

Provision of energy services such as heating, ventilation and air conditioning (HVAC) represents one of the largest costs associated with the operation of commercial and residential buildings. The prices for all forms of energy have been steadily increasing, and recent carbon regulations have applied further upward price pressure on fossil fuels. In addition, concerns about long-term environmental sustainability have been increasingly driving building developers, owners and tenants to select buildings that conform to “Green Building” standards such as LEED (Leadership in Energy and Environmental Design).

In this context, Building Energy Management is becoming an increasingly important part of a successful building design, construction and operations and maintenance (O&M) strategies. There are many ways to improve energy efficiency and reduce energy costs for your facilities – if you know where to look. Levelton Consultants has a proven track record of helping clients obtain these energy cost savings through the application of engineering and economic principles.



### Levelton's Expertise

Levelton Consultants has a long history of working with our clients to help them quantify the financial, operational and environmental impacts associated with their building energy-use decisions. We are equally comfortable in our coveralls performing an energy end-use audit in your boiler room, or leading an energy management charette with your building design team.

We have a committed team of engineers, scientists, AEE-accredited Certified Energy Managers, and LEED Accredited Professionals with energy management expertise spanning a wide range of building systems. We are recognized experts in building envelope design and modelling, whole-building energy modelling, and building materials selection. In addition, our energy managers have an “industrial-strength” understanding of building mechanical systems.

Cost savings achieved through energy management may result from:

- Improvements in efficiency due to optimization of energy conversion technology. Examples include the replacement of oversized HVAC fans with new equipment correctly sized to the required service, or replacement of inefficient incandescent lighting with modern fluorescents.
- Reductions in energy use and / or purchase costs due to changes in patterns of energy use. Examples include the implementation of night set-backs on space heating temperature setpoints, or installation of chilled water storage to allow air conditioning to be operated during night-time periods with low power prices.
- Substitution of one energy source for another. Examples include the use of daylighting to supplement electric lighting, or the substitution of biomass for natural gas in boiler systems.



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### Services for existing construction:

Levelton provides energy use auditing services that conform to the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) guidelines for Preliminary Energy Use Analysis, Level I – Walk-Through Analysis, Level II – Energy Survey and Engineering Analysis, and Level III – Detailed Analysis of Capital-Intensive Modifications.

Energy audits use standardized methodologies to evaluate the energy use in an existing building, taking account of the building envelope, mechanical and electrical systems, and processes conducted within the building. The energy use measured and / or calculated during an audit is typically compared against historical usage patterns for the building (determined from utility bills or similar consumption records) to establish a baseline and calibrate a model for the building. This building energy model is then used to predict the effect of proposed energy conservation measures.

Conservation measures that appear feasible or appropriate are investigated to determine the order-of-magnitude costs of such changes, and to provide an estimate of payback or life-cycle costs when comparing various options.

Conducted in a similar manner to energy audits, water audits provide a similar function for the evaluation of water-using fixtures and usage patterns in a given facility, with a focus on improving water use efficiency.

Levelton recommends that the audit activities be performed in consultation with building owners, maintenance staff, and occupants to ensure audit accuracy and appropriateness in the context of the desired goals of the Client.



### Services for new construction:

Levelton provides consulting services as part of the building design team, helping to carry out sustainable building materials selection and ensure the design supports long-term energy-efficient performance and durability of the building envelope and mechanical systems.

We work with the mechanical and electrical sub-consultants to optimize the energy performance of the building, conducting whole-building energy simulations that predict the energy usage of the facility. Through this modelling, we can identify efficiencies or improvements in maintenance, operations, and / or the processes conducted within the facility that will lead to reductions in usage of energy and water in the facility.

During building construction, we act as a LEED Coordinator, working with building project teams to collect and evaluate the application materials required to earn LEED certification. Additionally, during the final phases of construction, we act as a LEED Commissioning Agent, ensuring that building system commissioning activities are carried out according to established best practices.

**Levelton Consultants Ltd.**

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