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# Dalhousie University Sustainability Plan

*Building a sustainable community*



June 2010. Dalhousie University Office of Sustainability  
[www.sustainability.dal.ca](http://www.sustainability.dal.ca)

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*The process of sustainability is a pathway of continual improvement where actions protect and enhance human and natural resources needed by future generations to enjoy a quality of life equal to or greater than our own.*

**Purpose:**

This plan provides strategic direction for achieving sustainability outcomes in campus operations. Strategies outlined in this plan have been derived through an iterative process using qualitative and quantitative data at a system-wide and topical level (Figure 1.). Performance measures and phased in targets will be used to track progress.

*"Out of clutter... find simplicity. From discord . . . find harmony. In the middle of difficulty lies opportunity. "*  
- Albert Einstein

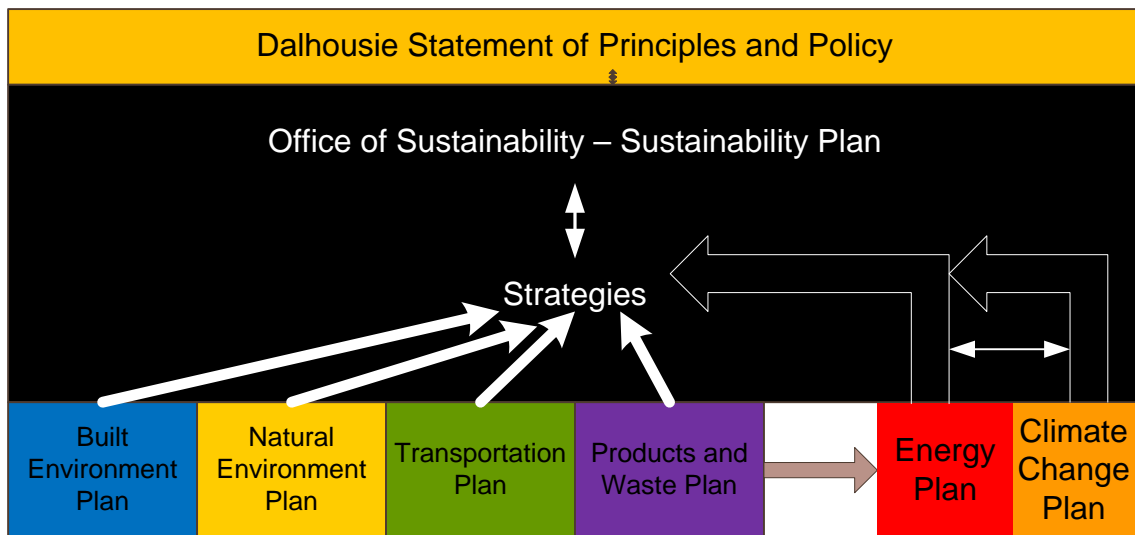


Figure 1. Sustainability Plan Framework

**Scope:**

This plan covers issues related to sustainability in campus operations. Strategies that emphasize ecological health benefits and economic efficiencies are a key focus for this plan and the University Office of Sustainability. Other university sustainability initiatives are also happening through groups such as the College of Sustainability, the Environment Health and Safety Office, the Equity Office and the Organization Wellness committee. Activity through a number of student societies and the Student Union Sustainability Office is ongoing. More information on “who is doing what” can be found on the [Office of Sustainability’s website](#).

**Plan Engagement:**

Members of the Dalhousie and HRM community have provided comments on the plan through individual and organizational meetings, emails, and web forums. The Dalhousie President’s Advisory Council on Sustainability has reviewed and support the concepts promoted in the plan.

## Why?

Sustainability is a path that requires continual improvement as new challenges develop. The University has a base of activity and experience to press forward on an increased level of effort. The strengths and opportunities we garner can maximize effort and minimize risk (Figure 2).

## Situational Analysis

### ***Strengths***

Dalhousie University has been involved in sustainability issues over the last twenty years. The University has signed three international declarations related to environment and sustainability: the [Halifax Declaration](#), the [Talloires Declaration](#) and the [UNEP International Declaration on Cleaner Production](#).

Dalhousie switched to pesticide-free landscaping, created a unique Chemicals Exchange program, released its own Sustainability policy, and offers a six-stream recycling and composting program. The campus is engaged in retrofitting projects and is aiming to reduce its chemical load through a recent change to green cleaners. The university bookstore is stocking green products, encouraging re-usable bags, and the sale of re-used books. Residence and food services have focused efforts on increasing local food content, fair-trade products, and sustainability education. The President has recently signed the [University and College's Climate Change Statement for Canada](#).

The University has and continues to offer lectures, courses, programs, research opportunities, and publications on environment and sustainability. Over 100 professors at Dalhousie teach and research in this area. The College of Sustainability is now offering an environment, sustainability, and society major in five faculties. Innovative community outreach initiatives like the Eco-Efficiency Centre continue to grow.

Student involvement has been strong. Over the years, numerous student organizations have contributed to sustainability at the university through research, policy and education campaigns such as Green Week, and action-orientated projects like the Dump and Run. In 2007, students voted to establish a student Sustainability Office.

In 2008, a focused effort to systematically tackle sustainability issues was launched at Dalhousie. A University Office and Student Office of Sustainability were created to reduce Dalhousie's environmental impact and enhance sustainability across the campus. The College of Sustainability was created and offers a major in environment, sustainability and society with key disciplines across the University.

### ***Internal Risks***

As increased awareness and urgency for sustainability solutions grow so will be the expectation for the University to “walk – the –talk”. Dalhousie University is the Maritimes largest university and one of its oldest. The campus is located on 79 acres in downtown Halifax. The campus built environment spans over a century of development including 110 buildings representing 4.8 million square feet. Similar to

many institutions, Dalhousie has a significant deferred maintenance backlog of unfunded projects totaling well over \$200 million dollars. This coupled with the age of some buildings has created challenges for the funding of energy efficiency upgrades. Through Facilities Management and The Office of Sustainability, the University is focusing renewed efforts on energy efficiency projects. An energy budget has been established and other financial mechanisms through the university are being explored. However, the list of energy efficiency projects far outweighs the current budget. Sustainability projects with higher pay backs or more qualitative benefits may be slower to be realized based on resource availability.

The life cycle (capital, operating, and disposal) costs of a major appliance, building system, or office equipment purchases may be less if the true costs is accounted for. If decisions are made based on capital versus operating funds the best choice for the University may not be realized.

Sustainability driven decision-making provides additional complexity especially in the infancy stages of implementation. It requires people to think, consider, and act upon multiple sets of information including social, health, ecological, and economic impacts. The numerous benefits are clear if these considerations are incorporated. The initial time and effort required can be a barrier if there is not lasting commitment for change.

The sustainability challenge is large though not insurmountable. It will require involvement from the campus community at all levels. A few sustainability advocates will make some headway though they cannot have the depth, knowledge, and capacity of a fully-engaged campus.

**“Human actions during the last 50 years have altered ecosystems to an extent and degree unprecedented in human history.”**

*Millennium Ecosystem Assessment Report*

### **External Risks**

The size of the sustainability challenge is significant. The formula – Impact (I) = Population (P) x Consumption (C) x Technology (T) identifies key variables impacting sustainability. In 1950, our global population was three billion. The prediction for global population in 2050 is nine billion<sup>1</sup>. Since 1950, our world energy consumption has quadrupled and food production has tripled. Over 1.4 billion people live in poverty.<sup>2</sup> A great deal of ecological change has occurred in the last century<sup>3</sup>. There are increasingly fewer number and type of trees, plants, wetlands, birds<sup>4</sup> mammals and animals in the world<sup>5</sup>. The quality of air and water has changed<sup>6</sup>. The climate is changing faster than normal. These

1 US Census Bureau, 2008. <http://www.census.gov/ipc/www/idb/worldpopinfo.html>

2 World Bank, 2008. [http://www-wds.worldbank.org/external/default/WDSContentServer/1W3P/IB/2008/08/26/000158349\\_20080826113239/Rendered/PDF/WPS4703.pdf](http://www-wds.worldbank.org/external/default/WDSContentServer/1W3P/IB/2008/08/26/000158349_20080826113239/Rendered/PDF/WPS4703.pdf)

3 World Resources Institute, 2003. World Resources 2002-2004: Decisions for the Earth: Balance, voice, and power.

[http://pdf.wri.org/world\\_resources\\_2008\\_roots\\_of\\_resilience.pdf](http://pdf.wri.org/world_resources_2008_roots_of_resilience.pdf)

4 Bird Life International, 2004. State of the World's Birds. <http://www.birdlife.org/action/science/sowb/index.html>

5 United Nations Environmental Programme, 2002. Global Outlook 3. <http://www.unep.org/GEO/geo3/>

6 United Nations Population Fund , 2001. The State of the World's Population. <http://www.unfpa.org/swp/2001/english/index.html>

rapid changes appear to be more negative than positive for life on earth<sup>7</sup>. Through our consumption and numbers, humans have created or contributed to these changes<sup>8</sup>.

Recent data on sustainable development trends reveal a need for increased effort as the scales of sustainability continue to be unbalanced in key areas. For example, “Globally green house gas emissions continue to rise as well as particulate air pollutants. Stratospheric ozone continues to be depleted though at a much reduced rate. Sulphur dioxide concentrations have been reduced across the globe with increase technological efficiencies. Little progress is being made to slow habitat loss and fragmentation”<sup>9</sup>.

Impacts are complex and progressive. In Canada, our expansive ecosystems, transport, and consumptive patterns finds us grappling with issues such as air quality, climatic change, water quality, and habitat and species loss. Environmental issues are often complex in the multiplicity of inter-linkages of causes and solutions. One example is in the area of transportation. “Our rising population and continued growth in trade which are pushing up transport-related energy usage as never before. We rank near the top in per capita use of fossil fuels, and we pay a price: from greenhouse gas emissions and air pollution to contamination of water and soil”<sup>10</sup>. Statistics from the same report show that approximately 2-3% of Canadian public bike; 12% - 15% walk; 15% take public transport, and the rest drive if they live and work within 0-5 km range. In contrast, “In most European countries, at least a fourth of urban trips are made by walking or cycling, and a few countries -- like Denmark and The Netherlands -- report a non-motorized travel rate of over 40%, ...Dutch and Germans who are 75 and older make roughly half their trips by foot or bike”<sup>11</sup>. These national differences are contributed to taxes, gas prices, urban planning, safe and dedicated biking and walking networks, and educational and cultural conditions. The low rate of active transportation is directly linked to health symptoms such as increasing inactivity and obesity<sup>12</sup>. Other factors include decreased outdoor activity resulting in what has been recently termed by Louv<sup>13</sup> as a nature deficit disorder.

Energy and water consumption and prices are rising. On average, Canadians consumed 341 gigajoules of energy each in 2002, compared with only 222 gigajoules in 1967. Conservation programs have been successful in off-setting some of these energy increases”<sup>14</sup>. These increases can be attributed to consumer habitats such as purchasing more appliances, electronics, and bigger homes and using more commodities such as hot water. These trends are reflected in the campus community with increases in electronics, personal appliances, and other amenities along with other factors such as aging building systems, increased in enrollment and research activity. A recent comparison of energy and water consumption rates at Dalhousie shows many of our buildings above national standards.

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7 Intergovernmental Panel on Climate Change, 2007. Climate Change 2007. <http://www.ipcc.ch/ipccreports/assessments-reports.htm>

8 World Watch Institute, 2010. Vital Signs 2010. <http://www.worldwatch.org/>

9 OECD, 2008. Key Environmental Indicators. <http://www.oecd.org/dataoecd/20/40/37551205.pdf>

10 Statistics Canada. (2006). Households and Environment Survey. <http://www.statcan.ca/english/freepub/11-526-XIE/11-526-XIE2007001.pdf>

11 American Public Health Association. (2003). Promoting Safe Walking & Cycling to Improve Public Health. *Am J Public Health* 93(9):1509-1516

12 Frank, L., Andresen, A., Schmid, T., (2004). Obesity Relationships with Community Design, Physical Activity, and Time Spent in Cars. *American Journal of Preventive Medicine*, 27(2)

13 Louv, Richard. (2005). *Last Child in the Woods: Saving our Children from Nature Deficit Disorder*, Richard Louv, Algonquin Books.

14 Statistics Canada. 2006. Energy. Energy Consumption on the Rise. [http://www41.statcan.ca/2006/1741/ceb1741\\_003-eng.htm](http://www41.statcan.ca/2006/1741/ceb1741_003-eng.htm)

In Nova Scotia, electricity, water and fossil fuel prices, on average, have risen continually over the last 10 years. In 2007-2008 Dalhousie's annual budget highlighted these increases, "2007-08 Bunker C fuel oil prices have exceeded budget by 15% owing to current pricing that is at an all time high. Nova Scotia Power is currently seeking approval for automatic increases tied to fuel prices and if approved, fuel-related adjustments would first apply in January 2009. Increases in water rates (including waste water management) have not yet been announced. The preliminary model includes an increase of \$1,175,000 or 10% as an estimate of the potential overall cost increase in these areas."<sup>15</sup>

In addition to utility increases, energy security issues are a foreseeable future risk. A recent report highlights energy security vulnerabilities in Nova Scotia. Ninety percent of Nova Scotia's energy supplies are from outside the province and much of this outside the country. In addition connections to major energy infrastructure is lacking in key areas.<sup>16</sup> These factors can shape the energy markets and supply that Dalhousie has access to.

### **Opportunities**

Numerous nations and organizations have developed policies and laws to try and change human behaviour<sup>17, 18, 19</sup>. The concept of sustainable development was introduced into the common lexicon in the 1980s as a response to some of these changes. Efforts such as a ban on CFC production are direct examples of global action. At provincial and municipal levels specific sustainability efforts have been undertaken.

In 2007, the Nova Scotia Government adopted the Environmental Goals and the Sustainable Prosperity Act. The Act sets out 21 goals ranging from air emissions, renewable energy, water quality, and energy efficient buildings<sup>20</sup>. The Union of Nova Scotia Municipalities opened a Sustainability Office to work on common projects such as GHG reporting. Halifax Regional Municipality has a Sustainability Director overseeing a number of programs and plans. Many NGOs, businesses, and other government departments have sustainability thrusts, annual reports, and programs. Global initiatives such as the Global Reporting Initiative are setting standards for sustainability activity and measurement.

Dalhousie is in a good position to develop and enhance relationships with government, community groups, and the business community. Possible opportunities include shared research, project funding, collaborative educational initiatives, and energy service contracting. A review of funding programs revealed a number of programs that may be beneficial to Dalhousie's sustainability efforts. Many are targeted in the area of energy efficiency.

There is an increase in reporting and assessment of sustainability activity in North American Universities. Dalhousie has the opportunity to benchmark success and identify areas for strategic

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<sup>15</sup> Dalhousie University. 2008. Budget Advisory Committee Report XXXVI [http://as01.ucis.dal.ca/fs/pdf/BACXXXVI\\_-\\_Web\\_Final\\_2008.pdf](http://as01.ucis.dal.ca/fs/pdf/BACXXXVI_-_Web_Final_2008.pdf)

<sup>16</sup> Hughes, Larry. Energy Security in Nova Scotia. Canadian Centre for Policy Alternatives. [http://policyalternatives.ca/documents/Nova\\_Scotia\\_Pubs/2007/ccpa\\_ns\\_energy\\_security.pdf](http://policyalternatives.ca/documents/Nova_Scotia_Pubs/2007/ccpa_ns_energy_security.pdf)

<sup>17</sup> Brundtland, 1987. Our Common Future

<sup>18</sup> United Nations, 1992. Agenda 21. <http://www.un.org/esa/sustdev/documents/agenda21/index.htm>

<sup>19</sup> Government of Canada, 2006. [http://www.sinfo.gc.ca/s1\\_e.cfm](http://www.sinfo.gc.ca/s1_e.cfm)

<sup>20</sup> Nova Scotia Government 2007. 2020 Vision. <http://www.gov.ns.ca/ecotrust/pdf/2020FactSheet.pdf>

improvement. Promoting the success of the University and focusing on the future help to improve recognition, lift campus moral, and draw people to the university.

	Helpful	Challenges
Internal	<ul style="list-style-type: none"> <li>• Long involvement in sustainability activities.</li> <li>• Recent Administrative and Student Sustainability Office.</li> <li>• Sustainability research, programs and the College of Sustainability.</li> <li>• Many sustainability issues are in our direct sphere of influence to change.</li> <li>• A number of interested groups and individuals on campus.</li> </ul>	<ul style="list-style-type: none"> <li>• Matching the rate of change needed to mitigate external risks.</li> <li>• Matching curriculum and operational expectations.</li> <li>• Processes that foster energy, economic, and waste inefficiencies.</li> <li>• Isolation of sustainability concepts from key organizational decisions.</li> <li>• Small number of people involved.</li> <li>• Compliance with multiple levels of regulations.</li> </ul>
External	<ul style="list-style-type: none"> <li>• Partnership opportunities.</li> <li>• External promotion and improved recognition.</li> <li>• Increased sustainability activity in North American Universities.</li> <li>• Innovative learning and employment programs that support community and campus sustainability.</li> </ul>	<ul style="list-style-type: none"> <li>• Energy security.</li> <li>• Volatile utility prices (water, energy, electricity).</li> <li>• Ecological degradation (air quality, water quality, habitats).</li> <li>• Global impacts (climate change, ozone depletion, human population, economic instability)</li> <li>• Financial market volatility.</li> </ul>

Figure 2: Situational Analysis Summary



### What? Planning Framework:

The purpose of the planning framework [the Dalhousie Sustainability Wheel (Figure 3) and Sustainability Frame (Figure 4)] is to facilitate a common understanding of key planning components.

The Dalhousie Sustainability Wheel is a visual representation of the key issues and outcomes involved in achieving greater sustainability at Dalhousie University. At the center of the framework is *academic life*. This represents governance issues, student life, and academic achievement. The orange ring represents the resources and infrastructure which support academic life. Dalhousie's positive sustainability outcomes are represented in yellow, and outputs that we aim to reduce in blue.

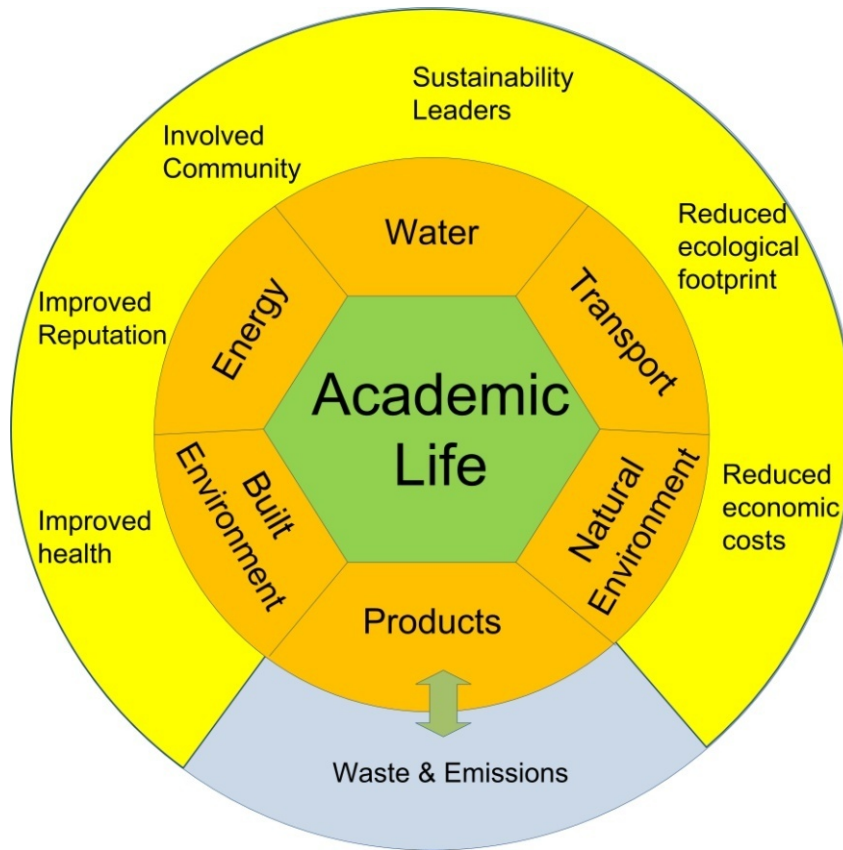


Figure 3. Dalhousie's Sustainability Wheel

**Vision:** Dalhousie University is a leader of academic sustainability. We create positive health, ecological and economic change by weaving sustainability concepts into curriculum, research, culture, and university operations.

<p style="text-align: center;"><b>Values</b></p> <p><b>Integration:</b> Supporting approaches and decisions that improve the campus and local community ecology, economy, and health.</p> <p><b>Planning:</b> Making decisions that consider present and future generations.</p> <p><b>Efficiency:</b> Providing quality education and services while progressively reducing negative environmental, health, and economic impacts.</p> <p><b>Continual Improvement:</b> Supporting ongoing measurement and improvement of sustainability efforts.</p> <p><b>Innovation:</b> Creating a climate of creativity, inquiry, research, and collaboration that foster new ideas and approaches to sustainability questions and challenges.</p>	<p style="text-align: center;"><b>Outcomes</b></p> <ul style="list-style-type: none"> <li>• <b>Improved Health and Security</b></li> <li>• <b>Reduced Ecological Impact</b></li> <li>• <b>Reduced Economic Cost</b></li> <li>• <b>Involved Community</b></li> <li>• <b>Sustainability Leaders</b></li> <li>• <b>Improved Reputation</b></li> </ul>
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<b>Goals</b>						
1. Values, knowledge, skills, and social structures that support sustainability are endorsed.	2. Support organizational behaviours and physical systems that promote sustainability.	3. Decrease natural resource use (energy, water, products) and outputs (waste, toxins and air emissions).	4. Increase renewable energy on campus.	5. Enhancing health and social attributes of the campus ecosystem.	6. Increase sustainable transportation options.	7. Draw people to Dalhousie as a result of sustainability activity.

**Decision-Making Criteria**

**Economic costs:** life cycle costs (capital, operating, and disposal), penalties, credits/taxes, revenue potential, costs avoided

**Ecological costs:** water quality and quantity, air quality, stored carbon, biodiversity, habitat

**Social issues:** learning, cultural expression, equity, aesthetics, recruitment


























































**Health impacts:** physical health, psychosocial functioning, wellness

<b>Key Activities: Activities streams will be used together to achieve the most synergistic effect amongst goals.</b>			
<b>Technology: Building Systems and product upgrades:</b> central energy and cooling systems, lighting, HVAC, re-circulation of energy and water, equipment and labs, Reuse and recycling infrastructure, office equipment, appliances ...	<b>Behaviour:</b> Social learning programs, specialized training, workshops, websites, student employment and assignments, issue campaigns.	<b>Design:</b> Transportation Demand Management planning, sustainability concepts incorporated into policies and procedures (e.g. Overall university policy and plan, procurement, building design and renovations...); efficient business processes, climate change plan.	<b>Measurement &amp; Reporting:</b> Baseline data establishment, GHG Inventory, public reporting, annual plans, measures refinement.

<b>Targets</b> (a baseline year of April 2008-March 2009 has been selected). These targets will meet relevant provincial targets outlined in the Environmental Goals and Sustainability Prosperity Act. →			
	<b>Phase 1 (2009 - 2012)</b>	<b>Phase 2 (2013- 2016)</b>	<b>Phase 3(2017-2020)</b>
• Divert solid, liquid and hazardous waste from landfill	55%	65%	70%
• Reduce electricity, heat, and water consumption per/person	5%	15%	20%
• Reduce GHGs (which will impact associated air emissions which will be reported on in progress reports)	10%	20%	50%
• Increase renewable energy supply on campus	Plan and Pilot	5%	15-20%
• Increased travel (commuting and business) through sustainable modes.	TDM Plan	5% (of drive alone)	15% (of drive alone)
• Enhanced natural environment.	Plan	Assessed against Plan	Assessed against Plan
• Buildings achieve green building certification status.	All new buildings	10% existing buildings	30% existing buildings.
• Sustainable food offerings.	Comprehensive Plan	Assessed against Plan	Assessed against Plan
• Major planning, policy, reporting, and communication products incorporate sustainability concepts and criteria [documents will be listed] – Assessed at each phase.			
• Sustainability is reflected as a core concentration in the University curriculum at the undergraduate and graduate level – Assessed at each phase.			
• Positive student and employee experience.	Assessed at each phase through qualitative and quantitative measures.		

Figure 4: Dalhousie Sustainability Frame

## Who? Key Roles related to Campus Sustainability (Table 2)

	Technology	Behaviour	Design: Sustainable Information Management	Design: Policy & Planning	Measurement & Reporting
<b>Facilities Management (FM):</b> The largest administrative unit at the university with over 400 staff. FM is responsible for key areas such as building infrastructure, grounds, waste and recycling, custodial service, and parking.					
<b>Finance:</b> Manages finances of the university including budgeting and investing. Includes other services such as procurement and travel.					
<b>Student and Community Services:</b> Is responsible for key functions such as student residence and programming, bookstore, food and conference services, career and academic services, and student wellness.					
<b>Information Technology Services (ITS) :</b> Provides a number of services including email, internet connections, web sites, computer labs, PCPC, telephone services, computer training, and support.					
<b>Human Resources:</b> Provides services such as benefits and pensions, payroll, employee and organizational development, staff relations, and staffing.					
<b>Environmental Health and Safety Office:</b> Provides health and safety training, hazardous waste management, and administers smoke-free and scent free-policies.					
<b>Office of Sustainability:</b> Mandate includes sustainability planning, project management, learning and communication, and assessment and reporting.	 				
<b>Organizations on Campus</b> (Student Societies, Student Sustainability Office, DSU, and other)					
<b>President &amp; Vice-Presidents, Board and Senate [Lead Role in providing Direction in all areas]</b>					
<b>Faculties and Departments</b>	 				
<b>Students</b>					

Key: Lead Role  , Partner Role 

## Key Strategies

<b>Upgrades</b>	<p><b>Campus Energy Systems</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Central Heating Plant Project (natural gas conversion/co-generation)</li> <li><input type="checkbox"/> Sexton Campus Heating Plant Project</li> <li><input type="checkbox"/> Cooling System projects (Chiller upgrade; renewable cooling; refrigerant changes)</li> </ul> <p><b>Buildings: New and Existing</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Meet green building standards for new and existing buildings</li> <li><input type="checkbox"/> Focus on retrofitting buildings that are high energy and water users. Incorporate renewable energy and use passive and synergistic building design.</li> </ul> <p><b>Campus Lighting and Equipment Upgrades</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> 40 Buildings, campus houses + Outdoor Lighting</li> </ul> <p><b>Transportation</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> More bike racks in key areas, covered, bike shelters/hub/path, showers, parking space/systems. Active transport corridor</li> </ul> <p><b>Natural Environment</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Natural Landscape enhancement</li> </ul> <p><b>Computing (computers, communications, applications)</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Data Centre: Virtualization, Heat Recovery, ...</li> <li><input type="checkbox"/> Networked Power Management</li> <li><input type="checkbox"/> Hardware and Software: computers and other communication devices</li> </ul>
<b>Behaviour</b>	<p><b>Consumption Behavioural Changes</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> ReThink: Sustainability on Campus</li> <li><input type="checkbox"/> Sustainability Certification: Course and Certificate designed specifically for Key Operational groups on Campus</li> <li><input type="checkbox"/> Sustainable Procurement &amp; Waste Education</li> </ul> <p><b>Transportation Demand Management</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Commuter Options program - incentives and education: for transit, carpooling, active transport, travel avoidance, green fleet, idle-less</li> </ul> <p><b>Electronic Document Management:</b> Consolidation to Multi-functional devices, business processes</p>
<b>Measurement and Monitoring</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Develop metering and monitoring plan</li> <li><input type="checkbox"/> Increase meters on campus (electricity, steam, water for each building), visually display consumption</li> <li><input type="checkbox"/> Ongoing - Energy analysis and problem solving</li> <li><input type="checkbox"/> Sustainability reporting</li> </ul>
<b>Design</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Start and Finish: Built Environment, Natural Environment, Transportation, Procurement &amp; Waste, Energy, and Climate Change Plans.</li> <li><input type="checkbox"/> Sustainable Guidelines and Standards: Sustainable Procurement, Reducing plug load and paper from office equipment; business process efficiencies, ...</li> <li><input type="checkbox"/> Green Building Standards</li> </ul>

## So What? Did What We Do Make a Difference:

Assessment and reporting drives strategic action, helps to celebrate success, and shows transparency and trust. Key assessment and reporting requirements are outlined in the University Sustainability Policy and include:

- issuing a President’s Sustainability Plan every five years. The Plan will include a framework for action including goals, outcomes, strategies, targets, measures, and indicators;
- action planning by faculties and departments to meet the vision set out in the President’s Sustainability Plan; and
- public reporting of Dalhousie sustainability efforts every three years to communicate on-going progress.

***“What gets measured gets done” - Tom Peters***

To feed information into these plans and reports, audits and assessments will be conducted. Assessments include qualitative data and quantitative data from sources such as invoices, program evaluations, feasibility studies, external and internal trends, workshops/meetings, and campus audit results.

Eleven Indicators are outlined in the strategic frame (Figure 3). These indicators are outlined to match key goals and reflect overall outcomes. Relative measures are provided for each indicator (Table 3).

Table 3. Sustainability Indicators and Measures.

Indicators	Measures
Increased diversion of solid , liquid, hazardous waste	% as expressed in tonnes and ( litres for liquid), \$ saved.
Reduce electricity, heat, and water consumption per/person	% as expressed in kWh for electricity and heat and m <sup>3</sup> for water, \$ saved or avoided.
Reduce GHGs (which will impact associated air emissions)	% reduced expressed in CO <sub>2</sub> equivalent tonnes, air quality emissions will also be calculated such as NO, SO <sub>2</sub> , particulate matter)
Increase renewable energy supply on campus	Plan & Pilot, % kWh created in electricity and heat
Increased travel (commuting and business) through sustainable modes	TDM Plan, 5% up to 15% increased in sustainable travel modes (Video conferencing and other electronic meeting formats; active transportation, carpooling, transit).
Enhanced urban biodiversity.	Plan, Landscape enhancement.
Buildings achieve green building certification status.	All new buildings, 10% up to 30% of existing buildings.
Sustainable food offerings.	Plan, measures to be developed and assessed every three years.
Major planning, policy, reporting, and communication products incorporate sustainability concepts and criteria.	Number and type of products, policies, and processes.
Sustainability is reflected as a core concentration in the University curriculum at the undergraduate and graduate level	Type of initiatives (multi-disciplinary aspects, ...). Measurement criteria to be developed.
Positive student and employee experience.	Qualitative and scaled responses, measurement tools to be developed. Will include questions related to all outcomes in sustainability wheel.