

# Investment Grade Energy Audit Scope

An investment grade energy audit includes analysis of all energy consuming systems in an industrial or commercial facility and results are presented to show financial savings. The ROI of each project is reported with consideration to the institution's cost of money and internal discount rate. The following systems historically have shown large savings:

- **Energy overview**
  - Energy Utilization Index (EUI) and comparison to similar facilities
  - Energy cost per square foot
  - Summary of electricity usage for last 24 months
  - Summary of natural gas usage for 24 months
- **Lighting audit**
  - Lighting inventory count
  - Analysis of current lighting compared to energy efficient lights
  - Lighting control opportunities
    - Motion sensors
    - Daylight harvesting
    - Lighting schedules
  - Signage (Exit signs, display cases, outdoor)
  - Maintenance and heat recovery considerations
- **Hot water and steam**
  - Boiler efficiency and payback of replacement
  - Temperature set points
  - Controls opportunities
  - Boiler sizing
  - Pipe and valve insulation
  - Steam trap audit
- **HVAC**
  - Extensive data logged to understand current functionality
  - Test functionality of existing energy savings hardware
  - Add variable frequency drives
  - Add VAV controls
  - Add CO sensors to reduce outside air
  - Consider advantages of thermal storage
  - Exhaust fan control (restrooms, kitchens, process equipment)
- **Building Envelope**
  - Window smoke test to analyze air barrier opportunity
  - Roof analysis (wet insulation, change color, change reflectivity)
  - Solar film window coatings for UV rejection and added insulation
- **Compressed air**
  - System sizing
  - Compressed air operating hours
  - Leak detection and repair
  - Thermally regulated intake air
  - Consider air applications and reduce consumption
- **Electrical systems**
  - Transformers
  - Motors and drives
  - Power Factor and power quality
- **Water**
  - Eliminate one-through cooling water
  - Add VFD to domestic water boost pumps
  - Low flow toilets, showers and sinks
  - Add deduct meters where appropriate
- **Waste heat recovery**
- **Cogeneration and fuel procurement**
- **Renewable projects**
  - Photovoltaic solar generation
  - Wind generation
  - Geothermal heat pump
  - Solar thermal water heating
- **Special Systems**
  - Process specific equipment
    - Optimize
    - Schedule
    - Controls
    - Recover heat
  - Food service – energy star equipment has quick payback
  - Laundry
  - Swimming Pool
    - Pool Cover
    - Control systems
    - Solar thermal
  - Vending retrofitted with VendingMiser
  - Office equipment and computers
- **Energy savings policies and procedures**
  - Benefit of a full time energy manager or independent contract to enforce changes
- **Incentive Programs**
  - Utility company rebates
  - Accelerated tax depreciation and EPACT
  - State and federal energy grants
- **Implementation plan and financing options**