

EDMONTON PUBLIC SCHOOLS

November 25, 2008

TO: Board of Trustees

FROM: E. Schmidt, Superintendent of Schools

SUBJECT: District Energy and Environmental Management

ORIGINATOR: R. MacNeil, Assistant Superintendent

RESOURCE

STAFF: Brian Barclay, Dave Whitfield, David Callander, John Nicoll, Kelly Hehn, Kelly Hobbs, Larry Schwenneker, Nigel Rutter, Terry Korte, Will Deys

INFORMATION

Edmonton Public Schools has been practicing utility management for many years. Water conservation, energy management and heating/cooling efficiency have always been issues central to the operation of all district sites. In recent years, awareness about the environmental impact, as well as efficiency of operations have been considered.

This report is broken into two sections; the first relates to facility operations and maintenance, while the second examines low-cost initiatives currently being deployed to address environmental concerns and reduce our carbon footprint. Both sections include statements about future directions.

Facility Operations and Maintenance

The District operates 215 sites of differing size and design. Common to all buildings is the need for quality lighting, sound, air, and heating and cooling. Research from the School Facility Conditions and Learning Environments by Lance W. Roberts, PhD, has shown correlation between the learning environment and student achievement. The drive to optimize these learning environments leads many of the changes in district energy and environmental management. This goal supports the District priority *“To ensure every student is successful in their program of studies, with an emphasis on literacy and numeracy.”*

The adoption of the Canada Green Building Council LEED (Leadership in Environmental and Energy Design) or equivalent standards for maintenance and design provides a goal for all work being undertaken. The LEED Silver standard is the target for Lillian Osborne School which is currently under construction. Alberta Infrastructure has also set LEED Silver as the standard for the six new ASAP (Alberta Schools Alternative Procurement) schools currently under construction. Currently, several Facilities department staff, including a district Principal, are being trained to obtain their LEED accreditation. This will ensure energy and environmental standards are implemented in all district major projects in the coming years.

The mechanical systems which provide heating, ventilation and cooling of district facilities are being upgraded in an on-going basis. Added to these systems are the digital controls that allow

for programming for efficient operation and remote control of the heating and cooling. These are major renovation projects and require infrastructure funding to complete.

With school renovations, Facilities Maintenance staff have installed automated water conservation devices such as “water wolfs”, a device to regulate urinal flushing, low flow toilets and faucets, sensor faucets and waterless urinals. The hands free devices are beneficial in terms of the reduced opportunity for germs to be spread between staff or students, as well as reduced water consumption. High efficiency hot water heaters are also being installed. Water fixtures will continue to be replaced at the end of their life cycle. Regular maintenance and inspection of flush valves also reduces wasted water due to leaking valves.

Since 1982 the District has been replacing, retrofitting, and eliminating older lighting systems with energy efficient ones. The life span of the light tubes also increases with the newer lights and mercury content decreases, providing less environmental impact when recycling. To date, there have been 99 district buildings involved in the lighting retro-fit program. This represents approximately 50% of the District sites. The better lighting quality of the new lighting system means an improvement in the learning environment while reducing the energy consumption (Appendix I).

Improved and efficient lighting practices will continue to be a source of major gains in reducing energy use in the District. Daylight harvesting, which is the use of more natural light in work spaces, is a focus of all new building designs and is encouraged in existing spaces where there is adequate access to daylight.

Window replacement and re-roofing projects also provide substantial savings in terms of energy costs as well as increasing the occupant comfort level of each building. These projects will continue as affordable. Painting and flooring replacements may also be part of these maintenance projects. Both of these now include low volatile organic compounds (VOC) standards for the type of paint and adhesives used at district sites.

The Green Cleaning initiative began over three years ago with a goal to reduce potentially harmful chemicals from the school environment. The committee, made up of representatives from across district staff groups, has provided standards for the Purchasing Department to select appropriate products. Products containing specified prohibited chemicals are no longer allowed in district facilities as of September 2008. The Green Cleaning of our schools also provides the District with a LEED credit towards the Silver certification of the new schools.

District grounds crews are working within the Integrated Pest Management (IPM) policy and procedures developed and used by the City of Edmonton (Appendix II). These procedures include the basic guidelines that chemical products are only used as the last solution when other methods have been tried. District sites work with the City of Edmonton and have the opportunity to “opt out” of herbicide use on school property. Under the City of Edmonton’s Integrated Pest Management program, there are also restrictions on when and where pesticides can be applied around a school site.

Recycling of various wastes from all district sites is a growing part of the District’s goal to achieving environmental sustainability. Currently, all but 25 sites are involved in cardboard and paper recycling programs. A full description of the various recycling services in the District is listed in Appendix III.

Various pilot projects are being undertaken in district facilities. Facilities Services is assisting Riverdale School with the installation of photovoltaic solar panels for electricity production as a demonstration tool for learning about renewable energy sources. As part of the major renovations of Holyrood School, a solar hot water heating system is being installed to supplement the hot water supply.

Low Cost Initiatives

A number of initiatives in the District require little or no direct district funds to operate. These initiatives include the District energy management policy, naturescapes, bus routing, purchasing program, and a number of pilot projects involving schools and sponsorships or grants.

The current district Energy Conservation policy is specific to energy management (Appendix IV) and is due for review and updating this school year. This provides an opportunity to consider environmental sustainability in the policy.

Edmonton Public Schools utility monitoring and verification project is being designed to provide up to date status of utility costs and building performance (environmental footprint & efficiency) information to central and school decision units. The goal of the project is to have a process which provides a proactive approach with simple reporting tools that will monitor and report on utility use. Baseline usage levels will be established and reports will be generated to include district and site level data on an annual and monthly basis (Appendix V).

Naturescapes are initiatives involving school communities where they wish to increase or alter the green space around the school. With assistance from the Planning and Facilities design staff, school groups are undertaking these projects. Private and corporate grants provide the majority of funding for these projects.

Yellow buses used for school transportation are contracted by the District. Responsibility for the vehicle age and emissions lie with the contractor. Student Transportation works to create the most efficient routes possible to ensure the shortest ride times and shortest routes. With seven new schools opening by September 2010, we project that the demand for bus service may decrease across the District as more students will be able to walk to their neighborhood school.

The Purchasing Department is currently revising their procurement policy to include an environmental and energy conscious approach. Standards such as Energy Star compliance and Enviro-Choice cleaning products are considered as the minimum acceptable standards.

Information Technology Services (ITS) install and maintain the computer systems used in almost all district sites. Computers workstations are the next largest use of electrical energy in schools after air handling equipment and lighting. While this technology is becoming more energy efficient, the numbers of computers are increasing and peripheral devices such as Smart Boards are increasing as well. ITS has taken on the challenge of looking for ways to reduce energy consumption at each site by changing workstation settings to turn off monitors and central processing units automatically after pre-set time periods. Where applicable, ITS recommends lower powered devices and solutions for schools such as laptops, terminal services and workstation appliances instead of full desktop computers. They are also piloting ways in which to reduce environmental impacts through the reduction of print services. The learning from this can be applied to all district sites.

“No idle zones” are being explored for elementary schools as a way to improve the air quality for students on school property where vehicles are present. We are presently waiting for the City of Edmonton to decide if this should be a civic bylaw for public property. Depending upon the outcome, it will provide direction as to how we will proceed with this issue.

Over past years, district schools have had partnerships with organizations that assisted with environmental initiatives. The Alberta Beverage Recycling Program has provided containers to schools who requested them. Schools building naturescapes have worked with the Evergreen organization to plan and fund these projects. More recently, schools have applied to BP Canada for funding support for alternative energy or environmental projects in their schools. Through the work under the Society, Environment, Energy, Development Studies (SEEDS) Foundation, schools are working towards environmental “Green” or “Earth” status. One district school is currently involved in a pilot project with the City of Edmonton where it is recycling the multi-stream waste that is accepted through the home recycling program. Waste Management continues to work with schools to provide waste reviews for refining their waste collection and recycling processes.

Partnerships and relations are being formed with the District through the Facilities Department. Facilities staff and students are involved with the City of Edmonton in hosting the International Council for Local Environmental Initiatives (ICLEI) World Congress 2009 on environmental sustainability. Department staff are involved with the City of Edmonton’s CO₂RE program targeting residential and commercial CO₂ reductions. Facilities staff members also meet regularly with the University of Alberta, Calgary Board of Education, and numerous technical and professional associations to discuss and plan for sustainable educational facilities.

A district Energy and Environmental Management webpage will be introduced in the spring of 2009. This page will provide a central point for information about environmental initiatives, pilot projects, energy management tips and myths, as well as links to project sponsors, grants, and other relevant websites. There will also be links to curricular support materials and websites for all grade levels. As part of this plan we hope to provide individual schools with information as to their utility use so that they can establish baselines from which to compare their energy reductions. The Facilities Principal Committee meetings are also an on-going forum to gather and disseminate information about energy and environmental initiatives in the District.

In summary, the District is actively participating in energy and environmental management practices which is moving us into the forefront of environmental education. As these practices continue to be widely implemented, the impact on student learning and health will be positive. These actions align with the District priorities which call for the provision of a learning environment that promotes health, well being, and positive relationships.

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- Appendix I – District Electricity Consumption
- Appendix II – Integrated Pest Management Policy
- Appendix III – District Recycling Programs
- Appendix IV – District Policy
- Appendix V – Utility Monitoring and Verification Project

District Electricity Consumption

Lighting comprises 38% of the electrical consumption in our district and has the greatest opportunity for conservation measures, both technical and user driven.

An example of a technical conservation measure would be the District retrofit lighting program initiated in 2000. It will, when complete, result in a 25% reduction in energy consumption through the application of more efficient lighting technologies. This will also improve the lighting quality.

An example of a user driven measure would be the turning off of lights when leaving an office or classroom.

Integrated Pest Management (IPM) Policy

City of Edmonton IPM:

POLICY NUMBER: C501

REFERENCE: ADOPTED BY:

City Council 2004 02 24

City Council 2003 09 18-19

City Council

Public Hearing on Pesticides

SUPERSEDES:

New

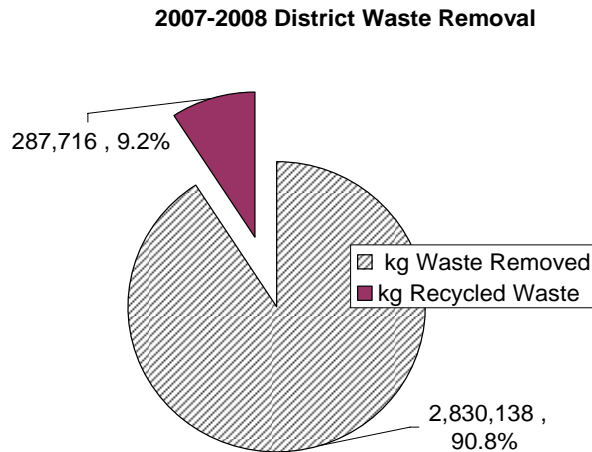
PREPARED BY: Community Services Dept. **DATE:** February 09, 2004

TITLE: Integrated Pest Management

Policy Statement: The City of Edmonton is committed to providing safe and healthy urban environments. Whereas controlling weeds and other pests is important for the enjoyment and sustainability of these environments, this policy limits pesticide use in the management of pests on City property. All forms of pest management activities on City property will follow the principles of Integrated Pest Management (IPM). As such, a variety of preventive and non-chemical pest management strategies are used or considered before using the least toxic approved pesticide. Approved pesticide applications will be used in circumstances where alternative practices or products have failed to manage the pest. Standards of practice for pesticide application on City property will continue to meet or exceed federal and provincial requirements.

Recycling

The following pie chart shows the estimated waste from district sites in terms of removed waste and removed recycling.



Last year's waste removal data showed that approximately 91% of our district waste was sent to the landfill. The remaining 9% consisted of recycled paper and cardboard. At this time we have no access to a commercial recycling service that also accepts items such as plastics, light metals, and glass.

In the next year, Waste Management Inc., our district contracted waste service, will be introducing full-stream recycling. This will increase the recycling products from paper and cardboard to include plastics, light metals and glass. This will have a significant reduction on the amount of waste removed from district sites. Additionally, as the waste is reduced at schools the frequency of pick up can be reduced, thus lowering the carbon footprint of the total waste removal service. Support for schools to establish and maintain recycling programs will be provided through the Facilities department.

In addition to the recycling of paper wastes, there is also a centrally subsidized recycling program that picks up the expired fluorescent lamps and ships them to a specialized recycling facility to remove and contain the mercury. The District also provides similar recycling processes for lighting ballasts and multi-cell batteries. Computer components and printer cartridges are collected and sent for recycling through various agencies.

Board Policy

CODE: FO.BP

TOPIC: Energy Conservation

EFFECTIVE DATE: 11-02-1997

ISSUE DATE: 16-05-1997

REVIEW DATE: 02-2002

1. Edmonton Public Schools are committed to cost effective energy practices within the District's buildings.
 2. It is recognized that, to achieve maximum benefit from this commitment, all staff and students have a responsibility for effective energy practices.
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Reference(s):

Utility Monitoring and Verification Project

Edmonton Public Schools' needs are three fold:

1. Timely district and site building performance reporting for proactive action
2. Billing management and reporting
3. Budget forecasting and purchasing practices for utilities at the District level

The goal of the project is to have a process which provides Facilities and School Administration a proactive approach with simple self reporting tools for cost control, prediction, cost avoidance and consumer awareness/responsible use.

Tools are being reviewed and developed to provide an easily accessible, common source of information for long term data management. It is anticipated that the process will be piloted by mid to late December 2008. Site administrators would be provided with their own copies of site specific performance reports that outline their utility use compared against their baseline consumption. The report would allow schools to view monthly comparisons of utility use, as well as indicating performance targets based on their school area, occupancy, and age of building. A "tips" section might provide reminders for how schools can improve their performance.