

The multi family audit is a detailed examination of how the multifamily facility uses energy and other controllable utilities, quantification of the buildings energy and water consumption, the cost of energy, technical analysis of the building and associated systems, and in conclusion a set of recommendations to reduce the energy costs. The energy cost reduction will be categorized by building envelope, equipment (mechanical, electrical, plumbing) and operational changes.

The audit should include:

- Analysis of existing energy (electric, natural gas, Liquid propane, fuel oil) consumption. A minimum of one year's bills should be evaluated. Evaluate consumption levels and patterns. Audited financial statements are not acceptable.
- Review maintenance and repair records.
- Review Record Drawings (As-built).
- Fuel usage data should be normalized with local weather data.
- Discuss building with management. The discussions should include building performance, HVAC systems, electrical, and building envelope. Included in the discussions, occupant comfort and complaints should be discussed.
- Site visit should be conducted using acceptable techniques for building type and size (i.e. small building with independent entries may utilize blower testing, large building with common entrances and hallways utilize visual inspection and measurements to calculate leakage.)
 - Sampling should include 10% of total existing units.
 - All unit types (bedroom count, HVAC system type, location in building) shall be taken into account.
 - Field verify blue prints
 - Inventory MEP equipment
 - Identify moisture problems
 - Identify ventilation system
 - Field verify fan operation
 - Assess building airflow
 - Evaluate building envelope
- Energy modeling should be conducted, according to ASHRAE Fundamentals Chapter 31. Manual Calculations, spreadsheet analysis or DOE approved multifamily energy audit software are all acceptable means of energy modeling. Assumptions and calculation methods should be documented.
- Economic analysis
 - Account for inflation and discount rates utilizing the Savings-to-Investment Ratio formula.

- Cost estimates for all energy efficiency measures. Provide back-up for cost estimates (RS Means is acceptable). Provide in spreadsheet format for local verification.
- Calculate energy dollar savings (annual savings, life cycle savings, show payback period) per recommended efficiency measure.
- Include benefits to end use bill payers.
- Identify non-energy related benefits.
- Mechanical Systems
 - Provide a detailed list of HVAC equipment, include age, capacities, make and model #s.
 - Identify equipment as common area, tenant area and if equipment is central or systems within tenant area.
 - State condition of equipment.
 - Provide combustion efficiencies for combustion equipment
 - Identify distribution systems and state condition of distribution systems and components.
- Electrical Systems
 - Provide a schedule of lighting, motors, and major appliances.
 - Identify savings, consumption and dollars for retrofits, in common space and units.

Reporting and Review

- Deliverable - Report including:
 - Executive Summary including Detailed Table of All Measures with
 - Annual Savings in kilowatt-hours and MMBTU
 - Annual Savings in dollars
 - Life of Measure
 - Life Cycle Savings of Measure
 - Estimated Cost (RS Means is acceptable)
 - Savings-to-Investment Ratio (SIR*) based on Estimated Cost
 - Building Description - Include the following,
 - Building Envelope
 - Mechanical Equipment and appurtenances
 - Electrical Equipment and appurtenances
 - Plumbing Equipment and appurtenances
 - All Evaluated Measures
 - Description
 - Rational
 - Analysis of Fuel and Electricity Bills

* Savings-to-Investment Ration (SIR): the calculated lifetime dollar savings divided by the cost of the installed measure. It is recommended that energy efficiency recommendations should be based on a calculated SIR, with larger SIRs receiving a higher priority. Measures can also be ranked by cost to calculate a SIR of 1.