University of British Columbia Vancouver Campus

Climate Action Plan 2010–2015

Climate Action Plan Report – 2012

June 2013

campus + community planning
campus sustainability

a place of mind

THE UNIVERSITY OF BRITISH COLUMBIA

1. Executive Summary

In 2012, UBC's sustainability leadership was recognized with over 15 provincial, national, and international sustainability awards, including the prestigious Excellence in Integration Award from the International Sustainable Campuses Network, recognizing UBC's achievements in integrating operational and academic sustainability across campus, and APPA's inaugural Sustainability Award in Facilities Management, recognizing UBC's comprehensive campus sustainability achievements.

UBC's leadership in developing and implementing its comprehensive Climate Action Plan was also awarded Best Case Study by the Association for the Advancement of Sustainability in Higher Education (AASHE), and Honorable Mention by the Canadian Association of University Business Officers (CAUBO).

UBC has continued to build on this success by making significant progress on implementing the three core projects of our Climate Action Plan, which together will achieve UBC's greenhouse gas (GHG) reduction targets of a 33 percent reduction in emissions by 2015 compared to 2007 levels:

- September 2012 marked the official opening of UBC Vancouver's Bioenergy Research and Demonstration Facility, making it Canada's first university – and one of a few institutions worldwide – to produce both clean heat and electricity for its campus from renewable bioenergy. The pioneering $34-million clean energy facility will eliminate 9 per cent of campus GHG emissions and generate enough clean electricity to power 1,500 homes.
- UBC completed Phases 2 and 3 of one of the largest steam to hot water conversions in North America. When finished, it will replace 14 km of aging steam system piping infrastructure to reduce emissions by 22 per cent and save up to $4 million a year in operational and energy costs.
- The Continuous Optimization "Building Tune-Up" program is retro-commissioning 72 buildings to reduce emissions in core buildings by 10 per cent. A pilot in two buildings is complete, the next phase of implementation is underway in 17 buildings, and investigation of 40 more buildings is in progress.

Of the 113 actions and sub-actions identified in UBC Vancouver's comprehensive Climate Action Plan, 79 are complete, in progress or ongoing, 14 are under development, and a further 20 are longer-term goals that have not yet been started or were re-evaluated and removed.

UBC and the University Neighborhoods Association (UNA) also began developing a Community Energy & Emissions Plan (CEEP) for the UTown@UBC community, which will complement the Climate Action Plan for the academic campus and outline strategies for a low carbon future for UBC's residential community. UBC is also in the process of developing an Engagement and Social Marketing Strategy that will define the campus' engagement program priorities aimed at reducing energy, water and waste in student residences, labs and offices.

We are pleased to share with you some of the highlights of our climate action initiatives that were implemented in 2012.

Orion Henderson
Director, Operational Sustainability

2. Climate Action at UBC Vancouver

UBC's Bioenergy Research and Demonstration Facility, opened September 2012. Credit: Don Erhardt

2.1. Overview and History

In 1997, UBC was the first Canadian university to adopt a sustainable development policy. A year later, it was the first to open a Campus Sustainability office. Within a decade, UBC met its Kyoto targets for academic buildings—five years early and despite increasing our building floor space by 35 percent and student enrolment by 48 percent.

In 2010, UBC's Vancouver Campus Climate Action Plan committed us to bold greenhouse gas (GHG) emission reduction targets—33 per cent by 2015, 67 per cent by 2020, and 100 per cent by 2050, compared to 2007 levels. We're now investing in large-scale energy retrofits, alternative energy systems, and engagement strategies to meet these ambitious climate goals.

2012 marks the third year of implementing the Plan, which identifies detailed GHG emissions reductions strategies in the areas of:

- Campus Development and Infrastructure
- Energy Supply and Management
- Fleets and Fuel Use
- Food
- Transportation
- Business Travel and Procurement

For more information, read the award-winning AASHE Case Study on Implementing UBC's Climate Action Plan. To learn more about UBC's sustainability initiatives, visit our Sustainability Milestones page and the Plans and Reports section of our website.

3. 2012 Greenhouse Gas Emissions

With over 48,000 students, 13,000 staff and faculty, and an institutional footprint of 402 hectares, UBC is one of the largest universities in Canada. The Vancouver campus is home to 368 institutional buildings owned by UBC, totalling 14.7 million square feet.

In 2012, total offsettable GHG emissions for UBC's Vancouver campus amounted to 60,715 tonnes CO_2e. Since 97 per cent of these emissions come from Vancouver campus buildings, with 73 per cent of the total occurring at the campus steam plant, key actions focus on improving energy efficiency in campus buildings and connecting alternative energy sources to the campus district energy system.

It was estimated that fugitive emissions of refrigerant gases comprise less than one per cent of UBC's Vancouver campus total emissions and collecting data to estimate these emissions would be disproportionately onerous. For this reason, emissions from this source have been deemed out of scope and have not been included in UBC's Vancouver campus GHG emissions profile.

3.1. Emissions in Greater Detail

The Climate Action Plan GHG reduction targets apply to emissions from core and ancillary buildings, TRIUMF, fleet and paper. The UBC Vancouver Campus GHG Inventory, which comprises these elements, has been compiled each year since 2006. In 2012, the offsettable Vancouver Campus emissions amounted to 60,715 tCO_2e. A detailed breakdown of the campus emission sources is provided in *Table 1*.

Table 1: UBC's Vancouver Campus Offsettable Emissions, 2012

Source	2007 emissions (tCO_2e)[1]	2012 emissions (tCO_2e)[1]	Per cent of 2012 campus emissions[1]
UBC Vancouver Campus – Core buildings[2]	**46,478**	**43,287**	**71%**
Steam (natural gas and light fuel oil)	*40,106*	*34,925*	*58%*
Natural gas (direct burn)	*3,515*	*4,214*	*7%*
Electricity	*2,856*	*3,887*	*6%*
Biomass facility[3]	*N/A*	*261*	*0.4%*
UBC Vancouver Campus – Ancillary buildings[4]	**11,405**	**15,407**	**25%**
Steam (natural gas and light fuel oil)	*7,311*	*9,347*	*15%*
Natural gas (direct burn)	*3,108*	*4,758*	*8%*
Electricity	*986*	*1,251*	*2%*
Biomass facility[3]	*N/A*	*51*	*0.1%*
TRIUMF[5]	**222**	**196**	**0.3%**
Fleet	**1,973**	**1,253**	**2%**
Paper	**1,003**	**572**	**1%**
Total Vancouver Campus Offsettable Emissions	**61,082**	**60,715**	**100%**

[1] *May not sum to total due to rounding.*
[2] *Core buildings comprise academic and administrative buildings.*

[3] *UBC is required to offset the CH_4 and N_2O portions of biomass combustion. In addition, the Bioenergy Research and Demonstration Facility (BRDF) burns a small amount of natural gas. The BRDF began operating in 2012.*
[4] *Ancillary buildings include student housing, conference, athletics and parking facilities.*
[5] *Although TRIUMF is a joint venture with other universities, it has traditionally been included in the UBC Vancouver Campus inventory since it is located on campus. UBC is responsible for 1/11th of emissions.*

Under the Greenhouse Gas Reductions Target Act, UBC has been required to report and offset its emissions since 2010, including emissions from all properties owned and leased by UBC and its subsidiaries. A summary of the emissions attributed to different off-campus units of UBC is provided in *Table 2*.

Table 2: Off-Campus Property Offsettable Emissions, 2012

Source	2012 emissions (tCO_2e)
UBC Properties Trust – Owned Buildings[1]	**2,168**
UBC Robson Square Campus	**181**
Other Off-Campus Properties[2]	**1,510**
Joint Ventures with other universities[3]	**222**
Great Northern Way Campus	*197*
Bamfield Marine Sciences Centre	*25*
UBC Properties Trust – Paper	**3**
Total Off-Campus Property Emissions	**4,084**

[1] *UBC Properties Trust, a company wholly owned by UBC, owns several residential buildings that are rented to staff, faculty and students, as well as space leased to retail and commercial tenants on campus.*
[2] *Other off-campus properties include 5 owned buildings and 11 leased spaces throughout the province.*
[3] *Although TRIUMF is a joint venture with other universities, it has traditionally been included in the UBC Vancouver Campus inventory and is thus not included in this table.*

Going beyond provincial requirements, the annual UBC Vancouver Campus GHG inventory also quantifies several categories of optional or Scope 3 emissions (*Table 3*). These emissions are not required to be offset. UBC's Climate Action Plan includes strategies for reducing Scope 3 emissions related to commuting, business travel, procurement and food.

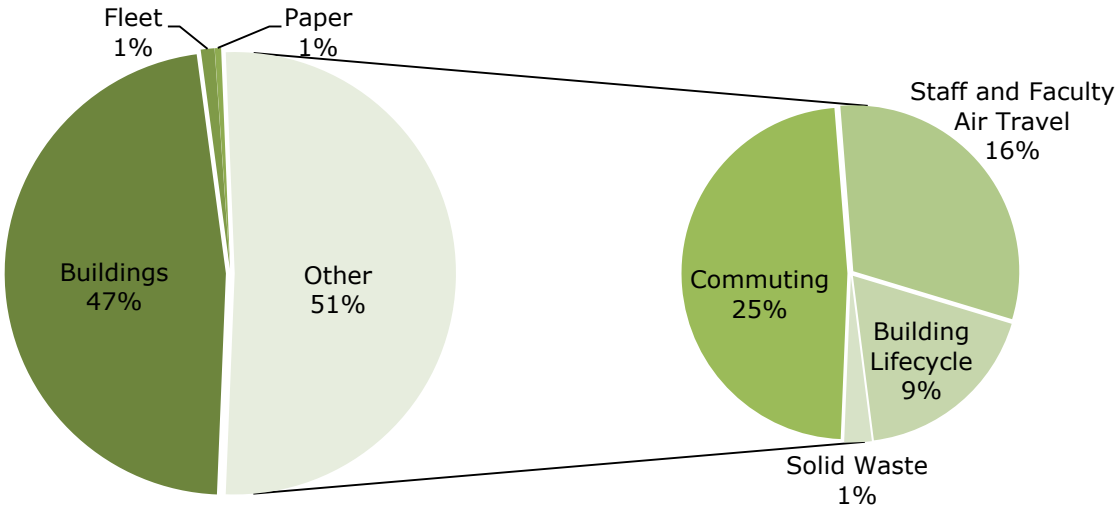
Table 3: UBC's Vancouver Campus Scope 3 Emissions, 2012

Source	2007 emissions (tCO_2e)	2012 emissions (tCO_2e)
Commuting	**28,880**	**30,755**
Staff and Faculty Air Travel	**13,600**[1]	**19,770**
Building Lifecycle	**10,190**	**11,705**
Solid Waste	**1,930**	**1,760**[2]

[1] *Not calculated in 2007; the value from 2006 is provided.*
[2] *Data for 2012 unavailable at time of publication; the value from 2011 is provided.*

The combined emissions from commuting, business travel, building lifecycle and solid waste (*Table 3*) were approximately equal to the offsettable Vancouver Campus emissions (*Table 1*) in 2012. *Figure 1* shows the relative proportions of the various emission categories for the UBC Vancouver campus.

Figure 1: UBC's Vancouver Campus Emissions by Scope, 2012



3.2. Comparison to Baseline Year

4.2.1 Scope 1 and 2 Emissions

UBC's Vancouver Campus offsettable emissions decreased 0.6 per cent from 2007 to 2012, despite a 10 per cent increase in building floor space and a 14 per cent increase in student enrolment. The emissions from campus buildings along with fleet and paper amounted to 1.42 tCO_2e per full-time equivalent student in 2012, a 13 per cent decrease in emissions per student since 2007.

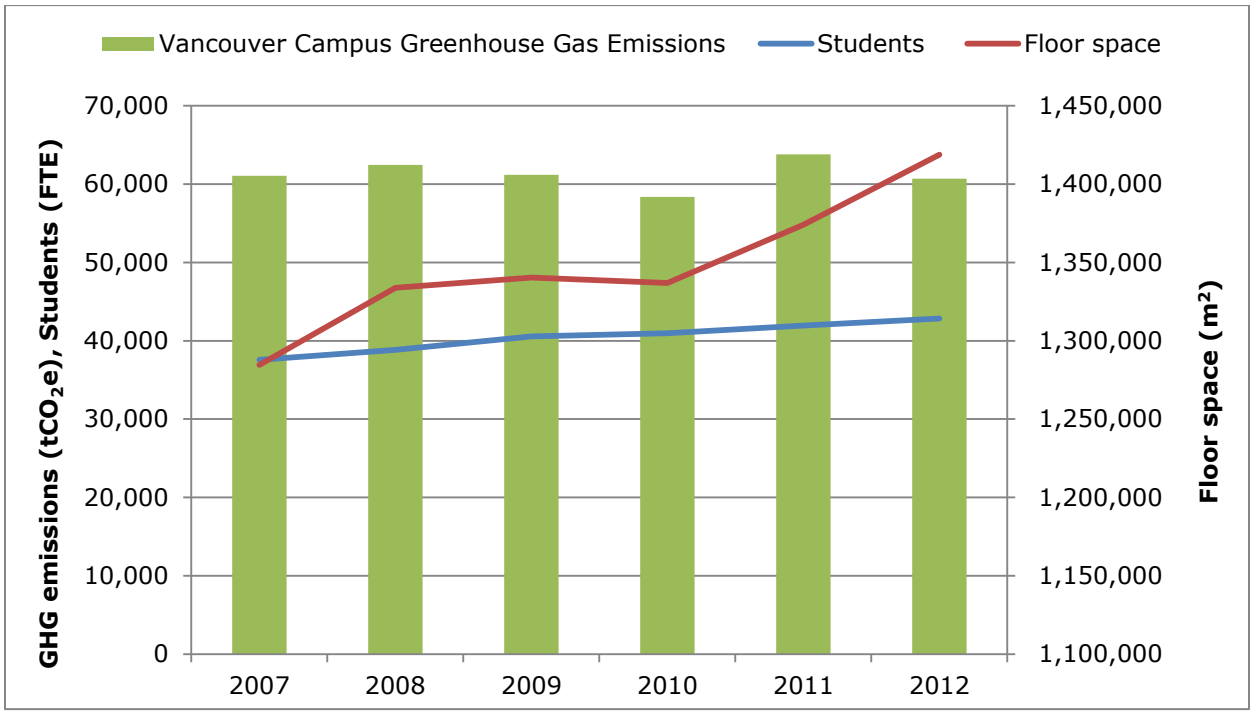
UBC's Vancouver Campus building floor space increased by over 134,000 m^2 between 2007 and 2012, with several older buildings demolished to make way for construction of 26 new buildings. Notable new buildings that opened in 2012 include Pharmaceutical Sciences & Centre for Drug Research and Development, Earth Sciences Building, and the Bioenergy Research and Demonstration Facility.

Table 4 and *Figure 2* outline the change in campus emissions since the 2007 baseline year, along with indicators of UBC Vancouver campus growth. Student enrolment increased by over 5,200 full-time equivalent (FTE) students from 2007 to 2012 while faculty and staff increased by 1,160 employees.

Table 4: UBC's Vancouver Campus Offsettable Emissions Compared to 2007 Baseline

Key Performance Indicator	2007	2012	Change from 2007 to 2012
GHG Emissions (tonnes CO_2e)	61,082	60,715	-0.6%
Staff and Faculty Employees (FTE)	12,045	13,206	+10%
Student Enrolment (FTE)	37,589	42,848	+14%
GHG Emissions per Student (tonnes CO_2e/FTE)	1.62	1.42	-13%
Floor Space (square meters)	1,284,592	1,418,833	+10%
GHG Emissions per square meter (tonnes CO2e/m2)	0.048	0.043	-10%

Figure 2: UBC's Vancouver Campus Offsettable Emissions and Growth, 2007 to 2012



4.2.2 Scope 3 Emissions

UBC's Vancouver Campus Scope 3 emissions (*Table 3*) can also be evaluated in the context of indicators of growth in population and floorspace (*Table 4* and *Figure 2*). While total commuting emissions increased from 2007 to 2012, student, staff and faculty population increased at a greater rate, resulting in a 6 per cent decrease in commuting emissions per capita. This decrease is primarily due to a shift in mode share: trips by single-occupancy vehicles and carpools decreased while trips by transit increased from 2007 to 2012.

Air travel emissions are affected by changes in employee population and travel patterns. The current focus is on developing a more accurate methodology for tracking the associated emissions[1].

Building lifecycle emissions are proportional to campus floorspace, which increased from 2007 to 2012. Solid waste emissions decreased from 2007 to 2012 despite the increase in campus population during that time. The total amount of waste decreased over that period, along with a 25 per cent increase in diversion rates (i.e. recycling and composting).

UBC's Climate Action Plan includes strategies for reducing Scope 3 emissions related to commuting, business travel, procurement and food, as outlined below and in the full Climate Action Plan Report.

[1] Calculations for air travel emissions are currently approximate as only 30 to 40 per cent of flights are booked through agencies that can track mileage for UBC. The emissions associated with tracked flights are pro-rated by total expenditure on flights to include an estimate of emissions associated with flights booked personally.

3.3. Offsets Applied to Become Carbon Neutral in 2012

As required by provincial regulation, UBC purchased a total of 64,799 tonnes of offsets from the Pacific Carbon Trust for UBC's Vancouver Campus and off-campus properties to become carbon neutral for 2012 (see *Table 5*).

A portion of the vehicle fuel consumed by UBC contains renewable content, as mandated by BC's Renewable and Low Carbon Fuel Requirements Regulation. In addition, CO_2 emissions from biomass at the Bioenergy Research and Demonstration Facility are considered carbon neutral. These emissions, reported as biomass in SMARTTool, amounted to 3,995 tonnes CO_2e and are not required to be offset. Including biomass emissions, total emissions for the UBC Vancouver Campus and off-campus properties amount to 68,794 tonnes CO_2e in 2012 (see *Table 5*).

Table 5: Total 2012 Emissions for UBC's Vancouver campus and off-campus properties

Location	2012 emissions (tCO_2e)
UBC's Vancouver campus	60,715
Off-campus properties	4,084
Total offsettable emissions	**64,799**
Biomass CO_2 emissions	3,995
Total emissions including biomass	68,794

3.4. Changes to 2010 and 2011 Emissions and Offsets Reporting

Several corrections were made to the 2010 and 2011 emissions reporting for off-campus properties. The corrected emissions for the combined UBC's Vancouver Campus and off-campus properties are summarized in *Table 6* below. UBC under-reported in 2010 and 2011 and this year purchased an additional 418 tonnes of offsets to continue to be carbon neutral for 2010 and 2011.

Table 6: Corrections to 2010 and 2011 Emissions

Category	Reported Emissions (tCO_2e)	Corrected Emissions (tCO_2e)	Additional offsets purchased (tCO_2e)
Total 2010 offsettable emissions	61,457[1]	61,649	192
Total 2010 emissions including biomass	61,520[1]	61,712	
Total 2011 offsettable emissions	67,570	67,796	226
Total 2011 emissions including biomass	67,616	67,842	

[1] *After applying a correction and purchasing additional offsets in the 2011 reporting year.*

4. Emissions Reduction Activities

Converting UBC's district heating system from steam to hot water will reduce emissions by 22 per cent. Credit: Don Erhardt

4.1. Actions Taken to Reduce Greenhouse Gas Emissions in 2012

UBC's Vancouver Campus Climate Action Plan sets out actions in six areas that are the key sources of UBC's GHG emissions. Of the 113 actions and sub-actions identified in UBC Vancouver's comprehensive Climate Action Plan, 79 are complete, in progress or ongoing, 14 are under development, and a further 20 are longer-term goals that have not yet been started or were re-evaluated and removed. A summary of key achievements are presented here and the full Climate Action Plan report is available online.

In 2012, UBC made significant progress on implementing the three core projects of our Climate Action Plan, which will achieve UBC's aggressive GHG reduction targets of 33 percent reduction in GHG emissions by 2015 compared to 2007 levels:

- September 2012 marked the official opening of UBC Vancouver's Bioenergy Research and Demonstration Facility (BRDF), making it Canada's first university – and one of a few institutions worldwide – to produce both clean heat and electricity for its campus from renewable bioenergy. The pioneering $34-million clean energy facility will eliminate 9 per cent of campus GHG emissions and generate enough clean electricity to power 1,500 homes.

- UBC completed Phases 2 and 3 of one of the largest steam to hot water conversions in North America. When finished, it will replace 14 km of aging steam system piping infrastructure to reduce emissions by 22 per cent and save up to $4 million a year in operational and energy costs. A total of 19 buildings are now connected.

- The Continuous Optimization "Building Tune-Up" program is retro-commissioning 72 buildings to reduce emissions in core buildings by 10 per cent. A pilot in two buildings is complete, the next phase of implementation is underway in 17 buildings, and investigation of 40 more buildings is in progress.

5.1.1 Scope 1 and 2 Highlights

UBC's new Stromer electric bicycles and electric-drive Smart cars. Credit: Don Erhardt

In addition to the three major capital projects that will achieve the majority of emissions reductions, over 40 staff in Climate Action Teams are championing transformation in their departments and across campus to contribute to climate action and sustainability at UBC.

In 2012, the third year of implementing the Plan, highlights in the areas of direct and indirect energy include:

Energy Supply and Management

- ***Server consolidation***: The new University Data Centre (UDC) in the new Pharmaceutical Sciences Building addresses the university-wide need for suitable space for housing computing infrastructure. The energy-efficient design, in conjunction with leading-edge cooling technologies, will reduce power utilization. Researchers writing proposals for high performance computing infrastructure and departments or units considering expansion of computing facilities are encouraged to locate in the new UDC instead of installing servers elsewhere.

Fleets and Fuel

- ***Electric vehicles***: UBC Building Operations is greening its fleet with the purchase of five electric-drive Smart cars and two Stromer electric bicycles with trailers for trades staff who travel around campus without heavy loads.

Development and Infrastructure

- ***Technical Guidelines:*** In 2012 the Interior Building Lighting, Exterior Building Lighting and Indoor Thermal Environment sections of the Technical Guidelines underwent major revisions with a focus on energy efficiency and standardization. In addition, new energy performance requirements for new construction and major renovations were written into the Sustainability section of the Technical Guidelines.

5.1.2 Scope 3 Highlights

UBC SEEDS student project helps Triple O's lead way to zero waste. Credit: Josie Midha

UBC's Climate Action Plan includes strategies for reducing Scope 3 emissions related to food, procurement, business travel and commuting. Highlights from 2012 include:

Food

- ***Triple O's waste sorting and fair trade***: A Social Ecological Economic Development Studies (SEEDS) student project developed signage for sorting recyclables, garbage and compost at the White Spot Triple O's in the David Lam building – the first partnership with a franchise on campus. As a result, the restaurant went from sending nearly all its waste to the landfill to recycling or composting about 85 per cent. Triple O's is also the first franchise on campus to switch to serving only fair trade coffee, putting it in line with all UBC Food Services outlets.

Transportation (Commuting)

- ***Bicycle parking:*** The Chemistry/ Physics secure bike parking facility opened its doors in September 2012 to waiting users. With space to store 45 bicycles, a bicycle repair center equipped with tools and an air pump, and facilities for changing and storing cycling apparel, the new space adds high value for staff and students in the area. The facility's bright green colour and unique architectural features also bring vibrancy to this section of campus.

Procurement and Business Travel

- ***UBCBuySmart***: Launched in October 2012, UBCBuySmart is a resource for selecting sustainable partners. Anyone on campus will be able to benefit from campus wide contracts and can find them all in one location, including sustainable partners identified by a leaf icon.

4.2. Plans to Continue Reducing Greenhouse Gas Emissions 2013 – 2014

UBC's Building Tune-Up program will reduce emissions by 10 per cent.

5.2.1 Scope 1 and 2 Emissions

To achieve UBC's ambitious emissions target of becoming a net energy producer by 2050, UBC has invested in several major capital projects that will be examples for cutting edge clean energy technology and innovative industry partnerships. Over the next three years these projects will achieve UBC's goal of reducing emissions by 33 per cent by 2015:

Converting district heating system to a hot water system

Phases 4 through 7 of this project will be completed in 2013-2014. The $88 million steam to hot water conversion will heat 130 buildings on campus when it is completed in 2017, reducing UBC's GHG emissions by 22 per cent. The largest source of savings comes from the system's ability to heat the campus while operating at a significantly lower temperature than the outgoing steam system, reducing distribution losses. The lower temperature of the system also enables researchers, students, staff and corporate partners to explore and integrate green technology and best practices in such areas as geothermal energy, ocean thermal energy, solar energy and waste heat recovery. The conversion project is a long-term investment with payback period of almost 25 years, but the lifetime of the district energy system is much longer than that – it is a major investment in sustainable infrastructure with a lifetime of sixty to eighty years.

Bioenergy Research and Demonstration Facility

When the Bioenergy Research and Demonstration Facility (BRDF) ramps up to full capacity in 2013, it will eliminate 9 per cent of campus GHG emissions and provide 25 per cent of UBC's average district heat when operating in thermal mode and 12 per cent in cogeneration mode. In cogeneration (or demonstration) mode, the system will generate two megawatts of cost-effective clean electricity. This is up to six per cent of the campus's average electrical demand and 4.5 per cent of peak demand, equivalent to the amount of electricity needed to power 1,500 homes. Showcasing the campus as a living lab, the BRDF will also provide research and learning opportunities for faculty and students in the clean energy sector.

Continuous Optimization (Building Tune-Up)

The Continuous Optimization "Building Tune-Up" program will operate in 72 buildings totaling 7.7 million square feet. It will reduce energy consumption and GHG emissions in core buildings by 10 per cent through retro-commissioning measures with a combined simple payback of 5 years or less. Implementation of energy conservation measures already underway in Phase 1 for 2.1 million square feet of research-intensive floor space will be completed in 2013. Implementation in 20 academic and administrative buildings in Phase 2 will begin in 2013, followed by 20 buildings in Phase 3 in 2014. Future phases will address the remaining buildings.

5.2.2 Scope 3 Emissions

While not directly responsible for Scope 3 GHG emission sources, UBC recognizes that they are within its sphere of influence and that the University can act to mitigate these emissions. Key initiatives over the next few years will continue to move the campus toward a low carbon future.

Some highlights of activities targeting scope 3 emissions include:

Transportation

- ***Electric Vehicles:*** Through the Provincial Community Charging Infrastructure Fund, UBC is installing 18 electric vehicle charging stations on campus. Ten of these stations will be dedicated to UBC's fleet, as an ongoing commitment to reduce campus emissions. The remaining eight public access stations will be located at Thunderbird Parkade.

Procurement and Business Travel

- ***Paper:*** Beginning in 2013, 50 per cent recycled content paper will be the new standard offering under the new paper supply contract with Grand & Toy. In addition, Grand & Toy has committed to reduce the number of its delivery trips to campus from five days per week to three days per week.

Food

- ***Local food production:*** A new hoop house will allow the UBC Farm to add a greater diversity of fruits and vegetables in the early season, and will also extend what can be offered in the fall, with the growing season now stretching into October. A new cooler added in 2012 allows for increased storage of UBC Farm produce for sale to campus outlets and market-goers.

5. Links to Relevant Reports

Visit sustain.ubc.ca to learn more about UBC's Climate Action Plan.

UBC Sustainability Initiative
http://sustain.ubc.ca/

UBC Climate and Energy
http://sustain.ubc.ca/campus-initiatives/climate-energy

UBC Climate Action Plan
http://sustain.ubc.ca/campus-initiatives/climate-energy/climate-action-plan

UBC Sustainability Plans and Reports
http://sustain.ubc.ca/our-commitment/strategic-plans-policies-reports

Case Study: Implementing UBC's Climate Action Plan
http://www.aashe.org/resources/case-studies/implementing-ubcs-climate-action-plan

Appendix A: Climate Action Plan 2012 Implementation Update

ID	Action	Responsible Portfolio(s)	Partnerships Required	Timeline	Status Update 2012 calendar year
		Department(s)	Internal & external	Milestones or specific general stage of the plan (<3 yrs, 3-5 yrs, >5yrs)	Progress to date; next steps if applicable
Campus Development and Infrastructure					
DV-01	**Increase the energy efficiency of development on campus**				
a)	Adopt **MNECB 2011** when available for all new construction including core, ancillary, and market residential development. **Target:** 30% below current BC building code (about **45% below MNECB 1997**) for all new buildings. This target would be similar to achieving 5 LEED points in energy and atmosphere.	Infrastructure Development	SHHS, Building Ops, Campus Sustainability	Commencing 2010. Adopt when available (expected in 2011).	**Complete**. Requirement for 42% below MNECB 1997 and 5 points in LEED EA credit 1 written into Vancouver Campus Plan and UBC Technical Guidelines.
b)	Commit all UBC **ReNew** buildings to achieve energy performance targets. **Target:** 20% below current BC building code (about 35% below MNECB 1997) for all ReNew buildings. This target would be similar to achieving 5 LEED points in energy and atmosphere.	Infrastructure Development	SHHS, Building Ops, Campus Sustainability	Commencing 2010.	**Complete**. Requirement for 33% below MNECB 1997 and 5 points in LEED EA credit 1 written into Vancouver Campus Plan and UBC Technical Guidelines.
c)	Adopt higher energy efficiency standards for the **Residential Environmental Assessment Program** (REAP).	Campus and Community Planning	Infrastructure Development, UBC Properties Trust	< 3 yrs	**Complete.** REAP Version 3.0 was developed in 2012 with higher energy performance requirements. Will be released in April 2013.
d)	Develop a **LEED® Guide** to identify optional LEED® points that are a priority for UBC (e.g. energy and atmosphere) and to share lessons learned to date to guide consultants through LEED® certification at UBC.	Campus Sustainability	Building Ops, Infrastructure Development, SHHS, C&CP	< 3 yrs	**Complete.** The LEED Implementation Guide was completed in 2011. The guide outlines which credits are considered mandatory requirements by UBC or recommended for the campus. References to the Guide will be inserted in the Technical Guidelines and Campus Plan in 2012.
e)	Develop **design guidelines around site orientation** to include passive solar heating and light access, tree shading, and co-locating buildings to support shared infrastructure.	C&CP	Infrastructure Development, Building Ops, SHHS, UBC Properties Trust	< 3 yrs	**Complete.** The Vancouver Campus Plan prioritizes a compact campus, with opportunities for sharing infrastructure and resources and reducing energy usage to be considered in the siting review for each new project and in the more detailed site planning for the mixed-use hubs. The VCP Design Guidelines' section 2.3.10 — Sustainability Best Practice in Building Design — singles out passive design, orientation, shape and massing, windows and glazing as items to be considered early in the design process in order to improve energy performance and comfort.

ID	Action	Responsible Portfolio(s)	Partnerships Required	Timeline	Status Update 2012 calendar year
f)	Ensure that UBC's **Technical Guidelines** explicitly require highest standards of energy efficiency.	Infrastructure Development, Building Operations	SHHS, Properties Trust	Complete by end of fiscal year 2009-10.	**Ongoing**. In 2012 the Interior Building Lighting, Exterior Building Lighting and Indoor Thermal Environment sections of the Technical Guidelines underwent major revisions with a focus on energy efficiency and standardization. In addition, new energy performance requirements (see DV-01-g) were written into the Sustainability section of the Technical Guidelines.
g)	Develop "**Energy Density Targets**" for new student housing and core academic development.	Infrastructure Development	C&CP, Building Ops, SHHS, Properties Trust	Establish Targets by 2012, to be included in development by 2013	**Complete.** A new method was developed to generate custom energy density targets for renovations and new construction of student residence, office, classroom and laboratory spaces. The new methodology for assigning an energy target to a building was tested on Ponderosa Phase 2 in 2012 and refined for use in future building projects. The new requirement for a custom Energy Density Target was included in the 2012 revision of UBC Technical Guidelines.
h)	Increase **infill development on the North Campus** as a means of increasing density and reducing emissions associated with achieving UBC's growth targets as outlined in the Vancouver Campus Plan (e.g., 50% of students housed on campus by 2030).	C&CP	Campus Sustainability	ongoing	**Ongoing.** The Vancouver Campus Plan emphasizes higher-density mixed-use facilities at designated infill locations on the North Campus to increase student housing capacity and support a greater variety of academic and personal services on campus. Ponderosa Housing Hub Phase 1 was under construction in 2012 while design began on Phase 2. This Hub will provide approximately 960 student residences beds, academic space and a range of community services and amenities.
DV-02	**Establish long term funding to support energy efficiency for both new construction and existing buildings.**				
a)	Evaluate the legal and financial opportunities to **create new financing mechanisms for retrofits** .These could include the UBC endowment, working capital, GPO, etc.	Treasury		End of fiscal year 2009 - 2010	**In progress**. In 2011 UBC signed onto the Billion Dollar Green Challenge, which encourages universities to create self-managed green revolving funds that finance energy efficiency improvements. In 2012 a UBC Net Impact (MBA) student team was engaged to design the mechanisms for the fund at UBC.
b)	Incorporate energy efficiency awareness into **communications with financial donors and granting agencies** to ensure that the green and energy efficient features of buildings are properly funded.	Development Office	Infrastructure Development, Building Ops, SHHS	Ongoing	**Not yet started.**
c)	Develop funding mechanisms for **addressing energy efficiency in existing and new ancillary buildings** (e.g. housing and athletics facilities).	C&CP	SHHS, Athletics, Infrastructure Development	< 3 yrs	**In progress.** In 2012 UBC's Community Energy Manager completed Energy Management Plans for ancillary units, currently under review. The Billion Dollar Green Challenge revolving fund mentioned above can also be a source of funding for these facilities.
d)	Include the **lifecycle costs** (e.g., operations and maintenance, energy costs, carbon tax, offset costs) when developing business cases for capital projects.	Infrastructure Development	Building Operations, SHHS, Properties Trust	Ongoing	**In progress.** UBC`s Technical Guidelines require lifecycle cost analysis. A number of building projects in 2012 underwent lifecycle assessment including the University Neighbourhood Association community centre and the District Energy Centre.

ID	Action	Responsible Portfolio(s)	Partnerships Required	Timeline	Status Update 2012 calendar year
e)	Develop UBC specific **financial business case criteria** (e.g. payback thresholds, etc.) to guide the evaluation of facility upgrades.	Infrastructure Development, Treasury	Bldg. Ops., SHHS, Athletics, UBC Properties Trust	End of fiscal year 2009-10	**Not yet started.**
DV-03	**Implement comprehensive renovation projects for existing buildings.**				
a)	Support the **proposed UBC ReNew Phases 2 through 5** in order to continue retrofits of existing core buildings and ensure that high performance building envelopes and systems are included in ReNew projects. To support this initiative, project budgets should be allocated in such a way that 5% of the overall budget is put towards energy performance upgrades.	Infrastructure Development	Building Operations, Campus Sustainability	3 - 5 yrs	**Longer term goal.** Capital plan identifies several projects that are being evaluated against funding availability. Government funding to help support these projects has been requested.
b)	Develop a **ReNew equivalent program for Ancillary Buildings** (Housing and Athletics).	Infrastructure Development	Building Operations, C&CP	Program development and approval by 2012.	**Not yet started.**
DV-04	**Work with our neighbors and partners to understand and reduce the complete UBC carbon footprint.**				
a)	Support the **University Neighbourhood Association (UNA)** in developing an emissions inventory and strategies for reducing emissions from campus neighborhoods.	Campus Sustainability	UNA, C&CP, SHHS, UBC Properties Trust	Commence in 2010.	**In progress.** A draft Community Energy and Emissions Inventory and Plan was completed in 2012, targeted for adoption in 2013/14 Q1.
DV-05	**Leverage our experiences in development and emission reduction for academic and research purposes.**				
a)	Support the inclusion of climate change and energy efficiency in the **Social, Ecological, Economic Development Studies (SEEDS) program** on campus to build a campus scale learning network and support the incubation of demonstration projects related to net positive energy and water.	Campus Sustainability	All departments	continuous	**Ongoing.** In 2012, 59 student reports related to climate, energy and water themes were completed through the SEEDS program.

ID	Action	Responsible Portfolio(s)	Partnerships Required	Timeline	Status Update 2012 calendar year
		Department(s)	Internal & external	Milestones or specific general stage of the plan (<3 yrs, 3-5 yrs, >5yrs)	Progress to date; next steps if applicable
Energy					
EN-01	**Expand energy management activities on campus.**				
a)	Develop an **energy management program for all ancillary facilities.** **Target**: Save 15% of housing and athletics energy consumption by 2020	Campus Sustainability	SHHS, Athletics	Start in year 2 (2011)	**In progress**. In 2012 UBC's Community Energy Manager completed Energy Management Plans for ancillary units, currently under review.
b)	Implement full campus-wide **energy monitoring, reporting and benchmarking**.	Building Operations	Campus Sustainability	Start in year 1 (ongoing)	**Ongoing**. Benchmarking is completed annually. A monitoring, targeting and reporting system was implemented in 2011. Energy reports will be distributed as buildings move through the Continuous Optimization "Building Tune Up" program.
c)	Participate in the Canada Green Building Council's **(CaGBC) Green Building Performance Initiative** to benchmark with peers	Campus Sustainability		< 3 yrs	**Re-evaluate.** Instead, UBC will participate in Energy Star Portfolio Manager when it is launched in Canada in 2013.
EN-02	**Maintain optimal performance of existing systems.**				
a)	Implement a **continuous commissioning program** for core academic buildings **Target**: 10% reduction in energy use in existing core buildings by 2015.	Building Operations	BC Hydro funding.	Program development to begin in 2010	**Ongoing**. The Continuous Optimization "Building Tune Up" program is under way. In 2012 implementation began on the 17 laboratory buildings in Phase 1, and investigation began on 21 Phase 2 buildings and 20 Phase 3 buildings.
b)	Expand **condition assessment** activities and **preventative maintenance** to support energy efficiency in existing buildings.	Building Operations		< 3 yrs	**Under development**. A system is in place for ongoing condition assessment (VFA). A preventative maintenance program is being developed by Building Operations, following implementation of the new work management system.
c)	Ensure O&M staff receive adequate **training (and certification)** to allow them to operationalize the CAP and fulfill their mandates	Building Operations		Start in year 1	**Ongoing**. Buildings Operations staff participated in coaching sessions as part of the Continuous Optimization program and several staff attended NRCan energy efficiency workshops.
d)	Invest in the **Sustainability Coordinators program** to increase participation in energy and GHG management efforts.	Campus Sustainability		Start in year 1	**Ongoing**. SC program includes over 150 volunteers, with a focus on energy each fall. New SCs received specific training on climate and energy in 2012, to be repeated annually. A new campus-wide sustainability engagement strategy will be completed in 2013/14.

ID	Action	Responsible Portfolio(s)	Partnerships Required	Timeline	Status Update 2012 calendar year
e)	**Optimize steam plant efficiency** through setting annual plant commissioning and optimization targets.	Building Operations			**Complete.** The steam plant will be de-commissioned and demolished in 2016 when the new Campus Energy Centre is connected to the hot water system, which will improve efficiency by 22%. In 2012 the Bioenergy Research and Demonstration Facility began supplying steam to the campus grid, which reduced the summer load at the steam plant.
EN-03	**Develop incentive systems for building operators and users to reduce energy and water consumption.**				
a)	Review utility rates, rate structure and departmental budgeting strategy to provide correct **market signal to encourage conservation.** This would include core, ancillary, and tenant buildings.	Bldg. Ops./Campus Sustainability; Treasury	Budget Office	2013	**Removed.**
b)	Create **building-by-building user groups** to link Building Operations with faculty, staff and students (building users).	Campus Sustainability	Building Operations	Start in year 1	**Under development.** May be an outcome of the engagement strategy in Action EN-06 (b). In 2012 a pilot Chemistry Building Strategic Working Group to evaluate energy efficiency projects was established as a partnership between the Chemistry Department, Risk Management Services, Building Operations and Campus Sustainability.
c)	Review **space planning requirements** and develop financial incentives to encourage departments to operate within the BC University Space Standards.	Infrastructure Development	Building Operations	< 3 yrs	**Ongoing**. UBC charges departments for space.
d)	Expand the pilot test of a **real time energy management dashboard** to visualize and track building energy use. Include a broader range of user groups.	Campus Sustainability	Building Operations	Ongoing	**Ongoing**. Over 60 buildings are connected to Pulse's energy management software in conjunction with the Building Tune-Up continuous commissioning program. A communication strategy to engage users with this energy dashboard was launched in the Phase 1 buildings in 2012.
EN-04	**Control peak demand**				
a)	Develop and implement a **peak demand** management strategy	Building Operations/ Campus Sustainability		2013	**Under development**. Presently monitoring peak demand and have engaged BC Hydro to conduct a System Impact Study that will inform the business case for UBC to pursue demand response. Assessing automation of high voltage electrical controls to enable automatic load shedding and smart grid functionality in campus buildings.
b)	Support a UBC **Green IT strategy** for consolidation of IT Data Centres (server rooms, etc.) to achieve economies of scale in terms of resource efficiency	IT (Finance) / Campus Sustainability		< 2 yrs	**Ongoing**. The new University Data Centre (UDC) in the new Pharmaceutical Sciences Building began operating in November 2012. The UDC addresses the university-wide need of suitable space for housing computing infrastructure. The energy-efficient design, in conjunction with leading-edge cooling technologies, will allow UBC to reduce its power utilization. Researchers writing proposals for high performance computing infrastructure and departments or units considering expansion of computing facilities are encouraged to locate in the new UDC instead of installing servers elsewhere.

ID	Action	Responsible Portfolio(s)	Partnerships Required	Timeline	Status Update 2012 calendar year
EN-05	**Transition to a renewable energy system on campus.**				
a)	Develop an energy supply transition strategy based primarily on implementing the recommendations of the **Alternative Energy Study Project** (i.e. transition from a steam heating to a heating water distribution system).	Building Operations, Campus & Community Planning	Infrastructure Development, SHHS, Athletics, Properties Trust	< 3yrs	**Complete**. Conversion of the steam system to hot water is ongoing with Phases 2 and 3 completed in 2012. Phases 4 to 9 to be complete by 2016. UBC's Bioenergy Research and Demonstration Facility, the first commercial-scale demonstration of biomass gasification co-generation in North America, began operation in 2012. The BRDF will reduce campus GHG emissions by 9 percent while yielding valuable new knowledge in the clean energy sector.
b)	Update Technical Guidelines to ensure energy-efficient **thermal enclosure standards**.	Building Ops, Infrastructure Development		Start in year 1	**On hold.**
c)	Ensure reliability risk assessments are completed for **new energy technology proposals.**	Infrastructure Development	Building Operations	< 3 yrs	**Ongoing**. Through the Campus as a Living Lab Working Group, new technology proposals are evaluated. Projects approved in 2012 include the energy storage system and electric vehicle charging stations. Building Operations ensures hazard assessment is completed.
EN-06	**Support the campus community in energy management activities.**				
a)	Promote an **Energy Management Office** (within Campus Sustainability) that all departments (including Ancillaries) can access for energy-related questions and advice.	Campus Sustainability	Bldg. Ops., SHHS, Athletics	< 3 yrs	**In progress.** Currently three staff in Campus Sustainability provide energy-related advice, including a community energy manager who supports ancillaries and UTown@UBC community members.
b)	Develop a campus **community engagement strategy** to build awareness and encourage energy conserving behaviours.	Campus Sustainability		Start in year 1	**In progress.** Will be completed in 2013/14.
c)	Strengthen the relationship between the academy (teaching, research, and learning) and operations by establishing **joint research / operational programs** and projects aimed at providing tangible examples of energy efficiency/conservation, GHG emissions reduction and climate action.			< 3 yrs	**Complete / Ongoing.** The UBC Sustainability Initiative (USI) unites sustainability efforts in teaching and learning, research and partnerships, and campus operations. Several "Campus as a Living Laboratory" projects are underway: Signature Projects • Bioenergy Research and Demonstration Facility • Centre for Interactive Research on Sustainability • Energy Storage Systems • UBC Smart Energy Systems Collaborative Projects • MicroLED Lighting System Demonstration

ID	Action	Responsible Portfolio(s)	Partnerships Required	Timeline	Status Update 2012 calendar year
EN-07	**Reduce energy consumption from laboratory and research activities.**				
a)	Develop a **"Green Laboratories"** initiative.	Campus Sustainability	Building Operations, Risk Management	< 3 yrs	**In progress.** In 2012 two pilot projects were completed – a fume hood retrofit in Chemistry and a lab renovation from CAV to VAV in Chemical & Biological Engineering. In addition, an audit of Chemistry Physics was initiated which will identify pilot projects to be completed in 2013. Analysis of these pilots will inform a campus-wide retrofit program. Risk Management Services is re-commissioning all fume hoods to ensure face velocities comply with recommended safe levels, which will also achieve energy savings. The Shut the Sash campaign promoted energy-conserving behaviour in labs through a competition that resulted in 85% reduction in fume hood energy use in three buildings.

ID	Action	Responsible Portfolio(s)	Partnerships Required	Timeline	Status Update 2012 calendar year
		Department(s)	Internal & external	Milestones or specific general stage of the plan (<3 yrs, 3-5 yrs, >5yrs)	Progress to date; next steps if applicable
Fleets and Fuel Use					
FF-01	Complete **E3 Silver Certification** of the operational fleet. In order to do this, UBC will need to obtain between 67 and 78 points in the E3 system. These points are obtained by implementing various actions in the following areas: • Green Fleet Action Plan, Training and Awareness, Idling Reduction, Vehicle Purchasing, Fuel Data Management, Operations and Maintenance, Trip and Route Planning, Utilization Management, Fuel Efficiency, GHG Reductions	Building Operations		2013	**In progress**. UBC registered as a participating member in 2012 and will complete E3 Certification in 2013. At the start of the process UBC already has 13 default points, out of the minimum 67 points required for E3 Silver Certification.
FF-02	Continue to integrate **electric or ultra low consumption vehicles** into the 'on campus' fleet and increase the profile of these vehicles through signage and display to create awareness of UBC activities.	Building Operations		Within 5 years	**Ongoing**. Building Operations replaced five electric vehicles that were not meeting needs (Might-E Trucks) with electric-drive Smart cars. Building Operations purchased two new Stromer electric bicycles with trailers for trades staff to use on campus. Total of 21 electric or hybrid vehicles in all departments, or 5 per cent of fleet.
FF-03	Review legal requirements and explore opportunities for allowing **low speed electric vehicles** to be registered for use on campus (e.g., "ZENN" cars and others). This may require a bylaw in concert with the City of Vancouver.	Campus & Community Planning	Metro Vancouver	Start in year 1	**Complete.** Building Operations currently uses low speed electric vehicles (Might-E Trucks) that are registered for use on campus. These models are being phased out and replaced with more appropriate vehicles to serve trades staff needs. Requirement to travel off-campus to be re-evaluated.
FF-04	Provide **right sizing** advisory service and enact policy which requires departments to evaluate the size and efficiency of their vehicle prior to purchase.	Building Operations	All depts	2013: Phase 1 (Bldg Ops.) 2014: Phase 2: (FRO depts.) 2016: Phase 3: (other depts.)	**In progress.** Building Operations began working with Automotive Resources International (ARI) on right sizing. ARI will conduct a complete analysis of the current fleet and provide a project plan for right-sizing. Building Operations retired six vehicles based on the criteria identified. Currently 32 different models are in use – these will be consolidated to four models that serve the light-duty trades (Sprinter, Tacoma, Transit and Smart). These four models are being promoted to other departments since standardization eases the need to maintain an extensive inventory of parts.

ID	Action	Responsible Portfolio(s)	Partnerships Required	Timeline	Status Update 2012 calendar year
FF-05	Implement a **fuel/emission tracking system** for campus vehicles not currently serviced at the Building Operations facility.	Campus Sustainability	All Depts	Implement by December 2009 (data required under Bill 44)	**Ongoing**. Since 2009, odometer readings are collected annually from individual vehicle owners/administrators to estimate fuel consumption for greenhouse gas reporting to the province. In 2012, achieved 86 per cent response rate and estimated the remainder based on methodology developed in 2011.
FF-06	Establish a **departmental monitoring system** to ensure cost recovery on department vehicles used by projects and researchers (e.g., require odometer readings, fuel meter readings, etc).	Building Operations	All Depts	Start in year 1	**Re-evaluate.** The readings described above are not yet being communicated back to departments. Building Operations tracks odometer readings and fuel use for each vehicle. The introduction of Geotabs in Building Operations fleet vehicles will allow for accurate fuel consumption and emissions data tracking.
FF-07	Promote the costs and benefits of **centralized vehicle services** (established in the UBC Building Operations Fleet Management Business Plan) to UBC departments.	Building Operations	All Depts	Start in year 1	**In progress.** Building Operations began engaging ARI for Fleet Management Services. Other departments attended an Open House in November 2012 where the new electric Smart cars and electric bicycles were showcased. The benefit of contracting ARI's services is gaining traction in other departments. Several vehicles outside of Building Operations have since been purchased or leased through ARI; each was one of the four standardized models mentioned in FF-04 above.

ID	Action	Responsible Portfolio(s)	Partnerships Required	Timeline	Status Update 2012 calendar year
		Department(s)	Internal and External	Milestones or specific stage of the plan (<3yrs, 3-5yrs, >5yrs)	Progress to date; next steps if applicable
Transportation (Commuting)					
TR-01	Explore the feasibility of implementing a **combined discounted transit-parking pass program** for staff and faculty (make bus pass a priority component of salary/compensation increase)	Transportation Planning, Parking	TransLink	> 5 years	**Longer term goal.**
TR-02	Evaluate opportunities to grant employee benefits or create **incentives for dedicated non-GHG commuters** (as part of Healthy Workplace Plan)	Central HR		3-5 years	**Longer term goal.**
TR-03	Improve **'end of trip' biking facilities** in technical standards (tie level of facility to occupancy, provide safe and secure bike parking, showers, etc)	Transportation Planning		< 3 years	**Complete.** In 2010, standards were incorporated into Vancouver Campus Plan Design Guidelines. CIRS is an example of a new building constructed with end of trip facilities including a secure bicycle parking room, showers and lockers.
TR-04	Develop **preferential parking strategy** targeted at faculty and staff (ideally revenue neutral, focused on preferred location rather than lower rates/fees, target carpoolers, low emissions vehicles, low SOV users, scooters, small cars, etc)	Parking, Transportation Planning to cross-promote		< 3 years	**In progress**. On-street parking spaces are being re-allocated for car-share vehicles. Parking for car2go expanded to Wesbrook Mall, West Mall and Agronomy Road. In 2013 the street parking strategy for motorcycles will be finalized, and motorcycle parking placement in parkades will be re-evaluated. Electric vehicle charging stations will be in place by March 2013 (see TR-11 below). Reviewing Thunderbird Parkade rate and targeting an increase in maximum daily rate to be in line with the rest of the parkades. Also, targeting an increase in the maximum daily rate in B Lots. If approved, these increases will come into effect mid-2013.
TR-05	Study the feasibility of implementing a **U-Pass "tax" for UBC Residents** (i.e. charge new market residential development for one U-Pass per household, at the point of purchase)	Transportation Planning, UNA, Budget Office	TransLink, UNA	> 5 years	**Re-evaluate. Longer term goal.**

ID	Action	Responsible Portfolio(s)	Partnerships Required	Timeline	Status Update 2012 calendar year
TR-06	Partner with the Vancouver Area Cycling Coalition (VACC), renamed HUB, to improve **cycling skills and awareness**	Transportation Planning	HUB	< 3 years	**Complete.** Ongoing HUB Cycling skills courses are held at UBC to align with Bike to Work Week in Spring and Fall.
TR-07	Per studies conducted for Parking Services and Campus and Community Planning: a) build **way-finding** to enhance accessibility to pedestrians, cyclists, transit users, etc b) build **congestion reporting system** to mitigate traffic congestion (and emissions) on campus	Parking, Campus and Community Planning, Transportation Planning, Consultants	City of Vancouver (try to harmonize with regional way finding system)	3 - 5 years	**In Progress.** a) Pedestrian wayfinding strategy is complete and signage is being installed across campus. In 2013 vehicle wayfinding signage will begin to be implemented – this will assist drivers with routing and avoiding the campus pedestrian core, which will result in less vehicle circling. b) In 2013 dynamic signage showing which parkades have space available will be investigated.
TR-08	Building on the 'telecommuting guideline', consider developing an **employee transit policy** to assist staff in reducing GHG emissions associated with commuting (e.g., encourage flexible work hours for staff through staggered start times, compressed work weeks, telecommuting, etc)	HR		< 3 years	**Longer term goal.**
TR-09	Evaluate the feasibility of implementing a **cap on vehicle parking** on campus.	Parking, Transportation Planning to cross-promote		< 3 years	**Complete**. The 2010 Vancouver Campus Plan limits institutional surface parking on campus. In 2012, approximately 140 spaces were removed or reduced in surface parking lots, adding to the 550 spaces removed or reduced from 2010 to 2011
TR-10	Explore opportunities to expand **U-Pass to staff and faculty members**	Transportation Planning, HR, Faculty Assn	TransLink	> 5 years	**Longer term goal**.
TR-11	Provide **plug-in for electric assist vehicles**, including: a) Bicycles	Parking, Utilities, Building Operations, Transportation Planning, Infrastructure Development		< 3 years	a) **Ongoing.** The new Chemistry/Physics bike facility was constructed in 2012 with electrical outlets. All other new bicycle facilities will also have outlets. Exploring the option of a bonus REAP point for increasing indoor bike parking and providing electrical connections.

ID	Action	Responsible Portfolio(s)	Partnerships Required	Timeline	Status Update 2012 calendar year
	b) Motorized vehicles				b) **In progress.** The new ACU lot to the east of UBC Hospital was constructed in 2012 with 10 electrical outlets for vehicle charging. Through the Provincial Community Charging Infrastructure Fund, UBC is installing 18 electric vehicle charging stations on campus (to be completed in April 2013). Ten of these stations will be dedicated to UBC's fleet, as an ongoing commitment to reduce campus emissions. The remaining eight public access stations will be located at Thunderbird Parkade.
TR-12	Review policy around **student resident parking permits** and assess the feasibility of: A) eliminating parking passes for first year students living on campus; B) raising rates significantly to discourage the purchase of parking permits by students living on campus.	Parking, SHHS, Transportation Planning		< 3 years	**Under development.** Note that SHHS parking rates are Board-approved.
TR-13	Explore the feasibility of providing a **U-Pass opt-in for students who are currently not eligible.**	Transportation Planning, AMS, Enrollment Services	TransLink	TBD based on Translink negotiations	**Longer term goal.** In 2012 certain eligibility categories changed to increase the number of students who qualified for U-Pass, including Okanagan campus students studying at UBC Vancouver campus.
TR-14	Evaluate opportunities to revise UBC's Employee Housing Program to include incentives for staff and faculty to find **housing closer to campus**, thereby encouraging shorter commutes (e.g., financial assistance weighted to give more to employees that choose to live closer to campus)	Treasury, SHHS, UBC, HR, UNA		< 5 years	**Ongoing.** In 2012, the Board of Governors adopted *The University Community on Campus – UBC's Housing Action Plan*, UBC's comprehensive plan to improve housing affordability and choice on the Vancouver campus for faculty, staff and students. UBC is dedicating up to 30% of its future housing stock to restricted housing options exclusively for faculty and staff, which will remain staff and faculty housing in perpetuity. The options include a restricted home ownership program and Housing Assistance Program for tenure and tenure-track faculty, restricted rental housing and preferential access to new market leasehold units. UBC is also committed to building enough student housing to meet demand through the Student Housing Financing Endowment.
TR-15	**Promote various commuting options** for staff, faculty and students (i.e., EPP, Flex, ICBC, etc)	Transportation Planning, HR		3 - 5 years	**Complete.** Ongoing promotion at events such as Imagine UBC student orientation and new faculty/staff orientation, via Sustainability Coordinators, on website and through other outreach initiatives as opportunities arise.
TR-16	Develop **Bike Buddy program** to encourage bike pooling (advertise on carpool notice board)	Transportation Planning	HUB	< 3 years	**Removed.** Instead, skills training and cycling maps are provided.

ID	Action	Responsible Portfolio(s)	Partnerships Required	Timeline	Status Update 2012 calendar year
TR-17	Consider setting **limits on the transferability of parking passes** to discourage driving on campus (phase this in the next time parking fees get restructured)	Parking		> 5 years	**Removed.** This may actually discourage car pooling – encourage flexibility instead.
TR-18	Improve **on-campus bike sharing program** (make available to conference guests)	Transportation Planning, AMS		TBD	**Longer Term Goal.** In 2012 the City of Vancouver announced that it will be launching a public bicycle system. Once implemented, UBC will explore feasibility of expansion to UBC community.
TR-19	Evaluate opportunities to promote a culture of cycling with **guided on-campus bike tours**	Campus Sustainability	Transportation Planning	< 3 years	**Complete.** Ongoing bike tours are provided as part of outreach initiatives, as opportunities arise. Tours were provided for the Velo-city Global 2012 conference.
TR-20	Ensure the Campus Plan aligns with the CAP in terms of land use and the need for **infrastructure that encourages alternative transportation** (e.g., compact, mixed-use, walkable communities with more amenities on campus).	Campus Sustainability	Transportation Planning	Start in year 1	**Complete.** Vancouver Campus Plan was completed in 2010.

ID	Action	Responsible Portfolio(s)	Partnerships Required	Timeline	Status Update 2012 calendar year
		Department(s)	Internal and External	Milestones or specific stage of the plan (<3yrs, 3-5yrs, >5yrs)	Progress to date; next steps if applicable
Business Travel and Procurement					
BTP-01	Update UBC Policy 83 (Travel and Related Expenses) to articulate UBC's commitment to **reducing emissions associated with operational business travel.**	PPS (Travel Mgmt)	All Depts	Start in year 1	**In progress.** Final stages of updates to the procedures that complement Policy 83 are nearly complete and will be posted Fall 2013, to be launched at same time as new payment process. Next step is to review Policy 83.
BTP-02	Convene a Task Team to refine and implement a user-friendly **measurement and reporting system to support flight reduction** by all UBC departments.	UBC IT	PPS (Travel Mgmt), Finance, Campus Sustainability, Department representatives	Start in year 1; Target 2012 for system roll out	**Under development.** Waiting for new Online Payment Tool to stabilize (operational for 12 months) before adding features such as GHG measurement. Currently preferred vendor North South Travel provides annual flight mileage reports for calculating GHG emissions. This type of reporting will improve with new T&E system.
BTP-03	Anticipating a future need to offset **emissions associated with research travel**, begin a dialogue between the Office of the VP of Research and the research granting agencies on the capacity to absorb the costs of carbon offsets for travel into research grants and use the offset fees to contribute to a reduction fund on campus.	Office of the VP of Research	Research Granting Agencies (NSERC, etc)	< 3 yrs	**Under development.**
BTP-04	Fund and promote use of **video conferencing** facilities. Investigate the potential of having a centralized booking system for video-conferencing facilities.	UBC IT		Start in year 1	**In progress.** Now have campus-wide licenses for video-conferencing and web-conferencing software. "BlueJeans" allows multi-point conferences that can connect participants using different protocols and devices, including video-conferencing systems and software, Skype, telephone, and Microsoft Lync/Communicator. "Blackboard Collaborate" allows external web-conferencing sessions to be organized independent of courses, which is ideal for meetings and seminars that may include participants outside of UBC. While these are available, they are not yet actively promoted.
BTP-05	Study the potential to create an off campus **central depot for shipments** in order to reduce the number of shipments coming to campus on a daily basis.	PPS	All Depts, vendors	Start in year 1	**Removed.** Instead, focus on consolidating and decreasing the number of trips to campus by working with vendors (see BTP-06).

ID	Action	Responsible Portfolio(s)	Partnerships Required	Timeline	Status Update 2012 calendar year
BTP-06	**Consolidate and optimize deliveries by suppliers, shippers and couriers** in an effort to reduce the number of trips to-from and around campus. **Target**: Make arrangements with a minimum of 10 suppliers by April 2014	Payment & Procurement Services		Start in year 1	**Ongoing**. This action is becoming more necessary with the new public realm plan that limits vehicle traffic in the pedestrian core of campus. Ongoing work with vendors on decreasing and consolidating trips via annual scorecard, and also included as terms in new RFPs (e.g. scientific contract being negotiated in 2013). In 2012 a new contract with Weber replaced a number of different suppliers and consolidated purchases so fewer suppliers coming to campus. As part of 2013 contract with Grand & Toy for paper, UBC negotiated delivery from 5 days per week to only 3 days per week. Options for optimizing courier trips will be evaluated 2013/14.
BTP-07	Study workflow to identify opportunities to **eliminate paper from operations** and to assess the feasibility of various electronic / paperless systems and integration of digital technology and print management (e.g., handheld scanners, laser fiche, online viewers, electronic ordering, electronic submission of proposals, alternative practice to original signatures on approvals, etc)	Payment & Procurement Services	All Depts	< 3 yrs	**In progress.** Travel & Expense online payment tool will launch in early 2013 and complete transition by end of 2013. This tool integrates digital attachment capabilities and will eliminate printing associated with expense claims. This is a continuation of a multi-year plan to move paper -based transactions online. The plan started with ePAF and includes Electronic Fund Transfers, E-Procurement, and certifying the university to digitally store backup files for auditing purposes.
BTP-08	Implement the Document Management Strategy and set target to **achieve paperless operations** to support UBC in a transition from a paper based to digital model	UBC IT	All Depts	Already underway (set target once strategy is complete)	**Under development.** Document Management Steering Committee has been re-formed. UBC IT will be offering a Microsoft SharePoint software service in summer 2013. This web-based platform provides a secure option for communication, collaboration, and document storage among teams and user communities
BTP-09	**Eliminate the use of virgin paper** immediately. Communicate and encourage uptake of the current 30% post-consumer recycled content standard for paper purchasing on campus. **Target**: 80% of all paper purchases to contain recycled content by 2012	Payment & Procurement Services	All Depts	< 3 yrs	**Complete.** In 2012, 97% of purchases through preferred supplier Unisource contained 30% post-consumer recycled content or better. When direct purchases through Grand & Toy, Staples and XGS are included, 82% of total university paper purchases contain 30% post-consumer recycled content or better. UBCBuySmart will now promote minimum 50% recycled content, as it is now cost-effective. For the new paper supply contract with Grand & Toy to begin in 2013, UBC negotiated 50% recycled content as the new standard paper offering.
BTP-10	Replace packaged/carded stock with **bulk items** (e.g. pens) in Bookstore	Bookstore		< 3 yrs	**Ongoing.**

ID	Action	Responsible Portfolio(s)	Partnerships Required	Timeline	Status Update 2012 calendar year
BTP-11	Require all suppliers to use **reusable or recyclable packaging** or to **uncrate and take back packaging** that is non-reusable or recyclable. **Target**: Arrangements with 50% of preferred vendors by 2015.	Payment & Procurement Services	Suppliers and all Depts	3-5 yrs	**Ongoing**. In 2012 the Grand & Toy "boomerang box" became available for office supplies deliveries to campus – this reinforced corrugated box is meant to be returned and reused. Packaging is addressed in annual supplier scorecard administered by Payment and Procurement Services. The new Scientific RFP included a significant sustainability component and when it is awarded in 2013, PPS will work directly with suppliers in this area. Similarly, in 2013 the new office supplies RFP will address packaging.
BTP-12	Conduct a campus-wide **waste audit** and use the results to set waste reduction targets.	Campus Sustainability		< 1 yr	**In progress.** Waste Audit complete. Waste action targets to be launched in 2013/14.
BTP-13	Work with UBC researchers to conduct **lifecycle analyses on common purchases** in an effort to define the embodied energy within the supply chain and show buyers at UBC the life cycle costs of their choices (e.g., LCA of laser vs. inkjet printers). Communicate these findings to the UBC Community through UBCBuySmart and training.	Payment & Procurement Services	Faculty/ students	< 1 yr	**Ongoing.** In 2012, a SEEDS project completed a triple-bottom-line assessment of wheat paper and concluded that it was a good alternative. UBC will connect the new preferred vendor for paper, Grand & Toy, with the wheat paper supplier. A SEEDS project in 2013 will evaluate sugar cane paper.
BTP-14	Conduct outreach to ensure that all people making purchasing decisions on campus are aware of Payment & Procurement Services resources to encourage **sustainable purchasing** (e.g., list of preferred vendors, Supplier Code of Conduct, Sustainable Purchasing Guide, template RFPs, etc.)	Payment & Procurement Services	Working Group members + Campus Sustainability (outreach)	Start in year 1	**In progress.** UBCBuySmart, launched in October 2012, is a resource for selecting sustainable partners – to be promoted throughout UBC.
BTP-15	Create a policy for **three-way sharing of savings** (between the buying department, Finance and the Campus Sustainability) from smart purchasing decisions. Give a portion of the savings to a UBC 'sustainability fund' to support ongoing initiatives.	Payment & Procurement Services, Finance, Campus Sustainability	All Depts	< 3 yrs	**In progress.** In 2011 UBC signed onto the Billion Dollar Green Challenge, which encourages universities to invest in self-managed revolving funds that finance energy efficiency improvements. In 2012 a UBC Net Impact (MBA) student team was engaged to design the mechanisms for the fund at UBC.
BTP-16	Explore opportunities for **cost-sharing** across campus that allows researchers and departments to share the cost and resources (e.g., furniture, lab equipment, etc)	Provost	All Depts, CS, PPS, Budget Office	< 3 yrs	**Re-evaluate.**

ID	Action	Responsible Portfolio(s)	Partnerships Required	Timeline	Status Update 2012 calendar year
BTP-17	Evaluate opportunities for **enabling sustainable purchasing decisions** in order to achieve multiple benefits (i.e., sustainability leverage, efficiency, meeting user needs)	Payment & Procurement Services	All Depts, Campus Sustainability	Start in year 1	**Ongoing**. With launch of UBC BuySmart, anyone on campus will be able to benefit from campus wide contracts and can find them all in one location, including sustainable partners identified by a leaf icon. Category management team continues to bring together various committees (SSAC, ITPAC) to facilitate discussions between various units about benefits of volume purchases.
BTP-18	Expand list of preferred vendors to include **green hotels, car rental agencies** that provide low emissions vehicles, etc. Add current **green suppliers** to preferred vendor list by fall 2009.	Payment & Procurement Services	Suppliers	Start immediately	**In progress**. UBC TravelSmart links to provincial and CAUBO hotel listings which show Green Keys rating. Began work on greener events choices for off-campus conferences and meetings in Vancouver.
BTP-19	Continue the commitment to **promote/ advertise sustainable or low emissions product options** at retail outlets on campus	Bookstore	Retail outlets on campus (see also Food actions)	Start in year 1	**In progress.** The Bookstore is pursuing the following actions: • Focus on digital rather than printed marketing and communications outreach • Focus on marketing used, rental and e-books as sustainable learning materials • Education outreach to customers via presentations and social media channels, as well as updated sustainability FAQ on website, http://bookstore.ubc.ca/customer-service/faqs/sustainability • Member of campus fair-trade committee and continuing to source new fair-trade products.
BTP-20	Investigate options for asset disposal. Consider **online equipment inventory system** and SERF (Surplus Equipment Recycling Facility) in this investigation	Campus Sustainability	Finance, Payment & Procurement Services	Start in year 1 (January 2010)	**In progress.** In 2012, learned from the reuse-it! UBC pilot – to be re-evaluated in 2013.
BTP-21	Implement industry standards for **energy efficient products** (i.e., EPEAT for electronics, Energy Star, etc). This would include energy efficient research equipment where applicable. **Target**: 50% of all equipment purchases to meet this requirement by 2010; 100% by 2015	Payment & Procurement Services	All depts.	Start in year 1	**Under development.** Discussion between Payment and Procurement Services and Information Technology.

ID	Action	Responsible Portfolio(s)	Partnerships Required	Timeline	Status update – 2012 calendar year
		Department(s)	Internal and External	(<3yrs, 3-5yrs, >5yrs)	Progress to date; next steps if applicable
Food					
FO-01	Integrate the **UBC Food Systems Project (UBCFSP)** with the Climate Action Plan. Use the CAP as a vehicle for advancing FSP recommendations, some of which are highlighted in this plan (*).	Food System Project (FSP) stakeholders and Campus Sustainability		Start in year 1	**Complete.** LFS 450 classes in Jan-Apr. of each year address items in the CAP for the UBCFSP. Outcomes of the projects completed in 2012 are reported throughout this document. In 2013 the following projects will be completed: 1. Triple Bottom Line & Life Cycle Assessments for Eggs 2. Healthy and Sustainable Snacks 3. UBC Farm Agroforestry Product lines 4. Logistics of using fish from UBC Farm integrated aquaculture on campus 5. Monitoring and Evaluation of the UBC Food System Project 6. Interactive Map of the UBC Food System 7. AMS Lighter Footprint Strategy 2012 8. AMS Lighter Footprint Strategy at "The Perch" 9. Feasibility assessment for an AMS New SUB no packaging demonstration restaurant, "The Palate"
FO-02	Using a **Lifecycle Analysis** (LCA) approach, establish a **baseline inventory** for the UBC food system. Use the inventory results to set targets and develop actions to reduce emissions, eliminate waste, and increase the sustainability of the food system.	FSP stakeholders and Campus Sustainability		< 1 year	**In progress.** A student project in 2012 evaluated the greenhouse gas emissions associated with high-volume purchases by UBC Food Services. Recommendations from this project prompted these changes: • Chicken sausages formerly sourced from Chicago are now purchased from local Vancouver producer • Some cheeses formerly purchased from Quebec are now sourced locally from Abbotsford and the Fraser Valley. In 2013 Food Services will continue to identify local sources for other cheeses. LCA assessment of individual products is ongoing to support purchasing decisions by AMS and SHHS. Projects being completed in 2013 include: • LCA of egg products • Market testing/research of healthy snack alternatives e.g. hummus, carrots • Triple bottom line assessment of sugar, focused on waste of packets vs. liquid, and Fair Trade alternatives • Sustainable Water Consumption Project to (1) determine current access to drinking water on campus (i.e. tap water, water filling stations and fountains), and make recommendations for improving access, and (2) develop comprehensive social marketing plan that promotes access to drinking water.

ID	Action	Responsible Portfolio(s)	Partnerships Required	Timeline	Status update – 2012 calendar year
FO-03	Engage UBC food providers (i.e., Food Services, AMS, UBC Farm, food retail outlets, etc) in building a **network with local producers** to increase sourcing of local food.	SHHS, AMSFBD UBC Farm, food retail outlets	Get Local BC or other established network	< 3 yrs	**Ongoing**. SHHS have been meeting with local farmers; SHHS' large supplier partners are also a connection for outreach to farmers. A student project in 2013 is investigating the origin of egg products on campus including cage-free eggs and pre-made egg products (e.g. omelet mix), and investigating the desirability and feasibility of sourcing other egg types (free-range, pastured). Sprouts sources all produce locally and in future will look into direct sourcing from farmers. Sprouts is working to phase out non-local products (e.g. chocolate). Food mapping workshops are being offered to students.
FO-04*	Develop a **sustainable food purchasing policy** to articulate "when price and quality are comparable, UBC will purchase from the most local source." **Reinforce** this policy through the bid process by weighting evaluation criteria to favour suppliers that support sustainable, low carbon agricultural practices. Finally, **promote** the policy and evaluation criteria amongst all UBC Food Services outlets and to contracted vendors.	SHHS, AMSFBD	Supply Management	< 3 yrs	**Complete/In Progress.** UBC Supply Management's Sustainable Purchasing policy applies to all procurement categories. SHHS' bid process targets local, in season food and delivery mechanisms. (Sourcing for outlets is handled centrally). AMS seeks to align with UBC purchasing policy where possible. Highlights from 2012: • SHHS pursued Ocean Wise certification for all fresh seafood, to be adopted 100% in 2013 • AMS pursued Ocean Wise certification for all seafood offerings, to be adopted 100% in 2013. • All fresh poultry served in UBC Food Services units was halal certified in 2012.
FO-05*	Increase **food production at the UBC Farm**. Use the farm to represent the types of food that can be grown, seasonally, in our climate.	UBC Farm	LFS, Campus Sustainability, UBCFS, AMSFS	3-5 years	**Ongoing.** Despite bad weather in June, overall 2012 was a good growing year due to nice weather in September. UBC Farm's new cooler increased storage capacity – e.g. beets and carrots are now available until Christmas – which increased sales to campus outlets. Sales from UBC Farm to Place Vanier and Totem Park increased 70% over last year; sales to Point Grill and Sage restaurants increased 30% and sales to Sprouts were steady. A new hoop house will allow UBC Farm to add more diverse fruits and vegetables in early season and will also extend what can be offered in fall, by extending the growing season into October. UBC Farm is working to produce items that sell well. The New Farm Centre will focus less on increased growth and more on processing.
FO-06	Advocate for more **edible landscapes** (i.e., gardens, rooftop gardens, etc) on campus through participation in the development of the Public Realm Plan, Technical Guidelines for new buildings and the new Design Guidelines.	SHHS	C&CP, SALA, LFS, Campus Sustainability	< 3 yrs	**In progress.** • A SEEDS project by planning students worked with C+CP to develop guidelines and an application form for all prospective food gardens on campus. • Based on recommendations from the SEEDS Phase 3 project on the New SUB rooftop garden, AMS is moving forward with the overall recommendations by committing to a community garden management model with a club structure and AMS staff support. • Food gardens were started in 2012 at the Geography building and Green College. • Herb planter boxes designed by students were installed at Point Gill patio to provide herbs for use in the restaurant. • A SEEDS project on a "greenhouse fence" will be conducted by engineering and business students with funding from the AMS Sustainability Fund.

ID	Action	Responsible Portfolio(s)	Partnerships Required	Timeline	Status update – 2012 calendar year
					• The LFS Orchard Garden, developed in 2006 under condition that it would be temporary, is now under C+CP jurisdiction. Discussions are underway to assess the feasibility of incorporating the garden into the design of the Orchard Commons development project.
FO-07*	Provide **incentives** for consumers to purchase **healthy, low carbon food**: i) Gradually shift menus towards healthy, low carbon food options (e.g., offer "meat free" specials or "meat free" days on campus) ii) Evaluate opportunities to subsidize healthy food on campus with junk food (e.g., increase prices at vending machines and decrease costs of healthy food) iii) Offer targeted promotions through the UBC meal card iv) Promote ethical choices with the AMS "lov" card – local, organic or vegan v) Build a meal card program to promote sustainable, low carbon food options.	SHHS, AMSFBD	FSP/Working Group members, Food retail outlets on campus, Campus Sustainability	< 3 yrs (ongoing)	**Under development.** i) Green catering menu including low-carbon emphasis was included in the 2012 Sustainable Purchasing Guide. Residences offer vegan/vegetarian options for lunch and dinner. In 2012 a new vegan breakfast wrap was offered. SHHS tested a vending machine supplying healthy options and local products – products include Chilliwack beef jerky, tuna + crackers. The pilot in Gage Towers did well and has been expanded to 22 machines across campus. Other departments and schools are now asking for this model after seeing it elsewhere. ii) AMS is no longer charges a premium on Lighter Footprint menu items that were previously more expensive. iii) Not yet started but there is interest iv) A new comprehensive labeling system was developed (see FO-08 below). The final design is pending for rollout in 2013/14. v) Not yet started.
FO-08*	a) Develop a campus-wide **social marketing program** to promote i) sustainable, low carbon food choices, as well as ii) recycling and composting at UBC.	SHHS, AMSFBD	FRE, FNH (LFS), Waste Free UBC	<3 yrs	a) **Under development.** i) A LFS 450 project developed the UBC Sustainable Campus Food Guide to promote greater awareness of sustainable food options on campus and participation in sustainable food system – to be launched Feb. 2013. The first UBC Fair Trade Week launched in 2012, with social marketing tactics and materials. UBC Farm launched a sustainability scavenger hunt "app" for SUST101. A campus-wide survey was conducted by a student SEEDS project to 1) determine current understanding of campus food consumers' knowledge, beliefs and practices around sustainable food consumption, and 2) inform the UBC Food System Project to monitor and evaluate the sustainability of the UBC food system on an annual basis. This will enable development of food system indicators that could be used to measure and track progress in advancing the sustainability of the UBC food system – the main objective in the larger UBC Food System Project. Responses were received from approximately 400 campus community members. Students are developing and launching a second follow up food system survey in 2013. The UBC Sustainability website now has a Food section (www.sustain.ubc.ca/campus-initiatives/food), including pages on the UBCFSP, UBC Farm, and the UBC Sustainable Campus Food Guide. UBCFSP 2013 scenario includes the development of an interactive sustainable UBC campus food map. ii) This will be an outcome of the Waste Action Plan in 2013.

ID	Action	Responsible Portfolio(s)	Partnerships Required	Timeline	Status update – 2012 calendar year
	b) As part of this, evaluate the potential for a **food labeling system** on campus.				b) **In progress**. A new sustainable labeling system was developed for rollout by SHHS and AMS in 2013. Labels include vegan, free range, campus-made, Ocean Wise and halal certified. The campus community will be able to further identify sustainable food choices by the adoption of future new labels. AMS' new (interim) catering menu has identified vegan and gluten-free selections. New SUB menus, including the catering menu, may include the campus-wide labeling system once it is in place.
FO-09*	Building on existing models, develop **curriculum for an interactive 100-level sustainability course** to engage students in learning about sustainable food systems. Through this course, provide opportunities for students to make the links between a healthy diet and a healthy planet through: i) practical studies on the UBC Farm ii) lectures from sustainable food champions	Land and Foods Systems (build on efforts by existing grad students)	UBC Farm, outside experts/ lecturers	Start in year 1	i) **Complete.** SUST 101 began in January 2012, an entry-level course for students in various faculties towards a minor in "sustainable _____". The Faculty of Science approved an intro sustainability course as one entry point to their sustainability pathway. The Sowing Seeds Practicum at UBC Farm is now accredited and offered to both UBC and non-UBC students. The 3-course module includes a foundation course (2-credit online course in spring) followed by a practicum (6-credit summer intensive hands-on course) then a final course (2-credit online course in fall). ii) **Ongoing.** Partnerships between Land and Food Systems faculty and Food Service staff for programs and education are ongoing. Food Services chefs and sustainable champions present to LFS students each April. In addition: • LFS professor Andrew Riseman lectured on food system sustainability in ISCI 360 and ENVR 200 classes • LFS professors Andrew Riseman and Hannah Wittman spoke on food system sustainability at the PICS UBC-SFU public lecture series • 'Chew on This!' series of lectures and collaborative events offering varied perspectives on sustainable food and food security was offered again in 2012. • UBC Farm, along with Sustainability Ambassadors, is preparing a Farm projects symposium "by students for students" • Through Continuing Studies, chefs and professors will cook at UBC Farm.
FO-10*	**Reduce packaging waste** from the UBC food system: i) Develop a case study with an external supplier to demonstrate packaging waste reduction - and build from there. ii) Provide incentives for customers to supply their own containers at UBC and AMS Food Services outlets and encourage contracted vendors to do the same.	SHHS, AMSFBD	Supply Management	Start in year 1	i) **Ongoing.** SHHS Food Services outlets have been recycling soft plastics for two years and have eliminated all styrofoam in non-franchise outlets. Soft plastic recycling is available at every AMS outlet now. AMS has replaced all styrofoam packaging with paper products and is working to eliminate some remaining #6 plastics. ii) **Complete**. SHHS and AMS offer 15¢ - 35¢ discount to customers who bring their own mug or container. Blue Chip Cookies sells tumblers (travel mugs) for $6 with a free beverage. A Waste Reducing Vending Machine project in 2012 to sell non-disposable, sustainable products (such as re-usable chopsticks) may increase incentives offered at outlets. The Eco-to-go container exchange program is currently available throughout residences and SHHS retail outlets. In 2013 a SEEDS project will investigate the feasibility of integrating the Eco-to-go program to AMS and non-AMS outlets in the New SUB.

ID	Action	Responsible Portfolio(s)	Partnerships Required	Timeline	Status update – 2012 calendar year
FO-11	a) Work collaboratively with Waste Free UBC to conduct a **composting audit**. b) Use the results to set **goals for food waste reduction** on campus.	SHHS, AMSFBD	Waste Free UBC	< 3 yrs	a) **Complete**. Waste audit, including organics, was completed in 2010. Note: Metro Vancouver will be banning organic materials including food scraps from all sources, at all of its waste disposal facilities by 2015. b) **Under development**. The Waste Action Plan in 2013 will set targets. A LFS student project installed waste sorting bins with signage (Recycle, Compost, and Garbage) in White Spot Triple O's. The diversion rate at the outlet went from zero to 85 per cent as a result of this project. This model will be rolled out to other outlets next year. In 2013 the Waste Action Plan will implement campus-wide standardized signage that will be adopted by Food Services outlets with slight modifications to reflect specific unit requirements. In 2013 students will work with Campus Sustainability to support the development of the UBC Zero Waste Planning tool, in particular financial and GHG emissions aspects, and help evaluate implications of different waste planning strategies.
FO-12*	Conduct research on **food waste recovery and nutrient reintroduction** into the production system.	LFS, FSP	UBC Farm	3 - 5 years	**In progress.** UBC Farm had to stop receiving produce from VanWhole as high-nitrogen source for their compost due to regulatory concerns. In 2013 a student is working with the UBC Farm to develop an economically viable on-farm composting program, capable of accepting any organic material to create a high quality product for agricultural use that is replicable for other small-scale organic farms. A business plan was completed for vermicomposting at the SUB. Phase 3 of the worm bin project at the SUB developed a composting operational guide and recommendations for expansion to a full-scale commercial composter in the New SUB. In 2013 an undergraduate thesis project on vermicomposting aims to maximize the worm bin system to full capacity and maximize the quality of compost to be used in the New SUB rooftop garden as well as identify other potential market uses. AMSFB is working on committing a staff member to assist with composting on a regular part-time basis in the proposed New SUB organizational chart.
FO-13	Undertake a Feasibility Assessment for an **on-campus food processing** facility	SHHS, AMSFBD, LFS	FSP (potential for students to contribute through project work)	< 3 yrs	**In progress.** A processing facility will be embedded at the New Farm Centre with some capacity to supply food to campus envisioned. The needs assessment is underway: in 2012 a LFS 450 project defined the New Farm Centre needs (e.g. size, equipment) for stakeholders. Further projects will investigate regulations and energy savings. The on-campus demand has been identified. There is possibility of renting the facility to the outside community or urban farmers but its capacity might already be fully booked by campus users. In 2013 a student is working with AMS to develop a viable and sustainable operations framework and appropriate programming that supports plans to engage the campus community for the first Community Kitchen on campus in the New SUB SEEDS project. The proposed AMS Microbrewery will not be part of the New SUB but there may be possibility to include it as part of the New Farm Centre, with hops sourced from UBC Farm.

ID	Action	Responsible Portfolio(s)	Partnerships Required	Timeline	Status update – 2012 calendar year
FO-14*	Conduct plant-based research to identify **climate mitigation and adaptation** opportunities for the food system	LFS (FNH and Wine Research Centre), Botany, Forestry		3-5 years (and then ongoing)	**Under development.** UBC Farm is working towards this.
FO-15	Conduct research on **carbon cycling and sequestration** associated with food production	Ag Eng, LFS, Botany, Forestry	UBC Farm (directed studies)	3-5 years (and then ongoing)	**In progress.** A new LFS soil science professor is working on carbon sequestration. A new LFS agro-forestry program is focused on having more trees on the farm for more carbon storage.

ID	Action	Responsible Portfolio(s)	Partnerships Required	Timeline	Status Update 2012 calendar year
		Department(s)	Internal and External	Milestones or specific general stage of the plan (<3yrs, 3-5yrs, >5yrs)	Progress to date; next steps if applicable
Implementation					
IMP-01	Clearly define and communicate **accountabilities and responsibilities** for the CAP to all stakeholders involved in ongoing implementation.	VP FRO	Campus Sustainability	Start immediately	**Ongoing.** Communication of accountability and responsibility occurs in semi-annual planning and reporting meetings with stakeholder action teams.
IMP-02	Invest in the enhancement of information systems in order to ensure consistent and accurate **data management**. Explore whether PeopleSoft has a module that UBC could buy off the shelf to assist in tracking and monitoring performance.	Finance	All Depts	< 3years	**Ongoing.** To date, in-house quality management system for tracking emissions data and performance has been developed by Campus Sustainability staff.
IMP-03	Establish **key performance indicators**, related to achieving climate action goals and targets and other sustainability targets (e.g. from Inspirations and Aspirations), for Managing Directors and Directors (where applicable).	VP FRO	Campus Sustainability	Start in year 1	**In progress**. In 2012 Campus Sustainability began working with a number of campus operational units on unit-level sustainability frameworks and engaged directors in defining KPIs. The new sustainability strategy will be complete in 2013.
IMP-04	Identify where activities may be running counter to CAP goals and work to **create alignment** so that UBC is not just engaging in activities that reduce emissions, but also refraining from activities that increase emissions.	Campus Sustainability	All Depts	Ongoing	**Ongoing.** Responsibility of all climate action team members.
IMP-05	Explore opportunities to **formalize the management system** outlined in this plan to ensure successful implementation of the CAP and of other climate-related plans at UBC.	Campus Sustainability	All Depts	Start in year 1	**Under development.**
IMP-06	Improve **monitoring systems** as per the requirements defined in CAP Technical Report #3	Campus Sustainability	All Depts	Start immediately	**Ongoing.** Methodologies have been improved each year for calculating emissions included in reporting to provincial government (Scope 1, 2 and paper). In 2013 a more accurate methodology will be defined for solid waste.