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EASTERN TRUST™

PRESENTS

## Carbon Unit Registry

### Introduction

As the new decade begins in 2010, after nearly three years of research and development, the Carbon Unit Registry ("CUR") launches in Atlantic Canada as the means of simplifying and harmonizing global compliance for voluntary carbon units. The CUR streamlines delivery and settlement of carbon units ("CUs") using its proprietary 'trust enhanced algorithm' for easing the process of exchanging CUs across uneven regulatory regimes. This centralized and secure global trust service fills growing gaps as policies evolve through acting as a single comprehensive accounting system-- as a 'supra-registrar' of CUs. The CUR requires that CUs are certified under their applicable jurisdictional regime or an accredited voluntary protocol and the account information of its clientele is not publicly disclosed. The CUR's powerful electronic tracking systems speed liquidity in across emerging global carbon markets.

The CUR provides breakthrough transparency, credibility and strict accountancy in this nascent industry that requires standardization and coordinated regulation. Each CU may be assigned each a unique serial number for tracking and verification purpose. Clients of CUR confidentially access their CUs via a single point of contact expert in environmental laws, accounting and commercial transaction. Criteria for credits registered with CUR are authoritative and stringent and must meet established standards in social and environmental responsibility. The CUR based in Atlantic Canada is quickly becoming the world's first choice for trustworthiness in carbon unit registrar services.

Eastern Trust (2007) Co. Ltd. ("Eastern Trust") announces on November 16, 2009 its strategic alliance with Scotian Carbon Services for project coordination and fulfillment of certain CUR services.

### Highlights

Eastern Trust, an independent custodian and trust company, has the expertise and technology infrastructure required to drive transactional efficiencies and reduce operational complexity for all market participants. Eastern Trust developed a "central custody and post-trade facility" that bridges the gap between existing infrastructure and the needs of a more robust financial market, such as:

- **Single point of access to both the regulated as well as voluntary markets:** Provides participants with a single view and means to access their entire Carbon portfolio (EUAs, CERs, VCUs, *etc.*) and perform all transactions including trading, cancellation and retirements in one place.
- **Delivery against Payment:** Provides the ability to deliver offsets against participant's cash accounts reducing the trading risk for counterparties.
- **Clearing and settlement of offset trades:** Provides independent trade/retirement validations and confirmations as well as support for the physical delivery of different offset types.
- **Facilitating cross-border payments and transactions:** Provides support to manage cross-border transactions in multiple currencies.
- **Enhanced transparency and reporting for all constituents:** Provides electronic storage and access to verification reports, audit trails and third-party validation of account holding and retirement accounts and aggregate retirement/credit information.
- **Managing operational complexity and administrative burden:** Provides scale and expertise to manage the administration and paperwork associated with different offset types.
- **Produces framework for more sophisticated risk management:** Provides services such as escrow and collateral management as the market continues to mature with methodologies, market access, and systems tracking.

Improving the connectivity and consistency between physical registries and transaction services provide confidence to market participants and reduce transaction cost and risk. Consequently, evolution of the infrastructure of carbon markets plays an crucial role in the foundation of the markets and associated trading regimes.

Eastern Trust champions Canada and specifically Atlantic Canada as the ideal venue for global voluntary carbon units. Eastern Trust together with its strategic alliance partner, Scotian Carbon Services, seeks to present the case for Atlantic Canada's market leadership in delivering superior advantage to businesses worldwide by unsurpassed knowledge, service, integrity, and effectiveness with respect to CUs and to do its role in supporting improvement of our environmental conditions.

### **Strategic Partnership with Scotian Carbon Services**

Scotian Carbon Services ("SCS") is a leading provider of independent analysis and consulting services for global carbon and energy markets based in Atlantic Canada. SCS provides critical insights into energy and environmental markets and provides professionals with market-moving information through monitoring news, key market players and business and policy developments. SCS also helps businesses take advantage of opportunities by providing professional consultation in carbon credit registration and sales. It offers its clients the capabilities of the most experienced team in Atlantic Canada in international carbon credit project development and sales as well as domestic carbon management. SCS provides: authoritative market outlook and policy analysis, project management and unit brokering to Eastern Trust's clientele and helps to support application of the 'trust enhanced algorithm' with fully updated information and environmental knowledge base. SCS, a division of Scotian Windfields Inc. has

been leading the environmental matters in Atlantic Canada with its wind and solar projects in association with leading companies in Atlantic Canada.

## Executive Summary

- Environmental policy is gradually moving from command and control regulation to leveraging the advantages of competitive markets. Due to their physical nature, greenhouse gases lend themselves well to emissions trading on a global level.
- The global carbon market is growing rapidly. The market was worth approximately 18 billion in 2008 and was expected to grow to 150 billion by the end of 2009. (References available upon request.) This growth has been driven by the European Union Emissions Trading Scheme ("EU ETS") and interest in global Kyoto credits from the Clean Development Mechanism ("CDM") and Joint Implementation ("JI").
- In the mid-term we see the potential of direct or indirect linking of regional cap and trade programs comprising emitters in Europe, North America and Oceania/Asia, potentially reaching a combined cap of over 9 billion tons. It is estimated that a linked global cap and trade market could reach a turnover of \$3 trillion by 2020.
- To provide a legitimate contribution to climate change goals, emissions trading must deliver real and cost-efficient emissions reductions. For markets to perform efficiently, they need to deliver real reductions and be standardized, liquid, transparent and predictable.
- Market design need to be sensitive to the requirements of efficient markets and provide the basic preconditions to support secondary markets. As markets mature, market participants will require more sophisticated transaction models supported by financial intermediaries such as exchanges, custody and trusts, and clearinghouses.

## Carbon Markets, Mechanisms and Registry Infrastructure

### Prerequisites of a Global Carbon Market

The causes and consequences of climate change have forced the global community to consider mechanisms and policies for curbing emissions of greenhouse gases. The scale of this challenge calls for use of policy tools that combine environmental and economic efficiency. Environmental policymakers gradually have recognized the benefits of moving from command and control policies toward leveraging the advantages of competitive markets.

Emissions trading has been adopted successfully to control emissions of sulfur dioxide (SO<sub>2</sub>) and other pollutants. Due to their physical properties (easy to measure, monitor and validate), greenhouse gases lend themselves perfectly to global emissions trading:

- First and foremost, greenhouse gases have equal effects on climate change irrespective of where they are emitted. Hence, reductions in emissions of greenhouse gases carry the same environmental benefits wherever they take place. This physical nature has far reaching consequences for the politics of climate change. To have impact on positive change requires policies that curb emissions on a global scale. However, economic resources and political

motivation to deal with climate change are distributed unevenly. As availability of capital is limited, reductions will arrive faster and in larger scale if capital is allocated to projects where reductions are least expensive. This provides the foundation for a potentially global exchange of capital and emission rights.

- Most greenhouse gas emissions are associated with production or consumption of energy. As countries develop economically, the efficiency with which they produce and consume energy improves gradually. Various levels of economic development, energy efficiency and environmental regulation also entail very different marginal costs of reducing greenhouse gas emissions among economic regions.

The physical properties of greenhouse gases and global economic realities have necessitated the development of international treaties to suggest how reductions of greenhouse gases can be promoted in an equitable, expedient and cost efficient manner. Global regulation is a prerequisite to facilitate a market-based system for exchange of capital and emissions reduction credits on global scale.

Greenhouse gases predominantly comprise carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphurhexafluoride (SF<sub>6</sub>). While these gases have very different physical properties, from a climate change perspective they share the attribute of having a global warming potential that physicists can quantify. This allows us to convert emissions of all greenhouse gases into a carbon dioxide equivalent ("CO<sub>2</sub>e"). Hence, the physical nature and known global warming implications of various greenhouse gas emissions allow us to establish one single uniform product that lends itself to being traded as a commodity

### **UNFCCC and the Kyoto Protocol**

The United Nations Framework Convention on Climate Change ("UNFCCC" or the "Convention") is a non-binding international agreement that sets the basic legal foundations for international cooperation on climate change among almost all UN member states (191 countries). At its heart is the ultimate objective to stabilize greenhouse gas concentrations in the atmosphere "at a level that would prevent dangerous anthropogenic interference with the climate system".

The Convention places the heaviest burden for fighting climate change on industrialized nations, since they are responsible for most historic as well current greenhouse gas emissions. These countries agreed under the Convention to support climate-change mitigation activities in developing countries by providing financial support and transfer of environmental technologies.

In December 1997, after two-and-a-half years of negotiations, countries reached agreement on a text that set legally binding reduction targets for industrialized countries, a timetable for reaching targets and a set of mitigation approaches. The final text was named the Kyoto Protocol because it was agreed upon in the Japanese city of Kyoto. The Kyoto Protocol contained two groundbreaking features:

- It set reduction targets for greenhouse gas emissions from industrialized countries of 5 percent, measured against a base year of 1990 to be achieved during the period from 2008-2012.
- It provided for voluntary participation of developing countries through "project-based mechanisms."

### **Flexible Mechanisms**

Flexible mechanisms essentially are a means of creating reductions in global greenhouse gas emissions at the least cost. They employ the power of competitive markets to allocate capital to the cheapest

emissions reduction opportunities. The Kyoto Protocol contains three such "flexible mechanisms:" Emissions Trading, the Clean Development Mechanism ("CDM") and Joint Implementation ("JI"), thereby presenting a framework for a carbon market comprising all signatory states.

Mandatory carbon trading programs essentially comprise two alternative approaches. Regulation may address individual emitters' level of emissions by mandating specific emissions reductions or carbon intensity levels. To comply under this type of program (also referred to as baseline and credit programs), emitters face the choice of reducing emissions or surrendering verified emissions reductions (credits/offsets) for any shortfall between their actual emissions and their target level emissions.

Alternatively, regulation may address emissions of a group of emitters by placing a total cap on their permissible emissions known as "cap and trade." In cap and trade programs, emitters need to surrender rights to emit (allowances or credits) equal to their measured emissions. As most cap and trade programs cover a limited geographic area or selected emission sectors, they can be combined with verified reductions from outside the program to offset emissions increases above the cap. Provided certain conditions are met, this creates 'fungibility' between offsets and allowances. Both instruments carry the same environmental value and can be used for compliance interchangeably. While the concept of trading verified emissions reductions may carry environmental attractiveness, offsets have met challenges because it has proved very difficult to establish appropriate "business as usual" benchmarks against which reductions should be measured.

### **Environmental Efficiency**

To provide a legitimate contribution to climate change goals, emissions trading must deliver real and cost efficient emissions reductions. The quality and the value of offsets and allowances can be viewed as a proxy for the environmental integrity of a program. An allowance (a right to emit one ton of carbon) only holds value if there is a shortage of allowances relative to business as usual emissions levels. The price of the allowance should then correspond to the marginal cost of reducing emissions to the target level.

Real reductions are measured net of any indirect emissions increases caused by a reduction measure. Being additional - maybe the most contested property of many offsets - requires that the emissions reductions go above and beyond business as usual, *i.e.*, exceed any reduction that would occur in the absence of the financial incentive stemming from climate change regulation. In addition, emissions reductions should be permanent, *e.g.*, sequestered carbon should not resurface through tectonic activities, wildfire, or other unforeseen events. Finally, reductions need to be verifiable, in the sense that emissions reductions reported can be endorsed by an objective third party.

Upon satisfying these preconditions, offsets are legitimate greenhouse gas reductions that can be used to offset an emissions reduction target on an individual, regional or even national level. However, both the Kyoto protocol and most national environmental policies place limits on the extent offsets may be used to justify emissions growth. Most policies adopt carbon trading as supplemental to domestic reduction efforts. Supplementarity is a manifestation of widespread political imperatives that climate change needs to be combated by measurable actions to reduce greenhouse gas emissions at a local and national level.

### **Economic Efficiency**

Certain conditions need to be in place for markets to evolve and eventually develop into efficient commodity markets. Initially, it is critical to recognize that carbon markets, with the exception of voluntary demand, are not natural markets. Demand is not driven by consumer preferences, but

mainly created by climate change legislation. In fact, most significant parameters of cap and trade markets are set by regulation.

In creating regulated markets, legislators and regulators need to be sensitive to the prerequisites of efficient markets. Without this recognition, carbon markets may not deliver the advantages that traded markets can potentially provide over other policy options. At the same time, regulated entities and market participants need to be sensitive to the fact that carbon markets are policy tools and, as such, are vulnerable to changing political priorities. Political risk is prevalent in most markets, but to an even greater extent in markets created by political imperatives and legislation.

For markets to reach an advanced stage of development and economic efficiency, they need to be characterized by:

- Standardization
- Liquidity
- Transparency
- Predictability

Standardization is achieved by the uniformity of the commodity being traded. Can the properties of the commodity be clearly defined and measured? The fewer product variants that are traded, the more transparent and larger the market is likely to become. Currently, a greenhouse gas allowance (*i.e.* a right to emit 1 ton of CO<sub>2</sub>e) is a well-defined tradable financial instrument (*e.g.* the European Union Allowance ("EUA") in the EU ETS.) However, if different programs do not mutually recognize each others' allowance types, these allowances will not be fungible and they could potentially trade at different price levels in their respective markets. Offsets or verified reductions in greenhouse gases can be transformed into a uniform product on the basis of their global warming potential. However as the rules and practices surrounding multiple offset programs are different, buyers tend to prefer certain programs or offset types. Currently, the offset market is a very diverse market with a wide range of standards, products and prices. Certified Emission Reductions ("CERs") from CDM and Emission Reduction Units ("ERUs") from JI are among the most standardized instruments.

Liquidity is an important prerequisite of an efficient market. Liquidity can be measured in terms of transaction volume, frequency and price spread between bid and ask prices. A narrow price spread is an indicator of a liquid market. Liquidity is important for market confidence. In order to attract a high volume of transactions, many market participants need confidence that transactions of different sizes can be made quickly and at uniform and predictable prices. In liquid markets, large transactions do not move prices noticeably. Sufficient liquidity hence attracts transactions and breeds more liquidity. The price then becomes a trusted reference which again is a prerequisite to support a derivative market on top of the cash market.

Derivative markets are efficient means by which large players hedge or manage risks associated with volatile cash markets. Currently, with the exception of the EU ETS, most regional carbon markets are too small to be considered liquid. Markets need size to develop economic efficiency. Size can be achieved by creating effective linking mechanisms or preferably merging multiple carbon trading programs.

Market transparency enhances the efficiency of markets by providing market participants with symmetric information. Market information enhances possibilities of exploiting arbitrage opportunities and hence improves the linking of dispersed markets. Not all market participants are equally well served

by transparency, but symmetric information generally contributes to a fair and level playing field and enhances market participation. Exchanges typically provide the best transparency in terms of access to market data such as transaction prices and volumes, price spreads and contracts.

Transparency is an important consideration of European Union ("EU") financial market regulation as well as a fundamental goal of the US Securities and Exchange Commission. The EU ETS has reached a fair level of market transparency through disclosure of transaction data from the prominent exchanges, through the Community Independent Transaction Log ("CITL"), and through independent third-party information providers. The primary CDM market has an advanced level of transparency at the project and process level due to the disclosure requirements in the CDM (including public review requirements), but there is limited availability of price and transaction data. Currently, voluntary offset markets have a limited level of transparency.

Market certainty is an issue particularly relevant for carbon markets as their existence is politically motivated. Often carbon markets and their regulation are time constrained. This is significant to how markets price risk and, as a result, has an impact on the final cost effectiveness of carbon trading as a climate change policy option. Investors (*e.g.* in power plants) need confidence in the existence and levels of a carbon price over a time-span of 30 to 40 years of which the first 20 years are economically very significant. Correct market prices ensure that the markets perform their economic function of efficiently allocating capital resources. If markets price a high level of risk into carbon prices due to political uncertainty, it may impede the functioning of the market as a means of stimulating carbon reduction investments at the lowest cost. The EU ETS initially failed to provide investors with a desired level of certainty. However, recent announcements have indicated a lifespan of the European program until 2020, but critical parameters defining the stringency of this scheme are pending the outcome of global climate policy negotiations.

## **State of The Global Carbon Market**

The global carbon market is growing rapidly. This growth is predominantly attributable to the EU ETS and increasing interest in global Kyoto credits (CDM/JI). As new regional trading schemes emerge, the market is faced with a variety of new national compliance certificates, registries, protocols, and accounting systems. This section will address the fragmentation of the mandatory and voluntary carbon reduction schemes and demonstrate the impediments that these create in the context of developing a truly international carbon market.

## Compliance Markets

Compliance markets, and particularly the EU ETS, dominate the international market for carbon credits both in volume and financial value.

Table 1: Compliance Markets

Name	Type	Start Date	Cap Size MtCO <sub>2</sub> e	Value (2007)	Allowance Price (2007)
New South Wales Greenhouse Gas Abatement Scheme	Baseline and Credit	2003	N.A.	\$81 Million	\$3 - \$10
EU Emissions Trading Scheme	Cap and Trade	2005	2,100	€28,133 Million	€12.60-€30.75
Alberta Abatement Scheme	Baseline and Credit	2007	N.A.	N/A	N/A
New Zealand ETS	Cap and Trade	2008	62	N/A	N/A
Swiss Federal ETS	Cap and Trade	2008	4	N/A	N/A
Regional Greenhouse Gas Initiative	Cap and Trade	2009	171	N/A	\$3.07 - \$8.45

## The Kyoto Market

The Kyoto market is the largest cap and trade carbon market in existence yet. It is a market between the compliant entities of the Kyoto Protocol — the 37 national states of Annex B — which have committed themselves to an average of 5 percent total emissions reductions during the period from 2008-2012 compared to their 1990 emissions levels. Compliant states are assigned AAUs equivalent to their cap and can trade these between them. Carbon credits developed under CDM (CERs) and JI (ERUs) can be used by nations for compliance under the Kyoto Protocol or by businesses for compliance under cap and trade programs such as the EU ETS. It is not expected that AAUs will be traded to any great extent. However, the Kyoto market has become an important driver in creating global emissions reductions and transactions under the CDM/JI mechanism. In 2007, the CDM and JI market traded a total of 0.6 billion tons and \$18 billion worth of credits.

## European Union Emission Trading Scheme

The EU ETS cap and trade scheme began in 2005 and is the world's largest carbon market among private entities. The scheme covers energy and industrial sectors of 27 European countries with a total cap of 2.1 billion tons of CO<sub>2</sub>e/year. The traded instrument is the EUA. The total value of trading in the EU ETS was approximately \$44 billion in 2007. Emitters are allowed to use CDM/JI offsets for compliance subject to individual quantitative restrictions. The EU ETS has not yet created significant emissions reductions within the EU, but it has been the main driving force behind the development of thousands of emissions reduction projects under CDM in more than 100 developing countries. Estimates from the World Bank indicate that CDM has leveraged \$59 billion of investment capital to developing countries in the 2002-2007 time period.

## **Western Climate Initiative**

The stated purpose of the WCI is to identify, evaluate and implement ways to collectively reduce greenhouse gas emissions in the region. The initiative requires partners to set an overall regional goal to reduce emissions, develop a market-based, multi-sector mechanism to help achieve that goal, and participate in a cross-border greenhouse gas registry.

The Western Climate Initiative plans to lay the foundation for an international cap and trade program that would involve both the United States and Canada. On September 23rd, 2008, the WCI released an outline for the implementation of its cap and trade proposal. The first phase of this plan would be implemented on January 1, 2012, followed three years later by a broader cap on carbon emissions in 2015. Alberta and Saskatchewan object to cap and trade and in July 2008 called WCI's plan a "cash grab by some of Canada's resource-poor provinces." On 22 August, 2007, the WCI set a goal of reducing greenhouse gas emissions by 15% from 2005 levels by 2020.

## **The Alberta Abatement Scheme**

The Canadian province of Alberta introduced a carbon market in 2007 requiring all large point-source emitters to reduce the carbon intensity per unit of production by 12 percent. Only offsets produced in Alberta are eligible for use under this scheme. Emitters can meet their compliance obligation by buying into the government-run technology fund at \$15/ton, putting an effective price cap on the market.

## **The New Zealand Abatement Scheme**

New Zealand has recently introduced an economy-wide cap and trade scheme that will cover the forestry sector and will sequentially include additional industries until in 2013, when the entire economy will be covered. When all economic segments are included, the scheme is expected to cover 62 million tons of CO<sub>2</sub>. For the initial period (2008-2012) compliant entities will be allowed to surrender both local allowances (called "NZUs") and Kyoto units (with restrictions) for compliance purposes. Offsets also can be generated by non-covered economic segments within New Zealand.

## **The Swiss Abatement Scheme**

The Swiss emissions trading scheme began in 2008. Emission allowances are allocated to the companies free of charge, and CDM/JI credits may be used to cover a maximum of 8 percent of the target reductions. The size of the covered market is estimated at 4 million tons of CO<sub>2</sub>.

## **The Northeast Regional Greenhouse Gas Initiative (RGGI)**

RGGI is the first mandatory compliance market in the United States, covering 188 short tons of carbon emissions from power producers in 10 northeastern states: Connecticut, Delaware, Maryland, Massachusetts, Maine, New Hampshire, New Jersey, New York, Rhode Island, and Vermont. RGGI began in January of 2009. RGGI permits the use of offsets and allows increased use and wider origination of offsets depending on market prices. At lower prices offsets must be sourced from within the United States, either in RGGI states or in states which sign a memorandum of understanding. Upon reaching the maximum price threshold, participants are eligible to use EUAs and CERs to meet a

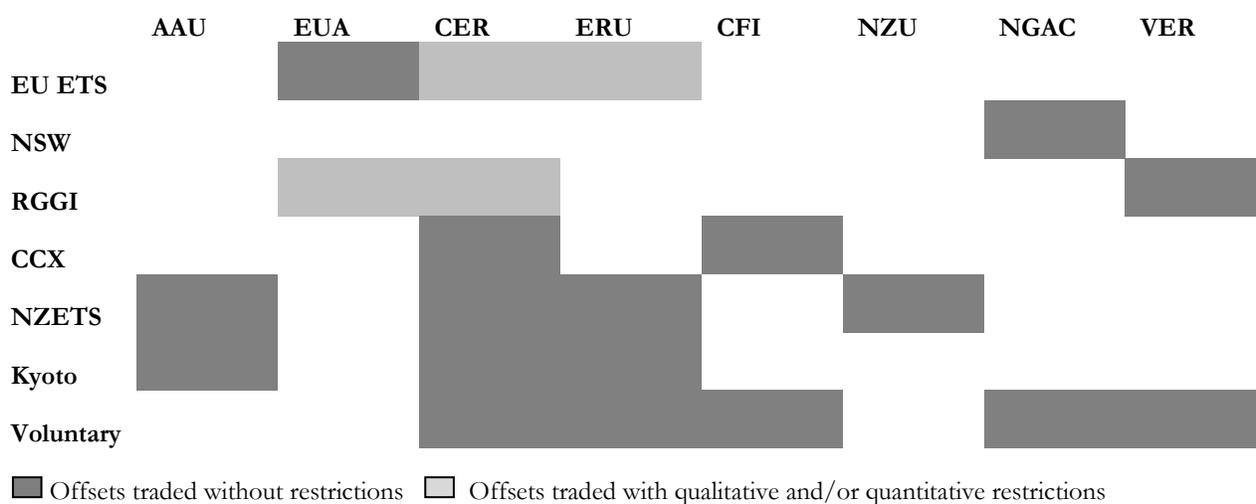
portion of their compliance. During the first allowance auction held on September 25, 2008, 12.5 million allowances were sold at a price of \$3.07/ton.

### Up-and-Coming Compliance Markets

The federal government of Australia recently released a green paper outlining a federal economy-wide cap and trade scheme covering all six Kyoto gases. The scheme is expected to come into effect in 2010 and would cover an estimated 446 million tons of CO<sub>2</sub> in 2010. Kyoto credits would be eligible for compliance within certain quantitative limitations. The federal government of Canada released a climate change plan in 2007 that was intended to reduce emissions 20 percent by 2020, and 60 to 70 percent by 2050 relative to 2006 levels. The baseline and credit trading program is expected to start in 2010 and force covered entities to reduce their emissions intensity by 18 percent below 2006 levels and then an additional 2 percent each year. Offsets can be sourced domestically from non-covered entities and all CDM projects are eligible but limited to 10 percent of each firm's compliance target. Cost containment mechanisms have been suggested that are likely to limit the attractiveness of using international offsets.

Global Warming Solutions Act, AB 32 (California) is a California Law that in 2006 mandated the first state-wide total economy cap on greenhouse gas emissions in the US. The law requires the California Air Resources Board (CARB) to create, monitor, and enforce a greenhouse gas reporting and reduction program that will bring the state to a 1990 level of emissions by 2020. On or before January 1, 2011, CARB must officially put into place specific regulations to achieve the global warming emissions. In conclusion, the various mandatory programs in operation place very specific requirements on which allowances and credits are eligible to be used for compliance. The lack of common recognition of each others' compliance instruments (see Table 2) pose a challenge to the development of fungible, liquid and efficient markets.

Table 2: Offsets Traded Under Various Programs



Source: The World Bank, "State and Trends of the Carbon Market 2008"

## Voluntary Markets

The voluntary market remains a small but growing portion of the overall global carbon market. Volumes and values tripled from 2006 to 2007, which witnessed the trade of 65 million VERs worth \$337 million (if Carbon Financial Instruments ("CFIs") traded on the Chicago Climate Exchange ("CCX") are included). The strong growth and variety of products offered in the voluntary space have spurred the development of numerous standards and registries designed to give consumers confidence that the credits they purchase are real and verifiable. In 2007, 87 percent of credits transacted in the over-the-counter ("OTC") market were verified by a third party, with the most widely used standard being the Voluntary Carbon Standard ("VCS"), followed by VER+ and the Gold Standard. In addition, the CCX is using its own set of standards for voluntary offsets. These standards offer guidance as to the type of projects that qualify for offsets, how their environmental qualities should be assessed, monitored, reported and verified, *etc.* The main features of these programs are listed in Table 3.

Another set of standards applies to the specific methodologies adopted for monitoring, verification and reporting of emissions reductions. The ISO 14064/65 standards are part of the International Organization for Standardization (ISO) family of standards. The ISO standards are not intended to support a particular greenhouse gas program, but are instead designed to be "regime neutral" so that they could be utilized by any abatement program. The World Business Council for Sustainable Development (WBCSD) and the World Resources Institute (WRI) Protocol for Project Accounting (WBCSD/WRI GHG Protocol) is a widely accepted set of guidelines used by project developers and incorporated into numerous standards, such as the California Climate Action Registry ("CCAR") Protocols and the ISO 14064 standards.

Standard Name	Sponsoring Organization	Volume Certified To Date	Project Types	Supplementality Requirements	Registry
Gold standard for voluntary emissions reductions (VGS)	Gold standard foundation	730,887	Renewable energy, energy efficiency	Same as UN	Gold Standard database
VER+	TUV SUD	981,512	Any except nuclear, large hydro	Same as UN	Blue Registry
Voluntary offset standard (VOS)	International Carbon Investor Services (ICIS)	N.A.	Any except nuclear, HFC-23, large hydro	Same as UN	-
Community Climate Biodiversity (CCBA)	CARE, Nature Conservancy, Rainforest Alliance, others	45,695	LULUCF	Various: financial, political barriers, common practices, <i>etc.</i>	CCBA database
Carbon Financial Instrument	Chicago Climate Exchange (CCX)	50,462,900	Methane, soil, forestry, renewable	Benchmark: beyond BAU; top performers	CCX
Voluntary carbon standard (VCS) version 1-3	IETA, Climate Group, World Economic Forum	N.A. <sup>6</sup>	List of 15 categories; LULUCF, others tbd	Includes performance standards, barrier analysis	The Bank of New York Mellon, APX, TZI, CDC

In addition to verification standards, supplier certifications are intended to provide a mark of quality recognizable by consumers wishing to engage in the voluntary space. The newest is the proposed UK-based Code of Best Practice for Consumers & Voluntary Code of Best Practice on Carbon Offsetting. In the United States, the Green-e Climate Standard was launched in 2008 and developed primarily to provide certification services for retail providers retiring carbon credits to sell as carbon offsets to customers. This program awards certification to specific project-based standards including the CDM, the Gold Standard, and the VCS. However being unregulated instruments, VERs do not qualify for compliance under established mandatory markets.

## Market Statistics - Traded Volumes

Although the voluntary market grew significantly in 2007, the compliance market still dwarfs the voluntary space (VERs and CFIs) both in volume traded and financial value.

**Table 4: Trading Volume by Offset Type**

	2006		2007		2008	
	Volume (Mt)	Value (\$ mil)	Volume (Mt)	Value (\$ mil)	Volume (Mt)	Value (\$ mil)
EUA	1017	28,738	1,643	44,560	1,296	47,543
CER	563	6,209	947	18,594	502	12,011
ERU	21	150	38	516	26	440
VER	14.3		42	258	N/A	N/A
CFI	10.3	38	23	72	N/A	N/A

The carbon market continues to mature financially with a variety of exchanges now offering a selection of EUA and CER contracts and derivatives. The market is still dominated by OTC transactions, but the share of exchange-traded carbon products is growing. The major player is the European Climate Exchange ("ECX"), with Nord Pool, BlueNext and the European Energy Exchange posting smaller market shares. Review of data from the major exchanges reveals that the carbon market still has more room to grow. Nearly 2/3 of all transactions registered on the largest carbon exchange, the ECX, are clearing services offered for OTC transactions. EUA futures are the most widely traded contracts followed by EUA spots and CER futures.

**Table 5 - 2007 Traded Volumes (Mt. 5: CO2e)**

	ECX	Blue Next	EEX(Carbix)	NordPool	Totals
EUAs					Total Exchange
Spot	-	23,703,000	3,474,977	1,408,000	28,585,977
Futures	373,399,000	1,065,000	9,067,000	25,290,000	408,821,000
Options	10,731,000	-	-	-	10,731,000
CERS					
Futures Total	27,485,000	-	-	5,667,000	33,152,000
Exchange	411,615,000	24,768,000	12,541,977	32,365,000	481,289,977
OTC (All Instruments)					Total OTC
Cleared Volume	777,338,000	-	10,127,166	64,143,000	851,608,166
Uncleared	-	-	-	-	157,455,834
Total OTC	1,188,953,000	24,768,000	22,679,143	96,508,000	1,009,064,000

*Source: ECX, BlueNext, EEX, NordPool,*

### **Environmental Resources Trust ("ERT") Greenhouse Gas Registry Program**

The ERT Greenhouse Gas Registry is the longest-standing registry in the voluntary carbon markets. Created in 1997, the registry tracks VERs and actual carbon credits. Both buyers and suppliers can register credits that they may either re-sell or retire. The ERT registry provides third party validation and verification services with standards varying on a case-by-case basis. In March, 2007, ERT selected APX to provide technological support for its Greenhouse Gas Registry Program.

### **Eastern Trust's Carbon Unit Registry (CUR)**

The Eastern Trust Carbon Unit Registry (CUR) is Canada's only non-public registry created to become a means of accounting for both compliance and voluntary carbon instruments on a supra-registry basis. This custodial registry aims to streamline delivery and settlement of carbon units (CUs) on a commercially oriented basis towards simplifying and harmonizing an increasingly uneven regulatory framework. This centralized, electronic accounting system stores CUs, assigns each a unique serial number for tracking and verification purposes, and provides clear parameters for defining account ownership. The custodial registry requires that its credits are certified under their jurisdictional regime or an accredited voluntary protocol and the account information of members is not publicly disclosed. This area is so complex that Eastern Trust's 'reason to be' makes it a market leader by its first mover advantage and commitment to development during the emerging stages of this nascent industry.

### **The California Climate Action Registry's Climate Action Reserve ("CCAR")**

The CCAR was established by California law as a non-profit voluntary registry for greenhouse gas emissions to protect and reward California companies for pre-compliance emissions reductions. Building on its emissions reporting system, CCAR partnered with APX Inc. in 2007 and launched the Climate Action Reserve to track and register voluntary projects verified to CCAR protocols.

## The Chicago Climate Exchange ("CCX") Registry

The CCX registry is an accounting system for the CCX's cap and trade scheme. Suppliers seeking to include their credits in the registry must first become members and then have their offsets approved by the CCX Committee on Offsets, which assigns serial numbers to ensuing third-party verified credits. Because both emission reduction allowances and project-based offset credits are traded on the CCX, the registry is both an emissions reductions tracking program and a carbon credit accounting system. The registry is transparent and provides publicly-available information regarding transaction volume, the offset provider/aggregator, project type, and location.

## TÜV SÜD's BlueRegistry

TÜV SÜD created the BlueRegistry to track certified VERs and renewable energy credits. Initially, the database was exclusive to VER+ credits and renewable energy certificates. However, TÜV SÜD is now working to transform BlueRegistry into a "master" registry for verified voluntary carbon credits. The BlueRegistry is designed to be transparent, and maintains publicly available information on factors such as credit-type, credit ownership and vintage.

As a global cap and trade program of this size seems very unlikely, the target could *inter alia* be met by a combination of regional cap and trade programs (trading under the cap) with other jurisdictions offering carbon reduction credits (trading reductions from the wedge). In the mid-term we see the potential of direct or indirect linking of regional cap and trade programs comprising emitters in Europe, North America and Oceania/Asia, possibly reaching a combined cap of over 9 Gt. A derivative market on top of a liquid homogenous cash market could reach up to multiples of ten times on top of physical volume. Table 6 shows velocity rates or market turnover rates for a selection of commodities and financial instruments. The numbers clearly indicate the immature nature of carbon markets and the growth potential inherent in this market.

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**Table 6 - Market Turnover Ratios**

Market	2005	2006	2007	2008
EUA-Carbon	12	41	66	102
EU Continental				
Power –				
Emerging	60	120	150	178
Market				
London Stock				
Exchange	110	125	154	185
NASDAQ	250	270	303	345
Crude Oil	430	467	730	850
Nordic Power-				
Mature Market	770	820	950	1240

*Source: World Federation of Exchanges*

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## Impediments to Efficient Carbon Markets

Efficiency of carbon markets come with size and geographic reach. Being political markets, the potential growth of the global carbon market first and foremost rests on political decisions concerning the role of market-based mechanisms as a means of reaching reduction targets - be it at governmental policy level or in global climate change negotiations.

Global climate change policy has significant implications on the interests of sovereign states and distributional implications need to be resolved through international negotiations. The potential of emission leakages to countries with more relaxed climate change policies, *e.g.*, through transfer of manufacturing and jobs, makes climate change policy intimately linked with trade policies. Access restrictions to global carbon markets are increasingly considered as a means of forcing countries to assume climate change commitments while limited evidence has been put forward that such solutions would support environmental and economic efficiency. Both proposals for a new EU directive for Phase 3 of EU ETS and legislative proposals for federal cap and trade programs in the United States include such provisions.

The extent to which regions that are committed to capping emissions connect to a larger global cap and trade system will depend on the differences in stringency among different programs. National targets will depend on levels of economic development and environmental ambitions and will be set appropriate with what host nations find palatable. Differences in program stringency will yield different carbon price levels and compliance costs. Such disparities may limit the scope of linking because uninhibited linking would equalize prices and thus impose a higher cost on one party than desirable.

Linking markets also will be restricted by political priority to domestic emissions reductions. The European Union has aimed at achieving at least 50 percent of their emissions reduction target through EU-wide emissions reductions and the remainder through global carbon trading. Recent EU proposals seem to indicate that the emphasis on domestic reductions will be strengthened after 2013. Environmental non-governmental organizations ("NGOs") strongly favor domestic action. We expect that many developed nations will favor internal abatement, even though such policies do not support the most cost-effective approach to reach greenhouse gas reduction targets. Enforcement of supplementarity through quantitative restrictions on the import of allowances or offsets reduces the scope of global trading and creates market and price segmentation due to the cost of domestic reductions. As a result, the price of domestic allowances are typically more expensive than prices in the global offset markets.

The tendency of politicians to adopt market-based solutions also depends on political perceptions of the environmental effectiveness of carbon markets. Do carbon markets deliver reductions below a business as usual scenario? This question cuts to the center of the concept of offsets and their political legitimacy. Despite widespread recognition and attention to the environmental integrity of offsets, carbon markets have not progressed to a stage at which the principles of real, additional, permanent and verifiable reductions are implemented in a uniform fashion. While a lack of common measure of environmental "quality" poses challenges to development of liquid and efficient global carbon markets, it also challenges public perceptions and political views of the role of carbon markets in climate change policy.

These issues explain the lack of common recognition of offsets among and within compliance and voluntary carbon markets. There are multiple standards and controversial issues over important eligibility criteria. Although it is technically possible to link cap and trade schemes with different offset acceptance criteria, it could prove politically difficult to reconcile such differences and markets could develop classes of offsets with different prices.

Standardization, liquidity, transparency and predictability are key prerequisites of economically efficient markets. Legislators and regulators need to be sensitive to the fact that many of these features depend on decisions being made when markets are designed. Ignoring this could cause carbon markets to fail in outperforming alternative regulatory options.

The important symbiotic relationship between physical cash markets and financial derivative markets is critical for markets to perform an efficient allocative function. For financial markets to thrive there needs to be a liquid and trusted cash market. Equally important, when an efficient derivatives market exists, players are encouraged to trade in cash markets because instruments are available to manage fundamental price risk. This is demonstrated clearly in the CDM market where the emergence of financial offset instruments will facilitate risk management in primary CDM transactions and hence attract further investments and new players.

When markets grow liquidity and offer market participants confidence, new players are attracted to the markets, such as financial institutions, hedge funds, *etc.* These participants will add a new level of financial professionalism to the market and generally help markets develop further liquidity and efficiency.

There are numerous issues of a technical nature that inhibit development of efficient markets. The efficiency of the "back office" of markets is central to the functionality as well as the confidence in markets. Lack of uniform standards on registries, emission monitoring, measurement and verification complicate linking and reduce mobility of credits and ease of transactions.

Specifically, the voluntary carbon markets have a variety of carbon standards, many classes of instruments and low transparency. A reliable transaction infrastructure is a prerequisite to establish confidence, reduce risk premiums and hence lower cost of compliance. The lack of transparency and existence of disputable practices in voluntary markets affect customer acceptance and also slow market penetration to the extent it impacts public perceptions of carbon trading in general.

Despite these impediments, we clearly see an increasing trend in the convergence and size of global carbon markets. In the mean time it is realistic to expect a level of fragmentation and price differentiation among different market jurisdictions. Despite common recognition that offsets need to be real, additional, permanent and verifiable reductions in emissions of greenhouse gases, there are challenges both in terms of interpretation, quantification and enforcement of these criteria.

Currently, the UNFCCC Kyoto project mechanisms are taking hits from several directions due to issues ranging from teething problems and politics, to misconceptions and erroneous accusations. Questions about the additionality of projects have resulted in the Executive Board of CDM developing stricter rules and improving enforcement of the program with the aim of safeguarding the environmental integrity of CDM.

Governments and politicians are simultaneously discussing different approaches to how this program can be taken forward as well as what role offsets, in general should play in various cap and trade program designs. Throwing the CDM mechanism into play has introduced significant political risk for project investors. Lack of predictability of long-term policy choices is likely to cause discontinuities in project investments in the CDM market which can already be observed from investor behavior relative to projects that will issue credits post 2012.

While there are aspects of the CDM mechanism that could be improved and are being addressed, we view CDM as the best point of departure for creating a scheme that could attract general recognition from the potential hosts of a larger global cap and trade program. This would require subscribing nations to multilaterally adopt and adapt the CDM according to mutually acceptable standards of environmental

integrity, governance and procedural requirements as well as ensure adequate administrative resources to process the expected levels of offsets supplies.

Creating a common platform for offset eligibility is not an easy task. Despite common recognition that offsets need to be real, additional, permanent and verifiable reductions in emissions of greenhouse gases, there are challenges both in terms of interpretation, quantification and enforcement of these criteria. The concept of additionality is as critical to the environmental integrity of offsets as it is difficult to quantify. Ensuring the appropriate environmental quality and reputational aspect of offsets is a prerequisite to maintaining the position of offsets as a key abatement option. However the economic attractiveness of offsets is too compelling to be ignored and we believe international offsets should and will be an important component of cap and trade programs in order to contain the cost of ambitious political targets.

A uniform approach to offset standards would also need to address eligible sectors and jurisdictions. Particularly, there would be a need for a uniform approach to the use of offsets from land use and forestry sectors where, for example, the EU has been hesitant to move due to concerns over permanence, leakages, monitoring, *etc.* Lack of common recognition of offset categories could represent a potentially significant impediment to efficient linking of cap and trade programs.

The EU ETS and the CDM have reached a stage at which both systems recognize the advantages of uniform and standardized rules and procedures for accounting, monitoring and verification of emissions and emissions reductions. Proposals have been put forward in favor of harmonization. The necessity of harmonization also extends to the financial sector where the emergence of a new economic instrument has not yet been fully assimilated due to challenges such as lack of uniform financial accounting standards and taxation ambiguities.

Currently, large parts of the voluntary market do not satisfy transparency, liquidity and standardizations criteria required to be viewed as efficient markets.

**The abundance of standards prevalent in voluntary markets is not sustainable and further development of the voluntary market would be helped by a consolidation and harmonization of current work practices. The Carbon Unit Registry consolidates the disunited protocols and processes, providing transparency and credibility to this burgeoning market.**

## Development of Carbon Market Infrastructure

Being an intangible asset, the existence and title to carbon instruments needs to be managed by an electronic banking system - a registry - that tracks the whereabouts of the carbon units from their inception (issuance) to their final consumption (retirement). Registries are a critical part of the physical infrastructure of carbon markets performing several very important functions.

Ideally, registries should fulfill the following functions:

- Provide a reliable means of attaching title of a carbon instrument to a single account holder.
- Facilitate markets by providing transfer of title to carbon instruments between holders, while ensuring an auditable trail from issuance to retirement of the instrument.
- Provide regulators with a way of checking compliance in mandatory trading programs as account holdings can be quickly reconciled with compliance requirements and the proper amount of allowances/credits can be retired.

- Improve environmental integrity and public acceptance of carbon markets by providing transparency and a means of preventing multiple uses by ensuring that credits are appropriately retired.

While these criteria constitute prerequisites for supporting reliable and efficient markets, not all registries currently in operation provide users with adequate capabilities to meet these conditions. Typically, registries that are not part of a more comprehensive regulatory scheme experience a number of issues related to ensuring title to instruments, providing good legal documentation and preventing double counting of environmental attributes.

The Kyoto Protocol has instituted an internationally harmonized carbon registry including national registries aimed at tracking the various carbon units of the Kyoto Protocol. In the EU, these national registries have been expanded to cover the allowances traded under the EU ETS in order to provide consistency with each member state's possession of Kyoto instruments. Voluntary carbon markets have not yet achieved the same level of harmonization as regulated markets, with a few exceptions such as the Renewable Energy Certificate System ("RECS") of Europe that has demonstrated the ability to establish a multinational system for voluntary environmental markets.

Registries serve a vital role in creating an ownership trail for offsets. However, they are primarily designed to facilitate record-keeping for compliance purposes and are not designed to facilitate low-risk and low-cost financial transactions. In the regulated on-exchange markets, trust companies, and clearinghouses (associated with the various carbon exchanges), have stepped-in and are mitigating risk through the use of intermediate accounts in registries where the securities remain until transactions between buyers and sellers are closed. However, much trading today is done off-exchange in OTC markets. In these markets, the simultaneous movement of cash associated with the offsets is decoupled from the movement of offset positions in registries, creating delivery and payment risk and operational complexity for market participants.

The problem in voluntary markets is compounded by the multitude of registries and standards faced by potential investors. There is no consistent system to ensure that credits are not double-issued under multiple programs or even used for multiple purposes without being appropriately retired. As the various offset types represent different instruments, there is limited interconnectivity between registries. The voluntary market, being unregulated, has reached a state at which consolidation both in terms of standards and technical infrastructure is desirable. The diversity of standards and environmental qualities need to be addressed through contributions from investors and buyers aiming for greater harmonization of quality parameters, reporting, verification procedures, retirement rules, *etc.* In the voluntary market, players could be served by transaction platforms that bridge and manage holdings across multiple standards and instruments.

From the perspective of market makers and other financial intermediaries (broker/dealers, hedge funds, carbon funds, *etc.*) that are dealing with multiple portfolios and striving to promote market liquidity, the payment risk and fragmented infrastructure add cost and create operational complexity and burden. Fortunately, we do not have to look far for solutions to these issues. Precedent exists in the manner in which mainstream markets, such as equity and bond markets, have evolved.

Eastern Trust, an independent custodian and trust company has the expertise and infrastructure required to drive transactional efficiencies and reduce operational complexity for all market participants. Eastern Trust is developing a "central custody and post-trade facility" that bridges the gap between existing infrastructure and the needs of a more robust financial market, such as:

- Single point of access to both the regulated as well as voluntary markets: Provides participants with a single view and means to access their entire Carbon portfolio (EUAs, CERs, VCUs, *etc.*) and perform all transactions including trading, cancellation and retirements in one place.
- Delivery against Payment: Provides the ability to deliver offsets against participant's cash accounts reducing the trading risk for counterparties.
- Clearing and settlement of offset trades: Provides independent trade/retirement validations and confirmations as well as support for the physical delivery of different offset types.
- Facilitating cross-border payments and transactions: Provides support to manage cross-border transactions in multiple currencies.
- Enhanced transparency and reporting for all constituents: Provides electronic storage and access to verification reports, audit trails and third-party validation of account holding and retirement accounts and aggregate retirement/credit information.
- Managing operational complexity and administrative burden: Provides scale and expertise to manage the administration and paperwork associated with different offset types
- Providing the framework for more sophisticated risk management: Provides services such as escrow and collateral management as the market continues to mature.

Improving the connectivity and consistency between physical registries and transaction services provide confidence to market participants and reduce transaction cost and risk. Consequently, evolution of the infrastructure of carbon markets plays an crucial role in the foundation of the markets and associated trading regimes.

## Solutions

We have identified that a larger and efficient global carbon market plays a key role in reaching global greenhouse gas reduction targets. By adopting the power of markets in allocating capital efficiently, the global community is likely to reach emissions reduction targets faster and at a lower cost than what is possible under current policies. While the EU ETS supported by the Kyoto markets has come a long way toward reaching the goal of a market-based and global approach, no other carbon markets — mandatory or voluntary — have reached a desired level of environmental integrity or efficiency. A review of existing climate change policies and carbon markets demonstrates a fragmented approach to addressing the global environmental challenge.

While markets can be powerful tools in support of environmental policy, they need to be liquid, standardized, transparent, and predictable to perform efficiently. We have identified political stumbling blocks that are likely to curtail the potential of efficient carbon markets, but we maintain a very optimistic view of the prospects of growth in global carbon markets.

Acceptance and deployment of market-based solutions will require the combined efforts of market participants in delivering real and cost-efficient reductions, and from politicians in recognizing and facilitating competitive markets. The financial industry can improve performance and credibility of markets and build confidence among investors and politicians through continued improvement of market infrastructure and transaction support services. Eastern Trust has a dedicated team, expertise and infrastructure to support market participants in achieving this goal and works in strategic relations with Scotian Carbon Services.

## About Eastern Trust

Eastern Trust is the only securities services trust company wholly-owned and managed by Atlantic Canadians. It seeks to do its part in helping improve the environment through fulfilling this significant role in the process. As a boutique trust company rooted in Atlantic Canada, everything at Eastern Trust is customized for each client and carefully designed to achieve its objective. It recognizes the value of liquidity in your asset and that principle drives the process, however, it invests in each client relationship and learns how to best serve client needs. Its services are designed around each client including as to language—Canada continues increasingly to be recognized as the world's pre-eminent jurisdiction for these matters in part by being language inclusive, objective and well-reasoned. These details matter in making it seem simple, and it focuses its resources at ensuring what you do makes sense for you in every context, no matter how complex and global. Additionally, Eastern Trust aligns with various socially responsible actions and otherwise help serve the 'triple bottom line'.

Eastern Trust's role as trustee and registrar is to make it easier for businesses to obtain the maximum value of corporate good works through certain independence, validation, and smooth the exchange process. Buyers purchasing VCUs as part of an overall carbon management strategy to reduce emissions and become carbon neutral, or sellers of VCUs, need a transparent register recording to prove that no carbon credit is double counted (i.e. sold more than once) and otherwise protect the integrity of the data/asset.

**Jonathan Meretsky**, a Harvard trained lawyer specializing in international bank regulatory and securities law has headed Eastern Trust's CUR division since its inception. Mr. Meretsky has experience serving some of the world's largest businesses from his positions on both Wall St. and Bay St. as to their international transactions and legal compliance. Mr. Meretsky founded the CUR so as to put his unique skill set to use in supporting the environment and in creating the logical extension for Atlantic Canada in this industry on the world stage. For further information on the CUR, please feel free to contact, Jonathan Meretsky via email directly at: [jmeretsky@easteritrust.ca](mailto:jmeretsky@easteritrust.ca).

## About Scotian Carbon Services

Scotian Carbon Services was established by Scotian WindFields Inc., Atlantic Canada's leader in environmentally sustainable projects, to provide practical expertise to help businesses navigate through the confusing landscape and regulations that are part and parcel of the new carbon economy. Scotian Carbon Services is a leading provider of independent analysis and consulting services for global carbon and energy markets based in Atlantic Canada. Scotian Carbon Services provides critical insights into energy and environmental markets and offers comprehensive services providing professionals with market-moving information through monitoring fundamental information, key market players and business and policy developments. Scotian Carbon Services also helps business take advantage of opportunities by providing professional consultation in carbon credit registration and sales. Our staff has experience in international carbon credit project development and sales as well as domestic carbon management. SCS serves both domestic and international clientele and is the Atlantic Canada strategic partner for various environmentally focused organizations.

In addition, Scotian Carbon offers authoritative consulting in:

- Carbon Footprinting
- Carbon Management Strategies

- Carbon Credit Projects, Sales and Marketing

Scotian Carbon Services utilizes state-of-the-art financial management and carbon protocol tools. We use integrated sustainability principles to help organizations save money by understanding and mitigating their carbon risk. By quantifying results we evaluate success and turn qualifying emission reductions into carbon credits.

The Atlantic Canadian business sector is well-informed about climate policy initiatives throughout North America. SCS understands the most likely direction these policies will take and provides service to some of Atlantic Canada's leading businesses and leaders. Identifying winners and losers among the various competing carbon emission reduction schemes will be a significant component of building a robust economy. Business needs to be nimble to take economic advantage of the opportunities as they exist and as they develop in the future and SCS is Atlantic Canada's leader in procuring this knowledgebase and advantage to businesses in our region. SCS gives business leaders the tools they need to understand, advocate, and address policy options. We track policy makers, organizations and key officials, the design of all North American and International schemes and climate change policies.

**Gay Harley**, Public Advocacy and Carbon Management Lead Consultant for SCS specializes in climate policy, cap and trade design, energy economics, carbon valuation and sales, industry sector strategies with nearly twenty years of international and domestic consultancy experience in this field. Ms. Harley is a policy analyst and carbon management expert with a specialty in energy and climate change issues a global thought leader in this field working in association with some of the world's leading CU businesses and NGOs. She leads Scotian Carbon Services, a climate change consulting organization and carbon management service provider through involvement at all levels of every assignment. In various contracts she has developed acclaimed international carbon strategies through the Clean Development Mechanism of the Kyoto Protocol with the establishment of partnerships and projects in Central and South America and Southeast Asia.

In the course of developing and managing carbon credit projects and policy documents, Ms. Harley has amassed considerable expertise in the regulatory landscape of climate change policy and regulatory frameworks. Her speaking credits include the Montreal Conference of the United Nations Framework Convention on Climate Change (Conference of Parties 11), the Sustainable Business Committee of the Conference Board of Canada, and the Carbon Expo in Cologne, Germany. Her publishing credits include carbon finance studies for CARE Canada and CARE Cuba, and full cost accounting assessments of environmental policies for government and think tanks. Please feel free to contact Gay at [gay.harley@scotianwindfields.ca](mailto:gay.harley@scotianwindfields.ca).

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