ENERGY EFFICIENCY VICTORIA

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30 July, 1999.

Building Performance Study
Productivity Commission
Locked Bag 2
Collins St East
MELBOURNE, VIC, 8003.

Dear Sir/Madam

RE: Submission to Study on 'Improving the Future Performance of Buildings'

There are various publications which address the issues raised in your Issues Paper. Perhaps most notable are:

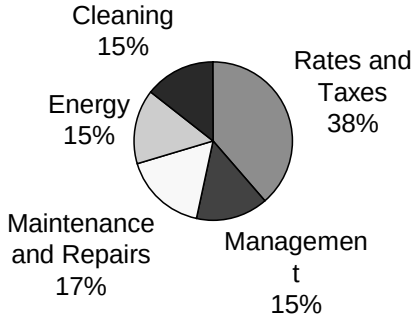
1. The Australian Greenhouse Office's recent 'Baseline Study of Greenhouse Gas Emissions from the Commercial Building Sector with Projections to the Year 2010' (May 1999), which provides a quantitative analysis of greenhouse emissions that would be attributable to the non-residential building sector under alternative levels of emission abatement initiatives.
2. The Property Council of Australia's (previously BOMA) 1994 *Energy Guidelines,* which provides guidance on energy consumption benchmarks, targets and IST&Ps.
3. The Property Council of Australia's *Victorian Office Buildings Operating Costs,* and also the energy survey, which provide further insight into commercial building energy consumption levels.
4. The Energy Research & Development Corporations 'Study into the Energy Efficient Renovation of Commercial Buildings'. This study provides a sound understanding of the Australian commercial building market and its renovation processes, identifies the potential to incorporate energy efficient considerations in that process, and recommends mechanisms that should promote change.

What follows are some observations and experiences of Energy Efficiency Victoria that address issues raised in sections of your Issues Paper of particular concern to us.

Section 2 The performance of buildings

In terms of facility management, energy costs usually comprise about 18% of a building's outgoings, as indicated in the following chart. (Refer Property Council of Australia - Operating Cost data and also Rawlinson Construction Handbook)

TYPICAL OPERATING COST FOR A 10,000m^2 FULLY SERVICED OFFICE BUILDING



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From the perspective of the facility manager or building engineer, this energy cost represents a substantial and controllable cost.

In terms of the total operating cost of a business, including wages etc, energy costs are usually significantly less than 5% of this total.

However, one of the principle benefits of reducing and effectively managing energy consumption is the improved quality of service the building consequently provides. A well designed, well maintained and well operated facility will be energy efficient. The correlation between energy performance and amenity can be well demonstrated. Poor energy performance is often indicative of poor general building performance, but this is not generally well understood by many building owner and managers.

Most energy consumed in commercial buildings is for the provision occupant comfort by way of air conditioning, ventilation or lighting. The objectives of providing these services both effectively and efficiently are totally consistent.

With energy conscious design of commercial buildings, energy performance criteria are established and sometimes briefed at the commencement of the design. Subsequently, various design options, as they are developed, are assessed against these criteria. Energy performance is then verified upon commissioning and monitored throughout the building operation. However, such energy conscious design, construction and operation are not normal, but not uncommon.

Some organisations conduct energy benchmarking studies of their portfolio, conduct energy audits and monitor the energy performance of their buildings. Their response to such analysis varies. The Department of Justice in Victoria monitors the energy performance of their building portfolio (over 150 properties), conducts energy audits, implements IST&Ps and incorporates energy performance requirements in their new building projects. IST&Ps are selected for implementation when generally they have a simple bay back period of less than 2-3 years. In the last three years the Department of Justice has invested in IST&Ps which have yielded an overall ROI of 38% and resulted in energy savings of 10%. The IST&Ps implemented have not compromised the facilities services. In many instances the quality of services has improved as a result of the IST&Ps.

Section 3: Input saving technologies

One of the main barriers to implementing IST&Ps in new construction is the diminishing consultant design component of building projects. Reduced competitive design fees and compressed deadlines work against assessing IST&Ps and exploring innovative approaches. Accordingly designs are often inclined to be over designed and less than optimally efficient.

Often the design process lags with respect information flow. The design process is inclined to be sequential and discrete where the architecture is committed before design of engineering services is commenced, and there is little interaction between the architectural design and the engineering services. In this regard, greater use could be made of electronic communication and interoperability.

Not only is integration of the design of building elements required, but integration throughout the building lifecycle is required. Designers often have little contact with building operators, and further, building users (occupants) have little direct input into the project initiation and briefing.

A further barrier is the difficulty of the building industry to keep up with emerging IST&Ps. Reduced competitive design fees and compressed deadlines compound this difficulty. Various professional bodies recognise this and are actively working to provide their membership with appropriate information and continuing education through journals and training seminars. However, there is to a large extent entrenched 'industry practice' which expedites building practice, sometimes to the detriment of medium to long term performance efficiency.

In conclusion, whether it be a new building or refurbishment, the approach to design is of paramount importance in producing a low energy building. The building needs to be considered as a whole, and the design of its various elements has to be integrated. For example the location and size of windows has implications for the level of daylighting available and the amount of artificial lighting required, as well as the heating and cooling requirements. These interactions need to be carefully considered for a low energy building.

The correct approach to design starts with adequate briefing and selecting a design team the client feels confident can deliver a building with the level of performance they require. If it is anticipated the operating costs of a new facility will be large, this energy efficient design input maybe better provided by a specialist consultant.

We trust this brief submission is a productive input to your study.

Yours faithfully

Paul Rogers
Manager - Commercial Building Program