5.0 GHG Reduction, Energy & Water Conservation Development Permit Guidelines "E"

5.1 Development Permit Guidelines "E": Objectives & Application

The objectives and guidelines of this Development Permit Area is to reduce GHG emissions and energy and water consumption for new development within the boundaries of Municipality of North Cowichan to help meet the OCP target of net-zero GHG emissions by 2050. Objectives include: promoting GHG reduction and energy efficiency through thoughtful site, building and landscape design; moving towards a net-zero emissions target by improving efficiency of new buildings; reducing the volume of embodied carbon in new construction; encouraging the design and construction of new buildings that are resilient and responsive to climate change; and reducing water consumption demands from new development.

5.2 Development Permit Guidelines "E": Exemptions

Any applicable exemptions under Development Permit Guidelines "A.1" or "A.2" associated with DPA-1 and DPA-2, as the case may be, shall also apply to these Development Permit Guidelines associated with DPA-6.

5.3 Development Permit Guidelines "E": Infrastructure and Servicing Impacts

5.3.1 Energy Conservation

(a) With respect to energy, show how conservation is incorporated and how the project endeavours to use renewable energy sources. Building siting is an important component.

(b) Select materials and colours in building and roof construction that minimize heat absorption.

(c) Select materials that encourage thermal massing and seasonal thermal energy storage.

(d) Use energy-efficient exterior lighting systems with timers and sensors to provide light only when required.

(e) Where possible, use lighting systems that are powered by renewable energy sources, such as solar energy.

(f) Control light glare such that light does not rise more than 90 degrees from the ground (nadir) and does not cross property boundaries. Consider installing high efficiency lighting and use shields to reduce glare to the outside.

(g) Minimize the amount of lighting on signs. Installation of video, reader board, neon or LED signs is discouraged.

(h) Applicants are encouraged, where feasible, to use on-site renewable energy generation systems to supply electrical and heating and cooling needs to buildings and other structures, and to operate water pumps, sewage pumps and/or charging stations for electric vehicles. Renewable and alternative energy sources include, but are not limited to: geothermal energy (heat loops and wells), wind (turbines), low-impact hydropower, passive solar heating (collectors, photovoltaic panels); co-generation; fuel cells; heat energy extracted from air (heat pumps), biomass, bio-gas and wastewater effluent.

5.3.2 Water Conservation

(a) With respect to water, show how conservation is incorporated. Site landscaping is an important component (see Objective 3 – Site Design and Landscaping).

(i) Manage stormwater flows and water quality by designing systems in accordance with the Ministry of Environment's Stormwater Planning: A Guidebook for British Columbia.

(ii) Install above-or below-ground rainwater collection systems such as naturalized ponds, bioswales, rain gardens and/or cisterns to capture, store and potentially re-use rainwater to irrigate non-edible plants and landscaping.

(iii) Design, install and manage cost-effective and efficient irrigation systems that support water, soil and energy conservation practices (including system features such as temporary (2 year plant establishment), drip irrigation, mulching, watering schedules, moisture sensors and timers, and water-use monitoring for leakages).

(iv) Where possible, use recycled water for irrigating non-edible plants and landscaping and for washing vehicles.

(v) To ensure that irrigation systems are cost-effective and efficient, use certified irrigation designers and installers. The Irrigation Industry Association of British Columbia is a certifying body in the province.

(vi) Use low or no water toilets, appliances and fixtures.

(vii) Consider installing "purple pipes" (pipes carrying reclaimed water, coloured purple to distinguish them from pipes carrying potable water).

(b) Manage stormwater flows and water quality.

(i) Discuss plans with the District to determine the site and off site (downstream) needs for storm water management to establish design parameters for infiltration, retention, and detention.

(ii) Minimize the length and amount of infrastructure (such as sewer and water lines, and roads) planned for a site.

5.3.3 Solid Waste

Reducing the amount of construction waste that ends up in landfills assists the Municipality and the Regional District in meeting their goals of reducing the amount of solid waste requiring disposal and in attaining the long-term goal of Zero Waste. It also reduces GHG emissions generated by transport of waste.

(a) Consider renovation and adaptive reuse of existing buildings.

(b) Use durable exterior and interior finishes to reduce the likelihood of material ending up in landfills.

(c) Consider using salvaged materials (where permitted in BC Building Code), both for buildings and landscape (as per BC Landscape standards).

(d) Consider specifying materials that are recycled, reused, and renewable or contain recycled content.

(e) Select locally sourced materials. North Cowichan supports, through Council policy, the "Wood First" initiative of the provincial government.

(f) Consider using products made from wood waste where appropriate (but watch for indoor air quality and possible off-gassing).

(g) Consider designing structures to maximize the use of standard size materials in building design for the efficient use of materials (less waste)

(h) In assessing and selecting finishes, review their comparative aesthetics, comfort and acoustical control.

(i) Select appropriate material for all projects (e.g. through life-cycle assessments).

(j) Consider building materials that have low "embodied energy," are from rapidly renewable sources, and/or have been acquired with minimal transportation kilometres. Consider using:

(i) locally manufactured materials;

(ii) low embodied energy materials such as wood;

(iii) durable materials for long service life and low maintenance;

(iv) materials with recycled material content, locally harvested materials, and sustainably harvested and certified wood.

(k) Maximize the use of safe and healthy materials.

(i) Use roofing materials that support rainwater harvesting (cedar and asphalt can transfer chemicals).

(ii) Use insulation that does not contain harmful chemicals such as hydrochlorofluorocarbons or extruded polystyrene.

(iii) Use high-performance windows.

(iv) Choose wood with natural preservatives over chemically treated wood where appropriate.

(v) Avoid manufactured products with pollutants such as urea formaldehyde.

(vi) Specify low volatile organic compound (VOC) building products.

(vii) Avoid materials that trap dust and odours.

(l) Minimize the generation of solid waste in construction.

(i) Install with deconstruction in mind to allow for material reuse.

(ii) Avoid demolition of old buildings to waste. Consider reuse/renovation as an option.

(iii) Prepare a plan for materials staging to protect materials from damage and possible waste (e.g. schedule just-in-time delivery; fence and protect staging area from weather).

(iv) Use preassembled, pre-cut components (e.g. trusses) to reduce site waste.

(v) Minimize the selection of materials with excessive packaging.

(m) Maximize the diversion of solid waste from landfill.

(i) Use local facilities for reuse and recycling of products that are not at the end of their useful lives (consider providing a facility on site for multi or large developments).

(ii) Incorporate full recycling options for the completed development (e.g. recycling, organics, composting), as well as garbage collection.

(iii) Use chipped vegetation as mulch on site, and use logged wood from the site in the design of the building or components.

(iv) Design adequately for waste diversion techniques on site, and locate these conveniently for use but not to negatively impact public access, corridors or areas.

(n) Make areas for recycling collection, composting and waste disposal sufficiently large and easily accessible and plan them so they have the capacity for expansion.