CITY OF KELOWNA

MEMORANDUM

Date: December 10, 2002 File No.: 0360-20

To: City Manager

From: Energy Management Committee (EMC)

Subject: EMC Interim Proposed Sustainable Building Plan for the City of Kelowna

RECOMMENDATION:

THAT Council endorse the concept of Sustainable Building Plan for the City of Kelowna;

AND THAT the EMC be directed to take the following actions as a result of this interim report:

- a) To seek input from all appropriate internal City Department/Divisions and any other possible outside stakeholders on the suggested recommendations as outlined in this interim report;
- b) To bring forward to Council a Sustainable Building Plan Implementation Strategy for City facilities.

BACKGROUND:

In the early 1990's the City of Kelowna recognized that community growth was putting pressure on the City's resources and infrastructure to meet the increased demand for services. The framework presented in the City's Strategic Plan (CSP) "Choosing Our Future" encompassed housing, transport, infrastructure, economic development and the City's natural and social environment. Progress to date in areas such as: water conservation; solid waste reduction; air quality; environmental review of drainage; watershed protection; transportation demand management (TDM); promotion of town center concepts and pollution prevention education have been successful outcomes of the CSP. In support of the CSP several City Managers began discussions on energy management and efficient resource use opportunities. Efficiency makes sense – overall resource use is reduced while achieving lower life cycle costs, helping to free up funds for future efficiency projects.

Today the City operates 166 buildings/structures consuming significant energy resources while creating carbon dioxide emissions. In order to identify resource saving measures for these facilities and uses, the City's has partnered with its electricity supplier, Aquila Networks Canada (Aquila), through its umbrella demand-side management program Power Sense. As a wholesale rate payer to Aquila, the City and all its rate payers are eligible for all Power Sense incentives approved by the British Columbia Utilities Commission today.

Recently the EMC has taken the lead to address sustainability criteria for contractors, vendors, and consultants working on all new and retrofit of City properties (i.e. Mission Sports Centre, Rotary Art Centre, PRC, Rutland Arena etc.) Proposal and performance guidelines are drafted. Operating performance and fuel efficiency for City facilities, equipment and vehicles are being reviewed to establish improvement targets. Energy reduction initiatives also create the potential for reductions in greenhouse gas production as a result of heating fuel useage. This is consistent with Councils commitment to the City's action plan for FCM's "Partners for Climate Protection" program.

With the appointment of a full time Energy Management Coordinator, the EMC believes a sustainable building plan for the City' is now the right direction to go. One may ask; what is a sustainable building plan? Sustainable building is the notion of designing, constructing and operating buildings and landscapes in a manner that minimizes environmental impacts. It incorporates energy efficiency, water conservation, waste minimization, pollution prevention, resource-efficiency, materials and indoor air quality in all phases of a building's life. Designing and constructing buildings in a more "sustainable" manner not only conserves valuable natural resources, but also provides economic and health benefits to building owners, occupants and the community at large.

Attached is an interim Proposed Sustainable Building Plan developed by the EMC. The report provides information and issues for implementation of a Sustainable Building Action Plan. It will be discussed and refined with input from other City departments and appropriate outside stakeholders. From this input staff will provide a follow-up report to Council with a final action plan and related resource requirements.

The EMC anticipates the implementation of a Sustainable Building Action Plan will be done in two phases. In Phase I staff will focus on new City facilities and cost effective retrofit of existing facilities. The committee intends (in its later stages, year 4-5) to possibly begin an outreach to private builders and developers in the Kelowna area. The program may present such topics as operating and maintenance improvement practices, government and other program funding sources, and a formal recognition program for performance excellence in development and retrofit projects. From this outreach, a Community Energy Management Advisory Committee in time may be established to work with the EMC and partners to ensure that efficiency and sustainability are integral to all facility construction activity in the Kelowna area.

The EMC believe today we need to: "Lead By Example" with a sustainable building plan having a number of partners and particular one that makes sense, that's "PowerSense".

Don Degen, EMC Chairman Rod Carle, Energy Management Coordinator

cc EMC Committee Director of Finance and Corporate Services Director of Works and Utilities **CITY OF KELOWNA** ENERGY MANAGEMENT COMMITTEE

"INTERIM"

PROPOSED SUSTAINABLE BUILDING ACTION PLAN

Recommendations to Promote Sustainable Design and Construction Efforts in the City of Kelowna



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EXECUTIVE SUMMARY

"Sustainable building" is the notion of designing, constructing, and operating buildings and landscapes in a manner that minimizes environmental impacts. It incorporates energy efficiency, water conservation, waste minimization, pollution prevention, resource-efficient materials, and indoor air quality in all phases of a building's life.

Designing and constructing buildings in a more "sustainable" manner not only conserves valuable natural resources, but also provides economic and health benefits to building owners, occupants and the community at large. The City of Kelowna through its partners Power Sense and Water Smart and its own Environmental Division has, for several years, provided a variety of conservation programs aimed at the design and construction industry. These include technical assistance, incentives, and educational programs in the areas of energy efficiency, air quality, water conservation, pollution prevention, and solid waste management. Initially, these programs were generally offered in a fragmented manner, with each department providing its own set of programs independent of other departments. Although these programs have been successful, and although some integrated programs have recently been offered, much more can still be done to transform the market in order to make sustainable building the standard practice in the City of Kelowna.

In August 2002, the Energy Management Committee (EMC) proceeded to develop a Proposed Sustainable Building Action Plan for the City of Kelowna. This document is the product of the EMC's work and serves as a proposed action plan to promote sustainable design and building on all new construction and major renovation projects that take place in the city.

Although construction activities are not confined to the City of Kelowna limits, the package of proposed recommendations in this Action Plan primarily includes policies and programs that the City of Kelowna can undertake—only one proposed recommendation specifically calls for regional cooperation. In addition, this document does not include action items that the private sector could implement. These omissions are deliberate. The focus was on developing a set of proposed recommendations that local government could control and implement.

This Proposed Action Plan is intended to be a discussion paper for decision-makers: City Council, department heads, and City managers. Some of the proposed recommendations listed entail minimal costs and could proceed without high level authorization, while others require a significant investment by the City and may not be implemented until later budget cycles. The EMC Group believes that the entire package of proposed recommendations needs to be implemented in order to affect real, largescale change in the way the building industry conducts business today.

I. INTRODUCTION

The City of Kelowna prides itself on being a leader in environmental issues. Over the past several years, the City has received national attention and awards for its progressive energy efficiency, water conservation and recycling programs. The City has become increasingly aware of the importance of sustainable building efforts in the overall scheme of environmental stewardship. The relationship between energy conservation and greenhouse gas reduction is also key issue on a national and global scale. The co-benefits to air quality improvement with green house gas reduction through energy conservation is high on the priority list for health professionals and air quality specialists. In Kelowna and the Central Okanagan there is strong interest to improve air quality therefore energy conservation has a strong partnership for establishing external funding initiatives.

The building industry is the nation's largest manufacturing activity, representing more than 50 percent of the nation's wealth and 13 percent of the Gross Domestic Product. In addition, buildings account for one-sixth of the world's freshwater withdrawals, onequarter of its wood harvest, and two-fifths of its material and energy flows. Structures also impact areas beyond their immediate location, affecting watersheds, air quality, and transportation patterns of communities. Given that buildings consume a significant amount of resources during their construction and occupancy, Kelowna has a vested interest in ensuring that buildings are designed and constructed in an environmentally responsible manner.

"Sustainability" describes the ability to meet the needs of the present without compromising the ability of future generations to meet their needs. "Sustainable building" (also referred to as "resource-efficient" or "green building") is the notion of designing, constructing, and operating buildings and landscapes in a manner that minimizes environmental impacts. It incorporates energy efficiency, water conservation, waste minimization, pollution prevention, resource-efficient materials and indoor air quality in all phases of a building's life. Building in a sustainable manner usually means exceeding codes or standard practices. Although meeting the current energy and plumbing codes certainly enables a building to be more resource-efficient than one built 50 years ago, much more can still be done. In some cases, such as solid waste management and irrigation, few if any requirements or minimal performance standards exist.

Sustainable building is an important component within the larger framework of sustainable development. The difference between the two concepts is as follows: sustainable building is more narrowly focused on individual buildings (how a building or landscape is designed and built), whereas sustainable development more broadly addresses issues affecting entire communities, such as land use and transportation.

II. BENEFITS OF SUSTAINABLE BUILDING & THE CITY'S ROLE

As noted earlier, buildings use a tremendous amount of resources during their construction and their occupancy. Designing and constructing buildings in a sustainable manner reduces energy and water use, reduces solid and hazardous waste, prevents indoor and outdoor pollution, and uses materials more efficiently. In turn energy, water, and material efficiency can save the building owner and/or tenant money by reducing utility bills. Furthermore, resource conservation reduces fossil fuel use and greenhouse gas production, the need for new power plants, water supplies, and landfills, thus benefiting the City of Kelowna and its residents.

Numerous case studies also indicate that sustainably designed buildings can result in human health benefits. Daylighting, reduction of toxic products, and other resource-efficient measures have been shown to increase worker productivity, reduce sick leave and provide a more comfortable working and living environment. Financially, these benefits are usually far greater than the savings from utility bills.

City of Kelowna through its partner Aquila Networks and their Power Sense initiative offer a variety of energy efficiency programs to the building industry and have done so for several years. For example, some programs offer financial incentives to offset the higher equipment costs of energy and water conserving technologies. The rationale is that the City will receive a high rate of return on its investment through reduced water and energy use during the life of the building.

The proposed recommendations outlined in this document augment the activities already implemented by City departments. They only include policies and programs that the City of Kelowna could undertake to facilitate sustainable building. That is not to say that City government is solely responsible for promoting these efforts. Clearly, the private sector, other government agencies, and individuals also play a key role in getting sustainable building into the mainstream; and partnerships between the City and these groups are vital. However, the purpose of this Proposed Action Plan is to only identify those items that the City of Kelowna can control and implement. The City's role is to move the market in a direction that benefits the environment, building industry and the community. The proposed recommendations outlined in the following pages attempt to raise awareness about sustainable building and its benefits; provide the industry with the information, tools and incentives to put sustainable building concepts into practice; recognize and reward successful projects; and lead the effort by example. Once sustainable buildings are more widely accepted and practiced, the City can begin to step aside and allow market forces to continue on their own.

Many of the recommendations in this Proposed Action Plan require a financial investment from the City of Kelowna. As with the existing City conservation programs, the City of Kelowna should see a return on its investment, via water, energy and waste reduction, within an acceptable time frame. In addition to reducing costs to City government, these practices will have a positive impact on the community as a whole, as described above. Consequently, it is in the interest of the entire city to invest in sustainable building.

BACKGROUND

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CURRENT SUSTAINABLE BUILDING ACTIVITIES

The City of Kelowna currently offers a number of conservation programs to the design, construction and landscaping industry. The following are just a few of many such examples:

- Aquila's PowerSense Program PowerSense is a wide-ranging and practical energy efficiency program. Every electrical consumer will find dozens of tips on how to use energy more wisely. Whether the objective is to improve an existing building's systems, the construction of a new home, or simply better solutions in household lighting, PowerSense provides incentives and information to help.
- Kelowna Water Utility's (KWU) *Water Smart Program* Provides commercial customers with technical assistance when installing water conservation technologies.
- The Regional District of Central Okanagan has its Regional Waste Reduction Office, which coordinates waste reduction education for all of the Central Okanagan.
- The City's Environmental Division has a number of Environmental Education Programs, which were developed mainly for Watersheds, Environment Participation and Air Quality. These programs are offered free to the public and all classes of School District 23.

In addition to City activities, the private sector has also initiated a variety of sustainable building programs. For example, there is a growing field of consultants and architects who specialize in sustainable design, and a few construction companies that have full-time staff whose expertise is sustainable construction. Today, many large construction and demolition companies recycle their construction debris on a regular basis.

Beyond the City of Kelowna limits, sustainable building activities are prevalent in many other jurisdictions. Perhaps one other widely recognized program is the BC Gas "Energy Matters Workshops" which were held in Prince George, Kamloops, Kelowna, Cranbrook and Castlegar. These workshops provided sustainable building guidelines for residential and commercial buildings. Presentations from the Energy Awareness Committee, Green Building Design Consultants and Engineering Groups were heard through out the one-day event. Topics included energy efficiency, policy development, utility management and the Leed program. It was noted during the workshop that in Santa Barbara, developers can have their building permits expedited if they include resource-efficient measures on their projects. These large-scale efforts reinforce the idea that sustainable building is important on both a local and national level.

In general, most City conservation programs that are targeted at the construction industry are focused on a specific issue. For example, Aquila's Power Sense Program is primarily aimed at energy efficiency in commercial buildings and the City's Water Smart Program is geared mainly towards water conservation in residential and commercial areas. A few recent programs take a more integrated approach, and include more than one conservation issue.

In addition to recognizing the value of integrating the efforts of City utilities, it has also become clear that the utilities need to work with other City departments to promote sustainable building efforts. The Corporate Services Department, the Planning and & Development Services Department and the Works & Utilities Department, along with many other departments are all key stakeholders in sustainable building. It is also critical that the City work more closely with the private sector and other government agencies, both locally and regionally, on these issues. In essence, cooperation is the key element in successfully promoting sustainable building activities.

KELOWNA'S PROPOSED SUSTAINABLE BUILDING ACTION PLAN

Despite the City of Kelowna's successful programs, and despite the recent trend to provide more integrated conservation programs to the building industry, sustainable building is not yet *the* standard building practice in the city. This is true for City-funded, other government, and private sector construction projects that take place within the city limits. In general, most construction projects in Kelowna utilize traditional building practices. That is, most projects simply strive to meet the energy and other building codes. Although Kelowna has stringent energy and plumbing codes, additional measures can be taken to conserve more resources on a project. And some sustainability issues, such as irrigation and waste reduction, lack any performance standards or requirements.

There are a number of reasons why sustainable building is not yet the standard practice. Higher first costs, perceived risks, lack of information about the latest available technology and lack of information about City incentive programs are only a few of the barriers to sustainable building. Developers, architects, contractors and other key players face a variety of challenges in implementing sustainable building practices. Recognizing this, the City EMC Group is proposing an ambitious initiative – development of a *Sustainable Building Action Plan* for the City of Kelowna. The goals of this Plan are to: (1) Identify the possible main barriers to sustainable building within the City of Kelowna; and (2) To identify a set of proposed recommended strategies that the City can undertake to overcome these barriers. If implemented, the strategies outlined in the Plan should do much to further the efforts of sustainable building on a large scale in the City.

IV.

POSSIBLE VISION AND MISSION STATEMENTS

The EMC Group believes first there is a need to developed a vision statement and mission statement. The vision statement needs to describe the long-term vision for sustainable building in the City of Kelowna, while the mission statement should define the objectives for this proposed Action Plan.

EXAMPLE "VISION STATEMENT"

To enable building and landscape design and construction to achieve the highest positive regard for our quality of life with the least ecological consequences to our natural environment.

EXAMPLE "MISSION STATEMENT"

To identify the barriers and incentives for private and public sector sustainable design and construction; to prioritize and recommend policies and programs for the City of Kelowna in response to these; and to provide the ideas and strategies that can guide the City's implementation.

V. IDENTIFICATION OF POSSIBLE BARRIERS

After possibly defining the vision and mission statements, there is need to identify various obstacles to sustainable building. The following is a list of the possible obstacles, grouped into three categories: Information, Regulations & Processes, and Incentives:

INFORMATION BARRIERS

Possible consensus as to what "sustainable building" means, what the minimum performance standards are, what activities are environmentally stressful, what the economics are, and how to evaluate or measure it.

Ask any two people to define "sustainable" or "green building" and you will probably get two different responses. Some regard meeting the energy code as building sustainably while others regard this as simply meeting the absolute minimum requirements. Some published definitions of sustainable building are vaguely defined and left to interpretation. Without an accepted, specific, working definition of sustainable building, it is difficult to promote the concept, identify goals, and measure the results.

Possible public policy defining why sustainable building benefits the City of Kelowna and promotes the public good; and there is a lack of success ineffectively communicating the benefits of sustainable building to the industry.

Sustainable building is more than doing the "environmentally right thing". Using resources more efficiently also provides economic benefits to the city, the building industry, and building occupants. Sustainably designed buildings further provide for a more comfortable and healthier environment, resulting in increased productivity and reduced sick leave. All tangible benefits pertaining to all stakeholders need to be defined and communicated in order to effectively promote sustainable building on a large scale.

The vast amount of information currently available has not been successfully integrated and effectively disseminated or promoted.

A tremendous amount of information on green building already exists. There are numerous publications, web sites, databases, products, incentive programs, and other information around the City, country and the world. However, most of the information is dispersed, and few architects, developers, project managers, and others have the time or money to conduct the necessary research.

Bad experiences and poor product performance from the past deter people from incorporating sustainable building practices today.

Some resource-efficient products that have been introduced in recent years have not performed as well as expected. One commonly heard complaint is we need to flush twice with low-flow toilets. Although this is true for some models, there are many other models that perform very well. Consumers need to be informed about what product features to look for in a toilet. Another example is plastic lumber. When first produced, plastic lumber failed to perform in some applications. Today, however, the product has been reengineered and greatly improved. Nonetheless, because of poor past performance there is still a misperception about the quality of plastic lumber.

REGULATORY & PROCESS BARRIERS

There is a perceived and real inconsistency between sustainable building practices and codes and regulations.

Because of the numerous sets of codes, regulations and requirements that apply to the building industry, it is not surprising that some may be inconsistent with the goals of sustainable building. Some of these may be perceived (but not real) inconsistencies due to a lack of understanding or misinterpretation of the regulation/requirement. Others may be real inconsistencies due to an attempt to meet a different set of goals. For example, in downtown Kelowna it is often prohibitively expensive to lease multiple containers on a construction project. As a result, the project is unable to site additional containers to recycle construction debris.

It is unclear from the various codes and regulations whether sustainable building is a priority for the City, and if it is, there is a lack of information as to how to achieve sustainable buildings and landscapes.

Because various codes, regulations and processes were established by various agencies to meet a variety of goals, it is not clear from existing codes, regulations and processes whether sustainable building is a priority issue for the City. Nor is it clear how sustainable building goals are to be achieved on a holistic level.

There are few if any benchmark standards or minimum performance standards for certain sustainable building issues.

Because some sustainable building issues, such as irrigation and job-site recycling, are not currently required, the minimum performance standards are undefined.

INCENTIVE BARRIERS

There is a lack of information about the inherent long-term economic benefits of sustainable building.

Many of the benefits of incorporating sustainable design and construction elements occur during the life of the building, such as reduced energy use and thus reduced utility bills. Other benefits take the form of reduced worker sick leave and lower operation and maintenance costs. These long-term savings should be, but usually are not, considered so that the entire life-cycle costs of the building are determined.

The reality is that first cost is the overriding concern among financial institutions, investors, etc.

Even if project managers choose to look at life-cycle costs with resulting higher first costs, they may not be able to secure larger loans for their project.

There is a lack of integration among various incentive programs (rebates, loans, technical assistance, and recognition programs), and a lack of understanding about how to apply and receive incentives.

The City currently offers (through PowerSense) several incentive programs to the building industry. However, many people are unaware of the variety of programs offered. Furthermore, most programs are dispersed among various departments -- there is no one-stop-shopping for City incentive programs, and those applying for incentives in one department are often not informed about incentives offered by other departments. Some programs require a significant amount of paperwork and a slow turn-around time, making them somewhat intimidating and less attractive to prospective applicants, especially first-time users.

Most current incentive programs are aimed at the developer, not at the people designing and constructing the building.

A single building project can employ dozens of consultants and contractors (architects, general contractors, sub-contractors, landscape architects, etc.). Each group, particularly those on the design team, can influence the way the building and landscape is designed and constructed. However, most financial incentive programs are targeted at the developer, thereby providing little incentive to those carrying out the work to build more sustainably.

The building industry faces a tremendous amount of risk (regulations, finances, and public opinion) and is constantly managing that risk. Sustainable building is often perceived as an additional risk.

Asking the industry to design and build in a more sustainable manner is asking the industry to change the way it fundamentally does business. Change is difficult for anyone, but it is particularly difficult for an industry that, by necessity, is conservative because of all the risks it faces.

Utility rates in Kelowna are low and can be a disincentive to any sustainable building practices that raise first costs.

Relative to other parts of the country, Kelowna's electrical energy and water rates are very low. As a result, the payback period for incorporating some of these resource-efficient measures can be prohibitively long. Thus, practices that may be cost-effective in some parts of the country and the world may not be cost-effective in Kelowna.

VI. PROPOSED OVERALL RECOMMENDATIONS

No single activity or policy will move sustainable building efforts to the point where it becomes common, everyday practice in Kelowna. In addition, the current approach will not be able to transform the market as quickly as possible. Rather, what is needed is for the City to implement a package of new initiatives to overcome the barriers described in the preceding pages. The following proposed recommendations recognize that different strategies appeal to different segments of the market. Some building professionals simply need the right technical information to change their design practices, while others need an incentive to change the way they normally do business.

The proposed recommendations outlined below are not listed in terms of priority. The EMC Group believes each proposed recommendation is equally essential to effectively promote sustainable building. It may be appropriate for the proposed recommendations to be implemented in an incremental fashion, with the low budget or no-budget items occurring first, followed by the larger budget items in subsequent years.

The first proposed recommendation calls for the development of a sustainable building **Primer**—a simple document that defines sustainable building, how to get there via the City's incentive programs, and why it is important. A critical component of the primer will be to develop sustainable building performance guidelines (part of the "how to" portion of the document).

The next proposed recommendation is for the City to adopt a **sustainable building policy** for all new City-funded construction projects. This could be accomplished by requiring the use of the Primer's performance guidelines or using other existing guidelines, such as the criteria developed by the US Green Building Council.

Once a common foundation has been established by the Primer, the City should **review code**s, regulations and other requirements that pertain to the building industry. The purpose of this would be two-fold: 1) To identify codes that are perceived barriers to sustainable building and clarify that they are not real barriers; 2) To identify, evaluate and recommend appropriate changes to codes which conflict with sustainable building.

In addition to ensuring that regulations do not impede sustainable building efforts, the City should provide the industry with the tools to put sustainable building ideas into action. One method is to create a **Resource Center** to make information more accessible to those conducting research on green building products, technologies and practices. A wealth of information about sustainable building already exists but is scattered among hundreds of companies, agencies and other organizations throughout the world. One-stop-shopping for this information is an item that the EMC Group strongly recommends.

Education and outreach is also key to getting sustainable building into the mainstream. Workshops, seminars, and other education of City staff (e.g. building inspectors) and industry professionals need to continue and expand. For many, this education will be an introduction to sustainable building ideas, while for others it will provide the latest information to continually do better.

The City should also continue to partner with Power Sense to provide additional financial **incentives** to the building industry in order to move the market. Although a life cycle cost

analysis usually validates the long-term cost-effectiveness of a sustainably designed project, green building practices often increase up-front costs. As a result, some developers and builders may need an incentive to incorporate resource-efficient technologies in their projects. In addition, upon review of the existing codes, the City may want to consider offering new incentives to developers and other team members (such as contractors and architects). The EMC should also explore air quality and greenhouse gas reduction funding which will further establish the co-benefits of air quality and energy conservation.

Marketing the Primer, a possible Resource Center, educational and incentive programs is vital to their success. The marketing campaign should create a "brand" or identity for sustainable building to incorporate this concept into everyday life for the building industry and the general public. As part of the marketing effort, the City should recognize, **reward** and publicize outstanding projects. This could happen in conjunction with a sustainable building conference or existing awards program.

Finally, to keep pace with constantly changing technologies and regulations, and to continually raise the bar, the Primer's performance guidelines should be **evaluated** and modified on a biennial basis. At some point, sustainable building may become so mainstream that the guidelines will not be necessary. In addition, if the other City initiatives, such as the educational and incentive programs, are successfully implemented, they too should be assessed biennially to determine whether they should continue, be modified, or replaced with new initiatives. Again, once sustainable building becomes more accepted and practiced, many of the City programs may be retired.

APPENDIX

EMC Group:

Don Degen, City of Kelowna Water Manager, EMC Chairman Rod Carle, City of Kelowna Electrical Manager, Energy Management Coordinator Jim Waugh, City of Kelowna Civic Properties Manager Cory Davis, City of Kelowna Environmental Tech Mark Watt, City of Kelowna Environmental Manager Fred Wollin, City of Kelowna Transportation Technician Kelly Hewson, Aquila Networks Canada , PowerSense Technical Advisor

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