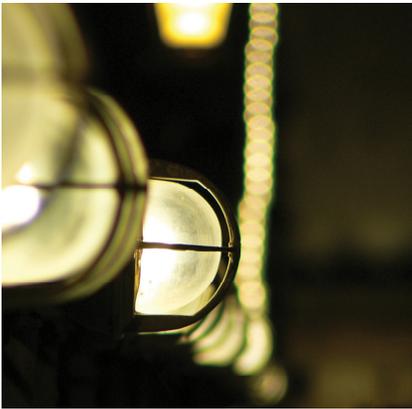


Sustainable Purchasing Guide
Sustainable Transport of Goods

A stylized black tree icon with many leaves.



Introduction

This section provides information on currently available **good transportation** options that can help to move the University of Saskatchewan toward its sustainability goals. Living within the boundaries of our sustainability goals requires us to apply two main strategies:

- Dematerialization** requires that we reduce the amount of materials as much as possible; and that we continually move toward the use of 100% recycled content.
- Substitution** requires that we find less harmful materials to replace those that currently damage and are not recyclable.

Sustainable purchasing is about including social, environmental, financial and performance factors in a systematic way. It involves thinking about the reasons for using the product (the service) and assessing how these services could be best met. If a product is needed, sustainable purchasing involves considering how products are made, what they are made of, where they come from and how they will be used and disposed.

Finally, remember that this is an evolving document – it will change with new information as our understanding of sustainability impacts and potential solutions improves.

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**Smart Purchases
Big Impact**

Wherever possible **CHOOSE** products that employ a combination of characteristics listed in the left hand column, and **AVOID** products that demonstrate characteristic in the right-hand column.

CHOOSE	AVOID
<ul style="list-style-type: none"> Locally produced and sourced Sea and rail freight Carbon-offsetting Consolidated and scheduled delivery Minimal packaging 	<ul style="list-style-type: none"> Air freight Daily and on-demand delivery

Option: Source Local Products

Strategy: Substitution (SO 1, 3, 4)

Ideally, on-site production of goods would significantly reduce the environmental impacts associated with the shipment of goods. However, as this is not often a feasible option, look to purchase products that require the shortest possible travel distance. Purchasing locally produced goods reduces the use of fossil fuels that contribute to greenhouse gas emissions and supports local business that provide people in your community with opportunities to meet their basic needs.

Option: Choose Greener Shipment Options

Strategy: Substitution (SO 1)

If you cannot purchase locally, try to source shipping methods with reduced environmental impacts. Minimizing air travel is one important consideration in this regard. Goods shipment accounts for a significant amount of air traffic. Air traffic is inefficient and contributes disproportionately to greenhouse gas emissions.

Sea freight is not without environmental consequences, but the impacts are generally less than air travel and more controllable. Internationally there is a movement toward slowing down shipping speeds, which reduces the associated greenhouse gas emissions.

Rail freight is one of the most energy efficient modes of transportation available today and is considered a prime strategy for reducing greenhouse gas emissions associated with surface transport. Rail systems enable high-speed, high-density transport and provide many opportunities for future improvement. Some further innovations include reducing aerodynamic drag, reducing train weight, regenerative braking, and higher efficiency propulsion systems. All of these advancements would further increase the efficiency of rail transport.

When road transport remains the only option, look for freight companies that are moving towards more fuel efficient, low emission vehicles.

Option: Choose Companies that Practice Carbon Off-Setting

Strategy: Substitution (SO 1)

Transportation is a significant source of greenhouse gas emissions. Reducing emissions is the most effective strategy to minimize environmental and health consequences. However, for emissions that cannot be reduced, "neutralising" their impact by supporting corresponding carbon emissions reductions somewhere else is an option. This is known as "carbon offsetting". There are two ways a company can off-set carbon emissions: 1) initiate projects and practices within the business that reduce greenhouse gases or 2) utilize retail carbon off-sets.



A number of major companies and organizations like the World Resources Institute, Ford, Stanford University, Interface Flooring and Patagonia engage in carbon offsets with some striving towards “carbon neutral” status. Some common methods companies of carbon offsetting include reforestation programs or funding research.

Unfortunately, there are no clear guidelines regarding “carbon neutrality” and it can be approached in very different ways. There are sometimes discrepancies in the methodologies used to calculate greenhouse gas emissions and savings. This means that carbon offsetting should be viewed as a positive (but somewhat subjective) practice.

In the retail carbon off-setting method, companies purchase carbon offsets from a broker organization in order to compensate for the amount of carbon dioxide and other greenhouse gases (GHGs) emitted by their day-to-day activities. Retailers who offer this service invest the company’s money into various projects that otherwise would not exist, thus reducing overall atmospheric GHG levels. In other words, producers pay to decrease emissions somewhere else in order to compensate for the emissions they cannot reduce from their own practices. Again, caution

must be exercised to ensure that the projects are legitimate and that impacts are verifiable, ideally by a third party.

Option: Choose Consolidated and Scheduled Shipping

Strategy: Substitution (SO 1)

Look for companies that consolidate shipments and offer scheduled deliveries, rather than on-demand and daily delivery. These methods reduce the number of shipments required, thereby reducing all of the associated environmental impacts.

Option: Choose Minimal Packaging

Strategy: Substitution (SO 1, 3)

Look for companies that supply their products in minimal packaging, utilizing recyclable and post-consumer recycled materials and biodegradable paperboard. Choose packaging that can be recycled locally.

Arriving at the currently preferred options

1. Identify the service

Small appliances provide efficiencies in daily activities.

2. Assess the need

The University of Saskatchewan requires small appliances in residences, offices, labs and other facilities.

3. Identify the contents

The most common material found in most small appliances (by weight) is steel, which is easily recycled. The plastics content of appliances is increasing and therefore more plastics are entering the waste stream as a result of appliance disposal.

Many appliances also contain small amounts of aluminum and copper. There are often some glass components but the glass is usually treated so it is resistant to heat. This is done by mixing some form of a heavy metal with the glass which reduces its recyclability. Some lead, PCBs and other potentially harmful materials are usually found in trace amounts as well.

4. Identify sustainability impacts

Systematically increasing concentrations of substances from the earth’s crust?

- Small appliances use electricity to operate. If the electricity used to operate the device and equipment is derived from the combustion of fossil fuels, it leads to an increase in concentration of substances from the earth’s crust in nature (CO₂, CO and SO_x). Increasing concentrations of these substances in nature can contribute to a number of negative outcomes such as climate change and acid rain as well as negative human health impacts. In Saskatchewan, most electrical energy is generated from the combustion of coal, a fossil fuel.
- The petroleum or natural gas used as feedstock for most plastics is extracted from the earth’s crust at a rate much greater than it is re-deposited back into the earth’s crust.
- Fossil fuels are also combusted to provide energy during the extraction of raw materials, transportation and the production of large appliances

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4. Identify sustainability impacts (con't)

- ii. ...systematically increasing concentrations of substances produced by society?
 - If the plastic used in small appliances is not recyclable, it usually ends up in landfills or incinerators. The plastic persists in the environment after it is used and discarded, contributing to an increase in concentration of complex human-made substances in nature. While it is true that over time and under the right conditions plastics will oxidize, fragment and disintegrate – with continued strong growth in the use and disposal of plastics, the timeline is too long to prevent their accumulation in nature.
 - The combustion of fossil fuels (see above) produces a number of chemical compounds (e.g. nitrogen oxides) that build up in the atmosphere.
- iii. ...systematically degrading nature by physical means?
 - The extraction of fossil fuels and virgin metals/minerals may systematically degrade nature, particularly where mining disturbs land that is not reclaimed and restored.
- iv. ...systematically undermining people's ability to meet their basic human needs?
 - A number of the compounds produced by the combustion of fossil fuels (e.g. nitrogen oxides, carbon monoxide, sulfur oxides, particulate matter) have a negative effect on human health.
 - Millions of small appliances are sent to the landfills each year displacing humans, ecosystems and natural resources.

5. Envision sustainable small appliances

In principle, sustainable small appliances would feature:

- no components that are derived from the earth's crust (e.g. petrochemicals and metals), unless those ingredients are 100% captured and reused.
- no components that are persistent in nature (eg. plastic), unless those substances are 100% captured and reused.
- a production process that:
 - does not contribute to the increased concentrations of substances from the earth's crust or the buildup of persistent compounds in nature,
 - uses only sustainable renewable energy or energy produced in a carbon-neutral manner;
 - does not rely on practices that systematically physically degrade land and ecosystems; and
 - does not rely on practices that undermine people's capacity to meet their basic needs.

6. Identify and prioritize alternatives

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Resources and Additional Information

1. Sustainable Stuff; Environmental Impact of Air Travel
www.sustainablestuff.co.uk/EnvironmentAirTravel.html
2. Green Sea; Carbon Offsetting
www.greensea.se/show.asp?si=899&go=MarineCarbonOffsetting-CarbonOffsetting
3. Guiding Principles for Sustainable Transportation
www.gdrc.org/uem/sustran/sustran-principles.html



This guide was made possible through the generosity of the Whistler 2012 project, which shared its template and much of its research.

