Project Name:

Eco Stewardship

"understanding our impact... creating positive change"

Project Description

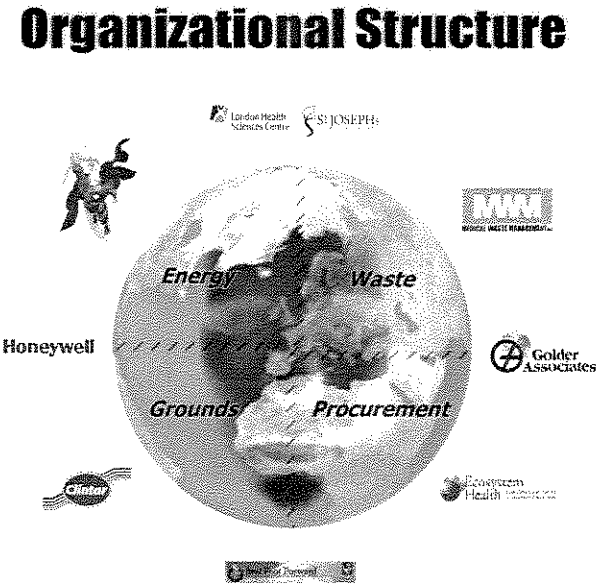
The Ecological Stewardship program at London Health Sciences Centre is a holistic approach to understanding, managing and reducing the impact our organization has on the planet. It is based on the Ecological Footprint model (created by professor William Rees of UBC) that calculates the impact an organization has on the renewable resources of the planet, and determines how much of the planet (expressed in global hectares Gh) is required to sustain that organization. To the best or our knowledge LHSC will be only the 2nd healthcare facility in Canada to complete an Ecological Footprint calculation, and the only organization to use this information as a benchmarking tool to improve their ecological performance. This program, tracks resources as they come into the organization, are consumed in the provision of patient care, and leave the organization for final disposal.
This "cradle to grave" approach considers where products come from (country of origin, environmental position of manufacturer etc.) what they are made of and how they are produced (recycled content, green energy sources etc.) how they are used (single use vs. reusable) and how they are disposed of and the impact of that disposal on the environment.

Eco-Stewardship Objective

Reduce the Ecological Footprint of the London Health Sciences Centre.

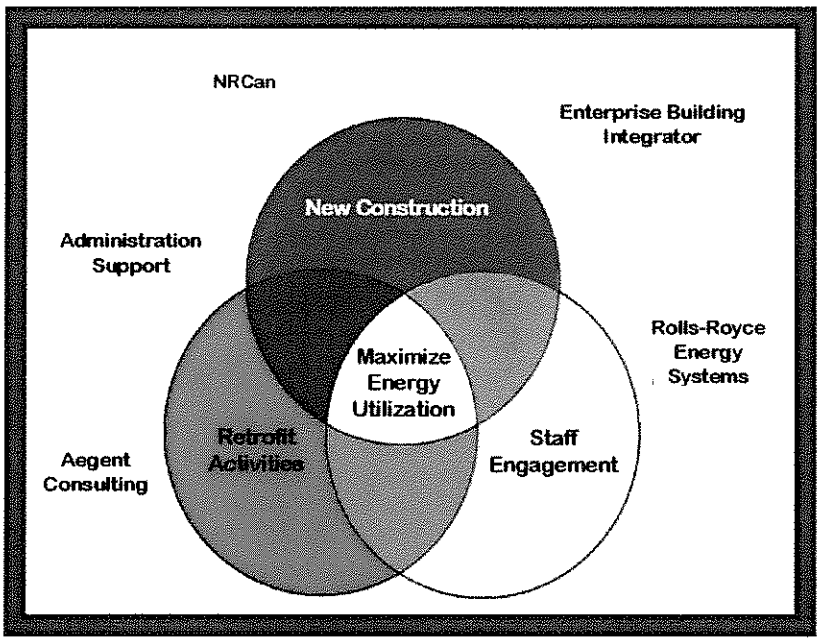
Project Structure and Strategies

The project is apportioned into four major operational areas as illustrated here with each area having their own project charter and individual goals, objectives, and measures of success.



Energy Stewardship

LHSC's Energy Stewardship program has been working to reduce our energy usage and greenhouse gas production since 2002 and we have been fortunate enough to be recognized for our success both provincially and nationally. The structure of the Energy Stewardship program is illustrated below.



Energy Performance Projects

Phase I

Phase I included upgrades to the lighting and building envelope, installation of zone dampers, variable speed drives, condensate heat recovery, heat exchangers, and a Building Automation System installation.

Phase II

Phase II was a complete replication project of Phase I described above and was implemented at the University Campus.

Phase III

Most recently in 2006 we commissioned a backpressure turbine in our Victoria Hospital Power Plant that produces 2MW of essentially free electricity as it operates in place of a pressure-reducing valve converting 650psi steam (in our main header) to 125psi for distribution to our facility. This project will reduce our energy costs by $500K annually and reduce our greenhouse gas production by 3,220,166 Kg.

Ecological Stewardship at LHSC

Understanding Our Impact..... Creating Positive Change

It seems a day doesn't pass where some form of the media is reporting on another concern with the ecology of our planet. These concerns range from global warming, to the destruction of the rain forests, to the daily extinction of animal species, to the pollution of our groundwater, and so on. Most developed countries regulate (to some degree or other) the handling of waste materials and the release of pollutants into the environment and yet despite this the most recent World Wildlife Fund (WWF)" Report On The Planet" predicts a total collapse of our ecosystem by the year 2050.

If we are doing such a good job in managing our waste materials how can it be that our ecosystem will collapse in 2050? Perhaps we are trying to uphold incorrect benchmarks, or managing logistics vs. impacts, or perhaps our view of waste management is too narrow for us to fully understand the damage our actions have on our ecosystem.

Questions such as these have motivated us at London Health Sciences Centre (LHSC) to define a new way of measuring and reducing the damage our organization has on the environment.

(L to R) back row, Phil Renaud, Mark Read, Mary-Lee Wainwright, Toby Ohara
front row, Peggy Frew, Julia Boffa

Based in the Engineering Services department, under the direction of Phil Renaud, Director of Engineering Services, LHSC's Ecological Stewardship team has developed a holistic approach to understanding and reducing the negative impacts of the organization on the environment. The primary benchmark for this initiative is the Ecological Footprint concept that was created by Professor William Rees of the University of British Columbia.

In simple terms the Ecological Footprint quantifies the impact an individual, organization, community or country has on the renewable resources of the planet and expresses those impacts in terms of the number of global hectares (Gh) needed to maintain the lifestyle or operation of the individual or organization. According to Julia Boffa, Coordinator of Customer Support Centers and Ecological Stewardship the footprint calculation is a significant challenge due to the comprehensive nature of the review and the data needing to be sourced and provided. Boffa notes, "as this first footprint calculation will be the foundation for numerous improvement initiatives it's critical that we have complete confidence in our data. As a result we have been working closely with numerous departments of the hospital to establish reliable data sources so that next year when we recalculate our footprint the process will be much simpler to complete"

LHSC has enlisted Best Foot Forward (BFF), a consulting firm based in Oxford, England as their partner in this process. BFF completed a footprint calculation for England's National Health Service (NHS). Early data comparisons show some similarities to NHS figures but until the full calculation is complete, how a large North American teaching hospital compares to a similar European facility will not be known.

Renaud and his team have structured Eco-Stewardship into four main functional areas, Procurement, Waste Reduction, Energy, and Environment. All pre-existing and newly established teams in these areas have been centered on a common mandate that sees regulatory compliance as a "given" and focuses instead on constant innovation and eco-impact reduction. Renaud notes that, "no longer can our view be limited within the walls of our organization, but we must look beyond these walls to understand the damage our waste streams create and seek methods to minimize that damage"

In order for us at LHSC to fulfill our mandate for innovation, all working teams have vendor partner participation to allow for access to the latest current and emerging technologies and to help manage the interdependence of multiple overlapping improvement initiatives.
It is clear that everything contained under the umbrella of Eco-Stewardship is connected and it is the understanding of that connectedness that will help inform decision-making as we move forward.

As it was with Energy Stewardship behavioral change and staff involvement will be critical to the success of Eco-Stewardship and we will be leveraging the notoriety and network of influence that our Energy icon Chester has developed and he will be transitioning to the icon for Eco-Stewardship.

2007 looks to be an exciting year for LHSC and the Ecological Stewardship program. As we look towards the finalization of our footprint calculation and report, we are excited about sharing this information with our colleagues both provincially and nationally.

Project Data			
Hospital	LHSC	LHSC	LHSC
Project	Phase I	Phase II	Phase III
Year Implemented	2000	2002	2006
Project Cost	$2,700,000	$3,100,000	$2,500,000
Guaranteed Savings	$449,000	$625,627	$411,799
Guaranteed Payback	6	5	6
Avg. Actual Annual Savings	$756,000	$687,425	$411,799
Payback based on annual savings	3.6	4.5	6.1

Greenhouse Gas Avoidance			
Hospital	LHSC	LHSC	LHSC
Project	Phase I	Phase II	Phase III
$CO_2(e)$ (kg)	6,400,000	4,394,000	3,170,112
SOx (kg)	9,068	23,335	38,583
NOx (kg)	2,696	6,937	11,471

Waste Reduction Team

The former Waste Management committee at LHSC has been replaced by the Waste Reduction Team that has a working mandate to find new ways to reduce and divert waste leaving our facilities and to continually research (and bring to LHSC) new technologies for treating our waste.
The waste reduction team works hand-in-glove with the green procurement team to ensure we track the materials moving through our facilities from cradle to grave.

Centered on the 3R's (Reduce, Reuse and Recycle) this team is working to reduce the 5,000,000 lbs of regular waste, 850,000 lbs of biomedical waste, and 82,000 lbs of incinerated waste we generate annually. Objectives for 2007 include.

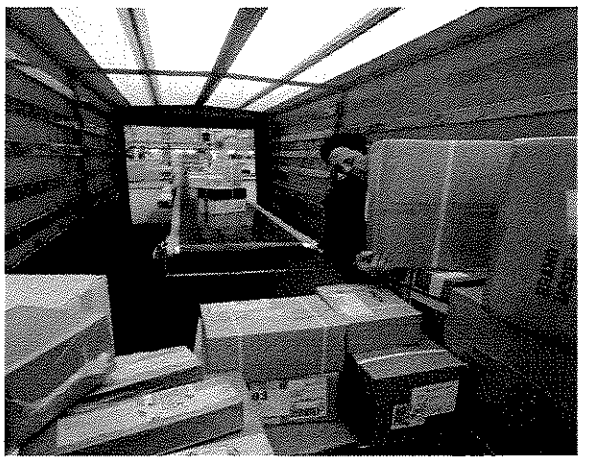
1. Conversion of our pilot in-house chemical recycling program for Formalin and Xylene at our central laboratory at the University Hospital to eliminate the purchase and disposal of the 26,000 liters of Formalin and 6,500 liters of Xylene annually used.

2. Restructure and reintroduce the recycling program for plastics, glass, cans, and paper products at all sites to improve capture and diversion from landfill and to maximize the financial return for these recyclables.

3. Design and construction of a centralized medical waste processing facility for the London Hospitals. This installation will substantially reduce the current cost of processing this waste to the point where the equipment payback is approximately 36 months. We will also improve our sustainability in the event of a pandemic where potentially infectious waste volumes would increase exponentially.

4. Identify all non-recyclable plastic containers used within the facility and source replacement recyclable products.

Green Procurement at LHSC



Green Procurement will be a key component of the Ecological Stewardship Program at LHSC. It will focus on the replacement and/or reduction of products and services used at our facilities that are proven harmful to the environment and to long-term human health. In examining green procurement options, LHSC can significantly mitigate the environmental aspects of our day-to-day operations, as the products and materials consumed at our hospitals represent approximately 80% of our ecological footprint.

The Green Procurement Program (GPP) at LHSC, conceived in January 2007, will introduce green procurement into all LHSC purchasing choices and decisions, so that environmental considerations are weighted along with availability, quality, dependability and price of products and materials. Since its inception, the GPP at LHSC has been working with our general purchasing organization (GPO) to put policies and procedures into place to ensure that this goal is achieved. These have included:

1. The creation of a "Green Procurement Questionnaire" that will be included with Request for Proposals (RFPs) and used during the purchasing process to assign an "environmental score", which will be added as a criterion when determining products to be used on site.
2. Established a Green Procurement Team to actively promote, encourage and implement green procurement initiatives. Members of this team include key decision-making personnel from both LHSC and the GPO.
3. Performance benchmarking matrices have been developed to track and maintain the GPP and are a testament to LHSC commitment to achieve measurable results.

The creation of the GPP has already instigated many new and interesting initiatives in its' first year of operation at LHSC.

A review of our top ten most consumed items on site, now referred to as LHSC "heavy hitters", highlighted various product replacement opportunities where very real opportunities to reduce our environmental impacts were discovered:

1. Initiated discussions surrounding the disuse of examination gloves containing Poly Vinyl Chlorides (PVC)

2. A biodegradable option for plastic medicine cups (which if stacked would be as tall as the CN tower in one month) has been sourced and pricing details are being collected for comparison.

3. Promoting the use of paper with recycled content as the preference for LHSC.

The GPO working with LHSC has initiated their own Green Team in response to the GPP, thus affecting change not only within our own facilities, but potentially reaching all the sites serviced by our GPO.

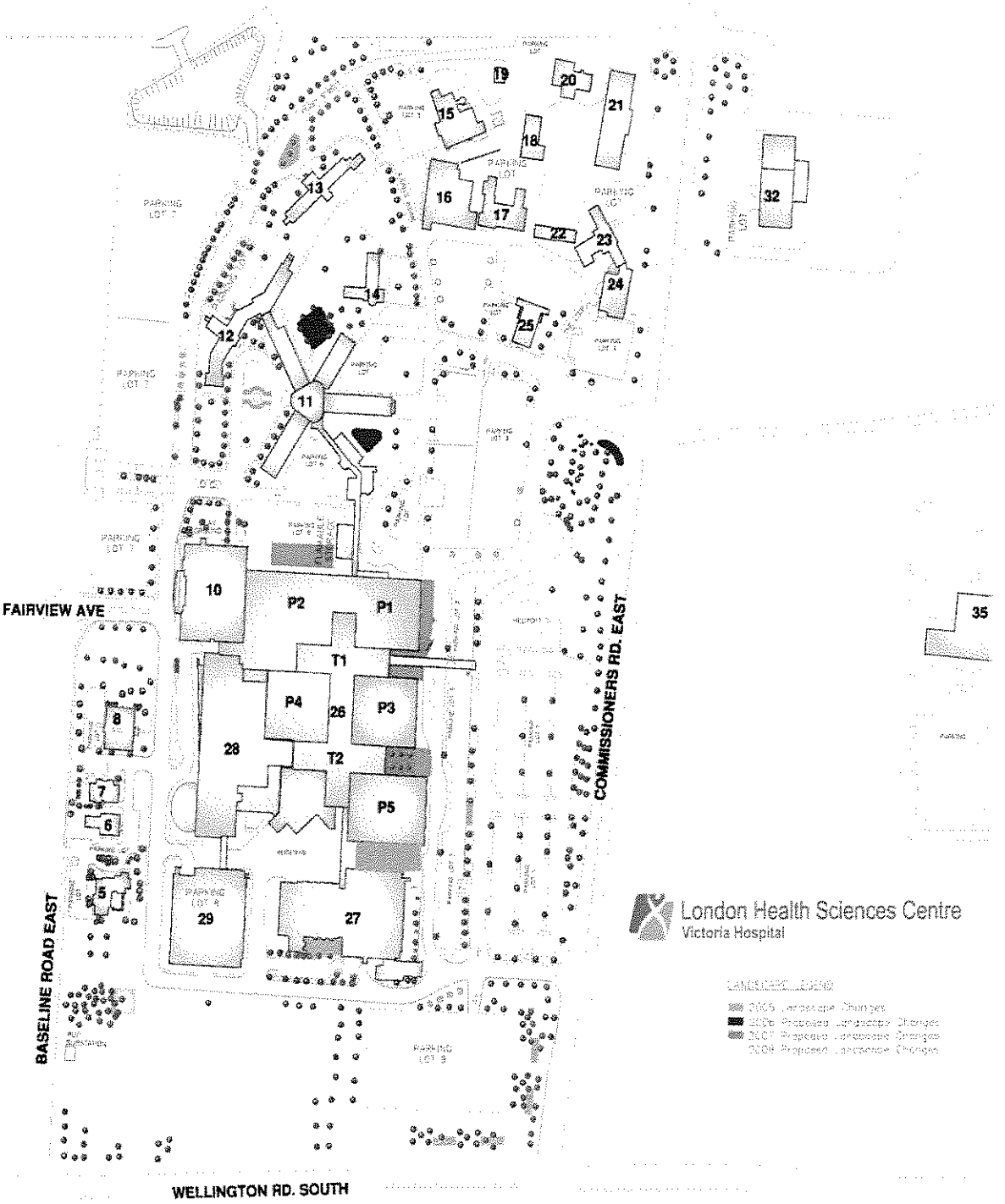
An aggressive awareness and education program focused specifically on Green Procurement has been developed, and is being featured as part of our Ecological Stewardship Week this may, which features display booths, various activities and promotions, lunch and learns, prizes and giveaways.

Vendor meetings have been scheduled to share with them LHSC's new direction in procurement and to create focus groups to discuss opportunities for improvement.

Grounds Operations

There is no area of operations within Engineering Services that is more closely linked to the planet and the natural environment than our Grounds Operations program. With 350 acres of combined hard and soft surfaces, 120 planted gardens, and 820 trees we take seriously our commitment to providing accessible grounds.

We have created a Grounds Master Plan for both the VH and UH sites to create multi-year strategies not unlike the capital plans created for our building maintenance programs. In doing this we have been successful in lobbying for funding for grounds improvements and have also had success in gaining support from our Foundations to promote the creation of healing gardens with donors who have a passion for gardening.



London Health Sciences Centre, Victoria Hospital site plan.

Healing Gardens

It is widely accepted that access to green space and healing gardens can have a therapeutic effect on both patients and family members and as such LHSC is committed to the creation of healing gardens at all sites.

We currently have 3 healing gardens, 1 at University Hospital and 2 at Victoria Hospitals. We have designs in hand for our next healing garden to be created outside our Intensive Care Unit at our Victoria Hospital and this project will be proceeding in September of 2007 and represents a $150,000 investment that is being fund-raised through our Children's Hospital foundation.

Grounds Achievements

1. All sites totally pesticide/herbicide free. Weed control on hard surface areas being done using EnviroClear, which is a completely natural and biodegradable solution.

2. All turf areas zoned for cutting to reduce the frequency of mowing to a level appropriate to building proximity and surrounding. This not only has a positive impact on our contract costs but it also has an ecological positive in reducing mowing time.

3. Road salt applications have been reduced through the use of pre-wetting solutions being used in advance of salt applications.

4. Signature (low maintenance) plants are being installed in all gardens areas to reduce maintenance activities and to create a consistent look at all sites.