

IOWA DEPARTMENT OF ADMINISTRATIVE SERVICES ▼
HUMAN RESOURCES ENTERPRISE

ENERGY MANAGEMENT TECHNICIAN

DEFINITION

Under general direction conducts energy audits and analysis and prepares an economic analysis of energy use and management in state office buildings and institutions to recommend cost saving corrective action; performs related duties as required.

The Work Examples and Competencies listed are for illustrative purposes only and not intended to be the primary basis for position classification decisions.

WORK EXAMPLES

Inspects space heating systems to determine if unnecessary heat production or loss is occurring by reviewing operational procedures of building maintenance to determine if thermostats are adjusted during heating and cooling seasons, only occupied building space is heated or cooled, correct adjustments are made to air/fuel ratios of firing equipment, temperature of the downstream sides of steam traps is not excessive, burner firing period is not short cycling, flue gas analysis made on a periodic basis, correct steam pressure set at a minimum to satisfy needs, and blowdown loss kept to a minimum.

Inspects preventive maintenance records to determine if all mechanical and pneumatic controlled equipment is cleaned, oiled, repaired and greased on a regular basis, such as inspections for hot spots and air leaks in boiler insulation, refractory, brickwork and casing, calibration of instruments and automatic temperature controls checked regularly, damaged insulation on heating pipes replaced, and filters, damper blades, linkages, intake and exhaust damper settings inspected.

Examines building envelope (windows, doors, walls, roof) to determine if changes such as insulation, weather stripping or storm windows and doors could be made to eliminate air leaks and heat escape.

Measures the amount of air and lighting levels supplied to a specific office space to determine the efficiency of the air handling and lighting systems, and to reduce the amount of energy supplied to those areas by using an air flow measuring device and light meter, and observing the number, placement, kind and wattage of bulbs, presence of task lighting and cycling of lights during day and evening hours.

Inspects air conditioning and central air handling equipment to determine if cold deck and hot deck temperatures are set to the highest and lowest points to provide acceptable humidity and still satisfy the system, whenever possible, outdoor air for cooling rather than mechanical refrigeration is used, fan speeds are checked against design conditions, air distribution systems are balanced, and room thermostats are located so they are not affected by sun, cold walls, etc.

Prepares an accounting form for each building audited to determine an energy utilization index for each building by recording from electric and gas bills, and average daily temperatures, kilowatt hours used per month, amount of electricity, steam and fuel used and rate of use, total cost and cost per kilowatt and/or unit hour, building data such as gross conditioned square footage and any deviation from normal operation, and applying proper conversion factors to determine the total BTU's consumed for the year.

Recommends energy conservation proposals to agencies involving minor changes such as lighting, window treatments such as draperies and blinds, weather-stripping, change in size of refrigerators, photocell switching devices for lights, reduction in water pressure and use of humidifiers, and major changes such as structural modifications and installation of more efficient heating, cooling and ventilation systems.

Prepares cost benefit figures to determine the cost effectiveness of implementing conservation proposals by analyzing the current energy use and costs, cost of modifications, expected life of modifications, and expected rate of energy price increases to arrive at a rate of return figure for management use.

Corresponds and consults with top level managers to present proposals, economic analysis and cost benefit figures to gain their support and cooperation in implementing the recommendations.

Monitors a building automation system to detect, report and correct internal problems in the points controlled by the pneumatic temperature, air handling systems and mechanical equipment; establishes temperature limits and responds to system alarms.

COMPETENCIES REQUIRED

Knowledge of the proper operation and maintenance of the components of heating, air-conditioning, and air handling systems and subsystems.

Knowledge of the basic concepts of energy conservation and the purposes, objectives and mechanics of energy auditing processes.

Knowledge of the specification, use and calibration of measuring devices such as light meters and air flow measuring devices, and the principles and applications of automatic control processes.

Knowledge of the techniques and analysis procedures necessary to evaluate the economic impact and advantages of energy production and cost effective changes.

Knowledge of the various processes and equipment resources and fuels necessary to produce useful energy forms such as electricity, heat, and light, and the factors required to select optimum energy sources and equipment for maximum economy, efficiency and environmental quality.

Knowledge of energy management accounting forms and the procedures, data and calculations required to complete them.

Knowledge of technical report writing.

Knowledge of mathematical concepts ranging from applied mathematics through algebra, necessary to perform energy conservation calculations and cost benefit analysis.

Knowledge of preventive maintenance practices and procedures and the effects upon heating air conditioning and ventilation systems and mechanical equipment.

Knowledge of building automation system, its component parts and the mechanical equipment interfacing with it.

Ability to perform financial analysis of alternate energy applications by applying appropriate tools and mathematical calculations to a diversity of energy related decisions.

Ability to collect and analyze pertinent energy related data and to render findings, conclusions and recommendations.

Ability to prepare concise clear technical reports of audit results and recommendations.

Ability to communicate effectively with all levels of staff and/or contractors involved in the operation, maintenance and decision making functions involving building energy conservation and use.

Ability to apply mathematical calculations and conversion formulas to energy related data to calculate energy utilization indexes and cost benefit factors.

Displays high standards of ethical conduct. Exhibits honesty and integrity. Refrains from theft-related, dishonest or unethical behavior.

Works and communicates with internal and external clients and customers to meet their needs in a polite, courteous, and cooperative manner. Committed to quality service.

Displays a high level of initiative, effort and commitment towards completing assignments efficiently. Works with minimal supervision. Demonstrates responsible behavior and attention to detail.

Responds appropriately to supervision. Makes an effort to follow policy and cooperate with supervisors.

Aligns behavior with the needs, priorities and goals of the organization.

Encourages and facilitates cooperation, pride, trust, and group identity. Fosters commitment and team spirit.

Expresses information to individuals or groups effectively, taking into account the audience and nature of the information. Listens to others and responds appropriately.

EDUCATION, EXPERIENCE, AND SPECIAL REQUIREMENTS

Successful completion of a two year Energy Technology or Energy Conservation/Management program from a community college or vocational school which included coursework in energy auditing of commercial buildings;

OR

successful completion of two years of college coursework with a major in Engineering from an accredited college or university and one year of full-time equivalent technical work experience in an energy management program;

OR

full-time equivalent work experience in an energy management program which included energy audits of commercial buildings may be substituted for the required education on a year for year basis;

OR

successful completion of an Energy Auditors Workshop as approved by the Iowa Energy Policy Council.

Effective Date: 5/83