

# “For a Fair & Equitable Tax Treatment of All Renewable and Traditional Energy Sources in Canada”

**Submission to the House of Commons Finance Committee**

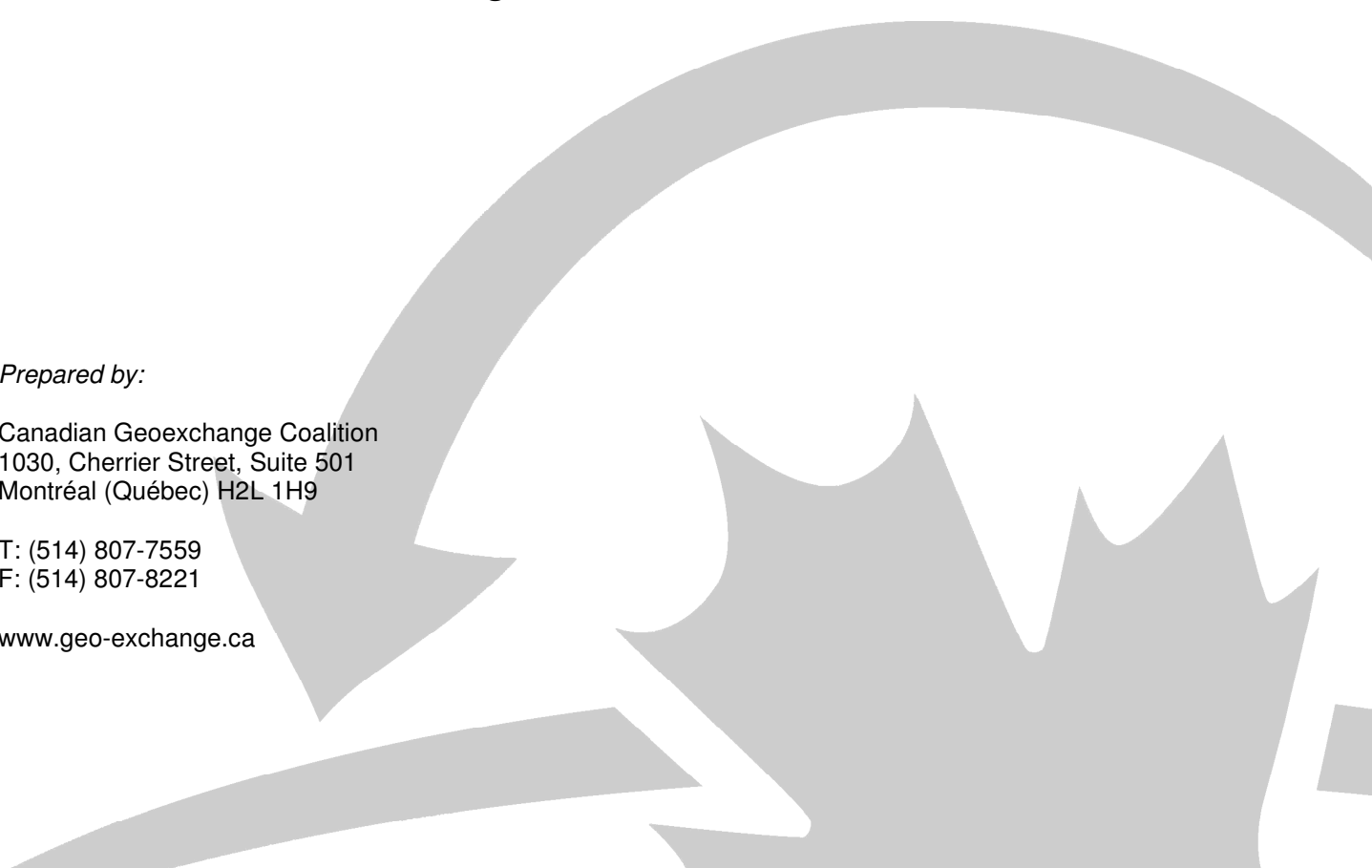
**Pre-Budget Consultations for 2007**

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## Geoexchange Technology Classification and Tax Treatment Under Class 43.1 and 43.2

### Summary

#### **Issue**

Geoexchange (the renewable technology also known as 'ground-source heat pumps', 'earth energy systems', *etc.*) offers potential technical efficiencies of up to 1000%, *i.e.* over ten times the energy savings of high-efficiency fossil fuel equipment, while providing other additional benefits to Canada's energy infrastructure.

Geoexchange technology is listed in the Class 43.1 Technical Guide since 1994 under the 'active solar equipment' category and has been consistently supported by the Federal Government. Ongoing inclusion of geoexchange in the current tax regime is essential to maintain a level playing field between energy sources in general and renewable energy sources in particular.

In addition, the Canadian Geoexchange Coalition (CGC) recommends the full inclusion of geoexchange technology as a **separate** category under the Accelerated Capital Cost Allowance for Clean Energy Generation. CGC believes that the eligibility of geoexchange for Class 43.1 under a separate category will raise awareness of the technology while 2007-08 new industry efforts dramatically increase consistency of results through the new national training and quality programmes.

The Government continues to review Class 43.2 on an ongoing basis to ensure inclusion of appropriate energy generation technologies that have the potential to contribute to energy efficiency and the use of alternative energy sources. Budget 2007 proposed eligibility to wave and tidal energy and a broader range of applications involving active solar heating, photovoltaics, stationary fuel cells, production of biogas from organic waste, and pulp and paper waste fuels.

Based on the hugely underutilized potential offered by geoexchange, the CGC recommends a review of Class 43.2 to specifically include geoexchange equipment such as the ground loop and the energy production unit (heat pump) as qualified equipment under the accelerated capital cost allowance for clean energy generation.

Generally, we believe that tax regime should treat every energy sources or technology equally, whether on the basis of carbon or productivity implications. Favoured tax treatment for either geoexchange or any other particular energy system – whether oil or solar – would be inappropriate market interference. The recommendations below would ensure such an ongoing level playing field between geoexchange and other renewable and traditional forms of energy.

In addition, whatever tax or incentive approach taken by the Federal government, CGC believes that each and every tool **must** be tied to the comprehensive CGC *Global Quality GeoExchange Program*. Reference to one unified national quality assurance tool is a critical step in risk management for all investors and policymakers.

#### **Recommendations**

1. CGC recommends that geoexchange be fully included under a separate category under the Accelerated Capital Cost Allowance for Clean Energy Generation (Class 43.1).
2. CGC recommends that eligibility of important parts of geoexchange systems which are not part of the building – e.g. the ground loop and the energy production / transformation unit (heat pump) – be clarified to ensure that such equipment can qualify for Class 43.1 and Class 43.2.
3. CGC recommends that geoexchange systems serving small and medium enterprises, in installations defined as "residential" under CSA standard C-448-02 (2006) Design and Installation of Earth Energy Systems (*i.e.* buildings under 15,000 ft<sup>2</sup>, require CGC system certification to qualify for 43.1 consideration.

## Geoexchange Technology Classification and Tax Treatment Under Class 43.1 and 43.2

### **Issue**

Historically, Natural Resources Canada has been a consistently strong supporter of the geoexchange technology (also known as 'ground-source heat pumps', 'earth energy systems', *etc.*) and the industry. Geoexchange technology has been listed in the Class 43.1 Technical Guide since 1994 under 'active solar equipment'. Ongoing inclusion of geoexchange in the current tax regime is essential to maintain a level playing field between energy sources in general and renewable energy sources in particular.

However, the Canadian Geoexchange Coalition (CGC) supports the full inclusion of geoexchange technology as a **separate** category under the Accelerated Capital Cost Allowance for Clean Energy Generation. In short, geoexchange should be represented as a separate and distinct category within Class 43.1 guidelines and related Federal Budget documentation.

To maintain a fair and equitable tax regime and following clarifications for qualified equipment under Class 43.2 in the 2007 Budget, the CGC also recommends a review of Class 43.2 to specifically include geoexchange equipment such as the ground loop and the energy transformation unit (heat pump) as qualified equipment under the accelerated capital cost allowance for clean energy generation.

### **Background**

Geoexchange technology, also known as ground-source, geothermal heat pump, earth energy, *etc.*, opens exciting new ways to capture and deliver quality thermal energy to consumers while more efficiently utilizing already-built electricity infrastructure and well-known technology. This 'least-known renewable energy' technology is tremendously underutilised and represents perhaps the single largest opportunity in renewable energy for Canadian policymakers.

All geoexchange systems involve a heat-transfer fluid moving within a loop to transfer thermal energy, to heat and cool spaces or processes. Geoexchange systems capitalize on this transfer of existing energy from earth, processes, or buildings rather than use combustion, to deliver ultra-high efficiencies and renewable heating and cooling.

Under national design and installation standard CSA C-448, geoexchange systems operate at a minimum COP of 3.0, or approximately a *300% minimum efficiency*. This means that for every unit of electricity invested in to a system, *at least* two units of 'free' heat or cool are transferred from the earth.

For example, when geoexchange meets 100% of heating needs, it saves as much as 70%, compared to electric resistance heating. When cooling a space, given the naturally low temperature of the earth, geoexchange usually operates about 35% more efficiently than even EnergyStar-rated air-conditioning technology.

In some applications efficiencies as high as 1000% can be achieved when parts of a building require cooling at the same time that others require heat. Well-designed geoexchange systems, such as those profiled in CGC's case studies and annual prize competition, often can achieve higher technical and economic efficiencies with integrated low-temperature hydronic systems, or thermal storage tools such as hot water or ice tanks.

Operational life for geoexchange systems can be set at 50 years – the common warranty on the largest cost driver, loop fields – with distribution system replacement in year twenty-five. Interior distribution systems usually make up approximately 30-35% of initial installation costs for residential systems. Commonly quoted savings estimates and figures which assume twenty year lifecycles are therefore exceedingly conservative and can be nearly effectively doubled. The Federal Government and some other governments such as the Government of Manitoba estimate that geoexchange provides the lowest life-cycle cost of any heating and cooling method. This

fifty-year timeframe is also significant in that it provides predictability for capital and infrastructure planning, and therefore may be viewed as a risk-management tool.

Additionally, simple project paybacks are often the first sought-after descriptor by consumers. Simple payback numbers however usually ignore a number of decision factors, such as capital depreciation and tax effects, opportunity costs, risk, fluctuations over time, and income in the years after the payback. In short, simple payback counter-intuitively tells us very little about the financial value of a project: it is almost never used in investment finance for exactly this reason. Project Net Present Value (NPV) is the tool of choice, and on this basis, geoechange often makes the most financial sense of any technology.

Historically, industry has identified the following barriers as its most important constraints:

1. Lack of training
2. Lack of certifications and quality assurance for customers
3. Upfront costs of geoechange systems, especially for residential installations
4. Lack of government incentives for geoechange
5. Lack of policies supporting geoechange market growth

The CGC has taken the following steps to address these barriers:

1. CGC has worked with a broad array of industry specialists to develop Canada's first national training programme for drillers, installers, and designers of geoechange systems. The training, developed by industry-leading practitioners, in cooperation with the Canadian Standards Association and Natural Resources Canada, far exceeds available training to date and has been widely praised by those who have completed courses. Training is fully revised and updated annually and delivered across Canada since February 2007.
2. CGC developed the *Global Quality Geoechange Program*<sup>®</sup> during 2005-2007. This first Canadian quality programme underwent extensive consultation, including a Canada-wide twelve-city tour of public consultations, and is the world's most extensive geoechange quality initiative.
3. CGC first looks to the private financial sector to develop financing programmes with lower risk premiums, using the *Global Quality Geoechange Program*<sup>®</sup> as quality assurance. Having one unified national quality assurance tool is a critical step in risk management for all investors and insurers.

A number of utilities and governments, including the Federal Government under the ecoENERGY Retrofit – Homes Program, are now referring to the CGC *Global Quality Geoechange Program*<sup>®</sup> for their grants and subsidies. Requiring CGC's quality assurance program in incentive programmes and regulatory frameworks is a low-cost way for governments to help renewable technology forward in Canada.

### **Effects of a Tax Incentive on Treasury**

Including geoechange as a separate category within class 43.1 guidelines would greatly raise awareness amongst institutional and other investors, leading to greatly increased investment in geoechange and propelling the industry forward at a critical moment in its growth. This will also support the geoechange market transformation initiative deployed by the CGC.

Given that CSA-compliant system designs will achieve an energy coefficient of performance of 3.0, CGC estimates that each dollar invested will be well spent in pursuit of productivity gains. CGC offers to work with stakeholders to develop scenarios as necessary.

Unlike other energy technologies geoechange plays an under-rated role in increasing infrastructure productivity for Canada, and has the potential to accomplish much more for the benefit of many sectors of the Canadian economy. There are many arguments in favour of CGC's proposal to offer a separate 43.1 category. Geoechange technology:

- is not sold or represented by the solar industry practitioners currently at work in the field;
- has a distinct and much advanced training, accreditation, and quality assurance programme for the technology's generally more technically complex design and installation requirements;

- is used in thermal transfer and storage applications much more frequently than any form of solar energy, especially in applications such as ice rinks and integrated-hydronic processes;
- does not directly capture only solar energies, but also uses the radiant heat of the earth in applications ranging from residential systems to orphaned mines and waste heat capture;
- is the only heating and cooling technology which qualifies both as a renewable and as highly energy-efficient;
- may otherwise be less visible to and / or targeted by the private investment community than other technologies;
- may be considered an energy-generation technology as it uses a small quantity of electricity or natural gas to provide a much larger quantity of renewable heat and cool;
- has been consistently and valiantly supported by NRCan as a distinct technology, and is now represented by a truly professional and credible industry association.

Available industry capacity is also an important constraint on the draw any goexchange tax incentive may have. As explained above, CGC has built Canada's first training curriculum around CSA Standard C-448, and is in the course of training industry participants to design and install compliant systems. CGC is rolling out the world's most stringent quality assurance initiative as well, in its new *Global Quality GeoExchange Program*.

Limiting the 43.1 provisions to those who are fully accredited to this industry standard, would have the effect of rationalizing and slowing any impact of a tax incentive might have on the Federal treasury, while simultaneously providing a meaningful level of risk abatement and quality assurance to investors.

In addition, targeted tax treatment will raise awareness of the technology at the same time that new industry efforts are dramatically increasing consistency of results through training and quality programmes. In such a context, whatever tax or incentive approach taken by the Federal government, CGC believes that each and every tool **must** be tied to the comprehensive CGC *Global Quality GeoExchange Program*. Quality assurance helps ensure that programmes deliver reliable and reputable geoexchange systems to the final consumer and that incentive monies are effective. CGC has worked with NRCan since 2002 specifically to build the world's first quality assurance framework, and as a result Canada now leads the world in this area.

### **Conclusions**

Generally, we believe that tax regime should treat every energy sources or technology equally, whether on the basis of carbon or productivity implications. Ongoing favoured tax treatment for either geoexchange or any other particular energy system – whether oil or solar – would be inappropriate market interference.

### **Recommendations**

1. CGC recommends that geoexchange be fully included under a separate category under the Accelerated Capital Cost Allowance for Clean Energy Generation. Geoexchange should be represented as a separate and distinct category within Class 43.1 guidelines and related Federal Budget documentation.
2. CGC recommends that eligibility of important parts of geoexchange systems which are not part of the building – e.g. the ground loop and the energy production / transformation unit (heat pump) – be clarified to ensure that such equipment can qualify for Class 43.1 and Class 43.2.
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