NVCA Climate Change Strategy and Action Plan

Stakeholder Advisory Group
Meeting 2, March 22, 2017 – Summary Document

April 7, 2017

Prepared for the Nottawasaga Valley Conservation Authority
by Georgian College, Environmental Technology Students
as part of their ENVR 3015 Stakeholder Engagement and Management Course
(Winter 2017)

Report Contents

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Introduction and Background

The Nottawasaga Valley Conservation Authority (NVCA) is developing a Climate Change Strategy and Action Plan to respond to anticipated climatic changes, and minimize the severity of the resulting impact.

The conservation authority has adopted the Local Government for Sustainability (ICLEI) Framework to complete their plan. The Climate Change Strategy and Action Plan will include the completion of all five framework milestones: initiation, research, planning, implementation, and monitor and review. To date, the NVCA has completed *Milestone 1 – Initiating the Process* and *Milestone 2 – Researching Climate Change,* and is currently working through for *Milestone 3 – Preparing the Climate Change Strategy*.

The NVCA partnered with Georgian College and students from the ENVR3015 Stakeholder Engagement and Management course to help in the preparation and facilitation of a stakeholder advisory group. The stakeholder advisory group has been formed to provide the NVCA with a broader, sector-specific range of perspectives in shaping the Climate Change Strategy and Action Plan. Specifically, the role of the stakeholder advisory group is to provide an ongoing forum for advice, feedback and guidance to the NVCA at key points during milestone 3 of the project. The first stakeholder advisory group meeting was held on February 15, 2017. **This document is a summary of the second stakeholder advisory group meeting.**

Meeting Details and Objectives

Second Stakeholder Advisory Group Meeting

Date: March 22, 2017

Time: 3:00pm to 6:00 pm

Location: Georgian College Barrie Campus, M building, Room M122

The **objectives** of the second meeting with the Stakeholder Advisory Group were to:

- Update stakeholders on the outcomes/results from advisory group meeting #1;
- Prioritize key elements of a successful climate change program for the NVCA;
- Brainstorm actions that the NVCA could undertake to address the key elements identified as priority; and
- Outline the next steps in developing the NVCA climate change strategy and action plan.

Meeting Participants

The following table summarizes meeting participants. Where an invitee was unable to attend the March 22, 2017, meeting, the notation (*invited*) is included next to the stakeholder name.

Table 1 – NVCA Climate Change Action Group Stakeholder Meeting Participants (Mar. 22, 2017)

Agency	Name
Aware Simcoe	Sandy Agnew
BILD GTA	Carmina Tupe *(invited)* Nicole MacInnis
City of Barrie	Katie Thompson *(invited)*
CounterPoint Engineering	Patrick Turner
Free Spirit Tours	Jennie Elmslie *(invited)*
Lakehead University (Orillia)	Dr. Sreekumari Kurissery
Lake Simcoe Region Conservation Authority	Hailey Ashworth
Ministry of the Environment & Climate Change	Chris Hyde
Ministry of Natural Resources & Forestry	Kate Gee *(invited)*
NVCA Agricultural Advisory Committee	Colin Elliott Jim Partridge Hugh Simpson
Simcoe Muskoka District Health Unit	Morgan Levison
Simcoe Muskoka Catholic District School Board	Glenn Clarke
Simcoe County District School Board	Jessica Kukac
Tourism Simcoe	Brendan Matheson
Town of Mono, NVCA Board of Directors	Councillor Fred Nix
Town of New Tecumseth	Rick Vatri
Nottawasaga Valley Conservation Authority	Gayle Wood Laurie Baron Fred Dobbs Chris Hibberd Heather Kepran Glenn Switzer Byron Wesson Lyle Wood
Georgian College, Environmental Technology Program	Nicole Barbato (faculty) STUDENTS: Samuel Adams, Victor Azubuike, Jordon Bloye, Joshua Cronk, Ryan Deforge, Brooklyn Dill, Christy Doolittle, Simon Fortin, Trevor Gelaznikas, Chelsea Hutchinson, David Khorsand, Avery Konda, Jessica Lawrynowicz, Michael LeClair, Justine Lunt, Danielle Marcoux, Gregory Mcgrath, Tyler Meadows, Stephanie Oddie, Marvin Patani, Nikole Priestman, Kristopher Robinson, Kyle Rossignol, Derek Switzer, Brittney Thomspon, Nathan Vajda, Tayte Van de Laar, Julie Waddell, Shaun Wakefield, Cheryl Weber, Ashley York

Meeting Overview

Welcome and Overview of Process to Date

Gayle Wood, Chief Administrative Office for the NVCA, welcomed participants to the stakeholder advisory group meeting for the NVCA Climate Change Adaptation Plan. She thanked everyone for participating and for their support, and provided an opportunity for stakeholders to reintroduce themselves. Gayle spoke about the involvement of the Georgian College students in the stakeholder engagement process and thanked them for the summary report from the first meeting. Nicole Barbato, professor for the Stakeholder Engagement and Management course at Georgian College, stated some of the outcomes and opinions received from the students subsequent to the first meeting. Some of these include the following:

- Students were surprised by the number of perspectives given and diversity of the conversation.
- Students enjoyed the hands-on opportunity of being involved in the meeting as a stakeholder/ note taker.
- Students enjoyed sharing their opinions and ideas on climate change during the meeting.

Gayle reviewed the meeting agenda, and gave an overview of the NVCA climate change work that has been completed to date:

- NVCA completed research to show that within the NVCA watershed, climate change effects are starting to occur.
    - Warmer temperatures, changes in precipitation, as well as intensity of weather events.
- The potential impacts related to climate change regarding specific elements of the watershed and climate change have been identified.
- Meeting #1 of the stakeholder advisory group focused on:
    - Identification of potential impacts related to climate change regarding communities and municipalities.
    - Defining key elements of successful Climate Change program at the watershed scale.
- Stakeholders were provided with the opportunity to review the stakeholder advisory group meeting #1- Summary Document in advance of the March 22, 2017 meeting.

Review of Results from Meeting #1

A student from each table provided a brief report of the outcomes from stakeholder advisory group meeting #1 - what might successful climate change NVCA programs look like. The following is a summary of each table's outcomes.

Table One: Rivers and Streams

Recommended that NVCA focus its energy in two areas, better management and reporting, which includes improved flood forecasting/warning programs, preparation and emergency preparedness (including low water response), increased riparian zones, no till farming (where appropriate), and drought tolerant crops in order to conserve water, and low impact development. Also, better data and communication, which involved improved education and outreach, collaboration, wide spread data collection, completing an inventory of natural assets and mitigating impacts of development on the watershed.

Table Two: Groundwater and Extreme Weather

Focused on Conservation Authority duties related to drought management, planning and monitoring. Established that climate change covers all areas of the NVCA and thus an encompassing strategy is necessary and continued monitoring, evaluation and data management is crucial. Being proactive and assessing future needs, as well as maintaining monitoring programs are important ensuring the reduction of climate change impacts. Working with municipalities to anticipate climate changes and adapt will be beneficial.

Table Three: Terrestrial/Aquatic Habitat, Shorelines and Stewardship

Recommendations focused on better data and analysis, communication and collaboration and additional stewardship opportunities. Current and future data is required to make predications when looking at floods and infrastructure impacts. IDF curves need to be updated and development/construction need to be educated on the updated IDF curves. Cooperation, communication and collaboration need to be made with local municipalities and access to data needs to be shared. Activities related to vegetative buffer strips and identifying and protection groundwater recharge areas will be important activities to address climate change impacts.

Table Four: Development Review and Floodplain Mapping

Considerations need to be made towards infrastructure, protecting water supplies and communication. Infrastructure needs to be designed in order to handle large precipitation events and decrease erosion. Water supplies need to be conserved by drawing less, as well as less being transported out of the watershed. Also, direct connections to the importance of climate change needs to be made, by communicating the importance of change in society, and producing long term goals instead of short term goals for change.

Table Five: Education and Communication

Large emphasis was put on consideration of target audience when communicating climate change, as well as enhanced risk analysis, plan development and cost considerations. The youth are the future and they need to be educated on the impacts of climate change so they can learn early and make a difference. The table felt strongly that to be successful in the face of climate change is to understand who the vulnerable sector populations may be, and adapt so that communication still occurs with them. Also, improved emergency preparedness in schools, better monitoring and preventative maintenance are important areas to focus. The table also

discussed updated mapping related to climate change, enhanced risk analysis, and infrastructure (and cost) requirements at the local level.

Table Six: Recreation and Tourism

A good understanding and communication of the changing climate is needed as well as the ability/willingness to undertake new activities. With changing temperatures and amount of precipitations, alterations will need to be made in popular activities. In some cases new activities will need to be created. Adaptation of recreation based on education and science to better understand the availability of certain species through recreational activities, (e.g., bird watching, hunting, fishing species and their seasons related to population). Education and climate change is paramount to develop communication and outreach which are key components to developing 'reasons to care'. New signage to better prepare individuals of potential risks during activities are also required.

Activity One:
Prioritizing Key Elements of a Successful Climate Change Program for the NVCA

The stakeholder advisory group members remained at the same tables as the first meeting, with the focus areas as follows:

1. Rivers and Streams – High and Low Water
2. Groundwater and Extreme Weather
3. Terrestrial and Aquatic Habitats, Shorelines and Stewardship
4. Development Review and Floodplain Mapping
5. Education and Communication
6. Recreation and Tourism

The stakeholder advisory group worked within their tables to discuss the main outcomes from the first meeting, and prioritized them so that a 'top five' was determined. A summary of the background rational for the top five priorities from each table is provided in **Appendix A**.

These priorities were transcribed onto large posters and a 'dotmocracy' session was held. Each stakeholder was given 12 dots (six green or blue indicating first choice, and six yellow or red indicating second choice). All stakeholders moved around to each table, and placed one first and second choice dot on the priorities that they felt were the most important. The total dots were tallied, narrowing the list from top five to top three. A summary of the 'dotmocracy' results are shown in Table 2.

Table 2 – Activity #1 Dotmocracy – Prioritizing Element of a Successful Climate Change Plan

Table	Top 5 Elements of Successful Climate Change Plan	Dotmocracy Ranking
Table 1 Rivers and Streams	Wide spread data collection	1 =12 2 = 13 TOTAL = 37
	Look further into permits to take water (global strategy for water taking)	1 = 13 2 = 7 TOTAL = 33
	Low impact development	1 = 9 2 = 8 TOTAL = 26
	Floodplain mapping	1 = 4 2 = 9 TOTAL = 17
	Improve low water warning	1 =1 2 =1 TOTAL = 3
Table 2 Groundwater and Extreme Weather	Continued monitoring, evaluation and data (particularly important to floodplain mapping, restoration services, drought planning, and flood management and mitigation practices).	1 = 13 2 = 8 TOAL = 34
	Training of municipalities so as next projects start, new practices are used rather than traditional practices.	1 = 10 2 = 5 TOTAL = 25
	Drought management – proactive approach to drought scenarios.	1 = 4 2 = 15 TOTAL = 23
	Consider level of involvement in low impact development (LID) (e.g. LID → allow what is required or is there a need to push for more?)	1= 6 2 = 4 TOTAL = 16
	Update/review management of conservation areas & conservation plans (e.g. invasive species management). Recreation on CA properties – issues with CA invasive species, signage to create awareness and protect patrons.	1 = 4 2 = 5 TOTAL = 13
Table 3 Terrestrial and Aquatic Habitat, Shorelines and Stewardship	Improvement of stewardship practices	1 = 13 2 = 7 TOTAL = 33
	Collaboration with municipalities/developers on low impact development	1 = 9 2 = 14 TOTAL = 32
	Better understanding of aquifers for urban planning	1 = 12 2= 7 TOTAL = 31
	Education and outreach of what is happening on climate change and what we can do.	1 = 6 2 = 8 TOTAL = 20

Table	Top 5 Elements of Successful Climate Change Plan	Dotmocracy Ranking
	Buffer zones between urbanized land and waterways	1 = 4 2= 6 TOTAL = 14
Table 4 Development Review and Floodplain Mapping	Communicate and collaborate with necessary partnerships to enact actionables.	1 = 30 2 = 8 TOTAL = 38
	Altering floodplain mapping process to represent the existing increased flooding and project future flooding.	1 = 9 2 = 10 TOTAL = 28
	Improve water supply approvals and monitoring.	1 = 10 2 = 7 TOTAL = 27
	Promote efficient and complete communities.	1 = 8 2 = 6 TOTAL = 22
	Assist in approval process for creating infrastructure to store water or allow water to flow from flood areas (i.e. Net Zero Infrastructure/LID).	1 = 2 2 = 9 TOTAL = 13
Table 5 Education and Communication	Collaborate with all stakeholders across sectors that are also completing Climate Change Strategy and Action Plans so that individual plans become a cohesive unit (build relationship across sectors).	1 = 20 2 = 9 TOTAL = 49
	Provide guidance on better urban design guidelines (environmentally friendly, LID, stormwater in school areas, rec areas, vulnerable locations)	1 = 7 2 = 13 TOTAL = 27
	Understand and respond to climate change effects on vulnerable sector populations (e.g. Low income, newcomers who are not familiar with the language, people without insurance).	1 = 6 2 = 3 TOTAL = 15
	Train educators/students so they can properly inform today's youth about climate change	1 = 4 2 = 6 TOTAL = 14
	Change/increase communication to general public to improve understanding.	1 = 6 2 = 7 TOTAL = 13
Table 6 Recreation and Tourism	Ensure that the NVCA and Stakeholders have a good understanding of the landscape	1 = 16 2 = 10 TOTAL = 42
	Trail maintenance for the adaptation of climate change. Will also help to reverse the effects of climate change damages (includes new mapping of canoe routes, signage, and planning for activities that complement the changes in weather).	1 = 12 2 = 5 TOTAL = 29
	Creation of literature and education on climate change for the general pubic (important for the development of "reasons to care").	1 = 6 2 = 4 TOTAL = 16

Table	Top 5 Elements of Successful Climate Change Plan	Dotmocracy Ranking
	Planning for climate related shifts and capitalizing on shoulder seasons (more activities based on warmer longer seasons).	1 = 3 2 = 3 TOTAL = 9
	The Introduction of new activities (such as fat biking and roller skiing).	1 = 2 1 = 3 TOTAL = 5

Activity Two:
Brainstorming actions to address the key elements identified as priorities for NVCA's climate change strategy and action plan

The stakeholder advisory group again worked among their tables (as listed above) to brainstorm specific actions that the NVCA could take in order to address the top three key elements produced from activity one. These key actions towards implementation were produced considering the SMART criteria—specific, measureable, achievable, realistic, and time related. A summary of the key actions that could be taken by the NVCA based on activity two are provided in **Appendix B**.

Wrap-up and Next Steps

A Georgian College student reported back to the larger group the potential actions that the NVCA could take for one of the top priority elements from their table. Many of the results from each table were offered up in the form of questions posed towards the conservation authority that they could take away from this stakeholder process and use in the development of their plan. The resulting questions posed in the wrap-up session are provided below in **Appendix C**.

Gayle Woods noted that the outcome of the meeting will be used to determine what activities can be incorporated to ensure the NVCA is targeting its climate change challenges efficiently and effectively. All participants were thanked for their support and cooperation, and the Georgian College students and Nicole Barbato were thanked for their time and effort in creating the summary reports and helping to plan the meetings.

Gayle indicated that once the second summary report was created, it would be forwarded to stakeholders in draft form for comments. The action plan draft will also be circulated for comment before being brought to the NVCA Board of Directors for approval.

Appendix A: Stakeholder Advisory Group Summary Notes from Activity One

ACTIVITY ONE: PRIORITIZING KEY ELEMENTS OF A SUCCESSFUL CLIMATE CHANGE PROGRAM - Rivers and Streams

Top 5 Climate Change Elements on which NVCA should focus	Supporting Rationale: Relationship to CA roles, responsibility, jurisdiction	Supporting Rationale: Application to physical CA jurisdiction, local, watershed scale	Supporting Rationale: Partnerships Opportunities
Wide spread data collection	Data collection is the Conservation Authority's (CA) responsibility.	It applies directly to the jurisdiction and is already being applied at a smaller scale to the watershed. The NVCA already collects results for water quantity and quality for nine tributaries. Based on this, it is already applied at the local/watershed scale, however it can be fine-tuned or enhanced for some subjects, such as groundwater quantity and quality	The NVCA has the opportunity to readily share data collected with other local communities, organizations, and municipalities.
Scale back water permits	NVCA does not have the authority to undertake this directly, it is the responsibility of the Ministry of the Environment and Climate Change (MOECC). However, it does relate to the roles and responsibilities of the conservation authority insofar that they try to mitigate or prevent dangerous low water conditions.	There is the possibility to establish a strategy at the local scale with the MOECC.	The NVCA would have the ability to support the MOECC.
Floodplain mapping	This is an important role of the NVCA.	It applies to their physical jurisdiction and can be applied at a watershed scale exclusively.	There is plenty of opportunity to work with other organizations which have innovative ideas/technologies, and may already have data available for the NVCA to use. Furthermore, results from this mapping can be shared with other communities.

Top 5 Climate Change Elements on which NVCA should focus	Supporting Rationale: Relationship to CA roles, responsibility, jurisdiction	Supporting Rationale: Application to physical CA jurisdiction, local, watershed scale	Supporting Rationale: Partnerships Opportunities
Improve low water warning	Lead for this program is with the MNRF (provincially). CA is responsible for local water level monitoring, and issuing low water condition statements.	This is limited to their physical jurisdiction based on the fact that water level monitoring is necessary on a watershed scale, and these warnings can be given at a local level.	The sharing of data was an important part of this element, and can be shared with partners such as municipalities who may sample base flow or groundwater sources in their areas, or other Conservation Authorities to compare their strategies with that of the NVCA.
Low impact development	Related indirectly to the roles and responsibilities of the NVCA. CA does not necessarily have the political jurisdiction as it belongs to private land owners, construction companies, municipalities, etc. Installing LIDs is very costly and sometimes difficult to incorporate. New developments have an easier time incorporating LIDs, than older developments. Placing LIDs is also very difficult as they can only be incorporated at certain slopes, depending on where the underlying water table is situated. Infiltration material plays a large role and there is a limit to how close they can be placed around buildings.	In order to implement at the watershed level, the NVCA could implement within the flood plain management strategy. NVCA could also look at recharge areas (considering land use types if promoting infiltration)	The NVCA can coordinate with construction, as well as new development in municipalities to look into possible LID locations.

ACTIVITY ONE: PRIORITIZING KEY ELEMENTS OF A SUCCESSFUL CLIMATE CHANGE PROGRAM
- Groundwater and Extreme Weather

Top 5 Climate Change Elements on which NVCA should focus	Supporting Rationale: Relationship to CA roles, responsibility, jurisdiction	Supporting Rationale: Application to physical CA jurisdiction, local, watershed scale	Supporting Rationale: Partnerships Opportunities
Support of municipalities	Yes, falls under the CA's strategic direction to provide education, awareness and expertise.	Yes, because it would be within municipalities that fall within the boundaries of the watershed	Yes, municipalities; also be opportunities to partner with MOECC and MNRF.
Continued monitoring, evaluation and data management	Yes, monitoring already falls under activities currently undertaken by the CA as well as evaluation and data management. There should be an increased recognition of drought monitoring in particular.	Yes, but there would need to be a significant amount of sharing between NVCA and neighboring CAs and associations.	Refer to previous notes.
Update and review the management of CA and conservation plans	Yes, it directly affects the day-to-day operations in addition to the long-term goals of the CA.	This is based on the CA's own functions so this would be directly within the CA's jurisdiction at the watershed scale.	Mostly related to the CA's own function but could seek to partner with private companies, municipalities or other CAs/associations in order to determine best practices for the NVCA.
Drought management*			
Consider level of involvement in LID *			

*Ran out of time for full discussion for these final two priorities. *Based on interests of the stakeholders including conservation authorities, agriculture and education, drought management and LID's were both relevant and decided upon as being priorities.

Additional Notes:

- Locally, agriculture relies on little to no irrigation and is largely reliant on precipitation, so when it comes to the impacts on agriculture and its relation to groundwater there is less of a connection. This may change in the face of severe drought situations. When it comes to severe weather events there is more of an issue. That being said, the only options that seem to be available to farmers include changing the crop or moving to a different geographic location.
- One stakeholder commented that no till farming may produce lower yields so in order for it to be a viable option, farmers would require subsidies for these losses. Another pointed out that no-till may involve lower inputs, which would offset yield losses, if any.
- Measuring groundwater quantity is an extremely important step moving forward and should be emphasized in actions taken in the future.

ACTIVITY ONE: PRIORITIZING KEY ELEMENTS OF A SUCCESSFUL CLIMATE CHANGE PROGRAM
- Habitats, Shorelines, & Stewardship

Top 5 Climate Change Elements on which NVCA should focus	Supporting Rationale: Relationship to CA roles, responsibility, jurisdiction	Supporting Rationale: Application to physical CA jurisdiction, local, watershed scale	Supporting Rationale: Partnerships Opportunities
Improvement of stewardship practices	This is an existing CA activity/program area.	This is an existing CA activity/program area.	The NVCA will have to change how/what they do as stewardship projects. (The might have to change what kind of trees they plant when doing tree planting projects.)
Low Impact Development/ Storm water management	CA is currently trying to build a small scale LID on an NVCA property. CA can be more involved in the process of low impact development.	LID considers land use impacts on waterways.	NVCA could work with developers for better storm water management. Also opportunity for giving demonstrations to builders and the public. Incentives could also be used (does not have to be monetary incentives). Could work with municipalities to find demonstration sites.
Better understanding of aquifers for urban planning	This is an existing CA activity.	Considerations of: • What could be done with the aquifer maps made? • How to plan for future developments. • Might have to work with an outside party.	Partnerships for education/outreach - especially in regards to recharge areas. Leverage existing models and recent OGS drilling/modelling work
Education and outreach regarding effects of climate change in our area.	Lead demonstrations of what climate change is doing in the NVCA watershed and what people can do about it by starting small.	See left.	Opportunity to involve the pubic with actives within the watershed. Could also partner with cities/towns to get education out there.
Buffer areas between urbanized land and waterways	Based on NVCA lands and partnerships with private landowners. (Look at buffer area information in Official Plans)	See left.	For success, need to work with private landowners. * There was discussion on need for removal/remediation of dams of private lands as a key activity. Also concern that the removal/remediation of dams can lead to possibility of warming rivers and streams.

ACTIVITY ONE: PRIORITIZING KEY ELEMENTS OF A SUCCESSFUL CLIMATE CHANGE PROGRAM
- Development Review and Floodplain Mapping

Top 5 Climate Change Elements on which NVCA should focus	Supporting Rationale: Relationship to CA roles, responsibility, jurisdiction	Supporting Rationale: Application to physical CA jurisdiction, local, watershed scale	Supporting Rationale: Partnerships Opportunities
Improve water supply approvals and monitoring	The NVCA monitors water quantity and quality already. They could be a representative for stricter water supply approvals, advocating for tighter regulations.	The improved monitoring of water supplies does fall within the physical jurisdiction of the NVCA and the water supply approvals falls to the jurisdiction of the provincial government.	Partnerships for improvement of water supply approvals and monitoring would be much more effective if the NVCA collaborated with other CAs and municipalities. Could potentially share information and techniques. Two-way communication for the sharing of information and policy creation.
Communicate and collaborate with necessary partnerships to enact "actionables"	Improved communication and collaboration is achievable through the NVCA and it is within their political jurisdiction.	This is achievable in the physical jurisdiction of the NVCA and it could be applied to the local watershed by making information available to the public and other partners. Transparency of information creates stronger relationships and trust with partners and the community.	Involving stakeholders, partners and the community to help facilitate this movement of bettering communication and collaboration. Has to have "buy in," everyone needs to be involved.
Assist in approval process for creating infrastructure to store water or allow water to flow from flood areas (i.e. Net Zero Infrastructure/LID)	Assisting in the approval process for the creation of infrastructure to store or allow water to flow from flood zones is within the jurisdiction of the CA.	Has to be implemented by infrastructure and planning departments in municipalities and townships but can be assisted by the NVCA.	Collaboration with municipalities is a must to be successful.
Altering floodplain mapping process to represent the existing increased flooding and predict future flooding	This achievable by the NVCA and is within the political jurisdiction of the NVCA. Floodplain mapping is already an integral part of NVCA's activities.	This is within the physical jurisdiction of the NVCA and will be applied at the watershed scale.	To revamp the existing floodplain mapping, funding will need to be provided to undertake the activities involved. Collaboration with other municipalities and sharing information can help facilitate the undertaking of these activities.

Top 5 Climate Change Elements on which NVCA should focus	Supporting Rationale: Relationship to CA roles, responsibility, jurisdiction	Supporting Rationale: Application to physical CA jurisdiction, local, watershed scale	Supporting Rationale: Partnerships Opportunities
Promote efficient and complete communities	The promotion of efficient and complete communities is a project that can be undertaken by the NVCA.	Promotion does fall within the physical jurisdiction by providing information and seminars to educate and promote efficient and complete communities and it is possible to implement this type of construction within the watershed.	Collaboration with neighbors in this initiative can improve the effectiveness of the promotion and encourage builders/contractors to adopt this type of construction options with increasing popularity. Work with municipal planning departments. Work with health unit, which is actively promoting complete communities.

ACTIVITY ONE: PRIORITIZING KEY ELEMENTS OF A SUCCESSFUL CLIMATE CHANGE PROGRAM
- Education and Communication

Top 5 Climate Change Elements on which NVCA should focus	Supporting Rationale: Relationship to CA roles, responsibility, jurisdiction	Supporting Rationale: Application to physical CA jurisdiction, local, watershed scale	Supporting Rationale: Partnerships Opportunities
Collaborate with all stakeholders across sectors that are also completing Climate Change Strategy and Action Plans so that individual plans become a cohesive unit (build relationship across sectors).	Yes - CA needs to be as transparent as possible when collaborating on common goals in terms of actions towards climate change.	Yes - this would apply to the physical jurisdiction of the watershed, as long as the sectors that the NVCA work with are located within the watershed. This can be applied at the local watershed scale.	CA could collaborate with other CAs, municipalities, school boards, health units,etc. and their climate change strategies. This would help ensure goals of the CA are integrated into the plans of these sectors (i.e. building new schools with mitigating aspects for flooding on property, this would be done in the planning phase of building the school. CA could communicate best practices for flood prevention)
Understand and respond to climate change effects on vulnerable sector populations (e.g. Low income, newcomers who are not familiar with the language, etc.).	Responsibility of another level of government.	Yes - understand and respond to climate change effects on those who fall within a vulnerable sector that live within the physical jurisdiction of the watershed	Yes - CA could also work with municipalities and the health unit to create programs to communicate with the vulnerable sector about climate change (or support the actions of these groups in their existing outreach). CA could improve methods of communication with the vulnerable sectors (i.e. extreme weather events). Finding different ways to communicate through language or education barriers.
Change/increase communication to general public to improve understanding.	Yes - CA would need to communicate certain aspects of their regulations with municipalities, school boards I.e. Municipalities regulate what trees should be planted but many don't survive on school grounds or would better survive in more rural environments.	Yes - communication would need to be changed to ensure that there is a general understanding across the watershed. CA needs to ensure that climate change is not being broadcast as a "world ending" problem (especially in schools).	CA could work with schools/health boards to integrate strategies they have developed into their climate change strategy or action plan. CAs could work on communicating strategies in extreme weather events with the public.

Top 5 Climate Change Elements on which NVCA should focus	Supporting Rationale: Relationship to CA roles, responsibility, jurisdiction	Supporting Rationale: Application to physical CA jurisdiction, local, watershed scale	Supporting Rationale: Partnerships Opportunities
Train educators and students so they can properly inform today's youth about climate change	Responsibility of another level of government.	Yes - can be applied at the local/watershed level.	Could work with school board, organization and government to develop training programs. Local organizations can create training programs; these training programs could be integrated into programs for teachers.
Provide guidance on better urban design guidelines (environmentally friendly, LID, stormwater in school areas, rec areas, vulnerable locations) *** Note: the stakeholders working on this section agreed that while this in an important part of addressing climate change, it does not fit under "education and communication".**	Yes – ability to share data, maps and other resources.	Yes - this would apply to the physical jurisdiction of the Nottawasaga Valley watershed.	Yes - work with municipalities to gather information on urban design guidelines as well as to gain information on the status of current urban design and structures.

ACTIVITY ONE: PRIORITIZING KEY ELEMENTS OF A SUCCESSFUL CLIMATE CHANGE PROGRAM
- Recreation and Tourism

Top 5 Climate Change Elements on which NVCA should focus	Supporting Rationale: Relationship to CA roles, responsibility, jurisdiction	Supporting Rationale: Application to physical CA jurisdiction, local, watershed scale	Supporting Rationale: Partnerships Opportunities
Creation of literature and education on climate change for the general public (important for the development of "reasons to care").	Yes, as they have education programs and outreach initiatives that will be affected by climate change impacts.	Yes, because they have reason to educate the people living in the watershed as well as the students and people that come to their properties.	There are as they could work with lots of local organization to improve awareness and education.
Trail maintenance for the adaptation of climate change. Will also help to reverse the effects of climate change damages (includes new mapping of canoe routes, signage, and planning for activities that complement the changes in weather).	Due to liability and safety • Trail maintenance • Upkeep • Signage Also a component of CAs education role.	Yes, related to CA owned property and facilities.	They can work with other organization such as tourism groups and NGOs to help educate people and maintain private land and CA properties.
Planning for climate related shifts and capitalizing on shoulder seasons (more activities based on warmer longer seasons).	To better provide information and ensure safe trails, facilities and activities in the watershed.	Yes, related to CA owned property and facilities.	They can work with other organization such as tourism groups and NGOs to help educate people and maintain private land and CA properties. (Tourism Barrie (and their Lake Simcoe Project) and Tourism Simcoe are potential partners.)

Top 5 Climate Change Elements on which NVCA should focus	Supporting Rationale: Relationship to CA roles, responsibility, jurisdiction	Supporting Rationale: Application to physical CA jurisdiction, local, watershed scale	Supporting Rationale: Partnerships Opportunities
The Introduction of new activities (such as fat biking and roller skiing).	Related to: • Safety • Public/User Education • Promotion of activities • Reuse of lands • Regulations	As the climate changes people will want to do new activities on properties, and the NVCA should understand potential and more forward with them.	Working with other recreation facilities and other key players
Ensure that the NVCA and Stakeholders have a good understanding of the landscape (This was ranked by the group as a number one priority but it was ranked by tables as number 5)	Related to the capacity of the watershed (people at one time) Take into consideration changing factors (i.e. season, temperatures, weather)	"Capacity" mostly relates to development of lands. "Capacity" could also relate to more people coming to visit CA properties and the need to limit access due to potential damages to the natural area because of excessive use.	They could work with NGOs and tourism to improve the understanding of land use. Also partnerships could be made to provide help when things get busy and they need people to support communication initiatives.

Additional Notes:

- **Carrying Capacity** should be on the list – How many tourists can you get into one area of a park or forested landscape before it becomes a negative impact on the environment. This relates to climate change though water usage and its increase through demand dependent on the number of tourists. Additionally, social attitudes towards water can lead to changes in water use habits could lead to reduction of water use. It was also noted that the NVCA does have a simulative capacity report, which means that they report on how many people can be put into a forested area before it causes negative ecological effects.

Appendix B: Stakeholder Advisory Group Notes from Activity Two

ACTIVITY TWO: BRAINSTORMING ACTIONS TO ADDRESS THE KEY ELEMENTS IDENTIFIED AS PRIORITIES FOR NVCA'S CLIMATE CHANGE STRATEGY AND ACTION PLAN

- Rivers and Streams

Top Priority Elements	Key actions towards implementation (note: areas underlined were unique to only a few stakeholders at the table)
Data Collection	• Expand on current programs to collect more data, such as NVCA stream gauges (nine main tributaries), and the benthic invertebrate monitoring systems. • The current weakness in data collection/monitoring for the CA is groundwater. Very little is known about the aquifers in the area due to lack of monitoring sites. Increased focus from the CA, as well as partnering with municipalities to share well data would be a prominent action towards implementation. Another key point for groundwater vulnerability is the need to measure quality more than once a year, and to adapt to emerging threats, such us rapidly increasing salinity. In order to effectively do this, prioritization of data is necessary. • Shifting focus to emerging issues is an important step towards focusing on climate change, so collecting data with the purpose of developing mitigation efforts is key. • Look at and compare with municipal data.
Study Further into Managing Permits to Take Water	• The Rivers & Streams group assessed the NVCA's efforts towards surface water protection and deemed it beyond thorough. • However, the Conservation Authority should continue to look into quantitative restrictions based on sector (i.e. rated by importance of use). Applying a monetary penalty for overages would be an effective way of dealing with this. • Another point raised was of the consistency and uniformity of surface water measurements (i.e. how these are dealt with across multiple municipalities). • Additionally, the following should be included for agricultural practices: take water primarily at night, build storage reservoirs so that water can be drawn during times of high water and reserved for times of low water, identify and protect the minimum water levels required in both ground and surface water, convert where possible to drought resistant crops, and finally work together with the sector to protect water resources.

Top Priority Elements	Key actions towards implementation (note: areas underlined were unique to only a few stakeholders at the table)
Low Impact Development (LID)	• The group largely agreed that the NVCA should approach this element from a perspective of further study. This would include assessing the cost of maintenance of the LID structures, setting up monitoring programs of the impacts/positives of LID, looking at what sources of water should or should not be infiltrated given land use, and also considering LID as a water balance puzzle (in which not every drop of water must be reinserted back into the ground, but the summation of total expected infiltration should equal out over an extended time scale). • Furthermore, there are water balance issues in pre-development compared to post-development. • Utility subsidies should be offered for LID buildings and neighbourhoods, and better methods of pre-treatment of water should be investigated (particularly identifying better ways to store water, prioritize a monitoring program for quality and quantity, and standardization should be developed). Note - Conservation authorities do not collect utility fees, so this action may be better suited for municipalities, etc. • Finally, developments should not have to meet requirements immediately, but should increase in sustainability over time, and slowly work to meet goals. (*Note: should consider goals/direction of MOECC and other policy makers in this regard.)

ACTIVITY TWO: BRAINSTORMING ACTIONS TO ADDRESS THE KEY ELEMENTS IDENTIFIED AS PRIORITIES FOR NVCA'S CLIMATE CHANGE STRATEGY AND ACTION PLAN

- Groundwater and Extreme Weather

Top Priority Elements	Key actions towards implementation (note: areas underlined were unique to only a few stakeholders at the table)
Supporting and providing information to municipalities so that when the next projects come around, new practices are used rather than traditional practices. This includes communicating that new practices have economical value.	Provide more frequent information to the stakeholders and allow them to react to issues with a more informed and up to date knowledge. • This may include sending stakeholders monthly or quarterly pamphlets or emails in order to keep them informed or the use of the data portal. • Reaching the Agricultural community raises some issues that may be difficult to address as farmers tend to be busy and may not always have time to attend meetings. Farmers do hold their own farm groups where they can bring ideas they receive from the NVCA to their entire agricultural community. As well as raise concerns about ideas they receive from the farm group. A representative of the Agriculture community asked to be invited to more NVCA meetings in order to be more informed. In order to inform both agriculture and municipalities the NVCA can look into less formal ways to provide information such as lunch and learns where stakeholders can enjoy the food and still be supplied with all the necessary information and address their concerns. The public also needs to be informed on the issues at hand. • Educating the public on issues such as water consumption and how they can better preserve the water and there may never be a need for the three tiers of low water response plans. Offer" lunch and learns" or other casual atmospheres which do not feel like "training".

Top Priority Elements	Key actions towards implementation (note: areas underlined were unique to only a few stakeholders at the table)
Continued monitoring, evaluation and data management is crucial. This is particularly important when it comes to floodplain mapping, restoration services, drought planning, and flood management and mitigation practices	The greatest opportunity to address climate change is with continuous monitoring of elements in which can be quantified and show a change in the environment. With this monitoring one can come up with more accurate predictions as to what may happen during more intense storm events. Learning from the past can only benefit the future. • Identify aquifer volume and size. • Continue source protection through ongoing monitoring. The NVCA can implement a more transparent data log similar to that of the LSRCA. The LSRCA has a data portal which is used to show its monitoring data to other conservation authorities as well as the public or anyone else of interest. This idea of developing a data portal will allow conservation authorities to examine other conservation authorities' data on a regular basis in order to determine if they are experiencing similar changes or issues in the relative area.
Drought Management	Activities should focus on being proactive by formulating a plan. Complete proactive education on water conservation (i.e. lower water uses, become more conservative in water uses, etc.). Adjust current drought analysis/management activities – for example there is a currently a 3 tier low water response framework in place and in most years don't see low water conditions above the indicators for a level 1.

ACTIVITY TWO: BRAINSTORMING ACTIONS TO ADDRESS THE KEY ELEMENTS IDENTIFIED AS PRIORITIES FOR NVCA'S CLIMATE CHANGE STRATEGY AND ACTION PLAN

- Habitat, Shorelines and Stewardship

Top Priority Elements	Key actions towards implementation (note: areas underlined were unique to only a few stakeholders at the table)

Adapting of Stewardship ideas	• Expand forestation and riparian vegetation zones.
	• Improve recharge area management (Keep in mind *Planning Act*).
	• Manage 1200+ private dams located within the NVCA watershed (modify private dam infrastructure).
	  o Understand where the possible trouble dams are located within the NVCA watershed (Important with rising and significantly low water levels due to climate change)
	  o Locate how many of the private dams located within the NVCA are not structurally sound (Important due to the policies and washout possibilities due to climate change)
	  o Educate private dam owners located within the NVCA on the importance of both quality and quantity of water as well as their dams' impacts on these 2 important factors.
	• Mitigation measures for invasive species.
	• Improve water recharge areas with incentive based approaches.
	• Develop an asset management plan.

Better Understanding of Aquifers	• Enhance understanding of local aquifers and threats to them through groundwater quality/quantity monitoring. • Practice existing stewardship to increase understanding of aquifers. Recognize importance of individual aquifers and connections between environmental features and aquifers. • Complete studies to have better understanding of aquifers role to climate change. • Expand knowledge on subsurface geology and its effects on aquifers. Continue partnership with OGS.
Collaboration with municipalities and developers for Low Impact Development (LID) implementation	• Demonstration sites for education purposes recognizing that when communities identify actions as priorities we can begin to see change (i.e. Community wants = change). • Utilize existing Provincial power (i.e. Provincial Policy statement direction). • Educate the public and others on how LID can be beneficial to the watershed.

ACTIVITY TWO: BRAINSTORMING ACTIONS TO ADDRESS THE KEY ELEMENTS IDENTIFIED AS PRIORITIES FOR NVCA'S CLIMATE CHANGE STRATEGY AND ACTION PLAN
- Development Review and Floodplain Mapping

Top Priority Elements	Key actions towards implementation (note: areas underlined were unique to only a few stakeholders at the table)

Communicate and collaborate with necessary partnerships to enact actionables.	• Identify challenging stakeholders and prioritize engagement with them
	  o *Build successes and find easy/quick wins; Gather 'apostles' to get more difficult stakeholders to partner with the NVCA to gather credited high level individuals to convince the stakeholders who are less likely to engage.*
	• Develop key messaging – this must include tailoring different messages for different groups/stakeholders/demographics, etc.
	  o *People are more influenced by people they identify with (i.e. social media stars, celebrities, etc.)- sometimes even more than family*
	• Consider rand of engagement opportunities:
	  o Partnerships found by attending meetings with higher levels of companies
	  o Social media is better for reaching out to the public
	• Consider partnerships for funding
	• Branding
	• NVCA needs to act less as a regulator/authority, and more as a facilitator

Improve flood mapping to represent existing and projected flood trends	• Create a safe spot for challenged stakeholders • Make information more accessible • Build trust with partners/stakeholders • *Create partnerships that have a monetary component to help with flood plain mapping to achieve more specific information/data, more equipment for mapping, and more infrastructure creation.*

Promote efficient and complete communities	• Get partnerships for funding
	  o *Promote economic benefits (tax breaks)- lower long- term costs*
	  o Lobby for more incentives
	• Prioritize certain areas
	• Research
	• *Create a database with information that is trusted for stakeholders to use on a regular basis (Will increase stakeholder willingness to engage)*

ACTIVITY TWO: BRAINSTORMING ACTIONS TO ADDRESS THE KEY ELEMENTS IDENTIFIED AS PRIORITIES FOR NVCA'S CLIMATE CHANGE STRATEGY AND ACTION PLAN

- Education and Communication

Top Priority Elements	Key actions towards implementation (note: areas underlined grey were unique to only a few stakeholders at the table)
Collaborate with all stakeholders to ensure information is communicated to all sectors.	• Develop a Climate Change action group from multiple organizations that are making climate change strategies (Regional Climate Change Working Group). • Identify what forms of collaboration are possible with stakeholders/partners. • Identify other groups that would be able to help spread the message (i.e. Church groups, schools, organizations).
Understand and respond to climate change effects on vulnerable sector populations	• Identify vulnerable sectors for each climate change outcome (i.e. drought, flooding. etc.) o Figure out how to prioritize sectors during different circumstances o Figure out the best way to communicate with each sector • Identify the needs of each sector and develop actions for each climate change outcome • Create maps indicating where each sector is located and using GIS tools do spatial statistics to see if there are any patterns or hotspots • Note that health unit has been very active in this area, and will be releasing a report, mapping, etc. in the near future.

ACTIVITY TWO: BRAINSTORMING ACTIONS TO ADDRESS THE KEY ELEMENTS IDENTIFIED AS PRIORITIES FOR NVCA'S CLIMATE CHANGE STRATEGY AND ACTION PLAN

- Recreation and Tourism

Top Priority Elements	Key actions towards implementation (note: areas underlined were unique to only a few stakeholders at the table)

Adaption
 	
Adapt to changes and advise through signage, and planning for activities that perhaps compliment potential weather changes.
 	
Trail management will also be required to ensure health & safety and to prevent liabilities
	• Development of Educational Program
	  • Implementing social media, community outreach and collaborations with all industries, sectors and departments – get the message across to everyone.
	  • Recommendations
	  ▪ Document pieces specific to climate change
	  ▪ Informing people at home – this approach is more generalized knowledge then specific to area or activity.

Education
 	
Creation of literature and additional education for all the general public and specific industries related to climate change for the tourism and recreation sectors
	• Creating literature for recreation specific sectors – i.e. trails, parks, and beaches
	  • More specific to safety and caution as well as expectations and risk potential pertaining to specific recreational activities and areas (e.g. Signage Policy & Strategy)
	
	• *Literature should be unique to each activity being facilitated or to specific recreational factions*
	  • *Updated paddling maps for emergency response*
	  • *Wilderness guides, handbooks, and tips*
	  • *Maintenance plans*
	  • *NVCA can potentially work and collaborate on strategies with tourism and recreational sectors and associated industry members.*

Top Priority Elements	Key actions towards implementation (note: areas underlined were unique to only a few stakeholders at the table)

Adaptation / Mitigation
 	
Ensure that the NVCA and Stakeholders have a good understanding of the landscape. Incorporate our previous steps to better understand availability of activities, resources and carrying capacities of our watershed including landscape and water resources that we use recreationally
	• There should be a carrying capacity standards developed for each of the natural features NVCA wishes to preserve within its watershed.
	  • Example 1: Wasaga Beach - how many tourists can be allowed before the water quality is affected?
	  • Example 2: Bruce Peninsula – currently dealing with trail systems overuse & ecosystem damage
	  • Long-term changes are not being monitored adequately enough for efficient response therefore more monitoring and data collection is needed as a way to increase response measures ensuring a quality watershed.
	  • Developed standards to ensure sustainable recreational use of the environment within communities.
	
	• Partnerships ensure that the overall availability of resources, activities and carrying capacities are carefully and collectively assessed and prioritized.
	  • Literature, education and broader understanding of what is available in the region should be advocated for, to ensure sustainable use by both resident and tourist alike. Activities and resources of our natural landscape features are important to consider together for both tourism and the economy, (ex. Bruce Peninsula, Oak Ridges Moraine, Wasaga Beach, Collingwood Caves, Horseshoe, etc.)
	  • Understanding that not all sports will be available during the typical seasons and adapting to activities that better suit the weather (and unpredictability of it) and to ensure that expectations are managed. This will require the input from local organizations, sporting groups, etc.
	  • *IMBA is the International Mountain Biking Association that specializes in outsourcing training programs. By using organizations like this, clear direction can be provided to truly understand how to ensure sustainable trail maintenance and production as well as performance related targets for people interested in the sport. Organizations like this can help develop standards about availability of local trails through the changing seasons*
	  • *Friends of Copeland Forest have excellent programs and initiatives that the NVCA can draw ideas from about facilitating adaptation through examples they have already implemented through their organization*

Top Priority Elements	Key actions towards implementation (note: areas underlined were unique to only a few stakeholders at the table)

Adaptation / Mitigation
 	
Ensure that the NVCA and Stakeholders have a good understanding of the landscape. Incorporate our previous steps to better understand availability of activities, resources and carrying capacities of our watershed including landscape and water resources that we use recreationally (CONTINUED)
	• Fulcrum – a monitoring program suggested to be adopted by the NVCA, residents, tourists or both.
	  • Parks Canada came to Georgian College Barrie Campus for a GIS presentation where she shared her knowledge about a program called Fulcrum. Fulcrum is a program that costs $25/month and is available for any organization to use. The program allows you to fit criteria into a database that is user friendly and allows observational data to be recorded and stored. Data is also able to be exported at no additional costs. Parks Canada currently uses the program.
	  • This could be a way to prioritize landscape features and their worth to residents
	  • This is a method that could be used to document observations related to the landscape and its ecosystems
	  • This could be a method to simply record recreational use by tourists while in the watershed boundary
	
	• *The Planning Act related to tourism aims to reduce the amount of transportation used to ensure tourism is not unexceptionally contributing to the combined GHG emissions and expected targets of the provincial government. This is a mitigation effort for this element.*
	  • *Advocate for more GO transit stops and better schedules.*
	  • *Potentially requesting a GO transit drop off site at the NVCA centres*
	  • *Promote that more stops be available in more northern regions to encourage shared transportation methods (ex. Bus or train)*
	  • *Expand provincial and municipal partnerships*

Appendix C: Stakeholder Advisory Group Notes from Report Back and Next Steps

Stakeholders' Final Questions

Response Category	Point Provided by Group Lead
Communication and Information	How can the NVCA change its "brand" so that it is viewed as more of a public interface by the community member whom it serves?
Communication and Information	Can the NVCA provide/facilitate more community-level information sessions (e.g. Lunch n' Learns) to increase awareness about potential/current climate change impacts, as well as the policies in place to protect against it?
Communication and Information	Can the CA begin to invite more input from important sectors that could use increased attention, such as agriculture or the education sector?
Communication and Information	How can the NVCA begin to create/encourage more on-site education programs (i.e. recreation & tourism sites) to provide information in regards to the unique hazards and risks that climate change poses on outdoor recreation? For example, consider flooding risk increases at many popular tourism destinations.
Communication and Information	How can the NVCA use its knowledge of dams to champion an outreach to owners of private dams in the rivers and streams within this watershed with the purpose of educating them on the effects/challenges of dams on natural ecosystems?
Communication and Information	Assess need for an additional communications staff to support climate change plan implementation.
Data Collection and Management	How can the CA begin to prioritize the data that it has or wants to collect? How can it determine what data needs to be collected, where it needs to be collected and for what purpose. This may aid in determining allocation of resources to potential projects.
Data Collection and Management	Need for communication/work with other stakeholders so that groups are not collecting data that is already being collected.
Data Collection and Management	Is it possible for the CA to construct better partnerships with relevant municipalities to spur increased data and information sharing, lessening the load that the NVCA has to undertake on its own.
Assorted Actions	What can the organization do to adapt to/mitigate invasive species on a local level? For example, can a tailor made solution be created for the unique threats posed within NVCA watershed?
Assorted Actions	How might the CA approach adapting to vulnerable sector needs in a changing social landscape? How will it prioritize sectors in need (drought, flooding) while considering increasing issues with language and cultural barriers?
Assorted Actions	From the question posed above, can the CA develop a map of these vulnerable sectors while also highlighting risk needs?

Appendix D: Additional Comments

The comments below were received after the meeting.

Carry Capacity – One stakeholder commented that the carrying capacity of the land should be underlying concern for all elements of the climate change strategic plan, saying "we must set limits to growth and those limits should be based on the science information collected by NVCA and other agencies."