



Introduction to Carbon Emissions Markets

Regulated and Proposed Markets
in the U.S. and Abroad

Megan Morgan
Chicago Climate Exchange

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On June 26, 2009, the U.S. House of Representatives passed H.R. 2454, the historic American Clean Energy and Security Act of 2009 (ACES). Should the Senate pass a bill and the President sign it into law, the resulting U.S. federal cap-and-trade market would create an estimated six billion CO₂ emission allowances annually¹. This will follow numerous CO₂ emission cap-and-trade markets launched in the past six years including the European Union Emissions Trading Scheme in 2005, the Regional Greenhouse Gas Initiative (RGGI) in 2009 and the Chicago Climate Exchange® in 2003.

As the EU, the U.S. and other large CO₂ emitting countries launch cap-and-trade markets regulating their respective economies, carbon has the potential to be the largest commodity in the world,² offering potential opportunities for investors and business owners to hedge, invest and capitalize on this emerging asset class.

In order to fully understand carbon markets, it is helpful to first understand the underlying legislation (or, in the case of the voluntary markets, the contractual agreement) that creates the commodity and the various factors that influence the price and volatility in the market. The purpose of this paper is to outline the fundamentals of cap-and-trade, provide a current snapshot of the diverse emissions markets across the world and to discuss the potential U.S. Federal cap-and-trade market.

The Dynamics of Cap-and-trade

In General, a cap-and-trade program is a market-based policy tool with the goal of reducing aggregate emissions in order to protect human health and the environment. The implementation of fixed emission cuts (“cap”) and tradable emission allowances (“trade”) fosters flexibility by sending a price signal to polluters and innovators allowing the economy

to identify or create the most cost effective compliance options.

In its purist form, a cap-and-trade program is implemented through the following steps:

- Set overall emission limits; subdivide that limit by setting specific limits for each emission source
- Assign tradable allowances to each emitter in an amount equal to their specific emission target
- Monitor, verify and report emissions
- Allow trading of emission allowances and track resulting transfers
- Conduct periodic ‘true-up’ requiring each emission source to surrender allowances in an amount equal to its verified emissions

Covered emissions sources can meet compliance by either reducing internally through installation of pollution controls and implementation of efficiency measures; purchasing another source’s allowances; or buying credits generated by offsets. Offsets are individual projects in “uncapped” sectors that sequester, mitigate or destroy greenhouse gases. Offset projects are approved and issued credits based on protocols set by the program on the basis of widely-accepted scientific evidence of greenhouse gas emission reduction.

The goal of trading is to encourage those sources who could more affordably reduce their annual greenhouse gas emissions through efficiency and low cost technology to undertake a large share of the economy’s emissions cuts allowing time for low carbon technology to catch up for those who cannot initially meet their reduction obligation. The market price of the tradable allowances would tend to gravitate to the marginal cost of compliance faced by the next least expensive mitigation technology.

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Offset projects encourage new mitigation options and keep cost of compliance lower by providing an avenue to introduce new technologies at lower costs into the marketplace. Allowing offset projects increases the flexibility of the entire program to meet the cap by changing the mix of activities undertaken to achieve a specific level of reduction and can reduce the overall economic cost of meeting a target for emissions.

Regulated International Greenhouse Gas Markets

*Kyoto Protocol*³

In December 1997, representatives from more than 160 countries met in Kyoto, Japan, to negotiate binding limits on greenhouse gas emissions for developed nations. The resulting Kyoto Protocol established emissions targets for each of the 37 industrialized countries and the European community (collectively the “Annex I” countries) relative to their 1990 emissions levels. The targets average 5.2% below 1990 levels for the 2008-2012 period, however individual targets range from an 8% reduction for the European Union to a 10% increase allowed for Iceland⁴.

Under Kyoto Protocol, Annex I countries can meet their compliance through a number of flexible



mechanisms. Joint implementation (JI) projects allow Annex I countries to earn emissions credits for projects that reduce emissions or enhance emissions-absorbing sinks, such as forests and other vegetation, in other Annex I countries. The Protocol also establishes a Clean Development Mechanism (CDM), under which Annex I countries purchase credits from projects that reduce emissions in developing countries. These credits are called Certified Emissions Reductions (CER).

Major countries that signed on to Kyoto Protocol include: the 25 nation states of the EU; Canada and Japan as Annex I countries; and China, India, Mexico and Brazil as developing countries generating CERs.

EU-ETS

The EU Emissions Trading Scheme (EU-ETS) commenced Phase I of the program on January 1, 2005 establishing the world’s largest cap-and-trade market for emissions allowances. Phase I was considered a “learning phase” and ended in 2007. Phase II runs from 2008 through 2012 in line with the Kyoto Protocol as the first commitment phase for EU regulated entities, which includes power generation, oil refineries, offshore installations and other heavy industrial sectors. Collectively, the EU has set an emissions reduction goal of 8% below 1990 levels throughout the 2008-2012 period. The EU emits roughly 5 billion metric tons of CO₂ annually and legislation places a direct cap on 50% of overall emissions. Total EUA allocation in the EU-ETS Phase II is slightly over 2 billion allowances per year from 2008–2012⁵. While each member state has different obligations to meet the Kyoto commitment, this does not preclude trading between entities in different member states as all entities are allocated the same standardized credit to meet compliance obligations, the European Union Allowance (EUA).

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In 2008, the EU-ETS traded over 3 billion metric tons (mts) of EUAs, with a notional value of \$91.9 billion, averaging \$29.71 per metric ton of CO₂ emissions⁶. However, the market was volatile in 2008. In the secondary market, spot prices ranged from \$45.39 on July 1, 2008 to \$17.40 on December 5, 2008⁷. In 2008, CERs traded 1.46 billion metric tons with a notional value of \$32.8 billion, averaging \$22.44 per metric ton. On the secondary market, spot prices ranged from \$30.66 on August 29, 2008 to \$17.96 on December 23, 2008⁸.

The European market continued to experience tremendous growth in the first half of 2009. While the annual allocation of allowances remained the same with only a light increase in CER issuance by the UN in the first half of the year⁹, the secondary markets saw increased transaction volumes. Exchange transaction volume for EUA spot, futures and options rose 200% from 1.06 billion metric tons¹⁰ (H12008) to 3.18 billion metric tons (H12009)¹¹. Similar growth was evidenced in the CER spot, futures and options markets with a 120% growth in exchange transaction volumes from 186 million metric tons (H12008) to

419 million metric tons (H12009)¹². Both EUA and CER spot prices are currently trading at a similar level to the beginning of the year (EUA/CER spot settlement: \$21.04/\$18.60 on August 19, 2009 and \$20.50/\$18.55 on January 2, 2009). However, during that time period exchange-traded spot prices hit lows for both EUAs and CERs on February 12, 2009 with closing prices of \$10.18 and \$9.73 respectively.

Phase II allowances are bankable forward into Phase III (unlike Phase I to Phase II¹³). Sectors already regulated in the EU-ETS will be required to reduce their emissions by 21% of their 2005 baseline. The EU is introducing new sectors to the cap, including transport, building, agriculture and waste, which will be required to cut 10% below their 2005 baseline. The emissions trading law will decrease allowances 1.74% a year (with the 2010 allocation of 2,083 million as a reference), starting with 1,973 million allowances issued in 2013 and reducing to 1,720 million by 2020. Additionally, the EU-ETS Phase III will introduce auctioning of at least half of the allowances instead of allocating to covered entities¹⁴.

EU-ETS Historical Spot Prices 2008-2009



Market Drivers in a Federally-Mandated Market

It is very important for market participants to understand the fundamental and technical drivers of the CO₂ emissions market which will ultimately create or reduce supply and demand for credits during the compliance year. This section details the theoretical relationship between CO₂ emission allowance prices in a government-mandated system and various market drivers. Allowance prices can be subject to long term, systemic factors such as regulatory developments and advances in technology, as well as short-run phenomena such as weather, the economy and energy price volatility.

Legislation & Abatement Technology Because the relative price of a carbon allowance will generally tend to reflect the marginal cost required to meet the emissions reduction target desired, long term pricing of the CO₂ emissions allowance is highly dependent on policy decisions made by a governing body and technology. Marginal cost can be defined as the cost to implement technology or change behavior. For example, the abatement cost for a renewable power source such as wind would be calculated as the cost of producing electricity with this zero-emission technology instead of the cheaper fossil fuel-based power¹⁵.

The extent of emissions cuts required by law affects the value of CO₂ allowances. As the cuts become more stringent, the mix of activities and technologies will progress along the cost curve to meet steeper cuts. Initial reductions will be met at the low end of the cost curve, such as measures to improve energy efficiency and readily available options for fuel switching (i.e., from coal to natural gas). Higher emissions targets will require inventive technology and activities that are further up the cost curve. These activities include renewable energy and major retrofits to fossil fuel burning entities that require large capital investments and long lead times to

Additionally, clarity in future cuts can enable covered entities to make strategic decisions to bank or sell allowances. If future cuts are perceived to be more expensive than the technology that is available to produce those cuts, emitters may invest in allowances today, banking them for future use. The opposite is true if technology is perceived to outpace the required cuts. Stable, predictable long-term government policy is needed to facilitate these technologies and encourage large investments.

The amount and type of entities covered and offsets recognized in legislation can lead to more or less opportunities to make efficient cuts. By diversifying the sectors covered under the cap, entities that have the technology available or are capable of changing behavior without great expense will make the first cuts in the system. Industries that are not capable of changing behavior can pay other sectors to make these reductions for them until internal cuts become feasible. The same can be said for innovation and low cost behavioral change in offset projects by engaging multiple sectors (forestry, agriculture, renewable energy) across multiple geographies (developing and industrial countries).

GDP

Economic output affects energy consumption. As an economy grows, entities tend to maximize capacity thus consume more energy, whereas recessionary conditions can cause emissions to decline as economic output decreases, in turn reducing demand for energy. In 2008, the Department of Energy reported energy-related carbon dioxide emissions declined by 2.8% due to higher energy prices and lower economic growth¹⁶.

Energy Prices

Relative cost of coal, natural gas, oil and renewable energy affects the amount of CO₂ emissions. Lower cost of coal relative to natural gas is a bullish

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burn the least expensive resource. Coal emits twice the amount of CO₂ emissions per megawatt hour than natural gas.

Weather

Extreme weather conditions, such as hot summers and cold winters, affect demand for energy and power as consumers use more air conditioning and heating, driving up utility-produced CO₂ emissions. Additionally, events such as hurricanes interrupting the supply of resources, such as natural gas, and droughts affecting the supply of hydroelectric power, can further drive up emissions as utilities turn to coal.

The U.S. Carbon Market

The U.S. market under pending legislation is estimated to be about three times the size of the European market. The United States economy emits slightly more than 7 billion metric tons of CO₂ annually. In 2007, emissions peaked at 7,125 million metric tons¹⁷ and have since dipped slightly, due to, according to the Energy Information Association, the economic downturn. Though the timeline for passage of a cap-and-trade bill remains unclear, 2009 has been an active year in both Congress and the Administration.



On June 26, 2009, the U.S. House of Representatives passed H.R. 2454, the American Clean Energy and Security Act of 2009 (ACES). The Senate is expected to take up the debate this fall, with the lead bill to be introduced by Environment and Public Works Chairwoman Barbara Boxer's (D-CA) on September 8. Other committees expected to contribute to the bill are Finance, Agriculture, Nutrition and Forestry, Foreign Relations, Commerce, Science and Transportation and Energy and Natural Resources. Senate Majority Leader Harry Reid (D-NV) has set a September 28 deadline for each of the 6 committees to submit their contributions to the bill. Should the Senate pass their version of ACES, committees from both houses will 'reconcile' the bill and present the final version to the President for signature.

HR2454: The American Clean Energy and Security Act of 2009 Within its framework, ACES addresses clean energy, energy efficiency and a federal cap-and-trade market. In general terms, the clean energy section establishes a renewable energy standard to be achieved by regulated electricity distributors in addition to addressing smart grid and state energy program funding. The energy efficiency section institutes efficiency standards for buildings, lighting, vehicles and industry. The remainder of this section will concentrate on the details of the cap-and-trade market.

What are the reduction goals?

Emission reduction goals are set relative to 2005 baseline of emissions levels. Starting in 2012, the program calls for a 3% reduction below 2005 CO₂ emissions, reducing to 17% below 2005 by 2020. The House bill provides clarity as to the goals of emissions reductions out to 2050, looking for an emissions cut of 42% below 2005 levels by 2030 and ultimately 85% below 2005 levels by 2050. In terms of total allowances in the system, the program begins with 4,627 million allowances and peaks in 2016 at 5,482

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million allowances due to the expansion of the cap to include more sectors in the early years of the program. From there, the available allowance pool ultimately declines to 1,035 million in 2050 and thereafter¹⁸.

What sectors of the economy are covered in the bill and which appear to be impacted the most and the least?

Sectoral coverage in ACES grows over the first few years of the program. The total percentage of the U.S. economy covered is 68% from 2012-2013, 76% from 2014-2015 and 85% from 2015-2050¹⁹:

The timeline for sectors covered under legislation is as follows:

- Starting in 2012: electric utilities; refiners/importers of petroleum with sales /distribution greater than 25,000 mts of CO₂e
- Starting in 2014: industrial sources larger than 25,000 mts CO₂e; stationary sources of any size in special sectors: adipic acid, primary aluminum, ammonia, cement, HFCs, lime, nitric acid, petroleum refining, phosphoric acid, silica carbide, soda ash, titanium dioxide, coal-based liquids or gaseous fuels; residential heating and propane fuel vendors
- Starting in 2016: Natural gas local distribution companies (LDCs) delivering more than 25,000 mts CO₂e

The electricity sector and the oil and gas sector look to be the most impacted of all covered entities in the beginning of the program. Under current guidelines in the bill, the electric utility sector would be allocated just over 40% of the allowance pool in 2012 representing roughly 2 billion metric tons of CO₂ compared to the 2005 baseline, when the sector emitted over 2.4 billion metric tons of CO₂. Analysis suggests that, should electricity demand remain

business as usual between 2005 to the start of the program, the utility sector could be approximately 20% short the allowances needed for compliance.

Oil refiners and importers fall under the cap under two provisions. The first (and by far the least greenhouse gas intensive) is by how much CO₂ the refining plants emit annually, for which the sector receives 2% of the allocation starting in 2014. Secondly, this sector is responsible for the emissions its petroleum product produces and is allocated no allowances for these emissions. In 2005, petroleum was responsible for over 2 billion metric tons of CO₂. Using the same business as usual assumption, refiners would be the most heavily impacted sector in the initial years of the program as they would have to purchase allowances for every metric ton of CO₂ produced by their product.

In 2014, the natural gas sector rolls into the cap and is allotted 9% of the allowances representing slightly less than 500 million metric tons of CO₂. In 2005, this sector emitted roughly 860 million metric tons, leaving it well short of allowances for compliance. Industrial sources are set to receive 15% of the allocation as a whole, which is relatively flat to the sector's 2005 emissions. However, sectors within



industrial classification will receive allocations based on energy and greenhouse gas intensity, which is a measurement of the amount of energy used and greenhouse gases produced in relationship to the value of the goods produced.

In 2030, all allowance allocation goes to zero for electric utilities; natural gas suppliers and petroleum refiners/importers and government auctions will replace the allocation structure.

What is the scope and size of Offset Projects in the Bill?

ACES allows for entities to meet a certain percentage of emissions compliance by purchasing offsets. The percentage is set at 30% in the beginning of the program and rises over time; however the bill caps the total number of offsets at 2 billion metric tons annually, split evenly between international and domestic offsets. In 2017, entities using international offsets for compliance must submit 1.25 tons of credits to offset each ton of emissions, which equates to 800 million metric tons of reductions.

As a comparison, the current EU Climate and Energy package allows for 1.6 billion metric tons to come from offsets over the entire life of the program (2008-2020), which equates to 125 million metric tons of CERs to be used annually for compliance. In order to keep the cost of compliance and allowance price low, ACES uses a large supply of offsets to meet demand at a lower price. However, to date under the CDM program, the UN has only issued slightly over 316 million CERs since 2006²⁰. In the EPA's analysis of ACES, it assumes that this limit is never reached²¹.

How is Early Action addressed in the Bill?

Early Action Credits are government credits granted to entities and offset projects that voluntarily make and register verified greenhouse gas emissions

reductions prior to being mandated to do so by law. As the language stands in Section 740 of the bill, the government will issue one credit for every ton of CO₂ reduced, avoided or sequestered from state, tribal and voluntary programs' offset projects. While the section recognized projects that started after January 1st, 2001, the reductions recognized accrue starting in January 1, 2009. Under Section 795, holders of credits from offset projects from 2001 to 2008 will receive a monetary equivalent of federal allowances based on 'the average monetary value of the credits from January 1, 2006 to January 1, 2009, adjusted for inflation²². Reductions from participants in RGGI, which is explained further below, will be recognized on a dollar for dollar basis.²³ Section 795 also addresses the industrial sector's early actions, stating roughly 12 million metric tons of CO₂ emissions cuts will be recognized from industrial emitters.

Early Action in the U.S.

The Chicago Climate Exchange (CCX®)

In 2003, CCX began a voluntary, legally binding, cap-and-trade market for reducing and trading greenhouse gas emissions. Today, CCX Members include 17% of the Dow Jones Industrial Average (BAC, DD, IBM, INTC, and UTC), 11% of the Fortune 100 (including: ABT, F, HON, IP, MOT and SWY) 22% of the largest CO₂ emitting utilities (AEP, AYE, DTE, DYN, LNT, MIR, NRG, RRI and TE), seven cities (Aspen, Berkeley, Boulder, Chicago, Fargo, Oakland and Portland) and two States (IL and NM). CCX Members contractually commit to make a 6% reduction from their baseline²⁴ by 2010. Members that cannot achieve the 6% reduction target internally must purchase allowances from other members that have exceeded their commitment or credits from registered Offset Projects. CCX Offset Projects, which destroy, mitigate or sequester greenhouse gas emissions, include: agricultural soil sequestration, agricultural methane, coal mine methane, forestry,

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landfill methane, rangeland soil carbon management, renewable energy and ozone depleting substance destruction. CCX Members are subject to third-party verification by the Financial Industry Regulatory Authority (FINRA) for their baselines and annual emissions. CCX Offset Projects must be verified by a CCX-approved independent third party.²⁵ CCX has over 460 members across its various membership categories: Members, Associate Members, Offset Providers and Liquidity Providers. Emissions under the CCX cap exceeded 600 million metric tons, which is larger than Germany's commitment under the EU-ETS. The tradable instrument on CCX is called the Carbon Financial Instrument® ("CFI®") contract which represents 100 metric tons of CO₂e reductions in the form of member emissions allowances or project-based offsets. Since the beginning of 2003, CCX has traded over 140 million metric tons of greenhouse gas emissions reductions (plus an additional 45 million metric tons as futures and options on its sister exchange, Chicago Climate Futures Exchange®) at prices ranging from a high of \$7.40 per metric ton set on May 30, 2008 to its current lows of \$0.25 on August 19, 2009.

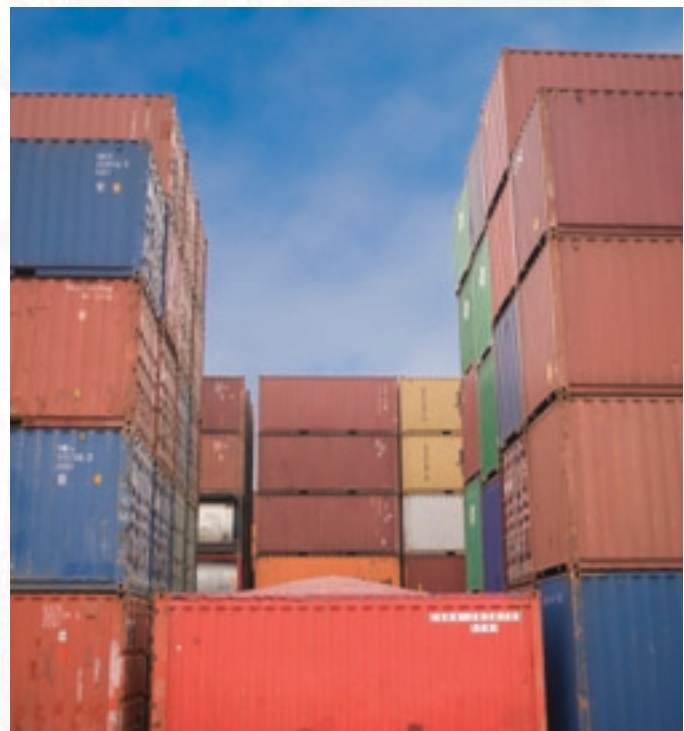
In an exchange on the House floor during consideration of H.R. 2454, Energy and Commerce Committee Chairman Waxman and Representative Halvorson (D-IL) stated that there is an expectation that CCX qualifies under sections 740 and 795 (as described above).

RGGI

The Regional Greenhouse Gas Initiative is a cooperative effort by ten Northeast and Mid-Atlantic States to limit greenhouse gas emissions. RGGI is the first government-mandated, market-based CO₂ emissions reduction program in the United States and covers the electricity sector in Connecticut,

Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island and Vermont. Under the RGGI program, entities are required to keep emissions stable from 2009 through 2014, meaning the program requires 0% cuts from the 2009 baseline. Without a federal law, RGGI constituents would then be required to cut 2.5% annually from 2015 through 2018 (an overall 10% cut from the 2009 baseline by 2018).

Since the first auction in September 2008, the RGGI states have auctioned a total of 110 million allowances, with prices ranging from \$3.07 per allowance in the initial auction to \$3.51 in March. In anticipation of the first auction, the Chicago Climate Futures Exchange (CCFE®), CCX's subsidiary specializing in environmental derivatives, launched futures and options on RGGI allowances in August of 2008. Since then, derivatives contracts representing over 420 million allowances have traded on CCFE, prices ranging from \$5.58 on the launch date to a low of \$2.90 on August 12, 2009²⁶.



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CCAR

California Climate Action Registry is a private non-profit organization originally formed by the State of California. CCAR serves as a voluntary greenhouse gas registry to promote early actions by organizations to reduce GHG emissions. CCAR develops greenhouse gas reporting standards and tools for organizations to measure, monitor, third-party verify and reduce their GHG emissions across industry sectors and geographical borders. Members voluntarily measure, verify, and publicly report their greenhouse gas emissions, and, in turn, the State of California offers its best efforts to ensure that California Registry members receive appropriate consideration for early actions in light of future state, federal or international GHG regulatory programs. The Climate Action Reserve is a division of CCAR, which was created to provide standards for the national voluntary carbon reduction market. Owners and developers of greenhouse gas emission reduction projects can register their projects and the associated reductions on the Climate Action Reserve.

CCAR has issued over 1.6 million Climate Reserve Tonnes (CRTs), to projects since its launch in May of 2008.²⁷ A CRT is the unit of measurement for greenhouse gas mitigation resulting from a qualifying project activity, issued by the Climate Action Reserve in the form of a tradable serialized electronic certificate, each representing one metric ton of emission reduction. On CCFE, prices for CRTs expiring in December 2009 have ranged from \$6.30 on the February 20, 2009 launch date to a low of \$4.25 per metric ton on August 19, 2009.

OTHER PROPOSED REGIONAL PROGRAMS

In absence of a federal law, regional programs have been growing in the United States. In California, legislators signed AB32 into law, a cap-and-trade program set to launch in 2012 that reduces

California's CO2 emissions by 25% from 1990 levels by 2020. The Western Climate Initiative (WCI), another regional cap-and-trade program, was formed from a coalition of seven U.S. states and four Canadian provinces. The proposed target for WCI is 15% below 1990 levels by 2020, and is proposed to go into effect on January 1, 2012. Additionally, a group of six Midwest governors have proposed a cap-and-trade system calling for reductions of 20% below 2005 levels by 2020 in the event that no federal mandate is put in place.

CONCLUSION

In the absence a federal U.S. cap-and-trade program, carbon markets have grown both in size and scope over the past several years. The purpose of this paper is to provide a broad overview of the components of a cap-and-trade market, the fundamentals that drive pricing of a CO2 allowance and a background on the various CO2 cap-and-trade markets across the globe with the ultimate goal to provide market participants with a better understanding of the carbon markets as they continue to grow in number and size across the globe.

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This white paper is designed to provide current and prospective clients with general information regarding the energy market and is for informational purposes only. There is no guarantee that any of the views expressed herein will come to pass, and nothing is intended to constitute individualized investment advice or a solicitation to purchase any security.

¹ Under the cap and trade program designed in ACES, the allocation in 2012 is 4,627 million allowances and 5,482 million allowances in 2016 in addition to 2 billion credits for offsets

² Bart Chilton, June 11, 2009:

<http://www.cftc.gov/stellent/groups/public/@newsroom/documents/speechandtestimony/opachilton-23.pdf>

³ As defined by United Nations Framework Convention on Climate Change (UNFCCC) on Kyoto Protocol. www.unfccc.int

⁴ US Dept of Energy Report: Impacts of Kyoto Protocol on US Energy Markets and Economic Activity, December 1998

⁵ There is no gradual reduction of allowance allocation in the EU-ETS, the same amount of allowances are allocated annually, 8% less the 1990 baseline

⁶ World Bank: State and Trends of the Carbon Market 2009, Capoor and Ambrosi

⁷ Spot price settlement date as reported on BlueNext www.bluenext.fr

⁸ Ibid

⁹ In the first half of 2009, the UNFCCC issued 67,850,344 CERs, up from 56,730,955 CERS in the first half of 2008. cdm.unfccc.int

¹⁰ 1 EUA and 1 CER represents 1 metric ton of CO₂e reduction. When quoting transaction volume, widely-used short hand reports volume in metric tons (mts) for standardization.

¹¹ Combined volume from the European Climate Exchange, Nordpool, Bluenext, EEX and Green Exchange

¹² Ibid

¹³ A note about bankability and the perceived market failure in Phase I of the EU-ETS: bankability allows carbon allowances to exist indefinitely, in other words, they never expire until used for compliance. Should a company be under its allocation of allowances in any given year, it has the choice to either sell the allowances into the market, or bank them for future use. Thus if the credits are not used for compliance, they do not expire. Phase I credits were not bankable into Phase II in the EU-ETS. A common misconception was that credits dropped to zero because the market was over allocated based on poor data and industry gaming. However, credits dropped because the market was both over allocated and the credits were not bankable into the next phase. Thus, those credits not used for compliance in Phase I expired worthless on December 31, 2007. In Phase II, any over supply can be mitigated by steeper cuts in Phase III, so that companies will bank the allowances to use for future use, rather than sell the credits, thereby suppressing their value.

¹⁴ McDermott, Will and Emery: McDermott Newsletter. EU-ETS Phase III: Consultation on Auctioning Rules. July 9, 2009

¹⁵ The McKinsey Quarterly 2007 Number 1; Enkvist, Naucler and Rosander

¹⁶ Energy Information Associate (EIA): U.S. Carbon Dioxide Emissions from Energy Sources 2008 Flash Estimate, May, 2009

¹⁷ EPA: Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 – 2007, April 15, 2009

¹⁸ HR 2454 Sec. 721

¹⁹ EPA Analysis of HR2454 in the 111th Congress, Appendix, June 23, 2009

²⁰ cdm.unfccc.int website referenced on 08/10/2009

²¹ EPA Analysis of H.R. 2454 in the 111th Congress, June 23, 2009

²² HR 2454, Section 795 b(1)

²³ Exact language as follows: "...a person exchanging State allowances under this section receive emission allowances established under section 721(a) in the amount that is sufficient to compensate for the cost of obtaining and holding such State allowances." HR 2454, page 942.

²⁴ Baseline is either their 2000 year emissions output or a four-year average of emissions output from 1998 to 2001

²⁵ See www.theccx.com for a full list of CCX-approved independent verifiers.

²⁶ DEC09 Futures price on CCFE, www.ccf.com

²⁷ As of 08/18/2009 report on www.climateactionreserve.org

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FOA Newsletter Guest Columnist

Megan Morgan

For more information, please contact Megan Morgan at mmorgan@theccx.com / 312.229.5139

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Family Office Association

500 West Putnam Avenue, Suite 400
Greenwich, Connecticut 06830
Ph: 203-570-2898

Angelo J. Robles, Founder and CEO

angelo@familyofficeassociation.org
www.familyofficeassociation.org