

Day, Kristin ENV:EX

From: Sanford, Donna L ENV:EX
Sent: Wednesday, December 12, 2012 10:44 AM
To: Moreau, Denise ENV:EX
Subject: Pembina GreenLearning: Progress/Status reports
Attachments: GreenLearning - EnerAction report June 2007; Re: GreenLearning meeting in Victoria June 18th 10am; Report now complete with Financial Summary; Sponsors Phone Conference & GreenLearning Quarterly Report July to Sept 2007

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Day, Kristin ENV:EX

From: Johan Stroman [johans@pembina.org]
Sent: Tuesday, June 12, 2007 9:11 AM
To: Sanford, Donna L ENV:EX
Subject: GreenLearning - EnerAction report June 2007
Attachments: EnerAction Report_June 2007 final JS.pdf

Hi Donna,

Please find enclosed the June report on EnerAction for 2007. If you have any questions, I would be happy to address them by phone this week or when we meet this coming Monday.

Best,

Johan

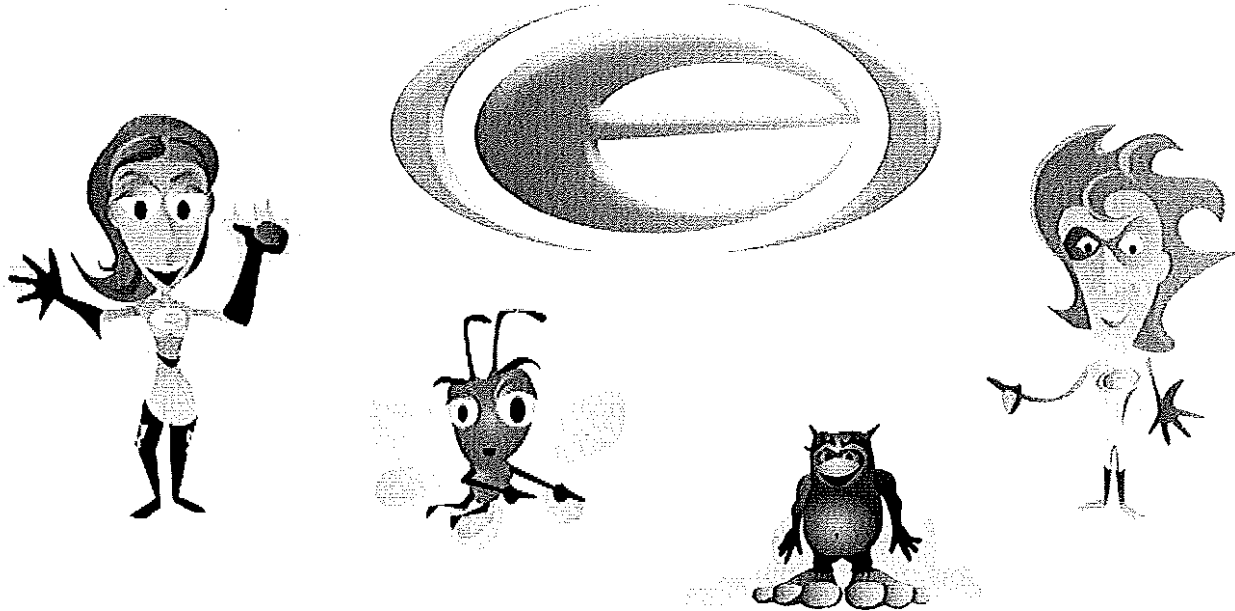
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BC EnerAction Project Report



June 2007

Prepared by Johan Stroman, BC GreenLearning

Calgary • Drayton Valley • Edmonton • Ottawa-Gatineau • Vancouver

GreenLearning is a project of the Pembina Foundation • www.greenlearning.ca

Executive Summary

EnerAction is a multi-faceted, integrated Grade 4 to 7 education resource that supports student awareness, understanding and action on energy and environment through participative, critical and reflective learning approaches. EnerAction incorporates an online carbon calculator for students with a lighting focus; a set of thorough lessons matched to specific learning outcomes in BC and ON curriculum; a results tracker for teachers to track student savings; and, downloadable backgrounders and additional relevant energy and environment resources for teachers and students. EnerAction was developed through use of current environmental educational literature, a series of participative focus groups with teachers and education specialists in BC and analysis of grade specific provincial learning outcomes.

EnerAction workshops held in April 2007, reached 87 BC public school teachers and another dozen ON teachers all of whom responded very positively to the workshops and the EnerAction resource content. Several teachers in BC and ON are now piloting the resource with their students and have reported back very favorably on the EnerAction teaching resource (teachers guide and lessons), student responses to the content and approach of the learning materials and have added invaluable input on use of the resources in the classroom.

EnerAction is slated for fall province wide launch in BC in the form of workshops, printed Teachers Guide and lessons, an interactive carbon calculator for use with lighting and a data-tracker for teachers to track classroom energy savings. Teacher input from workshops and piloting in BC and ON will be incorporated in this final version of EnerAction to ensure the highest quality possible. Curriculum coordinators in several BC school districts have responded positively to requests to have the resource workshopped at the district level. In BC, three GVRD school districts have already begun making arrangements to support professional development workshops for teachers to familiarize themselves and begin use of the resource this fall.

Based on the very strong positive response from BC and ON teachers to this resource, the development of additional missions to complement the current *Lighting* mission with their own carbon calculators and mission specific lessons is both timely and appropriate given the growing Canadian public interest and concern with climate change and energy use combined with teacher demand for high quality, thorough and flexible teaching resources on these topic areas.

EnerAction Project Resource

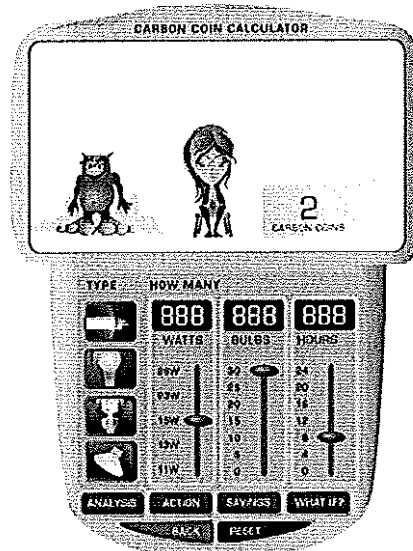
GreenLearning has developed integrated teaching resource for teachers to engage Grade 4 to 7 students in fun and participative Energy and Environment focused education. The resource includes: 12 lessons spanning and matched to four core intermediate courses (Science, Social Studies, Math and Language Arts); an interactive and intuitive webtool for students to use and see how electricity use and carbon emissions are connected; a results tracker to allow teachers and select students to input data and see how their school compares with others in Canada; downloadable PDFs of basic carbon calculator math to support teachers wishing to explore math side in a neat, structured and applied manner; and an online access point for teachers to find six backgrounders (written to suit Grade 5 students), search lesson materials and find other relevant Energy and Environment resources.

Both the lessons and web tool are framed on six core principles – called Enduring Understandings (EUs), which are drawn directly from the respective curriculum guidelines and shaped through critical key questions. These include:

1. The sun as the primary source of energy on earth for all living things
2. Our need for energy in all aspects of our lives
3. Renewable and non-renewable energy sources
4. The limits to energy sources and uses
5. Solutions and choices we can all make,
6. Responsible use and teaching others about why they should and how they can make changes to their own energy uses.

The first **EnerAction** mission centers on electricity use (Lights) while exploring diverse ideas such as building a better light bulb and designing a home of the future to sources and choices of energy and reflecting on our their energy ethics. Students have an opportunity to explore their ecological footprints and to play with different types of energy.

EnerAction is designed to support student awareness, understanding and action on energy and environment. Critical and reflective thinking are encouraged within each



lesson and is embedded in the Enduring Understandings as well. The use of student journals is supported and encouraged with links to recent journaling articles.

EnerAction uses engaging place-based, direct experience and reflective classroom approaches for multiple learning styles. The **EnerAction** project includes several lesson threads allowing teachers to choose learning methods best suited to their students' learning styles, preferences and interests.

Resource Development

GreenLearning developed this resource with reference to published documents, latest pedagogical innovation and best practices; teacher focus groups and feedback and evaluations from teachers in our BC teacher workshops in April 2007. The BC Ministry of Education Environmental Concepts in the Classroom document (ECC) and other recent publications on effective Environmental Education practices were consulted. Three BC focus groups were held in January and February and another in October of 2006. These meetings provided key input in supporting web tool functionality suitable for teachers and students to use. It also permitted 25 teachers and educators opportunities to help craft content which they felt is needed to support more effective Energy and Environment education programming in BC. Student input from two grade 5 classrooms on graphic elements supported the most visually compelling design possible. In combination with a focus group held in Ontario in January the teacher meetings have supported curriculum development that is student centered, age appropriate and honours the input of working professionals in the classroom. Teacher feedback from these focus groups was very positive: *"Well presented, thoughtfully planned and well paced"*, *"Nice building of activity themes by the whole group"*, and *"I liked the structure and the opportunity to break out of the grid to identify areas of interest"*.

Integrated Lessons

EnerAction lessons were designed to cover several Enduring Understandings while also addressing different learning styles for students. Each lesson is framed similarly and includes:

"The Big Idea": a brief summary of what the students will do

Subject area focus: what curriculum subjects are explored,
Specific curriculum links in BC and Ontario for grade 4 to 7

Time required (usually in a range)

Learning objectives for students

Learning styles that match the lesson and

Student skills that emerge from the lesson

Many of the lessons can be completed outdoors, which teachers are encouraged to do.

Also included are

Backgrounders: with links for teachers and their students on lesson related EUs

Additional Questions: for further discussion, reflection or journaling

Adaptations and Extensions: ideas for how to extend or adapt explorations and reflections for students

Criterion based reference tables for assessment: suggested structures for assessing curriculum content covered.

To complement the lesson plans developed through EnerAction, we have also provided references to learning materials from other organizations (see Table 4 in the Programming Planning references below) that teachers may find helpful.

The lessons developed include:

Lesson No. & Title	Enduring Understandings					
	1 - The Sun Earth's Energy Source	2 - Meeting our Energy Needs	3 - Energy Sources	4 - Limits to Energy Use	5 - Solutions and Choices	6 - Responsible use
1. Playing with Energy						
2. Ecol Footprints and Energy						
3. Energy Use Drama						
4. Changing Our Ways						
5. Build a Better Bulb						
6. Sources & Choices						
7. Wind all around us						
8. BC's New Energy Plan						
9. Lighting at School (webtool)						
10. Design the House of the Future						
11. Explore your Energy Ethics						
12. Energy Quotes						

Lesson 9 provides students and teachers a structured approach to consider their current use of electricity in school, to brainstorm ways to address their use of energy, support choosing and implementing action plans (as a class, individually and in smaller groups) and then using the Webtool and Results Tracker to measure and celebrate their success. The lessons developed provide many opportunities for students to reflect and critically consider questions¹ related to Energy sources, Energy choices and Responsible Use (i.e. taking action). The two lessons highlighting BC's new Energy Plan as well as Wind Energy are in completion stages.

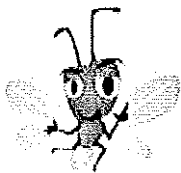
¹ See Appendix A.

Carbon Calculator Webtool

The interactive carbon calculator supports teachers and students making the connection between energy use and carbon emissions in a direct and tangible manner. Using coefficients that reflect emission levels current as of fall 2006, each province and territory generates different values. User prompting for what region in Canada is being considered provides the basis for critical reflection in Lesson 9 Lighting at School and at other points in the curriculum. The online component on energy awareness supports teachers and students understanding of energy, carbon and costs savings. The Flash programming employed uses a backward compatible version that enables BC schools with both current and older computer systems to engage this online resource. To support and reinforce student learning of the connections between Lighting choices and carbon emissions, a series of attractive, easy-to-use and student friendly calculation sheets, permit students to work through the steps and functions of the carbon calculator by hand.

Webtool Flow

The **EnerAction** webtool prompts the user to select a Canadian territory or province before beginning use of the calculator.

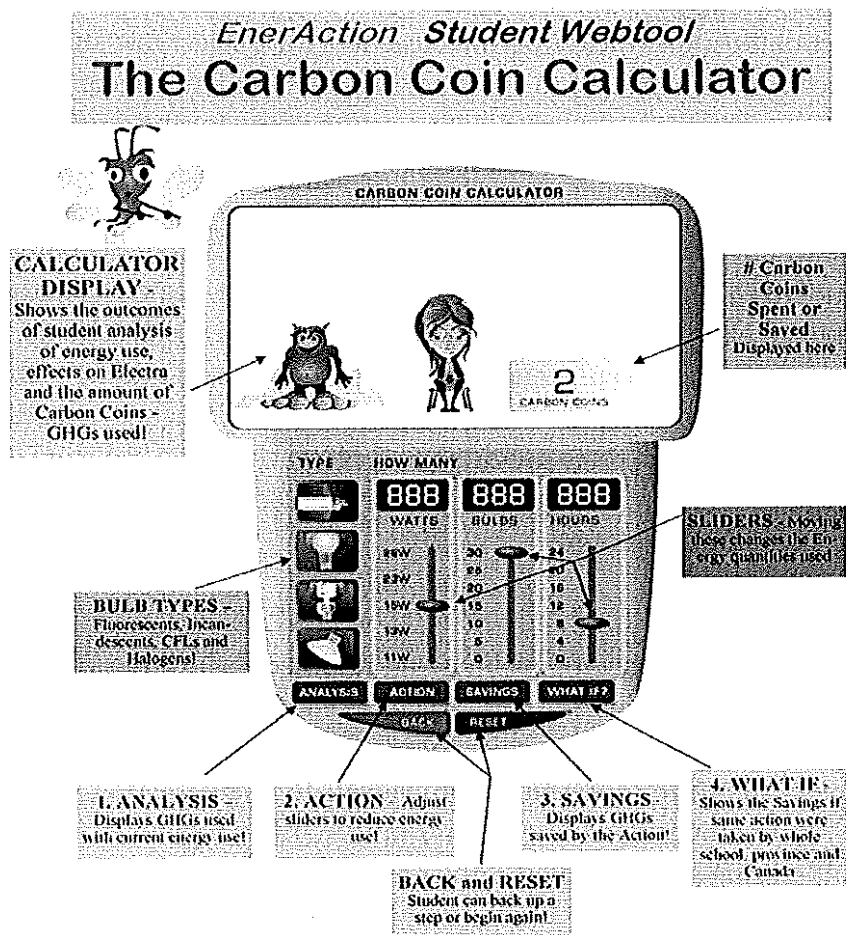


After a brief introduction to Electra, the carbon critters and the students need to assist by participating, the webtool moves through 4 basic steps – *Analysis, Action, Saving* and *What If?* In the Analysis and Action steps students select Bulb type, Bulb watts, Number of bulbs and number of hours that bulbs are on for. The number of *kWh, dollars* and *kg of Greenhouse Gases* are calculated for then calculated. Students are encouraged by the Cartoon Characters to make savings to help out Electra. Larger energy use and high carbon emissions make the Carbon critters happy and enlarge their footprints (a link to Ecological Footprints). Conversely strong savings shrink their feet and bring Electra back signaling positive steps for students. Clear comparison of *Before* and *After* allows students to see the outcome of their choices. The What If button allows students to see the outcome of their Action spread over an entire school year and extended to other classes. A slider enables them to see total results projected for 2 to 25 classrooms – magnifying the effect and impressing the power of collaborative and cooperative decision making to address electricity usage and carbon emissions.

Electra, Sparky and the *Carbon Critters* who help narrate the unit's thematic storyline that pits the exhausted super-hero Electra, against the carbon critters who foil her efforts to reduce global energy waste by their witless and careless actions. Multiple references to the theme of awareness and knowledge and the actions of the carbon critters are raised in different lessons underlining the conceptual link between the webtool and classroom activities for



students. In doing so, students are helped to realize how they can assist *Electra* in her mission through the impacts of many simple daily decisions and thus see that they and their families have the power to save energy and reduce emissions themselves.



EnerAction Results Tracker



The EnerAction Results Tracker permits teachers (or a select few students with limited student access to the website) to input savings that students make using Lesson 9 and their action plans. These are recorded with a group name for the students involved and the number of carbon coins saved (where 10 carbon coins = 1 kg of GHGs). Students can determine the savings their actions have using the online webtool.

Results per school can then be shown on screen in Table, 2D or 3D bar graphs, comparing the students' school with 9 other schools (by district, region or across the country). The findings also display the overall average savings for all schools.

Teachers can input their results and return to edit them and add new classes and continue their work in each subsequent school year. To ensure teacher authenticity and data integrity, a unique access code is provided to each teacher who registers within one working day of registration, confirming their identity and some basic information about their school, region and classes taught.

EnerAction Online

Teaching resources have been developed and refined including support documents for use of the webtool; lesson plans and criterion based assessment tools; as well as curriculum tables that show the fit of each of these activities with existing BC Prescribed Learning Outcomes; Literature connections for teachers to relate the unit via language arts; as well as hyperlinks to other online Energy and Environment resources which in turn are matched to the underlying six principles of the EnerAction program. Downloads of PDFs permit easy access for teachers to the lessons they are most interested in while supporting GreenLearning's ability to manage and update the content to keep it current.

EnerAction BC and ON Workshops

BC Teacher Workshops were promoted via the BC Working Group for Sustainability Education BCWGSE (www.walkingthetalk.ca), Environmental Education Provincial Specialist Association (EEPSA), the Provincial Intermediate Teachers Association, and Sea-to-Sky Outdoor school networks, Science World's Spring teachers' evening, and the New Teacher Conference held in Richmond, BC in early March.



Photo credit: Johan Stroman, GreenLearning (www.greenlearning.ca)

Between April 2 and April 24, seven EnerAction-GreenLearning workshops were held in six BC communities: Burnaby, Kamloops, Nelson, Saltspring Island, Vancouver and Victoria. 87 BC teachers participated in the 2.5 to 3 hour long workshops. At the workshops teachers were provided with a brief overview of GreenLearning, our Sponsors and EnerAction, an interactive discussion on effective Environmental Education techniques were shared; sample lessons were demonstrated and teachers were asked to showcase one of these for the group and then the student webtool was demonstrated prior to workshop evaluation and feedback. Teachers were provided dinner, a printed copy of the Teachers Guide, along with *Green Teacher* magazine Intermediate level EE resource books and a *Temperature Rising* poster (courtesy Natural Resources Canada).

EnerAction and Community Action on Energy Efficiency (CAEE)

Burnaby, Saltspring Island, Vancouver and Victoria are all part of the Community Action on Energy Efficiency (CAEE) initiative which is administrated by the Fraser Basin Council. The Central Kootenays and Kamloops are new CAEE communities or recently added to the planning stream for CAEE. The EnerAction workshops profiled and provided support for the work of the CAEE initiative. EnerAction resources provide opportunities for students to reflect on how initiatives like CAEE may support their own communities transition to sustainable energy plans and provides opportunities for students to learn more about BC's new Energy Plan 2007.

Findings from BC Workshops

Teachers who registered for the workshops indicated as their top three reasons for participating in the workshop to be: searching for new tools, ideas, approaches and resources; having a passion for environmental education and wanting to learn more about EE, and energy and the environment.



Photo credit: Johan Stroman, GreenLearning (www.greenlearning.ca)

BC workshops appear to have been highly successful with 97 % of BC participants feeling the workshop met its identified goals to: Introduce EnerAction, get teachers excited and interested in the use of this resource, model lessons and webtool and obtain specific feedback from teachers. The majority of participants rated the facilitation and logistics as "excellent" and "good". Of the teachers who attended 42% have been teaching for over 10 years, 19% for less than one year, 14% for 1-3 years and 14% for 4-6 years. Most of the teachers teach all subject areas and the bulk teaches Grade 5 and 6 level students.

More than 50% of teachers indicated that students would make the connection between the carbon calculator values and energy savings in the classroom and 60% agreed that the process of adjusting lighting choices, calculating carbon coins and conserving energy was conceptually sound.

The workshops revealed that nearly half of teachers prefer workshops held weekdays after school hours and that email, information printed or distributed at school, Pro-D workshops and word of mouth provide the best ways for teachers to learn about new programs and resources such as EnerAction.



Photo credit: Johan Stroman, GreenLearning (www.greenlearning.ca)

The majority of teachers ranked Teacher workshops as being of greatest use to them, followed by printed lessons and resources. Of the resources provided in the EnerAction project teachers rated the Teachers Guide and Lessons as the most likely for them to use with their students followed by the Webtool.

Rich qualitative feedback from teachers on both individual lessons and the webtool has provided the basis for a final revision process now underway. Once completed these revisions will provide the basis for a full launch of the EnerAction project in BC and ON. Having the opportunity to ground test the resource in this manner prior to full launch is rare in producing educational resources usually because of the time and cost involved, but is both pedagogically sounds and ensures high teacher and student uptake upon final launch of the materials (Dr. Milton McLaren, personal communications, February 2007).



Photo credit: Johan Stroman, GreenLearning (www.greenlearning.ca)

Teacher Feedback on EnerAction Resources

Teacher responses to EnerAction from the workshops included comments like:

"I am glad to see that the computer based component is only one part of the whole program... it is important I think to tie it to the 'real world' "

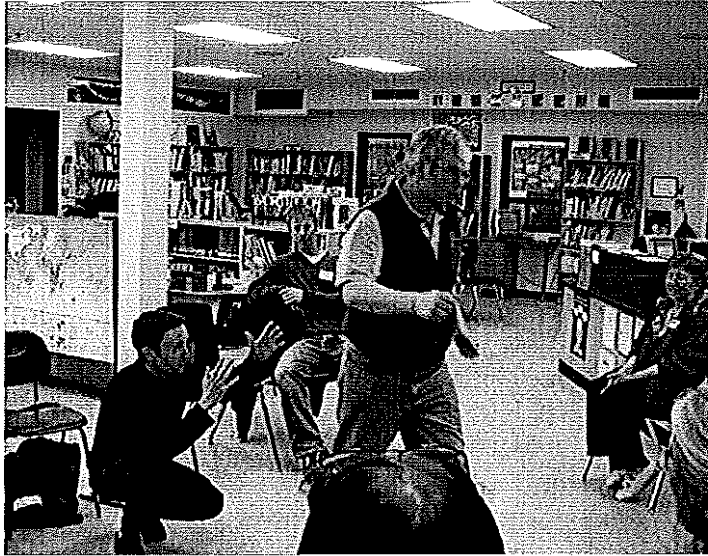


Photo credit: Johan Stroman, GreenLearning (www.greenlearning.ca)

Re: webtool: *"Great to have Lighting as one very tangible thing to look at."*

"I really like that the carbon critters tie in with the Walk a mile in my shoes exercise in Lesson 2. Less guilt if a critters habitat can be analyzed rather than ones' own to start"

"I love the idea that it can be applied at home too!"

"Please keep me in the loop. I will definitely take this into the schools and the public"



Photo credit: Johan Stroman, GreenLearning (www.greenlearning.ca)

"I think the EnerAction guide is top-notch and will be very well received."

"I think the sliders make the connection very strong and real for the students. It's great to be able to see the 'cause and effect' relationships right away."

"I was impressed at the variety of lessons and activities – great job at tying it to so many IRP learning objectives in so many different ways."

"I will be working with it right away"

"Congratulations on a job well done and thank you!"



Photo credit: Johan Stroman, GreenLearning (www.greenlearning.ca)

EnerAction Piloted in BC and ON

As part of the EnerAction workshops teachers were asked whether they would consider piloting and providing further feedback on the resource, to which 50% responded yes.

At present, a coordinating Community schools teacher who attended the workshops in Vancouver has enlisted six teachers in the local community schools and is

currently working through the unit with their Grade 6 students. Twelve teachers working with the Vancouver Community Schools association have pre-registered for a September workshop to begin use of this resource in fall 2007.

At least one teacher in each BC community workshop has indicated that they have begun piloting the resource with their classes.

In addition, the resource is currently being piloted in Ontario both at individual schools in several districts. One of those has targeted *Criterion Based Referencing* grids within lessons and how well students are able to achieve the outcomes specified.

Comments from teachers currently piloting the resource include:

"One of the best lesson's I've ever taught"

"These kids are kinesthetic learners and this lesson got them moving!"

"Students are very, very engaged"

"The whole lesson really made them think about the issues, and they loved the option of being able to change their minds and move to another opinion"

"Students responded with enthusiasm – they were hooked."

"They were excited to chart their own energy use for the morning."

"They understood what it was all about and why conserving energy is important to the environment and well being."

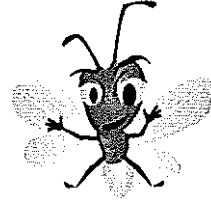
"Instructions were clear and organized and easy to follow."

Curriculum coordinators in Richmond, Surrey and Vancouver BC have indicated strong support of the resource and planning for teacher Professional development workshops is underway with each of these districts.

This level of engagement, interest and implementation of the resource materials is strong support for teacher interest, support of and use of EnerAction with their students. All piloting information and feedback from teachers in June of 2006 will be used to complete final revisions for fall launch of EnerAction. Further to this, long term and ongoing evaluation design is being integrated with the resource to ensure that the materials remain current and relevant to keep up with pedagogical innovation and to include new information as it becomes available.

Fall 2007 - Launch of EnerAction

Using teacher feedback from our workshops and telephone follow-up with participating teachers and classes, GreenLearning will complete the final revision of lessons and online webtool to further refine the **EnerAction** project for a full scale launch this fall. Given very positive teacher feedback from workshops and supportive responses from district curriculum coordinators to date, planning for fall workshops and Pro-D conference participation has begun with a full provincial launch of the resource expected by early October.



Next EnerAction Missions

Based on the very strong positive response from BC and ON teachers to this resource, and the applicability of the *Lighting* mission as a simple but powerful and empowering place to start, GreenLearning requested input from BC teachers on upcoming missions that would best complement the first one. Initial framing for 3 other missions has already begun, including: Transportation to and from school, Home heating, and Idling. Given the enthusiastic response to the initial resource this spring, additional missions with new carbon calculators and mission specific lessons seems both timely and appropriate given the growing Canadian public interest and concern with climate change and energy use combined with teacher demand for high quality, thorough and flexible teaching resources on these topics.

Appendix A – EnerAction Enduring Understandings, Objectives and Key Questions

Enduring Understandings	Objectives	Key Questions
1. The Sun - The sun is the primary source of all energy on Earth for all living things, and moves air, water and powers the water cycle.	Students will investigate what energy is, its role in the environment and understand how it is transferred to/through all living things	What is energy and where does it come from?
		How is energy transferred from the sun to the rest of all living things?
		How does energy work?*
		Can the world run out of energy?
		How does energy flow power the water cycle?
		How can energy move from one living thing to another?
2. Energy Needs - We need energy for all aspects of our lives: shelter, agriculture, transportation, manufacturing, trade, services and recreation.	Students will appreciate that we use energy for a variety of things and in a variety of ways, and that we need energy to survive	What are the various types of energy that we need for shelter, agriculture, transportation, manufacturing, services and recreation?
		What are the many ways that you "use" energy?
		How much energy do I use?*
		Why should I care?*
		What are the immediate and long-term effects of these uses on society and also the environment?
		How does our use in Canada compare with energy use in other countries (amounts and sources)
3. Energy Sources - Energy comes from a variety of renewable and non-renewable sources, and all aspects of harnessing, transforming, transferring and using energy have impacts on the environment, people and communities	Students will investigate ways in which energy is transformed for our use and understand that the way we use that energy has different impacts on environment and society	How is energy harnessed so that we can use it?
		What are the different forms of energy?
		How is energy transformed from one form to another?*
		What is a renewable versus non-renewable energy source?
		What is the difference between using renewable

		energy and using non-renewable energy?
		What are the positive and negative impacts of harnessing energy and transforming energy?
		What are the real costs of energy? (environmental, human and community)
		How does the ecological footprint of a community/region/country change with its' Energy source choices?
		What will happen when the non-renewable sources of energy, such as gas and oil, run out?
		Where does energy go when it is used up?
		Where do we get energy from in Canada?
		Where do other countries get their energy?
		What caused human Energy revolutions in the past?
		What is the next Energy revolution?
		Are humans running out of energy?
4. Energy Limits - Our access to all energy sources are limited in different ways and even the use of free energy sources (e.g. the wind) has costs and impacts	Students will understand how the use of any form of energy has impacts on the environment and society.	Can energy be recycled and used again?
		Why is it necessary to conserve energy if some of it comes from renewable resources?
		Is there enough renewable energy for all the people on the planet?
		When will non-renewable sources run out?
		Will there be enough for me?
		How is the environment affected by using free energy sources?

		What is the Energy crisis?
		What will be in energy conservation for me?
5. Solutions & Choices - Solutions to these challenges lie in the choices that we – our families, out schools, businesses and governments – make. These actions include lifestyle changes, conserving and using energy efficiently, and choosing renewable energy sources. These choices will help us meet our energy needs for many years to come.	Students will appreciate how the environmentally responsible use of energy can reduce the negatives impacts of that use, and can contribute to a higher quality of life for all	How do humans use energy and resources efficiently, in order to address the challenges presented by our energy needs?
		What are the immediate and long term effects of these energy use choices on society and the environment?
		How do technological innovations increase or decrease our ability to conserve energy?
		What are some of the most important solutions to avoid wasting energy and resources at home and at school?
		What are zero-emissions? Carbon-neutral?
		How can we modify the way we build things so they are more energy efficient?
		What are my personal values about energy?
6. Responsible Use - We can plan, make choices and take action (make choices) and influence other to use energy wisely	Students will experience positive feelings of success by taking action which reduces energy consumption and influences others to use energy wisely. Students will celebrate and reflect on their success and action plan experience.	What are my family's values related to energy use?
		How can I best influence my family to make wise choices about energy?
		What kinds of choices can I make to reduce my energy consumption?
		What actions can you take to influence other people to use energy wisely?
		What are good examples of energy conservation plans?
		What is my vision of wise energy use for Canadians?
		How do I make a powerful action plan?

		What did I learn about my plan and others plans?
		What is my next step/others next step?
		What can we do as a country to reduce our energy consumption?
		What is the Kyoto agreement?
		What are some past success stories on environment and other issues that can help us?

** Questions with asterisks indicate that these may apply equally well to other enduring understandings.*

Day, Kristin ENV:EX

From: The Wong's [kdwong@cyberus.ca]
Sent: Monday, July 16, 2007 6:04 AM
To: Kelly, Liz EMPR:EX; Sanford, Donna L ENV:EX; Roger Crowley; Janet Annesley; Elizabeth 'Kilvert; Cheryl Bishop; Emily Davidson; Gavin, Theresa (ENE); Sheelagh Lawrence; Ana Skinner; Kim Brand; Paula Switzer; Carolyn Murphy; Jo Coombe; Dan O'Grady; Pat Dolan; Mary Ferguson; Kaz Flinn; Lori Gammell; Hazel Gillespie; Judy McVean; Pape-Salmon, Andrew EMNG:EX; Thiessen, Lee ENV:EX; Bryan Young; Greg Kiessling; John Whytock; Bob Curran
Subject: Report now complete with Financial Summary
Attachments: GreenLearning April to June 2007 Quarterly Report.pdf

GreenLearning Sponsors and Investors,

I am resending our Quarterly Report which now includes our financial summary. We hope you will be able to join us this week for our phone conference: Wednesday, July 18, 2007 1:00 p.m. EST / 11:00 MST / 10:00 PST

The phone number is s.15 long distance or in Edmonton s.15
The conference code is s.15

RSVP to kdwong@cyberus.ca. Should you be unable to participate, please feel free to invite another person from your organization to take your place for the call in and discussion.

Thank you,

Kris Wong

Accolades

"I was impressed at the variety of lessons and activities – great job at tying it to so many IRP learning objectives in so many different ways." – BC teacher participating in EnerAction Workshop

"One of the best lesson's I've ever taught" "Students responded with enthusiasm – they were hooked." – ON teachers piloting EnerAction in their classrooms



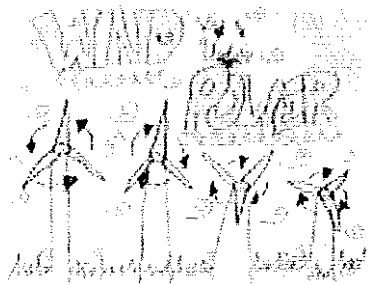
GreenLearning Goes Emerald!! GreenLearning was the recipient of an Alberta Emerald Award for the category Education: Other Organization. The Alberta Emerald Foundation hosted the 16th annual Emerald Awards for environmental excellence in Calgary. Kathy Worobec and Peter Dickey (Pembina Foundation Board Chair) accepted the award and recognized all of the talented individuals and founding sponsors that took GreenLearning from an idea to a program that is now active in Alberta, BC and Ontario. Pembina Executive Director, Marlo Reynolds is holding the award on the left.

Directions in the Upcoming Quarter As the classroom testing phase wraps up for eCardsTM and EnerActionTM we are turning our team focus toward outreach, marketing and delivery (OMD). For the next quarter, our outreach activities will centre around our new classroom resources for teachers while we develop an overall OMD plan for GreenLearning.

We've developed an OMD chart of key audiences and approaches, drawing on our organizational contacts and strengths in program delivery. But we're looking for other opportunities and creative ideas to consider in reaching teachers, non formal educators and

students. We've attached our "Chart of Possibilities" and hope you'll share your expertise and experience in building and executing effective outreach, marketing and delivery. We'll be discussing OMD plans and ideas during next week's July 18th Quarterly Phone Conference.

eCards™ eCards is a powerful approach to elearning, with the first module targeting Ontario Grade 7 (Geography, Language, Art and Information Technology) and focussing on renewable and non-renewable energy sources. Students research a source of energy, create an eCard, and email it to their principal, a friend or the premier.



Recent activities include completing the resource ready for pilot testing, conducting an April 16 workshop to prepare pilot teachers, conducting online training of other pilot teachers, and managing the Beta testing.

Sixteen teachers in five different school districts pilot tested eCards in their classroom. We were pleased to have the support of the curriculum consultants from these participating school boards. We ran into a major technical snag during the pilot and while the purpose of pilot testing is to find any glitches before publicly launching the site, it was frustrating for teachers and their classes. Despite this, each pilot teacher carried on and in the end the technical problems did nothing to dampen their enthusiasm.

We have interviewed the Beta teachers and over the summer, will use this feedback to prepare eCards for full launch in the fall. Feedback on both the resource and the classroom experience has been overwhelmingly positive.

One pilot teacher summed up her experience: "I am amazed at the quality of the students' pictures. Two of my most struggling students really excelled in this medium. Certainly points out the need for diversity in teaching approaches!! Much reward for very little effort on my part."

Launching eCards and EnerAction in Ontario Since beginning work to develop GreenLearning for Ontario, Pembina has put considerable effort and resources into building partnerships with school boards and other education organizations. It is a challenge for an NGO like us to get its "foot in the door" of school boards and to get our programs into the hands of teachers and in use in classrooms. Our strategy from the outset was to work closely with the teachers and curriculum consultants of selected schools boards to co-develop eCards and

EnerAction and engage them in making these programs a success. The strategy is paying off. We have a good working relationship with school boards. Nine large school boards will promote our resources to their teachers in the fall, list our resources on their websites, encourage their teachers to get on board, and support us in work-shopping their teachers (with workshop dates now being confirmed). In addition Pembina is confirmed to conduct workshops at several province-wide teacher conferences and make presentations at key province-wide meetings of educators and curriculum consultants.



Sparky, Electra and the Carbon Critters are a hit with Grades 4-7 pilot teachers and students.

EnerAction workshops were completed in April 2007 in BC and ON and were very well received. Seven community workshops were held in BC with 87 teachers attending in Kamloops, Nelson, Victoria, Saltspring Island, Burnaby and Vancouver (2x) as well as a dozen teachers in ON. Teachers have pilot tested the unit with students in both ON and BC and the feedback on the lessons has been very positive and enthusiastic. Detailed feedback on the workshops, lesson plans, and webtool have been compiled and modification and improvement of the webtool, as well as lesson revision and editing are well underway.

Following the beta-testing of the resource, teachers have begun registering for fall workshops in Vancouver and curriculum coordinators in Surrey and Richmond have requested teacher workshops this fall in their districts. Several potential funders have indicated particular interest in supporting the development of specific EnerAction missions. Most interest has been shown by teachers and several BC Ministries in extending the success of the *Lighting* mission focus to a *Transportation* mission. Storyboarding work for this mission exists but requires further development.

Re-Energy .ca – Solar Oven Challenge Over 85 teachers registered for the Solar Oven Challenge through Green Street. The Solar Oven Challenge included building, testing and baking in a solar oven. The student/class submissions were reviewed and prizes were awarded to classes, groups and individuals. A few groups submitted recipes including a chicken/broccoli dish and rice crispy squares. You can check out the winners at: http://www.re-energy.ca/t_showcase_feature.shtml

The final report has been submitted to Green Street and we are waiting for confirmation that we will offer the Solar Oven Challenge again next year. Downloads of the other construction plans (wind turbine, biogas generator and micro-hydro generator) continue to be extremely popular and we received another student submission from India.

Alberta - The Cradle of GreenLearning Promotion of GreenLearning to Alberta teachers continues. We will be attending the ATA Science Conference in November, the Greater Edmonton Teacher's Convention in February 08, Inside Education teacher institute in July 07 and possibly Youth Forum's with Learning for a Sustainable Future. Work with school boards/districts continues such as working with Calgary Public's EcoTeam, and building contacts to send out the eNews to teachers.

We continue to participate in the work of the Alberta Council for Environmental Education and we're very involved in establishing an Alberta Education for Sustainable Development working group in response to the UN Decade of ESD.

Ideas in Development

Youth Leadership Program - Enabling Social Equity, Ecological Sustainability and Effective Community Action: Pembina and The Pearson Seminar on Youth Leadership of Pearson College are collaborating to develop a leadership education program for young Canadians aged 18 to 24. The intention is to develop a student centered, community oriented, experiential education semester program that provides college/university accreditation. The program will be piloted in western Canada, with the idea that a model may be created for use in bioregions across the country. We propose to develop a unique education program informed by a youth perspective that will enable and empower youth to take leadership in achieving greater ecological sustainability and social equity in their own lives and communities. Pembina and Pearson are actively fundraising to secure development funds for a pilot program.

Green Energy Games: The Green Energy Games are beginning to take shape with Olympic athletes on board to visit schools and help lead the Green Energy Games. Students will participate in the Apathy Hurdles, the Flick Off Lights timed event, Recycle What You Can, and many more games. The goal is to motivate students and teachers to take action and become engaged in GreenLearning programs. We would like to pilot this in Alberta in the fall of 2007.

Financial Summary The financial report shows a shortfall of revenues to expenses for 2007 to date. The Pembina Institute continues to invest in GreenLearning to build a successful and financially secure program. Part of this investment is in Pembina resources to secure the long-term funding base required to sustain GreenLearning. Marlo Raynolds, Executive Director, Gordon Harrison, Education Director and the GreenLearning Team have met with approximately 50 prospective funders over the past few months. Some of these are in the early stages while others have been approved in principle. Thank you to those of you that have assisted us with introductions to organizations interested in energy education.

GreenLearning Financial Summary for January to June, 2007

Revenue				Total
Corporate Donations				155833
Provincial Government Grant				60000
Foundation Grants				13500
Total Revenue				229333
Expenses	Pembina	Contractor	Expenses	Total
Program Development & Management, Sponsor Stewardship & Reporting	59938	6268	3827	70033
eCards	29463	23507	2420	55390
EnerAction	67131	93948	5101	166180
BC workshops	8650	600	6114	15364
ON workshops		2593	2595	5188
Other, including Web Development	975	221	515	1711
Total Expenses				313866
Net Shortfall				-84533

Sponsors & Investors Thank you to all who joined us in April for our first phone conference. It is July, but we hope many of you can call in next week for an update and discussion. After that we have the October 29th Sponsor Recognition and Planning Event in Alberta. The phone conference scheduled for January has been moved to Wednesday, January 30th. Please revise your calendars. Dates for the rest of 2008 will be set in November.

The GreenLearning web site has been updated with profiles from new funders. We don't have all of you yet, but we hope to. Profiles and logos can be forwarded to kdwong[at]cyberus.ca.

Founding Sponsors

- Alberta Education
- Alberta Environment
- Alberta Municipal Affairs
- BP Canada
- ConocoPhillips
- Enbridge
- Nexen
- Petro-Canada
- Shell Canada
- Suncor Energy Foundation
- TransCanada Pipelines
- Weyerhaeuser

Current and Recent Sponsors

- BC Hydro
- BC Ministry of Environment
- BC Ministry of Energy, Mines and Petroleum Resources
- Bullfrog Power Inc.
- Enbridge
- Environment Canada
- Hydro One
- Laidlaw Foundation
- Ontario Ministry of Environment
- Ontario Power Authority
- Petro-Canada
- ScotiaBank
- TransCanada Pipelines

GreenLearning Education Team

Johan Stroman, Director, BC GreenLearning 604-886-7456 johans@pembina.org

Kathy Worobec, Director, Alberta GreenLearning 708-485-9610 kathyw@pembina.org

Nadine Raynolds, Coordinator, Youth Leadership Program 250-358-2164 nadiner@pembina.org

Gordon Harrison, National Program Director/Ontario GreenLearning Director 613-256-1487 gordonh@pembina.org

Outreach, Marketing and Delivery Plan

Our goal is to market and deliver GreenLearning to Canadian curriculum consultants, teachers and non-formal educators to ensure uptake of our resources and programs – thus reaching thousands of youth with high quality GreenLearning experiences.

Our organizational strengths lie in our high quality content and our expertise in delivering superb workshops for teachers. Our approach with curriculum consultants, school boards and teachers is to work through existing contacts and networks to deliver workshops, to present at conferences, to take program information directly to teachers in their schools, and to establish a presence through education websites and print media. Details are included in the chart of possibilities below.

We are very interested in exploring other ideas for reaching these audiences and hope that you will share your thoughts.

GreenLearning Outreach, Marketing and Delivery Chart of Possibilities

Audience	Purpose	Approaches
Curriculum Consultants and school boards	Inform them of GL resources and “sign them” on to help implement	<ul style="list-style-type: none"> • Nurture relationships, ie. with CCs involved in pilot testing. • Working with several CCs in BC and Ontario to host teacher workshops in fall. • Reference to eCards in a new Geo-7 textbook in Ontario.
Provincial and national education associations	Use existing memberships, lists, and events to promote GL	<ul style="list-style-type: none"> • E-mailing and postings through networks & association websites & newsletters • Listings and reviews through association websites and newsletters. • Workshops and displays at provincial and national conferences/gatherings
School Principals	<p>Ask administrators to pass info to teachers</p> <p>Reach champion principals/schools</p>	<ul style="list-style-type: none"> • Email to principals using provincial online databases, including international schools, independent schools and others • Fax/mail drop to schools • Nurture relationships with champion schools and administrators • Profile schools
Teachers	<p>Inform them of all resources and opportunities</p> <p>Engage them in high quality PD experiences</p> <p>Provide opportunities for them to help develop and refine resources</p>	<ul style="list-style-type: none"> • Email notices/news/cards (drawing from searchable database of contacts, such as eNews) • Online tools, such as tagging of web pages, “What’s New” page, “Tell Ten Teachers” tool, viral marketing campaign, showcase classes and schools, teacher comment board, and more. • Printed materials such as a general brochure and specific cards for each program, display boards and other materials such as t-shirts, erasers. • Workshops via schools, school boards,

	Ask them to promote to other teachers	<p>conferences, and teacher institutes. Workshops we are hosting this fall will be for 20-40 teachers and some include 2-part delivery (live workshop followed by online WebEx tutorial).</p> <ul style="list-style-type: none"> • Promotion through teacher magazines and journals: advertisements, articles and submission of lesson plans. • Green Street program allows us to promote Re-Energy and other programs through the "Solar Oven Challenge" and teacher workshops.
Student Teachers	Reach new teachers as they are learning about approaches and resources	<ul style="list-style-type: none"> • Guest lectures at universities • Host and attend student teacher gatherings/events • Contact pros to tell them about resources • Have students complete non-formal education practicum with Pembina in Alberta
Families	Secondary approach to target audience	<ul style="list-style-type: none"> • Media campaign: create hook and news story to generate coverage in papers/tv/web. • Program launches with schools and communities • Summer community events, such as folk festivals and markets. • Via Parent Advisory Committees

Students	<p>To validate and reinforce importance</p> <p>To celebrate their actions</p> <p>To get students to ask teachers to use GL</p>	<ul style="list-style-type: none"> • Student showcases online • Kidsworld and other youth/children oriented magazines • Flashy viral marketing campaign for student zones • Non-formal partners who directly deliver to youth in summer • Famous person or character to promote • Materials such as erasers, pencils, carbon critter cookies, stickers.
Non-formal and community groups/ institutions	Profile GL to groups of youth who are already in an organized setting/ experience	<ul style="list-style-type: none"> • Science World display • Boy Scouts and Girl Guides: workshops for leaders • Actua summer camps • Youth based organizations such as SYC, EYA, Check Your Head, others
Corporate Sponsors	Engage sponsors in outreach and delivery	<ul style="list-style-type: none"> • Employee engagement program –delivery activities in schools with Pembina staff support and training • Inserts in mailings
Pembina Internal	Encourage Pembina staff (55+ people) to promote GL whenever possible	<ul style="list-style-type: none"> • Email signatures and personal contacts – “Tell a Teacher Near You” • Marlo and other staff to mention in speeches, presentations and media • Community and Corporate Eco-Solutions Groups - workshops and presentations • Displays at any conferences, gatherings • Brochure/handbill for staff to handout

Day, Kristin ENV:EX

From: Johan Stroman [johans@pembina.org]
Sent: Tuesday, June 19, 2007 8:45 AM
To: Sanford, Donna L ENV:EX; Freedman, Rebecca ENV:EX; Keller, Emily ENV:EX
Cc: Gordon Harrison/G'Learning
Subject: Re: GreenLearning meeting in Victoria June 18th 10am

Dear Donna, Rebecca and Emily,

Gordon and I wish to thank you for joining us yesterday morning to meet regarding GreenLearning and our fall launch plans for EnerAction in BC and Ontario. I appreciate your thoughts and insights on the program and the challenges faced by NGOs in developing quality educational materials that help teachers challenge student thinking and environmental behaviour. We feel strongly that EnerAction will support schools very well in addressing BC Energy Plan objectives and also support efforts to monitor energy and green house gas emissions savings in the province, while providing quality education that is curriculum linked from Grades 4 to 7.

I will forward links and EnerAction educational resources to you in the months ahead as we complete revisions and prepare to provide these materials to BC educators.

Please feel free to contact me if you have any questions or any ideas in relation to EnerAction, Green Energy Games and development of our next mission on Transportation. Donna, I will connect with you by phone in the next few days.

Best,

Johan

Sanford, Donna L ENV:EX wrote:

> Hi Johan. Two of my colleagues will be joining me June 18th -- Emily
> Keller and Rebecca Freedman.
>
> Regards,
> Donna
>
>
>

--

Johan Stroman
Director, BC *GreenLearning*
Pembina Foundation
Home Office: (604) 886-7456
PO Box 614, Gibsons, BC, V0N 1V8
email: johans@pembina.org

Teachers, visit: [_www.greenlearning.ca_](http://www.greenlearning.ca)
Oil sands in-depth: [_www.oilsandswatch.org_](http://www.oilsandswatch.org)
Donate: [_www.pembina.org/donate_](http://www.pembina.org/donate)

P.S. Message sent by a /Wind Power by Pembina/ Computer Buy wind:
[_http://www.pembina.org/wind_](http://www.pembina.org/wind)

Day, Kristin ENV:EX

From: The Wong's [kdwong@cyberus.ca]
Sent: Monday, October 22, 2007 1:10 PM
To: Janet Slazor; Mary Ferguson; Karen Leach; Greg Kiessling; Ana Skinner; Pape-Salmon, Andrew EMNG:EX; Bryan Young; Cherine Badwi; Cheryl Bishop; Dan O'Grady; Sanford, Donna L ENV:EX; Elizabeth 'Kilvert; Gavin, Theresa (ENE); Janet Annesley; Jo Coombe; John Whytock; Kaz Flinn; Kim Brand; Thiessen, Lee ENV:EX; Lori Gammell; Pat Dolan; Sheelagh Lawrence; Freedman, Rebecca ENV:EX; Barry Beale; Barry Fergusson; Julie Greenspoon; Bev Yee; Trina Innes; Heather Wheeliker; Aynsley Toews; Bernie Galbraith; Cathy Glover; Daniel Carr; Margret Brady Nankivell; Martin Rose; Paula Switzer
Cc: Nadine Reynolds; Kathy Worobec; Gordon Harrison/G'Learning; johans@pembina.org; Grace Gruber; foundation@pembina.org
Subject: Sponsors Phone Conference & GreenLearning Quarterly Report July to Sept 2007
Attachments: GreenLearning Quarterly Report July to Sept 2007.pdf; GreenLearning Employee Engagement_Sep-07.pdf

GreenLearning Sponsors,

We are thrilled to share our excitement with all of you that have supported us to our current status - eCards and EnerAction are now 'live.' We'll have a quick look at these during next Monday's phone conference and will introduce the idea of an Employee Engagement program - one pager attached. Our Quarterly Report is also attached for your review.

Our phone conference is set for next Monday, October 29th 1:00 p.m. EST / 11:00 a.m. MST / 10:00 a.m. PST.

The call in number is s.15 long distance or s.15 in Edmonton. Conference Code is s.15
s.15

We look forward to speaking with you. Thanks to those that have let us know you are unavailable on the 29th. The GreenLearning program directors are happy to answer questions or comments at any time. Our next phone conference is January 30th, 2008 1:00 p.m. EST / 11:00 a.m. MST / 10:00 a.m. PST.

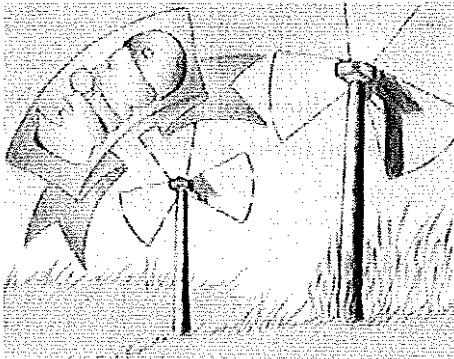
Regards,

Kris Wong on behalf of the GreenLearning Team

eCards and EnerAction leave the nest!

Like proud but nervous parents, the Pembina Education team has pushed eCards and EnerAction out of the nest to fledge for themselves.

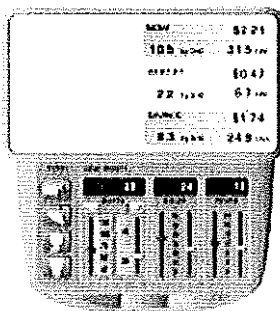
eCards and EnerAction are now 'live' and the GreenLearning team is out of the office conducting workshops for teachers in school districts throughout BC, Alberta and Ontario. Teachers love these materials and registrations to enable teachers to download these programs for their classrooms have been rising steadily.



Here is a sample of the impressive artwork coming out of the Grade 7 classes using the renewable and non-renewable energy source eCards module.

We've had a great opportunity to use the eCards framework for an exciting new module that will extend the reach of the Cape Farewell Project. See below.

Also new this past quarter is that eCards is now a GreenStreet approved program.



EnerAction features an energy calculator that is unique. Students adjust the sliders to see how "playing" with the variables of lighting affects energy consumption and the level of greenhouse gas emissions (the correlation of greenhouse gas emissions to kilowatt-hours is calibrated by province). They then calculate baseline, take action, track actual reductions in kilowatt-hours and carbon emissions, and celebrate.

Strong Fundamentals: Gordon Harrison -- Director, GreenLearning

It's been about a year since Pembina asked me to assume the position of Director of GreenLearning and it's been a year of rebuilding.

The fundamentals are now strong. eCards and EnerAction are powerful education programs and work is beginning on the Youth Leadership program and the Green Energy Games.

GreenLearning has developed invaluable relationships – *partnerships* with curriculum consultants and school boards providing us with a solid delivery mechanism that allows us to work directly with teachers—the best approach, by far, for ensuring teachers use our programs this year and beyond.

School boards share our commitment to success and are now marketing our resources to their teachers and supporting us in organizing and conducting workshops for their teachers and in providing ongoing assistance. In Ontario, for example, we are working with eight large school boards to deliver 16 workshops this fall, and it seems every day, a new school board calls up, wanting to arrange workshops. Relationships with BC consultants and school boards are in an earlier phase but are developing well. Outreach for GreenLearning in Alberta continues on an established basis.

We've had excellent support from the Pembina Institute and from the Board of the Pembina Foundation. With them, we have embarked on the development of an Endowment Fund that will ensure the continuation of effective GreenLearning education.

Sincere thanks to all of our Sponsors who have supported us in helping teachers and young people make a difference!

Here is a sampling of some of the workshops and venues we are booked for:

- Science World – Fall Teacher Resource Night (Vancouver)
- SFU sustainABILITY festival (Burnaby)
- BC Social Studies Teachers Conference (Burnaby)
- EEPsA Inspiring Sustainability Conference (Vancouver)
- BC LESS Fest and GreenStar! Conference (Gibsons)
- Ontario Association of Geography and Environmental Educators conference (Toronto)
- Calgary Youth Forum AB Teachers' Association Science Conference

- Science Teachers Association of Ontario Conference (Toronto)
- School Board workshops with Halton Catholic & Public, London Catholic, Peel, Thames Valley, and TorontoCatholic & Public, Upper Canada

Cape Farewell & eCards



Amelie, a student from Montreal, on the bowsprit of the *Nooderlicht*, September 19, 2007.

On September 23, 2007, the 12 students on board the *Nooderlicht* completed an Arctic climate change expedition; 3 of the students were from Canada, the others from the UK and Germany.

While on the voyage, each of the 12 students conducted science projects and expressed their experience in an artistic medium. For example, Doriana, from Nunavut, was studying changing weather patterns by interviewing Inuit elders (traditional knowledge) and reviewing scientific data; she will create a piece of throat singing music.

The GreenLearning team is working with the British Council, one of the sponsors of the voyage, to link 10 teachers and their classes across the country with the work and experience of the *Nooderlicht*. We will make the expedition students' research, along with webcasts and blogs, available through our elearning program, eCards. We'll provide an online tutorial on eCards to all participating teachers and will work with each teacher to tailor the voyage material for subjects and grades. Teachers signed on are from Grade 6 to Grade 12 and are integrating the material with a variety of subjects.

Re-Energy .ca – Solar Oven Challenge The Solar Oven Challenge is being offered again this year as an approved program of Green Street. Students will build a solar oven, test it and bake with it. We are only accepting 40 registrants this year and already have 13 classrooms registered. You can check out last year's solar oven showcase submissions at: http://www.re-energy.ca/t_showcase_feature.shtml

The GreenLearning Web Site The medium is the message, so over the summer work has been done to revamp the GreenLearning web site. Teachers will be better able to find resources quickly (new registration process) and we'll be able to update information more easily.

Youth Leadership We are anticipating the green-light any day. Pembina and Pearson College are working together to develop and pilot a bioregional Youth Leadership Education Program. This program is unique in Canada, offering youth aged 18-24 with accredited, experiential, leadership training in sustainability. It will offer young people who have experienced GreenLearning programs in their schools an opportunity to develop and expand their leadership skills, and apply them to their own communities' challenges. As a semester program, including action projects, and with follow-up support and mentorship for one year beyond the program, this will be a transformational learning experience for young Canadians. Pembina is hiring a youth intern this winter to assist with market research, and is continuing to fundraise to develop a business plan, complete program curriculum, form an advisory group, and implement and evaluate a pilot semester program. With a successful pilot, Pembina and Pearson plan to make this youth leadership semester an annual or bi-annual event, including a full scholarship program.

Green Energy Games Our thinking on The Green Energy Games is evolving so that we plan to use the games in a marketing sense, to expand outreach to schools for our core programs, EnerAction and eCards and the other existing resources. Having Olympic athletes interested in bringing a wise energy use message to schools is an excellent opportunity to raise awareness of the connections between sport, clean air, healthy living and energy choices.

Sponsors & Investors Welcome to the Ontario Ministry of Energy and the British Council who signed on with GreenLearning programs in the last quarter.

Employee Engagement We would like to develop a program through which we can involve employees from our sponsor organizations in the delivery of GreenLearning. A one page backgrounder is attached and we invite you to share your experience and interests in the program design.

Face to Face Meetings Our plan for reporting to sponsors included Quarterly Reports followed by phone conferences three times per year and once annually, an in-person meeting. Travel to an in-person meeting was not feasible for most of you this year. We see the value of likeminded people working around the same table, though we are highly aware ourselves, of time and dollar constraints. Over the next few months, we'll poll each of you on possible options such as *regional* in-person annual meetings. Please contact kdwong@cyberus.ca with your comments.

Phone Conference Schedule for 2008

Wed, January 30th 1:00 EST/11:00 MST/10:00 PST

Wed, April 30th 1:00 EST/11:00 MST/10:00 PST

Wed, July 30th 1:00 EST/11:00 MST/10:00 PST

Founding Sponsors

- Alberta Education
- Alberta Environment
- Alberta Municipal Affairs
- BP Canada
- ConocoPhillips
- Enbridge
- Nexen
- Petro-Canada
- Shell Canada
- Suncor Energy Foundation
- TransCanada Pipelines
- Weyerhaeuser

Current Sponsors

- BC Hydro
- BC Ministry of Environment
- BC Ministry of Energy, Mines and Petroleum Resources
- British Council
- Bullfrog Power Inc.
- Enbridge
- Environment Canada
- Hydro One
- Laidlaw Foundation
- Ontario Ministry of Energy
- Ontario Ministry of Environment
- Ontario Power Authority
- ScotiaBank
- TransCanada Pipelines

Financial Summary The shortfall continues for this third quarter with funding agreements expected to bring a shift toward balance in the fourth quarter. The outlook for the first quarter of 2008 is positive resulting in the ongoing underwriting of the GreenLearning program by the Pembina Institute. A plan for a secure and long-term funding base is being developed with the support of the Pembina Foundation Board, the Institute Board and the Institute's Executive Director, Marlo Reynolds.

GreenLearning Financial Summary for January to September, 2007

Revenue				Total
Corporate Donations				155833
Provincial Government Grant				60000
Foundation Grants				13500
Total Revenue				229333
Expenses	Pembina	Contractor	Expenses	Total

Program Development & Management, Sponsor Stewardship & Reporting	88634	15004	8829	112467
eCards	41947	34673	3078	79698
EnerAction	96528	101748	6359	204635
BC workshops	10025	838	6365	17228
ON workshops	50	5557	2595	8202
Other, including Web Development	4413	530	824	5767
Total Expenses				427997
Net Shortfall				-198664

GreenLearning Education Team

Johan Stroman, Director, BC GreenLearning 604-886-7456 johans@pembina.org

Kathy Worobec, Director, Alberta GreenLearning 708-485-9610 kathyw@pembina.org

Nadine Raynolds, Coordinator, Youth Leadership Program 250-358-2164 nadiner@pembina.org

Gordon Harrison, National Program Director/Ontario GreenLearning Director 613-256-1487
gordonh@pembina.org

Employer-Supported Volunteerism

Volunteer Canada lists the benefits of Employer-Supported Volunteerism:

- for the company, from enhanced public image to improved employee morale and productivity,
- for the employees, from learning new skills to a sense of contribution to the community,
- for the community, from the influx of skilled volunteers to providing needed community services.

The Canadian Business for Social Responsibility, Natural Resources — Consulting Services states, “Companies are becoming more aware of the direct link between the health and success of their business and the personal fulfillment of their employees [including volunteerism].”

GreenLearning—Rich Opportunities to Engage Sponsors’ Employees

GreenLearning offers rich education programs that provide opportunities for our sponsors’ employees to work with us, working with teachers and students, to make a difference.

- Re-Energy.ca is a hands-on science. Young people build working models of a solar oven, a wind turbine or a water turbine, springboarding from this to examine the role of renewable energy technologies in our energy future. Employees could join us in helping students or Guides/Scouts to construct a solar oven and bake a treat.
- eCards is an innovative elearning program that enables students to research an energy topic and then create and send an eCard summarizing their work. Help us work with a class to make eCards, or better yet, bring your company’s environment and energy policy to the students; for example, one of our sponsors that is pioneering LEED-certified condos could provide a tour of their condos and watch the students create eCards summarizing their experience.
- Our Green Energy Games—bring elite Olympic athletes to schools to conduct Green Energy Games—is an ideal opportunity to for sponsors’ employees to come out to help officiate Games events or “coach” student teams.
- And this is only the beginning—if we put our heads together, what opportunities can we come up—ways to engage your employees in working with today’s young people in ways that will benefit all and can showcase your company.

Please note, that Pembina will brief and support all employees participating with us in delivering GreenLearning to young people.

Designing a Two-Way Successful Employee Engagement Program

Through our Quarterly Phone Conferences and other venues, Pembina would like to work with its sponsors to design a program to engage your employees in GreenLearning in a manner that meets both of our needs. The following questions will help to frame this discussion:

- What is your experience with employee engagement programs?
- What are the logistics of operating employee engagement programs; e.g., do employees participate during work hours or after hours, at specific times of year?
- What training do employees require/receive?

For more information, please contact Kris Wong, Pembina’s Sponsorship Coordinator: kdwong@cyberus.ca or 613-820-4098.

Day, Kristin ENV:EX

From: Sanford, Donna L ENV:EX
Sent: Wednesday, December 12, 2012 10:41 AM
To: Moreau, Denise ENV:EX
Subject: FOI request: Pembina GreenLearning
Attachments: Pembina: GreenLearning BC transfer payment request ; FW: Pembina Environmental Education Project; Transfer Payment - Pembina; Pembina Institute request; RE: 2 small amendments

Hi Denise. Here is a set of emails related to the transfer agreement with Pembina on the GreenLearning project. I will send a separate note attaching Pembina's progress reports.

Donna Sanford | Senior Policy Analyst
Climate Action Secretariat | BC Ministry of Environment
Ph: 250-387-7921 | Fax: 250-356-7286 | e: donna.sanford@gov.bc.ca

Day, Kristin ENV:EX

From: Sanford, Donna L ENV:EX
Sent: Tuesday, March 28, 2006 4:04 PM
To: Gilliland, Jim ENV:EX
Cc: Thiessen, Lee ENV:EX
Subject: Pembina: GreenLearning BC transfer payment request

Hello Jim. Per Lee's request for further information from Pembina on the costs to develop a BC-based Greenlearning program, given one has already been developed for Alberta. Diane Simpson at Pembina offers the following:

- The program is entirely curriculum based, and BC's curriculum is significantly different from Alberta's. Therefore all the materials need to be revised to reflect BC's economy, geography, climate, ecology. This includes all the maps and diagrams. All the writers are BC-based to ensure accurate regional content.
- Some changes to the program are being implemented after an evaluation of the Alberta program, mainly to make navigation of the web tool easier.
- Web-based work always tends to be expensive

Please advise if you need more details from Pembina.

Thanks Jim,
Donna

Day, Kristin ENV:EX

From: Diane Simpson [diane@dianesimpson.com]
Sent: Thursday, January 19, 2006 4:49 PM
To: Sanford, Donna L ENV:EX
Subject: RE: 2 small amendments

Hi Donna,

I had to change the deliverables a bit once I realized the funds were up to March 31, 2006. Please let me know if that is ok.

I will be out of reach tomorrow - I will try and look at my email tomorrow to see if everything is ok.

Diane

Diane Simpson

-----Original Message-----

From: Sanford, Donna L ENV:EX [<mailto:Donna.Sanford@gov.bc.ca>]
Sent: Thursday, January 19, 2006 3:26 PM
To: 'Diane Simpson'
Subject: 2 small amendments

Sorry, Diane, one more email on this! On more careful read:

1. Completion date should read March 31, 2006.
2. In the 2nd para, can you please insert that these materials will be BC-specific? And / or indicate that this is a BC focused program.

Thanks. Look forward to a slightly revised email. Meanwhile, the bulk of the paperwork on this end is complete, and has been sent up for approval.

-Donna

-----Original Message-----

From: Diane Simpson [<mailto:diane@dianesimpson.com>]
Sent: January 18, 2006 8:42 PM
To: Sanford, Donna L ENV:EX
Subject: RE: Paper work needed before end of this week

Hi Donna,

I just sent the request to you and Lee - is that all you required. Did I have the dates you wanted it completed correct?

Diane

Diane Simpson

-----Original Message-----

From: Sanford, Donna L ENV:EX [mailto:Donna.Sanford@gov.bc.ca]

Sent: Wednesday, January 18, 2006 12:02 PM

To: 'diane@dianesimpson.com'

Subject: Paper work needed before end of this week

Importance: High

Hi Diane. In case you didn't get my second message yesterday. Our finance staff now need to get our paperwork by end of this week. Could you please send me your request letter ASAP (since we already have your business plan, this can be a very short email outlining the 50K request, and referencing your Oct 7 2005 meeting with Lee).

Thanks Diane.

-Donna

> -----Original Message-----

> From: Sanford, Donna L ENV:EX

> Sent: January 17, 2006 11:44 AM

> To: 'diane@dianesimpson.com'

> Subject: GreenLearning BC

>

> Hi Diane. Can you please call me when you get a chance re: your

> request for funds for the Green Learning BC project.

>

> Thanks,

> -Donna

>

> Donna Sanford

> Senior Policy Analyst

> Climate Change Section

> BC Ministry of Environment

> 3rd Floor 2975 Jutland Rd., Victoria BC V8T 5J9

> Ph: 250-387-9943 Fax: 250-356-7197

>

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Version: 7.1.375 / Virus Database: 267.14.21/235 - Release Date: 1/19/2006

Day, Kristin ENV:EX

From: Thiessen, Lee ENV:EX
Sent: Tuesday, January 17, 2006 11:26 AM
To: Sanford, Donna L ENV:EX
Subject: FW: Pembina Environmental Education Project
Attachments: Greenlearning Proposal August 3.doc

Follow Up Flag: Follow up
Flag Status: Flagged

-----Original Message-----

From: Diane Simpson [<mailto:diane@dianesimpson.com>]
Sent: August 16, 2005 3:48 PM
To: Thiessen, Lee WLAP:EX
Subject: Pembina Environmental Education Project

Hello Lee,

Donna Sanford and Ted Sheldon met with Marlo Raynolds, the Pembina Institute's executive director, and I in early May to discuss the Ministry of Environment possible involvement in Greenlearning.ca - an environmental educational website for BC schools.

I recently contacted Donna and Ted to set up another meeting with them. Bruce Sampson from BC Hydro and Mossadiq from Xantrex recommended we talk to you so I asked Donna if we should talk with you as well. Donna suggested I contact you directly about meeting with Marlo and I - Donna said that herself and Ted would likely attend the meeting we would have with you.

We have a number of corporations interested in sponsoring the project including, BC Hydro, Xantrex, Vancity, Alcan, NorskeCanada. We have also had discussions with the federal government and expect funding from them in the future. We have received a commitment of funds from the Ministry of Energy and Mines.

Marlo will be back in BC in September and we would like to meet with you again. The dates he is available are Sept 13 and 14. He may come Sept 27th and 28th. He will also be in BC on October 6 and 7th. I am not sure of the days we will do meetings in Victoria but perhaps you could let me know if any of those days seem good for you to meet.

I have attached our proposal to this email.

Diane

Diane Simpson
Director, BC Education Program

The Pembina Institute - Vancouver Office
Suite 606, 55 Water Street
Vancouver, BC, V6B 1A1

Phone: 604-677-4662

Fax: 604- 874-8557

dianes@pembina.org
www.pembina.org

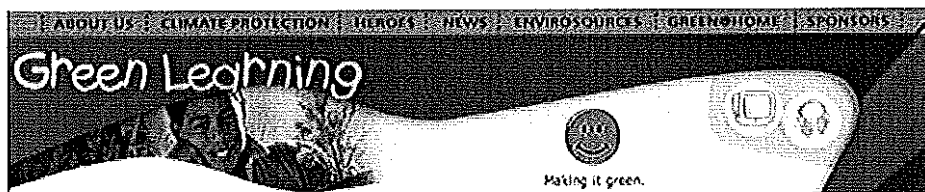
Greenlearning.ca BC

Preliminary Project Proposal

Prepared July 2005

**For more information, please contact
Diane Simpson, Director, BC Education Programs
Vancouver Office: Suite 606, 55 Water Street
Phone: (604) 677-4662 Email: dianes@pembina.org**





An Overview of Greenlearning.ca BC

The issues of sustainable energy, climate change, and air quality are critical, interconnected, and pressing. Addressing these has become a priority at both global and regional levels. Increasingly, governments, corporations, communities, non-governmental organizations, and individuals are advancing solutions of energy conservation, alternative and renewable energy supplies, and a broad sustainability approach to energy. Solutions include those that protect the environment, improve human health and well-being, and enhance economic competitiveness.

Education—school and public—plays a crucial role in achieving these solutions. Effective education on energy-environment issues contributes to creating a long-term “culture of energy conservation.” Education fosters a significant and lasting shift in behaviours and consumer choices to use energy wisely, to use clean energy, and to reduce emissions of air pollutants and greenhouse gases. In the short term, education can motivate and empower young people and families to take simple and practical actions that will produce real results. The challenge for today’s educator is to engage young people in understanding and applying complex information on energy and the environment in order that they will take appropriate action to help shape a sustainable future.

Greenlearning.ca—an innovative sustainability education program of the Pembina Institute—meets this challenge head on . . .

- Greenlearning.ca is a Web-based educational resource and teacher-training program that addresses selected school curriculum opportunities in grades 1 to 12. It provides high quality, interactive opportunities for students to examine the critical energy and environment issues of our time and to learn about sustainable energy, climate change, air quality, energy efficiency, and renewable energy.
- Greenlearning.ca provides teachers with complete units of study in selected science and social studies courses. The courses are flexible and capitalize on e-learning opportunities.
- Greenlearning.ca content is developed with multi-stakeholder advice and technical expertise, coupled with professional educational design, to ensure high-quality content, objectivity, relevance, and a balanced presentation of a variety of perspectives to support student inquiry and critical thinking.

- Greenlearning.ca also offers parents, educators, and the general public access to a wide range of resources on energy-environment and on sustainable energy issues and solutions.
- Greenlearning.ca encourages and supports students, teachers, school administrative staff, parents, and community leaders to take actions that will conserve energy, improve air quality, and reduce greenhouse gas emissions.

Three years in development, Greenlearning.ca Alberta was successfully piloted in the 2004–2005 school year and will be fully launched in the fall of 2005. Co-sponsored by three Alberta government departments and ten major corporations, Greenlearning.ca was developed by the Pembina Institute, an independent and widely respected public interest organization. Greenlearning.ca represents a unique collaboration among government, business, and NGO sectors to develop and support learning resources that position critical energy-environment issues into existing openings in the core educational curriculum. This e-learning resource is earning the acclaim of teachers, students, education officials, as well as its sponsors.

The Pembina Institute is now initiating a second phase: to work with respective provincial partners and agencies to develop and implement Greenlearning.ca for British Columbia and Ontario.

The Pembina Institute for Appropriate Development is a research and policy leader in Canada on climate change, energy efficiency, and renewable energy, with a national track record of success in environmental education. The Institute works with educators, communities, youth, governments, and progressive corporations to develop and implement sustainability solutions in the energy-environment field. For more about the Pembina Institute, please refer to *Annex A* or go to www.pembina.org.

Greenlearning.ca BC—Goals and Objectives

The Goals of Greenlearning.ca BC are to:

- Develop the literacy, knowledge, and skills of British Columbia students regarding energy-environment issues and a sustainable energy future and to develop their capacity to think critically about these issues.
- Engage British Columbia students in applying their learning and in taking appropriate and practical action on energy-environment and sustainability issues in their own lives, schools, and communities.
- Provide parents and the public with a comprehensive resource that will motivate and support energy conservation, the increased use of sustainable energy choices, and a reduction in pollutants and greenhouse gas emissions.

The Objectives of Greenlearning.ca BC are to:

- Produce and maintain a curriculum-based, pedagogically sound, comprehensive, Web-based education resource on energy conservation and renewables, clean air, and climate change that engages students and meets the needs of teachers.
- Train and support teachers to use this resource to facilitate effective student learning and engagement on energy efficiency and conservation, air quality, climate change, and renewable energy.
- Build a strong base of student knowledge and literacy regarding interrelated energy and environment issues and solutions while also meeting core curriculum learner expectations.
- Motivate and engage students in making informed choices and taking actions that result in wise energy use, cleaner air, and fewer greenhouse gas emissions—enabling students and their families to contribute in a significant way to provincial energy conservation and clean air objectives as well as to our national goal of reducing climate-damaging greenhouse gas emissions (from 1990 levels) by 20 per cent.
- Engage parents, families, and communities in understanding these key energy-environment issues and in taking practical actions to contribute towards their solutions.
- Contribute high quality and innovative e-learning content to British Columbia schools (as well as to independent and/or distance learners) and help fulfil the potential of e-learning technology and interactive online learning resources.
- Reduce the cost of delivering engaging, current and updatable, and relevant learning resources to the formal school system on critical issues of key concern to the public and Government of British Columbia.

Greenlearning.ca BC Addresses Critical Needs

The Need for Smart Technology and Economic Growth

British Columbia has a strong base of innovation and expertise in alternative energy and power technology and has a goal to establish British Columbia as a world leader in sustainable environmental management. The provincial government recognizes the environmental, economic, and job creation potential of the alternative energy and power technology industry in British Columbia. An Alternative Energy and Power Task Force for the province has been formed to implement this objective.

The Premier's Technology Council has a vision for growing a world-class power technology cluster in a sustainable British Columbia. The strategy commits the province to showcase its leadership in world markets and work with industry on developing solutions to today's energy challenges. The strategy focuses on smart power market opportunities that are important in BC and represent large worldwide market opportunities. With a clear vision and strategy, BC hopes to be the provider of leading-edge power technology solutions to markets around the world.

British Columbia has market leaders and emerging companies in a number of smart, sustainable, power technology areas, including power electronics, fuel cells, natural gas and electric hybrid engines, smart grid and power measurement, small and micro-hydro, ocean, solar, and wind energy, sustainable urban building and design practices, and more. BC has an opportunity to create high-paying jobs by addressing its own energy needs and by exporting that expertise to confront energy challenges around the globe. BC's power technology sector includes more than 60 companies providing 3,000 jobs and generating \$700 million in annual revenues. Alternative energy and power technology has the potential of adding hundreds of millions to the economy over the next decade.

Education that supports the initiatives of the task force and educates students on alternative energy technology and the economic benefits will assist in moving this agenda forward in British Columbia. Not only will it assist those students who want to select careers and post-secondary education in the alternative energy sector, students are also a powerful knowledge base for the community today. Students will take activities and information they have learned on Greenlearning.ca home to their families, furthering the awareness and understanding of alternative energy and creating energy sustainability in BC.

The Need for Energy Market Transformation

The BC government aims to permanently improve the energy performance of existing buildings with an aim to address specific barriers to energy efficiency. Part of that initiative focuses on information and education that increases consumer awareness. Student projects and take-home energy assignments on this topic will increase public awareness and demand for energy-efficient buildings and conservation measures.

The Need for Education on Critical Energy and Environment Issues

Public and school education and engagement are highly effective tools in creating awareness and understanding and in changing behaviours over the long term. Education on energy-environment issues can foster energy-environment literacy, change deeply programmed lifestyle behaviours, foster a culture of conservation, and support public policy objectives in these areas.

Environment Canada has similarly stressed the importance of education in achieving national sustainability objectives. "Environmental education is about helping Canadians understand, share and use information to make decisions and engage in action that protects the planet, improves human health and well-being and enhances the competitiveness of the Canadian economy. Sustainability requires long-term and lasting behaviour change. Learning and internalizing environmental stewardship is an important way to achieve the behavioural changes that span generations" (from *The Education and Engagement Pillar of the CESF*, Environment Canada, 2004).

The Need for Clean Air

The need to address air quality is well documented and widely accepted and is a matter of escalating public and government concern. For the past three decades, the impact of air pollution on humans and on the natural environment in British Columbia has been clearly demonstrated and reported. In particular, the escalating impact of smog on human health and the associated health care costs have been carefully monitored by such agencies as the Ontario Medical

Association. Of equal concern are the environmental consequences, and the associated economic costs, of regional acid rain and ground-level ozone to lakes, forests, and crops.

Energy production and energy consumption for transportation and for meeting residential and commercial electrical power and space heating or cooling needs—both within the province, and in neighbouring jurisdictions—are the greatest sources of air pollutants that lead to the deterioration of British Columbia's air quality. Conserving energy, using more efficient energy technologies, and increasing the share of energy produced from clean renewable sources will result in cleaner air with net financial savings to British Columbia citizens. These "solutions" will provide significant improvements, and yet are largely untapped. Implementing them will require much greater citizen literacy on the issues, motivation to take action, and practical knowledge on how to do so.

The Need for Climate Protection

There is growing scientific and political agreement on the potential impact of climate change and on the need to take immediate action to begin to reduce greenhouse gas (GHG) emissions. The weight of scientific evidence clearly demonstrates that, as greenhouse gas levels increase in the atmosphere and trap more heat energy, average global temperatures will rise and global climate systems will be destabilized. Growing evidence suggests that the environmental, economic, and social consequences—and costs of climate change—will be significant. For example, Prairie crop yields are expected to fall by 10 to 30 per cent, and hydroelectric generating potential in Ontario, the Prairies, and southeastern BC could diminish. Environment Canada states, "Changes in the occurrence and severity of extreme events would have serious implications for the security and integrity of Canada's natural resources, social systems, and infrastructure with subsequent implications for the insurance industry and supporting public sectors" (from *Green Lane*, Environment Canada).

Responding to this need, the Government of Canada ratified the Kyoto Protocol in December 2003 and, in 2005, released *Project Green*, the federal action plan on climate change.

Although various stakeholders continue to debate whether Kyoto targets are too much or too little and how much economic or regulatory policy should be pursued, few dispute that urgent and substantial action is required. In British Columbia, a strong consensus has emerged on the importance of citizen engagement on the issue and the need for individuals and businesses to take practical actions that significantly reduce GHG emissions. The federal government's One Tonne Challenge also depends heavily on individuals and families being motivated to reduce emissions, aware of how to reduce emissions, and supported in taking practical steps to achieve those reductions.

The Need for Sustainable and Secure Supplies of Clean Energy

Two planks lie at the heart of the province's strategy for meeting energy needs of the future:

- 1) increasing the development and use of cleaner energy supplies, including a much expanded role for renewable energy, and
- 2) reducing demand for energy through conservation and efficiency.

The Need for Energy-environment Resources Focused on Core Curriculum Learner Expectations

The realities of today's classroom include a "crowded" curriculum, public expectations of higher results, a scarcity of up-to-date and relevant teaching resources, and societal pressures to address topical issues. At the same time, the majority of teachers are motivated more by providing quality education that meets core curriculum expectations than by a personal commitment to issues such as conservation and the environment.

While the existing BC curriculum provides substantial "openings" for learning about energy and environment issues, most of the resources available today on this topic are supplementary resources and learning activities that require extra teacher time and effort to fit into an already crowded curriculum.

Teachers require high quality resources on topical issues that provide balanced and current content that is infused across and correlated directly to the mandated curricula, and that support student inquiry and decision-making.

The Need for e-Learning Resources

While governments continue to invest heavily in classroom technology and Internet connectivity, educators indicate that there are surprisingly few effective online resources available to teachers and students, especially education resources designed specifically for Web-based learning. Teachers want effective and well designed e-learning resources. At the same time, the availability and uptake of e-learning technology varies widely across the province. Therefore, e-learning resources must be effectively designed not only to be interactive and make use of the capabilities of the medium, but also to be flexible enough to provide teachers with a range of options for classroom use, from simply downloading the resources for printing and distribution to students, to online teacher-led activities, to fully online student-led interactive learning.

Meanwhile, print textbooks are becoming increasingly expensive to produce and publish. For rapidly evolving issues such as those in the energy and environment area, textbooks quickly become stale-dated. Learning resources must be current, easily updated, and affordable for the educational system. Online resources now have the potential to cut learning resource costs to school boards dramatically while keeping materials current.

Why Greenlearning.ca—Pioneering a New Approach

In 2001—after a decade of national experience in education on energy and the environment, teacher training workshops, and electronic publishing of online supplementary learning resources—the Pembina Institute stepped back to reassess its education programs and approaches. With support from the Alberta government, the Institute looked critically at what was needed to increase the effectiveness of education on the environment-energy front. The process included 18 months of needs assessment, consultations with teachers, curriculum review, and the exploration of options for effective e-learning design. This review and planning led to the development of the Greenlearning.ca e-learning platform and program, and to merging forces with the education team that developed the award-winning Destination Conservation energy

efficiency education program for the Tomorrow Foundation. The result—a collaborative three-year \$860,000 electronic publishing and teacher engagement and training initiative that has been successfully launched for Alberta schools, and the widespread uptake of this resource in classrooms in September 2005. Greenlearning.ca Alberta serves as phase one of the Pembina Institute's long-term efforts to respond to the need for a national suite of quality Canadian e-learning energy-environment programs, customized to the requirements of the specific issues and curriculum needs of each province and territory.

Building on its experience in developing and implementing Greenlearning.ca in Alberta, the Pembina Institute is now cultivating and confirming multi-stakeholder collaborative partnerships with governments, corporations, education and teacher organizations, and non-governmental organizations (NGOs) to develop and deliver Greenlearning.ca BC. This second phase of the Institute's program will also include a similar approach for Ontario, moving forward in the fall of 2005. By late 2006, we anticipate beginning the work to engage appropriate regional partners and expand Greenlearning.ca into Quebec and Manitoba, and potentially to other provinces.

What is Greenlearning.ca?

Greenlearning.ca content focuses on three related energy-environment issues, and, in an integrated manner, links these to three broad solution action areas:

The three related energy-environment issue drivers . . .

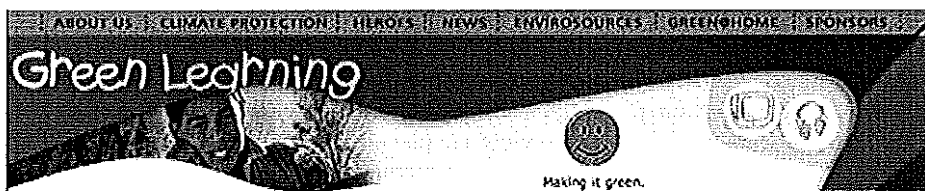
- air pollution, smog, and clean air
- climate change
- meeting energy requirements

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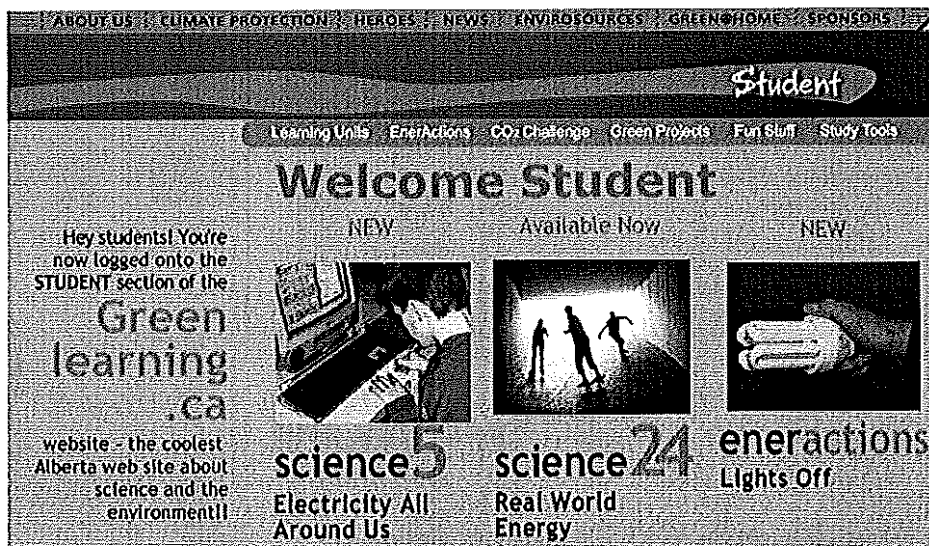
. . . are inextricably linked to the three broad solution action areas

- energy conservation and efficiency
- increased use of alternative and renewable sources of energy
- implementation of broad energy and sustainability strategies

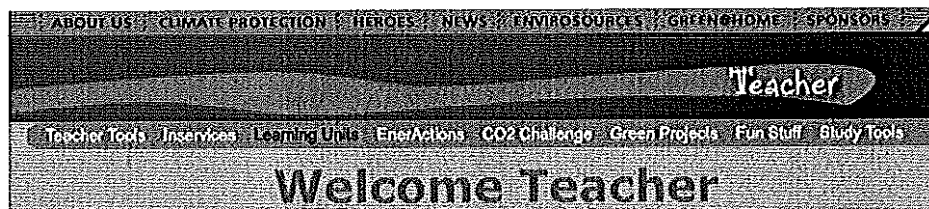
Greenlearning.ca is a unique Web-based energy-environment education resource that addresses core curriculum learning objectives and is packed with engaging online activities for students and superior teaching tools for teachers. Innovative Web design provides customized points of entry to the site for different users, by province or school board, and by type of user. The program engages, trains, and supports teachers through professional development orientation sessions and intensive training workshops.



From the home page of Greenlearning.ca, students, parents, teachers (wanting to learn more about the science of energy), company employees, or anyone else can access green news, learn about climate change, hear about local environmental heroes, and learn how to make their home more energy efficient. This section of the Web site is known as the public layer.



Students go to their own home page to access the fascinating world of energy and environment, created just for them—exciting on-line games, fun activities, and intriguing information on energy and climate change. Students use the site to complete on-line worksheets, find information for assignments, or to play one of the entertaining educational online games.



Teachers enter Greenlearning.ca to access curriculum and unit plans, lesson plans, evaluation tools, answers keys, background information, and on-line training tools. The teacher site is password-protected, created by teachers for teachers, and has all a teacher needs to engage students in a topical issue while meeting core curriculum expectations.

Preliminary Evaluation Results Are In!

Most modules of Greenlearning.ca Alberta were piloted over the 2004–2005 school year. A small group of Alberta teachers were introduced to Greenlearning.ca. The Pembina Institute has just completed a preliminary survey and resource evaluation with these pilot teachers:

- Over 90 per cent have used Greenlearning.ca, or plan to do so in the fall.
- On a scale of 1 to 5, where 5 is excellent, over 90 per cent of the teachers who have used Greenlearning.ca rated it either 4 or 5.

The enthusiasm of Greenlearning.ca Alberta teachers is evident in some of their evaluation comments: “the students really enjoyed the online resources” . . . “everything was complete” . . . “differentiation of instruction is important” . . . “well laid out and easy to use” . . . “the kids really got into it . . .”

Evaluation of the Alberta experience and actual results will continue and will be used to shape Greenlearning.ca BC. Evaluation results will be shared with all partners and sponsors.

Merging National Experience with BC Expertise and Capacity

The Pembina Institute’s climate change and energy team, some 45 strong, is comprised of professionals from many fields including engineering, policy, economics, international development, environmental science, urban planning, and education. With extensive technical and policy expertise in these fields, a commitment to research, a national reputation for excellence in creative multi-stakeholder collaboration, and over a decade of experience in providing high-quality and comprehensive environmental education—the organization is well positioned to develop and deliver an effective education resource to teachers and students.

The Institute has, since its inception in 1985, successfully launched or facilitated collaborative initiatives in which a variety of perspectives and interests from government, industry-business, environmental organizations, and other non-governmental sectors were required to address and solve complex energy-environment problems and were critical to informing and engaging Canadians on these issues in an objective manner. The organization’s approach is variously described as practical, collaborative, solutions-focused, objective, systems-based, and multi-disciplinary.

The Pembina Institute has initiated preliminary work to design Greenlearning.ca specifically for British Columbia through initial consultations with key agencies and organizations and by beginning to build multi-stakeholder partnerships. Preliminary consultations to date—and potential partners—include those with the BC Ministries of Energy and Mines and Environment, Environment Canada and Natural Resources Canada, Wild BC, BC Hydro, Van City, Xantrex, Alcan, and Norske.

Greenlearning.ca BC—Key Deliverables

Over the period of 2005 to 2009, the Pembina Institute will, through this project, deliver the following to school boards, schools, and teachers across British Columbia:

- learning resource deliverables,
- teacher training and engagement deliverables,
- marketing and promotion deliverables.

Each of these is described below in separate sections.

Learning Resource Deliverables

The Pembina Institute will research, develop, and deliver the following British Columbia Greenlearning.ca components:

- *A minimum of four complete Learning Units will be created for British Columbia.* Each Greenlearning.ca unit will address the mandated curriculum outcomes of a specific British Columbia grade level and subject or course (Science or Social Studies) selected on the basis of the best openings for these topics and greatest need relative to availability of existing learning resources. In a balanced and relevant manner, the concepts and skills of energy and environmental literacy will be infused throughout and integrated into each of these four units.

Each Greenlearning.ca unit will contain all the resources required to make learning relevant, increase ecological and sustainability literacy, and build motivation for conservation behaviours and clean energy choices, while fully addressing the core curriculum requirements. Each unit will include teacher lesson and unit plans, a curriculum map, background information for each lesson, online and downloadable activities for classroom use (addressing a variety of learning styles), and evaluation activities.

While some elements of the existing Greenlearning.ca Alberta units can be used, the British Columbia units will be completely designed and written from the ground up for the BC curriculum. It is expected that at least two of the four new BC units will be for grade and subject combinations not addressed in the Alberta program, adding substantially to the overall national coverage of the resource. (However, the Alberta units for subject and grade combination not covered in Greenlearning.ca will also remain available to BC teachers wishing to customize or adapt these on their own.)

Three *EnerAction Conservation Modules* are especially designed to help teachers and students learn about and participate in energy conservation in the school. The modules can be used as part of the curriculum or completed as school or class projects. The focus is to get students and teachers involved in making changes in their behaviours at school and at home. The *EnerAction* modules are:

- **EnerAction One Less Tonne:** The Pembina Institute's existing onelesstonne.ca program will be upgraded for British Columbia schools by adding new school and home

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appropriate actions, an electronic recording and reporting system, and a special interface for school audiences.

- **EnerAction Lights Off:** Using this module, teachers and students learn about energy conservation in the school, conduct conservation campaigns, and monitor results. This resource allows a participating school to track its energy and energy cost savings, as well as its reductions in greenhouse gas emissions. This module was created for Greenlearning.ca Alberta and will be updated and made British Columbia-specific for Greenlearning.ca BC.
- **EnerAction Computers Off:** Similar to Lights Off, a brand new Computers Off module will be developed for use in Ontario, Alberta, and BC. Computer usage is one of the prime causes of increased electricity consumption in schools. Students will develop campaigns to turn off computers when they are not needed. The program will also record their savings in kilowatt hours, dollars, and carbon dioxide reductions.

Four Topic Resource Centres—three new centres on *Energy Conservation*, *Air Quality*, *Renewable Energy*, and the upgraded and expanded centre on *Climate Change*—will be jointly developed and funded by the Greenlearning.ca BC and Greenlearning.ca Ontario projects. The topic resource centres will provide a valuable background learning resource to assist teachers in their own learning, research, and planning; support independent research or follow-up by high school level students, as well as resourcing some core student assignments; assist parents and families seeking additional information and practical action tips; and engage employees and citizens.

Each of the topic resource centres will offer:

- a comprehensive and balanced overview of the topic area within a consistent energy-environment-sustainability content framework and context;
- guided access to a selection of third-party Web sites and resources, primary source documents, and detailed technical how-to resources;
- several interactive and downloadable learning activities and planning tools for each centre, to drive engagement in the content, support learning, and facilitate action by individuals and families. One example is *The Great Canadian (Climate Change) Energy Challenge*—an online tool to engage users in learning about climate change, renewable energy, and energy efficiency.

The initial development of the three new topic resource centres will draw on, adapt, and upgrade premier quality materials already developed by several of the project's content partners, such as:

for Climate Change

- Natural Resources Canada's *One Tonne Challenge* program,

for Energy Conservation

- the public education and engagement resources of the Office of Energy Efficiency, Natural Resources Canada,

- school energy conservation and audit resource material developed by Destination Conservation and its offshoots,
- the Pembina Institute's Re-energy.ca.

Green At Home: One factor in the success of British Columbia's recycling program was educating young people who, in turn, engaged their parents and families. *Green At Home* is based on the same principle—by using take-home or downloadable guides, audits, and activities on resource conservation, green purchasing, and sustainable practices, students and their families can implement measures to save water, save energy, reduce emissions, and save money. This existing Greenlearning.ca Alberta resource will be completely revamped and tailored for use in British Columbia.

Energy in a Global Village: Greenlearning.ca will be linked to the Energy in a Global Village (EGV) online resource. Developed by the Pembina Institute and the Manitoba Teachers' Society, EGV enables students in Canada to examine how other people in other countries use energy, and how they are developing regionally appropriate sustainable energy solutions. EGV uses the inquiry-process (student-directed learning) and is linked to provincial curricula.

Teacher Engagement and Training Deliverables

A primary objective of Greenlearning.ca is to increase the capacity of teachers to facilitate high-quality learning in the energy-environment field. The teacher engagement and training component of Greenlearning.ca is designed to:

- generate teacher awareness of energy-environment issues,
- introduce teachers to the Greenlearning.ca resource,
- motivate teachers to fully address these issues where they are positioned in the formal curriculum,
- build the knowledge of teachers about energy-environment issues and solutions,
- provide comprehensive professional development on effectively teaching Greenlearning.ca and on integrating e-learning resources into their own teaching styles and available e-learning technology.

The Pembina Institute will use a variety of workshop methods to directly engage and support Ontario teachers in using Greenlearning.ca. In addition, online teacher training and support services will provide ongoing and affordable support to all teachers and electronic distance support for teachers in more remote locations and smaller communities.

Train the Trainer Workshops with Partners: The Pembina Institute will work with our education partners to train trainers and support these trainers and their organizations in delivering a province-wide teacher professional development program for Greenlearning.ca BC. Starting in year two of the project, the Institute will organize and conduct "train the trainer" sessions. These trainers, in turn, will conduct professional development and training workshops for teachers in using Greenlearning.ca in their classrooms. The Pembina Institute has initiated discussions with

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a number of lead teacher organizations and associations and with individual schools boards to design and deliver a Greenlearning.ca professional development program.

This approach will provide a multiplier effect and, therefore, cost-effective and significant outreach and engagement. It will take advantage of the strong relationships and educator networks which our partners have already established in the province. It also will provide partner organizations with curriculum content and workshop materials for them to utilize with their teacher members and add to their program repertoire.

Direct Delivery of Workshops: The Pembina Institute BC Greenlearning.ca team will also deliver Greenlearning.ca workshops through a variety of opportunities (see below).

Workshop Methods: Two types of workshops are planned for delivery by partners and by the project team itself:

1. General *Greenlearning.ca—Climate Change and Clean Energy Orientation* workshops will be developed and delivered to teachers and school officials through local, regional, and provincial professional development conferences and events. These half-hour to two-hour workshops will be designed to introduce and motivate teachers to take more in-depth professional development workshops.
2. *Division- and Subject-Specific Workshops* will be developed for each of the four Greenlearning.ca modules. These workshops will be delivered by Pembina's partner "trainers" and by our BC Greenlearning.ca team. These workshops will be offered through a variety of venues. They will enable teachers to explore energy-environment issues and solutions, will provide teachers with online experience in becoming familiar with the resource, and will enable them to begin to plan how they will use Greenlearning.ca in their classroom "starting Monday morning."

Venues for Professional Development: The Pembina Institute and its partners (trainers) will use a variety of professional development venues:

- *Province-wide subject-specialty conferences.* There is a well-established annual "slate" of such conferences, always looking to present the "best" to its teachers. Utilizing these existing networks makes this a cost-effective manner for reaching interested teachers and introducing them to Greenlearning.ca.
- *School board professional development workshops.* These could be regional workshops (for several school boards) and could include both general and learning unit specific workshops.
- *Special events.* These venues, such as Earth Day, attract a wide variety of public, including teachers, and are an opportunity to showcase Greenlearning.ca and hook teachers into seeking out professional development opportunities in their school board or area.
- *Online training.* Professional development will also be offered online in a self-training format, using PowerPoint slides as well as streaming video and audio. Teachers will be able to access online training at any time and use it at their convenience. Online training will introduce teachers to the materials and get them started in using the materials, including an

introduction to Greenlearning.ca as well as training sessions in specific Greenlearning.ca components such as the learning units, topic resource centres, and conservation modules.

Marketing and Promotion Deliverables

Greenlearning.ca BC and the availability of professional development sessions and workshops for teachers will be actively promoted and marketed through the Institute's education partners and education media to schools boards and to teachers. In addition, Greenlearning.ca will be promoted and marketed to the public.

School Boards: The Pembina Institute will cultivate the support and endorsement of school boards and/or the curriculum consultants of these boards to promote the resource to teachers first by circulating promotional print materials, e-newsletters and e-mail bulletins, and then by facilitating teacher engagement and training sessions as part of the board's professional development program. The Pembina Institute has begun discussions with potential delivery partners at both the school board level and with relevant teachers' professional organizations and programs.

E-newsletters, E-promotions, and Articles: Greenlearning.ca BC will be marketed via dedicated e-newsletters and list-serves. We will cross-promote Greenlearning.ca on high-traffic Web sites frequented by BC educators and students, including those of delivery partners and sponsors, as well as our own Re-energy.ca, Onelesstonne.ca, Pembina.org, and Climatechangesolutions.com. Articles will also be written and placed with the educational presses and for teacher newsletters and magazines.

Engaging Student Leaders: Working with student and youth leaders—who can go on to influence other youth as well as emerge to be tomorrow's civil, political, and business leaders—provides enormous leverage. Greenlearning.ca will work with partners, such Learning for a Sustainable Future, to offer a limited number of direct hands-on learning experiences in workshops and forums to youth leaders, to directly engage these future leaders, as well as to facilitate broader uptake and engagement of the resource in schools.

With Our Sponsors: The Pembina Institute will work with its project partners and sponsors to raise awareness of and promote Greenlearning.ca in a manner that is coordinated with their own public engagement and outreach activities on these issues.

Making it Happen—Work plan and Methodology

The Pembina Institute has over 15 years of experience in developing and delivering energy-environment education programs to teachers across Canada, coupled with four years of experience in the development and (initial) delivery of e-learning platforms (Greenlearning.ca Alberta). Pembina's education team has built on this experience to create a preliminary project workplan and methodology, and to generate a realistic budget. An initial version of the workplan and timelines is available as a separate document (available soon, on request), recognizing that this will continue to evolve and change with the input of sponsors and partners.

The Pembina Institute will use well-established results-based management techniques to design and manage the project, setting out clear and measurable expected results at the outset, and conducting ongoing evaluation against these expected results.

The design and development of Greenlearning.ca BC will begin with the project team conducting assessments and focus groups of teachers, students, curriculum developers, e-learning professionals, content advisors, and partners. This process will enable us to create a resource that builds on work to date (Greenlearning.ca Alberta) while serving as a uniquely BC product designed by BC teachers for the BC curriculum.

The workplan for Greenlearning.ca BC includes the following key stages:

- To review and analyze the British Columbia curriculum to select the optimal subject and grade area topics for the complete learning modules.
- To write draft learning resource materials and design learning activities using an iterative process involving Web designers, e-learning professionals, and education writers.
- To design and test the graphic user interface and online navigation.
- To use content and education professionals to review draft materials.
- To complete Web design, layout, and production of pilot versions.
- To commission educators and advisors to review pilot versions
- To make revisions based on feedback of reviewers.
- To conduct classroom pilot testing and evaluation (both student and teacher), and revise, evaluate, and measure project impacts and results.
- To support feedback from teacher and student users and improvement mechanisms
- To continue to upgrade and maintain the resource.

The Pembina Institute has successfully involved corporate, and other, sponsors to fund and advise on the development of education resources, including the national *Climate Change Education and Action Kit* and Greenlearning.ca Alberta. While tapping into the knowledge and perspectives of government, corporate, and NGO partners to ensure accuracy and a broad representation of points of view, the Pembina Institute as publisher, maintains editorial control so that the resulting educational resources are accurate, objective, balanced, and of the highest quality, uniquely positioned to support student critical thinking and decision-making on these issues. Greenlearning.ca Alberta meets the approval of teachers and school districts and enjoys the full support of Alberta Education. The same methodology will be employed in developing Greenlearning.ca BC.

Growing and Sustaining Greenlearning.ca

The Pembina Institute is fully committed to sustaining the Greenlearning.ca program over the long term, including formal evaluation of the use and results achieved, ongoing continuous improvement of the resource materials, site updates to ensure that materials are current, systematic promotion and marketing of the resource, and continuing teacher engagement and training workshops. Annual sustaining costs are expected to be about 10 per cent of the initial development and training costs.

The Pembina Institute is currently exploring a variety of revenue streams for sustaining the Greenlearning.ca program (all provinces), and will test these possible streams in Alberta in the coming months. Based on the results of this testing, the Pembina Institute will prepare a detailed business plan and budget for sustaining the program over the long term. This will be presented to all project partners and sponsors for discussion and input, and the plan for sustaining the project over the long term will be finalized by early in the third year of the current development and implementation phase. Possible sustaining revenue streams may include:

- **School board level subscription fees:** One option for securing revenues to maintain and update learning resources and to engage and train teachers is the establishment of a very modest resource subscription fee established on a per student basis and collected from participating school boards. Once Greenlearning.ca has been implemented and a significant number of teachers are using the resource, the Pembina Institute will be able to demonstrate concrete education results and document the significant benefits to school boards, including:
 - incremental reductions in energy and water consumption and savings on school utility bills that are a direct result of students and teachers using Greenlearning.ca,
 - avoidance of purchase costs for some supplementary print resources in directly related core learning resources,
 - significant student and family contributions towards the province's energy conservation goals, air quality goals, and national greenhouse gas emission reduction goals.

With anticipated energy savings, a annual subscription fee in the range of five to ten cents per student would be sound investment for most school boards.

- An "**EnviroSource**" or "**Green Store**" component on the site: A one-stop direct Web link to providers of energy conservation and renewable energy supplies and services, and other environmentally friendly products and green learning resources. The Institute will negotiate a referral fee or commission on all items sold as a result of links from the Web site, tracked on a school district basis, and will forward 50% of the funds received to the participating school board to use to enhance their sustainability and conservation project work, and use the remaining 50% to support ongoing operation and maintenance of Greenlearning.ca.
- The option of **ongoing corporate sponsorships** remains open—either sponsorship of specific school boards to enable them to subscribe, or, sponsorships of the overall program, which eliminates or reduces the need for subscription fees.

The selection of appropriate measures to fund this learning program on a sustained basis requires additional discussions with the provincial government education departments, interested school districts, and other sponsors and partners. The detailed work plan includes a commitment to finalize a proposal for sustaining the program beyond year four and submit it to the project sponsors and other partners by early in the third year of the project.

Involving and Recognizing Our Sponsors

The Pembina Institute values its sponsors, provides real opportunities for their active involvement in the project, and recognizes their important contributions:

- Our multi-stakeholder **Sponsor Advisory Committee** will meet about three times a year to provide guidance on the project review, facilitate more detailed feedback on the development and implementation of Greenlearning.ca and to receive progress reports. All project sponsors and major partners are asked to designate at least one representative and are welcome to attend and participate. Regular electronic communication updates and consultation are maintained between meetings.
- **Content advisors:** Content advisors, as well as sponsors, will have the ongoing opportunity to review and advise on the actual resource content and materials as work progresses. Typically, as new material is written, content advisors are notified and provided an opportunity to review it and provide general or specific feedback and advice.
- To compliment our Sponsor's Employee Engagement Program, Greenlearning.ca will provide background materials, online activities, and take-home activities that employees can use on their own or with their families. The Pembina Institute will provide articles for company or departmental newsletters and postings for their Web sites to promote their involvement in the program.
- Sponsors receive a logo button in the **Sponsor section of the Web site** and space to provide a profile and briefly explain their outlook and actions on environment and sustainability, energy conservation, climate change, and related issues. Links are also created to the sponsors' own Web sites and educational resources they may wish to highlight.
- **Acknowledgement in print and e-promos:** Each sponsor will be appropriately recognized on all program print promotion, electronic e-mail, and newsletter promotion. In addition sponsor credit will be given in all media materials and launch materials created for Greenlearning.ca BC.

Employees can also be engaged directly in Greenlearning.ca with a variety of mechanisms including:

- "brown bag lunch" briefing sessions and Web site tours to make employees familiar with the program and its resources, and assist them in promoting it.



Formatted: Bullets and Numbering

Timelines for Greenlearning.ca BC

Greenlearning.ca BC is a four-year project, with most of the project revenue requirements occurring in the first three years. This consists of a concentrated, two-year resource development and piloting period followed by a third full year (after launch of all the main components) for intensive teacher engagement and training, and a fourth year of updating and maintenance with ongoing teacher engagement and training. The key milestones for BC Greenlearning.ca are summarized in the table below:

June to Dec 2005	Confirm government, corporate, NGO and education sponsors and partners, and, secure initial funding.
Dec 2005 to Feb 2006	Consult, design, and map the resource. Contract teacher and other expert development teams.
Feb 2006 to Aug 2007	Research, write, and produce Greenlearning.ca resource components—pilot test, evaluate, revise, and publish.
Oct 2006	Preliminary launch of Greenlearning.ca BC including the public layer, EnerAction modules, and one complete British Columbia learning unit (with additional launches as each of the remaining modules and components are ready). Begin marketing and promotion. Begin teacher engagement and training workshops.
Oct 2006 to Aug 2007	Complete development of all resource modules and components.
Sept 2007 to Aug 2008	Promote and market, and conduct teacher engagement and training (major focus). Continue to test and evaluate the program and its delivery to revise and update as required.
Sept 2008 to Aug 2009	Maintain and update resources, conduct ongoing promotion and teacher engagement, and complete the transition to sustaining funding resources.

Budget for Greenlearning.ca BC

Revenue over three years	
Government of BC	200,000
Government of Canada	200,000
Platinum Corporate Sponsors (4x \$100,000)	400,000
Gold Corporate Sponsors (4 x \$50,000)	200,000
Total Revenue	1,000,000
Expenses over three years	
Resource design and development, including consultation, writing, editing, evaluation, pilot testing	380,000
Web design and development	200,000
Marketing and promotion	50,000
Teacher engagement and training	245,000
Travel and project expenses	50,000
Project management and administration	75,000
Total Expenses	1,000,000

BC Project Sponsors and Partners

The Pembina Institute is actively engaging and confirming project sponsors and partners. This section is being fleshed out as discussions continue with various government departments and potential corporate sponsors, as well as with the content and delivery partners. Initial and positive discussions have already taken place with the following:

Provincial Government:

- Ministry of Energy and Mines (a potential financial sponsor and content partner and advisor)
- Ministry of Environment (a potential financial sponsor and content partner and advisor)
- Ministry of Education (in-kind support in a curriculum advisory role)

Federal Government:

- Environment Canada (a potential financial sponsor and content partner and advisor)
- Natural Resources Canada (a potential financial sponsor and content partner and advisor)

Corporate:

- BC Hydro (a potential financial sponsor and a content partner and advisor in the context of corporate social responsibility)
- Van City (a potential financial sponsor and a content partner and advisor in the context of corporate social responsibility)
- Norske (a potential financial sponsor and a content partner and advisor)
- Alcan (a potential financial sponsor and a content partner and advisor)
- Xantrex (a potential financial sponsor and a content partner and advisor)

Discussions with other leading corporations and potential financial sponsors have been initiated.

Educational or Environment-Energy NGOs and Agencies:

- Wild BC (delivery partner)
- Learning for a Sustainable Future (potential delivery partner)

Annex A

The Pembina Institute for Appropriate Development

The Pembina Institute of Appropriate Development creates sustainable energy solutions through research, education and advocacy, and consulting services. Concentrating on the field of energy and environment, we promote environmental, social, and economic sustainability in the public interest through the development of practical solutions for communities, individuals, governments, and businesses. The Pembina Institute provides policy research leadership on climate change, energy issues, green economics, energy efficiency and conservation, renewable energy, and environmental governance. The organization is one of Canada's leading NGOs in the development of effective education resources on energy and environment issues. For more information, please refer to our Annual Report or visit our Web site: www.pembina.org.

To achieve our vision, the Institute has established some long-term behavioural change outcomes:

- The Canadian corporate sector continuously shifts to more sustainable energy production and consumption.
- Communities in Canada and developing countries continuously move towards more sustainable energy production and consumption.
- Today's Canadian youth become empowered with the skills, knowledge and attitudes to make the decisions necessary for the shift to more sustainable energy.
- Federal and provincial/territorial governments in Canada implement policies and programs that result in more sustainable energy production and consumption.

The four key areas of focus for the Institute are to:

- minimize negative environmental impacts from conventional energy,
- optimize energy conservation and efficiency,
- maximize low impact renewable energy, and
- minimize greenhouse gas emissions.

Directly Related Experience: Alongside the Institute's successful development of Greenlearning.ca in Alberta, several examples of the work initiated and conducted by the Pembina Institute demonstrate our capacity to achieve expected results and outcomes on time and on budget. Many more examples of our expertise and experience can be found at www.pembina.org.

In Formal Education:

- **Re-energy.ca** is the leading international online education resource on renewable energy (by use rates and Web search results) for junior and senior high school. Re-energy.ca features practical low-cost construction plans, lesson plans, and teaching strategies. Teachers introduce the concepts of renewable energy in science classes by having students build simple fully operational working models of technologies such as a wind turbine, a mini-hydro generator, and a methane gas digester. The site currently enjoys an average of more than 50,000 downloads per month!

- **The Climate Change Awareness and Action Kit** is an innovative and comprehensive multimedia package for teaching about climate change in secondary schools. Designed for the Alberta Science and Social Studies curricula, the *Climate Change Awareness and Action Kit* offers a range of educational methodologies to engage students in a full investigation of climate change.

In Public Education and Outreach

- **Climate Change Solutions:** This Web site is Canada's "megasite" of interactive tools, resources, and success stories on actions to reduce greenhouse gas emissions. www.climatechangesolutions.com draws on the real-world experience of Canadian industry, governments, and individuals to highlight the many untapped "win-win" solutions available to address climate change. More importantly, the site provides easy access to the information, tools, and resources needed to translate concerns about global climate change into concrete local actions that can reduce greenhouse gas emissions. Climatechangesolutions.com demonstrates how to reduce emissions in the following sectors: Individuals and Families, Municipalities, Oil and Gas Production, Electricity Generation, Agriculture, and Forestry and Forest Products.
- **Environment and Energy in the North Primer Series:** The Pembina Institute's Energy Watch program has developed *Environment and Energy in the North*, a series of six primers, two guides, and a listing of resources and contacts to assist Northerners to take part effectively in managing the environmental impacts associated with oil and gas development and to ensure that government and industry are using the best practices available.

In Collaborative Multi-stakeholder Policy and Program Delivery

- **One Tonne Corporate Challenge:** Under the workplace-based One Tonne Corporate Challenge (OTCC), established by the Pembina Institute, with support from the Government of Canada's Climate Change Action Fund, hundreds of employees of Shell Canada, Petro-Canada, Suncor Energy, and ConocoPhillips Canada have already committed to reduce their annual GHG emissions by a total of 4,601 tonnes. The results of the OTCC pilot were published in *One Tonne Corporate Challenge: Overview, Evaluation and Lessons Learned*, released in June 2005 by the Pembina Institute.
- **CanREA:** The Canadian Renewable Energy Alliance is a coalition of Canadian non-governmental organizations active in the fields of low-impact renewable energy and energy efficiency. In May 2005, CanREA released the *Preliminary Framework for a National Renewable Energy Strategy for Canada* in response to the Canadian government's call for input and consultations. The Pembina Institute is one of the founding members of CanREA.
- **Energy Planning Initiatives for First Nations:** The Pembina Institute has been working with 35 First Nations in western Canada on the implementation of sustainable energy options that lead to cost savings, reductions in environmental impacts, and local economic development.

Day, Kristin ENV:EX

From: Sanford, Donna L ENV:EX
Sent: Thursday, January 19, 2006 2:21 PM
To: Thiessen, Lee ENV:EX
Cc: Mlinar, Anita ENV:EX
Subject: Transfer Payment - Pembina

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Lee. Can you please review the paperwork for this Transfer Payment and forward to Anita for next steps.

I:\EPD\WACC\TRANSFER PAYMENTS\2005-2006\Climate Change\WAC-06-xxx Pembina Green Learning

Please note that I've asked Diane Simpson to revise her request email to (1) indicate March 31, 2007 end date and (2) note that the educational resources to be developed will be BC specific.

I've made the same amendments to the TP agreement letter as with the BCSEA TP (omitted the three clauses; added Hu's line).

Finally, I've stated in the TP agreement letter that we've attached both the email request and the business plan submitted previously. I don't have a copy of their recent business plan -- could you please save it in the above folder?

Thanks,

-Donna

Donna Sanford
Senior Policy Analyst
Climate Change Section
BC Ministry of Environment
3rd Floor 2975 Jutland Rd., Victoria BC V8T 5J9
Ph: 250-387-9943 Fax: 250-356-7197

Day, Kristin ENV:EX

From: Diane Simpson [diane@dianesimpson.com]
Sent: Tuesday, January 24, 2006 2:22 PM
To: Thiessen, Lee ENV:EX
Cc: Kathy Worobec; Sanford, Donna L ENV:EX
Subject: Pembina Institute request

Hello Lee,

This request is in reference to the Pembina Institute's meeting with you on Oct 7, 2005.

Greenlearning.ca is a public school curriculum-based e-learning education program of the Pembina Institute that addresses key topical issues of climate change, energy and environment, renewable energy and technology, sustainability, energy efficiency and conservation, ecosystems and species at risk (flora and fauna), and environmental stewardship. This on-line teacher resource weaves in a First Nations perspective, is regional specific in its content, and is completely curriculum driven.

The Pembina Institute requests \$50,000 from Ministry of Environment, Climate Change Section for this project. These funds will contribute to the review of where climate change links to the BC Ministry of Education Integrated Resource Package and specific outcomes and the development of teacher materials, student activities and backgrounders on climate change and solutions to climate change on Greenlearning.ca website. These materials will be completed by March 31, 2007.

Thank you.

Diane

Diane Simpson
Director, BC Education Program

The Pembina Institute - Vancouver Office Suite 606, 55 Water Street Vancouver, BC, V6B 1A1

Phone: 604-677-4662
Fax: 604- 874-8557

dianes@pembina.org
www.pembina.org

22 August, 2012

Through a grant to Wild BC, an additional grant to Sage/Tides Foundation, and a contract to Animation Brewery, Diane Simpson produced educational materials on climate change impacts and adaptation in B.C.

Curriculum materials related to this project are available on the Wild BC website, which should also include links to the DVDs.

Jenny Fraser

From: Fraser, Jenny D ENV:EX
Sent: Tuesday, February 8, 2011 5:30 PM
To: Thiessen, Lee ENV:EX; White, Thomas ENV:EX
Subject: FYI - High School Adaptation Project Finished!

In 2006 we provided a grant to Wild BC to produce classroom lesson plans on climate change impacts and adaptation in B.C. In 2009 we provided a grant to Tides Foundation to produce supplementary audio-visual materials based on these lesson plans. I'm happy to report that these materials are finally completed. All materials are available for use by teachers and others through the Wild BC website.

The WildBC lesson plans are directly linked to the high school curriculum; getting this link is important because it means that teachers are likely to actually use the materials.

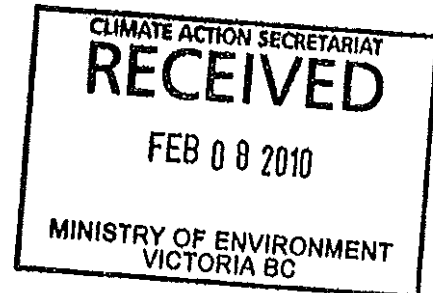
- [Is BC In the Hot House?](#) [220 KB - PDF]
- [Connecting Ecosystems and Climate](#) [200 KB - PDF]
- [Impacts on Natural Systems](#) [200 KB - PDF]
- [Just Do It](#) [533 KB - PDF]

The supplementary AV materials are approved for educational use and are at <http://wildbc.org/futurethink/ft-index.html>.

Jenny Fraser
Climate Change Adaptation Specialist
Climate Action Secretariat
British Columbia Ministry of Environment
Telephone: (250) 387-9330
Jenny.Fraser@gov.bc.ca

Jan 28, 2010

Ms. Jenny Fraser,
Climate Change Adaptation Advisor
PO BOX 9486
Victoria, BC
V8W 9W6



Dear Ms. Fraser:

Tides Canada Initiatives Society – GreenThink project would like to thank the Ministry of Environment for their generous contribution of \$85,000 to develop a climate change resource for high school students. (Please note that Sage Centre has gone through a name change. At the time of signing the contribution agreement for this project with MOE, our name was Sage Centre).

The \$85,000 contribution from MOE was used for expenses incurred for the Adapting to Climate Change educational resource project.

The resource has been named FutureThink BC: Climate Change Impacts and Adaptation and can be viewed in the climate change resource section on the Wild BC website. The resource is also available in DVD format.

The website and DVD helps students learn what scientists propose we do to prepare for the impacts of climate change, and what communities are doing to prepare for an uncertain future. Using case studies from Vanderhoof, the Okanagan and Delta, students and teachers explore how communities are responding to 3 significant impacts of climate change in the province:

- Changes in Forest Ecosystems and the Mountain Pine Beetle Infestation (Vanderhoof)
- Depleting Water Supplies (Okanagan)
- Rising Sea Levels (Delta)

We are particularly pleased with our short animated films that were based on the interviews we conducted with key climate scientists in British Columbia. These short films can be used in the classroom and for public presentations. These short films cover both the topic of impacts and adaptations to climate change in British Columbia.

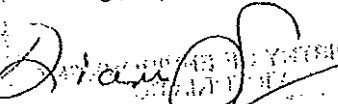
In this resource the student and teacher will discover:

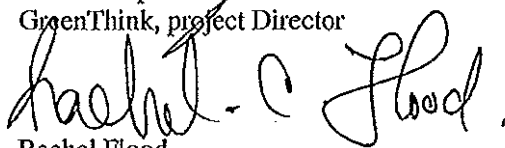
- Climate change lesson plans that link to the BC curriculum.
- Stand-alone audio visual materials that complement lesson plans:
 - Short films with climate change experts
 - Colourful graphs, maps and figures
 - Simulations
- Resources developed specifically for grade 10 science and the climate change learning outcomes.
- Materials appropriate for all secondary subjects.

TIDEScanada

I will call you in the near future to set up an appointment so that I can walk you through the resource.
Please do not hesitate to call me if you have any questions about the project. I can be reached at 604-730-9762.

Best Regards,


Diane Simpson
GreenThink, project Director


Rachel Flood
Senior Project Specialist
Tides Canada

. Copyright.txt
From: Diane Simpson [diane@dianesimpson.com]
Sent: Thursday, July 22, 2010 1:42 PM
To: Fraser, Jenny D ENV:EX
Subject: Copyright

Hi Jenny,

Stu tells me we have to put who has copyright on these presentations. I just want to clarify who I think has the copyright on these flash presentations.

I don't necessarily want to have copyright, but I have to do all of this legally and I have to be very careful to protect Tides Canada in all this - all those lawyers of the federal government could come after us if we don't do it correctly!

Everyone who participated in the project licensed their work to GreenThink - project of Tides Canada Initiatives Society - even for the 3 flash presentations that you paid for. Based on this I think I should put copyright © 2010 GreenThink - project of Tides Canada Initiatives Society and licensors.

If we transfer the ownership of the presentations to the BC government and everyone redoes their license agreements to agree to your ownership, then we can change the copyright notice. Those license agreements are being sent to you by AB so you will see the wording on those.

s.14

That said all of those url's that Stu gave you are temporary. All the scientists licensed their work to Tides to be uploaded onto the BC website only - the lawyers were just so specific about where the scientist work could go so this all they would allow us. So based on these agreements you shouldn't give away those swift files or urls to anyone. Scientists, the general public, students and teachers can access the flash presentations from the wildbc website.

If we put the BC gov't lawyers on it and they get new agreements with everyone you can pass the swift files around. I will be fine with this - and of course you will have to get me to sign a transfer on this. I would like these out as much as possible so will be happy to do what it takes.

Because it puts Tides into a legal bind if you send them around, I think what is best is you refer people to the wildbc website when that is up in a week or two. We will release that wildbc url in early August - we need to get the url from wildbc.

I know you have sent the urls to PICS but if you can clarify all this with them that would be great.

All this legal stuff is sure a learning experience!

Diane

Does GT own the copyright on those 3 she paid for?

CONSENT TO LICENCE MATERIALS

PARTICIPANT: Jenny Fraser, Adaptation Specialist, B.C. Ministry of Environment
PO Box 9486 Str. Prov. Govt.
Victoria, BC V8W 9W6
(250) 387-9330 Jenny.Fraser@gov.bc.ca

PRODUCER: Diane Simpson, doing business as GreenThink, a project of the Tides Canada Initiative Society
400 - 163 W. Hastings Street, Vancouver, BC, V6B 1H5
604-730-9762 diane@dianesimpson.com

PRODUCTION: Climate Change Resource - Educational DVD and Website - see attached "Consent for Appearance Guide" for further details on the project

"Materials" provided listed on Schedule A.

In consideration of the opportunity afforded me to provide materials for the above-noted Production, I hereby irrevocably grant to the Producer, its successors, assignees and licensees, the following non-exclusive rights, throughout the world, in perpetuity (the "Rights") including:

i) the unlimited copyright licence to use and to deconstruct, compile or assemble any of the Materials (see attached Schedule A) in any form (including photographs, films, tapes, recordings, graphs, figures, notes and documents, etc.) owned or furnished by me (the "Materials"); and I specifically waive any moral rights I may have had in any of the Materials supplied; and

ii) the unfettered right to photograph, film, record and reproduce the Materials, in whole or in part, by any means;

The Producer and its Authorized Users acknowledge that the copyright and title to the Licensed Materials and any trademarks or service marks relating thereto remain with the Licensor. Neither the Producer nor its Authorized User shall have the right, title or interest in the Licensed Materials except as expressly set forth in this Agreement.

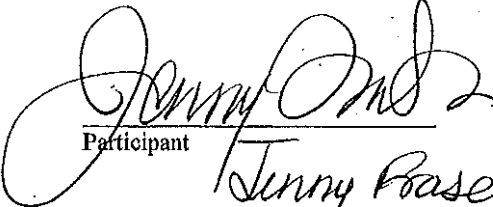
All of which are authorized to be published on a DVD disk and on the Web (limited to the Wild BC website (<http://www.wildbc.org>) with a link provided to Greenthink, Tides Canada Initiative Society and other educational non-profits), including the right to edit, modify, add to, juxtapose and combine the Materials in any combination or sequence with or without other material prepared by others and the right to delete any part of the Materials for use in the Production;

I grant the Producer the right to manufacture, distribute and publish all or any part of the Materials in the Production which shall be published on the Wild BC website (<http://www.wildbc.org>) with a link provided to Greenthink, Tides Initiative Society and other educational non-profits) and through manufactured DVD disks to be distributed free through various workshops held and/or facilitated by Wild BC, Greenthink and at teachers conferences.

And I hereby authorize the Producer to use the Materials, in whole or in part, in connection with advertising or publicizing the Production.

I represent that I own, control or have obtained permission to grant all the rights, title, and interest in and to the copyright, artistic and/or other rights associated with the Materials that accompany or are embodied in my Interview, and I declare that I have the right to grant the Licence contained in this Agreement. To the best of my knowledge, information and belief there are no claims or demands against the Materials. Should anyone make a claim I for any such dispute I hereby release the Producers from liability for use of the Materials should any party claim a property interest in any of them. I will not seek to prevent through a court ordered injunction the publishing of the Production. Producer makes no representation or warranty, and expressly disclaims any liability with respect to the content of any Licensed Materials, including but not limited to errors or omissions contained therein, libel, infringement of rights of publicity, privacy, trademark rights, moral rights, or the disclosure of confidential information.

All of which is agreed this 17th day of January ~~2009~~ 2011


Participant
Jenny Boaser
(print name)

**CONSENT TO LICENSE MATERIALS
SCHEDULE A**

DESCRIPTION OF MATERIALS:

Photographs (physical copy) – list photographs by brief description

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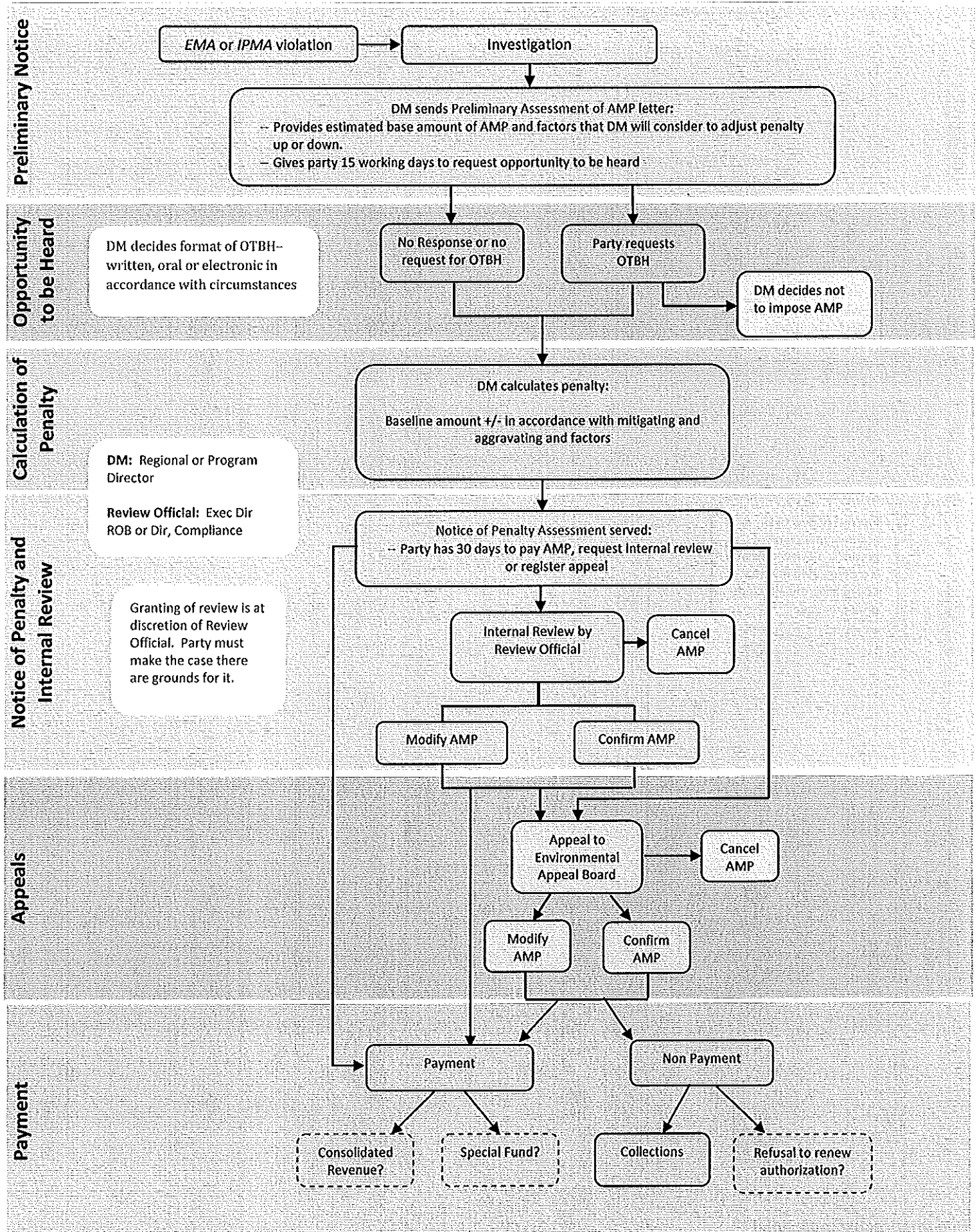
Photographs (digital) – list by filename

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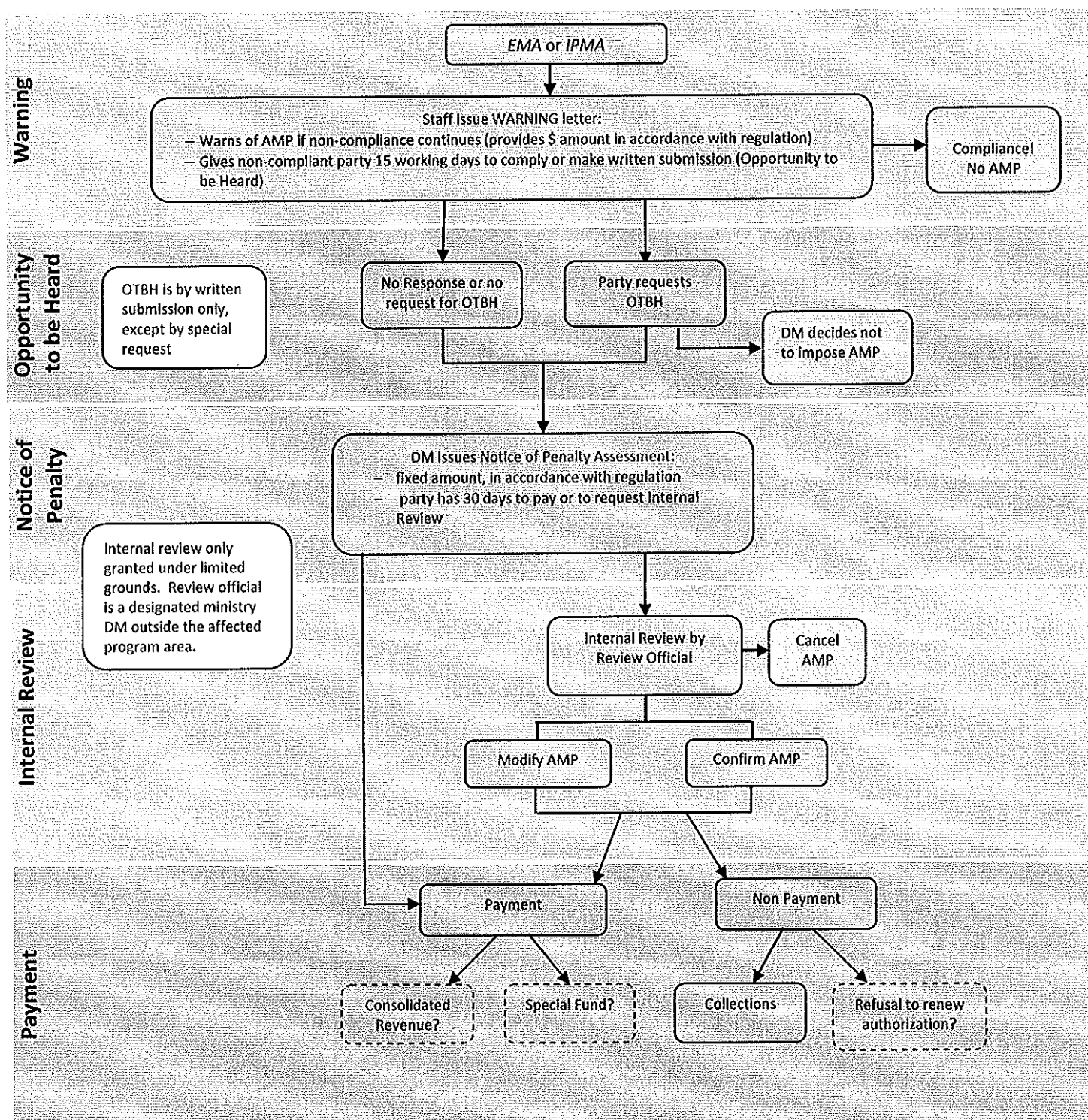
Graphs, Maps and diagrams (physical or digital – list by title or file name)

- Net Annual Inflow of water into Okanagan Lake
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Example of **Variable** AMP scheme for MoE



Example of **Fixed** AMP scheme for MoE



Permission to use forest images.txt
From: Diane Simpson [diane@dianesimpson.com]
Sent: Tuesday, March 9, 2010 9:00 PM
To: Fraser, Jenny D ENV:EX
Subject: FW: Meeting Summary

Hi Jenny,

s.22

On Work:

Animation Brewery and I are trying to secure rights for some images for the climate change presentations. We incorporated some pictures from the website of the Ministry of Forests and Range (<http://www.gov.bc.ca/for/>). If you click on the url's below you get the pictures we want.

Heidi Gutte filled in the official document "to request permission to reproduce all or part of the material" from their website (<http://www.gov.bc.ca/com/copy/req/index.html>). We got an email back and they want a lot more information about the project. We really need these images approved in order to move forward with the project and I just thought a call from you to them would speed up the approval process. I bet if they know it is for you they will give the permission easier. Otherwise we will spend endless unpaid hours talking to their lawyers and such - this copyright issue really is a challenge.

We are told that:

There is a processing fee: "standard processing fee for requests which are non-commercial in nature is \$85.00 plus GST but we allow a 40% discount if the request is for not-for-profit educational use thereby reducing the fee to \$51.00 plus GST. If the request is for commercial purposes, the fee will vary depending on the nature of the material and your intended use and distribution of it."

Do you think they could wave this fee for us as it is for the department?

The person who emailed me is:

Ilona Ugro
Copyright Officer
Intellectual Property Program
Ministry of Citizens' Services
E140 - 4000 Seymour Place
Victoria, BC V8W 9V1
Phone: (250)356-1339 Fax: (250)387-1940
Email: Ilona.Ugro@gov.bc.ca

We would greatly appreciate if you could help us acquire the permissions for the following images from the website of the Ministry of Forest and Range:

From this site:

http://www.for.gov.bc.ca/hfp/mountain_pine_beetle/bbphotos.htm

- Larval stage (
http://www.for.gov.bc.ca/hfp/mountain_pine_beetle/images/MPBbrood.jpg)

AND

- Mountain pine beetle galleries with larva visible (
http://www.for.gov.bc.ca/hfp/mountain_pine_beetle/images/pgfr_53.jpg)

AND

- Subalpine fir secondary structure after MPB attack in the Tweedsmuir area (
http://www.for.gov.bc.ca/hfp/mountain_pine_beetle/images/DSCN0069.jpg)

Permission to use forest images.txt

and from this site:

http://www.for.gov.bc.ca/hts/rs/mpb_impact/mpb_impact2008.html

- Mountain Pine Beetle Vanderhoof Attack Severity Poster (

http://www.for.gov.bc.ca/hts/rs/mpb_impact/plots/2008/vanderhoof/MPB_Vanderhoofof_Attack_Severity_Poster_June17_2009.pdf)

Please let me know if you have any luck or if you know who we could contact alternatively to acquire those rights.

Diane

RE Flash Videos - Update Question.txt

From: Fraser, Jenny D ENV:EX
Sent: Wednesday, July 21, 2010 11:05 AM
To: 'Diane Simpson'
Subject: RE: Flash Videos - Update & Question

Over my years in communications I've negotiated enough rights and permissions to understand the ins and outs. I fully understand that owning copyright to the videos does not give SAGE/MOE superseded rights to disregard the license agreements for specific contents.

I'm clear about the distinction between "ownership" of the videos and permission to use specific segments within the videos (i.e. the interview clips) - and I'll make this distinction clear to PICS. If PICS wants to use the flash videos or segments of the videos, they'll have to obtain permission from the owners (SAGE or MOE) AND from the rights-holders (e.g. government of Canada). PICS will likely have to negotiate separately rights to use some of the interview clips. (Fortunately, PICS has access to legal support through University of Victoria.)

It would help me if I understood the existing use/distribution rights to the interview clips. I think the best way to handle this would be for you to send me copies of the existing use/distribution rights you have negotiated. That would enable me to interface with PICS more effectively; I could then advise them of the status of any materials they're interested in using. This would minimize need for your involvement. Once PICS has identified a plan of action we would double-check with you before proceeding.

Sound like a plan?

-----Original Message-----

From: Diane Simpson [mailto:diane@dianesimpson.com]
Sent: Wednesday, July 21, 2010 10:10 AM
To: Fraser, Jenny D ENV:EX
Subject: Re: Flash Videos - Update & Question

Hi Jenny,

Lets have a phone conversation about the "ownership" of these short films. As you know I would be fine with you having "ownership" of the films but even when you have ownership it does not give you the right to do as you please with the films. Everyone is still restricted with what they can and cannot do with the films, since the content that makes up the films was licensed only for specific distribution (educational, not for profit, etc.) Owning copyright to a film does not give that owner superseded rights to disregard the license agreements for the content of the films.

It was such a challenge for us to get the permission from gov't lawyers to let scientists license in their work to us. Each lawyer made their license agreement very specific to their needs and to the us using it in the schools and to be on the wild bc website or whatever. Each license is different. Every lawyer in government had a different license agreement - we were bound by all their requirements. Of course all of this involved so much unexpected time for us on the project. Requirements are more than just being a non-profit.

Lets talk about it. Of course I want these distributed as much as possible.

I would be available most of the day tomorrow to talk at

s.22

Diane

RE Flash Videos - Update Question.txt

On 7/19/10 3:37 PM, "Fraser, Jenny D ENV:EX" <Jenny.Fraser@gov.bc.ca> wrote:

- > As I've received the flash videos from Stu, I've been forwarding them
- > to Coralie Breen, who is working for the Pacific Institute for Climate
- > Solutions and the U.Vic. Distance Learning Center to develop "short
- > courses" on climate change science, impacts, mitigation and adaptation.
- >
- > She's very interested in using the AV material you've developed.
- > Apparently PICS is aiming the science at a grade 10 level.
- >
- > The courses would be developed for government staff, offered through
- > the Public Service Agency Learning Centre, and delivered by various
- > people associated with PICS. While they will be developed for
- > government staff, PICS also hopes to make them more widely available
- > through Distance Learning. I imagine all this would be on a
- > not-for-profit basis but will confirm that and get back to you.
- >
- > Assuming that it is not-for-profit, we should start to discuss
- > permission to use materials.
- >
- > The three flash videos paid for directly by MOE:
- > * MOE "owns" them and can give permission to PICS to use them.
- > * With respect to permission to use the interviews, my understanding
- > is that we (probably PICS) would have to renegotiate with the original
- > scientists and/or their employer. Is this correct? If so, would you
- > be able to provide original permissions and contacts?
- >
- > The six (?) flash videos produced and paid for by SAGE Foundation out
- > of the grant:
- > * SAGE owns them. Who would PICS contact regarding permission to use?
- > You? What should they include in a letter?
- > * With respect to permission to use the interviews, my understanding
- > is that we (probably PICS) would have to renegotiate with the original
- > scientists and/or their employer. Is this correct? If so, would you
- > be able to provide original permissions and contacts?
- >
- > Anything else I should know here?
- >
- >
- > Jenny Fraser
- > A/Manager, Climate Change Adaptation
- > Climate Action Secretariat
- > British Columbia Ministry of Environment
- > Telephone: (250) 387-9330
- > Jenny.Fraser@gov.bc.ca
- >
- >

s.14

CONSENT TO LICENSE MATERIALS

PARTICIPANT: STEPHEN SHEPPARD
(Name)
2045 - 2424 MAIN MALL, VPC.
(Address)
604. 822. 6582 shep@interchange.vbc.ca
(Phone) (eMail)

PRODUCER: Diane Simpson, doing business as GreenThink, a project of the Tides Canada Initiative Society

400 - 163 W. Hastings Street, Vancouver, BC, V6B 1H5
604-730-9762 diane@dianesimpson.com

PRODUCTION: Climate Change Resource - Educational DVD and Website

"Materials" provided listed on Schedule A.

In consideration of the opportunity afforded me to provide materials for the above-noted Production, I hereby irrevocably grant to the Producer, its successors, assignees and licensees, the following non-exclusive rights, throughout the world, in perpetuity (the "Rights") including:

- i) the unlimited copyright license to use and to deconstruct, compile or assemble any of the Materials (see attached Schedule A) in any form (including photographs, films, tapes, recordings, graphs, figures, notes and documents, etc.) owned or furnished by me (the "Materials"); and I specifically waive any moral rights I may have had in any of the Materials supplied;
and
- ii) the unfettered right to photograph, film, record and reproduce the Materials, in whole or in part, by any means.

All of which are authorized to be published in any media, including without limitation, online networks connected to devices, film, television, DVD or other video discs, CD-ROM (whether or not interactive) or any other form of audio-visual production, including any versions or translations thereof, (now known or hereafter devised), including the right to edit, modify, add to, juxtapose and combine the Materials in any combination or sequence with or without other material prepared by others and the right to delete any part of the Materials for use in the Production;

I hereby authorize the Producer the right to exhibit, transmit, manufacture, publish, telecast, broadcast, distribute and otherwise exploit all or any parts of the Materials and/or the Production in any and all manner, media, formats, and markets now known or hereafter devised, and to license others to do any of the foregoing; and

And I hereby authorize the Producer to use the Materials, in whole or in part, in connection with advertising or publicizing the Production.

PAGE 1

I represent that I am entitled, without any third party approvals, to grant the Rights as set out herein and that such Rights are free of any third party claims or interests. I hereby irrevocably release the Producer, its representatives, agents, employees, successors, assignees, and licensees or any of them (the "Releasees") from any and all claims and demands for any matter related directly or indirectly to the grant or use of the Rights, including without limitation, for invasion of privacy, defamation and any other personal and/or property rights, including any moral rights under copyright law and I hereby waive the right to seek injunctive or other equitable relief against the Releasees for any such matter.

All of which is agreed this 19 day of July 2010.

Steph Sheppard

Participant

Without any third party approvals, to grant the Rights as set out herein and that such Rights are free of any third party claims or interests. I hereby irrevocably release the Producer, its representatives, agents, employees, successors, assignees, and licensees or any of them (the "Releasees") from any and all claims and demands for any matter related directly or indirectly to the grant or use of the Rights, including without limitation, for invasion of privacy, defamation and any other personal and/or property rights, including any moral rights under copyright law and I hereby waive the right to seek injunctive or other equitable relief against the Releasees for any such matter.

STEPHEN SHEPPARD, UBC, CALP
(print name)

_____, 2010.

Without any third party approvals, to grant the Rights as set out herein and that such Rights are free of any third party claims or interests. I hereby irrevocably release the Producer, its representatives, agents, employees, successors, assignees, and licensees or any of them (the "Releasees") from any and all claims and demands for any matter related directly or indirectly to the grant or use of the Rights, including without limitation, for invasion of privacy, defamation and any other personal and/or property rights, including any moral rights under copyright law and I hereby waive the right to seek injunctive or other equitable relief against the Releasees for any such matter.

_____, 2010.

Without any third party approvals, to grant the Rights as set out herein and that such Rights are free of any third party claims or interests. I hereby irrevocably release the Producer, its representatives, agents, employees, successors, assignees, and licensees or any of them (the "Releasees") from any and all claims and demands for any matter related directly or indirectly to the grant or use of the Rights, including without limitation, for invasion of privacy, defamation and any other personal and/or property rights, including any moral rights under copyright law and I hereby waive the right to seek injunctive or other equitable relief against the Releasees for any such matter.

**CONSENT TO LICENSE MATERIALS
SCHEDULE A**

DESCRIPTION OF MATERIALS:

Photographs (physical copy) – list photographs by brief description

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Photographs (digital) – list by filename

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Graphs, Maps and diagrams (physical or digital – list by title or file name)

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- South Delta T1-2100.png
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> please use image files
sent to July 19/2010
which have the /CALP
watermarks

South Delta: 2050

Description: In 2050, during a scenario of sea level rise, storm surge and high tide, this is what could happen – all the homes located on the floodplain will be flooded.

sustained X

in the event of multiple dike breaches *

Figure 1:

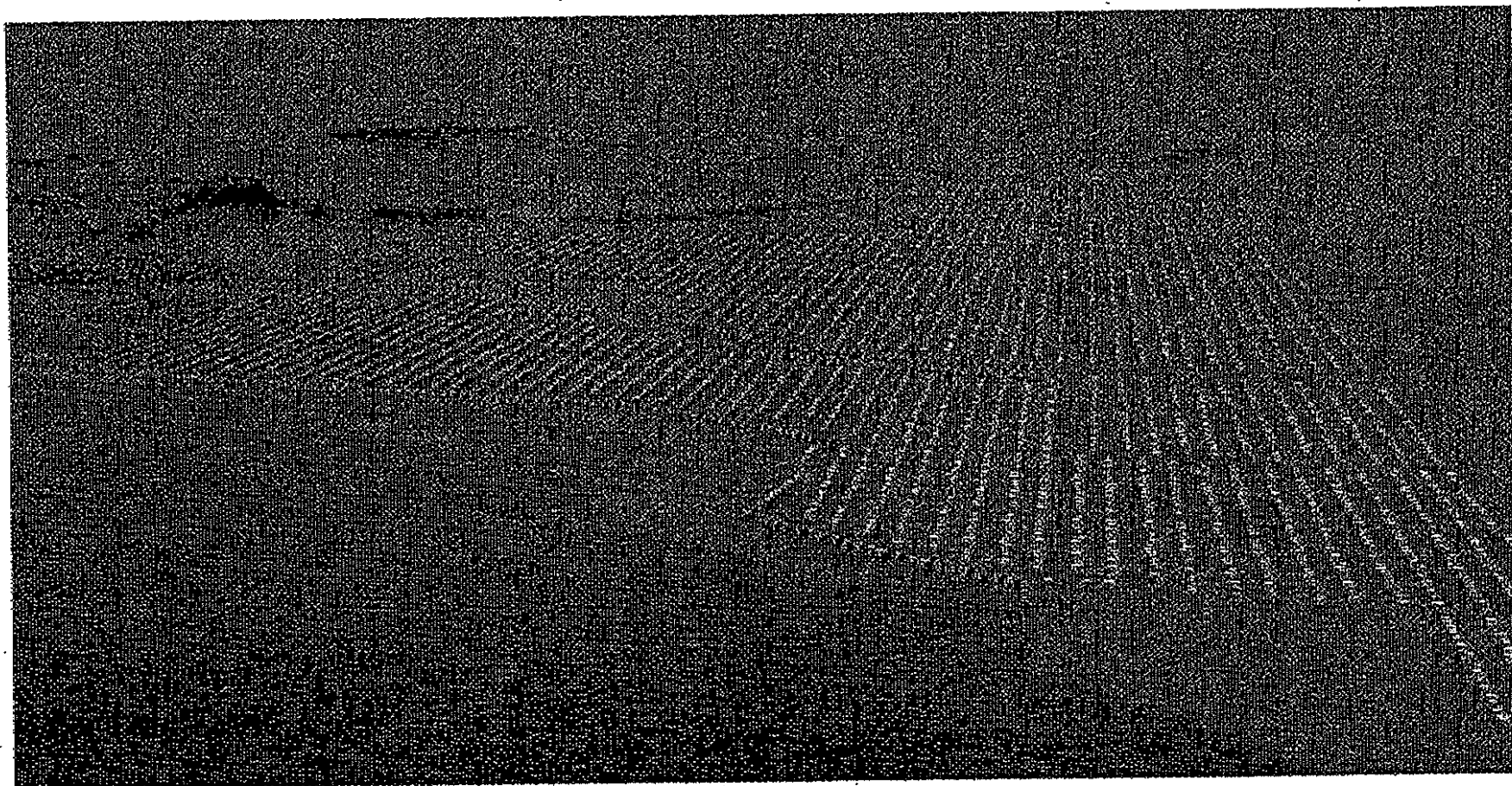


Figure 1: David Flanders, UBC-CALP, 2007

South Delta: Alternative to Urban Sprawl

Description: This visualization shows an alternative to urban sprawl, high density building in the higher elevation areas of Tsawwassen. This alternative helps to reduce green house gas emissions by mixing residential and business buildings, allowing people to be close to their jobs, and reducing the distance and time that they need to commute. Rather than driving to Vancouver, in this high density option, people can walk or bike to work from their home.

Figure 1:

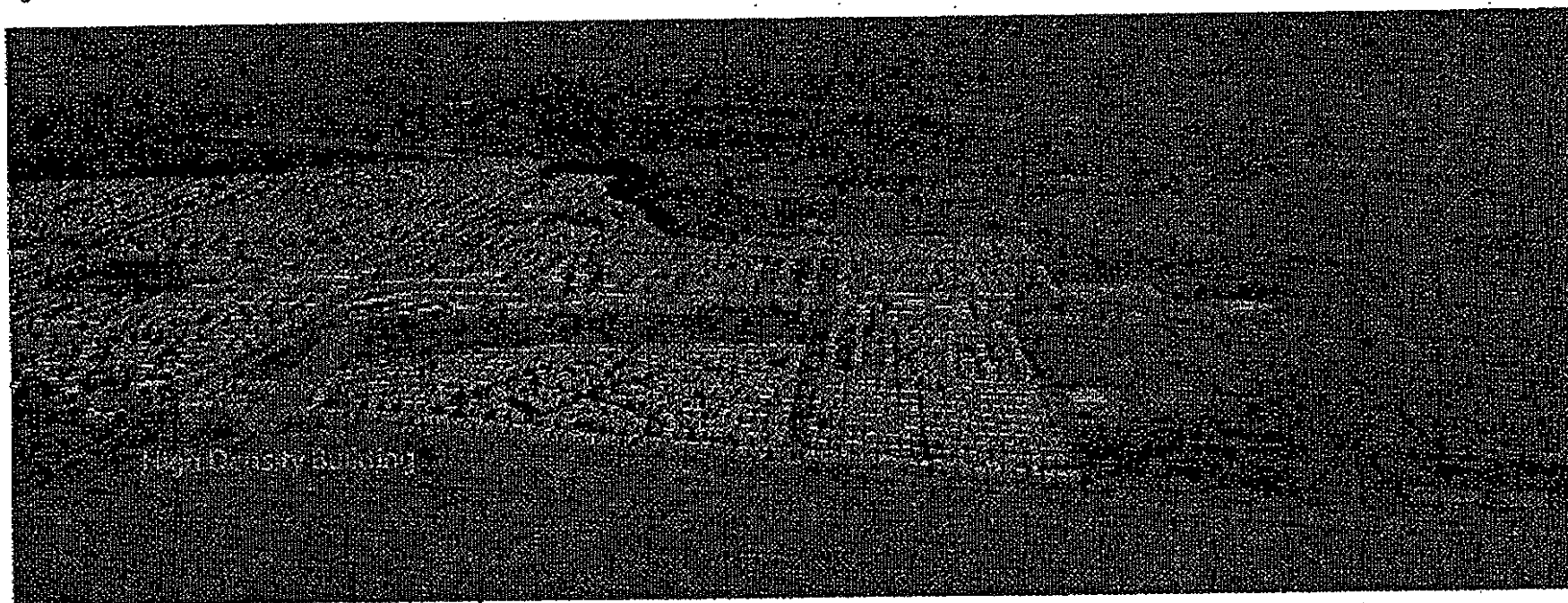


Figure 1: David Flanders, UBC-CALP, 2007

edit *

FutureThink BC: 

Climate Change Impacts and Adaptations