management 7 Place Capital Improvement in Service 12 Measure & Verify Improvement 13 Budget for Energy Programs	8 Maintain Asset

Data Element Name	Created	Modified	Used
Energy Measurement End Date	20 Plan (new facilities) 10 Measure & Benchmark Consumption 11 Measure & Benchmark Production 15 Process Invoice	1 Conduct Program Management 5 Execute Purchase 10 Measure & Benchmark Consumption 11 Measure & Benchmark Production 12 Measure & Verify Improvement 13 Budget for Energy Programs 15 Process Invoice	4 Review Facility Energy Performance 16 Report Findings 22 Review Findings and Record ECMs
Energy Measurement Start Date	20 Plan (new facilities) 10 Measure & Benchmark Consumption 11 Measure & Benchmark Production 15 Process Invoice	1 Conduct Program Management 5 Execute Purchase 10 Measure & Benchmark Consumption 11 Measure & Benchmark Production 12 Measure & Verify Improvement 13 Budget for Energy Programs 15 Process Invoice	4 Review Facility Energy Performance 16 Report Findings 22 Review Findings and Record ECMs
Energy Training Date			1 Conduct Program Management
Facility Built Date	18 Update Asset Information	18 Update Asset Information	1 Conduct Program Management 8 Maintain Asset 10 Measure & Benchmark Consumption 19 Acquire
Heating Degree Days End Date	EXT (NOAA or local DoD weather source)	EXT (NOAA or local DoD weather source)	1 Conduct Program Management 10 Measure & Benchmark Consumption
Heating Degree Days Start Date	EXT (NOAA or local DoD weather source)	EXT (NOAA or local DoD weather source)	1 Conduct Program Management 10 Measure & Benchmark Consumption
Project Status Date	1 Conduct Program Management 20 Plan	1 Conduct Program Management 3 Dispose 5 Execute Purchase 7 Place Capital Improvement in Service 9 Manage Contract 12 Measure & Verify Improvement 13 Budget for Energy Programs 14 Perform Receipt & Acceptance 18 Update Asset Information 21 Budget	22 Review Findings and Record ECMs
RPA Placed in Service Date	18 Update Asset Information	18 Update Asset Information	1 Conduct Program Management 10 Measure & Benchmark Consumption 11 Measure & Benchmark Production
Utility Provider Rate Schedule Effective End Date	5 Execute Purchase	5 Execute Purchase	1 Conduct Program Management 4 Review Facility Energy Performance 9 Manage Contract 12 Measure & Verify Improvement 14 Perform Receipt & Acceptance 15 Process Invoice
Utility Provider Rate Schedule Effective Start Date	5 Execute Purchase	5 Execute Purchase	1 Conduct Program Management 4 Review Facility Energy Performance 9 Manage Contract 12 Measure & Verify Improvement 14 Perform Receipt & Acceptance 15 Process Invoice
End of Date Type Pick List Values			

Data Element Name	Created	Modified	Used
Dollar Amount	Various	Various	1 Conduct Program Management 5 Execute Purchase 6 Execute Requisition 7 Place Capital Improvement in Service 12 Measure & Verify Improvement 13 Budget for Energy Programs 14 Perform Receipt & Acceptance 17 Source Goods / Services 21 Budget
Dollar Amount Type	Various	Various	
Dollar Type Pick List Values			
Appropriation Amount	EXT (DoD Finance)	EXT (DoD Finance)	1 Conduct Program Management 6 Execute Requisition 13 Budget for Energy Programs 17 Source Goods / Services
Energy Conservation Measure Estimated Cost Amount	16 Report Findings	1 Conduct Program Management 22 Review Findings and Record ECMs	13 Budget for Energy Programs
Energy Cost Amount	***Potential expenditure*** 1 Conduct Program Management 10 Measure & Benchmark Consumption 16 Report Findings ***Potential savings*** 1 Conduct Program Management 4 Review Facility Energy Performance ***Actual expenditure*** 15 Process Invoice ***Actual savings*** 12 Measure & Verify Improvement	***Potential expenditure*** 10 Measure & Benchmark Consumption 22 Review Findings and Record ECMs ***Potential saving*** 1 Conduct Program Management 4 Review Facility Energy Performance ***Actual expenditure*** 15 Process Invoice ***Actual saving*** 12 Measure & Verify Improvement	
Energy Cost Type	***Potential expenditure*** 1 Conduct Program Management 10 Measure & Benchmark Consumption 16 Report Findings ***Potential savings*** 1 Conduct Program Management 4 Review Facility Energy Performance ***Actual expenditure*** 15 Process Invoice ***Actual savings*** 12 Measure & Verify Improvement	***Potential expenditure*** 10 Measure & Benchmark Consumption 22 Review Findings and Record ECMs ***Potential saving*** 1 Conduct Program Management 4 Review Facility Energy Performance ***Actual expenditure*** 15 Process Invoice ***Actual saving*** 12 Measure & Verify Improvement	5 Execute Purchase 13 Budget for Energy Programs
Energy Training Cost Amount			1 Conduct Program Management
Obligation Amount	9 Manage Contract	9 Manage Contract	1 Conduct Program Management 14 Perform Receipt & Acceptance
Planned Amount	1 Conduct Program Management 20 Plan	1 Conduct Program Management 20 Plan	13 Budget for Energy Programs 21 Budget

Data Element Name	Created	Modified	Used
Procurement Instrument Amount	9 Manage Contract	9 Manage Contract	1 Conduct Program Management 7 Place Capital Improvement in Service 14 Perform Receipt & Acceptance
Project Detail Fund Code Cost Amount	19 Acquire 14 Perform Receipt and Acceptance	19 Acquire 14 Perform Receipt and Acceptance	1 Conduct Program Management 7 Place Capital Improvement in Service 12 Measure & Verify Improvement 14 Perform Receipt & Acceptance
Project Estimated Cost Amount	1 Conduct Program Management 20 Plan	1 Conduct Program Management 20 Plan	1 Conduct Program Management 7 Place Capital Improvement in Service 12 Measure & Verify Improvement 14 Perform Receipt & Acceptance
End of Dollar Amount Pick List Values			
Document Type Code	1 Conduct Program Management	1 Conduct Program Management	EXT
Duration of Acquisition Mechanism	9 Manage Contract	9 Manage Contract	1 Conduct Program Management 7 Place Capital Improvement in Service 14 Perform Receipt & Acceptance
Efficiency Standard Achievement Value	19 Acquire (new buildings: all except EnergyStar®) 10 Measure & Benchmark Consumption (existing buildings) 7 Place Capital Improvement in Service (standards except EnergyStar®)	10 Measure & Benchmark Consumption (existing buildings)	1 Conduct Program Management
Efficiency Standard Target	1 Conduct Program Management (existing) 20 Plan (new)	1 Conduct Program Management (existing) 20 Plan (new)	4 Review Facility Energy Performance 10 Measure & Benchmark Consumption
Energy Certification	EXT (Personnel & Readiness)	EXT (Personnel & Readiness)	1 Conduct Program Management
Energy Conservation Measure Fund Code	1 Conduct Program Management	1 Conduct Program Management	13 Budget for Energy Programs
Energy Conservation Measure Identifier	22 Review Findings and Record ECMs	22 Review Findings and Record ECMs	1 Conduct Program Management 7 Place Capital Improvement in Service 8 Maintain 12 Measure & Verify Improvement 13 Budget for Energy Programs 14 Perform Receipt & Acceptance
Energy Conservation Measure Estimated Life	16 Report Findings	1 Conduct Program Management 22 Review Findings and Record ECMs	4 Review Facility Energy Performance
Energy Conservation Measure Status Code	22 Review Findings and Record ECMs	1 Conduct Program Management 7 Place Capital Improvement in Service 12 Measure & Verify Improvement 13 Budget for Energy Programs 14 Perform Receipt & Acceptance	8 Maintain
Energy Conservation Measure Category	22 Review Findings and Record ECMs	22 Review Findings and Record ECMs	1 Conduct Program Management 7 Place Capital Improvement in Service 8 Maintain 12 Measure & Verify Improvement 13 Budget for Energy Programs 14 Perform Receipt & Acceptance
Energy Performance Type Code	18 Update Asset Information 19 Acquire	18 Update Asset Information	4 Review Facility Energy Performance
Energy Performance Value	18 Update Asset Information 19 Acquire	18 Update Asset Information	4 Review Facility Energy Performance

Data Element Name	Created	Modified	Used
Energy Reporting Category	1 Conduct Program Management 18 Update Asset Information (goal excluded only)	1 Conduct Program Management 18 Update Asset Information (goal excluded only)	10 Measure & Benchmark Consumption
Energy Reporting Category Reason	1 Conduct Program Management 18 Update Asset Information (goal excluded only)	1 Conduct Program Management 18 Update Asset Information (goal excluded only)	10 Measure & Benchmark Consumption
Energy Reporting Organization Code	1 Conduct Program Management	1 Conduct Program Management	5 Execute Purchase 10 Measure & Benchmark Consumption 12 Measure & Verify Improvement 13 Budget for Energy Programs 15 Process Invoice 20 Plan
Energy Reimbursement Percentage	18 Update Asset Information	18 Update Asset Information	10 Measure & Benchmark Consumption 15 Process Invoice
Energy Role	20 Plan (new facilities) 10 Measure & Benchmark Consumption 11 Measure & Benchmark Production 15 Process Invoice 16 Report Findings	1 Conduct Program Management 5 Execute Purchase 10 Measure & Benchmark Consumption 11 Measure & Benchmark Production 12 Measure & Verify Improvement 13 Budget for Energy Programs 15 Process Invoice 16 Report Findings 18 Update Asset Information	7 Place Capital Improvement in Service 8 Maintain 9 Manage Contract 22 Review Findings and Record ECMs
Energy Star Building Type	18 Update Asset Information	18 Update Asset Information	1 Conduct Program Management 8 Maintain Asset
Energy Training Credit Hours			1 Conduct Program Management
Energy Training Type			1 Conduct Program Management
Energy Type	20 Plan (new facilities) 10 Measure & Benchmark Consumption 11 Measure & Benchmark Production 15 Process Invoice 16 Report Findings	1 Conduct Program Management 5 Execute Purchase 10 Measure & Benchmark Consumption 11 Measure & Benchmark Production 12 Measure & Verify Improvement 13 Budget for Energy Programs 15 Process Invoice 16 Report Findings 18 Update Asset Information	7 Place Capital Improvement in Service 8 Maintain 9 Manage Contract 22 Review Findings and Record ECMs
Building Module Identifier	18 Update Asset Information	18 Update Asset Information	
Building Module Type	18 Update Asset Information	18 Update Asset Information	
Facility Number	2 Create Asset Information	18 Update Asset Information	1 Conduct Program Management 10 Measure & Benchmark Consumption
Facility Physical Quality Rate	18 Update Asset Information	18 Update Asset Information	1 Conduct Program Management 10 Measure & Benchmark Consumption
Facility Use Days Per Week	18 Update Asset Information	18 Update Asset Information	10 Measure & Benchmark Consumption
Federal Support Indicator	10 Measure & Benchmark Consumption	10 Measure & Benchmark Consumption	1 Conduct Program Management 15 Process Invoice 20 Plan
Federal Support Percentage	10 Measure & Benchmark Consumption	10 Measure & Benchmark Consumption	1 Conduct Program Management 15 Process Invoice

Data Element Name	Created	Modified	Used
			20 Plan
Geospatial Feature	18 Update Asset Information	18 Update Asset Information	1 Conduct Program Management 9 Manage Contract 10 Measure & Benchmark Consumption
Heating Degree Days	EXT (NOAA or local DoD weather source)	EXT (NOAA or local DoD weather source)	1 Conduct Program Management 10 Measure & Benchmark Consumption
Installation Code	2 Create Asset Information	18 Update Asset Information	1 Conduct Program Management 5 Execute Purchase 10 Measure & Benchmark Consumption 12 Measure & Verify Improvement 13 Budget for Energy Programs 15 Process Invoice 22 Review Findings and Record ECMs
Installation Name	2 Create Asset Information	18 Update Asset Information	1 Conduct Program Management 5 Execute Purchase 10 Measure & Benchmark Consumption 12 Measure & Verify Improvement 13 Budget for Energy Programs 15 Process Invoice 22 Review Findings and Record ECMs
Installation Operational Status Code	2 Create Asset Information	18 Update Asset Information	1 Conduct Program Management
Installation Reporting Component Code	2 Create Asset Information	18 Update Asset Information	1 Conduct Program Management
Lifecycle Cost Avoidance Type	20 Plan 22 Review Findings and Record ECMs	1 Conduct Program Management 22 Review Findings and Record ECMs	16 Report Findings
Location Directions Text	18 Update Asset Information	18 Update Asset Information	1 Conduct Program Management 9 Manage Contract 10 Measure & Benchmark Consumption
Measurement and Verification Method Type	12 Measure & Verify Improvement	12 Measure & Verify Improvement	1 Conduct Program Management
Meter Identifier	2 Create Asset Information (personal property)	18 Update Asset Information (personal property)	1 Conduct Program Management 7 Place Capital Improvement in Service 10 Measure & Benchmark Consumption
Meter Location	2 Create Asset Information (personal property)	18 Update Asset Information (personal property)	1 Conduct Program Management 7 Place Capital Improvement in Service 10 Measure & Benchmark Consumption
Meter Location Description	2 Create Asset Information (personal property)	18 Update Asset Information (personal property)	1 Conduct Program Management 7 Place Capital Improvement in Service 10 Measure & Benchmark Consumption
Meter Type	2 Create Asset Information (personal property)	18 Update Asset Information (personal property)	1 Conduct Program Management 7 Place Capital Improvement in Service 10 Measure & Benchmark Consumption 20 Plan

Data Element Name	Created	Modified	Used
Ownership Type	1 Conduct Program Management 20 Plan	1 Conduct Program Management 20 Plan	12 Measure & Verify Improvement
Payback Period	20 Plan 22 Review Findings and Record ECMs	1 Conduct Program Management 22 Review Findings and Record ECMs	16 Report Findings
Peak Demand Type	9 Manage Contract 10 Measure & Benchmark Consumption	9 Manage Contract 10 Measure & Benchmark Consumption	15 Process Invoice
Person Contact Information	1 Conduct Program Management	1 Conduct Program Management	
Person First Name	1 Conduct Program Management	1 Conduct Program Management	
Person Last Name	1 Conduct Program Management	1 Conduct Program Management	
Person Identifier	1 Conduct Program Management	1 Conduct Program Management	
Person Role Code	1 Conduct Program Management	1 Conduct Program Management	
Postal Code	18 Update Asset Record 9 Manage Contract (purchase of renewable energy)	9 Manage Contract (purchase of renewable energy)	1 Conduct Program Management 9 Manage Contract 10 Measure & Benchmark Consumption 15 Process Invoice
Procurement Instrument Description Text	9 Manage Contract	9 Manage Contract	1 Conduct Program Management 7 Place Capital Improvement in Service 14 Perform Receipt & Acceptance
Procurement Instrument Identification Number	9 Manage Contract	9 Manage Contract	1 Conduct Program Management 7 Place Capital Improvement in Service 14 Perform Receipt & Acceptance
Procurement Instrument Type Code	9 Manage Contract	9 Manage Contract	1 Conduct Program Management 7 Place Capital Improvement in Service 14 Perform Receipt & Acceptance
Project Description Text	1 Conduct Program Management 20 Plan	1 Conduct Program Management 20 Plan	1 Conduct Program Management 7 Place Capital Improvement in Service 12 Measure & Verify Improvement 14 Perform Receipt & Acceptance
Project Detail Fund Code	1 Conduct Program Management 20 Plan	1 Conduct Program Management 20 Plan	1 Conduct Program Management 7 Place Capital Improvement in Service 12 Measure & Verify Improvement 14 Perform Receipt & Acceptance
Project Detail Organization Code	1 Conduct Program Management 20 Plan	1 Conduct Program Management 20 Plan	1 Conduct Program Management 7 Place Capital Improvement in Service 12 Measure & Verify Improvement 14 Perform Receipt & Acceptance
Project Name	1 Conduct Program Management 20 Plan	1 Conduct Program Management 20 Plan	1 Conduct Program Management 7 Place Capital Improvement in Service 12 Measure & Verify Improvement 14 Perform Receipt & Acceptance 16 Report Findings
Project Number	1 Conduct Program Management 20 Plan	1 Conduct Program Management 20 Plan	1 Conduct Program Management 7 Place Capital Improvement in Service 12 Measure & Verify Improvement

Data Element Name	Created	Modified	Used
			14 Perform Receipt & Acceptance 16 Report Findings
Project Schedule Type	1 Conduct Program Management 20 Plan	1 Conduct Program Management 3 Dispose 5 Execute Purchase 7 Place Capital Improvement in Service 9 Manage Contract 12 Measure & Verify Improvement 13 Budget for Energy Programs 14 Perform Receipt & Acceptance 18 Update Asset Information 21 Budget	22 Review Findings and Record ECMs
Project Status Code	1 Conduct Program Management 20 Plan	1 Conduct Program Management 3 Dispose 5 Execute Purchase 7 Place Capital Improvement in Service 9 Manage Contract 12 Measure & Verify Improvement 13 Budget for Energy Programs 14 Perform Receipt & Acceptance 18 Update Asset Information 21 Budget	22 Review Findings and Record ECMs
Project Type Code	1 Conduct Program Management 20 Plan	1 Conduct Program Management 20 Plan	
Real Property Site Unique Identifier	2 Create Asset Information	18 Update Asset Information	1 Conduct Program Management 4 Review Facility Energy Performance 5 Execute Purchase 6 Execute Requisition 7 Place Capital Improvement in Service 8 Maintain 9 Manage Contract 10 Measure & Benchmark Consumption 11 Measure & Benchmark Production 12 Measure & Verify Improvement 13 Budget for Energy Programs 15 Process Invoice 16 Report Findings 20 Plan 21 Budget 22 Review Findings and Record ECMs
Real Property Unique Identifier	2 Create Asset Information	18 Update Asset Information	1 Conduct Program Management 4 Review Facility Energy Performance 5 Execute Purchase 6 Execute Requisition 7 Place Capital Improvement in Service 8 Maintain 9 Manage Contract 10 Measure & Benchmark Consumption 11 Measure & Benchmark Production 12 Measure & Verify Improvement 13 Budget for Energy Programs 15 Process Invoice 16 Report Findings 20 Plan

Data Element Name	Created	Modified	Used
			21 Budget 22 Review Findings and Record ECMs
Renewable Energy Classification	1 Conduct Program Management 5 Execute Purchase 20 Plan	1 Conduct Program Management (DoD) 20 Plan	10 Measure & Benchmark Consumption 11 Measure & Benchmark Production
Renewable Energy Analysis Category	INA	INA	INA
Renewable Energy Analysis Category Rating	INA	INA	INA
Renewable Energy Potential Amount	INA	INA	INA
RPA Command Claimant Code	2 Create Asset Information	18 Update Asset Information	1 Conduct Program Management 10 Measure & Benchmark Consumption 11 Measure & Benchmark Production
RPA Interest Type Code	18 Update Asset Information	18 Update Asset Information	1 Conduct Program Management 10 Measure & Benchmark Consumption 11 Measure & Benchmark Production
RPA Name	2 Create Asset Information	18 Update Asset Information	1 Conduct Program Management 4 Review Facility Energy Performance 5 Execute Purchase 6 Execute Requisition 7 Place Capital Improvement in Service 9 Manage Contract 10 Measure & Benchmark Consumption 11 Measure & Benchmark Production 12 Measure & Verify Improvement 13 Budget for Energy Programs 15 Process Invoice 16 Report Findings 20 Plan 21 Budget 22 Review Findings and Record ECMs
RPA Operational Status Code	18 Update Asset Information	18 Update Asset Information	1 Conduct Program Management 8 Maintain 10 Measure & Benchmark Consumption 11 Measure & Benchmark Production
RPA Predominant Current Use FAC Code	18 Update Asset Information	18 Update Asset Information	1 Conduct Program Management 4 Review Facility Energy Performance 10 Measure & Benchmark Consumption
RPA Total Unit of Measure Code	18 Update Asset Information	18 Update Asset Information	1 Conduct Program Management 4 Review Facility Energy Performance 10 Measure & Benchmark Consumption
RPA Total Unit of Measure Quantity	18 Update Asset Information	18 Update Asset Information	1 Conduct Program Management 4 Review Facility Energy Performance 10 Measure & Benchmark Consumption
RPA Type Code	2 Create Asset Information	18 Update Asset Information	1 Conduct Program Management 8 Maintain 4 Review Facility Energy Performance 10 Measure & Benchmark Consumption

Data Element Name	Created	Modified	Used
Savings to Investment Ratio (SIR)	4 Review Facility Energy Performance 20 Plan	1 Conduct Program Management 20 Plan	13 Budget for Energy Programs 16 Report Findings 21 Budget 22 Review Findings and Record ECMs
Site Name	2 Create Asset Information	18 Update Asset Information	1 Conduct Program Management 4 Review Facility Energy Performance 5 Execute Purchase 6 Execute Requisition 7 Place Capital Improvement in Service 9 Manage Contract 10 Measure & Benchmark Consumption 11 Measure & Benchmark Production 12 Measure & Verify Improvement 13 Budget for Energy Programs 15 Process Invoice 16 Report Findings 20 Plan 21 Budget 22 Review Findings and Record ECMs
Site Operational Status Code	2 Create Asset Information	18 Update Asset Information	1 Conduct Program Management 10 Measure & Benchmark Consumption 11 Measure & Benchmark Production
Site Primary Indicator	2 Create Asset Information	18 Update Asset Information	1 Conduct Program Management 10 Measure & Benchmark Consumption 11 Measure & Benchmark Production
Site Delivered/Source Energy Indicator	6 Execute Requisition	6 Execute Requisition	1 Conduct Program Management 10 Measure & Benchmark Consumption 11 Measure & Benchmark Production
State or Country Primary Subdivision Code	18 Update Asset Information	18 Update Asset Information	1 Conduct Program Management 9 Manage Contract 10 Measure & Benchmark Consumption 15 Process Invoice
System Capacity			1 Conduct Program Management 4 Review Facility Energy Performance 12 Measure & Verify Improvement
System Manufactured Date			1 Conduct Program Management 4 Review Facility Energy Performance
System Manufacturer			1 Conduct Program Management 4 Review Facility Energy Performance
System Type			1 Conduct Program Management 4 Review Facility Energy Performance 12 Measure & Verify Improvement
Technology Type	1 Conduct Program Management 20 Plan	1 Conduct Program Management 20 Plan	
Temperature Type	4 Review Facility Energy Performance	4 Review Facility Energy Performance	1 Conduct Program Management 10 Measure & Benchmark Consumption 11 Measure & Benchmark Production 12 Measure & Verify Improvement

Data Element Name	Created	Modified	Used
Time	Various	Various	Various
Time Type	Various	Various	Various
Time Type Pick List Values			
Energy Measurement End Time	Various	Various	Various
Energy Measurement Start Time	Various	Various	Various
Facility Daily Use End Time	18 Update Asset Information	18 Update Asset Information	8 Maintain Asset 10 Measure & Benchmark Consumption
Facility Daily Use Start Time	18 Update Asset Information	18 Update Asset Information	8 Maintain Asset 10 Measure & Benchmark Consumption
End of Time Type Pick List Values			
Unique Item Identifier	2 Create Asset Information	18 Update Asset Information	1 Conduct Program Management 11 Measure & Benchmark Production 12 Measure & Verify Improvement 14 Perform Receipt & Acceptance
Unit of Measure Code	Various	Various	1 Conduct Program Management 4 Review Facility Energy Performance 5 Execute Purchase 8 Maintain Asset 10 Measure & Benchmark Consumption 12 Measure & Verify Improvement 13 Budget for Energy Programs 15 Process Invoice 16 Report Findings
Unit of Measure Role	Various	Various	1 Conduct Program Management 4 Review Facility Energy Performance 5 Execute Purchase 8 Maintain Asset 10 Measure & Benchmark Consumption 12 Measure & Verify Improvement 13 Budget for Energy Programs 15 Process Invoice 16 Report Findings
Unit of Measure Value Quantity	Various	Various	1 Conduct Program Management 4 Review Facility Energy Performance 5 Execute Purchase 8 Maintain Asset 10 Measure & Benchmark Consumption 12 Measure & Verify Improvement 13 Budget for Energy Programs 15 Process Invoice 16 Report Findings

Data Element Name	Created	Modified	Used
Utility Provider Customer Account Number	5 Execute Purchase	5 Execute Purchase	1 Conduct Program Management 4 Review Facility Energy Performance 9 Manage Contract 12 Measure & Verify Improvement 14 Perform Receipt & Acceptance 15 Process Invoice
Utility Provider Invoice Number	15 Process Invoice	15 Process Invoice	1 Conduct Program Management 4 Review Facility Energy Performance 9 Manage Contract 12 Measure & Verify Improvement 14 Perform Receipt & Acceptance
Utility Provider Organization Name	5 Execute Purchase	5 Execute Purchase	1 Conduct Program Management 4 Review Facility Energy Performance 9 Manage Contract 12 Measure & Verify Improvement 14 Perform Receipt & Acceptance 15 Process Invoice
Utility Provider Rate Schedule Code	5 Execute Purchase	5 Execute Purchase	1 Conduct Program Management 4 Review Facility Energy Performance 9 Manage Contract 12 Measure & Verify Improvement 14 Perform Receipt & Acceptance 15 Process Invoice
Utility Provider Type	5 Execute Purchase	5 Execute Purchase	1 Conduct Program Management 4 Review Facility Energy Performance 9 Manage Contract 12 Measure & Verify Improvement 14 Perform Receipt & Acceptance 15 Process Invoice
Value Accuracy Type	Various	Various	Various
Value Accuracy Type Pick List Values			
Energy Cost Accuracy	***Potential expenditure*** 1 Conduct Program Management 10 Measure & Benchmark Consumption 16 Report Findings ***Potential savings*** 1 Conduct Program Management 4 Review Facility Energy Performance ***Actual expenditure*** 15 Process Invoice ***Actual savings*** 12 Measure & Verify Improvement	***Potential expenditure*** 10 Measure & Benchmark Consumption 22 Review Findings and Record ECMs ***Potential saving*** 1 Conduct Program Management 4 Review Facility Energy Performance ***Actual expenditure*** 15 Process Invoice ***Actual saving*** 12 Measure & Verify Improvement	5 Execute Purchase 13 Budget for Energy Programs
Energy Measurement Value Accuracy	20 Plan (new facilities) 10 Measure & Benchmark Consumption 11 Measure & Benchmark Production 15 Process Invoice	1 Conduct Program Management 5 Execute Purchase 10 Measure & Benchmark Consumption 11 Measure & Benchmark Production 12 Measure & Verify Improvement 13 Budget for Energy Programs 15 Process Invoice	4 Review Facility Energy Performance 16 Report Findings 22 Review Findings and Record ECMs
End of Value Accuracy Type Pick List Values			
Workload Quantity	4 Review Facility Energy Performance	4 Review Facility Energy Performance	1 Conduct Program Management 10 Measure & Benchmark Consumption

Data Element Name	Created	Modified	Used
Workload Utilization Type	4 Review Facility Energy Performance	4 Review Facility Energy Performance	1 Conduct Program Management 10 Measure & Benchmark Consumption

Appendix G: Data Elements with Definitions

This table lists the minimum energy information required to achieve the forthcoming information environment. Data elements are considered new if they were developed though the EEIMR business transformation effort. Existing data elements are those developed during other business transformation initiatives such as the Real Property Inventory Requirements business process reengineering effort. The pick list values column provides the list of acceptable values for each data element, either as a list or as a link to a spreadsheet. If no pick list is provided, the required value of the data element is explained in the definition column.

Data Element Name	New or Existing Standard	Pick List Values[7]	Definition
Acquisition Mechanism	New	DEFC = Definitive Contract IDC = Indefinite Delivery Contract GFSS = GSA Federal Supply Schedule BPA = Blanket Purchase Agreement BOA = Basic Ordering Agreement UESC = Utility Energy Service Contract ESPC = Energy Savings Performance Contract PPA = Power Purchase Agreement EUL = Enhanced Use Lease INPG = Incentive Program	The type of execution mechanism for the energy conservation measure, to include renewable energy.
Address Street Direction Code	Existing	E = East W = West SW = Southwest SE = Southeast NW = Northwest N = North NE = Northeast S = South	The code that stands for a directional portion of a street name. Examples of the direction in the street name that they represent are: N (North); NE (Northeast).
Address Street Name	Existing		The term commonly used to refer to the street of the address.
Address Street Number	Existing		The designator that distinguishes one street address from another within the same street.
Address Street Type Code	Existing	http://pe.usps.gov/cpim/ftp/pubs/Pub28/Pub28.pdf	The code that stands for the type of street of the address.
Asset Allocation Current Use FAC Code	Existing	see E^2IM	An OSD-level designator that represents the current use of a specified portion of the real property asset.
Asset Allocation Size Quantity	Existing		The quantity in terms of the associated unit of measure granted to the using organization associated with each assigned area use and user combination.

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[7] The Enterprise Energy Information Model (E^2IM) contains the EEIM standard data elements, metadata, business rules, pick lists, etc. in text format. Currently DUSD (I&E) BEI uses the IBM Websphere tool (Business Glossary, Information Server, Workbench) to execute this capability.

Data Element Name	New or Existing Standard	Pick List Values[7]	Definition
Asset Allocation Size Unit of Measure Code	Existing	see E^{2}IM	The Unit of Measure Code used for the measurement of the assigned area size.
Asset Allocation User Organization Code	Existing	see E^{2}IM	A code used to identify the organization using a specific portion of a real property asset.
Asset Review Type Code	Existing (to include energy)	*Propose to add:* BSL=Baseline BMK = Benchmarking HRRA = HVAC Retro-/Re-commissioning Assessment EA1 = Energy Audit 1 EA2 = Energy Audit 2 EA3 = Energy Audit 3 WA = Water Audit CEA1 = Comprehensive Energy Audit 1 CEA2 = Comprehensive Energy Audit 2 CEA3 = Comprehensive Energy Audit 3	A code used to identify the type of asset review performed for the real property asset, such as appraisal, survey, inventory, functional certification.
Building Module Identifier	Existing		The non-intelligent code used to uniquely and permanently identify a DoD building.
Building Module Type	Existing	W = Wing FA = Floors - above grade level BR = Bedroom BF = Bathroom - full OFFICE = Office CUBICLE = Cubicle BAY = Bay	A designator that identifies the type of building module.
Capital Improvement Reason Code	Existing	FUNC - Modify Functionality ICAP - Increase Capacity IEFF - Increase Efficiency LIFE - Extend Useful Life SIZE - Increase Size	This is the reason the capital improvement was performed.
City Code	Existing	see E^{2}IM	The code used to identify the city in which the real property asset or organizational unit is located or the city nearest to the asset. The nearest city shall be in the same county as the asset.
Climate Zone Code	New	1a = 9000 < CDD50°F (very hot, humid) 1b = 9000 < CDD50°F (very hot, dry) 2a = 6300 < CDD50°F $\leq$ 9000 (hot, humid) 2b = 6300 < CDD50°F < 9000 (hot, dry) 3a = 4500 < CDD50°F < 6300 (warm, humid) 3b = 4500 < CDD50°F < 6300 (warm, dry) 3c = CDD50°F $\leq$ 4500 AND HDD65°F $\leq$ 5400 (warm, marine) 4a = CDD50°F $\leq$ 4500 AND 3600 < HDD65°F $\leq$ 5400 (mixed, humid) 4b = CDD50°F < 4500 AND 3600 < HDD65°F $\leq$ 5400 (mixed, dry) 4c = 3600 < HDD65°F $\leq$ 5400 (mixed, marine) 5a = 5400 < HDD65°F $\leq$ 7200 (cool, humid) 5b = 5400 < HDD65°F $\leq$ 7200 (cool, dry) 5c = 5400 < HDD65°F $\leq$ 7200 (cool, marine) 6a = 7200 < HDD65°F $\leq$ 9000 (cold, humid) 6b = 7200 < HDD65°F $\leq$ 9000 (cold, dry) 7 = 9000 < HDD65°F $\leq$ 12600 (very cold) 8 = 12600 < HDD65°F (subarctic)	International climate zones as defined by the ANSI/ASHRAE Standard 90.1-2004.

Data Element Name	New or Existing Standard	Pick List Values[7]	Definition
Construction Material Code	Existing	ABV = Anchored Brick Veneer ASPH = Asphalt BV = Brick Veneer COMB = Combination of Wood and Masonry Frame BLCK = Concrete Block CONC = Concrete Moment Frames, Concrete Shear Walls, Concrete Frame with Infill Shear Walls, Precast/Tilt-up Concrete Walls with Lightweight Flex, Precast Concrete Frame with Concrete Shear Walls, and Pavement WIRE = Copper, aluminum, fiber optics CW = Curtain Walls to include Aluminum Glass, Stone and Metal Panel, Precast Concrete NA = Does Not Apply EARS - Earth (stabilized) EARU = Earth (untreated) GRAV = Gravel SFG = Includes Steel Moment Frame, Steel Braced Frame, Steel Light Frame, Steel Frame with Concrete Shear Walls, and Steel Frame with Infill Shear Walls MET = Metal (Steel, aluminum, copper, or other metal, e.g., Quonset Hut) OTHR = Other OLIM = Other Local Indigenous Materials (Reeds, Branches, Ice, etc.) OTHP = Other than Steel or PVC Piping PLSY = Plastics, synthetic materials, etc. PFAB = Prefabricated/Modular PVC = PVC Piping MEW = Reinforced Masonry Bearing Walls with Wood or Metal, Reinforced Masonry Bearing Walls with Precast Concrete, and Unreinforced Masonry Bearing Walls ROCK = Rock STP = Steel Piping TIMB = Wood Light Frame and Wood	The primary building material used to construct a given real property facility.
Construction Type Code	Existing	PERM = Permanent Facility SEMI = Semi-permanent Facility TEMP = Temporary Facility RELO = Relocatable	The code used to identify the type of construction for a given real property facility.
Conversion Factor	New		A value that is used to transform energy consumption or production information into a needed piece of information.
Conversion Factor Role	New	EUBTU = Energy Units to MMBTU EUCO2 = Energy Units to CO_2 EUCH4 = Energy Units to CH_4 EUN2O = Energy Units to N_2O EBCO2 = eGRID baseload to CO_2 EBCH4 = eGRID baseload to CH_4 EBN2O = eGRID baseload to N_2O ENCO2 = eGRID non-baseload to CO_2 ENCH4 = eGRID non-baseload to CH_4 ENN2O = eGRID non-baseload to N_2O TDCO2 = Travel distance to CO_2 TDCH4 = Travel distance to CH_4 TDNO2 = Travel distance to N_2O	A value that identifies a given conversion factor based on the type of information it is intended to derive.

Data Element Name	New or Existing Standard	Pick List Values[7]	Definition
Cooling Degree Days	New		An index that is defined as the difference between the average outside temperature for a day (24 hour period) and a given base temperature (typically 65 F). Weekly, monthly, or annual cooling degree days are the sum of the degree days during the respective time periods. CDD is a measure of the climate (outside temperature) related impacts on cooling energy requirements; the greater the number of CDD, all things being equal, the greater the cooling energy requirements for a facility.
Country Code	Existing	see E^{2}IM	The code used to identify the country in which the real property asset or site is located.
Date	New		The calendar day that an event occurred or is expected to occur.
Date Type	New	AR = Asset Review Date CIPS = Capital Improvement Placed in Service Date CDDE = Cooling Degree Days End Date CDDS = Cooling Degree Days Start Date DID = Document Issue Date ESA = Efficiency Standard Achievement Date ECE = Energy Certification Expiration Date ECMS = Energy Conservation Measure Status Date ERCS = Energy Reporting Category Start Date EME = Energy Measurement End Date EMS = Energy Measurement Start Date ETRN = Energy Training Date FACB = Facility Built Date HDDE = Heating Degree Days End Date HDDS = Heating Degree Days Start Date MEIN = Meter Installation Date PJS = Project Status Date RECE = REC Expiration Date RPPS = RPA Placed in Service Date SYSM = System Manufactured Date RSEE = Utility Provider Rate Schedule Effective End Date RSES = Utility Provider Rate Schedule Effective Start Date	The information that the date represents.
Document Type Code	Existing (propose pick list)	DD1391 = Form DD1391 DD1354 = Form DD1354 LCCA = Life Cycle Cost Analysis ASB = As-Builts CERT = Certification CAGG = Contract Agreement CONS = Consumption Information PJAD = Project Approval Document EXEP = Execution Plan COST = Cost Estimate SOW = Scope of Work	A code that identifies the type of document.
Dollar Amount	New		The value of the funds in US Dollars.

Data Element Name	New or Existing Standard	Pick List Values[7]	Definition
Dollar Amount Type	New	APAM = Appropriation Amount ECME = Energy Conservation Measure Estimated Cost Amount ECAM = Energy Cost Amount ETCA = Energy Training Cost Amount OBAM = Obligation Amount PLAM = Planned Amount PIAM = Procurement Instrument Amount PJCA = Project Detail Fund Code Cost Amount PJEC = Project Estimated Cost Amount	The purpose of the dollar amount.
Duration of Acquisition Mechanism	New		The duration or contract term of a third party acquisition mechanism.
Efficiency Standard Achievement Value	New	LCN = LEED Certified - New Building LSN = LEED Silver - New Building LGN = LEED Gold - New Building LPN = LEED Platinum - New Building LCE = LEED Certified - Existing Building LSE = LEED Silver - Existing Building LGE = LEED Gold - Existing Building LPE = LEED Platinum - Existing Building GPC = Guiding Principles Conformance GG1 = Green Globes 1 GG2 = Green Globes 2 ASH904 = exceed ASHRAE 90.1 2004 by 30% ASH907 = exceed ASHRAE 90.1 2007 by 30% ASH910 = exceed ASHRAE 90.1 2010 by 30% ASH1807 = achieve ASHRAE 189.1 2007 ASH1809 = achieve ASHRAE 189.1 2009 ASH1811 = achieve ASHRAE 189.1 2011ES75 = EnergyStar® Rating of 75 or more HPSB = High-Performance Sustainable Building Database Inclusion	A value that indicates the level of a specific efficiency standard a facility has achieved. These will be specific as they relate to the Efficiency Standard Target.
Efficiency Standard Target	New	LCN = LEED Certified - New Building LSN = LEED Silver - New Building LGN = LEED Gold - New Building LPN = LEED Platinum - New Building LCE = LEED Certified - Existing Building LSE = LEED Silver - Existing Building LGE = LEED Gold - Existing Building LPE = LEED Platinum - Existing Building GPC = Guiding Principles Conformance GG1 = Green Globes 1 GG2 = Green Globes 2 ASH904 = exceed ASHRAE 90.1 2004 by 30% ASH907 = exceed ASHRAE 90.1 2007 by 30% ASH910 = exceed ASHRAE 90.1 2010 by 30% ASH1807 = achieve ASHRAE 189.1 2007 ASH1809 = achieve ASHRAE 189.1 2009 ASH1811 = achieve ASHRAE 189.1 2011 ES75 = EnergyStar® Rating of 75 or more HPSB = High-Performance Sustainable Building Database Inclusion	The target value to be attained in order to achieve the efficiency standard.

Data Element Name	New or Existing Standard	Pick List Values[7]	Definition
Energy Certification	New	BEP - Certified Business Energy Professional BESA - Certified Building Energy Simulation Analyst CBCP - Certified Building Commissioning Professional CEA - Certified Energy Auditor CEM - Certified Energy Manager CEP - Certified Energy Procurement Professional CGD - Certified GeoExchange Designer CLEP - Certified Lighting Efficiency Professional CMVP - Certified Measurement & Verification Professional CPQ - Certified Power Quality Professional CRM - Certified Carbon & GHG Reduction Manager CRU - Certified in the Use of RETScreen CSDP - Certified Sustainable Development Professional DGCP - Distributed Generation Certified Professional EBCP - Existing Building Commissioning Professional EMIT - Energy Manager in Training GBE - Certified Green Building Engineer HPB - High Performance Building Professional LAPB - LEED Accredited Professional (Building Design & Construction) LAPH - LEED Accredited Professional (Homes) LAPI - LEED Accredited Professional (Interior Design & Construction) LAPN - LEED Accredited Professional (Neighborhood Development) LAPO - LEED Accredited Professional (Operations & Maintenance) LGA - Green Associate REA - Certified Residential Energy Auditor REP - Certified Renewable Energy Professional	The specific type of energy certification held by an individual.
Energy Conservation Measure Category	New	BPI = Boiler Plant Improvements CPI = Chiller Plant Improvements BAS = Building Automation Systems/Energy Management Control Systems (EMCS) HVAC = Heating, Ventilating, and Air Conditioning LI = Lighting Improvements BEM = Building Envelope Modifications CWHS = Chilled Water, Hot Water, and Steam Distribution Systems EMD = Electric Motors and Drives REFG = Refrigeration DISG = Distributed Generation RES = Renewable Energy Systems EUDS =Energy/Utility Distribution Systems WSCS = Water and Sewer Conservation Systems EPRA = Electrical Peak Shaving/Load Shifting ECRA = Energy Cost Reduction Through Rate Adjustments ERPI = Energy Related Process Improvements AMS = Advanced Metering Systems APR = Appliance/Plug-load reductions CM = Commissioning Measures OTH = Other	The category of energy conservation measure as identified in the Department of Energy EISA 432 Implementation Guidance.
Energy Conservation Measure Estimated Life	New		The number of years that an energy conservation measure is expected to be in operation after it is placed in service.
Energy Conservation Measure Fund Code	New	see E²IM	The designator that identifies the funding source of an Energy Conservation Measure.

Data Element Name	New or Existing Standard	Pick List Values[7]	Definition
Energy Conservation Measure Identifier	New		A unique identifier that distinguishes one energy conservation measure from another.
Energy Conservation Measure Status Code	New	PR = Proposed BU = Budgeted AP = Appropriated UC = Under Construction CC = Construction Complete BO = Beneficial Occupancy DO = Decommissioned/Out of Service CA = Cancelled	A designator that identifies the current phase of an Energy Conservation Measure within the overall lifecycle.
Energy Cost Type	New	E = Expended A = Avoided	A value that indicates whether an energy cost amount is expended or avoided.
Energy Performance Type Code	New	AFUE - annual fuel utilization efficiency HSPF - heating season performance factor COP - coefficient of performance EER - energy efficiency ratio EF - energy factor LER - luminaire efficiency rating	A code that identifies the kind of energy efficiency to which a specific energy rating pertains, e.g., fuel use, luminosity, etc.
Energy Performance Value	New		The nameplate performance rating or in-service performance rating available for the equipment or system.
Energy Reimbursement Percentage	New		The percent value of energy costs that are reimbursed by a Cost Sharing Partner.
Energy Reporting Category	New	432CF = EISA 432 Covered Facility 432NC = EISA 432 Not Covered Facility EIGI = Energy Intensity Goal Included EIGN = Energy Intensity Goal Excluded WIGI = Water Intensity Goal Included WIGN = Water Intensity Goal Excluded AFM = Appropriate Facility for Metering NAFM = Not Appropriate Facility for Metering PDF = Public Disclosure Facility NPDF = Not Public Disclosure Facility GHGI = GHG Goal Included GHGE = GHG Goal Excluded	A value that identifies the category(ies) of energy reporting to which a given facility is subject.
Energy Reporting Category Reason	New		A brief description of why a facility is subject to a specific reporting category.
Energy Reporting Organization Code	New	see E^{2}IM	A code used to identify the organization reporting energy measures.
Energy Role	New	CO = Consume PP = Potential Production PR = Produce PU = Purchase RR = Retain (DoD generated REC only) SA = Save	A value that identifies the activity of interest for energy.

Data Element Name	New or Existing Standard	Pick List Values[7]	Definition
Energy Star Building Type	New	BF = Bank/Financial Institution CH = Courthouse DC = Data Center HC = Hospital (acute care and children's) HO = Hotel HW = House of Worship SC = K–12 School MD = Medical Office WW = Municipal Wastewater Treatment Plant OF = Office RH = Residence Hall/Dormitory RS = Retail Store SM = Supermarket WH = Warehouse (refrigerated and non-refrigerated)	The category of commercial buildings eligible to receive an EnergyStar® rating.
Energy Training Type	New	FEI = Facility Efficiency Improvement REP = Reporting Requirements RPP = Renewable Project Planning FBES = Fundamentals of Building Energy Systems BECS = Building Energy Codes and Applicable Professional Standards EAA = Energy Accounting and Analysis LCCM = Life-cycle Cost Methodology FSP = Fuel Supply and Pricing IESA = Instrumentation for Energy Surveys and Audits	The value that identifies a type of energy training.
Energy Training Credit Hours	New		The number of educational credits received for energy training, usually based on the number of classroom hours per week.
Energy Type	New	See Appendix J	A term that identifies the form, substance, or source of power produced for use or consumed in a building or structure.
Facility Number	Existing		A locally developed asset identification that is normally visible, either painted or by signage on the exterior of a real property facility, used for visual identification of the facility.
Facility Physical Quality Rate	Existing		A percentage used to depict the physical capability of existing facilities as measured by a condition index. The Facility Physical Rate represents a facilities restoration and modernization requirement but does not represent a facilities sustainment or new footprint requirement. The Facility Physical Quality Rate estimates will not contain any annual sustainment tasks or "deferred sustainment" costs, although they may contain restoration costs caused by deferred sustainment. The Facility Physical Quality Rate will also not represent costs to build out capacity deficits. Facility Physical Quality Rate will be in terms of the estimated cost to restore and modernize facilities to full-up "90-100 percent rating" status.

Data Element Name	New or Existing Standard	Pick List Values[7]	Definition
Facility Use Days Per Week	New		The number of days in a typical week that use of a facility occurs or is expected to occur.
Federal Support Indicator	New	Y = Yes N = No	An indicator that identifies whether energy costs at a National Guard facility are paid by the Department of Defense.
Federal Support Percentage	New		The percent value of energy costs at a National Guard facility that are paid by the Department of Defense.
Geospatial Feature	Existing		An abstraction of a real world phenomenon that physically places the phenomenon via an implicit or explicit reference to a specific location relative to the Earth that is comprised of one or more geometric primitives and one or more topological primitives. This information must be accompanied by the applicable coordinate reference system, as defined by the International Organization for Standards (ISO).
Heating Degree Days	New		An index that is defined as the difference between a given base temperature (typically 65 F) and the average outside temperature for a day (24 hour period). Weekly, monthly, or annual heating degree days are the sum of the degree days during the respective time periods. HDD is a measure of the climate (outside temperature) related impacts on heating energy requirements; the greater the number of HDD, all things being equal, the greater the heating energy requirements for a facility.
Installation Code	Existing	<Defined by Component>	The code assigned by the Military Service (includes Washington Headquarters Services) or Agency used to identify the site or group of sites that make up an installation. This represents the official identifying code for a Service's installation.
Installation Name	Existing		The official identification or name applied to the entire installation, as used by the DoD and the Services to recognize the installation.
Installation Operational Status Code	Existing	CARE = Caretaker SEMI = Semi-active CLSD = Closed ACT = Active	The code that stands for the operational status of an installation (e.g., active, closed).

Data Element Name	New or Existing Standard	Pick List Values[7]	Definition
Installation Reporting Component Code	Existing	MCRES = Marine Corps Reserve ARACT = Army Active ARRES = Army Reserve ARGUARD = Army National Guard WHS = Washington Headquarters Services MCACT = Marine Corps Active NAVACT = Navy Active NAVRES = Navy Reserve AFACT = Air Force Active AFRES = Air Force Reserve AFGUARD = Air National Guard USACE = U.S. Army Corps of Engineers	A code used to identify the Defense Component that has statutory reporting responsibility for the installation.
Lifecycle Cost Avoidance Type	New	ECA = Energy Cost Avoided CIA = Capital Investment Avoided OCA = Operations Cost Avoided	The type of annual cost savings/avoidance from energy conservation measure over the life span of the measure.
Location Directions Text	Existing		The narrative geographic description of the Location.
Measurement and Verification Method Type	New	A = Retrofit Isolation with Key Parameter Measurement B = Retrofit Isolation with All Parameter Measurement C = Utility Data Analysis D = Calibrated Computer Simulation	The type of method that is used to measure and verify the energy performance of a project.
Meter Identifier	New		A code that uniquely identifies an energy meter.
Meter Location	New		The location of a specific energy meter described in a Latitude Coordinate and Longitude Coordinate value that is expressed and stored as decimal degree values with five position decimal accuracy. When paired, Latitude Coordinate and Longitude Coordinate values must fall within 5 feet of the meter. The computational datum for latitude and longitude is the World Geodetic System 1984 (http://earth-info.nga.mil/GandGwgs84/index.html) with the valid range of values for Latitude Coordinates of -90 to 90 and Longitude Coordinates of -180 to 180".
Meter Location Description	New		A narrative that describes how one may find a specific energy meter.
Meter Type	New	ST = Standard AC = Advanced, Connected to automatic reading system AN = Advanced, Not connected to automatic reading system NA = None, Appropriate NN = None, Non-appropriate	A value that indicates whether a meter is of standard design or advanced design, and whether or not buildings that have no meter are "appropriate" buildings.
Ownership Type	New	DD = DoD Platform/DoD Producing Asset DO = DoD Platform/Other Entity Producing Asset OO = Other Entity Platform/Other Entity Producing Asset	A designator that indicates whether DoD or another entity owns an asset that produces (or physically supports an asset that produces) energy. Platform is either the land or facility that the energy benefit producing asset resides on, while the producing asset is the facility or equipment that produces the energy benefit.

Data Element Name	New or Existing Standard	Pick List Values[7]	Definition
Payback Period	New		The length of time needed to pay back the initial capital investment, usually expressed in years.
Peak Demand Type	New	RAR = Real Property Asset - RPA Peak Demand RAU = Real Property Asset - Utility Specified Peak Demand RSU = Real Property Site - Utility Specified Peak Demand RSS = Real Property Site - Site Peak Demand Use	The type of peak demand being measured that reflects the maximum power requirement for a real property asset or site during a specified peak time period.
Person Contact Information	New		Information needed to contact via email a person who fulfills an energy-related role.
Person First Name	Existing		The text of a person forename.
Person Identifier	Existing		The unique identifier for a person.
Person Last Name	Existing		The text of a person surname.
Person Role Code	New	BMR = Building Manager FEM = Facility Energy Manager ICM = Installation Commander IEM = Installation Energy Manager PWO = Public Works Officer PM = Project Manager UW = Utility Worker	A value that identifies an energy-related capacity that a given person fulfills.
Postal Code	Existing	see E^{2}IM	Postal code of an address.
Procurement Instrument Description Text	Existing		The text that provides an overall description of the Procurement Instrument (Reference line 17 of Synopsis in FAR 5.203 for detailed definition).
Procurement Instrument Identification Number	Existing		The structure that differentiates one procurement instrument from another.
Procurement Instrument Type Code	Existing		The symbol denoting the class or category of a procurement instrument as identified in DFARS 204.7003 (a) (3).
Project Description Text	Existing		Descriptive information from the respective project documents or legal/official instruments illustrating the basic characteristics of the project.
Project Detail Fund Code	Existing	see E^{2}IM	A code used to identify the actual fund type(s) used to fund the work called for in the real property project.
Project Detail Organization Code	Existing	see E^{2}IM	A code used to identify the organization or organizations funding the real property project.
Project Name	New		The text commonly used to refer to a specific project.

Data Element Name	New or Existing Standard	Pick List Values[7]	Definition
Project Number	Existing		A unique number assigned to a real property project. This serves as permanent identification of the project from planning through programming, funding, project execution, and reporting.
Project Status Code	New	PR = Proposed BU = Budgeted AP = Appropriated AW = Awarded UC = Under Construction CC = Construction Complete CT = Contract Closeout BO = Beneficial Occupancy DO = Decommissioned/Out of Service CA = Cancelled	A designator that identifies the current phase of a specific project within the overall project lifecycle.
Project Type Code	Existing (to include energy)	*Propose to add:* EE = Energy Efficiency EC = Energy Conservation REPR = Renewable Energy Production REPU = Renewable Energy Purchase WE = Water Efficiency	A code used to identify the type of project.
Real Property Site Unique Identifier	Existing		The unique identifier (UID) used to permanently identify a Site. This UID will be a Real Property Site Unique Identifier (RPSUID).
Real Property Unique Identifier	Existing		The real property unique identifier (RPUID) is a non-intelligent code used to permanently and uniquely identify a real property asset.
Renewable Energy Analysis Category	New	MC = Mission Compatibility GC = Geographic Compatibility EV = Economic Viability TP = Technical Practicability	The term that identifies the type of analysis conducted to determine the geographic, mission, technical, or economic viability of producing a specific type of renewable energy at a given location.
Renewable Energy Analysis Category Rating	New	R=Red A=Amber G=Green	The qualitative "stoplight" valuation of the viability of producing a specific type of renewable energy at a given location.
Renewable Energy Classification	New	N=New O=Old	A value that indicates whether a renewable energy project was initiated before January 1, 1999 ("old") or not ("new").
Renewable Energy Potential Amount	New		An estimate of the amount, in MMBtu, of the annual renewable energy potential at the installation by Energy Type.
RPA Command Claimant Code	Existing		A code used to identify the Service organization that has direct command authority over a real property asset.

Data Element Name	New or Existing Standard	Pick List Values[7]	Definition
RPA Interest Type Code	Existing	PDOM = Public Domain LEAS = Leasehold ONST = Owned by State or Local Government ONFG = Owned by Foreign Government GVPV = Government / Private Agreement EASE = Easement FEE = U.S. Government-owned Property OTHR = Other PRIV = Owned by Private Entity ENVL = Retained Interest for Environmental Issues ONFA = Owned by Another Federal Agency LESS = Lesser Interest as defined by a Legal Instrument	A code used to identify the type of interest that DoD holds in an asset.
RPA Name	Existing		The common identification or name which may be taken from legal documents regarding the real property asset or from other naming convention.
RPA Operational Status Code	Existing	CARE = Caretaker SEMI = Semi-active CLSD = Closed ACT = Active EXCS = Excess OUTG = Out-granted SURP = Surplus to Government DISP = Disposed TBA = To Be Acquired NONF = Non-functional	A code used to identify the current operational status of the real property asset. This includes consideration of the asset's capability to support the Service or tenant organizations' required missions.
RPA Predominant Current Use FAC Code	Existing	see E^{2}IM	The OSD FAC Code that represents the current use of the asset based on the largest quantity utilized for a single purpose.
RPA Total Unit of Measure Code	Existing	see E^{2}IM	The total unit of measure for the asset as defined by the DoD Facility Analysis Category (FAC) code.
RPA Total Unit of Measure Quantity	Existing		The numerical amount of the unit of measure (defined by the Military Service's CATCODE or by DOD FAC Code).
RPA Type Code	Existing	B = Building S = Structure LS = Linear Structure L = Land	A code used to identify the type of real property asset.
Savings to Investment Ratio (SIR)	New		A ratio of economic performance computed from a numerator of discounted energy and/or water savings, plus (less) savings (increases) in other operation-related costs, and a denominator of increased initial investment costs plus (less) increased (decreased) replacement costs, net of residual value (all in present-value terms), as compared with a base case.
Site Delivered/Source Energy Indicator	New	SD = Site Delivered Energy SO = Source Energy	A value that indicates whether an energy amount is expressed in terms of Site Delivered Energy or Source Energy, as defined by the Department of Energy.

Data Element Name	New or Existing Standard	Pick List Values[7]	Definition
Site Name	Existing		The phrase commonly used to refer to the site.
Site Operational Status Code	Existing	CARE = Caretaker SEMI = Semi-active CLSD = Closed ACT = Active EXCS = Excess OUTG = Out-granted SURP = Surplus to Government DISP = Disposed	A code used to identify the current operational status of the Site (e.g., Active, Closed).
Site Primary Indicator	Existing	Y = Yes N = No	The designator that identifies the primary Site of the Installation, i.e., the site on which an installation's command operations are located.
State or Country Primary Subdivision Code	Existing	see E^{2}IM	The code used to identify the primary subdivision of a country such as a state, the District of Columbia, or a possession in which the real property asset or organizational unit is located.
System Capacity	New		The useable capacity of a given installed equipment item.
System Manufacturer	New		The manufacturer of a given installed equipment item.
System Type	New	1 = Chiller 2 = HVAC 3 = Air handler 4 = Boiler 5 = Chilled Water 6 = Cooling Tower 7 = Walk-in refrigerator/freezer	The value that identifies the type of a given piece of installed equipment.

Data Element Name	New or Existing Standard	Pick List Values[7]	Definition
Technology Type	New	BPI1 = Boiler control, including new controls and retrofits to existing controls BPI2 = Replacement of existing boilers with high efficiency boilers BPI3 = Boiler decentralization BPI4 = Boiler Plant Modifications BPI5= Other Boiler Plant Improvements CPI1 = Chiller retrofits or replacements CPI2 = Chiller plant pumping, piping, and controls retrofits and replacements CPI3 = Other Chiller Plant Improvements BAS1 = Heating, Ventilating and Air Conditioning (HVAC) upgrade from pneumatics to Direct Digital Control BAS2 = Upgrade or replacement of existing EMCS systems BAS3 = EMCS Control BAS4 = Installation Control and Monitoring System BAS5 = Facility Control and Monitoring System BAS6 = Other Building Automation Systems/Energy Management Control Systems (EMCS) HVAC1 = Packaged air conditioning unit replacements HVAC2 = HVAC damper and controller repair or replacement HVAC3 = Window air conditioning replacement with high efficiency units HVAC4 = Cooling tower retrofits or replacements HVAC5 = Economizer installation HVAC6 = Fans and pump replacement or impeller trimming HVAC7 = Thermal energy storage HVAC8 = Variable air volume retrofit HVAC9 = HVAC HVAC10 = Energy Recovery Systems HVAC11 = Other Heating, Ventilating, and Air Conditioning LI1 = Interior and exterior lighting retrofits and replacements LI2 = Intelligent lighting controls LI3 = Occupancy sensors LI4 = Light Emitting Diode technologies LI5 = Daylighting LI6 = Spectrally enhanced lighting LI7 = Fiber optic lighting technologies LI8 = Other Lighting Systems BEM1 = Insulation installation BEM2 = Weatherization BEM3 = Window replacement BEM4 = Reflective solar window tinting BEM5 = Other Building Envelope Modifications CWHS1 = Piping insulation installation CWHS2 = Hot water heater repair and replacement CWHS3 = Steam trap repair and replacement CWHS4 = Repair or replacement of existing condensate return systems and installation of new condensate return systems CWHS5 = Steam and Condensate Systems CWHS6 = Other Chilled Water, Hot Water, and Steam Distribution Systems EMD1 = Motor replacement with high efficiency motors EMD2 = Variable speed motors or drives EMD3 = Other Electric Motors and Drives REFG1 = Replacement of ice/refrigeration equipment with high efficiency units REFG2 = Other Refrigeration DISG 1 = Cogeneration systems installation DISG 2 = Microturbines installation DISG 3 = Fuel cells installation DISG 3 = Electric Energy Systems DISG 4 = Other Distributed Generation RES1 = Photovoltaic system installation RES2 = Solar hot water system installation RES3 = Solar ventilation preheating system installation RES4 = Wind energy system installation RES5 = Passive solar heating installation RES6 = Landfill gas, waste water treatment plant digester gas, and	The type of technology that best describes the energy improvement.

Data Element Name	New or Existing Standard	Pick List Values[7]	Definition
		coalbed methane power plant installation RES7 = Wood waste and other organic waste stream heating or power plant installation RES8 = Replacement of air conditioning and heating units with ground coupled heat pump systems RES9 = Geothermal RES10 = Ground Source Heat Pump RES11 = Hydro Electric RES12 = Solar RES13 = Solar Thermal RES14 = Waste to Energy RES15 = Waste to Fuel RES16 = Ocean (OTEC) RES17 = Biofuels RES18 = Biogas RES19 = Hydro Kinetic RES20 = Other Renewable Energy Systems EUDS1 = Transformers installation EUDS2 = Power quality upgrades EUDS3 = Power factor correction EUDS4 = Gas distribution systems installation EUDS5 = Other Energy/Utility Distribution Systems WSCS1 = Low-flow faucets and showerheads WSCS2 = Low-flow plumbing equipment WSCS3 = Water efficient irrigation WSCS4 = On-site sewer treatment systems WSCS5 = Potable WSCS6 = Non Potable WSCS7 = Other Water and Sewer Conservation Systems EPRA1 = Thermal energy storage EPRA2 = Gas cooling EPRA3 = Other Electrical Peak Shaving/Load Shifting ECRA1 = Change to more favorable rate schedule ECRA2 = Lower energy cost supplier(s) (where applicable) ECRA3 = Energy service billing and meter auditing recommendations ECRA4 = Other Energy Cost Reduction Through Rate Adjustments ERPI1 = Production and/or manufacturing improvements ERPI2 = Recycling and other waste stream reductions ERPI3 = Industrial process improvement ERPI4 = Other Energy Related Process Improvements AMS1 = Metering APR1 = Replace air-cooled ice/refrigeration equipment APR2 = Replace refrigerators APR3 = De-lamp vending machines APR4 = Plug timers APR5 = Energy Star® products APR6 = Other Appliance/Plug-load reductions OTH1 = Other / Facility Energy Improvements	
Temperature Type	New	IT = Indoor Temperature OADB = Outdoor Ambient Dry Bulb Temperature OAWB = Outdoor Air Wet Bulb Temperature ADOA = Average Daily Outdoor Ambient Temperature SWT = Supply Water Temperature RWT = Return Water Temperature OAT = Outdoor Air Temperature WDT = Water Delta Temperature	A value that identifies the means of measuring the amount of heat in the air or other substances for various applications.
Time	New		The hour and minute that a given event occurred or is expected to occur.
Time Type	New	FDUE = Facility Daily Use End Time FDUS = Facility Daily Use Start Time EME = Energy Measurement End Time EMS = Energy Measurement Start Time	The information that the time represents.

Data Element Name	New or Existing Standard	Pick List Values[7]	Definition
Unique Item Identifier	Existing		The identifier that is a set of data elements that make an item globally unique.
Unit of Measure Code	Existing (to include energy)	*Propose to add:* FTQ = Thousand Cubic Feet TS = Thousand Square Feet STN = Short Ton KWH = Kilowatt Hour MWH = Megawatt Hour T6 = Thousand Gallons BZ = Million Btus FAH = Degrees Fahrenheit CEL = Degrees Celsius	A commonly understood acronym, abbreviation, or other character string that refers to a particular type of unit used to measure or quantify something.
Unit of Measure Role	New	1 = Temperature 2 = Energy 3 = Building Module 4 = Persons	The classification of an object that is measured.
Unit of Measure Value Quantity	Existing		The number of units in a given measurement or quantification.
Utility Provider Customer Account Number	New		The number assigned to a specific utility account.
Utility Provider Invoice Number	New		The number assigned to a specific invoice for a specific utility account.
Utility Provider Organization Name	New		The legal name of a utility service provider entity.
Utility Provider Rate Schedule Code	New	<Defined by Component>	The code that identifies a specific utility provider rate schedule.
Utility Provider Type	New	1 = Commodity 2 = Transportation 3 = Distribution	The type of service that the Utility Provider provides to the DoD.
Value Accuracy Type	New	AD = Actual Date ADA = Actual Dollar Amount APS = Actual Project Schedule AT = Actual Time ED = Estimated Date EDA = Estimated Dollar Amount EPS = Estimated Project Schedule ET = Estimated Time AEMA = Actual Energy Measurement Amount - allocated AECM = Actual Energy Measurement Amount - metered EEMC = Estimated Energy Measurement Amount - current FEMA = Forecasted Energy Measurement Amount TEMA = Targeted Energy Measurement Amount	A value that indicates whether the measurement, timeframe, or dollar amount is actual or estimated.
Workload Quantity	New		The total amount of work accomplished in a building by Workload Utilization Type.
Workload Utilization Type	New	1 = Hours 2 = Shifts 3 = Units of Output 4 = Customers/Persons Served 5 = Occupancy	A code that identifies characteristics of asset utilization useful in determining how much energy is consumed in a building.

Appendix H: Data Element Business Rules
This table lists business rules for data elements; they describe the constraints that apply to each data element.   This table does not include all data elements, only the ones that have defined business rules.

Data Element Name	Definition	Business Rules
Acquisition Mechanism	The type of execution mechanism for the energy conservation measure, to include renewable energy.	1) An Energy Conservation Measure may have multiple funding mechanisms. 2) When Acquisition Mechanism is selected, there must be a valid value for Energy Conservation Measure Fund Code. 3) Any Acquisition Mechanism that is for a third party financing vehicle must have a valid value for Duration of Acquisition Mechanism.
Address Street Direction Code	The code that stands for a directional portion of a street name. Examples of the direction in the street name that they represent are: N (North); NE (Northeast).	Address Street Direction Code must be acquired from the real property inventory system of record.
Address Street Name	The term commonly used to refer to the street of the address.	Address Street Name must be acquired from the real property inventory system of record.
Address Street Type Code	The code that stands for the type of street of the address.	Address Street Type Code must be acquired from the real property inventory system of record.
Asset Allocation Current Use FAC Code	An OSD-level designator that represents the current use of a specified portion of the real property asset.	1) An Asset Allocation Current Use FAC Code must be associated with a Real Property Unique Identifier. 2) Asset Allocation Current Use FAC Code must be acquired from the real property inventory system of record.
Asset Allocation Size Quantity	The quantity in terms of the associated unit of measure granted to the using organization associated with each assigned area use and user combination.	Asset Allocation Size Quantity must be acquired from the real property inventory system of record.
Asset Allocation Size Unit of Measure Code	The Unit of Measure Code used for the measurement of the assigned area size.	Asset Allocation Size Unit of Measure Code must be acquired from the real property inventory system of record.
Asset Allocation User Organization Code	A code used to identify the organization using a specific portion of a real property asset.	Asset Allocation User Organization Code must be acquired from the real property inventory system of record.
Asset Review Type Code	A code used to identify the type of asset review performed for the real property asset, such as appraisal, survey, inventory, functional certification.	1) Each Asset Review Type Code value must be associated with at least one Real Property Unique Identifier. 2) Asset Review Type Code must be acquired from the real property inventory system of record.
Building Module Identifier	The system-generated non-intelligent code used to uniquely and permanently identify a DoD building module.	1) Each Building Module Identifier must be associated with a Building Module Type and a Real Property Unique Identifier. 2) Building Module Identifier must be acquired from the real property inventory system of record.
Building Module Type	A designator that identifies the type of building module.	1) Each Building Module Type must be associated with a Building Module Identifier. 2) Building Module Type must be acquired from the real property inventory system of record.
Capital Improvement Reason Code	This is the reason the capital improvement was performed.	Each Capital Improvement Reason Code must be associated with a Real Property Unique Identifier.

Data Element Name	Definition	Business Rules
City Code	The code used to identify the city in which the real property asset or organizational unit is located or the city nearest to the asset. The nearest city shall be in the same county as the asset.	1) Each City Code must be associated with a Real Property Site Unique Identifier or a Real Property Unique Identifier. 2) City Code must be acquired from the real property inventory system of record.
Construction Material Code	The primary building material used to construct a given real property facility.	Construction Material Code must be acquired from the real property inventory system of record.
Construction Type Code	The code used to identify the type of construction for a given real property facility.	Construction Type Code must be acquired from the real property inventory system of record.
Conversion Factor Role	A value that identifies the information that a given conversion is intended to derive.	A Conversion Factor Role must be associated with a Conversion Factor.
Cooling Degree Days	An index that is defined as the difference between the average outside temperature for a day (24 hour period) and a given base temperature (typically 65 F). Weekly, monthly, or annual cooling degree days are the sum of the degree days during the respective time periods. CDD is a measure of the climate (outside temperature) related impacts on cooling energy requirements; the greater the number of CDD, all things being equal, the greater the cooling energy requirements for a facility.	1) If Cooling Degree Days is populated then the corresponding dates and date types of 'Cooling Degree Days Start Date' and 'Cooling Degree Days End Date' must also be populated. 2) Each Cooling Degree Days entry must be associated with a Country Code entry and a Postal Code entry.
Country Code	The code used to identify the country in which the real property asset or site is located.	Country Code must be acquired from the real property inventory system of record.
Date	The calendar day that an event occurred or is expected to occur.	When a Date is exchanged between systems, the date must be transmitted in XML format (YYYYMMDD).
Date Type	The information that the date represents.	1) When the Date Type equals 'RPA Placed in Service Date', 'Capital Improvement Placed in Service Date', or 'Asset Review Date', the information must be acquired from the real property inventory system of record. 2) When the Date Type equals 'Energy Training Date' the information will be the actual training date or the last day of the fiscal year in which the training occurred. 3) A Date Type must be identified for any Date.
Dollar Amount Type	The purpose of the dollar amount.	When the Dollar Amount Type equals Project Detail Fund Code Cost Amount, the information must be provided by a project system.
Efficiency Standard Achievement Value	A value that indicates the level of a specific efficiency standard a facility has achieved. These will be specific as they relate to the Efficiency Standard Target.	1) An Efficiency Standard Achievement Value must be associated with a Real Property Unique Identifier 2) An Efficiency Standard Achievement Value must be associated with an Efficiency Standard Target.
Efficiency Standard Target	The target value to be attained in order to achieve the efficiency standard.	1) A real property asset may have one or more Efficiency Standard Targets at a given time. 2) An Efficiency Standard Target must be associated with a Real Property Unique Identifier.
Energy Certification	The specific type of energy certification held by an individual.	Energy Certification must be associated with a Person First Name and Person Last Name.

Data Element Name	Definition	Business Rules
Energy Conservation Measure Category	The type of energy conservation measure as identified by the US Department of Energy, per EISA 2007 Section 432.	Each Energy Conservation Measure Identifier must be associated with exactly one Energy Conservation Measure Category.
Energy Conservation Measure Estimated Life	The number of years that an energy conservation measure is expected to be in operation after it is placed in service.	Each Energy Conservation Measure Estimated Life must be associated with an Energy Conservation Measure Identifier.
Energy Conservation Measure Fund Code	The designator that identifies the funding source of an Energy Conservation Measure.	Each Energy Conservation Measure Fund Code must be associated with an Energy Conservation Measure Identifier.
Energy Conservation Measure Identifier	A unique identifier that distinguishes one energy conservation measure from another.	1) When an Energy Conservation Measure is being implemented, an Energy Conservation Measure Identifier must be associated with exactly one Project Number. 2) There must be exactly one Technology Type associated with a given Energy Conservation Measure Identifier.
Energy Conservation Measure Status Code	A designator that identifies the current phase of an Energy Conservation Measure within the overall lifecycle.	Each Energy Conservation Measure Identifier must be associated with only one Energy Conservation Measure Status Code at a time.
Energy Cost Type	A value that indicates whether an energy cost amount is expended or avoided.	Each Energy Cost Type must be related to a Dollar Amount, a Dollar Amount Type of Energy Cost Amount and a Value Accuracy Type of Energy Cost Accuracy.
Energy Performance Type Code	A code that identifies the kind of energy efficiency to which a specific energy rating pertains, e.g., fuel use, luminosity, etc.	An Energy Performance Type Code must be associated with a System Type.
Energy Performance Value	The nameplate performance rating or in-service performance rating available for the equipment or system.	An Energy Performance Value must be associated with an Energy Performance Type Code.
Energy Reimbursement Percentage	The percent value of energy costs that are reimbursed by a Cost Sharing Partner.	Energy Reimbursement Percentage must be associated with an Energy Type.
Energy Reporting Category	A value that identifies the category(ies) of energy reporting to which a given facility is subject.	A real property facility may have many Energy Reporting Categories simultaneously.
Energy Reporting Category Reason	A brief description of why a facility is subject to a specific reporting category.	Energy Reporting Category Reason must be associated with an Energy Reporting Category.
Energy Reporting Organization Code	A code used to identify the organization reporting energy measures.	A real property asset may have multiple Energy Reporting Organization Codes.
Energy Role	A value that identifies the activity of interest for energy.	Each Energy Role must be associated with an Energy Type.
Energy Training Credit Hours	The number of educational credits received for energy training that is usually based on the number of classroom hours per week.	Energy Training Credit Hours must be associated with a Person Role Code.
Energy Type	A term that identifies the form, substance, or source of power produced for use or consumed in a building or structure.	Each Energy Type must be associated with an Energy Role.

Data Element Name	Definition	Business Rules
Facility Number	A locally developed asset identification that is normally visible, either painted or by signage on the exterior of a real property facility, used for visual identification of the facility.	Facility Number must be acquired from the real property inventory system of record.
Facility Physical Quality Rate	A percentage used to depict the physical capability of existing facilities as measured by a condition index. The Facility Physical Rate represents a facilities restoration and modernization requirement but does not represent a facilities sustainment or new footprint requirement. The Facility Physical Quality Rate estimates will not contain any annual sustainment tasks or "deferred sustainment" costs, although they may contain restoration costs caused by deferred sustainment. The Facility Physical Quality Rate will also not represent costs to build out capacity deficits. Facility Physical Quality Rate will be in terms of the estimated cost to restore and modernize facilities to full-up "90-100 percent rating" status.	Facility Physical Quality Rate must be acquired from the real property inventory system of record.
Heating Degree Days	An index that is defined as the difference between a given base temperature (typically 65 F) and the average outside temperature for a day (24 hour period). Weekly, monthly, or annual heating degree days are the sum of the degree days during the respective time periods. HDD is a measure of the climate (outside temperature) related impacts on heating energy requirements; the greater the number of HDD, all things being equal, the greater the heating energy requirements for a facility.	1) If Heating Degree Days is populated then the corresponding dates and date types of 'Heating Degree Days Start Date' and 'Heating Degree Days End Date' must also be populated. 2) Each Heating Degree Days entry must be associated with a Country Code entry and a Postal Code entry.
Installation Code	The code assigned by the Military Service (includes Washington Headquarters Services) or Agency used to identify the site or group of sites that make up an installation. This represents the official identifying code for a Service's installation.	Installation Code must be acquired from the real property inventory system of record.
Installation Name	The official identification or name applied to the entire installation, as used by the DoD and the Services to recognize the installation.	Installation Name must be acquired from the real property inventory system of record.
Installation Operational Status Code	The code that stands for the operational status of an installation (e.g., active, closed).	Installation Operational Status Code must be acquired from the real property inventory system of record.
Installation Reporting Component Code	A code used to identify the Defense Component that has statutory reporting responsibility for the installation.	Installation Reporting Component Code must be acquired from the real property inventory system of record.
Lifecycle Cost Avoidance Type	The type of annual cost savings/avoidance from an energy conservation measure over the life span of the measure.	Each Lifecycle Cost Avoidance Type must be associated with an Energy Conservation Measure Identifier.
Location Directions Text	The narrative geographic description of the Location.	1) Locations Directions Text must be acquired from the real property inventory system of record. 2) Location Directions Text is required when a physical street address is unavailable and should be of sufficient descriptiveness to enable the local real property/asset management office to locate the asset.

Data Element Name	Definition	Business Rules
Measurement and Verification Method Type	The type of method that is used to measure and verify the energy performance of a project.	A Measurement and Verification Method Type must be associated with a Project Number.
Meter Identifier	A code that uniquely identifies an energy meter.	Each Meter Identifier must be associated with at least one Real Property Unique Identifier and exactly one Meter Type.
Meter Location	The location of a specific energy meter described in a Latitude Coordinate and Longitude Coordinate value that is expressed and stored as decimal degree values with five position decimal accuracy. When paired, Latitude Coordinate and Longitude Coordinate values must fall within 5 feet of the meter. The computational datum for latitude and longitude is the World Geodetic System 1984 (http://earth-info.nga.mil/GandGwgs84/index.html) with the valid range of values for Latitude Coordinates of -90 to 90 and Longitude Coordinates of -180 to 180".	1) A Meter Location must be associated with a Meter Identifier. 2) The latitude and longitude coordinates in a meter location should be maintained to an accuracy of at least four decimal places.
Meter Location Description	A narrative that describes how one may find a specific energy meter.	A Meter Location Description must be associated with only one Meter Identifier.
Meter Type	A value that indicates whether a meter is of standard design or advanced design, and whether or not buildings that have no meter are "appropriate" buildings.	Each Meter Type must be associated with an Energy Type.
Ownership Type	A designator that indicates whether DoD or another entity owns an asset that produces (or physically supports an asset that produces) energy. Platform is either the land or facility that the energy benefit producing asset resides on, while the producing asset is the facility or equipment that produces the energy benefit.	Purchase or production of renewable energy must be associated with an Ownership Type.
Payback Period	The length of time needed to pay back the initial capital investment, usually expressed in years.	Each Payback Period must be associated with an Energy Conservation Measure Identifier.
Peak Demand Type	The type of peak demand being measured that reflects the maximum power requirement for a real property asset or site during a specified peak time period.	1) Peak Demand Type must be used with Energy Type, Unit of Measure Value Quantity, Unit of Measure Category Code, Date and Date Type of 'Energy Measurement End Date' and 'Energy Measurement Start Date.' 2) A Peak Demand Type of 'Real Property Asset - Utility Defined Peak Demand' will measure the quantity of the maximum power requirement for a building based on the tariff defined time of the utility provider.
Person Contact Information	Information needed to contact via email a person who fulfills an energy-related role.	Person Contact Information will be associated with only one Person Identifier.
Person First Name	The text of a person forename.	Each Person First Name will be associated with at least one Person Identifier.
Person Identifier	The unique identifier for a person.	1) Each person of interest to the DoD shall be identified uniquely across the enterprise. 2) Each Person Identifier will be associated with Person Contact Information, Person First Name, Person Last Name, and Person Role Code. 3) Each person Identifier associated with a Person Role Code of "FEM" will also be associated with the RPUID(s) associated with each asset for which the role is assigned.

Data Element Name	Definition	Business Rules
Person Last Name	The text of a person surname.	Each Person Last Name will be associated with at least one Person Identifier.
Person Role Code	A value that identifies an energy-related capacity that a given person fulfills.	1) Each Person Identifier will be associated with at least one Person Role Code. 2) Energy Training Credit Hours must be associated with a Person Role Code.
Postal Code	Postal code of an address.	Postal Code must be acquired from the real property inventory system of record.
Procurement Instrument Description Text	The text that provides an overall description of the Procurement Instrument (Reference line 17 of Synopsis in FAR 5.203 for detailed definition).	Each Procurement Instrument Description Text must be associated with a Procurement Instrument Identification Number.
Procurement Instrument Identification Number	The structure that differentiates one procurement instrument from another.	Each Procurement Instrument Identification Number must be associated with exactly one Procurement Instrument Type Code.
Procurement Instrument Type Code	The symbol denoting the class or category of a procurement instrument as identified in DFARS 204.7003 (a) (3).	Each Procurement Instrument Type Code must be associated with a Procurement Instrument Identification Number.
Project Description Text	Descriptive information from the respective project documents or legal/official instruments illustrating the basic characteristics of the project.	The Project Description Text will be a summary of the information reflected in Box 10 of the DD1391.
Project Detail Fund Code	A code used to identify the actual fund type(s) used to fund the work called for in the real property project.	Each project must have at least one Project Detail Fund Code.
Project Detail Organization Code	A code used to identify the organization or organizations funding the real property project.	Each project must have at least one Project Detail Organization Code.
Project Name	The text commonly used to refer to a specific project.	1) The Project Name will be the Project Title reflected in Box 4 of the DD1391. 2) Each Project Name will be associated with exactly one Project Number.
Project Number	A unique number assigned to a real property project. This serves as permanent identification of the project from planning through programming, funding, project execution, and reporting.	Each Project Number will be associated with a Project Status Code, a Date and a Date Type of 'Project Status Date', at least one Technology Type, and at least one Project Type Code.
Project Status Code	A designator that identifies the current phase of a specific project within the overall project lifecycle.	Each Project Status Code will be associated with a Date and Date Type of Project Status Date.
Project Type Code	A code used to identify the type of project.	Each Project Number must be associated with at least one Project Type Code.
Real Property Site Unique Identifier	The unique identifier (UID) used to permanently identify a Site. This UID will be a Real Property Site Unique Identifier (RPSUID).	Real Property Site Unique Identifier must be acquired from the real property inventory system of record.
Real Property Unique Identifier	The real property unique identifier (RPUID) is a non-intelligent code used to permanently and uniquely identify a real property asset.	Real Property Unique Identifier must be acquired from the real property inventory system of record.
Renewable Energy Analysis Category	The term that identifies the type of analysis conducted to determine the geographic, mission, technical, or economic viability of producing a specific type of renewable energy at a given location.	1) Each value for Renewable Energy Analysis Category must be associated with a Real Property Site Unique Identifier. 2) Each value for Renewable Energy Analysis Category must be associated with a Renewable Energy Analysis Category Rating.

Data Element Name	Definition	Business Rules
Renewable Energy Analysis Category Rating	The qualitative "stoplight" valuation of the viability of producing a specific type of renewable energy at a given location.	1) Each Renewable Energy Analysis Category Rating must be associated with a Real Property Site Unique Identifier. 2) Each value for Renewable Energy Analysis Category Rating must be associated with a Renewable Energy Analysis Category.
Renewable Energy Classification	A value that indicates whether a renewable energy project was initiated before January 1, 1999 ("old") or not ("new").	1) Any renewable energy project that began operation prior to January 1, 1999 must have a Renewable Energy Classification of "old". 2) Any renewable energy project that began operation after January 1, 1999 must have a Renewable Energy Classification of "new".
Renewable Energy Potential Amount	An estimate of the amount, in MMBtu, of the annual renewable energy potential at a given location by Energy Type.	1) Each Renewable Energy Potential Amount must be associated with a Real Property Site Unique Identifier. 2) Each value for Renewable Energy Potential Amount must be associated with a Renewable Energy Analysis Category and a Renewable Energy Analysis Category Rating.
RPA Command Claimant Code	A code used to identify the Service organization that has direct command authority over a real property asset.	RPA Command Claimant Code must be acquired from the real property inventory system of record.
RPA Interest Type Code	A code used to identify the type of interest that DoD holds in an asset.	RPA Interest Type Code must be acquired from the real property inventory system of record.
RPA Name	The common identification or name which may be taken from legal documents regarding the real property asset or from other naming convention.	RPA Name must be acquired from the real property inventory system of record.
RPA Operational Status Code	A code used to identify the current operational status of the real property asset. This includes consideration of the asset's capability to support the Service or tenant organizations' required missions.	RPA Operational Status Code must be acquired from the real property inventory system of record.
RPA Predominant Current Use FAC Code	The OSD FAC Code that represents the current use of the asset based on the largest quantity utilized for a single purpose.	RPA Predominant Current Use FAC Code must be acquired from the real property inventory system of record.
RPA Total Unit of Measure Code	The total unit of measure for the asset as defined by the DoD Facility Analysis Category (FAC) code.	RPA Total Unit of Measure Code must be acquired from the real property inventory system of record.
RPA Total Unit of Measure Quantity	The numerical amount of the unit of measure (defined by the Military Service's CATCODE or by DOD FAC Code).	RPA Total Unit of Measure Quantity must be acquired from the real property inventory system of record.
RPA Type Code	A code used to identify the type of real property asset.	RPA Type Code must be acquired from the real property inventory system of record.
Site Delivered/Source Energy Indicator	A value that indicates whether an energy amount is expressed in terms of Site Delivered Energy or Source Energy, as defined by the Department of Energy.	The amount of source energy in a given energy amount must be greater than the site-delivered portion of that energy amount.
Site Name	The phrase commonly used to refer to the site.	Site Name must be acquired from the real property inventory system of record.
Site Operational Status Code	A code used to identify the current operational status of the Site (e.g., Active, Closed).	Site Operational Status Code must be acquired from the real property inventory system of record.
Site Primary Indicator	The designator that identifies the primary Site of the Installation. The site on which installation command is located.	Site Primary Indicator must be acquired from the real property inventory system of record.
State or Country Primary	The code used to identify the primary subdivision of a country such as a state, the District of Columbia,	State or Country Primary Subdivision Code must be acquired from the real property inventory system of record.

Data Element Name	Definition	Business Rules
Subdivision Code	or a possession in which the real property asset or organizational unit is located.	
System Capacity	The useable capacity of a given installed equipment item.	A System Capacity must be associated with exactly one System Type.
System Manufacturer	The manufacturer of a given installed equipment item.	A System Manufacturer must be associated with a System Type.
System Type	The value that identifies the type of a given piece of installed equipment.	A System Type must be associated with at least one Unique Item Identifier.
Technology Type	The type of technology that best describes the energy improvement.	1) There must be at least one Technology Type associated with a given Project Number. 2) An Energy Conservation Measure Identifier must be associated with exactly one Technology Type.
Temperature Type	A value that identifies the means of measuring the amount of heat in the air or other substances for various applications.	Each Temperature Type must be associated with a Unit of Measure Value Quantity.
Time	The hour and minute that a given event occurred or is expected to occur.	Each instance of Time must be associated with a Time Type.
Time Type	The information that the time represents.	1) Each instance of a Time Type of 'Facility Daily Use End Time' or 'Facility Daily Use Start Time' must be associated with a Real Property Unique Identifier. 2) Each instance of a Time Type of 'Energy Measurement End Time' or 'Energy Measurement Start Time' must be associated with an Energy Type and an Energy Role.
Unit of Measure Code	A commonly understood acronym, abbreviation, or other character string that refers to a particular type of unit used to measure or quantify something.	A Unit of Measure Code must be associated with a Unit of Measure Value Quantity.
Unit of Measure Role	The classification of an object that is measured.	No more than one Unit of Measure Role may be associated with a given Unit of Measure Value Quantity.
Unit of Measure Value Quantity	The number of units in a given measurement or quantification.	A Unit of Measure Value Quantity must be associated with a Unit of Measure Code.
Utility Provider Customer Account Number	The number assigned to a specific utility account.	1) Each Utility Provider Customer Account Number must be associated with a Utility Provider Organization Name. 2) Each Utility Provider Customer Account Number must be associated with at least one Real Property Site Unique Identifier.
Utility Provider Invoice Number	The number assigned to a specific invoice for a specific utility account.	Each Utility Provider Invoice Number must be associated with exactly one Utility Provider Customer Account Number.
Utility Provider Organization Name	The legal name of a utility service provider.	Each Utility Provider Organization Name must be associated with at least one Energy Type.
Utility Provider Rate Schedule Code	The code that identifies a specific utility provider rate schedule.	1) Each Utility Provider Rate Schedule Code must be associated with a Utility Provider Customer Account Number. 2) Each Utility Provider Rate Schedule Code must be associated with Date and Date Type that indicate 'Utility Provider Rate Schedule Effective Start Date' and 'Utility Provider Rate Schedule Effective End Date.'
Value Accuracy Type	A value that indicates whether the measurement OR the dollar amount are actual or estimated.	1) When a facility does not have its own meter and energy consumption is estimated by means of an allocation methodology, the Value Accuracy Type pick list value must be "Energy Measurement Actual - allocated". 2) Each Energy Cost Type and Dollar Amount Type equal to 'Energy Cost Amount' must have an associated Value Accuracy Type.

Data Element Name	Definition	Business Rules
Workload Quantity	The total amount of work accomplished in a building by Workload Utilization Type.	Each Workload Quantity must be associated with a Workload Utilization Type and a Real Property Unique Identifier.
Workload Utilization Type	A code that identifies characteristics of asset utilization useful in determining how much energy is consumed in a building.	Each Workload Utilization Type must be associated with a Workload Quantity.

Appendix I: Selected Pick List Values with Definitions

This table lists selected pick list values with their definitions for generic energy data elements that could be used for multiple purposes (e.g. time type). This table does not include all data element pick list values, only the pick list values for a select group.

Date Element Name	Pick List Value	Pick List Value Definition
Date Type	Asset Review Date	The calendar date that the asset review was completed.
Date Type	Capital Improvement Placed in Service Date	The calendar date the improvement to a real property facility is available for use by DoD. The date on which a leasehold improvement (capital improvement) is made to a leased facility. On this date, the government assumes liability and the warranties begin for the capital improvement to which they have received title. Also includes date of leaseholds.
Date Type	Cooling Degree Days End Date	The calendar date that a cooling degree day application is intended to end.
Date Type	Cooling Degree Days Start Date	The calendar date that a cooling degree day application is intended to begin.
Date Type	Document Date	The calendar date that the document was issued.
Date Type	Efficiency Standard Achievement Date	The calendar date on which the efficiency standard was achieved for a facility.
Date Type	Energy Certification Expiration Date	The calendar date that a specific energy certification expires.
Date Type	Energy Conservation Measure Status Date	The calendar date on which a status of an Energy Conservation Measure becomes effective.
Date Type	Energy Measurement End Date	The calendar date when an energy measurement, including costs, stops or is expected to stop.
Date Type	Energy Measurement Start Date	The calendar date that an energy measurement began or is expected to begin.
Date Type	Energy Reporting Category Start Date	The calendar date on which a requirement to report an asset under a specific energy reporting category begins.
Date Type	Energy Training Date	The calendar date on which energy training was completed.
Date Type	Facility Built Date	The calendar date on which the original construction was completed for a facility.
Date Type	Heating Degree Days End Date	The calendar date that a heating degree day application is intended to end.
Date Type	Heating Degree Days Start Date	The calendar date that a heating degree day application is intended to start.
Date Type	Meter Installation Date	The calendar date that an energy/water meter is installed.
Date Type	Project Status Date	The calendar date on which a status of an energy project becomes effective.
Date Type	REC Expiration Date	The calendar date on which a renewable energy certification expires.

Date Element Name	Pick List Value	Pick List Value Definition
Date Type	RPA Placed in Service Date	The calendar date that the real property asset is available for use by DoD. On this date, the government assumes liability and the warranties begin for the asset to which DoD receives legal interest. For all acquisitions governed by UFC-300-XX, this date reflects the date an interim Transfer and Acceptance of Military Real Property document (DD Form 1354) is signed, title for assets listed on the acceptance form is transferred, and the punch list of additional work and certificate of occupancy by local authorities are attached to the acceptance form.
Date Type	System Manufactured Date	The month and year that a given installed equipment item was manufactured.
Date Type	Utility Provider Rate Schedule Effective End Date	The calendar date that a rate schedule expires.
Date Type	Utility Provider Rate Schedule Effective Start Date	The calendar date that a rate schedule becomes effective.
Dollar Amount Type	Appropriation Amount	The dollar value of the money set aside (as by a legislature) for a specific purpose.
Dollar Amount Type	Energy Conservation Measure Estimated Cost Amount	The estimated cost for implementing an energy conservation measure.
Dollar Amount Type	Energy Cost Amount	The amount of potential or actual expenditure or saving associated with the purchase of energy (to include RECs) expressed in US dollars.
Dollar Amount Type	Energy Training Cost Amount	The funds expended to train personnel for energy management purposes.
Dollar Amount Type	Obligation Amount	The dollar value in which an entity pledges its full faith and credit to repay its debt.
Dollar Amount Type	Planned Amount	The amount of money that management is intending to use to fund the execution of energy work.
Dollar Amount Type	Procurement Instrument Amount	The total dollar value of the contract that includes all line items and contract modifications.
Dollar Amount Type	Project Detail Fund Code Cost Amount	The actual amount of funds expended by fund code in U.S. dollars and cents.
Dollar Amount Type	Project Estimated Cost Amount	The estimated cost for the execution of a project.
Measurement and Verification Method Type	A = Retrofit Isolation with Key Parameter Measurement	This option is based on a combination of measured and estimated factors when variations in factors are not expected. Measurements are spot or short-term and are taken at the component or system level, both in the baseline and post-installation cases. Measurements should include the key performance parameter(s) which define the energy use of the ECM. Estimated factors are supported by historical or manufacturer's data. Savings are determined by means of engineering calculations of baseline and post-installation energy use based on measured and estimated values.
Measurement and Verification Method Type	B = Retrofit Isolation with All Parameter Measurement	This option is based on periodic or continuous measurements of energy use taken at the component or system level when variations in factors are expected. Energy or proxies of energy use are measured continuously. Periodic spot or short-term measurements may suffice when variations in factors are not expected. Savings are determined from analysis of baseline and reporting period energy use or proxies of energy use.

Date Element Name	Pick List Value	Pick List Value Definition
Measurement and Verification Method Type	C = Utility Data Analysis	This option is based on long-term, continuous, whole-building utility meter, facility level, or sub-meter energy (or water) data. Savings are determined from analysis of baseline and reporting period energy data. Typically, regression analysis is conducted to correlate with and adjust energy use to independent variables such as weather, but simple comparisons may also be used.
Measurement and Verification Method Type	D = Calibrated Computer Simulation	Computer simulation software is used to model energy performance of a whole-facility (or sub-facility). Models must be calibrated with actual hourly or monthly billing data from the facility. Implementation of simulation modeling requires engineering expertise. Inputs to the model include facility characteristics; performance specifications of new and existing equipment or systems; engineering estimates, spot-, short-term, or long-term measurements of system components; and long-term whole-building utility meter data. After the model has been calibrated, savings are determined by comparing a simulation of the baseline with either a simulation of the performance period or actual utility data.
Renewable Energy Analysis Category	Mission Compatibility	The degree to which a renewable energy project is compatible with the military mission, operational activities, explosive arcs, other required standoffs or clear areas and has the signed concurrence of the current training/operational officer and Force/Site Commander.
Renewable Energy Analysis Category	Geographic Compatibility	The degree to which a renewable energy project is compatible with existing and future master plans, topography, cultural resources, environmental resources and hazards and has been cleared by the DoD Siting office, if required.
Renewable Energy Analysis Category	Economic Viability	The degree to which a renewable energy project is viable, considering Life Cycle Cost Analysis, Savings-to-Investment Ratio, simple payback, and/or any other required cost analysis threshold(s).
Renewable Energy Analysis Category	Technical Practicability	The potential for a renewable energy source measured in MW based on the technical capacity to support all required subsystems, energy source, and/or any stock requirements required to generate energy from the renewable energy source. This capacity is independent of impact from mission, economics or geographic compatibility and is based solely on the technical capability to generate energy from the available renewable resource.
Renewable Energy Analysis Category Rating	Red	Is Incompatible with the Renewable Energy Analysis Category.
Renewable Energy Analysis Category Rating	Amber	Constraints exist in the Renewable Energy Analysis Category but can be mitigated.
Renewable Energy Analysis Category Rating	Green	Is compatible with the Renewable Energy Analysis Category with little to no constraint.
Time Type	Facility Daily Use End Time	The time at which typical daily use of a facility stops or is expected to stop.
Time Type	Facility Daily Use Start Time	The time at which typical daily use of a facility begins or is expected to begin.
Time Type	Energy Measurement End Time	The time of day on a specific calendar day when an energy measurement, including costs, stops or is expected to stop.

Date Element Name	Pick List Value	Pick List Value Definition
Time Type	Energy Measurement Start Time	The time of day on a specific calendar day when an energy measurement, including costs, stops or is expected to begin.
Value Accuracy Type	Energy measurement actual - metered	Indicates that the energy measurement value is based actual metered information.
Value Accuracy Type	Energy measurement actual - allocated	Indicates that the energy measurement is based on an allocation of actual information.
Value Accuracy Type	Actual dollar amount	Indicates that the dollar amount is an actual amount.
Value Accuracy Type	Estimated dollar amount	Indicates that the dollar amount is an estimated amount.
Value Accuracy Type	Energy measurement estimated current	Indicates an energy measurement value is the estimated total for the current fiscal period.
Value Accuracy Type	Energy measurement forecasted	Indicates an energy measurement value is a forecasted amount for a future fiscal period.
Value Accuracy Type	Energy measurement targeted	Indicates an energy measurement value is the targeted amount for period of time.
Value Accuracy Type	Actual Project Schedule	Indicates when a project schedule is actual
Value Accuracy Type	Estimated Project Schedule	Indicates when a project schedule is estimated.
Value Accuracy Type	Actual Date	Indicates when a calendar date is actual.
Value Accuracy Type	Estimated Date	Indicates when a calendar date is estimated.
Value Accuracy Type	Actual time	Indicates when a point in time is actual.
Value Accuracy Type	Estimated time	Indicates when a point in time is estimated.

Appendix J: AEMR Energy Types

Energy Type	
ARO = Asphalt and Road Oil	LUBS = Lubricants
AVG = Aviation Gasoline	MOTG = Motor gasoline
BD10 = Biodiesel - B100	MSWF = Municipal solid waste - Fossil-derived
BD2 = Biodiesel - B20	NPTH = Naphtha (<401 degrees F)
BD1 = Biodiesel - B10	NAG = Natural Gas
BD5 = Biodiesel - B5	NAVS = Navy Special
BGCM = Biogas - Captured Methane	NPW = Non-potable Water
BGLG = Biogas - LandGEM	OTHO = Other oil (>401 degrees F)
BGWW = Biogas - WWTP	PENT = Pentanes Plus
BM = Biomass	PETF = Petrochemical Feedstock
BMAB = Biomass - Agricultural byproducts	PCOK = Petroleum Coke
BMP = Biomass - Peat	PWT = Potable Water
BMSB = Biomass - Solid Byproducts	PPG = Propane
WUD = Biomass - Wood and wood residuals	PLN = Propylene
BSGF = Blast furnace gas - Fossil-derived	RECNS = REC - No Energy Type Specified
BUT = Butane	RECBM = REC - Biomass
BUTY = Butylene	RECGO = REC - Geothermal
CHW = Chilled Water	RECH = REC - Hydro - falling water
CHP = CHP	RECLG = REC - Landfill Gas
CNG = CNG	RECSE = REC - Solar Electric
CNG24 = CNG 2400	RECWE = REC - Waste to Energy
CNG30 = CNG 3000	RECW = REC - Wind
CNG36 = CNG 3600	RWT = Reclaimed Water
ANC = Coal - Anthracite	RAF = Rendered Animal Fat
COL = Coal - Bituminous	GLC = Renewable - Electric - Geothermal
COK = Coal - Coke	HYD = Renewable - Electric-Hydro - falling water
CL = Coal - Lignite	REOTH = Renewable - Electric-Ocean thermal
CMC = Coal - Mixed (Commercial sector)	REOT = Renewable - Electric-Ocean Tidal
CME = Coal - Mixed (Electric Power sector)	PHO = Renewable - Electric-Solar Electric
CMIC = Coal - Mixed (Industrial coking)	REWE = Renewable - Electric-Waste to Energy
CMI = Coal - Mixed (Industrial sector)	WND = Renewable - Electric - Wind
CSUB = Coal - Sub bituminous	REO = Renewable - Electric - Other
COGF = Coke Oven Gas - Fossil-derived	RNEB = Renewable - Non-electric-Biomass
CRUD = Crude oil	GEO = Renewable - Non-electric-Geothermal (GSHP)
FSD1 = Distillate Fuel Oil No. 1	RNEH = Renewable - Non-electric-Hydro - falling water
FSD2 = Distillate Fuel Oil No. 2	RNELG = Renewable - Non-electric-Landfill Gas
FSD4 = Distillate Fuel Oil No. 4	RNEOT = Renewable - Non-electric-Ocean thermal
E85 = E-85	RNESD = Renewable - Non-electric-Solar Day lighting
ELC = Electricity	SOL = Renewable - Non-electric-Solar Thermal
ETH = Ethane	RDF = Renewable - Non-electric-Waste to Energy
E100 = Ethanol - E100	RNEW = Renewable - Non-electric-Wind
ETL = Ethylene	RPWOT = Renewable - Potable Water - Ocean thermal
NATG = Natural Gasoline	ROTH = Renewable - Other
HGO = Heavy gas oils	FSR1 = Residual Fuel Oil No. 5
SHW = Hot Water - purchased	FSR2 = Residual Fuel Oil No. 6
ILW = Irrigation/Landscape Water	SN = Special Naphtha
IBT = Isobutene	SHW = Steam - purchased
IBTL = Isobutylene	SG = Still Gas
K = Kerosene	TFD = Tires - Fossil-derived
KJF = Kerosene-type Jet Fuel	UOILS = Unfinished Oils
PPG = Liquefied Petroleum Gas (LPG)	VEGO = Vegetable Oil
	WW = Wastewater

Appendix K: EEIM Capability Objectives – Organization Roles and Source Requirements

This appendix illustrates possible levels of aggregation of information and use in various organizations in the DoD Enterprise. Additionally, it illustrates the requirements that the objective supports.

	EEIM Capability Objective Information		Organization Role(s) C = Collect; U = Use; UA = Use in Aggregate				Source Requirement					
Obj #	Objective	Data Element Mapping	Installation	Regional/ Command HQ	Component HQ	OSD DoE GAO OMB	AEMR	NDAA	EPA PM	EISA/ EO/ EPAct	OSD ECIP	Mgt Info
1.1.1	Ability to identify real property asset, type, location, condition, size, age (year built), owner, reimbursable users, non-reimbursable users, interest type, operational status and construction type and material.	Address Street Direction Code Address Street Name Address Street Number Address Street Type Code Asset Allocation Current Use FAC Code Asset Allocation Size Unit of Measure Code Asset Allocation Size Quantity Asset Allocation User Organization Code City Code Construction Material Code Construction Type Code Country Code Date Date Type Energy Reimbursement Percentage Facility Number Facility Physical Quality Rate Geospatial Feature Location Directions Text Postal Code Real Property Unique Identifier RPA Command Claimant Code RPA Interest Type Code RPA Name RPA Operational Status Code RPA Predominant Current Use FAC Code RPA Total Unit of Measure Code RPA Total Unit of Measure Quantity RPA Type Code State or Country Primary Subdivision Code	C,U	U	UA Aggregate by: Installation Asset Type Location Facility age Size Condition *<Special scenarios may need to go down to asset level>*	UA Aggregate by: Service Asset Type Location Facility age Size Interest Type			x	x		x
1.1.3	Ability to identify (by type) the number of meters planned to be installed by reporting entity and by year, and the planned cost amount.	Dollar Amount Dollar Amount Type Energy Conservation Measure Identifier Energy Conservation Measure Category Energy Reporting Organization Code Energy Type Meter Type Value Accuracy Type	C,U	UA Aggregate by: Installation Type	C: Central Metering Program (Total Amount & Number) UA Aggregate by: Region Installation Type	UA Aggregate by: Service Type	x					

	EEIM Capability Objective Information		Organization Role(s) C = Collect; U = Use; UA = Use in Aggregate				Source Requirement					
Obj #	Objective	Data Element Mapping	Installation	Regional/ Command HQ	Component HQ	OSD DoE GAO OMB	AEMR	NDAA	EPA PM	EISA/ EO/ EPAct	OSD ECIP	Mgt Info
1.1.4	Ability to identify real property asset and site metering types and locations.	Energy Type Meter Identifier Meter Location Meter Location Description Meter Type Real Property Site Unique Identifier Real Property Unique Identifier	C,U	UA Aggregate by: Installation Type	UA Aggregate by: Installation Type	UA Aggregate by: Service Type	x					
1.1.5	Ability to identify temperature (UOM, UOM Code) and degree days by site.	City Code Climate Zone Code Cooling Degree Days Country Code Date Date Type Geospatial Feature Heating Degree Days Installation Code Installation Name Postal Code Real Property Site Unique Identifier Site Name Site Operational Status Code State or Country Primary Subdivision Code Temperature Type Unit of Measure CodeUnit of Measure Role Unit of Measure Value Quantity	C,U	UAAggregate by: Installation	UAAggregate by: Installation							x
1.1.6	Ability to identify the reporting inclusion classifications (Goal, Excluded, Covered, Not-Covered) at the constructed asset level.	Energy Reporting Category Energy Reporting Category Reason Energy Reporting Organization Code Real Property Unique Identifier RPA Operational Status Code	C,U	UA Aggregate by: Asset Type Installation	UA Aggregate by: Asset Type Installation	UA Aggregate by: Service Asset Type (if exclusion in baseline changes)	x			x		
1.1.7	Ability to identify data associated with energy consuming equipment and systems by system type, age, capacity, manufacturer, and energy performance rating.	Date Date Type Energy Performance Type Code Energy Performance Value Facility Number Real Property Unique Identifier RPA Operational Status Code System Capacity System Manufacturer System Type Unique Item Identifier	C,U	UA Aggregate by: Type of System Average Age At Service Level (supports investment justifications/ cost to replace)	UA Aggregate by: Type of System Average Age At Service Level (supports investment justifications/cost to replace)				x			x

	EEIM Capability Objective Information			Organization Role(s) C = Collect; U = Use; UA = Use in Aggregate				Source Requirement					
Obj #	Objective	Data Element Mapping	*Installation*	*Regional/ Command HQ*	*Component HQ*	*OSD DoE GAO OMB*	AEMR	NDAA	EPA PM	EISA/ EO/ EPAct	OSD ECIP	Mgt Info
1.1.8	Ability to identify facility hours of operation and workload.	Facility Number Facility Use Days Per Week Real Property Unique Identifier RPA Operational Status Code Time Time Type Workload Utilization Type Workload Quantity	C,U	U	U				x			x
1.1.9	Ability to determine energy consumption and calculate intensity by type at the site level (from utility bill) and at constructed asset level and/or at the asset allocation FAC code level.	Asset Allocation Current Use FAC Code Asset Allocation Size Unit of Measure Code Asset Allocation Size Quantity Asset Allocation User Organization Code Conversion Factor Conversion Factor Role Date Date Type Energy Reimbursement Percentage Energy Role Energy Type Facility Number Federal Support Indicator Federal Support Percentage Real Property Unique Identifier RPA Operational Status Code RPA Predominant Current Use FAC Code RPA Total Unit of Measure Code RPA Total Unit of Measure Quantity RPA Type Code Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Utility Provider Customer Account Number Utility Provider Invoice Number Utility Provider Organization Name Utility Provider Type Value Accuracy Type	C,U	UA Aggregate by:Installation Asset	UA Aggregate by:InstallationAsset	UA Aggregate by:Installation and Service	x					x

EEIM Capability Objective Information			Organization Role(s) C = Collect; U = Use; UA = Use in Aggregate				Source Requirement					
Obj #	Objective	Data Element Mapping	Installation	Regional/ Command HQ	Component HQ	OSD DoE GAO OMB	AEMR	NDAA	EPA PM	EISA/ EO/ EPAct	OSD ECIP	Mgt Info
1.1.10	Ability to compare energy consumption by type to historical data at the constructed asset level and/or at the asset allocation FAC code level.	Asset Allocation Current Use FAC Code Asset Allocation Size Unit of Measure Code Asset Allocation Size Quantity Asset Allocation User Organization Code Conversion Factor Conversion Factor Role Date Date Type Energy Reimbursement Percentage Energy Role Energy Type Facility Number Federal Support Indicator Federal Support Percentage Real Property Unique Identifier RPA Operational Status Code RPA Predominant Current Use FAC Code RPA Total Unit of Measure Code RPA Total Unit of Measure Quantity RPA Type Code Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type	C,U	UA Aggregate by: Installation Asset Type Asset	UA Aggregate by: Installation Asset Type Asset	UA Aggregate by: Service Asset Type Asset (for specific projects to measure performance)	x					x

	EEIM Capability Objective Information		Organization Role(s) C = Collect; U = Use; UA = Use in Aggregate				Source Requirement					
Obj #	Objective	Data Element Mapping	Installation	Regional/ Command HQ	Component HQ	OSD DoE GAO OMB	AEMR	NDAA	EPA PM	EISA/ EO/ EPAct	OSD ECIP	Mgt Info
1.1.11	Ability to compare all types of energy consumption by real property FAC code and/or by asset allocation FAC code and associated size.	Asset Allocation Current Use FAC Code Asset Allocation Size Unit of Measure Code Asset Allocation Size Quantity Asset Allocation User Organization Code Conversion Factor Conversion Factor Role Date Date Type Energy Measurement Value Accuracy Energy Reimbursement Percentage Energy Role Energy Type Facility Number Federal Support Indicator Federal Support Percentage Real Property Unique Identifier RPA Operational Status Code RPA Predominant Current Use FAC Code RPA Total Unit of Measure Code RPA Total Unit of Measure Quantity RPA Type Code Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity	C,U	UA Aggregate by:Installation Asset TypeAsset	UA Aggregate by:InstallationAsset TypeAsset	UA Aggregate by:ServiceAsset type and size	x					x

EEIM Capability Objective Information			Organization Role(s) C = Collect; U = Use; UA = Use in Aggregate				Source Requirement					
Obj #	Objective	Data Element Mapping	*Installation*	*Regional/ Command HQ*	*Component HQ*	*OSD DoE GAO OMB*	AEMR	NDAA	EPA PM	EISA/ EO/ EPAct	OSD ECIP	Mgt Info
1.1.12	Ability to track energy consumption by location and climate zone.	City Code Climate Zone Code Cooling Degree Days Conversion Factor Conversion Factor Role Country Code Date Date Type Energy Role Energy Type Geospatial Feature Heating Degree Days Installation Code Installation Name Postal Code Real Property Site Unique Identifier Site Name Site Operational Status Code State or Country Primary Subdivision Code Temperature Type Time Time Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type	C	U	U	U			x			x
1.1.13	Ability to measure the amount of energy consumed in a constructed asset by meter.	Date Date Type Energy Role Energy Type Meter Identifier Meter Location Meter Location Description Meter Type Real Property Unique Identifier RPA Operational Status Code Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type	C,U									x

EEIM Capability Objective Information			Organization Role(s) C = Collect; U = Use; UA = Use in Aggregate				Source Requirement					
Obj #	Objective	Data Element Mapping	*Installation*	*Regional/ Command HQ*	*Component HQ*	*OSD DoE GAO OMB*	AEMR	NDAA	EPA PM	EISA/ EO/ EPAct	OSD ECIP	Mgt Info
1.1.14	Ability to derive Source energy amount from a Site-Delivered amount of energy.	Conversion Factor Conversion Factor Role Energy Role Energy Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity	C,U	UA: Aggregate by:Installation	UA: Aggregate by:ServiceInstallation	UA Aggregate by:InstallationServiceDoD	x			x		
1.1.15	Ability to establish internal targets and monitor energy consumption against those targets at the component/installation/constructed asset level.	Conversion Factor Conversion Factor Role Date Date Type Energy Reporting Organization Code Energy Role Energy Type Installation Code Installation Name Meter Identifier Meter Location Meter Location Description Meter Type Real Property Unique Identifier RPA Operational Status Code RPA Type Code Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type	C,U: Installation Asset	C, UA: Aggregate by: Installation	C, UA: Aggregate by: Service Region/Command HQ	C, UA Aggregate by: DoD Service	x					
1.1.16	Ability to report performance against external energy consumption targets at the Component and/or installation level.	Conversion Factor Conversion Factor Role Date Date Type Energy Reporting Category Energy Reporting Category Reason Energy Reporting Organization Code Energy Role Energy Type Installation Code Installation Name Real Property Unique Identifier RPA Operational Status Code Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type	C,U	C, UA: Aggregate by: Installation	C, UA: Aggregate by: Service Region/Command HQ	C, UA Aggregate by: DoD Service	x					

EEIM Capability Objective Information			Organization Role(s) C = Collect; U = Use; UA = Use in Aggregate				Source Requirement					
Obj #	Objective	Data Element Mapping	Installation	Regional/ Command HQ	Component HQ	OSD DoE GAO OMB	AEMR	NDAA	EPA PM	EISA/ EO/ EPAct	OSD ECIP	Mgt Info
1.1.17	Ability to forecast facility energy consumption based on a) historical consumption in that facility, b) climate history data for the facilitylocation from an authoritative source, or c) consumption data from similar facilities (e.g., same building use, size, climate zone, age, etc.)	Capital Improvement Reason Code Climate Zone Code Cooling Degree Days Construction Material Code Construction Type Code Date Date Type Energy Role Energy Type Facility Number Facility Physical Quality Rate Heating Degree Days Postal Code Real Property Site Unique Identifier Real Property Unique Identifier RPA Operational Status Code RPA Predominant Current Use FAC Code RPA Total Unit of Measure Code RPA Total Unit of Measure Quantity RPA Type Code Temperature Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type	C,U	C, UAAggregate by:Region/Command HQInstallation	C, UA Aggregate by:ServiceRegion/Command HQInstallation		x			x		x

EEIM Capability Objective Information			Organization Role(s) C = Collect; U = Use; UA = Use in Aggregate				Source Requirement					
Obj #	Objective	Data Element Mapping	*Installation*	*Regional/ Command HQ*	*Component HQ*	*OSD DoE GAO OMB*	AEMR	NDAA	EPA PM	EISA/ EO/ EPAct	OSD ECIP	Mgt Info
1.1.18	Ability to determine actual and/or projected total utility costs for an energy provider(s) by energy type and by location (site and installation).	City Code Country Code Date Date Type Dollar Amount Dollar Amount Type Energy Cost Type Energy Reimbursement Percentage Energy Role Energy Type Geospatial Feature Installation Code Installation Name Postal Code Real Property Site Unique Identifier Site Name Site Operational Status Code State or Country Primary Subdivision Code Utility Provider Customer Account Number Utility Provider Invoice Number Utility Provider Organization Name Utility Provider Rate Schedule Code Utility Provider Type Value Accuracy Type	C,U	UA Aggregate by: Region/Comm and Installation	UA Aggregate by: Service Region/Command	UA Aggregate by: Service	x					x
1.1.19	Ability to account for reimbursable vs. non-reimbursable utility costs at the constructed asset level.	Asset Allocation Current Use FAC Code Asset Allocation Size Quantity Asset Allocation Size Unit of Measure Code Asset Allocation User Organization Code Dollar Amount Dollar Amount Type Energy Cost Type Energy Reimbursement Percentage Energy Role Energy Type Facility Number Federal Support Indicator Federal Support Percentage Real Property Unique Identifier RPA Operational Status Code RPA Predominant Current Use FAC Code RPA Total Unit of Measure Code RPA Total Unit of Measure Quantity RPA Type Code Value Accuracy Type	C,U	UA Aggregate by:Region/Co mmandInstall ation	UA Aggregate by:Service							x

EEIM Capability Objective Information			Organization Role(s) C = Collect; U = Use; UA = Use in Aggregate				Source Requirement					
Obj #	Objective	Data Element Mapping	Installation	Regional/ Command HQ	Component HQ	OSD DoE GAO OMB	AEMR	NDAA	EPA PM	EISA/ EO/ EPAct	OSD ECIP	Mgt Info
1.1.20	Ability to identify peak demand and hours at the site level (from the utility bill) and the constructed asset level (from meters).	Date Date Type Energy Role Energy Type Meter Identifier Meter Type Peak Demand Type Real Property Site Unique Identifier Real Property Unique Identifier RPA Operational Status Code Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Utility Provider Customer Account Number Utility Provider Invoice Number Utility Provider Organization Name Utility Provider Rate Schedule Code Utility Provider Type	C,U	U Aggregate by: Installation	U Aggregate by: Installation							x
1.1.21	Ability to access utility provider information (vendor identification, tariff information).	Date Date Type Energy Role Energy Type Procurement Instrument Description Text Procurement Instrument Identification Number Real Property Site Unique Identifier Site Name Utility Provider Customer Account Number Utility Provider Organization Name Utility Provider Rate Schedule Code Utility Provider Type	C,U	U Installation	U Installation (Sites serviced by each vendor)	UA Aggregate by: vendor (Sites serviced by each vendor across DoD)						x
1.1.22	Ability to identify reporting entity for energy consumption, production or purchase.	Energy Reporting Organization Code Energy Role Energy Type	C,U	U Asset	U Asset	UA (listing of assets not being claimed or double reported)	x			x		

EEIM Capability Objective Information			Organization Role(s) C = Collect; U = Use; UA = Use in Aggregate				Source Requirement					
Obj #	Objective	Data Element Mapping	Installation	Regional/ Command HQ	Component HQ	OSD DoE GAO OMB	AEMR	NDAA	EPA PM	EISA/ EO/ EPAct	OSD ECIP	Mgt Info
1.1.23	Ability to generate a load profile based on advanced meter information at the real property asset or site level.	Date Date Type Energy Role Energy Type Meter Identifier Meter Type Real Property Site Unique Identifier Real Property Unique Identifier RPA Operational Status Code Time Time Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity										x
1.2.1	Ability to identify the standard(s) that a facility is measured against.	Efficiency Standard Target Real Property Unique Identifier RPA Operational Status Code	C,U	U	U	UA Aggregate by: Component	x		x			x
1.2.2	Ability to determine the level of achievement of the facility relative to the standard(s).	Date Date Type Efficiency Standard Achievement Value Efficiency Standard Target Real Property Unique Identifier RPA Operational Status Code	C,U	U	U	UA Aggregate by: Component	x		x			x
1.2.3	Ability to identify inclusion in the FEMP High Performance Buildings Database http://eere.building green.com/	Date Date Type Efficiency Standard Achievement Value Efficiency Standard Target RPA Type Code Real Property Unique Identifier RPA Operational Status Code	C,U	UA	UA	UA Aggregate by: Component			x	x		

EEIM Capability Objective Information			Organization Role(s) C = Collect; U = Use; UA = Use in Aggregate				Source Requirement					
Obj #	Objective	Data Element Mapping	Installation	Regional/ Command HQ	Component HQ	OSD DoE GAO OMB	AEMR	NDAA	EPA PM	EISA/ EO/ EPAct	OSD ECIP	Mgt Info
1.2.4	Ability to benchmark and track benchmarking results for a constructed asset, including asset size (area), type, consumption, and EnergyStar or similar rating information.	Asset Review Type Date Date Type Efficiency Standard Achievement Value Efficiency Standard Target Energy Role EnergyStar Building Type Energy Type Real Property Unique Identifier RPA Operational Status Code RPA Total Unit of Measure Code RPA Total Unit of Measure Quantity RPA Type Code Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type	C,U	U	U	U			x	x		
1.2.5	Ability to track completed energy evaluations at the constructed asset level (commissioning and audit).	Date Date Type Asset Review Type Code Real Property Unique Identifier RPA Operational Status Code	C,U	UA Aggregate by: Installation	UA Aggregate by: Installation	UA Aggregate by: Component				x		
1.2.6	Ability to identify all ECMs associated with each real property facility (RPUID) and to aggregate and report all ECMs by location (RPSUID and Installation Code).	Energy Conservation Measure Identifier Energy Conservation Measure Category Installation Code Installation Name Real Property Site Unique Identifier Real Property Unique Identifier RPA Operational Status Code Site Name	C,U	UA Aggregate by: Installation	UA Aggregate by: Installation	UA Aggregate by: Installation				x		
1.2.8	Ability to provide information needed to assess the contribution of the ECM to the site or facility energy security.	Energy Conservation Measure Identifier Energy Conservation Measure Category Installation Code Installation Name Real Property Site Unique Identifier Real Property Unique Identifier Site Name	C,U	U	U	U Use at:Project/Facili ty Level					x	x

EEIM Capability Objective Information			Organization Role(s) C = Collect; U = Use; UA = Use in Aggregate				Source Requirement					
Obj #	Objective	Data Element Mapping	Installation	Regional/ Command HQ	Component HQ	OSD DoE GAO OMB	AEMR	NDAA	EPA PM	EISA/ EO/ EPAct	OSD ECIP	Mgt Info
1.2.9	Ability to track status of each ECM at the constructed asset level.	Date Date Type Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Real Property Unique Identifier	C,U							x		
1.2.11	Ability to identify the estimated cost of ECMs at the constructed asset level.	Dollar Amount Dollar Amount Type Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Status Date Energy Conservation Measure Category Real Property Unique Identifier Value Accuracy Type	C,U							x		
1.2.12	Ability to identify and track the type of acquisition (example, in-house, ESPC, etc.) associated with each ECM being or having been implemented.	Acquisition Mechanism Date Date Type Dollar Amount Dollar Amount Type Duration of Acquisition Mechanism Energy Conservation Measure Fund Code Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Procurement Instrument Description Text Procurement Instrument Identification Number Procurement Instrument Type Code Value Accuracy Type	C,U	UA Aggregate by: Installation Project	UA Aggregate by: Installation Project	UA Aggregate by: Acquisition Method by Component	x			x		

EEIM Capability Objective Information			Organization Role(s) C = Collect; U = Use; UA = Use in Aggregate				Source Requirement						
Obj #	Objective	Data Element Mapping	Installation	Regional/ Command HQ	Component HQ	OSD DoE GAO OMB	AEMR	NDAA	EPA PM	EISA/ EO/ EPAct	OSD ECIP	Mgt Info
1.2.13	Ability to identify estimated annual and life-cycle energy consumption and cost avoidance by energy type and cost avoidance type (Btus and O&M), based on historical consumption data or benchmarking associated with each ECM at the constructed asset level.	Date Date Type Dollar Amount Dollar Amount Type Energy Conservation Measure Estimated Life Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Energy Cost Type Energy Role Energy Type Lifecycle Cost Avoidance Type Real Property Unique Identifier Technology Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type	C,U	UA	UA	UA Aggregate by: Component Project (ECIP & 3rd Party Financing) Energy Type				x		
1.2.14	Ability to identify Savings-to-Investment Ratio (SIR) and Pay Back Period -- based on historical consumption data or benchmarking -- associated with ECMs.	Date Date Type Dollar Amount Dollar Amount Type Energy Conservation Measure Estimated Life Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Energy Cost Type Lifecycle Cost Avoidance Type Payback Period Real Property Unique Identifier RPA Operational Status Code Savings to Investment Ratio Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type	C,U	UA	UA	UA Aggregate by:Component Project (ECIP & 3rd Party Financing)				x		
1.2.15	Ability to identify the measurement and verification date and methodology for each implemented ECM.	Date Date Type Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Measurement and Verification Method Type	C,U	U	U	U (CTS Requirement at the ECM level)				x		

EEIM Capability Objective Information			Organization Role(s) C = Collect; U = Use; UA = Use in Aggregate				Source Requirement					
Obj #	Objective	Data Element Mapping	*Installation*	*Regional/ Command HQ*	*Component HQ*	*OSD DoE GAO OMB*	AEMR	NDAA	EPA PM	EISA/ EO/ EPAct	OSD ECIP	Mgt Info
1.2.16	Ability to measure and verify actual energy savings/cost avoidance generated by each implemented ECM.	Date Date Type Dollar Amount Dollar Amount Type Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Energy Cost Type Energy Role Energy Type Measurement and Verification Method Type Real Property Unique Identifier Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type	C,U	UA	UA	UA Aggregate by: Component Project				x		
1.2.17	Ability to identify project name, number, type, technology type, status, actual and estimated status date implementing each ECM associated with each RPUID.	Date Date Type Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Measurement and Verification Method Type Project Description Text Procurement Instrument Identification Number Project Name Project Number Project Status Code Project Type Code Real Property Unique Identifier Technology Type Value Accuracy Type	C,U	UA	UA	UA Aggregate by: Component Project				x	x	

EEIM Capability Objective Information			Organization Role(s) C = Collect; U = Use; UA = Use in Aggregate				Source Requirement					
Obj #	Objective	Data Element Mapping	Installation	Regional/ Command HQ	Component HQ	OSD DoE GAO OMB	AEMR	NDAA	EPA PM	EISA/ EO/ EPAct	OSD ECIP	Mgt Info
1.2.18	Ability to track project estimated and/or actual total cost amount and project status to date, fund code(s), funding organization(s), appropriation/funding year, award date(s) (*Project Status and Date*), programmed/appropriation amount, and obligation amount(s).	Date Date Type Dollar Amount Dollar Amount Type Energy Cost Type Project Detail Fund Code Project Detail Fund Organization Code Project Name Project Number Project Status Code Project Type Code Real Property Unique Identifier Value Accuracy Type	C,U	UA	UA	UA Aggregate by:Component Project				x	x	
1.2.19	Ability to upload and link documents (e.g., DD1391) to project information.	Date Date Type Document Type Code Project Name Project Number Project Status Code Project Technology Type Project Type Code	C,U	UA	UA	UA Aggregate by: Component Project					x	
1.2.20	Ability to identify and obtain contact, certification/accreditation and training information for the energy managers.	Date Date Type Energy Certification Energy Training Type Installation Code Installation Name Person Contact Information Person First Name Person Identifier Person Last Name Person Role Code	C,U	UA	UA	UA Aggregate by: Component				x		x

EEIM Capability Objective Information			Organization Role(s) C = Collect; U = Use; UA = Use in Aggregate				Source Requirement					
Obj #	Objective	Data Element Mapping	*Installation*	*Regional/ Command HQ*	*Component HQ*	*OSD DoE GAO OMB*	AEMR	NDAA	EPA PM	EISA/ EO/ EPAct	OSD ECIP	Mgt Info
1.2.21	Ability to quantify persons obtaining energy training each year, and the associated cost at a given installation/site, to include both energy managers and other personnel.	Date Date Type Dollar Amount Dollar Amount Type Energy Training Credit Hours Energy Training Type Installation Code Installation Name Person Identifier Person Role Real Property Site Unique Identifier Site Name Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type	C,U	UA Aggregate by: Installation	UA Aggregate by: Installation	UA Aggregate by: Component	x					x
2.1.2	Ability to identify each renewable project by energy type and location.	Address Street Direction Code Address Street Name Address Street Number Address Street Type Code City Code Country Code Energy Role Energy Type Geospatial Feature Installation Code Installation Name Location Directions Text Postal Code Project Description Text Project Name Project Number Project Type Real Property Site Unique Identifier Real Property Unique Identifier RPA Operational Status Code Renewable Energy Classification Site Name State or Country Primary Subdivision Code Technology Type	C,U	U	U	UAAggregate by:Component Project (Special Projects)	x	x				x

EEIM Capability Objective Information			Organization Role(s) C = Collect; U = Use; UA = Use in Aggregate				Source Requirement					
Obj #	Objective	Data Element Mapping	Installation	Regional/ Command HQ	Component HQ	OSD DoE GAO OMB	AEMR	NDAA	EPA PM	EISA/ EO/ EPAct	OSD ECIP	Mgt Info
2.1.3	Ability to link renewable energy project to the renewable energy producing asset and the DoD platform asset.	Date Date Type Ownership Type Project Name Project Number Project Status Code Project Type Code Renewable Energy Classification Technology Type Unique Item Identifier Value Accuracy Type	C,U								x	x
2.1.4	Ability to identify RE project name, number, type, status and technology type.	Date Date Type Measurement and Verification Method Type Procurement Instrument Identification Number Project Name Project Number Project Status Code Project Type Code Renewable Energy Classification Technology Type Value Accuracy Type	C,U	U	U	UA Aggregate by: Component Project	x	x				x
2.1.5	Ability to identify and track the acquisition mechanism (example, in-house, ESPC, etc.) associated with each RE project at the ECM level.	Acquisition Mechanism Date Date Type Dollar Amount Dollar Amount Type Duration of Acquisition Mechanism Energy Conservation Measure Fund Code Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Procurement Instrument Description Text Procurement Instrument Identification Number Procurement Instrument Type Code Project Number Value Accuracy Type	C,U	U	U	UA Aggregate by: Component Acquisition Method	x	x				

EEIM Capability Objective Information			Organization Role(s) C = Collect; U = Use; UA = Use in Aggregate				Source Requirement					
Obj #	Objective	Data Element Mapping	Installation	Regional/ Command HQ	Component HQ	OSD DoE GAO OMB	AEMR	NDAA	EPA PM	EISA/ EO/ EPAct	OSD ECIP	Mgt Info
2.1.6	Ability to identify RE project's Ownership Type (DoD Platform/DoD Producing Asset, DoD Platform/Other Entity Producing Asset, Other Entity Platform/Other Entity Producing Asset)	Ownership Type Project Description Text Project Name Project Number	C,U	U	U	UA Aggregate by:Component Project	x					
2.1.7	Ability to identify renewable projects that supply energy to DoD that is not transmitted by or contributing to a commercial electrical grid.	Energy Role Energy Type Project Name Project Number Project Type Technology Type	C,U	U	U	UA Aggregate by: Project		x				x
2.1.8	Ability to track RE project estimated and/or actual total cost amount, fund code(s), fund organization(s), appropriation/funding year, award date(s) (Project Status and Date), programmed/appropriation amount(s), and obligation amount(s).	Date Date Type Dollar Amount Dollar Amount Type Measurement and Verification Method Type Project Detail Fund Code Project Detail Fund Organization Code Project Name Project Number Project Status Code Project Type Code Real Property Unique Identifier Renewable Energy Classification Value Accuracy Type	C,U	UA	UA	UA Aggregate by: Project	x	x			x	

	EEIM Capability Objective Information			Organization Role(s) C = Collect; U = Use; UA = Use in Aggregate				Source Requirement					
Obj #	Objective	Data Element Mapping	Installation	Regional/ Command HQ	Component HQ	OSD DoE GAO OMB	AEMR	NDAA	EPA PM	EISA/ EO/ EPAct	OSD ECIP	Mgt Info
2.1.9	Ability to measure unit of renewable energy consumed from each RE project by time period and location (site) and climatic conditions.	Climate Zone Code Cooling Degree Days Date Date Type Energy Conservation Measure Identifier Energy Role Energy Type Heating Degree Days Postal Code Project Name Project Number Project Type Real Property Site Unique Identifier Renewable Energy Classification Site Name Technology Type Temperature Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type	C,U	UA	UA	UA Aggregate by: Project Component Location						x
2.1.10	Ability to measure units of renewable energy actually produced from each RE project by time period, location (site), and climatic conditions.	Climate Zone Code Cooling Degree Days Date Date Type Energy Role Energy Type Heating Degree Days Postal Code Project Name Project Number Project Type Real Property Site Unique Identifier Renewable Energy Classification Site Name Technology Type Temperature Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type	C,U	UA	UA	UA Aggregate by:ProjectComponentSite	x	x		x		

EEIM Capability Objective Information			Organization Role(s) C = Collect; U = Use; UA = Use in Aggregate				Source Requirement					
Obj #	Objective	Data Element Mapping	Installation	Regional/ Command HQ	Component HQ	OSD DoE GAO OMB	AEMR	NDAA	EPA PM	EISA/ EO/ EPAct	OSD ECIP	Mgt Info
2.1.11	Ability to determine estimated units of renewable energy to be produced from each RE project by time period, location (site), and climatic conditions.	Address Street Direction Code Address Street Name Address Street Number Address Street Type Code City Code Climate Zone Code Cooling Degree Days Date Date Type Country Code Energy Role Energy Type Geospatial Feature Heating Degree Days Installation Code Installation Name Location Directions Text Postal Code Project Name Project Number Project Type Real Property Site Unique Identifier Real Property Unique Identifier Renewable Energy Classification Site Name Site Operational Status Code State or Country Primary Subdivision Code Technology Type Temperature Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type	C,U	UA	UA	UA Aggregate by: Project Component Site	x	x		x		

EEIM Capability Objective Information			Organization Role(s) C = Collect; U = Use; UA = Use in Aggregate				Source Requirement					
Obj #	Objective	Data Element Mapping	Installation	Regional/ Command HQ	Component HQ	OSD DoE GAO OMB	AEMR	NDAA	EPA PM	EISA/ EO/ EPAct	OSD ECIP	Mgt Info
2.1.12	Ability to measure performance of RE project relative to estimated performance.	Date Date Type Energy Role Energy Type Project Name Project Number Project Status Code Project Type Real Property Site Unique Identifier Real Property Unique Identifier Site Name Technology Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type	C,U	UA	UA	UA Aggregate by:ProjectComponentSite	x	x		x		
2.1.13	Ability to account for Renewable Energy Certificates (RECs) retained from each renewable energy project produced on DoD controlled land.	Date Date Type Energy Reporting Organization Code Energy Role Energy Type Ownership Type Project Name Project Number Project Status Code Project Technology Type Project Type Real Property Site Unique Identifier Real Property Unique Identifier Site Name Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type	C,U	U	U	U Aggregate by: Project Component DoD	x	x				
2.1.14	Ability to identify renewable energy producing asset and associated DoD platform asset.	Real Property Unique Identifier RPA Predominant Current Use FAC Code Unique Item Identifier										

EEIM Capability Objective Information			Organization Role(s) C = Collect; U = Use; UA = Use in Aggregate				Source Requirement					
Obj #	Objective	Data Element Mapping	Installation	Regional/ Command HQ	Component HQ	OSD DoE GAO OMB	AEMR	NDAA	EPA PM	EISA/ EO/ EPAct	OSD ECIP	Mgt Info
2.1.15	Ability to account for all renewable energy that is produced on a DoD platform but not consumed by DoD, by location.	City Code Date Date Type Energy Reporting Organization Code Energy Role Energy Type Ownership Type Postal Code Project Number Project Status Code Project Technology Type Project Type Real Property Unique Identifier State or Country Primary Subdivision Code Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type										x
2.1.16	Ability to determine the feasibility and impact of potential renewable energy projects by technology type on an installation's mission requirements.	Energy Role Energy Type Installation Code Installation Name Real Property Site Unique Identifier Renewable Energy Analysis Category Renewable Energy Analysis Rating Site Name Value Accuracy Type										x
2.1.17	Ability to estimate the amount of yearly renewable energy potential at each installation by technology type.	Renewable Energy Potential Amount Energy Role Energy Type Installation Code Installation Name Real Property Site Unique Identifier Site Name Value Accuracy Type										x

EEIM Capability Objective Information			Organization Role(s) C = Collect; U = Use; UA = Use in Aggregate				Source Requirement					
Obj #	Objective	Data Element Mapping	Installation	Regional/ Command HQ	Component HQ	OSD DoE GAO OMB	AEMR	NDAA	EPA PM	EISA/ EO/ EPAct	OSD ECIP	Mgt Info
2.1.18	Ability to determine the difference between the amount of renewable energy produced by DoD (Scope 1) and the amount purchased by DoD (Scope 2) during a specific period of time.	Conversion Factor Conversion Factor Role Date Date Type Energy Role Energy Type Ownership Type Project Name Project Number Project Type Real Property Site Unique identifier Real Property Unique Identifier Site Name Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Value Accuracy Type					x					
2.2.1	Ability to account for each type, units and cost of renewable energy purchased.	Date Date Type Dollar Amount Dollar Amount Type Energy Cost Type Energy Reporting Organization Code Energy Role Energy Type Installation Code Installation Name Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Utility Provider Customer Account Number Utility Provider Organization Name Utility Provider Type Value Accuracy Type	C,U	UA	UA	UA Aggregate by: Component	x	x				

EEIM Capability Objective Information			Organization Role(s) C = Collect; U = Use; UA = Use in Aggregate				Source Requirement					
Obj #	Objective	Data Element Mapping	Installation	Regional/ Command HQ	Component HQ	OSD DoE GAO OMB	AEMR	NDAA	EPA PM	EISA/ EO/ EPAct	OSD ECIP	Mgt Info
2.2.2	Ability to identify the production location (energy role, postal code) and consumption location for purchased renewable energy.	City Code Country Code Energy Role Energy Type Geospatial Feature Postal Code Procurement Instrument Identification Number Real Property Site Unique Identifier Renewable Energy Classification Site Name State or Country Primary Subdivision Code Utility Provider Customer Account Number Utility Provider Organization Name Utility Provider Type	C,U	UA	UA	UA Aggregate by: Project	x					
2.2.3	Ability to account for the type, units and total cost of RECs purchased by each DoD Component.	Date Date Type Dollar Amount Dollar Amount Type Energy Cost Type Energy Role Energy Type Installation Code Installation Name Procurement Instrument Identification Number Procurement Instrument Type Real Property Site Unique Identifier Unit of Measure Code Unit of Measure Role Unit of Measure Value Accuracy Utility Provider Customer Account Number Utility Provider Organization Name Utility Provider Type Value Accuracy Type	C,U	U	U	U	x	x				

EEIM Capability Objective Information			Organization Role(s) C = Collect; U = Use; UA = Use in Aggregate				Source Requirement					
Obj #	Objective	Data Element Mapping	Installation	Regional/ Command HQ	Component HQ	OSD DoE GAO OMB	AEMR	NDAA	EPA PM	EISA/ EO/ EPAct	OSD ECIP	Mgt Info
2.2.4	Ability to forecast each type, units and cost of renewable energy *planned to be* purchased.	Date Date Type Dollar Amount Dollar Amount Type Energy Role Energy Type Installation Code Installation Name Real Property Site Unique Identifier Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Utility Provider Customer Account Number Utility Provider Organization Name Utility Provider Type Value Accuracy Type	C,U	UA	UA	UA Aggregate by: Component	x			x		
2.2.5	Ability to forecast each type, units and cost of RECs *planned to be* purchased.	Date Date Type Dollar Amount Dollar Amount Type Energy Role Energy Type Installation Code Installation Name Real Property Site Unique Identifier Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Utility Provider Customer Account Number Utility Provider Organization Name Utility Provider Type Value Accuracy Type	C,U	UA	UA	UA Aggregate by: Component	x			x		

Appendix L: Phasing of Capabilities

This appendix illustrates the implementation phasing of the EEIM capabilities in the DoD Enterprise.

Phase	Capability	Processes and Procedures	EEIM Data Elements	Systems/Technology	Advanced Analytics	Policy	EEIM 'To-Be State' Gaps

Phase I – Automation of Current Processes and Standardized Information	Measure energy and water use and analyze trends	1. Energy/Water Use:
		  a. Collect consumption information based on installation invoice captured either by manual or automated billing procedures.
		  b. Capture utility provider information to include billing.
		  c. Capture estimated consumption data if actual is unavailable at the site-level.
		2. Integrate real property information from the authoritative (RPI) system (e.g., square footage, Installation Code) with energy data.
		3. Identify relevant energy use (and associated RP) exclusions and exemptions and apply to energy use data.
		4. Identify renewable energy potential by site.
		5. Forecast RE planned to be purchased.
			Asset Allocation Current Use FAC Code
			Asset Allocation Size Quantity
			Asset Allocation Size Unit of Measure Code
			Asset Allocation User Organization
			City Code
			Conversion Factor
			Conversion Factor Role
			Country Code
			Date
			Date Type
			Dollar Amount
			Dollar Amount Type
			Energy Cost Type
			Energy Reimbursement Percentage
			Energy Reporting Category
			Energy Reporting Category Reason
			Energy Reporting Organization Code
			Energy Role
			Energy Type
			Federal Support Indicator
			Federal Support Percentage
			Installation Code
			Installation Name
			Installation Operational Status Code
			Installation Reporting Component Code
			Meter Type
			Postal Code
			Real Property Site Unique Identifier
			Real Property Unique
				OSD:
				1. Publish enterprise data dictionary
				2. Establish a Configuration Support Panel
				3. Develop an enterprise-level data warehouse
				
				Components:
				1. Modernize/develop systems
				2. Collect, convert, cleanse data
				3. Systematically import to the enterprise-level data warehouse the Components' data from Systems of Record (SORs)
				
				DoD:
				1. Systematically export data into a standard DOE/FEMP data structure
					Visualize enterprise-wide trends for applicable site-level metrics	1. Information Assurance for Metering
						2. Work with DoE to Develop Mechanism to Report Outside of DoD (CTS+AEMR=FEMP)
						3. Energy data classification guide
							Energy use measured at asset level across the Enterprise

Phase	Capability	Processes and Procedures	EEIM Data Elements	Systems/Technology	Advanced Analytics	Policy	EEIM 'To-Be State' Gaps
			Identifier Renewable Energy Analysis Category Renewable Energy Analysis Rating Renewable Energy Potential Amount RPA Command Claimant Code RPA Interest Type Code RPA Name RPA Operational Status Code RPA Predominant Current Use FAC Code RPA Total Unit of Measure Code RPA Total Unit of Measure Quantity RPA Type Code Site Delivered/Source Energy Indicator Site Name Site Operational Status Code Site Primary Indicator State or Country Primary Subdivision Code Time Time Type Unit of Measure Code Unit of Measure Role Unit of Measure Value Quantity Utility Provider Customer Account Number Utility Provider Invoice Number Utility Provider Organization Name Utility Provider Rate Schedule Code Utility Provider Type Value Accuracy Type				

Phase	Capability	Processes and Procedures	EEIM Data Elements	Systems/Technology	Advanced Analytics	Policy	EEIM 'To-Be State' Gaps
	Collect energy audit data, Energy Conservation Measures (ECMs) (implemented or proposed for implementation), energy project information and track project execution	1. Identify the number, type, and status of potential ECMs at the asset level. 2. Identify the number, type and status of ECMs and renewable energy projects being implemented by project by Site and FY. 3. Identify individual energy projects by Site and FY. 4. Track performance of implemented projects.	Acquisition Mechanism Asset Review Type Code Document Type Code Duration of Acquisition Mechanism Energy Conservation Measure Estimated Life Energy Conservation Measure Fund Code Energy Conservation Measure Identifier Energy Conservation Measure Status Code Energy Conservation Measure Category Lifecycle Cost Avoidance Type Measurement and Verification Method Type Payback Period Procurement Instrument Description Text Procurement Instrument Identification Number Procurement Instrument Type Code Project Description Text Project Detail Fund Code Project Detail Fund Organization Code Project Name Project Number Project Status Code Project Type Code Savings to Investment Ratio Technology Type				Project information at the asset level
	Measure renewable energy production and project data to include RECs	1. Collect renewable energy production data from meters by location and by project (manual or AMI-enabled). 2. Integrate real property information	Ownership Type Renewable Energy Classification				Electronic transfer of all energy production data

Phase	Capability	Processes and Procedures	EEIM Data Elements	Systems/Technology	Advanced Analytics	Policy	EEIM 'To-Be State' Gaps
		from the authoritative (RPI) system (e.g., square footage, Installation Code) with renewable energy data. 3. Identify individual renewable energy projects by Site and FY. 4. Track performance of implemented renewable energy projects.					
Phase II –Partial Automation of Asset-level Energy and Water Use Information	Measure energy and water use and analyze trends	1. Geo-enable site-level energy consumption data. 2. Link site-level energy consumption data to weather information. 3. Capture consumption data from existing meters at the asset level (meters may not all be connected to AMI). 4. Allocate energy consumption data to individual assets based on estimates or actual data. 5. Capture utility provider invoice information through automation (e.g. electronic file transfer). 6. Identify facility standards real property assets are measured against and their achievement to those standards.	Address Street Direction Code Address Street Name Address Street Number Address Street Type Code Climate Zone Code Cooling Degree Days Efficiency Standard Achievement Value Efficiency Standard Target Geospatial Feature Heating Degree Days Location Directions Text Meter Identifier Meter Location Meter Location Description Temperature Type	1. Link existing meter data management systems to enterprise energy information systems ensuring appropriate "guards" and safety between the Control and Information Management boundary 2. Automate capturing utility invoice information	Visualize enterprise-wide trend of applicable energy use data to the asset level		Measuring energy use at asset level for all assets

Phase	Capability	Processes and Procedures	EEIM Data Elements	Systems/Technology	Advanced Analytics	Policy	EEIM 'To-Be State' Gaps
	Collect energy audit data, Energy Conservation Measures (ECMs) (implemented or proposed for implementation), energy project information and track project execution	Collect data on individual energy projects by asset.	Facility Physical Quality Rate		Visualize enterprise-wide trends of applicable audit, ECM and project information by RPUID		
Phase III – Fully Automate Asset-level Energy and Water Use Information **Complete EEIM Implementation**	Measure energy consumption and analyze data	1. Capture metered asset-level energy consumption data using AMI (all meters will be connected to AMI). 2. Identify construction and capital improvement information for real property asset for forecasting of consumption. 3. Identify major energy consuming systems and their performance ratings. 4. Identify, assess and address energy security (Pending further policy definition). 5. Identify facility hours and workload. 6. Identify contributing factors in energy consumption costs based on demand.	Capital Improvement Placed in Service Date Capital Improvement Reason Code Construction Material Code Construction Type Code Energy Performance Type Code Energy Performance Value Energy Star Building Type Building Module Identifier Building Module Type Facility Number Facility Use Days Per Week Peak Demand Type Factor System Capacity System Manufacturer System Type Unique Item Identifier Workload Quantity Workload Utilization Type	1. Link all meter data management systems to enterprise energy information systems. 2. Integrate Equipment Management and Maintenance Systems with the energy management SORs and systematically import data to the enterprise data warehouse			
	Measure renewable energy production data	1. Capture excess production metered data supplied to grid.	Additional data elements may be needed at later date (TBD).				

Phase	Capability	Processes and Procedures	EEIM Data Elements	Systems/Technology	Advanced Analytics	Policy	EEIM 'To-Be State' Gaps
	Training	1. Identify training of staff and energy manager certification information.	Energy Certification Energy Training Credit Hours Energy Training Type Person Contact Information Person First Name Person Identifier Person Last Name Person Role Code				

Appendix M: Facility Energy Laws, Regulations, Policies, and Guidance

Listed below is established governance for DoD facility energy management as it is addressed in this document.

Laws/Regulations

- Public Law 110-140: Energy Independence and Security Act of 2007
- Public Law 109-58: Energy Policy Act of 2005
- Title 42 USC, Section 8251: National Energy Conservation Policy Act – February 2010
- National Defense Authorization Act (NDAA) 2010, Section 332
- NDAA 2011, Section 2832
- Title 10 USC, Part 434: Energy Code for New Federal Commercial and Multi-Family High Rise Residential Buildings – December 2007

Executive Orders

- Executive Order 13423: Strengthening Federal Environmental, Energy, and Transportation Management – January 2007, Office of the President of the United States
- Executive 13514: Federal Leadership in Environmental, Energy, and Economic Performance – October 2009, Office of the President of the United States

Policy

- DoD Directive 5126.46: Defense Energy Information System – December 1987
- DoD Directive 5134.01: Under Secretary of Defense for Acquisition, Technology, and Logistics – December 2005 (as modified April, 2008)
- DoD Instruction 4170.11: Installation Energy Management – December 2009

Guidance

- Department of Defense 2011 Annual Energy Management Report Guidance
- Department of Defense Energy Manager's Handbook – August 2005, Department of Energy
- Reporting Guidance for FY2010 Annual Report on Federal Government Energy Management, September 2010, Department of Energy
- Guidance for Electric Metering in Federal Buildings – February 2006, Department of Energy
- High Performance and Sustainable Buildings Guidance – December 2008, Interagency Sustainability Working Group
- Establishing Baseline and Meeting Water Conservation Goals of Executive Order 13423 – January 2008, Department of Energy
- DoD 5126.46-M-2: Defense Utility Energy Reporting System Manual
- DoD 8910.1-M: Department of Defense Procedures for Management of Information Requirements – June, 1998

Industry Standards

- American Society of Heating, Refrigeration, and Air Conditioning Engineers Standard 90.1-2007 and 189.1-2010
- U.S Green Building Council's 's Leadership in Energy and Environmental Design Rating System