AGENDA

REGULAR MEETING OF THE ADVISORY COMMITTEE ON ENVIRONMENTAL SUSTAINABILITY BOWEN COMPLEX CONFERENCE ROOM 500 BOWEN ROAD (LOWER LEVEL) WEDNESDAY, 2015-OCT-14, COMMENCING AT 4:30 P.M.

1. CALL THE REGULAR MEETING OF THE ADVISORY COMMITTEE ON ENVIRONMENTAL SUSTAINABILITY TO ORDER:

- 2. **INTRODUCTION OF LATE ITEMS:** (See addendum if applicable.)
- 3. ADOPTION OF AGENDA:

(Motion required to adopt the agenda or amended agenda.)

4. ADOPTION OF MINUTES:

Minutes of the regular Advisory Committee on Environmental Sustainability Pgs. meeting held Wednesday, 2015-SEP-09, at 4:57 p.m., in the Bowen Complex 4 - 6 Conference Room.

(Motion required to adopt minutes.)

5. **PRESENTATIONS:**

(a) Eric Demers; Vancouver Island University. West Marsh Bird Banding Project: Research and Results for 2015.

(Motion required to receive the presentation.)

6. CHAIR'S REPORT:

- (a) Introduction of Natalie Cielanga, VIU Representative.
- (b) Review meeting etiquette.

(Motion required to receive the Chair's report.)

7. **STAFF REPORTS:**

Amending The City Energy Conservation And Management Policy (a) - R. Lawrance, Environmental Planner / Scott Pamminger, Infrastructure Planning And Energy Manager.

Purpose: To update the City's Energy Conservation and Management Council Policy which includes a section on anti-idling for City Fleet Vehicles and to present the Anti-Idling Policy for adoption.

Delegation:

1. Natalia Kuzmyn.

Pgs. 16-19

7 - 15

Staff Recommendation: That the Advisory Committee Environmental Sustainability receive the report and recommend that Council:

- 1. adopt the proposed amendments to the City's Energy Conservation and Management Policy which includes an anti-idling component; and,
- 2. adopt the proposed Corporate Anti-Idling Policy.

(Motion required to adopt recommendation.)

(b) **Information Only Items:**

i. **Environmental Services Monthly Report** – September 2015 Pgs. 20 - 21

- **Update on 2015 Green Nanaimo Awards** Verbal report ii.
- iii. Poster: Presentation - Happy City: Your City, Your Life -Charles Montgomery, World VIU Days - Celebrating International Education, 2015-NOV-03, Shaw Auditorium, Vancouver Island Conference Center.

Pg. 22

23

(Motion required to receive the information only items.)

- 8. **CORRESPONDENCE**: (Not related to a report to the Committee.)
 - E-mail dated 2015-SEP-13 from Linda A. Campbell regarding Wood (a) Pg. Fireplaces and Backyard Burning.

(Motion required to receive the correspondence.)

- 9. **NOTICE OF MOTION:**
- 10. **OTHER BUSINESS:** (Motion required to review other business.)
- 11. **DELEGATIONS:** (Not related to a report to the Committee.)
 - (a) Mari Justine Galloway, Environmental Policy Research Centre (Freie Pgs. Universitat Berlin) / University of British Columbia. Perceptions of Climate Change Impacts and Vulnerabilities in Nanaimo Research Participation Request.

(Motion required to receive the delegation.)

- 12. **QUESTION PERIOD:** (Public Related to agenda items only)
- 13. BUSINESS ARISING FROM PRESENTATIONS AND DELEGATIONS:
- 14. **ADJOURNMENT:** (Motion required to adjourn.)

2015-OCT-09 File: A2-12

G:\Environmental Services\ACES\Agenda\2015\ACES151014A.docx

MINUTES

REGULAR MEETING OF THE
ADVISORY COMMITTEE ON ENVIRONMENTAL SUSTAINABILITY
BOWEN COMPLEX CONFERENCE ROOM
500 BOWEN ROAD (LOWER LEVEL)
WEDNESDAY, 2015-SEP-09, COMMENCING AT 4:30 P.M.

PRESENT: Gail Adrienne, Chair

Members: Daniel Appell

Emil Bock

Councillor Diane Brennan

Richard Finnegan

Calvin Tant (arrived at 4:57 p.m.)

Staff: Rob Lav

Rob Lawrance, Environmental Planner

Kevin Brydges, Environmental Bylaw Enforcement Officer

Robin Tweed, Recording Secretary

Geoff Goodall, Director, Engineering & Public Works (arrived at 5:07 p.m.)

REGRETS: Glenda Hunter (Natalie Cielanga, VIU, appeared on Ms. Hunter's behalf)

Colin Brown Wally Wells

CALL THE MEETING TO ORDER:

The Regular Meeting was called to order at 4:57 p.m.

2. INTRODUCTION OF LATE ITEMS:

ADOPTION OF AGENDA:

It was moved and seconded that the Agenda be adopted. The motion carried unanimously.

ADOPTION OF MINUTES:

It was moved and seconded that the minutes of the Regular Advisory Committee on Environmental Sustainability meeting held Wednesday, 2015-JUL-08, at 4:38 p.m., in the Bowen Complex Conference Room be adopted as circulated. The motion carried unanimously.

5. PRESENTATIONS:

(a) Julie Pisani, Drinking Water and Watershed Protection Program Coordinator, Regional District of Nanaimo, providing a PowerPoint presentation on the Community Watershed Monitoring Program – Water Quality Sampling in Nanaimo's Urban Streams.

It was moved and seconded that the presentation be received. The motion carried unanimously.

6. CHAIR'S REPORT:

(a) DRAFT - 2016 ACES Key Date Calendar.

It was moved and seconded that the 2016 Advisory Committee on Environmental Sustainability Key Date Calendar be adopted. The motion carried unanimously.

(b) River's Day Event. This event is held annually on the last Sunday of September in Bowen Park. Deborah Beck, Coordinator, City of Nanaimo, organizes and the Chair wished to acknowledge the wonderful job she does in putting this event together.

It was moved and seconded that the Chair's report be received. The motion carried unanimously.

STAFF REPORTS:

(a) Environmental Framework Process R. Lawrance, Environmental Planner

It was moved and seconded that the Advisory Committee on Environmental Sustainability endorse the Environmental Framework Process. The motion carried unanimously.

(b) Buttertubs Marsh Management Plan Review R. Lawrance, Environmental Planner

It was moved and seconded that the Advisory Committee on Environmental Sustainability receive this report for information. The motion carried unanimously.

(c) Information Only Items:

- i. Environmental Services Monthly Report July/August 2015.
 - Goose management possible technical workshop for Vancouver Island
 - BC Hydro working towards more energy efficiency awareness and programs.
- ii. Green Nanaimo Awards Update verbal.
 - If anyone has a potential candidate please submit by 12:00 noon 2015-SEP-15.
 - Staff are working with an artist to choose a print for the award and will send out an e-mail with some options.
- iii. Sustainability Fair 2015-OCT-08 Vancouver Island University.
- iv. "Introduction to Passive House Design and Construction" One-day Course 2015-SEP-17 Parksville Community Conference Centre.

It was moved and seconded that the Advisory Committee on Environmental Sustainability receive the information only items. The motion carried unanimously.

- 8. CORRESPONDENCE: (Not related to a report to the Committee.)
 - (a) E-mail dated 2015-SEP-02 from Glenys Verhulst, Oil to Heat Pump Incentive Program Manager, providing a Media Release on the New Oil to Heat Pump Incentive Program for B.C. Homeowners. Staff distributed a poster which was received subsequent to the e-mail of 2015-SEP-02.

It was moved and seconded that the Advisory Committee on Environmental Sustainability receive the correspondence. The motion carried unanimously.

- 9. NOTICE OF MOTION: (None.)
- 10. OTHER BUSINESS: (None.)
- 11. DELEGATIONS: (None.)
- 12. QUESTION PERIOD: (No questions.)
- 13. ADJOURNMENT: It was moved and seconded at 6:27 p.m. that the meeting adjourn. The motion carried unanimously.

APPROVED AS READ:

APPROVED FOR DISTRIBUTION:

Gail Adrienne, Chair Advisory Committee on Environmental Sustainability Richard Harding, Director
Parks, Recreation and Environment

CERTIFIED BY:

Corporate Officer City of Nanaimo

2015-SEP-09 File: A2-12

G:\Environmental Services\ACES\Minutes\2015\ACES150909M.docx

City of Nanaimo

REPORT TO THE ADVISORY COMMITTEE ON ENVIRONMENTAL SUSTAINABILITY

DATE OF MEETING: 2015-OCT-14

AUTHORED BY: ROB

ROB LAWRANCE

ENVIRONMENTAL PLANNER

PARKS, RECREATION AND ENVIRONMENT

SCOTT PAMMINGER

INFRASTRUCTURE PLANNING AND ENERGY MANAGER

PARKS, RECREATION AND ENVIRONMENT

RE: AMENDING THE CITY ENERGY CONSERVATION AND MANAGEMENT POLICY

STAFF RECOMMENDATION:

That the Advisory Committee on Environmental Sustainability receive the report and recommend that Council:

- adopt the proposed amendments to the City's Energy Conservation and Management Policy which includes an anti-idling component; and,
- 2. adopt the proposed Corporate Anti-Idling Policy.

PURPOSE:

To update the City's Energy Conservation and Management Council Policy which includes a section on anti-idling for City fleet vehicles and to present the Anti-Idling Policy for adoption.

BACKGROUND:

The City's Energy Conservation and Management Policy was adopted by Council on 2009-OCT-19 and is a Council Policy that details energy conservation objectives for the City that applies to its buildings, infrastructure and vehicle fleet.

The policy defines roles and responsibilities for City staff around energy conservation in the workplace and provides general targets, performance measures and a payback period to guide decisions on energy-related projects and purchases.

While the City Fleet Manager has developed an anti-idling training program for new staff and drivers with the City, the City has not had an official policy on anti-idling to date.

DISCUSSION:

The existing Council Policy on Energy Conservation and Management is seen as an important tool in ensuring energy conservation practice is recognized as a priority within the City. As a regular practice, Council Policies are reviewed to ensure they remain relevant and effective tools for staff and Council.

The City Infrastructure Planning and Energy Manager, along with other staff have reviewed the current Council Policy on Energy Conservation and Management and identified some portions of the document that could be improved. They include the following:

- Reference to a Corporate Sustainability Strategy should be removed since this strategy was never finally adopted by Council and was only a draft at the time the Energy Conservation and Management Policy was adopted;
- The inter-departmental Sustainability Committee was disbanded after the Corporate Climate Action Plan was completed and the Infrastructure Planning and Energy Manager position established, in 2010; and,
- The Fleet Manager is tasked with anti-idling training and awareness. recognizing the important role anti-Idling programs can play in energy conservation as well as pollution and GHG emissions reduction.

In addition to adding anti-idling training to the Energy Conservation and Management Policy, a new Anti-Idling Policy for Council adoption has been prepared, which provides more clarity on the role of the Fleet Manager to oversee training; and for staff to know when anti-idling procedures are to be followed (see attached).

Respectfully submitted,

Rob Lawrance

ENVIRONMENTAL PLANNER

PARKS, RECREATION AND ENVIRONMENT

Concurrence by:

Scott Pamminger

Infrastructure Planning and Energy Manager PARKS, RECREATION AND ENVIRONMENT

Scott Pomminger

Richard Harding DIRECTOR

PARKS, RECREATION AND ENVIRONMENT

Attachments:

- Existing Energy Conservation and Management Policy approved 2009-OCT-19;
- Proposed Energy Conservation and Management Policy; and,
- Draft Anti-Idling Policy.

2015-OCT-07

File: A1-15-1 / A2-12 / A10-13 / F1-1

G:\Environmental Services\ACES\RptACES\2015\

ACESRPT151014AmendingTheCityEnergyConservationAndManagementPolicy.docx



COUNCIL POLICY

Pages: 1 of 2

Approval Date: 2009-OCT-19

SECTION: BUILDINGS, FACILITIES AND PROPERTIES

SUBJECT: Energy Conservation and Management Policy

Purpose:

To clearly define the goals and objectives of the City of Nanaimo in reducing energy consumption, in a manner that is consistent with the:

- City of Nanaimo Corporate Sustainability Strategy;
- City of Nanaimo Corporate Climate Change Plan;
- BC Hydro Powersmart Partner Program agreement,

The City's general goals are to:

- To become more efficient with energy use;
- Reduce waste and greenhouse gas emissions;
- Seek environmentally neutral sources of heating, cooling, and energy; and to
- Reduce pollution.

Principles:

To carry out these goals, the City Sustainability Committee will oversee the following:

- 1. The City will conserve energy by identifying and adopting, specific, quantifiable targets. Initially the City will set a target of 1% reduction in the City's overall energy consumption per year for existing buildings (as of October 2009). Where growth/expansion of a building area is required, the energy intensity (e.g. kwh/square foot) should not be greater than the energy intensity of existing facilities of similar use.
- The City's building, fleet and department managers will be tasked with contributing toward meeting these reduction targets. Energy usage in their respective buildings, facilities, vehicles and operations shall be considered. Opportunities to reduce energy consumption shall be identified.
- All non-essential lighting and other electrical loads shall be minimized during non-business hours. Departments are expected to make a reasonable determination as to what critical functions must continue and inform the Building and Department Managers.
- 4. The City will commit to work with staff to help them better understand energy consumption and the means by which individuals can influence reductions through prudent use of resources.

To help accomplish this, the City may Introduce incentives, both fiscal and behavioral, intended to compel staff to use the least amount of energy necessary to achieve personal, professional and operational tasks.

- The responsibility for "energy efficiency and conservation" will be added to all job descriptions over time.
- 6. Upgrade existing energy use, mechanical systems, lighting, appliances and other related systems to higher efficiency standards (i.e. Energuide, Energy Star) where the change offers a simple payback of 8 years or less. For buildings, where simple payback is greater than 8 years, a lifecycle cost analysis will be done to determine the advantage of switching to more higher efficient building wide systems.
- 7. The finance department will report on the corporation's energy consumption and greenhouse gas emissions for each year. All staff will be made aware of their departments energy consumption so that energy efficiency and performance can be assessed and action taken.
- 8. Building and Department managers shall review, through the budget process, all new energy consuming initiatives these initiatives will include building and construction projects; as well as programs and/or services provided to the community. Initiatives that ensure that efficient energy use remains a priority will be given preference for adoption.

Previous Revision/s: None



PROPOSED CHANGES COUNCIL POLICY

Pages: 1 of 2 Approval Date:

SECTION: BUILDINGS, FACILITIES AND PROPERTIES

SUBJECT: Energy Conservation and Management Policy

Purpose:

To clearly define the goals and objectives of the City of Nanaimo in reducing energy consumption, in a manner that is consistent with the:

- · City of Nanaimo Corporate Sustainability Strategy;
- City of Nanaimo Corporate Climate Change Plan;
- BC Hydro Powersmart Partner Program agreement,

The City's general goals are to:

- To become more efficient with energy use;
- Reduce waste and greenhouse gas emissions;
- Seek environmentally neutral sources of heating, cooling, and energy; and to
- Reduce pollution.

Principles:

The following will be policy will be adopted to implement the above goals:

To carry out these goals, the City Sustainability Committee will oversee the following:

- 1. The City will conserve energy by identifying and adopting, specific, quantifiable targets. Initially The City has will-set a target of 1% reduction in the City's overall energy consumption per year for existing buildings (as of October 2009). Where growth/expansion of a building area is required, the energy intensity (e.g. kwh/square foot) should not be greater than the energy intensity of existing facilities of similar use.
- 2. The City's <u>Infrastructure Planning</u> and <u>Energy Manager</u>, in addition to other Building, Fleet and Departmental Managers, will be tasked with contributing toward meeting these reduction targets. Energy usage in their respective buildings, facilities, vehicles and operations shall be considered. Opportunities to reduce energy consumption shall be identified.
- 2.3. The City will adopt a Fleet Anti-Idling Policy as an air quality and energy conservation measure. The City's Fleet Manager will be responsible for all Ant-Idling Training and Awareness Programs.

Į	3.4. All non-essential lighting and other electrical loads shall be minimized during non-business hours. Departments are expected to make a reasonable determination as to what critical functions must continue and inform the Building and Department Managers.
)	4-5. The City will commit to work with staff to help them better understand energy consumption and the means by which individuals can influence reductions through prudent use of resources. To help accomplish this, the City may introduce incentives, both fiscal and behavioral, intended to compel staff to use the least amount of energy necessary to achieve personal, professional and operational tasks.
ľ	5.6. The responsibility for "energy efficiency and conservation" will be added to all job descriptions over time.
	6-7. Upgrade existing energy use, mechanical systems, lighting, appliances and other related systems to higher efficiency standards (i.e. Energuide, Energy Star) where the change offers a simple payback of 8 years or less. For buildings, where simple payback is greater than 8 years, a lifecycle cost analysis will be done to determine the advantage of switching to more higher efficient building wide systems.
	7-8. The finance department will report on the corporation's energy consumption and greenhouse gas emissions for each year. All staff will be made aware of their departments energy consumption so that energy efficiency and performance can be assessed and action taken.
	8-9. Building and Department managers shall review, through the budget process, all new energy consuming initiatives – these initiatives will include building and construction projects; as well as programs and/or services provided to the community. Initiatives that ensure that efficient energy use remains a priority will be given preference for adoption.
P	revious Revision/s: 2009-OCT-19



Pages: 1 of 3 Approval Date:

SECTION: BUILDINGS, FACILITIES AND PROPERTIES

SUBJECT: Anti-Idling Policy

Purpose:

The purpose of this policy is to establish guidelines for unnecessary idling of municipal vehicles and equipment. Limiting idling times reduces air pollution and greenhouse gas emissions and contributes to healthier work environments and the efficient use of city resources.

Scope:

This policy applies to all staff operating vehicles and equipment owned, rented or leased by the City of Nanaimo.

Definitions:

1. Idling

Idling means the operation of a vehicle or equipment while they are not in motion and not being used to operate auxiliary equipment that is essential to the operation of the vehicle or equipment.

2. Fuels

For the purpose of this policy this includes all vehicles or equipment that run on fossil fuels which include gasoline, ethanol, diesel, bio-diesel, propane, hydrogen and natural gas.

Vehicles

For the purpose of this policy, vehicles or equipment refers to cars, light trucks, vans, heavy trucks, snow equipment, buses, loaders, backhoes, street sweepers and any other equipment operated by staff and utilizing fossil fuels.

Procedures:

- Manufacturer's guidelines (recommendations).
 Always follow the manufacturer's guidelines and recommendations for idling unless otherwise advised by fleet services.
- 2. Gasoline and alternative fuel vehicles. Idle times up to one (1) minute are allowed for vehicles during their initial shift warm up and at subsequent times when the vehicle is being restarted after a prolonged period of shut down that results in vehicle conditions similar to those prior to initial shift warm up.
- 3. <u>Diesel fuelled vehicles/equipment.</u>
 Idle times up to three (3) minutes are allowed for diesel fuelled vehicles/equipment during their initial shift warm up and at subsequent times when the vehicle/equipment is being restarted after a prolonged period of shut down that results in vehicle/equipment conditions similar to those prior to initial shift warm up.
- 4. Operation of equipment in the field.
 - a. Gasoline and alternative fuel vehicles. No operator shall idle the engine of an unleaded fuelled vehicle in excess of one (1) minute, if the vehicle is stopped for a foreseeable period of time.
 - Diesel fuelled vehicles/equipment.
 No operator shall idle the engine of a diesel fuelled vehicle in excess of three (3) minutes if the vehicle is stopped for a foreseeable period of time.
 - Diesel fuelled vehicles/equipment should only be turned off after enough time has passed to allow the proper circulation and cooling of engine oil, coolant, and turbo chargers, not to exceed three (3) minutes.
 - c. When engines must be left running for any reason, the operator must remain with the vehicle.

Exceptions:

This policy does not apply to the following vehicles, equipment or situations. Operators must use their own discretion in certain situations.

- Emergency vehicles and equipment are exempt while engaged in operational activities where engine power is necessary for an associated power need.
- Vehicles may idle for purposes of defogging, defrosting or de-icing windows. Idling must end when the windows have cleared enough for the vehicle to be safe to drive. In addition to using the vehicle defrosters operators must manually clear glass of snow, ice or frost.
- During times of extreme cold, idling periods may be necessary for the well-being of the operator and passengers.

- 4. As part of routine maintenance, this policy does not apply to vehicles being serviced or repaired while running the engine is required.
- 5. A diesel engine while in an active regeneration cycle on its diesel particulate filter (DPF).

Accountability:

- 1. All employees who operate motorized vehicles / equipment are responsible for ensuring the vehicles / equipment are operated in accordance with this policy.
- 2. Supervisors in each department will be responsible for the adherence and enforcement of the vehicle / equipment idle free policy.

Training:

All City staff are required to participate in the City of Nanaimo's anti-idle awareness training/information sessions.

Previous Revision/s: None.

----Original Message-----

From: Webmaster

Sent: Wednesday, October 07, 2015 5:50 PM

To: Webmaster; Dept. of Parks Rec. and Environment

Subject: Request to Appear as Delegation

Natalia Kuzmyn has requested an appearance before the Advisory Committee on Environmental Sustainability

The requested date is Oct 14, 2015.

The requested meeting is: Advisory Committee on Environmental Sustainability

Presenter's information

Address:

City: Nanaimo Province: BC Postal Code: Home Phone:

Email:

Bringing a presentation: No

Details of Presentation:

A proposal to introduce voluntary vehicle idling restrictions, as well as a City-wide educational program on merits of same. The letter cites examples of ongoing excessive idling, suggests a functional by-law that would restrict vehicle idling to 10 minutes within a 60 minute period, and asks for introduction of a fine of maximum \$100 for violation.

It provides a 14 page "How To" kit to implement this plan from Natural Resources Canada, and a published article on a 2015 study by U.B.C. showing that just after two hours of exposure to diesel exhaust fumes, our DNA is altered.

In addition to my own community support signatures, I will also submit a letter of support from the Nanaimo Aboriginal Centre, signatures from Green Party's Paul Manly's office, a letter of support from V.I.H.A., and hopefully support from the Nanaimo South End Community Association.

Rob Lawrance, whom I first contacted about this initiative, said that if I also wished to present this to ACES, I should submit application via this format before 9:00 AM, Oct 09/15, in order to present at the next Committee meeting, Oct 14, 2015.

I look forward to your reply.

Natalia Kuzmyn

From: Darryl & Natalia

Sent: Wednesday, October 07, 2015 11:41 AM

To: Rob Lawrance Cc: Diane Brennan

Subject: Nanaimo vehicle idling by-law proposal

Oct. 07, 2015

City of Nanaimo

Rob Lawrance Environmental Planner

c.c. Diane Brennan Chair, Policy Development for Environment

Dear Rob Lawrance,

I thought you'd appreciate a copy of the vehicle idling by-law proposal ahead of the Oct. 14 City Council meeting, and a bit before all of the support letters are finally in.

I will provide you with the neighbourhood signatures copy, a copy of supporting signatures from Green Party's Paul Manly's office, the Native Aboriginal Centre letter of support, and a letter of support from V.I.H.A. -- which should arrive shortly -- by Mon. or Tues A.M. next week. I'm presenting to the South End Community Association tonight.

Please let me know how many copies of the proposal letter I should prepare for the City Council meeting, and whether or not they will all need copies of the Natural Resources Canada

"4 Effective Enforcement for Idling Control By-laws" document of 14 pages. It is available on line at:

http://www.nrcan.gc.ca/energy/efficiency/communities-infrastructure/transportation/municipal-communities/reports/4407

And the 2 page article on U.B.C.'s recent study: Breathing in diesel exhaust leads to changes 'deep under the hood', found at:

http://www.sciencedaily.com/releases/2015/01/150108100702.htm

Thank you for your encouragement to garner community support in this effort. I hope you and Diane Brennan both agree that the City cannot afford to wait for *plan Nanaimo*'s expectation of a vehicle turn-over to reduce GHG levels. People and businesses here are struggling to make ends meet, and far too many vehicle mufflers and engines are in need of repair. If you doubt this, spend a few hours at Fifth and Pine Streets during rush hour. These people cannot afford newer environmentally friendly vehicles. However, with a sensible by-law around voluntary vehicle idling, Nanaimo's annual 480,421+ tonnes of GHG emissions (70% of which is generated by vehicles) could be substantially reduced to help meet Provincial guidelines of reducing output to 33% below 2007 levels by 2020 and to 80% by 2050.

You can reach me at [#####]. I will also watch for email.

Respectfully, Natalia Kuzmyn Natalia Kuzmyn Darryl J. Beschell

Nanaimo, BC,

August 28, 2015

City of Nanaimo
Rob Lawrance
Environmental Planner
c.c. Diane Brennan
Chair, Advisory Committee on Environmental Sustainability
c.c. His Worship Mayor Bill McKay
c.c. City Council

Dear Rob Lawrance,

Prolonged voluntary vehicle idling in a city known as the Island hub for commercial activity is unfortunately not subject to any restrictive emissions by-law that would protect its citizens or the environment from polluting exhaust fumes.

Educating the City's own employees, though commendable, is hardly tantamount to a concerted effort to educate and protect the rest of Nanaimo, nor does it do much to reduce the balance of substantial locally generated greenhouse gas emissions.

To illustrate by example of personal experience, we cite a recent incident that often occurs across the road from our Residential area home. A full rig moving van parked partially in front of 14 Fifth St. overnight, idled its engine from about 4:30 AM till 6:44 AM, presumably to warm up the driver's cab. No work activity was going on around this Allied affiliate van. This is not an accommodating space for the length of rig. Disturbing continuous engine noise and worrisome emissions from Allied Van Lines and adjacent sites are commonplace. When residents are trying to sleep, it's most frustrating.

Our neighbours on Pine St., the opposite Residential side of the so-called Light Industrial island between us, have endured over a decade of all-hours truck activity and excessive diesel fumes, sometimes non-stop through the night, with additional similar activity from Diamond Delivery, next door to Allied. Though by-laws are in place for noise abatement and illegal use of the streets, no restrictive idling laws exist to diminish the risk to people's health, nor for the well being of the Island environment. Running an engine for actual work requirements is one thing, but voluntary idling is just senseless and disturbs both the peace and health of citizens who live in the area. A twenty year senior resident on Princess St. says he gets serious drifts of diesel fumes, while a new Pine St. young family hope that this letter will have some effect towards creating a safer place to raise their newborn son.

We're all aware of the science behind cumulative vehicle emissions. A UBC study published Jan. 08, 2015, shows that just two hours of exposure to diesel exhaust fumes cause methylation (alteration) of DNA. The carbon hydrogen coating can silence or dampen gene transcription, thus preventing protein production. The study suggests this methylation can change about 2800 different points of DNA, and affects about 400 genes.

(cont'd p.2)

(Voluntary Idling By-law, Aug.cp 28, 2015, continued)

The City of Nanaimo can appreciate that the above mentioned examples of excessive idling represent but a small fraction of all other similar occurrences. It is our hope that Nanaimo will finally join progressive BC cities such as Vancouver, the City of North Vancouver, Surrey, Victoria, Grand Forks, and the Town of Gibsons by creating a city-wide educational program and by enacting restrictive voluntary idling by-laws. The latter is essential to discourage offenders insensitive to others' discomfort, distress and right to otherwise sweet, healthy air.

The City may consider such a by-law difficult to enforce, but most by-laws have had this objection raised initially. Over time word will get out to instill city-wide consciousness. Citizens need some tool by which they can protect their health and their neighbourhoods, and the City should proudly lead in this positive step towards a cleaner, more livable place for its residents. Natural Resources Canada prepared a report called 4 Effective Enforcement For Idling Control By-laws, duplicated herein as an attachment. It is a comprehensive, step by step guide to initiate, implement and maintain effective education and compliance of municipal idling restrictions. Authorizing parking enforcement officers already on the street and in hot-spot zones is key.

Please bring this proposal to City Council with a maximum voluntary vehicle idling time not to exceed 10 minutes within a 60 minute period, punishable by a maximum fine of \$100—thereby avoiding numbers likely to contest in court.

Thank You. Respectfully,

Natalia Kuzmyn, Darryl J. Beschell,

City of Nanaimo

REPORT TO THE ADVISORY COMMITTEE ON ENVIRONMENTAL SUSTAINABILITY

DATE OF MEETING: 2015-OCT-14

ENVIRONMENTAL SERVICES SECTION AUTHORED BY:

RE: ENVIRONMENTAL SERVICES MONTHLY REPORT - SEPTEMBER 2015

ENVIRONMENTAL PLANNING AND DEVELOPMENT:

Working with the City Fleet Managers and Manger for Infrastructure and Energy on updating the City Anti-Idling and Energy Conservation Policies.

 Working with Planning and Design staff reviewing and updating Schedule D of the City Zoning Bylaw (No.4500). This schedule is used when considering additional density applications.

Met with ACES sub-committee members to discuss Environmental Framework Process.

Currently working on clarifying public engagement goals and outcomes.

 Met with students and faculty with VIU's Mount Arrowsmith Biosphere Research Institute to discuss collaborative research opportunities with Parks, Recreation and Environment.

DEVELOPMENT APPLICATION REVIEW & DEVELOPMENT REFERRALS:

Received and provided comment on three development permit area and two subdivision applications for review.

Attended one pre-application site visit for a potential watercourse development permit applications.

PROJECT / PROGRAM DEVELOPMENT:

- Vancouver Island Beggartick Plant Recovery Program: Site visit with consulting biologists and staff. Preparation of third and final plot completed in Third Street Park.
- Stormwater Engineering Standards Update: Draft Standards presented to development consultants and developers for their review and comment. Next meeting scheduled for 2015-OCT-09.
- Met with Parks Operations staff to plan for Invasive Plant Management Program: fall / winter invasive plant management projects. Met with members of the Vancouver Island BroomBusters to review last season and to begin planning for the 2016 season.

Report to ACES –2015-OCT-14
RE: ENVIRONMENTAL SERVICES MONTHLY REPORT –SEPTEMBER 2015

EDUCATION / TRAINING:

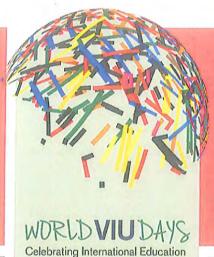
- Attended the "Introduction to Passive House Design and Construction" One Day Workshop — Parksville, B.C., on 2015-SEP-17.
- Ecological Restoration (University of Victoria) Ongoing online course.
- Community Energy Management (Community Energy Association) Ongoing online course.

ENFORCEMENT:

- 13 Calls for Service.
- Colliery Dam security and environmental liaison and permitting.
- DFO and Environment Canada reports regarding water main break.
- Departure Creek sediment trap clean out.
- Knotweed removal on going.
- Two (2) Section 9 notifications.

2015-OCT-06 File: A2-12 / A1-15

G:\Environmental Services\ACES\RptACES\2015\ACESRPT151014EnvironmentalServicesReport-September2015.docx



HAPPY CITY:Your City, Your Life

PRESENTED BY CHARLES MONTGOMERY

FREE
TUESDAY
NOV.3
7pm
SHAW AUDITORIUM
VANCOUVER ISLAND

CONFERENCE CENTER



CAN THE SHAPE OF YOUR CITY AFFECT HOW HAPPY YOU ARE?

An award-winning author and urban experimentalist, Charles Montgomery is the author of *Happy City*.

In his work, Montgomery has used insights in happiness science to drive high-profile experiments that help citizens transform their relationships with each other and their cities.











----Original Message-----From: Linda Campbell

Sent: Sunday, September 13, 2015 8:35 AM

To: Mayor Bill McKay; Bill Bestwick; Wendy Pratt; Jim Kipp; Ian Thorpe; Jerry Hong; Gordon

Fuller, Diane Brennan; Bill Yoachim; Richard Harding; Rob Lawrance

Cc: editor@nanaimobulletin.com; Trevor Johnson Subject: Wood Fireplaces & Backyard Burning

Dear Mayor Bill McKay, City Councillors, Richard Harding & Rob Lawrance,

In my opinion it's time the City passed By-Laws to ban wood burning fireplaces and backyard burning. With our growing City population this is no longer an acceptable method of heating and disposing of yard waste. It gravely affects people with breathing difficulties. Many are plagued with respiratory problems including Asthma and COPD. This primitive practice is exactly that in this present day. To further expand it causes greasy soot to float through air which is deposited on residence's vehicles, decks and outdoor furniture causing an ongoing clean-up process.

I'd appreciate it if you would give some serious consideration to change, options and ultimately improvement on these primitive practices.

Regards, Linda A. Campbell ----Original Message---From: Mari Justine Galloway

Sent: Tuesday, September 29, 2015 12:00 PM

To: Rob Lawrance

Subject: Follow up: Masters Research, Nanaimo and Climate Change

Dear Mr. Lawrance,

Thank you very much for the nice phone call yesterday. To follow up I would like to give you a little bit more information regarding my project and research.

I am a Canadian student studying a Masters of Environmental Policy and Planning at the Freie Universität in Berlin, Germany. This semester I recieved funding from the University Alliance for Sustainability for a research stay at UBC to conduct comparative research in the field of climate change.

My research falls under the larger CC-Visages project. The goal is to investigate climate change policy and coherence across multi-level governance. The final result will take the form of a 60 page master's thesis to be completed by the summer 2016. As such I would like to focus on focus on policymakers' perceptions of climate change impacts and vulnerability and compare this to the greater policy context.

Nanaimo was chosen as the case study based on the Climatological Environmental Justice Index (CEJI) and its classification as the third most vulnerable community in Canada according to the German Canadian FFU research collaboration "CC-Visages". The CC-Visages project developed a comparable human stress index (HSI) on the community level in Brazil, Canada, and Germany. Using six (6) social vulnerabilities (income, education, age, gender, migration, population density) und the Temperature Humidity Index (THI), a Climatological Environmental Justice Index (CEJI) was developed.

This study will use the Q Oracle methodology to reach its conclusions.

Around 20-30 statements will be chosen from analysis of relevant newspapers, academic journals, speeches, films and interviews with experts in the field. Then, approximately 8-12 will be chosen asked to sort these statements in order of agreeance. These rankings will be statistically analysed and then summarized into a questionnaire. There will be up to three rounds of questionnaires, which the experts will complete to see whether consensus can be reached across differing opinions. Throughout the study the answers remain anonymous, even amongst the participants as the research focus is the opinion and not the person itself that provides the information.

You can find more information regarding the project here: http://www.environmentaljustice.de/cc-visages.nanaimo.php

Please let me know if you have any questions. Also if you could send me details regarding the Committee meeting, the place and time that would be great.

Thank you very much.

Best regards,

Mari Galloway



Home

Research

About Us

Media

Impressum

CC-VISAGES in Canada (2015-2016)

Perceptions of climate change impacts and vulnerabilities in Nanaimo

Basic project information



Mari Justine Galloway

Project executive:

· Mari Justine Galloway (thesis project in environmental policy and planning master)

Project association:

The project is located at the Environmental Justice Institute. It is also associated with the Environmental Policy Research Centre (FFU) of the Freie Universität Berlin / Germany and connected to the University of British Columbia.

Project Summary

Please click here to download the project summary.

Funding:

Deutscher Akademischer Austausch Dienst (DAAD) - "Strategic University Alliance for Sustainability" program of Freie Universität; Berlin and University of British Columbia 2015-2016

Abstract

Globally, there is an unequal distribution of climate change impacts and vulnerability to climate change. However it is unlikely that the distribution of the benefits and burdens will be based on climate alone. It is well-documented that the distribution of climate change benefits and burdens on human populations are also influenced by underlying social, environmental and economic realities (Samson et al. 2011, Martins et al. 2010, U.S. Global Change Research Program 2011). Adaptation measures are put in place to reduce these vulnerabilities and build resilience. To develop successful adaptation policies it is important to understand both at the macro and micro level, a community's climate vulnerabilities and perceptions of vulnerability.

Individuals define vulnerability based on several personal and collective frames,



Research poster from Sept 28, 2015

Perceived insecurity from experienced or anticipated impacts associated with climate change will likely arise from a combination of external definitions from "experts" and internal definitions derived from psychological, social, moral, institutional and cultural processes. It will also depend on multiple social, economic and political elements, which may occur scales and speeds and which will produce very different outcomes in different communities (O'Brien and Leichenko 2010; O'Brien et al. 2004). Focusing on deepening the understanding of perceptions of climate change and vulnerability is critical to the development of inclusive models for adaptation. As such, this study aims to determine the range of perceptions in regard to climate change across the city policy network in Nanaimo, British Columbia.

Social marginalization

Nanaimo was chosen based on the Climatological Environmental Justice Index (CEJI) and its classification as the third most vulnerable community in Canada according to the German Canadian FFU research collaboration "CC-Visage". The CEJI variables are based on the Climate Stress Index (CSI) and the Human Stress Index (HIS).



Map of the climate change vulnerability in Canada

Field research and Methodology

Based on small scale representations of GIS data in Nanaimo the qualitative survey data will be obtained at the community level in Nanaimo. This will then be analysed with qualitative-quantitative methods, namely through factor analysed guideline interviews (Miles and Haberman 1994). The range of perspectives on the given topic will be sorted and the possibility of consensus will be revealed using the Q Oracle (Kaufmann 2012). Final findings will then be included in the above named GIS representations to create a public participation geographic information system map (Gosine, Teelucksingh, 2008).

Final result

Finally, a fuller picture of coherence between policy approaches to climate change adaptation and community-level policy perceptions of climate change vulnerability at the grassroots level will be identified. The research will demonstrate the consensus or lack thereof regarding climate adaptation policies and the perceived vulnerabilities to climate change impacts in Nanaimo. The final result will take the form of a 60 page master's thesis to be completed by the summer 2016.

References

Baxter J and Deacon L. (2012). No opportunity to say no: a case study of procedural environmental injustice in Canada. Journal of Environmental Planning and Management.

Beveridge R, Miewald C and Ostry A. (2011). Climate Change and Food Security in British Columbia Pacific Institute for Climate Solutions.

Carlaw K and Lee M, (2010). Climate Justice, Green Jobs and Sustainable Production in BC. Canadian Centre for Policy Alternatives BC Office.

Goldberg, M and Kerstetter S. (2007). Income Insecurity and Food Insecurity in British Columbia. Provincial Health Services Authority. Gosine, A and Teelucksingh. (2008). Environmental Racism in Canada. Edmond Montgomery Publications.

Kaufmann, G. (2012). Environmental Justice and Sustainable Development. With a Case Study in Brazilié½s Amazon Using Q Methodology. Doctoral Thesis. Freie Universitié½t Berlin. Berlin.

O'Brien, Karen L., and Robin M. Leichenko. "Winners And Losers In The Context Of Global Change." Annals Of The Association Of American Geographers 93.1 (2003): 89-103. Academic Search Premier.

- Leichenko, Robin M., Karen L. O'Brien, and William D. Solecki. "Climate Change And The Global Financial Crisis: A Case Of Double Exposure." Annals Of The Association Of American Geographers 100.4 (2010): 963-972. Academic Search Premier. Web.
- Martins, R. D., & Ferreira, L. D. C. (2010). The research on human dimensions of global environmental change in Latin America: Looking back, moving forward. International Journal of Climate Change Strategies and Management. 2(3), 264124/2280. doi:10.1108/17568691011063042
- Miles, MB. & Huberman, AM. (1994). Qualitative Data Analysis (2nd edition). Thousand Oaks, CA: Sage Publications.
- Regional District of Nanaimo Agricultural Area Implementation (2014) http://rdn.bc.ca/cms/wpattachments/wpID3260atID6829.pdf
- Rideout K, Seed B, and Ostry A. (1994). Putting Food on the Public Health Table (A Canadian Journal of Public Health / Revue Canadianne de Sante's Publique Vol. 97, No. 3, pp. 233-236.
- Samson, J., Berteaux, D., McGill, B. J., & Humphries, M. M. (2011). Geographic disparities and moral hazards in the predicted impacts of climate change on human populations. Global Ecology and Biogeography, 20(4), 532i61/2544. doi:10.1111/j.1466-8238.2010.00632.
- U.S. Global Change Research Program. (2011). Climate Change Impacts and Responses: Societal Indicators for the National Climate
 Assessment.

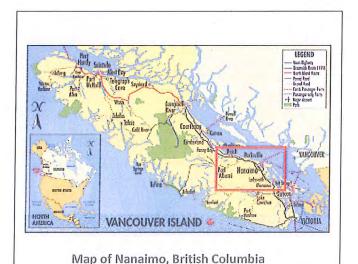
Perceptions of Climate Change Impacts and Vulnerability

Case Study // Nanaimo, British Columbia // Canada



Introduction

Globally, there is an unequal distribution of climate change impacts and vulnerability to climate change. However it is unlikely that the distribution of the benefits and burdens will be based on climate alone. It is welldocumented that the distribution of climate change benefits and burdens on human populations are also influenced by underlying social, environmental and economic realities (Samson et al. 2011, Martins et al. 2010, U.S. Global Change Research Program 2011). Adaptation measures are put in place to reduce these vulnerabilities and build resilience. To develop successful adaptation policies it is important to understand both at the macro and micro level, a community's climate vulnerabilities and perceptions of vulnerability.

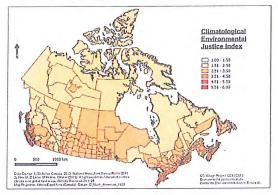


Individuals define vulnerability based on several personal and collective frames. Perceived insecurity from experienced or anticipated impacts associated with climate change will likely arise from a combination of external definitions from "experts" and internal definitions derived from psychological, social, moral, institutional and cultural processes. It will also depend on multiple social, economic and political elements, which may occur scales and speeds and which will produce very different outcomes in different communities (O'Brien and Leichenko 2010; O'Brien et al. 2004). Focusing on deepening the understanding of perceptions of climate change and vulnerability is critical to the development of inclusive models for adaptation. As such, this study aims to determine the range of perceptions in regard to climate change across the city policy network in Nanaimo, British Columbia.

Social Marginalization

Nanaimo was chosen based on the Climatological Environmental Justice Index (CEJI) and its classification as the third most vulnerable community in Canada according to the German Canadian FFU research collaboration "CC-Visage". The CEJI variables are based on the Climate Stress Index (CSI) and the Human Stress Index (HIS).

Climatological Environmental Justice Index



Map of climate change vulnerability in Canada



Map of climate stress index in Canada



Map of human stress index in Canada

Based on small scale representations of GIS data in Nanaimo the qualitative survey data will be obtained at the community level in Nanaimo. This will then be analysed with qualitative-quantitative methods, namely through factor analysed guideline interviews (Miles and Haberman 1994). The range of perspectives on the given topic will be sorted and the possibility of consensus will be revealed using the Q Oracle (Kaufmann 2012). Final findings will then be included in the above named GIS representations to create a public participation geographic information system map. (Gosine, Teelucksingh, 2008) To contribute to mutual learning at UBC and the FU the findings will be presented to both university communities.

Field Research and Methodology

13 steps to apply Q Oracle

- 1. Formation of a team to undertake and monitor a given subject.
- 2. Identifying the areas of 'discourse'
- 3. Selection of 'experts' and clustering of one or more panels. (P-set = total of all panels,
- 4. Collection of statements from literature and the P-set
- 5. Creation of a final Q sort by classification of environmental discourses (e.g. Dryzek
- 6. Q sorting by the P-set in accordance to the Q Pyramid
- 8. Interpretative analysis of conflict lines from the normalized scores and the decent
- 9. Development and transmission of the first round Delphi questionnaire
- 10. Analysis of the first round responses
- 11. Preparation and transmission of the second round questionnaires
- 12. Analysis of the second round responses (Steps 10 to 12 are reiterated at least three
- 13. Preparation of the final report by narratives of the discourses and analysis of the three rounds. (Provision of: Q sort correlation, normalized factor scores, PCA, Kendall W coefficient of concordance, free texts which can be analyzed by 'ad hoc methods' of discourse analysis)

Final Result

Finally, a fuller picture of coherence between policy approaches to climate change adaptation and community-level policy perceptions of climate change vulnerability at the grassroots level will be identified. The research will demonstrate the consensus or lack thereof regarding climate adaptation policies and the perceived vulnerabilities to climate change impacts in Nanaimo. The final result will take the form of a 60 page master's thesis to be completed by the summer 2016.

References

nende Kontor, http://www.thf-berlin.de/en/get-involved/pioneer-projects/allmende-kontor/

exter J and Deacon L (2012) No opportunity to say no: a case study of procedural environmental injustice in Canada. Journal of Environ

nning and Management veridge R, Miewald C and Ostry A, (2011). Climate Change and Food Security in British Columbia, Pacific Institute for Climate Solutions arlaw K and Lee M, (2010). Climate Justice, Green Jobs and Sustainable Production in BC, Canadian Centre for Policy Alternatives BC Office ty of Nanaimo Blog, http://www.nanaimo.ca/blog/nanaimo-s-food-strategy ements L, Chandle K and Lelie Puska, (2011) Climate change and food security on Va

oldberg, M and Kerstetter S, (2007). Income Insecurity and Food Insecurity in British Columbia, Provincial Health Services Authority.

Jointeer, wanta renserted 5, (2007). Informentating and considering the following the properties of th

Thesis, Freie Universität Berlin, Berlin.
Martins, R. D., & Ferreira, L. D. C. (2010). The research on human dimensions of global environmental change in Latin America: Looking back,
noving forward. International Journal of Climate Change Strategies and Management, 2(3), 264–280. doi:10.1108/17568691011063042
willes, MB. & Huberman, AM, (1994). Qualitative Data Analysis (2nd edition). Thousand Oaks, CA: Sage Publications.
Regional District of Nanairmo Agricultural Area Implementation (2014) http://dnb.cx.c/mrx/pyatatchments/vypl03260atl06829.pdf
wideout K, Seed B and Ostry A Putting Food on the Public Health Table Canadian Journal of Public Health / Revue Canadienne de Sante'e Publiqu

ol. 97, No. 3, pp. 233-236
farmson, J., Berteaux, D., McGill, B. J., & Humphries, M. M. (2011). Geographic disparities and moral hazards in the predicted impacts of climate

ology and Biogeography, 20(4), 532-544. doi:10.1111/j.1466-8238.2010.00632.x U.S. Global Change Research Program. (2011). Climate Chang

Masters of Environmental Policy and Planning

Introduction

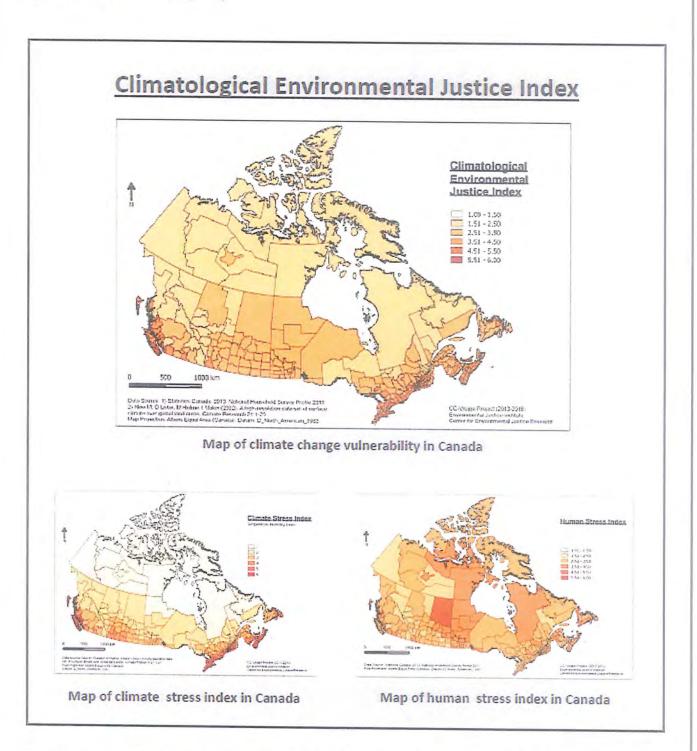
Globally, there is an unequal distribution of climate change impacts and vulnerability to climate change. However it is unlikely that the distribution of the benefits and burdens will be based on climate alone. It is well-documented that the distribution of climate change benefits and burdens on human populations are also influenced by underlying social, environmental and economic realities (Samson et al. 2011, Martins et al. 2010, U.S. Global Change Research Program 2011). Adaptation measures are put in place to reduce these vulnerabilities and build resilience. To develop successful adaptation policies it is important to understand both at the macro and micro level, a community's climate vulnerabilities and perceptions of vulnerability.



Individuals define vulnerability based on several personal and collective frames. Perceived insecurity from experienced or anticipated impacts associated with climate change will likely arise from a combination of external definitions from "experts" and internal definitions derived from psychological, social, moral, institutional and cultural processes. It will also depend on multiple social, economic and political elements, which may occur scales and speeds and which will produce very different outcomes in different communities (O'Brien and Leichenko 2010; O'Brien et al. 2004). Focusing on deepening the understanding of perceptions of climate change and vulnerability is critical to the development of inclusive models for adaptation. As such, this study aims to determine the range of perceptions in regard to climate change across the city policy network in Nanaimo, British Columbia.

Social Marginalization

Nanaimo was chosen based on the Climatological Environmental Justice Index (CEJI) and its classification as the third most vulnerable community in Canada according to the German Canadian FFU research collaboration "CC-Visage". The CEJI variables are based on the Climate Stress Index (CSI) and the Human Stress Index (HIS).



Based on small scale representations of GIS data in Nanaimo the qualitative survey data will be obtained at the community level in Nanaimo. This will then be analysed with qualitative-quantitative methods, namely through factor analysed guideline interviews (Miles and Haberman 1994). The range of perspectives on the given topic will be sorted and the possibility of consensus will be revealed using the Q Oracle (Kaufmann 2012). Final findings will then be included in the above named GIS representations to create a public participation geographic information system map. (Gosine, Teelucksingh, 2008) To contribute to mutual learning at UBC and the FU the findings will be presented to both university communities.

Field Research and Methodology

13 steps to apply Q Oracle

- Formation of a team to undertake and monitor a given subject.
- 2. Identifying the areas of 'discourse'
- Selection of 'experts' and clustering of one or more panels. (P-set = total of all panels, if any)
- 4. Collection of statements from literature and the P-set
- Creation of a final Q sort by classification of environmental discourses (e.g. Dryzek 1997)
- 6. Q sorting by the P-set in accordance to the Q Pyramid
- 7. Q analysis
- Interpretative analysis of conflict lines from the normalized scores and the decent factor array
- 9. Development and transmission of the first round Delphi questionnaire
- Analysis of the first round responses
- 11. Preparation and transmission of the second round questionnaires
- Analysis of the second round responses (Steps 10 to 12 are reiterated at least three times)
- Preparation of the final report by narratives of the discourses and analysis of the three rounds. (Provision of: Q sort correlation, normalized factor scores, PCA, Kendall W coefficient of concordance, free texts which can be analyzed by 'ad hoc methods' of discourse analysis)

Final Result

Finally, a fuller picture of coherence between policy approaches to climate change adaptation and community-level policy perceptions of climate change vulnerability at the grassroots level will be identified. The research will demonstrate the consensus or lack thereof regarding climate adaptation policies and the perceived vulnerabilities to climate change impacts in Nanaimo. The final result will take the form of a 60 page master's thesis to be completed by the summer 2016.

References

Allmende Kontor, http://www.thf-berlin.de/en/get-involved/pioneer-projects/allmende-kontor/

Baxter J and Deacon L (2012) No opportunity to say no: a case study of procedural environmental injustice in Canada. Journal of Environmental Planning and Management

Beveridge R, Miewald C and Ostry A, (2011). Climate Change and Food Security in British Columbia, Pacific Institute for Climate Solutions. Carlaw K and Lee M, (2010). Climate Justice, Green Jobs and Sustainable Production in BC, Canadian Centre for Policy Alternatives BC Office City of Nanaimo Blog, http://www.nanaimo.ca/blog/nanaimo-s-food-strategy

Clements L, Chandle K and Lelie Puska, (2011) Climate change and food security on Vancouver Island. Vancouver Island Community Research Alliance

Goldberg, M and Kerstetter S, (2007). Income Insecurity and Food Insecurity in British Columbia, Provincial Health Services Authority. Gosine, A and Teelucksingh. (2008). Environmental Racism in Canada, Edmond Montgomery Publications.

Kaufmann, G. (2012). Environmental Justice and Sustainable Development. With a Case Study in Brazil's Amazon Using Q Methodology. Doctoral Thesis. Freie Universität Berlin, Berlin.

Martins, R. D., & Ferreira, L. D. C. (2010). The research on human dimensions of global environmental change in Latin America: Looking back, moving forward. International Journal of Climate Change Strategies and Management, 2(3), 264–280. doi:10.1108/17568691011063042 Miles, MB. & Huberman, AM, (1994). Qualitative Data Analysis (2nd edition). Thousand Oaks, CA: Sage Publications.

Regional District of Nanaimo Agricultural Area Implementation (2014) http://rdn.bc.ca/cms/wpattachments/wplD3260atlD6329.pdf
Rideout K, Seed B and Ostry A Putting Food on the Public Health Table Canadian Journal of Public Health / Revue Canadianne de Sante'e Publique
Vol. 97, No. 3, pp. 233-236

Samson, J., Berteaux, D., McGill, B. J., & Humphries, M. M. (2011). Geographic disparities and moral hazards in the predicted impacts of climate change on human populations. Global

Ecology and Biogeography, 20(4), 532–544. doi:10.1111/j.1466-8238.2010.00632.x U.S. Global Change Research Program. (2011). Climate Change Impacts and Responses: Societal Indicators for the National Climate Assessment.