



Appendix B

REPORT

COMMUNITY SERVICES COMMITTEE

MEETING DATE: MAY 11, 2010

FROM: Environmental Policy

DATE: April 19, 2010

SUBJECT: Partners for Climate Protection Greenhouse Gas Emission Reduction Options

LOCATION:

WARD: Town wide

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RECOMMENDATION:

1. That the \$11,000 budget allocation for Oakville Hydro's Green Light Pact program be re-directed to the purchase of Renewable Choice (B) green power to achieve the 2010 annual greenhouse gas emission reduction target;
2. That the 2011 and future budget amounts required to meet the annual greenhouse gas emission reduction target through the purchase of green power be referred to the 2011 Budget Committee;
3. That staff continue to monitor the Western Climate Initiative and the progress toward development of an Ontario Cap-and-Trade system and report to Council annually on issues of energy management and GHG emissions; and
4. That the Partners for Climate Protection (PCP) Milestone #3 – Corporate Local Action Plan be endorsed for implementation with the original greenhouse gas (GHG) reduction target of 20% below 2014 and that staff continue to implement recommended actions within the plan to ensure uptake of energy efficiency, management, and alternative energy projects, and the use of technologies to reduce the Town's carbon impact, subject to annual budget review and approval.

KEY FACTS:

The following are key points for consideration with respect to this report:

- The PCP Milestone #3 – Corporate Local Action Plan GHG emission target has been readjusted to the original target of a 20% corporate GHG reduction

from 2004 levels by 2014 based on the outcome of an earlier staff report to CSC on January 12, 2010.

- Green power options and their associated costs are provided within the report as a method to reduce corporate GHG emissions.
- Using the existing 2010 budget allocation of \$11,000, a purchase of green power from the company, Renewable Choice, is recommended to meet the 2010 annual GHG reduction target.
- An explanation on carbon offsets and their purpose is provided within the report, as well, carbon offset options and their associated costs are stated within the report as a method to reduce corporate GHG emissions.
- A review of the quantification of GHG reduction measures and the carbon trading market is provided in the report that reflects the complexity and uncertainty surrounding these two areas.

BACKGROUND:

On January 12, 2010 the report *Energy Management and Partners for Climate Protection Local Action Plan* went to Community Services Committee (CSC) for discussion and Council approval. The Council resolution pertaining to the matter was:

1. That the report regarding Energy Management - Partners for Climate Protection (PCP) Local Action Plan, dated, December 14, 2009, be received;
2. That staff be requested to provide options to meet the PCP target of a 20 percent reduction in corporate greenhouse gas emissions by 2014 through the purchase of green energy or greenhouse gas emission credits to make up any shortfall in internal reductions and that the plan phase in the purchases between 2011 – 2014;
3. That the Corporate Energy Management Plan continue to be developed and implemented; and
4. That the Town no longer purchase Green Light Pacts from Oakville Hydro until a review of alternative green energy and greenhouse gas emission credit purchase programs has been completed.

At the CSC meeting, it was also requested that the Corporate Local Action Plan be referred to the Environmental Strategic Plan Advisory Committee for comment. As well, discussion surrounding emissions trading and the quantification of costs associated with GHG reduction measures was raised during the discussions. This report provides information on the purchase of green power and carbon offset options and their potential to contribute to corporate greenhouse gas (GHG)

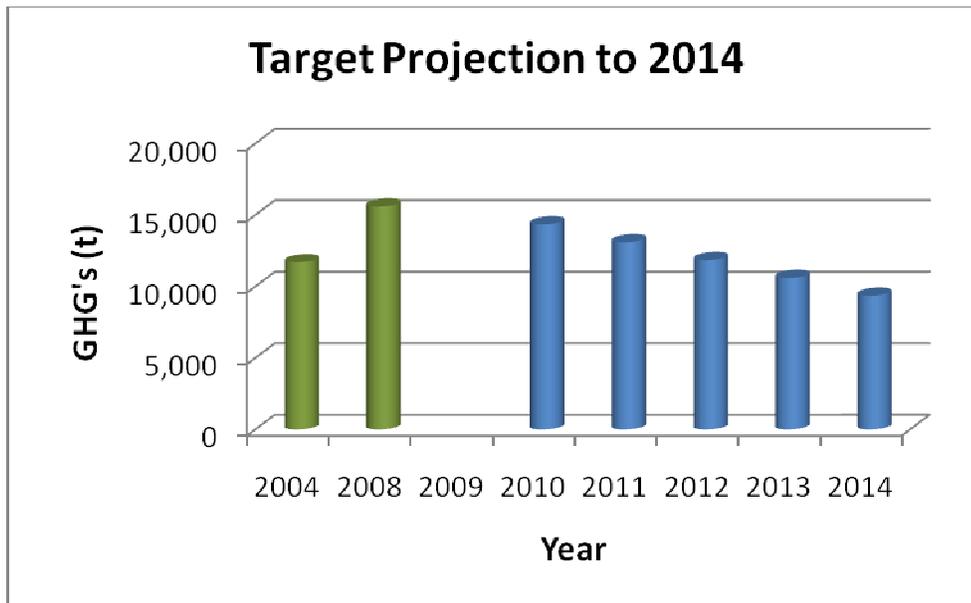
reductions. As well, an information update on the carbon credit market and status is provided within the report.

COMMENT/OPTIONS:

As requested by Council, the Corporate Energy Management and Local Action Plan were taken to the ESP Advisory Committee on January 27, 2010 for review. The Plan was well received by the Committee and support was indicated for continuing with energy management improvements as indicated in the Local Action Plan. The minutes of their meeting were distributed via the CSC Agenda of February 23, 2010.

Within the January 12, 2010 staff report, the corporate GHG emission target was presented with a target date extended to 2020. Council recommended that the original approved corporate GHG emission reduction target remain in place and the projection be readjusted to the original target date of 2014.

The graph below displays the readjusted corporate GHG emission reduction target to reduce GHG emissions by 20% by 2014.



*The 2004 and 2008 numbers represent actual corporate GHG data. 2010-2014 are projected numbers required to meet the corporate GHG reduction goal. 2009 data is not included as it was unavailable when the Corporate Local Action Plan was completed. The data will updated yearly to ensure that the Town is meeting the reduction target.

In order to meet the projected target the Town will need to reduce GHG emissions by approximately 1247 eCO₂ tonnes per year.

The following information on green power and carbon offset options has been provided as possible methods to reduce corporate GHG emissions.

Green Power Options

A green power purchase is an offset of electricity usage through support for production of renewable energy sources.

From 2006-2009 the Town purchased 170 000 kWh of green power annually from the Oakville Hydro Green Light Pact (GLP) program. This equated to an annual reduction of 37 eCO₂ tonnes per year.

To consider other options to the GLP program, the table below displays different pricing information from another three companies for the purchase of green power with the advantages and disadvantages of each option.

Company	Price (\$/kWh)	Cost (\$/eCO ₂ tonne)	Advantages	Disadvantages
Bullfrog Power	0.03 cents/kWh	\$167/eCO ₂ tonne	<ul style="list-style-type: none"> - Only funds Ontario green power projects - Wide-spread marketing campaign - Supported by World Wildlife Fund- Canada, the David Suzuki Foundation and the Pembina Institute 	<ul style="list-style-type: none"> - Expensive to purchase - Does not contribute to corporate energy cost reduction, energy efficiencies and improved energy risk
Oakville Hydro	\$60/1000kWh	\$270/eCO ₂ tonne	<ul style="list-style-type: none"> - Wholly-owned subsidiary of the Town of Oakville - Only funds Ontario green power projects 	<ul style="list-style-type: none"> - Expensive to purchase - Does not contribute to corporate energy cost reduction, energy efficiencies and improved energy risk
Renewable Choice (A)*	Price range: \$8-10/mWh	\$39-\$45/eCO ₂ tonne	<ul style="list-style-type: none"> - Least expensive Ontario green power option - Funds Ontario green power projects 	<ul style="list-style-type: none"> - American based company - Does not contribute to corporate energy cost reduction, energy efficiencies and improved energy risk
Renewable Choice (B)*	Price range: \$8-10/mWh	\$10-\$12/ eCO ₂ tonne	<ul style="list-style-type: none"> - Least expensive green power option 	<ul style="list-style-type: none"> - American based company - Funds Ontario and USA green power projects - Does not contribute to corporate energy cost reduction, energy efficiencies and improved energy risk

*Renewable Choice (A) is pricing based on green power projects only in Ontario.

*Renewable Choice (B) is pricing based on green power projects connected to the Ontario electricity grid that are based in the USA near Ontario.

The table below represents the total budget required to meet the 2014 target between 2010 and 2014 if Council were to solely recommend the purchase of green power.

Company	Cost (\$/eCO ₂ tonne)	Cost in 2014 to meet target (above 2010 base budget)
Bullfrog Power	\$167/eCO ₂ tonne	\$1,041,245
Oakville Hydro	\$270/eCO ₂ tonne	\$1,683,450
Renewable Choice (A)	\$39-\$45/eCO ₂ tonne	\$283,692
Renewable Choice (B)	\$10-\$12/ eCO ₂ tonne	\$73,510

To meet the 2014 GHG emission reduction target, 1247 eCO₂ tonnes needs to be reduced annually over these next 5 years including 2010. In order to achieve the 2010 annual reduction, staff suggests purchasing Renewable Choice (B) using the existing \$11,000 operating budget allocated to the Oakville Hydro Green Light Pact program. To ensure progression towards meeting the 2014 target, an additional \$15,000-\$20,000 needs to be incorporated within the 2011 operating budgeting process.

Refer to Appendix A for the annual green power cost information associated with the annual reduction target from 2010 to 2014.

Carbon Offset Options

A carbon offset (also referred to as a verified emission reduction – VER) is the reduction of a specific amount of greenhouse gas emissions resulting from carbon mitigation projects. Avoiding the release of carbon into the atmosphere in one location by implementing an emissions reduction project in another location is known as offsetting. Project types for carbon mitigation include land-use (i.e. forestry), methane capture, and energy efficiency.

The table below shows two companies that provide carbon offset services: Less Emissions and Renewable Choice.

Company	Price	Advantages	Disadvantages
Less Emissions	\$45/ eCO ₂ tonne	<ul style="list-style-type: none"> - Gold Standard Certified - Sister company to Bullfrog Power, Canadian based. - Supported by the Canadian Green Building Council 	<ul style="list-style-type: none"> - Projects are only internationally based - Does not contribute to long-term local community sustainability
Renewable Choice	\$5/ eCO ₂ tonne	<ul style="list-style-type: none"> - Verified Emission Reductions - Least expensive option available in Ontario - Supported by the Canadian Green Building Council 	<ul style="list-style-type: none"> - Projects are only USA or internationally based - American based company - Does not contribute to long-term local community sustainability

Although carbon offsetting is an inexpensive method of meeting a GHG reduction target, it does not support the social benefits related to implementing local initiatives such as local jobs, improved local air quality and leadership in carbon reduction through energy management and sustainable development.

It is important to note that the World Wildlife Fund in conjunction with Friends of the Environment and Greenpeace created a *Joint Statement on Offsetting Carbon Emissions* (Appendix B). The paper states that,

Carbon offsets do not...reduce emissions overall and therefore purchasing offsets should only be seen as a last resort after other measures to reduce or avoid emissions have thoroughly been explored and acted upon.

As well, carbon offsets do not contribute to corporate energy reductions that decrease the cost of energy for Town operations or reduce the impact of energy risk, and are less supportive of the town's Environmental Sustainability Policy (EN-GEN-001).

Quantifiable GHG Reduction Measures

The quantifying of the effects and relative costs of various GHG reduction measures is an emerging area of interest for those working toward climate change mitigation.

Data on the quantification of the costs associated with GHG reduction measures are lacking in Canada. This type of information would enable decision makers to implement measures that provide the highest results, at best cost, and report on significant results.

The Partners for Climate Protection (PCP) developed the *Annual Measures Report* in 2009 to address the issue of this gap in information. This report provides municipal examples of GHG reduction measures and their cost per tonne of eCO₂ reduction.

The table below shows the potential cost per eCO₂ tonne for each area of GHG mitigation, as well as the savings associated with the projects.

Measure	Description	Cost (\$)/ eCO ₂ tonne	Cost Savings (\$)/ eCO ₂ tonne
Streetlights	Conversion to LED or High Pressure Sodium, and altering ballasts	\$800*	\$160
Fleet Measures	Change in fuel type or technology, policy and education	\$640	\$310
Water & Sewage Measures	Water conservation, upgrading pumping equipment	\$420	\$160
Building Measures	Energy retrofits and upgrades to lighting and equipment	\$90	\$40

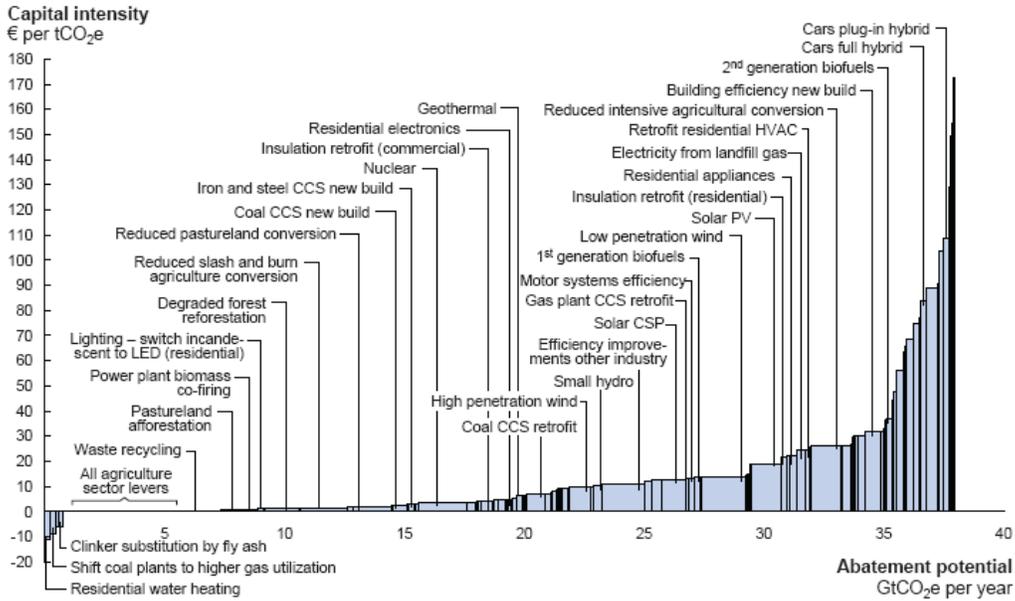
*May be conservatively high due to lack of information

The information in this PCP report will be updated yearly to include more data from new projects and additional participating municipalities. An increase in available data will help to refine this type of reporting on GHG mitigation measures and improve confidence in the data. Although the information in this report is relevant, the number of projects used to develop the cost per eCO₂ is few and the result may reflect higher costs due to the type of project implemented. Municipalities may have used information from pilot projects, testing new technology and first time implementation of GHG mitigation projects that often require higher project development costs.

Another report prepared in 2009 is *Pathways to a Low-Carbon Future* by McKinsey & Company that provides information from European research on global GHG abatement measures. The graphs below were taken from this report and display a GHG abatement comparison of different types of measures and how they compare in terms of their effectiveness.

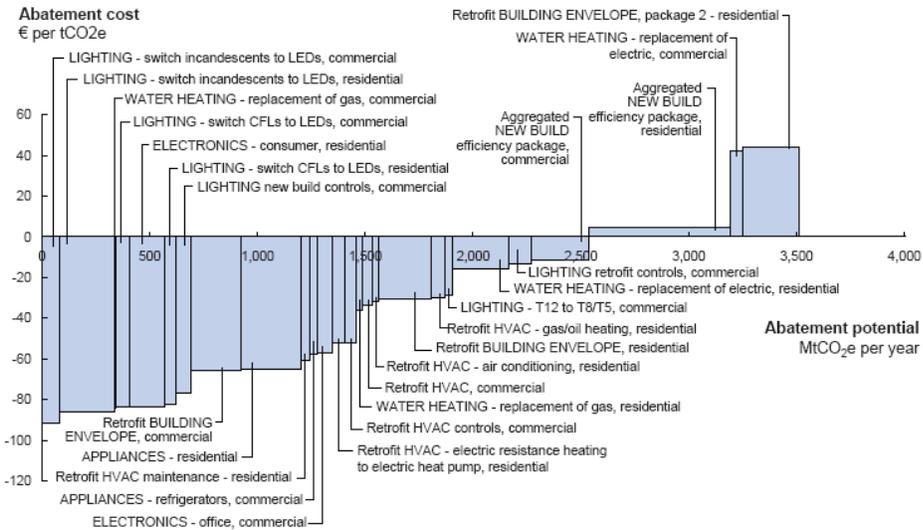
The following graphs show: (1) there are abatement measures requiring low to moderate capital intensity expenditures (cost per tCO₂e) with promising abatement potential (GtCO₂e per year) such as LED lighting retrofits, geothermal, energy efficiency improvements, insulation retrofits, solar PV and new energy efficient builds; and (2) the expected cost effectiveness of building sector improvements such as in lighting, HVAC, and building envelope (cost per tCO₂e) related to the abatement potential (MtCO₂e per year).

Capital intensity by abatement measure



Global GHG abatement cost curve for the Buildings sector

Societal perspective; 2030



Note: The curve presents an estimate of the maximum potential of all technical GHG abatement measures below €60 per tCO₂e if each lever was pursued aggressively. It is not a forecast of what role different abatement measures and technologies will play.
 Source: Global GHG Abatement Cost Curve v2.0

Although this data is European based, it is valuable to note the cost of abatement and its related potential for reduction.

Carbon Trading

Currently, the Ontario government is participating in the Western Climate Initiative (WCI) to develop a standard for a cap and trade system. The WCI is a collaboration of independent jurisdictions working together to identify, evaluate, and implement policies to tackle climate change at a regional level. The WCI jurisdictions are recommending a broad cap-and-trade program to reduce greenhouse gas pollution, spur growth in new green technologies, help build a strong clean-energy economy, and reduce dependence on foreign oil. This program is an important component of WCI's comprehensive regional effort to reduce GHG emissions by 15 percent below 2005 levels by 2020. This multi-sector program is the most comprehensive carbon-reduction strategy designed to date. When fully implemented in 2015, it will cover nearly 90% of greenhouse gas emissions in WCI partner states and provinces, including GHGs from electricity, industry, transportation, and residential and commercial fuel use.

There are three major carbon exchanges that are actively participating in carbon trading. These are the European Climate Exchange, the Montreal Climate Exchange and its affiliate the Chicago Climate Exchange.

The European Climate Exchange is currently trading at between \$20-30 per carbon contract and the Montreal Exchange is currently trading at \$10 per carbon contract. The Chicago Climate Exchange began trading in 2007 and actively exchanges both futures and options. The historical price of trading has been in the range of \$5-\$10 per Carbon Financial Instrument (CFI).

The Chicago Climate Exchange (CCX) is the only exchange that will allow a Canadian municipality to participate. There are many contract rules and policies to follow to be able to trade within the CCX marketplace. To join the CCX, there is a \$5,000 enrollment fee and a yearly \$10,000 membership fee. As well, once you become a member, a reduction target is assigned to you within 2 years for a 7% GHG reduction from the baseline year of 2010. If the Town did not meet the annual reduction, then Carbon Allowances would have to be purchased to meet the reduction requirement.

It is recommended that staff continue to monitor the development of an Ontario Cap-and-Trade system and bring forward any opportunities to Council at the appropriate time.

Environmental Strategic Plan Advisory Committee (ESPAC) Comments

The options to reduce GHGe's within the PCP Corporate Local Action Plan were presented to the ESPAC on April 28 in order to obtain feedback. There was good discussion around the options. The committee received the report, supported staff continuing to monitor options and implement actions for energy efficiency, management and alternative energy projects, and the

use of technologies to reduce the town's carbon impact (report recommendations 3 and 4) but expressed concern with spending funds for GHGe reductions outside of Oakville (report recommendations 1 and, potentially, 2). Based on the feedback from the ESPAC, the committee would not be supportive of report recommendations 1 and 2 but would be supportive of recommendations 3 and 4. This information is provided to Council for consideration in deliberations regarding the recommendations within the report.

Conclusions

In summary it is recommended by staff that:

- 1) The \$11,000 budget allocation for Oakville Hydro's Green Light Pact program be re-directed to the purchase of Renewable Choice (B) green power to achieve the 2010 annual reduction target, and that the future budget impacts required to meet the annual reduction target through the purchase of green power be referred for consideration in the annual budgeting process starting in 2011.
- 2) Given the uncertainty in the carbon market, staff will continue to monitor the Western Climate Initiative and the progress toward development of an Ontario Cap-and-Trade system and report to Council annually on energy management issues and GHG emissions.
- 3) The Partners for Climate Protection Milestone #3 – Corporate Local Action Plan be endorsed for implementation with the original GHG reduction target of 20% below 2014 and that staff continue to implement recommended actions within the plan to ensure uptake of energy efficiency, management, and alternative energy projects, and the use of technologies to reduce the town's carbon impact.

It should be noted there are several challenges related to Oakville's ability to meet the GHG reduction target, due to the fact that:

- Oakville is a growing municipality and will face a major issue with increasing GHG emissions. The reduction target will continue to change yearly. It is expected that the annual target will be larger than shown within the report and more financial and staff resources will be required to meet this target.
- It is not well understood by ICLEI and the Federation of Canadian Municipalities PCP program as to how the purchase of green power and carbon offsets will be used as a method to meet approved reduction targets. This is an issue that will need to be monitored as we move forward with implementing GHG reduction measures to ensure we remain in compliance with FCM and ICLEI requirements.

Bibliography

An annotated bibliography listing sources researched to ensure consistency and a broad base of knowledge can be found in Appendix C.

CONSIDERATIONS:

(A) PUBLIC

The community has a role to fulfill in the implementation of the Environmental Strategic Plan goals to improve energy efficiency, reduce greenhouse gas emissions and commit to energy conservation practices.

(B) FINANCIAL

Staff resources and other associated operating cost implications to continue implementation of the PCP program and energy management projects are included in the 2010 budget and will continue to be included in future capital and operating budget requests.

(C) IMPACT ON OTHER DEPARTMENTS & USERS

The implementation of the PCP program impacts all Departments within the Town, related Boards and Authorities, other agencies and Halton Region.

(D) CORPORATE AND/OR DEPARTMENT STRATEGIC GOALS

This report addresses the corporate strategic goal to:

- enhance our natural environment
- be fiscally sustainable
- have environmentally sustainable programs/services

(E) COMMUNITY SUSTAINABILITY

This issue impacts the environmental pillar of sustainability by continuing to improve Corporate GHG emissions that reduce the Town's ecological footprint and impact on the environment.

APPENDICES:

Appendix A – Renewable Choice Cost Analysis

Appendix B – WWF Joint Statement on Offsetting Carbon Emissions

Appendix C – Annotated Bibliography

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Appendix A

Price Quote from Bullfrog Power

	Corporate Inventory			Ontario Green Power Purchase		
	Total eCO2 (t)	Annual reduction (t)	Cumulative reduction (t)	Cost (\$)/ kWh	Cost (\$)/ eCO2 tonne	Cost (\$) to Offset with CA green power
2004	11,690					
2008	15,586					
2010	14,339	1247	1247	\$0.03	\$167	\$208,249
2011	13,092	1247	2494	\$0.03	\$167	\$416,498
2012	11,846	1247	3741	\$0.03	\$167	\$624,747
2013	10,599	1247	4988	\$0.03	\$167	\$832,996
2014	9,352	1247	6235	\$0.03	\$167	\$1,041,245

Price Quote from Oakville Hydro

	Corporate Inventory			Ontario Green Power Purchase			
	Total eCO2 (t)	Annual reduction (t)	Cumulative reduction (t)	Cost (\$)/ kWh	Cost (\$)/ eCO2 tonne	Cost (\$) to offset with CA green power	
2004	11,690						
2008	15,586						
2009							
2010	14,339	1247	1247	\$0.06	\$270	\$336,690	
2011	13,092	1247	2494	\$0.06	\$270	\$673,380	
2012	11,846	1247	3741	\$0.06	\$270	\$1,010,070	
2013	10,599	1247	4988	\$0.06	\$270	\$1,346,760	
2014	9,352	1247	6235	\$0.06	\$270	\$1,683,450	

Price Quote from Renewable Choice Energy A

	Corporate Inventory			Ontario Green Power Purchase			Carbon Offsets		
	Total eCO ₂ (t)	Annual reduction (t)	Cumulative reduction (t)	RECs to offset with CA green power (MWh)	Cost/MWh CA	Cost to offset with CA green power (USD)	Cost/mTon VERs	Cost to offset with methane capture VERs (USD)	
2004	11,690								
2008	15,586								
2009									
2010	14,339	1247	1247	5673	\$8.6	\$48,795	\$5.03	\$6,272	
2011	13,092	1247	2494	11347	\$8.6	\$97,590	\$5	\$12,470	
2012	11,846	1247	3741	17021	\$10	\$170,215	\$5	\$18,705	
2013	10,599	1247	4988	22695	\$10	\$226,954	\$5	\$24,940	
2014	9,352	1247	6235	28369	\$10	\$283,692	\$5	\$31,175	

Price Quote from Renewable Choice Energy B

	Corporate Inventory			Ontario Grid Green Power Purchase			Carbon Offsets		
	Total eCO ₂ (t)	Annual reduction (t)	Cumulative reduction (t)	RECs to offset with CA green power (MWh)	Cost/MWh CA	Cost to offset with green power (USD)	Cost/mTon VERs	Cost to offset with methane capture VERs (USD)	
2004	11,690								
2008	15,586								
2009									
2010	14,339	1247	1247	1470.213	\$8.6	\$12,643	\$5.03	\$6,272	
2011	13,092	1247	2494	2940.426	\$8.6	\$25,287	\$5	\$12,470	
2012	11,846	1247	3741	4410.639	\$10	\$44,106	\$5	\$18,705	
2013	10,599	1247	4988	5880.852	\$10	\$58,808	\$5	\$24,940	
2014	9,352	1247	6235	7351.065	\$10	\$73,510	\$5	\$31,175	

Appendix B



GREENPEACE

Joint statement on offsetting carbon emissions - by Friends of the Earth, Greenpeace and WWF-UK

Background information

A carbon offset negates the release of one tonne of CO₂e (carbon dioxide equivalent) by avoiding the release of, or removing from the atmosphere the same amount of CO₂e somewhere else. Carbon offsets can be generated by a number of activities such as energy efficiency (e.g. installing energy saving technologies in housing developments), renewable energy (e.g. wind farms) and sink (e.g. forestry) projects.

A growing number of individuals, businesses and government departments are claiming that all or parts of their activities are 'carbon neutral' through the purchase of carbon offsets. At the same time, government and business are showing strong interest in buying offsets under the Clean Development mechanism (CDM)¹ to meet targets under the Kyoto Protocol or the EU Emissions Trading Scheme.

Key criteria

Friends of the Earth, Greenpeace and WWF recognise that a market for voluntary carbon offsets is rapidly developing, and that these can be used to help catalyse the transition to non-fossil fuel based energy systems in offset host countries and to encourage greater energy efficiency. Carbon offsets do not, however, reduce emissions overall and therefore purchasing offsets should only be seen as a last resort after other measures to reduce or avoid emissions have been thoroughly explored and acted upon.

As environmental campaigners, we are concerned about the potential of these projects to be used as a way for businesses to argue there is no need for legislation that will curb emissions from their sector. Purchasing offsets can be seen as an easy way out for governments, businesses and individuals to continue polluting without making changes to the way they do business or their behaviour. In particular there are strong concerns over the environmental credibility of the credits and the contribution of the projects to sustainable development.

If/when we buy offsets to offset unavoidable work related emissions - Friends of the Earth, Greenpeace and WWF are committed to only purchasing offsets from projects which have been certified by the Gold Standard – an independent, transparent, internationally recognised

¹ The CDM allows industrialised countries, or companies, to gain emissions credits by investing in greenhouse gas reduction measures in developing countries which have not taken on emission reduction targets under the Kyoto Protocol. Supporters of the CDM see it as a tool to promote the transfer of cleaner technologies to developing countries.

benchmark for 'high quality' carbon offset projects². The Gold Standard, amongst others, only certifies projects which meet the following criteria:

- they must be energy efficiency or renewable energy projects (this includes methane to energy in certain circumstances³);
- they must pass a sustainable development screen i.e. there must be evidence that the project is making a real contribution to sustainable development and that it benefits the local community;
- they must only provide an energy service that helps catalyse the transition to non-fossil fuel based energy systems. Projects which generate credits from the destruction of industrial waste gases such as HFC's are not eligible. These projects have little or no wider sustainable development benefits; and
- they must follow a conservative, guided interpretation of the additionality requirement that is necessary to demonstrate that a project delivers real emission savings which would not have occurred anyway under 'business as usual'.

Furthermore, the Gold standard excludes forestry, large scale hydro power (e.g. over 15MW) and energy from waste (incineration) projects. For further information please see the Gold Standard's website (<http://www.cdmgoldstandard.org>).

Reforestation - sink projects

Examples of why we do not support forestry sink projects are as follows:

- although trees absorb CO₂ whilst they are living, it cannot be guaranteed that a new forest will be permanent. It is eventually likely to succumb to disease, fire, or logging – releasing the CO₂ into the atmosphere once again;
- depending on the method used to calculate the amount of CO₂ stored - whether other pools of carbon in the forest are taken into account (e.g. soil, leaf litter), and other factors – estimations of the amount of CO₂ that a forest can absorb can differ vastly;
- large-scale monoculture tree plantations often have negative impacts on the environment and forest communities; and
- buying forestry offsets does nothing to lessen society's dependence on fossil fuels to generate its energy – something that is ultimately needed to address climate change.

Recommendations

Purchasers

- 1 In order to ensure that the purchase of offsets is not seen as a solution to the growth in emissions we would encourage individuals, business and governments to first do all they can to cut down or avoid emissions of greenhouse gases before considering the purchase of offsets.

² As well as certifying CDM projects the Gold Standard also recently launched the Gold Standard for voluntary offset projects

³ The key criterion is that the methane captured is used to provide an energy service, thus replacing the need for fossil fuel.

Appendix C

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An American based company that business is to sell green power and carbon offsets.

Stockholm Environment Institute Carbon Offset Research & Education.
www.co2offsetresearch.org

Website updates users on offset programs and activities.

The Gold Standard. www.cdmgoldstandard.org/Current-GS-Rules.102.0.html

This is a certification group that certifies carbon offset projects

The Western Climate Initiative (WCI).
www.westernclimateinitiative.org/the-wci-cap-and-trade-program

The WCI website provides an overview of the group and its status.

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