

# Hornby Island Water Plan

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# Hornby Island Water Plan

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## Executive Summary

Hornby Water Stewardship (HWS) and Hornby Island Community Economic Enhancement Corporation (HICEEC) are collaborating on this plan *to strive to ensure the quantity and quality of water for Hornby Island, both in the short and long-term*. In the context of environmental awareness and care, water is perceived as a major issue with growth – planned or unplanned.

A great deal of work has been done by many organizations and educational institutions locally and around the world in this area. It is easy to get swamped by all the information. As a small island tucked away in the Salish Sea, it is wise to establish projects and activities that address both locally set priorities and the capacity to undertake them.

Getting to this plan has included a series of steps, including reviewing past work done on the island, building a reference list of information resources, a discussion forum with local people involved in *water* issues, the creation of a *discussion paper* (<http://www.hornbyislandwater.org/hornby-island-water-plan-discussion-paper>) to share findings, and a second, public forum to further explore possibilities and priorities.

This plan will be circulated for review and feedback, and refined and delivered to the Boards of HWS and HICEEC for approval.

Roughly fifty possible opportunities in support of the overall objective of this plan were suggested, and were categorized as falling under:

- Individuals (conservation, collection, quality assurance)
- Community infrastructure (distribution, saltwater intrusion prevention, sewage treatment)
- General awareness and education (low-use plantings, do-it-yourself, usage visibility, polluting chemicals, recognizing success, highlighting test results)
- Planning (homes, density)
- Regulation and enforcement (OCP, Islands Trust, Island Health, CVRD, Ministry of Forests, Lands & Natural Resources, collection and storage, short-term vacation rentals, neighbourhood water systems, commercial and high-density areas, grey water reuse, composting toilets, chemicals and medications)

Considering the desire for both short-term and long-term solutions, the following strategies have been selected for action in 2017:

- I. **General awareness and education**, including: publications, enhanced website as a single source of information, “water risk” signage, school children instruction, DIY (do-it-yourself) training sessions, summer public talks, and home-and-water tours of existing successful “green” water and disposal systems on the island.
- II. **Individuals**, including: conservation devices for wells, collection tanks, filtration systems, converting from pit to composting toilets, and a water testing service.
- III. **Research**, including local geological understanding of the relationship of our ground to our water, and awareness and adoption of practices being pursued by other areas (i.e., regional districts, Islands Trust, provincial government, universities, non-government organizations, etc.).

In recognition that *water* is deemed of high importance to residents, and considering that initiatives to achieve the plan’s objective are ongoing, it is proposed that a new governance structure be established, possibly under the Hornby Island Residents and Ratepayers Association (HIRRA), to ensure sustainable operational capability and capacity.

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## Background

### Hornby Water Stewardship (HWS)

The Hornby Water Stewardship project is a program since 1993 of the Heron Rocks Friendship Centre, and is being undertaken by members of the community on a volunteer basis.

The purpose of the project is to “foster personal responsibility for water conservation and protection.” All work is undertaken under the United Nations declaration that water is a human right, and therefore water belongs to everyone and is a shared responsibility.

The group has worked to foster understanding of the value and vulnerability of groundwater, surface and marine waters of Hornby Island.

Since inception, with limited resources, they have done much to address many of the issues raised in this planning process. They have conducted projects, workshops, seminars and demonstrations for adults and children on the topics of wells, septic systems, water borne illnesses, and water collection. They have written and distributed articles, brochures and posters to residents and visitors and have conducted scientific research, including extensive collection and testing of water samples. Funds have been provided to other Hornby Island groups for water collection and water diversion activities. Written submissions have been made to local and provincial policy and plan development. They have reached beyond Hornby Island to connect with and learn from others who are working to address issues of water quality and quantity.

The HWS group maintains an informational website: [www.hornbyislandwater.org](http://www.hornbyislandwater.org).

### Hornby Island Community Economic Enhancement Corporation (HICEEC)

The Hornby Island Community Economic Enhancement Corporation (HICEEC) is a publicly funded organization that has worked to support a healthy, diverse, and green economy on Hornby Island since 1997. In 2002, HICEEC was responsible for crafting the Community Vision to 2020, and conducting a Quality of Life survey to understand resident priorities, challenges, and opportunities at the time.

In 2015 HICEEC created an Economic Action Plan. This foundational piece of work, which polled 323 respondents on their household and employment situations, and opinions on a variety of economics-related topics, is providing the guiding principles and strategies for the work that HICEEC does.

One of the most significant results of the survey was that 78% of respondents would like to see an increase in the population of Hornby. In fact 32% would like to see the population at more than 1,500. This strong sentiment for growth leads to the question of what the island’s carrying capacity is; foremost in that discussion is *water supply*.

As such, a project has been created, *Promote and Incent Water Conservation*.

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## Objective

Based on exploratory discussions, this project has a range of possible activities in support of an overarching objective: *strive to ensure the quantity and quality of water for Hornby Island, both in the short and long-term.*

In the context of environmental awareness and care, water is perceived as a major potential issue with growth, planned or unplanned. Indeed, one of the guiding principles established in the 2015 Economic Action Plan exercise is: “conservation-oriented economy; we have no economy without the environment.” There is concern that the island has not properly addressed its water needs, and that the problem may only get worse in the future.

## Measures of Success

As the saying goes: what gets measured gets managed. Beyond objectives, it is important to establish a few critical indicators of progress or success. A few candidates, both at the project milestone level as well as the ultimate objective, include the following. They may be difficult to measure completely, and therefore proxies or statistical samples may be required (though measured consistently over time for directional purposes).

1. Water storage capacity (public and private)
2. Average water consumption per capita
3. Water quality (e.g., ditch contaminant reduction, occurrences of sickness reported at the clinic, well tests, anecdotal evidence from local plumbers)
4. Commitment and engagement (e.g., incentive program uptakes, education attendance, role model projects, Co-op sales of environmentally-friendly products, establishment of catchment ponds)

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## Plan Approach

Studies have been done on the island over the years, and individuals with a great deal of expertise have offered possible solutions to various components of the range of water issues. As well, government organizations at regional, provincial, national and international levels have produced numerous options and recommendations.

Some have said that Hornby doesn't have a water problem; it has a water *storage* problem. Others are concerned the quality of water as it currently exists, such as issues with wastewater proximity to drinking water, and salt water intrusion. Some are mostly concerned about the density of certain neighbourhoods; others are focused largely on the potential effects of the extreme seasonality of the population.

To start the planning process, a small committee was established, and which has been meeting since May 2016.

- Hornby Water Stewardship: Ellen Leslie, Dr. John Cox
- Hornby Island Community Economic Enhancement Corporation: Karen Ross, Darren Bond

It began pulling together existing and previous studies and references for a bibliography of work. As well, it determined that a logical process would be:

1. Pull together a report that shows what *could* be done on Hornby by consulting with individuals with expertise, reviewing outside plans (e.g., other gulf islands), and incorporating "best practice" research
2. Engage the community to review it and to prioritize what *should* be done.
3. Finalize a plan that incorporates these priorities to focus time, energy and budgets on a select few initial projects beginning in 2017, and report regularly on their status.
4. In parallel, participate as appropriate in research on the relationship of Hornby's geology, geography and its water, better to drive further initiatives to enable the quality and quantity objectives of the overall Hornby Water Plan.

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## General Considerations

There are four ways for accessing water on Hornby Island as an individual:

- Retrieving it from the ground
- Catching it from the air
- Reusing it from a previous purpose
- Purchasing it from a provider (sourced either from on or off-island)

As an island, with no lakes or rivers or snow-capped mountains, the main source of water for Hornby is from drilled and dug wells, along with some rainwater collection. Historically, people viewed the water from their drilled wells with an ownership mindset.

However, groundwater flows freely across property boundaries and is therefore a shared responsibility. People already experience the effect of their neighbour's actions as water levels can be affected by the pumping of other wells in the immediate vicinity.

Aquifers in BC are classified according to vulnerability. Aquifers on Hornby are unconfined fractured bedrock and are classified as highly vulnerable.

Climate change may have an effect on water. Spring rains may come earlier; fall rains may come later. We may need a diversity of sources to run our homes.

Residential wells are concentrated in the more populated areas and are not evenly distributed throughout the island. There are very few wells in the centre of the island.

The Official Community Plan (OCP) includes references to water throughout and, as such, helps to frame much of the work that may be proposed.

Research has indicated the potential value of “slowing water down” before it flows off the island, in order better to replenish the island's groundwater, and to lessen the flow of contaminated water due to shallow wells and septic systems.

The relative “value” of land may arise in research. Some properties could be deemed to be higher or lower value based on their ability to produce water, which is frequently mentioned in real estate advertising.

The demographic and economic profile of Hornby shows that its population has a higher median age and a lower median income than the average for other areas of the province. Considerations for the *expense* of solutions will, of course, be central in prioritizing possible follow-on initiatives. As one water forum participant pointed out: *most people won't spend \$15,000 for a water system if their well still produces, but they will spend that if their well runs dry. Septic, 25 years old, people don't think they have a problem until there is poop on the ground.*

Finally, water isn't just ours; full ecosystems need it, too. Looking to the future, we may want, or need, to be more self-sufficient in food, and this should be a consideration in the water plan. Similarly, there is a concept of a “water budget” that reflects the relationship between input and output of water through a region.

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## Opportunities Summary

As described briefly in the *Plan Approach* section, individuals with some degree of expertise as well as Hornby residents provided their input on *possibilities* and *priorities*. These were categorized into the following (the full document is available at

<http://www.hornbyislandwater.org/hornby-island-water-plan-discussion-paper>):

### Individuals

There is much that can be done at the household level to help ensure the necessary quantity and quality of water. The ability to move toward to the objectives of this water plan is perhaps mostly easily achieved at the individual level; decision-making is simpler than having to engage with neighbours, community members and regulators.

However, depending on the person's financial or personal situation, they may wish to take a position that's optimal for themselves but less so for the community at large.

Specific suggestions submitted included:

- **Conservation** – reducing current amounts of water consumption through the use of measurement devices (to monitor well levels, well intake, and wastewater outflows), and well restrictor devices (to restrict overconsumption automatically).
- **Collection** – rather than going to the well for water, people can harness the rain (in whole or in part) by using storage tanks, resulting in fewer problems with septic contamination, and knowing how much water you have on hand. For those with torch-on roofs, new membranes can be overlaid to allow for rainwater collection.
- **Quality assurance** – proactive and periodic well testing – both when it's dry and after all the rains – helps prevent contamination situations with early warning signs about issues that may help your own health and that of your neighbours.

### Community Infrastructure

Moving beyond the ability of individuals to effect change, some strategies may involve collective action at the neighbourhood, subdivision or island levels. Reasons for this often include overall cost factors – higher on the surface but possibly cheaper than the equivalent sum total of individuals replicating approaches – as well as regulatory requirements for both subdivided and crown land.

Specific suggestions submitted included:

- **Watershed Designation and Enhancement** – adopt measures to protect a critical component of water storage, ensuring long-term health both for the Hornby Island ecosystem and us.
- **Reservoirs** – establish holding areas for water, such as re-establishing a natural lake that one resident indicated had existed behind the recycling depot, and enhancing two ponds near the helipads in Mount Geoffrey Park.
- **Run-off Collection** – areas of the island overflow during the rainy season and the water rushes to the sea through streams and ditches. Slow this down, such as in Strachan Valley and on Mount Geoffrey.
- **Intrusion Prevention** – we are in a geological “teardrop” of fresh water surrounded by saltwater. Once the saltwater finds its way in, it is difficult to remove. So, restricted pumping is required, especially at the shoreline.



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- **Sewage Treatment** – a number of properties have inadequate systems for treating waste, causing contamination of groundwater that crosses boundaries. Implement a centralized composting site for human waste.

## General Awareness and Education

Perhaps before anything else can be achieved, or even started, continuing to raise the level of acknowledgement of the seriousness of the issue is paramount. Water isn't a priority until the day there isn't any. There may be a small percentage of the population that isn't aware, but there may also be a percentage that doesn't feel action is required beyond current practices.

Seasonally, some off-island owners and vacation rental clients are very water conscious, they come with an attitude of conservation, but education is still required for the rest where regular water use habits from home rule the day.

Specific suggestions submitted included:

- **Low-use Plantings** – it is easy to consider those that are drought resistant, such as native plants
- **Do-it-yourself** – there are likely a number of projects people could undertake themselves if they were shown how (including good guidance and standards in the new *BC Manual of Compost Toilet and Greywater Practice*), including a home-and-water tour of basic, medium and high-end systems for water and septic (while adhering to the BC Sewerage Regulation for certification).
- **Usage Visibility** – provide a heads-up moment through roadside signage – think Smokey the Bear – on the current risk level.
- **Polluting Chemicals** – highlight the toxic substances that people are flushing into septic systems.
- **Recognize Success** – showcase individuals or organizations that are making great strides.
- **Highlight Quality Results** – publish information produced by Island Health on a central website (i.e., Water Stewardship's site) and Facebook.
- **Live Talks** – provide information sessions to receptive groups, such as the school children, and summer visitors.

## Planning

We can't go back in time, but we can make it faster, better and cheaper to do the right things first.

Specific suggestions submitted included:

- **Homes** – when people are in the middle of designing or building a new home, incorporate water-smart solutions up-front rather than having to retrofit later, possibly through some kind of brochure or website (with the assistance of the realtors and home builders to pass along as a resource), for things such as seasonal greywater irrigation.
- **Density** – assuming the population on Hornby increases, it would be best if the development were such as to optimize the available land and water in an environmentally sensitive way (“eco-density”); perhaps the elder village is a model that could be replicated in other areas of the island. As any development of a commercial or high-density nature needs to get a development permit from Islands Trust, specifics could be built into these documents, and the OCP.

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## Regulation and Compliance

Sometimes education and awareness only take you so far; actual practices may steer around regulations with a wink of the eye, reflecting the “alternative” culture of the island. Most bylaws rely on a complaint-driven system; many people are reluctant to put in complaints for fear of disagreeable relationships with neighbours. Some inspection does take place – electrical – on new homes, but beyond that, very little.

Land-use zoning reflects decisions both from the past – prior to the creation of the Islands Trust – and also from ongoing updates to reflect current desires and concerns of the population. For example, the Galleon, Whaling Station, and Sandpiper subdivisions – designed in the '60s – have more than 70% usage rates of available water, and little possibility of increased development.

Given the desirability of Hornby Island, both as a summer destination for both part-time owners as well as visitors generally, there is a high level of occupancy when water is in shortest supply. This magnifies the need for regulation and compliance.

Specific suggestions submitted included:

- **Official Community Plan (OCP)** – strengthen and do more implementation of objectives and recommendations.
- **Requirement for Collection/Storage** – prior to issuing development permits (residential and commercial), ensure storage tanks are part of the design and implementation. Encourage xeriscaping as well to minimize watering requirements.
- **Regulation for Short-Term Vacation Rentals (STVRs)** – require appropriate capacity to handle seasonal stress.
- **Requirement for Greywater Reuse** – make this mandatory. (However, if rainwater is collected and used then it is not necessary to mandate greywater reuse. By putting greywater into a dispersal field (septic) and using rainwater for irrigation then the local soils are being hydrated by both the greywater and rainwater. If rainwater is not collected then traditionally it is considered storm water and dumped in a ditch to rush to the sea. Where at all possible, even if rainwater is not collected it should be infiltrated to native soils.)
- **Regulation for Composting Toilets** – establish a centralized offsite facility after somewhat cured; onsite burial; on-surface application.
- **Regulation for Chemicals and Medications** – establish a central collection-recycling centre, or encourage use of existing collection facilities.
- **Water Governance and Operations** – as recommended by the OCP, establish a committee to coordinate water planning (water-centric planning). This is more about quantity than quality, which already falls under the jurisdiction of Island Health. Possibly, an organizational model for this could be as a Hornby Island Residents and Ratepayers Association (HIRRA) committee with a paid “coordinator” position (similar to the Salt Spring Island Water Protection Authority).

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## Selected Strategies

There is a great deal that *could* be done in support of the plan's long-term water quantity and quality objectives, and many activities that *should* be done, but capacity and resources are limited. No matter; based on input received on the *Discussion Paper* and a public forum held at the Community Hall, consensus emerged on a couple of top priorities for action – *General Awareness and Education*, and *Individuals* – in 2017. There was some debate on another area, *Regulation and Compliance*, which, along with *Community Infrastructure and Planning*, may rise as priorities as time goes by.

Because it can be easy to default to either exclusively short-term or long-term approaches, the recommendation of this plan is to focus on one or two initiatives that fall under *each* approach. From a short-term perspective, achieving success – and celebrating success – with something tangible helps to improve water quality and quantity, and engages the community at the same time. However, after picking the low-hanging fruit, there will likely be new learnings from ongoing research in the water sustainability field, and considerations for solutions that currently don't exist or haven't been identified.

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## Strategy #1: General Awareness and Education

As much as we feel that Hornby Island is a leader in environmental practices, the truth is that we can be “preaching to the converted” while others – full-time residents, part-time residents, and visitors – are superficially engaged.

### Target Activities

1. **Publications:** producing printed content to reach the population. This could be in the form of articles in the First Edition, or standalone mailings, or brochures made available at regular visitor spots or through businesses (e.g., retail, accommodations, real estate agents, developers).
2. **Enhanced Website:** make the existing hornbyislandwater.org site the easy, single-source of information.
3. **Water Risk Signage:** use existing “Groundwater” signs along the roads to highlight the water drought conditions.
4. **School Instruction:** deliver the message of the importance of water to children, and provide material for them to take home to their families.
5. **DIY (Do-It-Yourself) Guides:** enable residents to undertake projects themselves, saving on the expense.

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## Strategy #2: Individuals

By far, feedback supported a focus on actions that people can control themselves. Indeed, it could almost be said that a guiding principle emerged that the best strategy is to go as far upstream (no pun intended) as possible to the source of potential scarcity and contamination.

### Target Initiatives

1. **Conservation Devices:** promote the use of, and possibly provide incentives towards the installation of, these measurement tools for well levels, intake volumes, and wastewater outflows.
2. **Collection Tanks:** promote the use of, and possibly provide incentives towards the installation of, storage containers, such as cisterns.
3. **Membranes for Torch-on Roofs:** promote the use of, and possibly provide incentives towards the installation of, this material that allows the effective retrofitting of older-style roofs, thus enabling rainwater collection for potable purposes.
4. **Water Testing Service:** invigorate the testing process for water, either through coordinated pick-up of samples, or possibly the establishment of a local business with the necessary facilities and training.
5. **Conversion from Pit to Composting Toilets:** provide support for people to convert from pit toilets to newly allowed composting toilets, which also dovetails with efforts for establishing a central site for discharge at the Recycling Depot.

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## Strategy #3: Research

The fundamental place of water in the whole ecosystem of the world continues to rise in prominence. The UN has declared it a human right. Climate change is causing unexpected conditions that cause drought, or floods, or both. Modelling has indicated that our region may experience more rainfall in the winter and less in the summer.

What rain that does fall, lands on an island made up of various geological formations. This geological make-up affects watersheds, groundwater, and aquifers. From there, it affects the access to potable drinking water. Related, we are surrounded by saltwater, a potential source of intrusion, rendering the water unusable.

By definition, a water plan involves people. The residents of Hornby represent a range of attributes: income levels, access to productive wells, efficient and non-contaminating septic systems, and desire for change. Additional density can place strains on the environment.

Additionally, the governance of the island involves multiple players, including the Comox Valley Regional District, K'ómoks First Nation, Islands Trust, and the provincial and federal governments. Making any kind of change can involve intricate discussions and interwoven plans. Water-centric planning, by its very nature, affects a network of interrelated subjects, all of which may follow different governance models and departments.

This means that having a finite set of projects isn't realistic or practical. Water is fluid. It will be important and valuable to stay connected to any and all efforts to understand better water practices, locally, regionally and beyond.

## Target Initiatives

1. **Geology and Ecology:** research (e.g., SFU, et al) on Hornby Island to understand the island's ecological sustainability.
2. **Governance:** research and align our governance model with the POLIS project on watershed governance, and the BC government Water Sustainability Act
3. **Best Practices:** explore approaches taken by outside groups, such as the Regional Districts of Nanaimo and Salt Spring island, which appear to have gone down this path before
4. **K'ómoks First Nation:** collaborate on joint efforts.
5. **Community Survey:** following on one that was done a number of years ago, use some of the same questions to get comparative results. As well, it can provide an up-to-date profile of the island, such as the number of septic systems, cisterns, and so on.
6. **Citizen-Based Monitoring:** engage locals in collecting information to show trends and results.
7. **Real-Time Monitoring:** upgrade current government wells, such as at the top of Sandpiper, from manual checking to real-time transmission of results.

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## Organization and Funding

Up to now, efforts have fallen largely into multiple streams, including a volunteer-based group of people in the Hornby Water Stewardship project (of Heron Rocks Friendship Centre society), as well as regulatory and planning bodies (e.g., Islands Trust, Island Health, CVRD, provincial government). Linked back to the Governance initiative under *Research*, there is an appetite to join these streams to implement the strategies above more effectively. In effect, it will likely require a kind of hubs-and-spokes structure to allow different initiatives to involve different participants, but under a single umbrella, to achieve success.

One possible approach to this monumental topic is to engage the full community using the “Collective Impact” methodology explored in the first half of 2016. Its intent is to bring together all of the various interested parties in support of a long-term, overarching goal.

A key recommendation for the successful *ongoing* implementation of both this first phase of the plan, and subsequent ones, is to position *water* as a critical shared element, requiring the same care and attention of residents and ratepayers as *parks, first responders, the cemetery, trails*, and so on. To that end, one possible and logical option would be to create a HIRRA committee totally comprised of volunteers – or that plus a paid part-time position – that would follow the same process and procedures as the other HIRRA committees.

If implementation of the recent Water Sustainability Act by the Government of BC includes such governance structures as “water managers” and “advisory boards” (included roles in the Act) across the province, this committee could be well positioned to represent Hornby’s interests and implement programs. Additionally, Islands Trust has resolved to approve a temporary Senior Freshwater Specialist position (subject to budget) to: improve knowledge of issues; establish a system for tracking issues; improving collaboration and data sharing; and, ensuring development doesn’t exceed capacity of supply.

To start with, the existing Hornby Water Stewardship project team could offer themselves up for membership. If the desire is to have a paid position, some exploration will need to be done to determine whether or not existing funds from the property tax rolls go to the CVRD, and whether a portion of that can, and should, be returned to fund such a position. (Salt Spring has a “Co-ordinator” function that could be a model to apply.)

## HICEEC

The *economic* elements of a water plan are hopefully clear: without the environment, we don’t have an economy. The Economic Action Plan recommended support for water conservation as a top-priority strategy in enabling the community’s stated desire to grow in population to support friends and family trying to make a life for themselves on the island. Having a full range of demographics – from school-aged children to working adults to active seniors – involves an expanded economy, but it must be a *conservation*-based economy.

From a project and financial support perspective, \$25,000 of Reserve dollars (money set aside by the regional district for economic development purposes, but which requires CVRD approval for spending) has been earmarked for this project. As well, staff support and funding for smaller items will be requested to support project activity requirements (estimated \$3,000).

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## Spokes

As described above, many of the proposed initiatives in this plan will require participation and collaboration with other groups. Some discussions have already taken place, but specific plans will need to be firmed up. These include:

- Islands Trust
- Island Health / HealthNet
- Ministry of Forests, Lands and Natural Resources
- K'ómoks First Nation
- Conservancy Hornby Island (CHI)
- Community Action Solutions Together (CAST)
- Vancouver Island Water Watch (VIWW)

In particular, initiatives intended to offer incentives to residents will require funding from higher levels of government, or, at the very least, leveraging HICEEC dollars to get matching grants to use.