

Presentation Synopsis



International Conference on Indoor Air Quality / Healthy Indoor Environment:

A Responsible Approach to Environmental Management of Existing Buildings

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Prepared for:

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1 INTRODUCTION

My talk this morning focuses on the existing building market, and what measures are being taken to both recognize and improve the environmental performance of buildings. New buildings start with a clean slate. Before foundations are laid, issues such as daylighting, building orientation and available transportation systems can all be addressed. But those sorts of issues generally cannot be changed once the building is built.

So my presentation will deal with the things that can be managed once buildings are constructed. And to help move the industry along this path, we will have a look at a recognition program developed here in Vancouver.

Since the word *sustainable* is part of this session's title, and since I am the first speaker, I thought it would be helpful to give a brief history of the environmental movement as a whole, while highlighting its impact on the building industry in particular. This will help you get acquainted with the main subject of my presentation, which relates to the responsible management of existing buildings.

It seems the word sustainable is used everywhere now. I saw a presentation from a hydroelectric company in Central Canada that used the word sustainable to describe its approach to building big dams. And I am sure you have heard the term uttered from politicians, educators and business leaders. Truly we have a word that seems to justify all actions and make pretty well anyone feel good. Unfortunately when a word ends up having many meanings it ultimately becomes meaningless.

I certainly do not feel confident in defining sustainability beyond mumbling something about our children's future. I can however relate the "S" word to environmental issues, and give you some background to the sustainable movement, so let's start there.

So here is what I want to do. I will provide you with a short history on the events and philosophical movement of environmentalism, and then relate this to the building industry. I will then look at the spectrum of environmental issues that we have to deal with in buildings. Finally, I will deal with the issue of rating systems as a means of improving the building industry's performance in the field of environmental stewardship. I will conclude by presenting a new recognition program developed by the Building Owners and Managers Association (BOMA).

1.1 A Brief History of Environmentalism

From my perspective, the environmental movement has emerged through two driving forces – reaction and concern. I am sure many of you can think of environmental disasters that in some way were pivotal in reshaping our paradigm about how we should live. From a building industry perspective, the issues that triggered environmental concern were:

1. Energy
2. Indoor air quality
3. Indoor *environmental* quality, and finally
4. Water

I have listed these in chronological order. You can tag each of these issues to a date or era:



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1. Energy: The oil embargo triggered the first resource conservation efforts. Remember the Club of Rome? Those were the folks who published a book called Limits to Growth that projected that we were going to run out of a lot of things around 1990. (Their book was published in 1972.) Back in the '70's, building engineers and architects started to diligently look at reducing the consumption of energy, and in particular fossil fuels. So the first wave of environmentalism related to resources, and for the building industry, that meant energy.
2. At the beginning of the 1980's, I was launching my career in the field of energy management, but there wasn't a whole lot of interest in energy conservation at that time. ASHRAE – the American Society of Heating, Refrigerating and Air Conditioning Engineers -- published a revision to their ventilation standard (#62) that drastically reduced the required flow rate of outdoor air per person in buildings in response to energy concerns. Similar enthusiasm in reducing utility bills helped create the next environmental issue – the indoor environment. The connection between resource consumption and indoor environment was starting to become apparent. We had to get smarter.
3. So in the '70's the focus was on resources, and in the '80's – in general terms – people's attention turned to air quality. Then in the 1990's, people got a whole lot fussier and not only complained about feeling stuffy, they also said they were getting eye strain from the lights, head aches from noisy fans, and back aches from their chairs. IAQ became IEQ – indoor environmental quality.
4. And then finally there was Walkerton. Water in general has come into the forefront of concern not only due to water *quality* issues, but also *quantity* issues. Remember National Geographic's only departure from their classic yellow cover? I am not talking about the Swim Suite issue, but the Water Issue, where every article related to water. Water quality, and in particular water conservation have become part of the sustainable building equation.

2 ENVIRONMENTAL ISSUES WITH EXISTING BUILDINGS

This historical review points shows us how the circle of environmental issues for buildings has become broader over time. While there are signs that some people wish to cast the net further and include social issues such as equity, I think we have a big enough challenge handling “pure” environmental issues.

By slicing the pie a different way from my historical presentation, the key sustainable issues for buildings are:

1. Resource consumption
2. Ecological loadings (e.g., ozone)
3. Indoor environment (IAQ, housekeeping)
4. Site (e.g., light pollution, transportation)

Each of the historical issues I mentioned can be fit in this sustainable framework. For example, energy and water conservation are resource issues. Air and water pollution can be dealt with under ecological loadings.



While new buildings have several site issues, existing buildings only have a few controllable aspects. For example, irrigation and pesticides can be curtailed.

3 MAKING A DIFFERENCE

With the maturation of our understanding of environmental issues relating to the building industry, there has become a need to develop means of recognizing and encouraging appropriate measures to make things better. The first question in this respect is – who does what? What are the appropriate roles of individuals and organizations? What role should government have? What role should industry have?

My attention has been on what role industry should have. We have other presenters this morning that can better speak to candidate roles of government.

So what can industry do? I think encouragement and competition are good motivators. One option to achieve these motivators is to have some sort of rating system. Another option is to have a pass/fail recognition system.

Whatever the rating or recognition system, a number of challenges must be overcome.

3.1 Challenges in Developing a Rating System

I would like to go over three challenges – the tensions of differing value systems, the lack of research and the problem of complexity.

3.1.1 Competing Value Systems

While environmentalism has been cradled within a fundamental cultural shift, it still has major conflicts with other dominant value systems. For example, fundamental doctrines of economics and the idea of progress are often at odds with environmentalism. There may be some objection to this statement as it might be construed to mean corporations do not care about environmental issues. But this is not my point nor is it true. My point is that different value systems may on the surface have points of agreement, but there will be times of conflict.

I am pointing out these philosophical conflicts because they play a part in trying to form an appropriate environmental response for the building industry. Buildings are for people, and since we live in a culture of syncretism, there is no easy way to firstly define what is “acceptable” environmentalism, and then to quantify this.

3.1.2 Lack of Research

While there have been various attempts at rating systems, very little research has been performed to date to help with quantifying the relative merits of environmental alternatives. For example, we may have some intuition about the relative merits of recycling over indoor air quality, but who can state the quantitative relationship between these? How can we justify giving two points for using a refrigerant with zero ozone depletion potential and three points for recycling? I have yet to see any research dealing with such issues, and frankly, I do not expect any. Why? Because the environment is complex. It’s like trying to write an algebraic equation for an eco system.



3.1.3 Complexity and Cost

The third challenge with rating systems is the inevitable complexity that tends to be introduced over time. This typically occurs from the consensus process and once again from the reality of how complex the environment is.

So these are the challenges that must be faced in developing any rating system for environmental performance in buildings. When BOMA looked at some of the certification options out there, it became quickly apparent that the cost per building to be certified -- that is, to complete the analysis and do the paperwork -- was going to be thousands of dollars per building. And this was just the soft cost. Of course the actual costs of achieving a certain level of sustainability was recognized to be significant, but this was deemed a value add proposition.

4 THE BOMA GO GREEN RECOGNITION PROGRAM

Now that we have tackled the history of “green buildings” and some of the challenges in rating systems, let’s have a look at a new recognition program.

Let me give you a little background on BOMA before describing their Go Green program. The Building Owners and Managers Association has over 18,000 members. Collectively, BOMA members own or manage more than nine billion square feet of office space, which represents more than 80 percent of the prime office space in North America

The BC Chapter of BOMA created the Earth Award which recognizes the top leading buildings in environmental performance. And now it has just launched the Go Green program.

4.1 Guiding Principals

Before developing any of the program details, BOMA decided that this would be a voluntary program.

4.2 Approach

Rather than going with a points-based program or rating system, BOMA took a very different approach. A series of best practices presently recognized in industry was selected as a minimum level of performance.

In each area of environmental stewardship, the hurdle was set in relation to industry’s maturity and understanding of the issue. This ranged from policy making down to implementation. Newer sustainable concepts will first be introduced to the program as policy requirements; older, more mature strategies will require implementation.

4.3 Criteria

A total of five categories were selected. Thereafter, two requirements from each category were established. Keeping with the theme of simplicity, this works out to a total of 10 requirements. I will now go through each of these requirements.

4.3.1 Resource Consumption

Energy remains a dominant resource issue in buildings. The Go Green program at this point is setting a benchmark for having an energy audit performed within the last three years. It also



requires a plan to implement the measures identified. At the program progresses, continued recognition will likely require proof of implementation.

A water audit should also be performed at the same time. This is something new for most building owners, but I believe it will provide insightful and beneficial.

4.3.2 Waste Reduction and Recycling

The Go Green program requires building owners to have a policy in place that requires materials such as drywall, steel studs and other recyclable construction material to be diverted from landfill.

In terms of consumable products – paper, glass and plastics – the building owner must have a recycling program in place.

4.3.3 Building Materials

Hazardous materials must be identified, and an action plan must be in place as to how to handle these products.

In terms of new building products, owners must have a written policy on the use of environmentally friendly materials. Given the flux of professional opinions over some aspects of building component selection, and the contractual freedom of tenants for their space improvements, the program is not rigid on specific products.

While there are various governmental requirements for use of ODP products, the program asks for some planning to be in place.

4.3.4 Interior Environment

The minimum requirement for IAQ is to have a complaint procedure in place, including measurements as required.

In recognition of the HVAC system being an important component of healthy buildings, there is a requirement for IAQ-enhancing maintenance of mechanical systems.

4.3.5 Tenant Awareness

And finally, to ensure that building occupants are on board with the management team's efforts, a communication program must be in place.

5 SUMMARY

So this morning we have looked at the history of environmental issues in the building industry, and seen how the various issues have emerged and broadened the perspective of sustainability.

An appropriate leader for tackling the recognition and encouragement aspect of these issues should be industry itself. There are however certain challenges that lie ahead, such as a lack of research.

We have looked at one recognition system – one of the first for existing buildings. You will now be hearing more about new building initiatives – I look forward in listening to the other presenters with you.