

Example DPA Strategies for Water Conservation

Water conservation strategies range from specific demand-side management strategies to strategies that address broader rainwater management goals. Water conservation strategies can also act as climate change adaptation measures, in particular for areas that are experiencing drought conditions. These strategies can prepare a community for the impacts of climate change, such as a reduced water supply, as well as help to mitigate against future climate change impacts.

The example strategies vary from simple (collecting rainwater from roof downspouts in rain barrels for irrigation), to the more complex (collecting rainwater in below-ground cisterns, also for irrigation purposes). They illustrate opportunities for local governments with different capacities to use the DPA authority.

The strategies for water conservation (WC) are organized into the following areas for which local governments can make requirements (*LGA Section 920 (10.1)*):

- landscaping;
- specific features in the development; and,
- machinery, equipment and systems external to buildings and other structures.

Consider the local feasibility of implementing particular strategies, including an assessment of the cost, benefits, risks and unintended consequences.

The Water Conservation Calculator

The Water Conservation Calculator (WCC) is a free, web-based decision-support tool that illustrates how specific water conservation measures can deliver fiscal and physical water savings for communities. It can help staff make the case for conservation and help decision-makers make informed decisions about infrastructure funding. For more information, see <http://www.waterbucket.ca/wuc/?sid=15&id=217&type=single>.

The Water Balance Model

The Water Balance model (<http://www.waterbalance.ca>) is one tool that can assist in designing developments that minimize change to natural hydrological conditions. The tool compares the impact of different development scenarios on the hydrological system of a site and helps make decisions about how best to manage rainwater runoff.

Landscaping – Strategies for Water Conservation

Plants found in native or ‘naturalized’ landscapes have adapted to the soil and water conditions specific to the geographic area.

Naturalized landscapes that include climate and soil-adapted plants (e.g. drought resistant plants) can be used in conjunction with techniques that capture and store water from naturally occurring sources to reduce the need for supplementary irrigation and increase water conservation.



Landscaping – Strategies for Water Conservation

1. Vegetation Types

This strategy can reduce water consumption, as well as energy consumption (the energy used to treat and transport water for irrigation and treat the water after use).

Consider the local feasibility of...

selecting indigenous tree, shrub and plant species to reduce the need for supplementary irrigation.

For example:

- Landscape new developments using native or naturalized species and drought-resistant plants.
- Use low-maintenance, salt-tolerant species along streets, sidewalks and other public spaces.
- Apply ‘xeriscape’ or low water use landscaping techniques to minimize and/or eventually eliminate the need for irrigation.

For more information on ‘xeriscaping’ and climate-appropriate plant selection, see:

- *City of Kamloops – Creating a Kamloops Xeriscape brochure*
(<http://www.city.kamloops.bc.ca/ipm/pdfs/Brochure-CreateXeriscape.pdf>).

For more information on developing successful strategies for urban forest management, refer to:

- *Planting Our Future – A Tree Toolkit for Communities*
(<http://www.treesfortomorrow.gov.bc.ca/resources/Plantingourfuture.pdf>).

2. Retaining and Restoring Natural Vegetation

This strategy conserves water resources by helping to increase the absorptive capacity of the soil, allowing rainwater to be captured, stored and slowly released.

Consider the local feasibility of...

retaining or restoring high-value natural vegetation to support effective rainwater management.

For example:

- Assess the development site for high-value natural vegetation that provides effective stormwater management.
- Design the development so that high-value natural vegetation and soil are retained.
- Restore high-value natural vegetation using plants suited to the climate and soil conditions.
- Replace trees that were removed during site development with trees suited to the climate and soil conditions.

For more information about assessing the potential for development while maintaining the original hydrologic condition, see:

- *Water Balance Model website* (<http://www.waterbalance.ca>).

3. Enhancing the Topsoil Layer

This strategy can reduce the need for irrigation and potable water. It can also reduce energy because less energy is used to treat and distribute potable water.

Consider the local feasibility of...

providing sufficient topsoil to promote well-rooted landscaping that requires less irrigation and stays green longer during drought conditions.

For example:

- Retain and/or add a healthy, absorbent topsoil layer sufficiently deep to allow for well-rooted planting and reduced irrigation requirements.

For more information about topsoil, absorbent landscaping and water conservation, see:

- *An Economic Rationale for Integrated Stormwater Management – A Resource for Urban and Rural Land Development in B.C.*
(http://www.env.gov.bc.ca/epd/epdpa/mpp/stormwater/urban_rural_land/pdf/42.pdf).
- *Waterbucket Green Infrastructure webpage about the Topsoil Primer – Topsoil: Just How Do You Obtain a Topsoil Layer to Advance Rainwater Management and Water Conservation Goals?*
(<http://www.waterbucket.ca/gi/?type=single&sid=104&id=480>).

Specific Features in the Development – Strategies for Water Conservation

Alternative design choices for specific features can conserve water and reduce energy use throughout the life-cycle of the development.

Specific Features in the Development – Strategies for Water Conservation
1. Permeable Surfaces
<p>This strategy can conserve water and reduce the load on local government stormwater systems. The use of permeable paving surfaces can also save energy by reducing the urban “heat island” affect and the need for mechanical cooling in buildings.</p>
<p><i>Consider the local feasibility of...</i></p> <p>using permeable paving surface materials to increase rainwater infiltration and recharge groundwater supply.</p> <p>In particular, consider maintenance costs sometimes associated with keeping porous surfaces unclogged.</p> <p><i>For example:</i></p> <ul style="list-style-type: none">• Use permeable pavers for residential streets, plazas/squares, courtyards, school yards, parking lots, driveways, walking and bicycle paths.• Use bark mulch and wood chips for walking paths.• Use concrete pavers or other permeable surfaces for parking lots, walkways and driveways.• Minimize non-permeable surfaces to facilitate on-site rainwater infiltration.
2. Rainwater Collection Features
<p>This strategy helps to conserve water resources and also saves energy as less energy is used to treat and distribute water.</p>
<p><i>Consider the local feasibility of...</i></p> <p>using naturalized ponds, bioswales or rain gardens to collect, store and/or attenuate the flow of rainwater and potentially re-use rainwater to irrigate non-edible plants and landscaping.</p> <p><i>For example:</i></p> <ul style="list-style-type: none">• Collect and re-use rainwater from naturalized ponds for irrigating non-edible plants, landscaping and washing vehicles.• Use vegetated channels such as bioswales in place of concrete storm channels and drains to capture, store and slowly release rainwater. <p><i>For more information on water management, see:</i></p> <ul style="list-style-type: none">• <i>Province of BC Living Water Smart website</i> (http://www.livingwatersmart.ca).• <i>Capital Regional District Innovative Rainwater Management website</i> (http://www.crd.bc.ca/watersheds/LID/rain-water-tour-main.htm).

Machinery, Equipment and Systems External to Buildings and Other Structures – Strategies for Water Conservation

Managing rainwater through on-site infiltration and efficient irrigation systems reduces overall water consumption, recharges groundwater supply and lowers the impact on stormwater systems.

Machinery, Equipment and Systems External to Buildings and Other Structures – Strategies for Water Conservation

1. Rainwater Collection Systems

This strategy helps to conserve water resources and saves energy as less energy is used to treat and distribute water.

Consider the local feasibility of...

installing above-ground or below-ground rainwater collection systems to capture, store and potentially re-use rainwater to irrigate non-edible plants and landscaping.

For example:

- Collect water from roof downspouts and direct it to planted areas or into rain barrels for irrigating non-edible plants and landscaping.
- Collect rainwater in above- or below-ground cisterns for irrigation or sub-surface infiltration systems that store runoff.

For more information on rainwater management, refer to:

- *Water Balance Model* (<http://www.waterbalance.ca>)
- *An Economic Rationale for Integrated Stormwater Management – A Resource for Urban and Rural Land Development in B.C.* (http://www.env.gov.bc.ca/epd/epdpa/mpp/stormwater/urban_rural_land/pdf/42.pdf).
- *Capital Regional District Innovative Rainwater Management website* (<http://www.crd.bc.ca/watersheds/LID/rain-water-tour-main.htm>).

2. Irrigation Systems

This strategy conserves water as well as energy.

Consider the local feasibility of...

using efficient irrigation systems that support water, soil and energy conservation practices.

For example:

- Design, install and manage cost-effective and efficient irrigation systems.

For more information about efficient landscape irrigation refer to:

- *Irrigation Industry Association of B.C. webpage* (<http://www.irrigationbc.com>).
- *Landscape Irrigation Scheduling Calculator* (<http://landscape-calculator.irrigationbc.com/?date=Fri%20Dec%2011%2016:49:47%202009>).
- *Irrigation Fact Sheet: B.C. Trickle Irrigation Manual, Chapter 15 Landscape Micro Irrigation* (<http://www.agf.gov.bc.ca/resmgmt/publist/500Series/565000-1.pdf>).