(19) Wood Products

✓ CHOOSE…	X AVOID…
…reused and recycled lumber	…virgin lumber
…FSC certified virgin wood	…formaldehyde and VOCs
	…CCA pressure treated wood
…fast growing renewable materials	
…recycled plastic wood	

1. IDENTIFY THE SERVICE
What service(s) do wood products provide?

Wood is a material that provides structure and aesthetics to a wide range of products including buildings, furniture, pallets, fences, decks, docks and children's play structures. The wood itself provides a multitude of services that include structure, aesthetic or temperature regulation for products that are used for shelter, leisure, eating and so on.

2. ASSESS THE NEED
Are wood products necessary for meeting our corporate objectives? How?

A successful and sustainable community requires many different services that are currently met with wood products, including basic needs such as shelter. In addition, wood is an aesthetically pleasing material that adds to Whistler's sense of place as a small community in midst of a spectacular natural area. The municipality will likely continue to use wood to meet some of its objectives.

3. IDENTIFY CONTENTS
What are the main components of wood products?

The main component of wood products is, of course, the wood. However, in and on wood products there may also be preservatives (e.g. pressure-treated wood), adhesives (e.g. plywood, orientated strand board, particleboard and medium density fiberboard) and laminates (e.g. glued laminated timber - glulam). While wood products may also contain additional materials such as nails and so on, this guideline focuses solely on the wood and its direct treatment.

4. IDENTIFY SUSTAINABILITY IMPACTS
If wood products are necessary, how do they contribute to:

i....systematically increasing concentrations of substances from the earth's crust?

• The **production of wood** products, from the management of forests to the delivery of the final product, requires large amounts of **energy**. Although the industry often burns wood scraps for energy, it still requires significant amounts of energy from fossil fuels. Producing and using this energy results in increasing concentrations of carbon dioxide

(CO_2) and sulfur oxides (SO_x), which in turn cause negative impacts such as ***climate change*** and ***acid rain***.

• Due to wood's vulnerability to decay and insects, pressure treating of wood emerged in the 1930s. To **produce pressure-treated wood**, raw wood is first bathed in a solution that includes copper (toxic to fungi that causes rot), arsenic (then the most common insecticide) and chromium (to try to prevent leaching), a formula known as **chromated copper arsenate (CCA)**. The wood is then pressure-treated, a process where it is placed in a cylinder and a vacuum sucks air and water out of the wood cells, then fills these with a mixture of water and pesticides. As the wood dries, the chemicals are trapped inside. Over time, small amounts of chromium, copper and arsenic leak out of the wood into the ground and groundwater, or are released when the wood is burned. These metals do not break down and accumulate in nature, leading to negative environmental as well as health impacts. For example, long-term exposure to arsenic is suspected to cause cancer (see SC#4).

ii....systematically increasing concentrations of substances produced by society?

• In **managed forests**, synthetic pesticides, herbicides and fertilizers are added to some forests to control pests and encourage tree growth. Many of these are ***persistent compounds***. Persistent chemical compounds do not break down and accumulate in nature, causing harm to natural systems and human health. For example, some pesticides are known ***carcinogens*** (SC#4).

• Volatile organic compounds (VOCs) are **used in wood products as adhesives**. VOCs do not break down easily and thus accumulate in nature, contributing to a variety of problems such as the formation of ***smog***.

• During the production process and at later stages of the ***product's life-cycle***, **wood waste is taken to landfill**, where may decompose into **methane** if the environment is without oxygen. Methane is a problematic ***greenhouse gas*** with much higher climate change potential that carbon dioxide.

iii....systematically degrade nature by physical means?

• Forest management practices that **remove trees at a greater rate** than they can regrow or weaken local biodiversity are unsustainable. Examples of these practices include ***clear-cutting*** and ***monoculture*** planting. Clear-cutting has many disruptive effects including reduced ***biodiversity***, destroyed wildlife habitat as well as severe soil erosion and flooding.

• **Wood products and production waste often end up in landfills**. Ongoing reliance on landfills as a form of waste management is a violation of the SP#3, as landfills will require more and more physical space, displacing and destroying natural areas and ***ecosystems***.

iv.…systematically undermine people's ability to meet their basic human needs?

• In some instances, forestry practices have infringed on the ability of **local communities and indigenous peoples to meet their needs**. These groups often rely on the forest for their livelihood, and in many cases have lost traditional use and ownership of the land where they have lived for many years without their consent.

• A number of **compounds used in wood products can be harmful to human health**.

For example, formaldehyde gas that is released from particleboard and arsenic from pressure treated wood are both suspected to be ***carcinogens***. Other concerns for human health include the use of pesticides.

5. ENVISION SUSTAINABLE WOOD PRODUCTS

What would sustainable wood products look like?

In principle, sustainable wood products contain wood that is **harvested** in a manner where:

• Local groups where the wood is harvested do not lose the ability to meet their basic needs as a result, and local communities participate in ongoing economic benefits.

• Harvesting does not occur at a faster rate than forests can regrow, and forestry practices minimize short-term and avoid long-term biodiversity, habitat destruction and other ecosystem impacts.

• Energy sources are renewable and carbon neutral. Material substances, both mined and synthetic, are ***assimilated*** by nature or fully captured in a technical loop, avoiding all ongoing increases of substances in nature.

Production processes use materials that can be assimilated in nature, or are 100% captured in technical cycles for reuse. All waste generated in the production process is used as an input to another process, and no waste is transported to landfills. The energy used at various stages of production and value-added processes is renewable and carbon-neutral.

6. IDENTIFY & PRIORITIZE ALTERNATIVES

Which alternative option(s) would be most effective?

To identify the best road surface materials, review the current alternatives outlined in the Appendix: Current Wood Product Options and choose the most appropriate alternative(s).

Appendix: Current Wood Product Options

This section provides information on *currently available* wood product options that help to move us toward our sustainability objectives (i.e. ultimately, eliminate contributions to violations of the TNS sustainability principles).

Living within the constraints of the sustainability principles requires us to apply two main strategies: ***dematerialization*** and ***substitution***. Dematerializing requires that we reduce the amount of materials used as much as possible and make sure that they are 100% recycled. Substituting requires that we find less harmful materials to replace those that currently damage nature and that are not recyclable. Eventually, all harmful materials and unintentionally produced compounds that build up in nature will have been eliminated or are being recycled, not only the ones that are currently causing impacts.

The options presented in this section will help to reduce contributions to violations of the sustainability principles. However, it is critical that you return to the definition of 'success' to make sure that enough progress is made over time on *all* four sustainability principles simultaneously, rather than simply exchanging one for another. Remember that this is an evolving document – it will change with new information as our understanding of sustainability impacts and potential solutions improves.

If you are aware of additional and/or more current information that is available, please contact the person responsible for the Sustainable Purchasing Policy. A summary of characteristics to 'choose' and to 'avoid' is provided in this table, which is followed by further explanation for each point.

Where possible, CHOOSE these guidelines under the left-hand column, and AVOID using others.

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Current Option: Use reused lumber and recycled wood products

Strategy: Dematerialization - Less Waste (All SCs)

When older buildings are torn down, the wood can often be reused in other construction projects or to form new wood products. By recycling wood, it is possible to reduce the use of virgin lumber and all associated sustainability impacts, such as physical disturbance of nature (SC#3), use of pesticides and fertilizers (SP#2), energy consumed in the production process (SC#1), and use of adhesives and wood treatments (SP#1,2). To help locate reusable wood, visit: www.recyclexchange.com.

Current Option: Use FSC and other certified wood products

Strategy: Dematerialization - Less Waste (All SCs)

If reusable or recycled wood is not available, another option is to purchase certified wood. There are a number of internationally recognized certification bodies that promote

the use of wood that has been grown and harvested using environmentally and socially responsible practices. These standards include: limiting or eliminating the use of chemical pesticides (SC#2), land management practices that harvest selectively and at lower yields (SC#3), and protecting the land rights of local communities (SC#4). In Canada, there are four widely recognized certification standards:

i. Forest Stewardship Council (FSC),

ii. Canadian Standards Association (CSA),

iii. Sustainable Forest Initiative (SFI), and

iv. American Tree Farm System.

For a comparison of certification standards and a list of certified products, visit: www.certifiedwood.org.

Current Option: Use wood free of formaldehyde and other VOCs

Strategy: Substitution – Nature-like (SC#2)

Wood products, such as plywood and particleboard contain adhesives with volatile organic compounds (SC#2). When used in buildings, they ***off-gas*** and contribute to poor indoor air quality (SC#4). Choosing wood free of VOCs reduces the municipality's contribution to violating these sustainability principles.

Current Option: Use wood free of CCA

Strategy: Substitution (SC#1)

By not using CCA pressure-treated wood (see sustainability impacts above), the municipality can reduce its contribution to the accumulation of chromium, copper and arsenic (SC#1) from accumulating in nature. These substances exist in nature, but only in small concentrations, and will accumulate as they are not biodegradable

Current Option: Use fast-growing renewable materials

Strategy: Substitution – (All SCs)

For some products, it is possible to substitute other materials for wood. One type of substitute is agricultural fibers, which mature quicker than tree fibers, and are being used to make products that have traditionally been made with wood. For example, straw is and an agricultural waste product that is being used for plywood and particleboard replacement (see www.dow.com/bioprod/).

By using products made with fast-growing renewable materials such as straw, the municipality reduces its use of wood and associated sustainability impacts, including all

the sustainability principles, primarily those associated with forest management (SC#3). However, it is possible that alternative products also have associated sustainability impacts. For instance, straw may require the use of pesticides and fertilizers in grain production (SC#1,2), intensive monoculture practices that lead to soil erosion (SC#3), and the use of VOCs and persistent compounds as adhesives to make particleboard (SC#2). Be sure to consult with the manufacturer to address these sustainability impacts when making such a purchasing decision!

Current Option: Use recycled plastic wood

Strategy: Substitution – (All SCs)

Another wood substitute is lumber made from recycled plastic, known as recycled plastic lumber. This lumber is either completely or partially made of recycled ***post-consumer*** plastic waste. Lumber made with both wood and recycled plastics are known as composites. Recycled plastic lumber has been used for fences, decks, benches and children's playground structures.

Using recycled plastic lumber reduces the amount of virgin lumber used and all associated sustainability impacts. For example, since plastic lumber does not rot and is not harmed by termites, it does not need to be treated with CCA (SC#1), therefore reducing contributions of chromium, copper, and arsenic. In addition, because recycled plastic lumber is made from post consumed waste, it diverts embodied energy and dissipative substances that may have gone into landfill (SC#3) or incinerators (SC#2). However, recycled plastic lumber may also have sustainability impacts, such as emissions from energy used to collect and process post-consumer plastic waste (SC#1), and release of chemical additives in the productions process to give the plastic certain physical properties (SC#2).

Resources & More Information

1. APA-The Engineered Wood Association www.apawood.org

2. www.collinswood.com/M3_HistoryPhilosophy/M3H3_JourneySustainability.html

3. www.fscus.org/

4. www.cwc.ca/environmental/bulletins/bulletin_2/manufacturing.html

5. www.environment-agency.gov.uk/netregs/sectors/278289/?version=1&lang=_e

6. www.howstuffworks.com/question154.htm

7. www.wrm.org.uy/

8. www.pinchin.net/newsletters/indoor_air/vocoffice.htm

9. www.endurawood.com/

10. www.pressure-treated-wood-arsenic.com/html/cca.html

11. www.greenbiz.com/resources/procurement/index.cfm

12. www.swmcb.org/EPPG/default.asp

13.www.city.richmond.bc.ca/environment/policy/purchasing_guide/purchasing_guide.htm

14. www.environmentalchoice.com/index_main.cfm

15. www.metrokc.gov/procure/green/

16. Nattrass, B. & Altomare, M. (1999). The Natural Step for Business: Wealth, Ecology and the Evolutionary Corporation. New Society: Gabriola (Canada).

17. Miller, G. (2002). Living in the Environment: Principles, Connections and Solutions. Wadsworth: Belmont.

18. www.ec.gc.ca/toxics/wood-bois/index_e.htm

19. www.ec.gc.ca/TOXICS/EN/detail.cfm?par_sectorID=4&par_actn=s2

20. www.ec.gc.ca/EnviroZine/english/issues/20/print_version_e.cfm?page=feature1

21. www.ccasafetyinfo.ca/

22. www.cancer.ca/ccs/internet/standard/0.3182.3172 372059 447474 langlden.00.html

23. www.moea.state.mn.us/lc/purchasing/plasticlumber.cfm

24. www.metrokc.gov/procure/green/plastic.htm

25. Recycled Plastic Lumber Standards

www.ses-standards.org/library/krishnaswamy_lampo.pdf

26. www.nerc.org/powerpoint/1202/plslmb1202/plslmb1202.html

27. www.greenresourcecenter.org/MaterialsSheets/RecycledPlasticLumber.html

28. Resort Municipality of Whistler