

Payback

Energy retrofits provide return on investment

DISCUSSIONS SURROUNDING ENERGY have shifted dramatically over the past generation. The word moved abruptly to the front-and-centre of the public agenda in the mid-1970s, when it was gauged almost exclusively through cost criteria, such as the fuel economy of one's car or the size of heating bills.

Today, talk of energy tends to be embedded in broader reviews of environmental issues. For example, consumption of fossil fuels is frequently discussed in the context of much more subtle effects, such as greenhouse gas emissions and the potentially sweeping effect of global climate change.

Still, too often, investments in alternative energy sources with fewer negative environmental implications are turned down, largely because they are deemed too expensive.

But something beyond money is slowly being included on the benefit side of equations – public perception and an interest in not only doing what is economical, but what is right for future generations. Even hard-nosed corporations have come to appreciate the value of public perception when they talk about energy. For public sector agencies, which are often directly or indirectly tied to protecting such common goods as clean water and clean air, this value is even more pronounced.

And sometimes, as the City of White Rock, BC, discovered, you hit the jackpot. In 2001 the municipality of 18,250, located in the southwest corner of the Lower Mainland, asked for bids on a contract to reinvent the facility housing its engineering and operations staff. Located in the city works yard, the structure consisted of an old wooden-frame building accompanied by a collection of trailer-offices. The new Operations Centre, completed last fall, has attained international prestige for its energy efficiency and other environmental virtues.

The \$1.34-million project – which included almost \$900,000 in funding from the Canada/British Columbia Infrastructure Program – was far more than a typical retrofit or simple new construction. For one thing, the two-pavilion structure used buried tank walls from an abandoned sanitary treatment plant for one foundation and the existing basement of the old sewage treatment plant control building for the other. Almost all of the original building was incorporated into the new one, diverting several hundred thousand tonnes of potential waste from landfill.

Other innovations abound. Solar power heat has been in use for more than half a year. Storm water – rather than treated drinking water – is used for toilets, washing vehicles, and for watering the grounds. “Daylighting,” the strategic use of windows to bring in ambient light, minimizes the need for electric lighting and contributes to heating. The roof of one pavilion has been insulated with soil and planted with vegetation.

All of this effort and imagination has paid off. The White Rock Operations Centre earned Canada's first new construction gold rating under the United States Green Building Council's Leadership in Energy and Environmental Design (LEED) program.

Like the R-2000 program initiated by the Canadian government in the wake of the energy crisis of the 1970s, LEED represents a certification standard that offers developers something to aspire to. Points are awarded based on location, materials, indoor environmental quality, and water and energy efficiency. A wide variety of details are brought to bear on the design, from access to public transit or bicycle trails, to the use of recycled wood or paint that emits fewer chemicals into the atmosphere. The points contribute to a basic certification, as well as more outstanding silver, gold and platinum ratings.

It was another BC project that earned the first Canadian LEED ranking, the transformation of a Victoria hospital into an office complex for high technology firms. Such distinctions reflect the province's emphasis on doing well while doing good, seeking to link principles such as energy efficiency with the more general goal of installing infrastructure that is more environmentally benign. Municipalities and developers have responded to the call, which is generally accompanied with special funding.

Without such incentives, says White Rock's Acting Director, Engineering and Operations, Ted Haight, the city might have opted for a much more customary building on the city works site.

“When an opportunity came along to get some grant money involved, that's when we did the big shift and went very ‘green,’” he says, adding that the municipal sector is especially well placed to take advantage of the slow and steady financial return that comes from such investments. “Cities are in a building for the long term. So you really do get the payback.”

The rationale for a great deal of ‘green’ funding relies on such payback. Even under the most optimal circumstances, municipalities are generally not in a position to put their resources

Nominations Please

5th Annual Award of Recognition for Excellence in Service as a Materiel Manager

The award, sponsored by *Summit* magazine and the Materiel Management Institute, recognizes an individual's significant and ongoing dedication to a project team or organization. Candidates are materiel managers and contracting staff at all levels of government and public institutions across Canada.

**Tell everyone about the unsung hero in your department.
Deadline: April 2, 2004**

The winner will be announced at the Materiel Management National Workshop in May 2004 and profiled in *Summit* magazine.

For information and nomination forms contact:
McEvoy Galbreath, Publisher, *Summit* Magazine
Tel: (613) 688-0763 or (800) 575-1146 • Fax: (613) 688-0767
Email: mcegalbreath@summitconnects.com

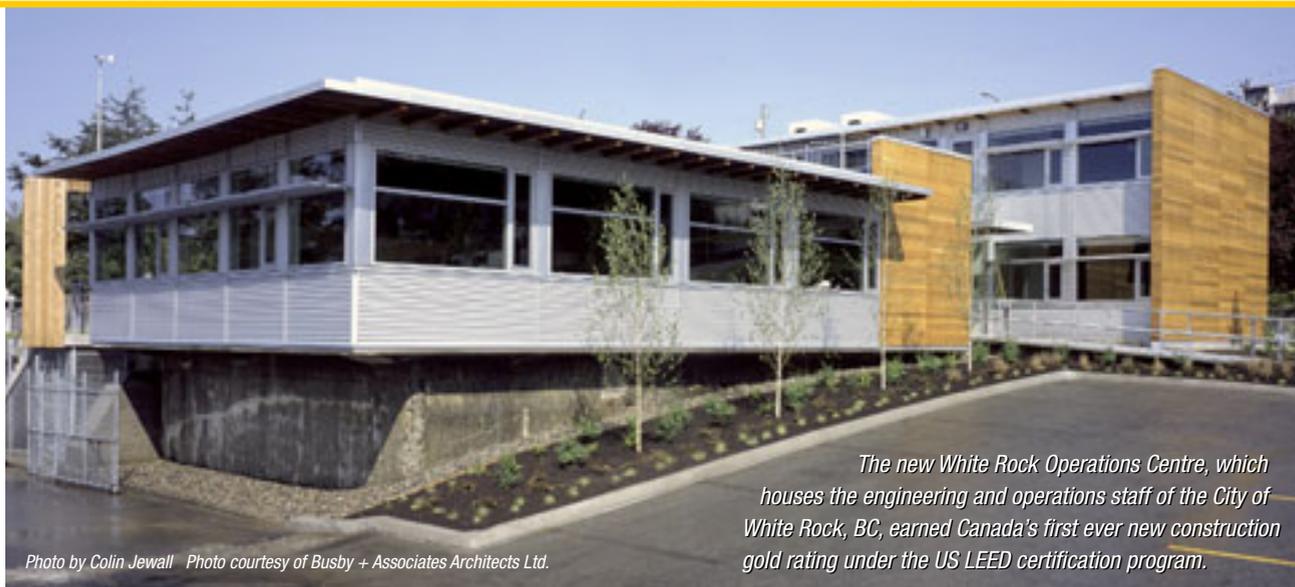


Photo by Colin Jewell Photo courtesy of Busby + Associates Architects Ltd.

The new White Rock Operations Centre, which houses the engineering and operations staff of the City of White Rock, BC, earned Canada's first ever new construction gold rating under the US LEED certification program.

into environmentally innovative design. Most have a hard time justifying new construction. Retrofitting existing buildings is the more customary course, trying to squeeze a few more years out of a facility that may be well past its prime.

Here again, 'green' technology can enable these improvements to do well while doing good. Relatively simple monitoring and control hardware – which can attend to such chores as switching off lights when no one is around, or juggling the heating/cooling cycle – can be highly cost-effective. This equipment may not be as flashy as a power-generating windmill or solar panels on the roof, but its conservation value offers many of the same environmental bragging rights, while its dollar value is even more appealing.

The success of these retrofitting activities invariably begins with a thorough audit of the facility in question, which often reveals the extent of required changes. Planners less frequently encounter sites in need of complete makeovers, like the one in White Rock, than they do sites that are in need of some rehabilitation. Sources such as the Green Municipal Funds at the Federation of Canadian Municipalities can assist in these rehabilitations, and many cities have taken advantage of this opportunity.

One of the most ambitious is the Regional Municipality of York, in southern Ontario, which is at the beginning of a three-year assessment of more than 150 of its buildings, at a total cost of just over \$700,000. At first glance, this looks similar to reviews the region previously conducted to determine major maintenance and retrofitting needs. Steadily, though, environmental and energy considerations have been integrated into these analyses.

According to York's energy management program manager, the benefits – such as minimizing electricity bills, reducing water usage, and lowering greenhouse gas emissions – are not a one-size-fits-all package. Tracey Forrest argues that specific sites call for strategies that are no less specific.

"We have many different types of buildings, and that is a reason why we should be looking at lots of different types of potential solutions," she says. "We have water and wastewater facilities, some of which are unstaffed and controlled remotely; we have lots of office space; and we also have long-term care and

housing. These have quite different occupancy patterns and have to be treated differently."

For just this reason, York teamed up with a local software firm to produce a tool to manage this complex process. The computer package, which the region is preparing to license to other interested municipalities, handles such challenges as normalizing consumption data in order to compare buildings of distinct size or design.

"It does a lot for us," says Forrest, who says the system starts with data on utility bills, such as energy consumption and demand. "It's an online database that allows multiple users to perform baselines on energy consumption, calculate energy savings and perform environmental analyses."

In addition to determining how to deal with the municipality's buildings, the study will also complement another York initiative, a Corporate Clean-Air task force. By demonstrating leadership in this area, the municipal government hopes to inspire individuals, households, and businesses to do the same. Like the study itself, the aim goes well beyond finding ways of trimming costs.

"The building energy feasibility study is not just to look at energy-saving measures," says Forrest. "It's also to look at green measures – renewables, daylighting concepts, water saving technology – things that don't necessarily lead to energy savings. They could, but the green attribute of the measure is more important."

This outlook is already reshaping the way many municipalities regard their retrofitting priorities. By making careful investments that can begin to pay for themselves in as little as four or five years, many municipal administrators can derive some satisfaction from knowing that they have also achieved benefits that go beyond dollars and cents. That is why when Ted Haight greets a visiting delegation that wants to know whether they should consider a project as daring as the White Rock Operations Centre, he does not hesitate to encourage them.

"I tell them it's worth it," he says. "There's a little more effort and cost initially, but the payback is there and socially, it's great." ❧

Tim Lougheed is an Ottawa-based freelance writer.