



ENERGY EFFICIENCY SERVICES

Future-proof your business with energy efficiency solutions

WHO WE ARE

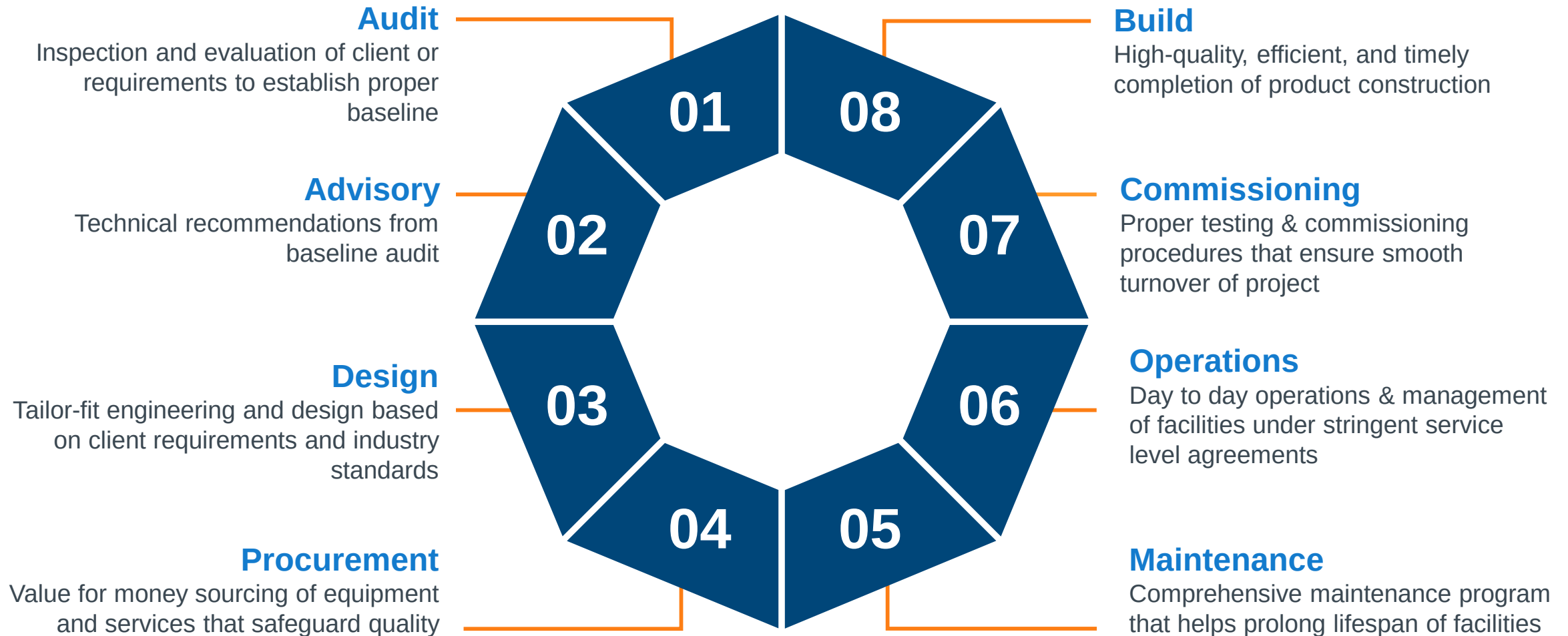
We deliver superior tailor-fit solutions

MSERV is one of the largest electromechanical contractors in the Philippines. We offer a broad range of solutions to meet your needs for efficient energy utilization. As a wholly-owned subsidiary of MERALCO, we have access to more than 100 years of expertise and have taken a role in building and re-building the nation amidst political and economic crises.



OUR PROJECT LIFECYCLE

We offer end-to-end solutions to address your needs



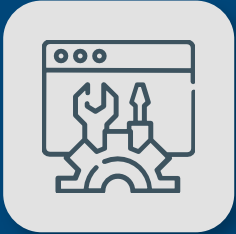
OUR EXPERTISE

Reliable and innovative solutions by your trusted energy solutions provider



ENERGY EFFICIENCY SERVICES

Energy Management



- Introduction
- Awareness & Compliance
- Energy Management Framework
- Energy Improvements

Audit & Advisory



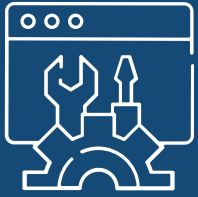
- Energy Audit (for EE&C Law Compliance)
- Investment Grade Audit
- Equitability Reliability Audit

Design & Build



- Electrical
- HVAC
- Lighting
- Automation





Energy Management

PHASE 1

Introduction to EE&C

General Overview on EE&C Law

PHASE 2

EE&C Awareness & Compliance

*Orientation for Key Personnel and Assistance
in Accomplishment of Annual Energy Reports*

PHASE 3

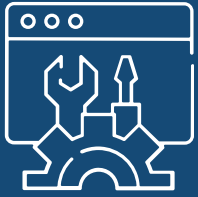
Energy Efficiency Framework

*Development and Implementation of
Energy Management Framework*

PHASE 4

Energy Management Improvements

*Design & Build, Operations & Maintenance
Energy Performance Contracts*



Energy Management

Phase 2: EE&C Awareness & Compliance

Package Inclusions	Duration
Module 1: Energy Efficiency and Conservation Law and its Impact to the Company <ul style="list-style-type: none">• Salient Features of the Law• Implications of the Law to the Organization• Requirements, Penalties and Incentives	0.25 Day
Module 2: Introduction to Energy Management Framework based on ISO 50001 for Sustainability <ul style="list-style-type: none">• Introduction and Key Rationale/Benefits• Energy Management System Approach following ISO 5001:2018• Implementation of strategy and Plans	0.5 Day
Module 3: Guide on EE&C Compliance and DOE Reporting <ul style="list-style-type: none">• Organization Preparation and Roles• Run-through on Templates and Typical Data Sources• Report Considerations (to avoid future issues)	0.25 Day
Consultancy Services <ul style="list-style-type: none">• Review and Validation of EE&C Compliance and Reports• Final Checking of Documents	2 Sessions



Audit & Advisory

ENERGY EFFICIENCY SERVICES

Energy Audit

(for EE&C Law Compliance)

Baseline measurements for Energy Audit compliance and identification of energy conservation measures

Investment Grade Audit (IGA)

Thorough and detailed assessment of all individual building equipment as feasibility of ESCO project implementation

System / Equipment Reliability Audit

Testing for equipment and performance and power supply parameters including power quality and equipment functionality



Audit & Advisory

ENERGY EFFICIENCY SERVICES

Energy Audit *(for EE&C Law Compliance)*

	SMALL Other DE	MEDIUM Type 1 DE	LARGE Type 2 DE
Annual Consumption (KWH)	<500,000 KWH	500,000 – 4,000,000 KWH	>4,000,000 KWH
Estimated Duration	1 Week	2 Weeks	1 Month
Systems Covered	Electrical, HVAC, Lighting, Automation		
Report Inclusions	<ul style="list-style-type: none">• Facility Overview• Energy Consumption Baseline, Breakdown and Analysis• Review of performance and efficiency per system• Equipment Conditions• Detailed Energy Management Opportunities with estimated savings and investments		



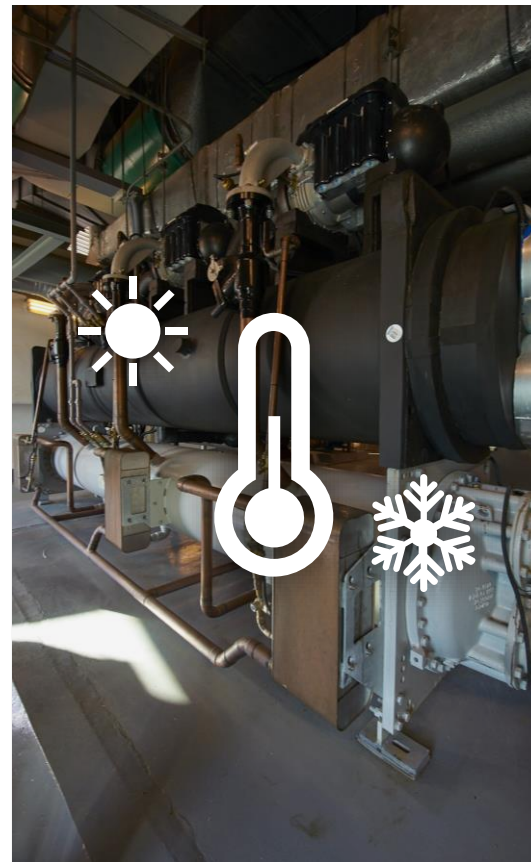
Design & Build

ENERGY EFFICIENCY SERVICES

ELECTRICAL



MECHANICAL



LIGHTING



AUTOMATION





ELECTRICAL SOLUTIONS

DESIGN & BUILD

- **High Efficiency Motors**
Better built motors that consume less power and can adjust to variable load conditions
- **Sag Correctors**
Protective devices that take care of voltage fluctuations and momentary outages
- **Capacitor Banks**
Electrical equipment used to counteract or correct the effects of inductive loads in the power factor
- **Harmonic Filters**
Electrical equipment that limit harmonics that cause significant distortions in the system





MECHANICAL SOLUTIONS

DESIGN & BUILD

- **HVAC System**
Energy efficient design Chillers, AHU, FCU, Pumps, Cooling Towers including Oil-free Magnetic Chillers, VRF and VFD systems
- **District Cooling System**
Central chiller plant and piping network to buildings
- **Inverter System**
Energy efficient inverter technology AC units
- **Heat Recovery System**
Utilization of waste heat to generate energy
- **Compressed Air**
Optimization and supply of energy efficient compressed dry air systems for industrial applications
- **Boilers**
Optimization and supply of energy efficient boiler systems





LIGHTING SOLUTIONS

DESIGN & BUILD

- **LED Lighting**

Latest lighting technology for improved energy efficiency

- **LED Streetlights**

LED streetlights with dimming capabilities for maximum efficiency

- **Smart Lighting**

Energy saving features such as automatic on/off, dimming and occupancy sensors





MANAGED SERVICES

AUTOMATION



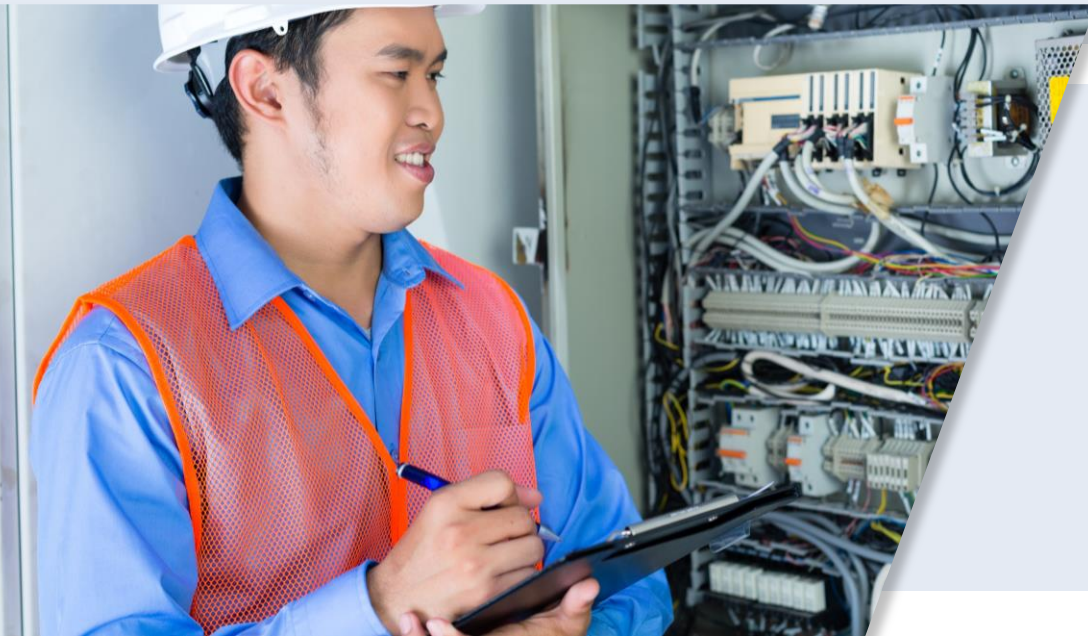
- Managed Service Software to ensure real time information
- Centralized monitoring for efficiency and quick response time
- Automated operations for AC units for increased efficiency



DAILY OPERATIONS



- Service Level Agreement with guaranteed operating performance
- Skilled on-site personnel (24/7)
- Daily operation, monitoring, inspection & cleaning of facilities
- Report and address any issues





MANAGED SERVICES

MAINTENANCE WORKS

- Preventive & Comprehensive maintenance coverage ensure worry-free operations
- Single point-of-contact for all equipment concerns
- Maximize efficiency and equipment life



EMERGENCY WORKS

- Quick response time with remote monitoring and onsite-crew
- Available use of emergency response team and mobile genset as needed
- Service level Agreement for response and recovery time



■ MSERV Energy Management System

Detailed monitoring of energy consumption with alarms and notifications for errors of unusual consumptions

■ Building & Facility Management System

Integration of different systems of a building or multiple facilities into one Management Software for easy Monitoring and Control

■ Chiller Management System

Optimizes operation of plant room to improve energy efficiency performance

■ Lighting Management System

Automated Monitoring and Controlling Lighting fixtures

■ Remote Monitoring System

Monitoring of equipment consumption and operation with alerts, analytics, and database management



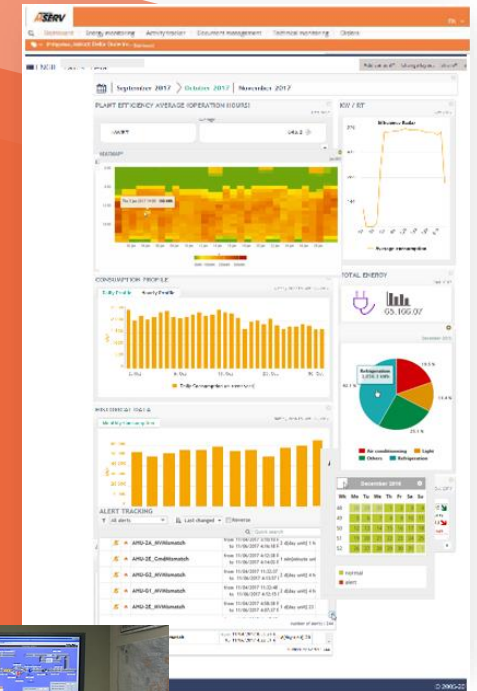


MSERV ENERGY MANAGEMENT SYSTEM (EMS)

DESIGN & BUILD

FEATURES & BENEFITS

- **Monitoring & Management of multiple systems**
Energy, Electrical, HVAC, Lighting, Auxiliaries
- **Centralized Energy monitoring**
Monitoring multiple sites remotely through a single command center
- **Numerous parameters and data**
Choose what information is presented; keeps historical data and provides analysis;
- **Software for EE&C Law Compliance**
Records information needed for annual reports; Supports ISO 50001 procedures for DOE's requirements
- **Automatic alarms and notifications**
- **Achieve Savings**
Energy, Maintenance, Manpower





163
m³

CO₂



163
kWh

EMS Expansion Possibilities



A/C

Chilled Water Plants

Fire Protection

Fuel System

Indoor Air Quality

Plumbing / Water

Power Centre

Ventilation

Solar Panel

Lighting

Sewage Treatment Plant

Room Control Unit

Building Transportation

Auxiliary Systems

Refrigeration

Access Control

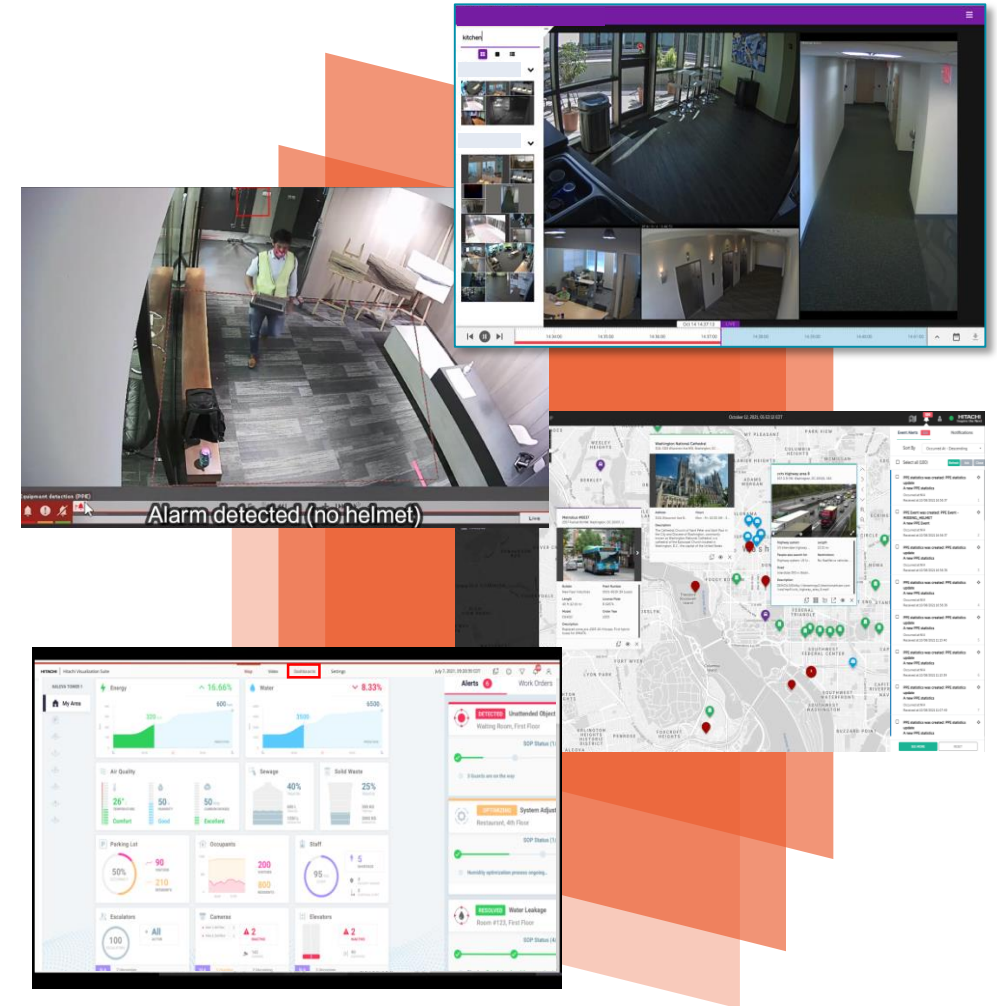


Remote Facility Monitoring System

DESIGN & BUILD

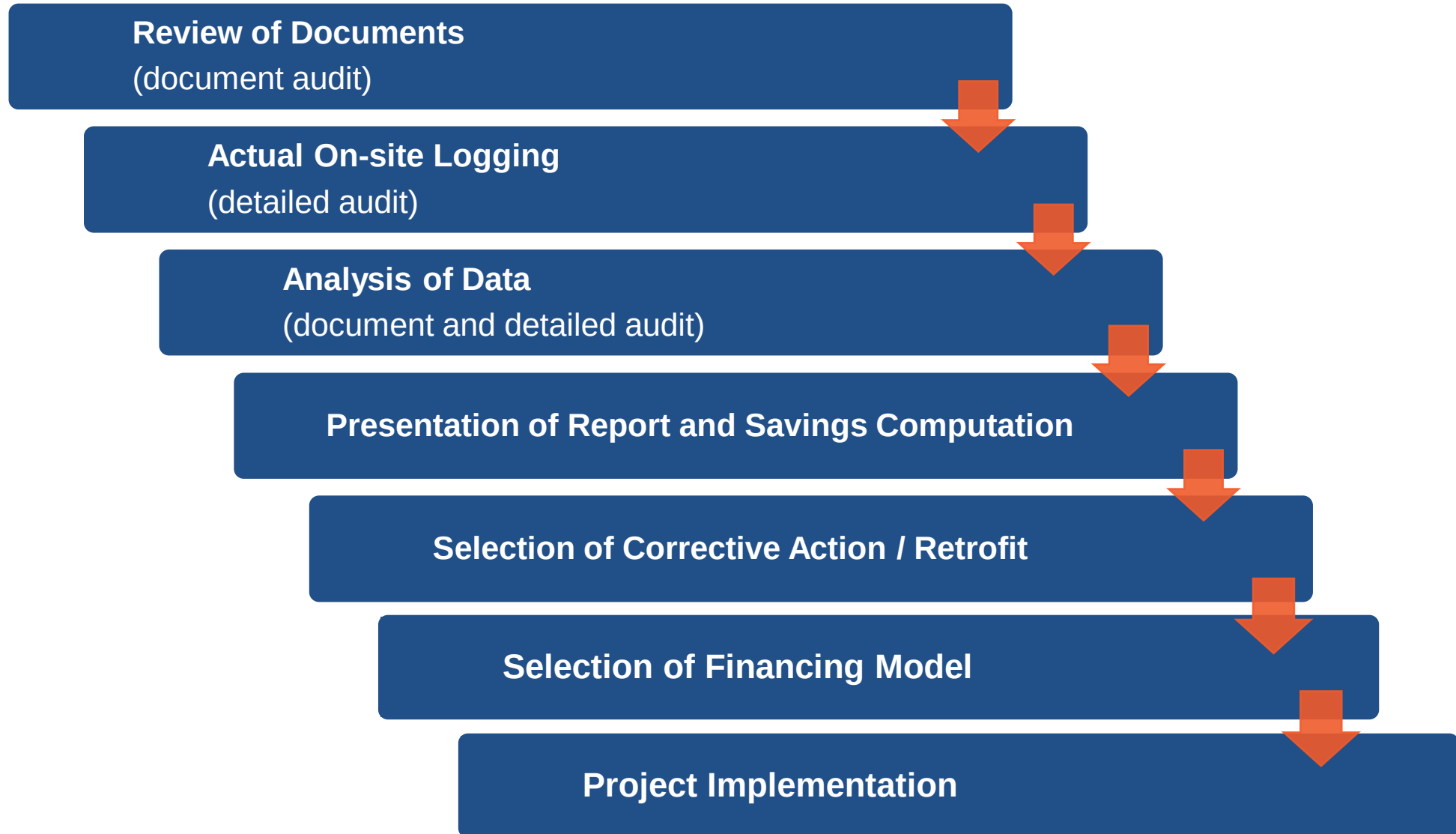
FEATURES & BENEFITS

- **Video Monitoring System**
Energy, Electrical, HVAC, Lighting, Auxiliaries
- **Video Analytics**
Monitoring multiple sites remotely through a single command center
 - **Face Recognition**
 - **PPE Detection**
- **Asset Tracking**
Choose what information is presented; keeps historical data and provides analysis;
- **Video Platform**
Records information needed for annual reports; Supports ISO 50001 procedures for DOE's requirements
 - **Situational Awareness**
 - **Video Management**
 - **Dashboard**





ESCO Performance Contract Process





Future-proof your business with energy efficiency solutions