



E M C Engineers, Inc., was founded in 1976 to serve the energy needs of our clients. Since then, the company has been true to its mission, providing engineering evaluations and design and construction services for government and private sector clients.

Energy efficient facilities are a goal of facility managers and owners, but getting there is not always simple or affordable. An energy performance contract assures annual energy cost savings that will exceed annual lease-purchase payments on new energy saving equipment, using a “broad scope”, intergrated approach to energy savings and implementation. This energy savings typically pays for the cost of the upgrades. These services also take full advantage of any available utility incentive programs to assist the owner in maximizing the value of the ESPC scope.



EMC offers a broad range of financing options to clients, often combining funding sources in order to “buy down” improvement costs. **Our goal with every project is to provide solutions that increase productivity, reduce energy consumption and optimize facility performance.** We assist in developing grant applications to fund all or portions of the project.

Project Development

Through EMC’s hallmark team approach - the engineers, project designers, sub-contractors and all the client’s team members agree on the goals, objectives, expectations and special considerations for the project. Beginning with the initial kickoff meeting and walkthrough with client’s staff, **EMC and the staff become a team** developing a plan and course of action for upgrading the facilities. Financing packages are developed to accomplish the program, often in phases and at times over a series of years.



Energy Auditing

The energy audit establishes the baseline performance of the facility, determines the energy efficiency measure cost and savings, identifies the measurement and verification methods, and outlines the options to be incorporated in the final plan/program. Our audits employ rigorous data logging of existing systems operation in order to determine actual operating parameters; this includes special systems such as dishwashers, swimming pools and elevators.

Based on this actual operating data, the development of the utility baseline, and the verification of current heating, cooling and ventilation loads, follows. Simultaneously, the retrofit options and designs are reviewed with the client to ascertain acceptance and viability.

Baseline Calculation Methodology

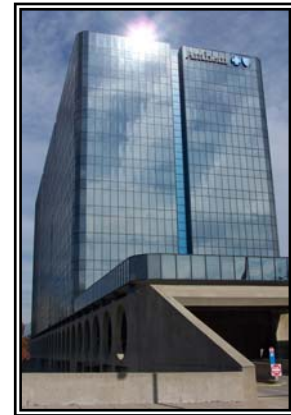
Our Baseline comes from actual utility bills from the past 2-3 years. We include actual weather data with the utility bill analysis and compile a representative baseline. We can then eliminate



unusual occurrences such as extremely cold winters, blizzards, hot spells, etc. Ventilation rates, population numbers, operating hours and equipment operation and non-operating lighting systems (burnouts) are also factored into the baseline. This approach gives us a very accurate Baseline for comparing future utility usage to past usage.

Performance (Savings) Guarantee

Our Performance Guarantee is provided through a third party insurance firm and is set up on an annual renewal basis. Colorado's state requirements are such that the guarantee must be offered for at least the first three years of the project and can be optional after. The value of this approach is the flexibility that it offers the client.



Financing

Working with the client, EMC will develop a program and put together a financing package that uses the lease purchase as the building block. EMC will assist with arranging financing and payment terms that meet the client's needs, focusing on leveraging other funds to achieve the goals, to mitigate costs and foster a more predictable and manageable budget. EMC often works to augment the typical tax-free municipal lease-purchase and similar conventional lender financing with grants, rebates, and other sources from programs such as:

- Colorado DOLA Energy and Minerals Impact;
- The STEPP foundation;
- The Department of Energy;
- Great Outdoors Colorado;
- The Department of Education School Facilities Capital Projects Program;
- QZAB,
- Utility rebates (e.g. Xcel, Colorado Springs Utilities, Aquila),
- Certificates of participation and revenue bonds

Insurance

We carry professional Errors and Omissions insurance to cover the client for any engineering errors that may occur. Liability, Workmen's compensation and Builders Risk insurance are provided by EMC as well as all subcontractors are required to submit proof of insurance prior to working on any project. These coverages provide assurance to our client's protecting their key interests.

Warranties

All installed equipment installed has the standard manufactures warranty and all contractors have the standard labor and materials warranty. The warranties are in the name of the client and are usually a minimum of one year.

Construction

Because EMC takes a customized "whole systems" approach to each project, we are experienced not only with the most typical prescriptive measures, but also more innovative and



customized measures such as heat recovery, free cooling and cogeneration, as well as renewables such as solar photovoltaic, solar hot water, and wind. EMC has worked with many Colorado clients on retrofits of existing facilities and has implemented **over 30 Performance Contracts for clients in Colorado since the mid-1980's.**



Commissioning

Commissioning the installed energy conservation measures is part of our standard operating protocol. This assures implementation and operation according to the design intent. In addition, for many buildings, the most cost effective course of action is a building systems tune-up or retro-commissioning. We find many instances of heating and cooling systems fighting each other for control resulting in simultaneous heating and cooling.

In many instances, control sequences may be marginally functioning, but are not optimized for efficient energy operations. Without a focused effort to investigate for these conditions it may be difficult to find and correct the problems. We develop our commissioning plan with the client and staff and require that functional testing be performed in the presence of staff. We have provided commissioning services for numerous clients such as:

Xcel Energy
Southern California Edison Company
Poudre School District
Adams County School District
Brighton School District
Windsor School District
Denver School Districts

Measurement and Verification of Savings

Planning and developing the monitoring and verification protocol includes the methods of monitoring and calculating savings. It is an important way to ascertain assurance of project results. Through on-going and periodic monitoring and site inspections, EMC determines whether the project is producing the results anticipated during the design phase.

In order to protect the client's investment in the project, EMC builds in a collaborative system for a monitoring and verification program up front, and continues to monitor results for the duration of the payback period for the project, and longer, if desired. M&V includes remote monitoring and documentation of system performance through trend logs, data loggers, and utility meter analysis. The building's staff are an integral part of the monitoring process and assist with verifying the results.

Client and Staff/Occupant Training

Training is an on-going component, which actually begins during the technical audit and



continues throughout the project. The commissioning process is the first step in a more formalized training program with a combination of “classroom” and “hands on” training that follows. In addition to involving staff and administrators in planning the project early on, EMC will also offer an in-service session with employees to explain the work done in the facility and how they can ensure the success of the project. Training assures persistence of energy savings measures.

Post-Construction Maintenance Support

The proper and efficient operation of equipment and systems is directly dependent on regular maintenance and inspection. EMC develops a planned maintenance program with client staff that combines outside service contractor responsibilities and in-house staff responsibilities.

EMC project managers work with the client’s staff to review and double check the scheduled maintenance. Filters, belts, sensor calibration, refrigerant charge, fuel/air mixtures, and manifold pressures are a few of the items on a checklist for each major piece of equipment (boilers, pumps, AHUs, DHW heaters, etc.) that are included in the planned maintenance manual.