

US Greenhouse Gas Reduction Policy:

Constellation Energy Perspective

Introduction

The growth in greenhouse gas (GHG)¹ emissions must be slowed, stopped and reversed. The ultimate worldwide goal must be to reach – and remain at or below – a GHG emissions level that protects our environment.

A challenge of this magnitude defies simple solutions. Meeting this challenge will require a broad, steadfast commitment on the part of producers in emissions-intensive industries, consumers and policymakers. It is time for the United States to move forward on a long term, comprehensive program to address climate change.

In Constellation Energy’s view, a meaningful national climate change program must:

- (1) be capable of linking with other international efforts,
- (2) reflect a market-based² approach to achieving mandated emissions reductions,
- (3) apply on an economy-wide scale, and
- (4) provide sufficient regulatory clarity and stability to enable markets to form and long term investment to take place.

Constellation advocates a cap-and-trade approach to GHG emissions reductions, augmented as necessary by other effective complementary mechanisms, such as energy efficiency programs, vehicle performance standards, fiscal policy, tax incentives, and investment in new technology development and energy supply diversity (e.g. new nuclear, renewables, and clean coal).

¹ While CO₂ is the most commonly discussed greenhouse gas and “carbon” is often used as shorthand for all greenhouse gases, it is critical that an effective US program include reductions in all greenhouse gases (GHGs). Any gas that absorbs infrared radiation in the atmosphere is a greenhouse gas, including carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), ozone (O₃), perfluorinated carbons (PFCs) and hydrofluorocarbons (HFCs). GHGs vary in impact and time in the atmosphere. They may be measured in units of equivalent CO₂ to create a standard, tradable emission allowance.

² Market-based means a regulatory approach – such as cap-and-trade – in which government sets the overall reduction goal but leaves it to industry and consumers to determine the measures and technologies that they will deploy to achieve the environmental goal.

Fundamental Principles

Competitive markets work best

Constellation's position on GHG policy is informed by the company's long-standing commitment to free and competitive markets as the most efficient means of allocating limited resources. Within a framework of mandatory GHG reductions, we are convinced that the key to successful global emissions reductions will be establishing an efficient worldwide market for GHG emissions permits that can appropriately value and price CO₂ (and CO₂ equivalent) emissions.

Policies must balance reliability, price, and environmental protection

Because the US economy depends heavily on access to electricity, it is imperative that the US energy supply be reliable and affordable. It is also imperative that our energy supply be provided in an environmentally responsible manner. These three objectives – reliability, affordability and environmental responsibility – are in tension and are tightly interconnected. Given anticipated economic growth and increasing electricity demand, the US will face challenges in meeting these three objectives simultaneously. Balancing these three objectives in a US GHG reduction program will require political commitment to creating transparent, well-functioning international markets and a credible carbon price signal.

Energy prices must be set by market forces

A true market price for GHG emissions will inform both supply-side (industry) and demand-side (end-user) measures that can help our economy adjust to a low carbon emissions world. It is anticipated that energy prices may rise in the future under a cap-and-trade program as the cost of emissions is factored in to prices along the energy value chain. Higher energy prices will prompt and enable investment in new technologies (e.g. carbon capture and sequestration) and/or new generation capabilities (e.g. improved solar technology, new nuclear facilities) that are funded at lower levels today. The development of such technologies and energy sources could produce important additional benefits for the US economy by creating jobs and technical expertise that may have broader market applications outside the US. Higher energy prices will also provide consumers an incentive to use energy more efficiently and adjust their demand for energy in response to changing market prices.

Constellation recognizes that increased energy prices may cause some hardship for consumers and some economic dislocation during the transition to a carbon constrained world. Mechanisms to mitigate economic effects, especially on low income consumers, should be strongly considered. However, no mechanisms that will impede the effectiveness of the market, such as price caps, should be used since their availability would undermine the emissions cap, severely limit international linking, compromise market price signals, and ultimately result in more expensive measures to reduce emissions.

Constellation's perspective on US GHG reduction policy is based on these fundamental principles.

GHG Reduction Program Requirements

1. Globally Linked

A fundamental goal of any US GHG reduction program should be to ensure that the program is capable of being linked with other existing and future GHG reduction programs around the globe, specifically with the European Union's Emissions Trading Scheme (EU ETS).

GHG reduction is a global issue

Reducing the accumulation of greenhouse gases in the earth's atmosphere is a global issue, both because all countries emit GHGs and because GHGs affect the entire global ecosystem, though the effects of climate change may be dramatically different in specific locations. These characteristics make GHG emissions unique among the issues confronting countries around the world and differentiate GHGs from other regulated air emissions, like SO₂, whose sources and effects are local or regional. As a result of the scale and breadth of this issue, no one country can affect the course of climate change on its own. Only a concerted global effort at GHG reduction can be effective, though the reduction targets for and mechanisms used by each country may be different.

By early 2008, the Kyoto Protocol of the UN Framework Convention on Climate Change (UNFCCC) had been signed by 178 nations, signifying their participation in the global GHG emissions reduction movement. To facilitate compliance with the Kyoto Protocol, the European Union created the EU ETS which involves all 27 EU countries. The EU has pledged to reduce GHG emissions to 20 percent below 1990 levels by 2020. The EU ETS has just commenced a second phase (2008-2012) of increasingly strict GHG emissions targets. Over and above this initial 20 percent reduction, the EU has committed to reducing its emissions by an additional 10 percent – to 30 percent below 1990 levels by 2020 – if other industrialized nations (i.e. the United States) participate in the global GHG emissions reduction movement. Kyoto signatories Australia, Canada and Japan appear to be on the verge of introducing GHG reduction schemes. In contrast, the US did not ratify the Kyoto Protocol nor has it embarked on any meaningful, mandatory, national GHG emissions reduction program.

A global GHG market will lead to effective, lowest cost solutions

A US GHG program that functions globally can help establish a worldwide market for carbon and thereby enable market participants to benefit from the least cost, highest impact GHG reduction projects available around the world.

One reason the US has been slow to embrace policies to address global climate change is the perception that the direct participation of developing countries – particularly China and India – is a prerequisite to such policies being fair and effective. The US, so the argument goes, would be at a competitive economic disadvantage if its economy were burdened by climate change regulation while the growing economies of China and India

were not. Further, this argument recognizes that addressing climate change at home is ineffective if growing economies do not also participate.

Incentives for participation must be created

The US must recognize that China and India are not likely to undertake policies that might jeopardize their rapid economic expansion for the sole purpose of curbing GHG emissions. The US can only expect China and India to follow the world community in adopting GHG emissions reduction programs if it is in their economic interest to do so.

Creating market-based incentives for their participation is the most effective way to ensure the participation of developing countries in a global GHG abatement scheme. Some mechanisms to link developing economies in to a global GHG reductions market are already in place. The Clean Development Mechanism (CDM) provisions of the Kyoto Protocol do this by creating an economic incentive for developing nations to pursue certain types of GHG reduction projects.³ Credible emissions reductions from properly validated offset projects, regardless of the project location, can provide an environmental benefit equivalent to the reduction of GHG emissions from US sources. Such offset projects may succeed in reducing GHG emissions at a fraction of the cost of additional marginal US reductions. Though the US has not ratified the Kyoto Protocol and therefore does not participate in this system currently, CDM offsets are increasingly recognized as a credible currency for GHG reductions in US markets.⁴ A globally linked US GHG program should allow the use of validated offset projects, in particular CDM certified emissions reductions (CERs), to meet US emissions compliance obligations. Properly validated offsets will be an important compliance mechanism and a critical cost containment measure.

The US can benefit economically through technological innovation

A second reason the US has been slow to embrace global climate change policies is concern in the US that a GHG reduction regime could have potentially disruptive effects on the American economy. These concerns have driven some policymakers and stakeholders to advocate for price caps, low emissions reduction targets, and other measures that will make it very difficult for a US program to achieve meaningful GHG reductions.

The US can benefit economically from transitioning to a low carbon emissions global economy by participating in the development of the technological solutions such a transition will require and that a robust emissions market can drive. A US GHG program can incorporate measures that will enable the US economy to benefit while at the same time mitigating the potentially disruptive effects of this economic transition. As the US program advances, it will be important to ensure continuous engagement with other

³ Similarly, the Joint Implementation (JI) provisions of the Kyoto Protocol create a mechanism whereby developed countries can host carbon offset projects funded by other developed countries. unfccc.int/kyoto_protocol/mechanisms/joint_implementation/items/1674.php

⁴ Background Information and Technical Support Document for Amendments to: 310 CMR 7.00: Appendix B(7) "Emission Banking, Trading, and Averaging." Massachusetts. February 2008.

emitting countries to maintain a credible market and align participation in achieving sufficient GHG reduction progress.

Transitioning to a low carbon emissions global economy will require next-generation technologies aimed at energy efficiency, renewable energy and emissions reduction. These new technologies will make it easier for the US to meet its domestic goals. Developing nations can represent an enormous potential market for these new American technologies if a US program is developed with the goal of becoming globally linked. In addition, it may be in part through the deployment of these new American technologies that developing nations are able to maintain growth while participating in a global GHG reduction program. Failing to take global linkage into account when designing the US program could undermine the many potential benefits: incentives to develop new technologies, potential new sources of US competitiveness and job growth, and protection of the global environment.⁵

Rather than waiting for developing countries to make international GHG reduction commitments, the US should create its own GHG program now and ensure that its domestic program is capable of linking with other international programs like the EU ETS. A US program should also include incentives for developing countries to participate, for instance, by permitting the import of CERs from CDM projects. US policymakers should understand and embrace the positive impacts that a low carbon global economy can have for American business. Far from being a competitive disadvantage for the US, a robust GHG reduction scheme can provide an enormous opportunity for the American economy and make it easier to reach our GHG emissions targets.⁶

2. Market Based

An effective GHG reduction program must be market-based. Alternatives to a market-based approach, such as a regulatory mandate with noncompliance penalties (and no allowance trading), are likely to be much more expensive overall and to be less successful at achieving emissions reduction goals.

The US was first to experiment with a cap-and-trade approach to achieving a regulated environmental goal in the Acid Rain Program. This program successfully created incentives to change emissions control technologies and succeeded in keeping industry

⁵ In testimony before the California State Senate, Michael Hanemann, director of the California Climate Change Center at UC Berkeley, explained that “if California could meet its goal of reducing its emissions to 1990 levels by 2020, it would boost the gross state product (GSP) by \$60 billion and create 17,000 new jobs.” Another UC Berkeley estimate shows even more significant job growth. Technology experts also testified about the need for innovation and the economic growth potential of the various technologies and agricultural practices (carbon sequestration) that will be required by a low carbon emissions economy. “US cap-and-trade would generate revenue, boost jobs.” August 16, 2007. www.pointcarbon.com website.

⁶ It is worth noting that the European Emissions Trading Scheme has not cooled an extremely robust European economy.

under the cap at lower than projected cost.⁷ Both environmental and economic goals were met. The EU ETS was modeled on the US Acid Rain Program. Over the past several years the EU ETS has shown that a properly structured cap-and-trade approach can yield similar success in addressing GHG emissions.

There are two critical components of a market-based emissions reduction system:

- 1) Structuring the cap and
- 2) Establishing the market for trading allowances.

Certain key market design parameters will determine how well the market functions to establish a true price for CO₂ emissions (and CO₂ equivalents) and to achieve our collective GHG emissions goals. The objective should be to establish a liquid and transparent emissions trading market and clear and predictable reduction targets and timelines.

Market Design: 1. Structuring the Cap

A long term emissions goal must be set

Based on current scientific analysis, the goal of a US GHG program should be to reduce emissions by 60-80 percent from current levels by 2050. It is important to recognize that even if GHG emissions were stabilized today, global climate change would continue to occur for a long period of time.⁸ The efforts we make today to reduce emissions may not return the climate system to its current/past state for a hundred years or more.⁹

⁷ EPA. *Cap and Trade: Acid Rain Program Results*. “Costs. The cost of compliance with the Acid Rain Program has been substantially lower than estimated. Achievement of the required SO₂ emission reductions (when the program is fully implemented in 2010) is now projected to cost \$1 to \$2 billion per year, just one quarter of original EPA estimates. The price of an allowance, which is the marginal cost of compliance, has been far lower than prices predicted in 1990. ... Innovations and Incentives. Allowance trading, which places a value on emission reductions, provides an increasing reward for innovation and use of more effective and efficient pollution reducing technologies. Acid Rain Program implementation has been accompanied by reduced costs and improved performance of pollution control technologies, which have led to lower than expected overall program compliance costs.” <http://www.epa.gov/airmarkets/cap-trade/docs/ctresults.pdf>.

⁸ According to the Arctic Climate Change Report, “Because excess carbon dioxide persists in the atmosphere for centuries, it will take at least a few decades for concentrations to peak and then begin to decline even if concerted efforts to reduce emissions are begun immediately. Altering the warming trend will thus be a long-term process, and the world will face some degree of climate change and its impacts for centuries.” *Impacts of a Warming Arctic: Arctic Climate Impact Assessment*. Cambridge University Press, November 2004.

⁹ For example, a recent analysis concludes that reducing emissions to 80% below current levels by 2050 (in order to stay at or below 450ppm from the current 379ppm) will still leave us with only a 50-50 chance of preventing a greater-than-2 degree centigrade warming. M. Meinshausen “What Does a 2 C Target mean for Greenhouse Gas Concentrations? A Brief Analysis Based on Multi-Gas Emission Pathways and Several Climate Sensitivity Uncertainty Estimates.” in H. Schellnhuber, et al., eds. *Avoiding Dangerous Climate Change* (Cambridge University Press, New York, 2006). An increase in average global temperatures of more than 2 degrees centigrade is predicted by several analyses to have clearly dangerous consequences. The Union of Concerned Scientists issued a statement recently urging that emissions targets aim at containing warming to within 2 degrees Celsius of current temperatures. “The delegates at the U.N. meeting must move toward a 2 degree Celsius target. Exceeding this temperature increase would pose

The cap must be phased in over time

GHG emissions reduction goals can and should be phased in over time, (i.e. the emissions cap should gradually be reduced over the program time period) as long as the timing and extent of the changes are known in advance and are not subject to change during the term of the program. For instance, a goal of a 20 percent reduction in GHG emissions from 1990 levels by 2020 might involve setting interim goals of 8 percent and 15 percent to create a “glide path” to the ultimate reduction goal. The emissions cap should be relatively close to current emissions at the start of the program (i.e. a relatively modest reduction target) to allow for systems to function and price discovery to be confirmed. At a reasonable pace, the cap should decline over the life of the program until the ultimate reduction target is met.

Cap levels must be clear through the long term to enable investment

The overall time horizon for a US GHG reduction program must be long enough to encourage investment in new GHG reduction technologies and to achieve significant reduction goals. In the UNFCCC process, the Kyoto Protocol set out emissions reduction commitments for a five year period (2008-2012). While it is anticipated that emissions reduction commitments will continue for decades into the future, specific reduction goals were left to be determined through the UN process, leaving considerable uncertainty about future periods. Experience indicates that the uncertainty created about future emissions reductions was an impediment to the types of long term investment needed to effect substantial long term reductions. Post-Kyoto discussions, as a result, are predicated on an 8 or 10 year period of emissions reductions (rather than the initial 5 year period) to facilitate investment.

While an 8 to 10 year program period is preferable to a 5 year period, a US reduction program should be even longer to support the scale of investment needed in the electric generation sector. A US program should set out the emissions reduction schedule (i.e. the declining emissions cap) through 2050. The current international discussions about emissions reduction commitments for the period after the Kyoto Protocol expires in 2012 present an opportunity for the US to harmonize with the targets in other global programs.

severe risks to human health and natural systems, including the extinction of many species and an increased threat of extensive melting of the Greenland and West Antarctic ice sheets.” UCS press release. “Leading Climate Scientists Call for Limiting Global Warming to Less than 2 Degrees Celsius above Pre-Industrial Levels.” December 6, 2007. Similarly, the National Association of Clean Air Agencies (NACAA) cites the IPCC’s report: “In February 2007, the IPCC concluded that the evidence of global warming is ‘unequivocal’ and it is very likely (at least 90% probability) that human activities have contributed to the global warming experienced to date. The IPCC also states in its report that the global climate is likely to warm between 2 and 4.5 degrees Centigrade (°C) (3.5 to 8 degrees Fahrenheit (°F)) if carbon dioxide (CO₂) concentrations in the atmosphere reach twice pre-industrial levels of 280 parts per million (ppm). Global CO₂ concentrations currently stand at 379 ppm, and if annual greenhouse gas (GHG) emissions remain at today’s levels, CO₂ concentrations will double by 2050 and triple by 2100, compared to pre-industrial levels.” NACAA Global Warming Principles, May 1, 2007. These conclusions are reiterated in the Intergovernmental Panel on Climate Change’s Fourth Assessment Report. Climate Change 2007: Synthesis Report. Summary for Policymakers. 17 November 2007. p.6-14.

The cap should be regulated at the emissions source

In setting an overall emissions reduction goal, policymakers must decide the point of regulation – that is, where in the value chain the cap should apply, and how that cap will be phased in over the program period.

Under a US GHG reduction program, emissions reductions should be set centrally for the entire program period for all covered emissions sources. Each covered industry may have a different obligation for meeting this centrally determined cap as long as each industry’s GHG emissions reduction burden is imposed over the full compliance period.

With respect to the industrial and power generation sectors, some commentators have proposed making upstream fuel sources the point of regulation. However, Constellation believes the most practical approach is to impose reduction targets (and, therefore, costs) at the emissions source. Imposing the cap on the actual source of emissions most closely aligns the cost of emitting with the incentive and technical ability to invest in technological solutions to reduce emissions.

Market Design: 2. Allowances and Trading

Allowances must correspond to the cap, not exceed it

Creating an effective market-based GHG reduction mechanism requires ensuring that the total number of allowances available in the market – whether the allowances are allocated or auctioned – corresponds directly to a meaningful GHG emissions cap. Emissions reporting should be made mandatory for all anticipated covered sources as soon as possible to establish accurate data gathering and to enable future compliance verification.

Policymakers should not create allowances in excess of the emissions cap to provide price relief for any covered industry. Any over-allocation will create price distortions in the GHG market, inhibiting the covered industries’ ability to most efficiently reach the GHG reduction goals and undermining the purpose of the program.

Once the emissions reduction target is set and the number of allowances has been established, policymakers must determine how to distribute allowances to covered sources. Allowances can either be allocated – that is, provided for free – or auctioned.

Half of available allowances should be distributed to sources, half auctioned

Constellation acknowledges that determining the division between allocation and auction amounts will be an inherently political process and will need to balance the impacts on markets, investment, consumers, incumbents, and new entrants. Constellation advocates initially allocating 50 percent of emission allowances to sources and auctioning the remaining 50 percent. Starting political dialogue with the presumption of an even split appears to be the best way to ensure that legitimate concerns are addressed and that the program transitions to the most economically efficient approach.¹⁰

¹⁰ A recent study has shown that “an allocation guided by equity considerations would initially distribute no more than 50 percent of allowances for free to major energy producing or consuming industries.”

Allowance auctions should eventually replace allocation

Over time, the program should transition to a distribution mechanism under which all available allowances are auctioned.

Auctioning emissions allowances provides a transparent and efficient carbon price discovery mechanism and avoids concerns about over-allocating allowances to emitting sources. In addition, auction revenues can be used to fund public interests such as investment in new technologies, adapting to effects of climate change, and mitigating economic impact on low income consumers.¹¹ A recent study concludes that “auctioning all allowances and using the revenues for socially productive purposes – is far preferable from the standpoint of maximizing overall economic efficiency” though it recognizes that auctions “could leave some carbon-intensive industries with significant net costs.”¹² It is essential that all auctions be centrally administered, open, transparent and timely.

Auction proceeds should be used to fund focused, long term investment

The scope, scale and time horizon of the emissions reductions envisioned under a US GHG program warrant focused, long term government investment likened by many to the Manhattan Project or the Race to the Moon. Government must be committed to using auction revenue wisely to address these serious long term issues if the US is to meet this significant challenge. One concern expressed about auctions is the lack of certainty that the revenue collecting entities would actually use the proceeds for the purposes initially intended. For this reason, it makes sense to create a special government entity (or repurpose an existing government entity) with a specific, narrow mandate regarding expenditure of auction revenue to ameliorate these concerns.

Allowance distribution should be updating and output-based

To the extent that emissions allowances are to be allocated within the electric power sector, there are several methodologies that could be used to determine distribution.

Allocating Allowances in a Greenhouse Gas Trading System. National Commission on Energy Policy (NCEP). Staff Paper. April 2007. p.ix. Such conclusions are driven in part by the expectation that gas remains on the margin and that therefore compliance costs to coal generation, unrecovered through increased energy prices, would be roughly 50% of allowances prices. MJ Bradley & Associates. Unpublished presentation. “Climate Change Policy Design.” March 2008.

¹¹ Some commentators have proposed allowance allocation structures that would allocate a modest percentage of allowances to local distribution companies (LDCs) based on load. Under such a proposal, LDCs could sell these allowances either through an auction or on the secondary market. The proceeds from these allowances could be used by the LDCs to offset fixed costs to consumers in energy provision, like distribution costs, to partially mitigate the economic impact of a GHG program. For market efficiency, it is critical that any allowance sale proceeds used for consumer benefit be distributed in a way that does not mute the energy consumption price signal to customers. In addition, such a program would need to include guarantees that allowance sales would not be used to disadvantage competitors and that allowance revenue would be used to fund public interests such as offsetting economic effects on low income consumers, encouraging investment in new technologies, and adapting to the effects of climate change. While there are significant unresolved issues entailed by an LDC distribution plan, the potential equity benefits make it worthy of further analysis and consideration. Additional mechanisms to provide consumer relief without disrupting electricity markets and pricing should also continue to be explored.

¹² *Allocating Allowances in a Greenhouse Gas Trading System.* NCEP. p.ix.

Options include allocations to generation facilities according to historical emissions (heat input) levels or according to electricity output (i.e. output-based allocation).¹³

An efficient and equitable allocation system should be based on the following key principles:

- 1) Reward – or at minimum not penalize – innovation, investment in energy efficiency and early reductions, and
- 2) Provide robust mechanisms for mitigating effects on low income energy consumers.

Given these considerations, Constellation does not recommend allocating allowances to emitting sources based on historical emissions levels. Such a system would effectively transfer the value of this newly created asset – emissions allowances – to those sources that have been least effective at reducing or avoiding emissions thus far. In addition, future incentives created by such an approach appear to be at cross purposes with the goal of emissions reduction.

Instead, an approach consistent with the goal of reducing GHG emissions would be allocating allowances to electric generators according to the megawatt-hours of power output they provide (updating, output-based allocations). Such an approach creates a direct financial incentive for investing in power plant efficiency upgrades and encourages the deployment of low carbon resources. “Reducing the electric sector’s CO₂ emissions will require that we use all of our energy resources as efficiently as possible, whether it be fossil or non-fossil resources. An output-based allocation will encourage efficiency in all forms of generation.”¹⁴ Constellation supports an updating, output-based approach to allowances allocation.

Over-allocating allowances should be avoided

One common criticism of allocating allowances is that the allocation can create ‘windfall’ profits for emitting sources.¹⁵ Indeed, analyses have shown that in the EU ETS, electric generators were able to pass on a majority of their additional costs to consumers, allowing them to realize profits on allocated emissions allowances.¹⁶ Constellation

¹³ Some commentators have proposed allocating all allowances to LDCs and granting them control over further allowance distribution. Because LDCs and/or their affiliates can and often do compete in both the wholesale and retail markets they may not be an appropriate entity to distribute allowances to sources with compliance obligations. Constellation opposes such a plan primarily because of this potential for conflicting incentives.

¹⁴ The Clean Energy Group. “Q&A on Output Based Allocations.” MJ Bradley & Associates. December 2006.

¹⁵ These profits are created when firms with the ability to pass their costs directly on to consumers also benefit from selling their emissions allowances on the market. Such firms incur little net cost and profit from allowance sales.

¹⁶ MJ Bradley & Associates cites Sijm et al (2006) and IPA Energy Consulting (2005) evaluations of the EU ETS and their conclusions that roughly 80-100% of costs were pass through to consumers. Additional analyses simulating a US cap-and-trade program indicate that unregulated generation would be able to pass through a majority of their costs to consumers, enabling them to realize large increases in earnings. Smith et al (2002) and others. Unpublished presentation. “Climate Change Policy Design.” March 2008.

recognizes the potential for overcompensation¹⁷ and believes a fair allocation methodology should avoid overcompensation. At the same time, it is important to recognize that many firms will experience a significant change in cost structure (e.g. marginal cost of coal, new capital investments) as a result of a GHG reduction program and this should be considered in determining the allowance distribution structure. Because emitting sources will also have a new obligation to reduce emissions, allowance allocations over the near term can help enable firms to make necessary investments in developing technological solutions to achieve the reduction requirements.¹⁸

Based on recent analyses, it appears that allocating a portion of available allowances (estimates range from 30-50 percent) would enable most firms to be ‘made whole’ in the near term.¹⁹ A partial allocation of allowances would enable covered emitting sources to have access to allowances and/or allowance revenues in the near term to 1) fund a diverse set of research, development and implementation approaches to emissions reductions and 2) mitigate potentially adverse economic effects.

Mechanisms to provide compliance flexibility and cost containment should not interfere with the market price

Even under a clear, stable well-designed market program there is always the potential for periods of price volatility, especially in the early stages. A US GHG reduction program should include mechanisms that will allow firms flexibility in managing their compliance in the face of volatile market prices, specifically acceptance of carbon offsets and banking and borrowing allowances. Our commitment to a credible market price signal leads us to oppose market price management mechanisms such as price caps, price floors or safety valves as a means of managing costs to firms.

Carbon offsets – Allowing the use of verified offsets purchased from the global carbon offsets market has been suggested as a compliance management mechanism that could help firms address allowance price concerns. The Clean Development Mechanism (CDM) provisions of the Kyoto Protocol already verify carbon offsets for use under the Kyoto program. As explained above, credible emissions reductions from properly validated offset projects, regardless of the project location, provide an environmental benefit equivalent to the reduction of emissions from US sources, and may do so at a fraction of the cost of domestic reductions. Constellation recognizes the complexity of verifying carbon offsets and believes that the use of strictly defined and verified carbon

¹⁷ Providing allowances to compensate entities for costs in an amount greater than their actual unreimbursed costs.

¹⁸ According to NERA, “The discussion about auction levels often has been based on an assumption that the ability to “pass through” costs means that any free allocation leads to increased profits. In reality, some increased profits (e.g. for non-emitting plants) would be expected regardless of allocation, whereas some plants would be likely to see reduced profits and asset values if they did not receive some free allocation.” “What Lies Ahead for the EU ETS?” Power UK. July 2007.

¹⁹ MJ Bradley & Associates concludes that “Since large competitive companies typically have a portfolio of generating assets, an allocation to coal plants in the range of 30-40% of historical emissions would make the most coal-intensive unregulated companies ‘whole’ but would tend to over-compensate other competitive generators.” Unpublished presentation. “Climate Change Policy Design.” March 2008. NCEP suggests that 50% distribution would address equity concerns. *Allocating Allowances in a Greenhouse Gas Trading System*. NCEP. p.ix.

offsets should be permitted in a US GHG reduction program. Given that offsets are to serve to compliment actual emissions reductions from sources, it makes sense to set reasonable limits on the percentage of total emissions that can be offset rather than covered by allowances.

Banking and borrowing – Another potential means of providing flexibility to emitters in complying with the GHG emissions reduction program is the banking and/or borrowing of emissions allowances over time. Banking involves permitting firms to “bank” unused allowances in early years and use them in later years as the emissions cap declines. The flexibility provided by banking may also create an incentive for sources to reduce emissions early because they will be able to sell or use banked allowances in the future when the price of an allowance may be higher.

Similarly, borrowing allowances means that firms would be allowed to manage their compliance in part by borrowing allowances from future years and paying them back, with interest, when compliance is easier for the firm or less expensive.²⁰ Allowing sources to bank and borrow allowances is a desirable flexible mechanism for mitigating price fluctuations because the cap on emissions would remain intact.

“Safety valves”– A third alternative mechanism receiving a lot of attention is often called a “safety valve” in public debate; however, this term can be misleading. A safety valve is proposed as a means of avoiding economic dislocation as a result of high compliance costs. In this way, safety valves function as a price cap on allowances. Such a safety valve mechanism would essentially be equivalent to imposing a penalty fee for covered sources that post emissions that exceed their allowances. Allowing a safety valve, therefore, runs the risk of breaking the emissions cap and defeating the purpose of a GHG emissions reduction program. Equally problematic is the structural impediment that a price cap could create in linking with international programs. The market price set in a capped system is not likely to interact effectively with a price signal in an uncapped system (e.g. EU ETS). Given the serious consequences to GHG program integrity if a safety valve price cap were set too low and the market price distortion they would cause, Constellation opposes the use of a safety valve or any other measure simply to cap the price of GHG emissions.

Moderating the effects of significant price fluctuations is an important consideration in establishing a new allowance trading market. Constellation believes that use of verified offsets and the banking and borrowing of allowances can be valuable flexible compliance mechanisms if they are structured appropriately.

²⁰ NRDC. Response to Representatives Dingell and Boucher on their proposed global warming legislation. March 19, 2007. p.28.

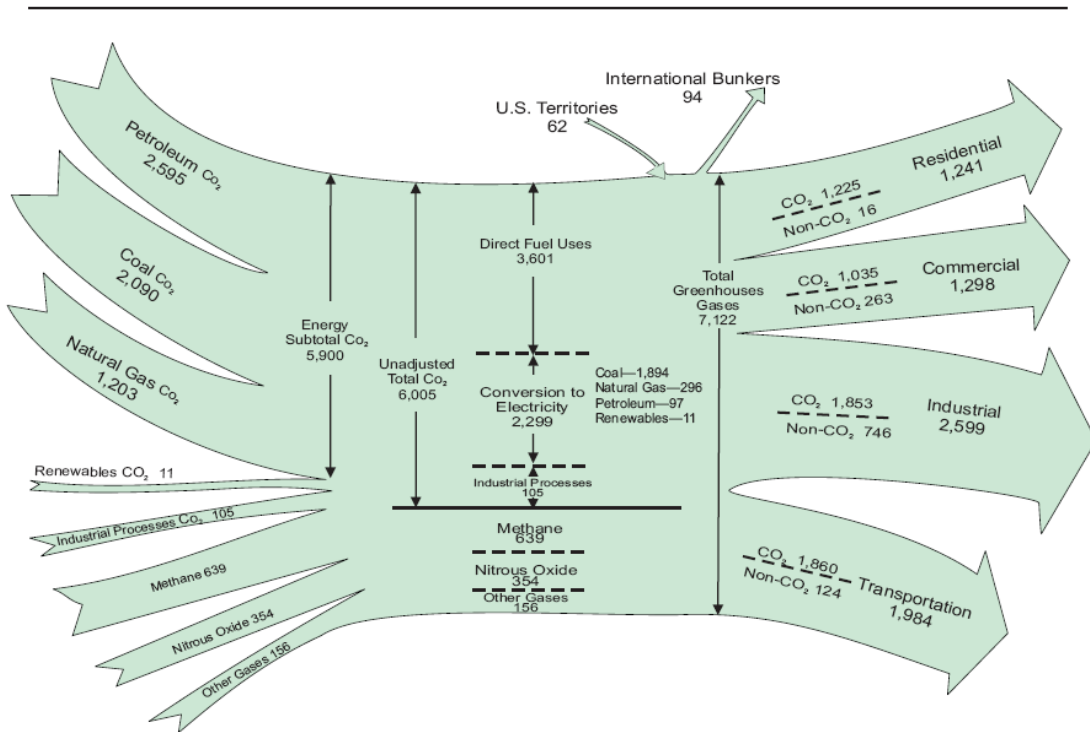
3. Economy Wide

Policymakers should impose mandatory reduction programs across all economic sectors in order to ensure that emissions reductions are made in the most efficient way while spreading the costs of reductions across the broadest possible spectrum of the economy.

Figure 1 illustrates the US national GHG emissions flow and shows the contribution of direct fuel uses and the commercial, industrial, and transportation sectors to US GHG emissions.

Figure 1.

Greenhouse Gas Emissions Flow, 2004 (million metric tons of carbon dioxide-equivalent)



Source: Energy Information Administration, Emissions of Greenhouse Gases in the United States 2004. December 2005

The electric power generation sector is often singled out as the major source of GHG emissions.²¹ However, there are clearly many other sources of emissions in the economy that must also be addressed if emissions are to be meaningfully reduced.

²¹ For example the northeast Regional Greenhouse Gas Initiative (RGGI) applies only to electric generators. Politically, it may be convenient to focus on one industry, and to start with the largest, most captive first, but Constellation believes this is not an effective approach to reaching US emissions goals.

Effectively addressing the various sources of emissions may mean employing mechanisms, in addition to cap-and-trade, appropriate for different economic sectors. For example, the transportation sector may be best addressed through a combination of cap-and-trade for upstream facilities and fuel and vehicle emissions standards for end-use reductions.

The availability of many sources of GHG reductions across the economy will increase the cost effectiveness of the program and the likelihood of significant emissions reductions in the US.²² Many low cost reduction opportunities across the economy will involve many players in the carbon trading market, increasing market liquidity and decreasing the potential for misuse of market power.²³

In addition to covering multiple economic sectors, there must also be a comprehensive, federal US GHG reduction program as opposed to a patchwork of state and regional programs.²⁴ Various regional initiatives to curb greenhouse gas emissions are already underway and policymakers in Washington are considering several pieces of federal GHG reduction legislation. Constellation Energy supports the overall goals of California AB 32 and the Northeast Regional Greenhouse Gas Initiative (RGGI), but believes it is critical that these be harmonized in a single, US GHG program as soon as possible. Having such a national, economy-wide program will avoid the inefficiencies and administrative costs that would otherwise exist in a patchwork approach by requiring national businesses to comply with different, and perhaps competing, regional plans. States should, however, focus on their ability to use incentives, tax policy, and other means to pursue environmental objectives not addressed by a federal program. A federal, economy-wide program will also facilitate the important linkage with other global programs that is critical to establishing a global carbon currency.

4. Regulatory Clarity and Stability

Policymakers must ensure that a US GHG program is clear and stable over a relatively long time horizon to reduce uncertainty for businesses and consumers and to enable sufficient, timely investment. A GHG regime must be sustainable over the long period of time needed to effect a real reduction of GHGs in the atmosphere. This will require (1) farsighted discipline to enact policies today to achieve reduction results 20 or 30 years down the road and (2) patience to allow those policies to work as intended.

If the market is not allowed to express the actual price of GHG reduction, then the market cannot efficiently evaluate the relative costs and benefits of the various reduction

²² *Allocating Allowances in a Greenhouse Gas Trading System*. NCEP. p.13.

²³ *Recommendations for Designing a Greenhouse Gas Cap-and-Trade System in California*. Recommendations of the Market Advisory Board to the California Air Resources Board. June 30, 2007. p.23.

²⁴ The current lack of a US GHG reduction policy has led to the pursuit of regional programs in the Northeast and Western US to address this global challenge. Local, regional, or even national-scale proposals to address a global issue such as GHG emissions tend to be too narrow in their approach, placing local interests ahead of the achievement of desired global results.

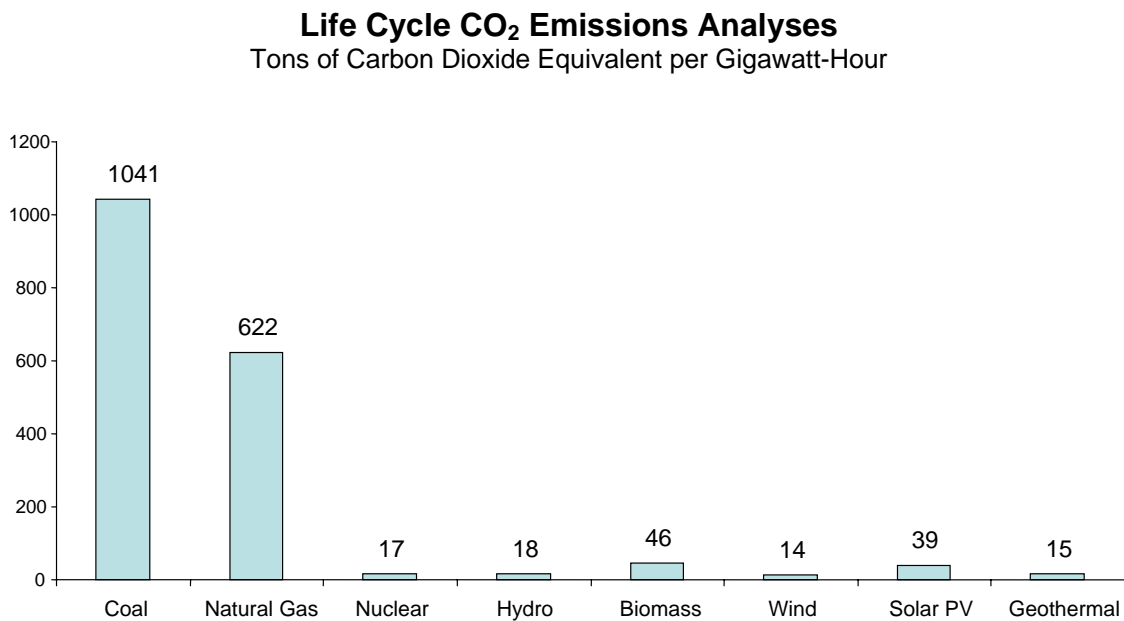
opportunities that may be available. A distorted price would lead to inefficient energy responses, including inappropriate levels of emissions reduction measures for existing sources (e.g. CCS), deployment of new generation technologies (e.g. nuclear, solar and clean coal) and consumer responses (e.g. changes in demand and efficient use of energy). The regulatory structure can and should evolve in a stable and reasonably predictable manner. Changes to the program, once commenced, should be evolutionary, not revolutionary.

Without a comprehensive, rational, and stable regulatory framework over a relatively long time horizon, investors will not have the confidence required to dedicate resources to the GHG reduction arena. A stable regulatory framework will create an environment in which the best of American innovation can be deployed to address climate change. Far from damaging the economy, this type of regulatory environment will help stimulate a new and productive sector of the American economy.

The Important Role of Nuclear

Nuclear power must be part of the global solution to the GHG challenge. Nuclear power’s competitive prospects will be enhanced substantially by its minimal operating emissions. Some critics argue that nuclear energy is not truly “carbon free” when the carbon emissions involved in nuclear fuel production are considered. However, studies have shown that even when comprehensive lifecycle carbon emissions are included, nuclear power is much less carbon intensive than most other sources of baseload power.

Figure 2.



Source: “Life-Cycle Assessment of Electricity Generation Systems and Applications for Climate Change Policy Analysis.” Paul J. Meier. University of Wisconsin-Madison. August 2002. cited on Nuclear Energy Institute website.

Figure 2 illustrates the lifecycle CO₂ emissions by fuel source. On a lifecycle emissions basis, regardless of calculation method, there is clearly an order-of-magnitude difference between nuclear GHG emissions and those of coal and natural gas. Nuclear emissions, even given a wide confidence interval around most estimates, are on par with emissions from renewable sources, including solar.

As stated at the outset, the goal of a rational GHG reduction program must be to balance affordable and reliable electricity with efforts to reduce GHGs. Nuclear power is an important part of that balance.

Conclusion

It is time for the US to create comprehensive mechanisms to reduce GHG emissions. The reduction of GHGs should be a national priority and should be accomplished through economically efficient means. For this reason, Constellation supports a national program which relies on market mechanisms to achieve a regulatory cap on emissions. Such a national program must create stable, long term expectations of emissions reductions so that the market for such emissions can function well and can link with other global programs. A broad, global marketplace is the most conducive means to achieve maximum environmental benefit at the lowest economic cost.

Constellation supports the setting of GHG emissions reductions targets in all economic sectors where these emissions are created. For the electric generation sector, we support an initial combination of 50 percent allowance auctions and 50 percent allocation of allowances to sources. Over time, allowances ought to be auctioned rather than provided free to sources. Once emissions caps and the allowance distribution strategy have been fairly set, Constellation supports minimal subsequent interference with the free market pricing mechanism.

Constellation supports long term emissions caps sufficient to prompt investment in technology to reduce emissions at existing sources and/or generate energy more cleanly. Constellation sees the GHG emissions market, if properly implemented, as a source of technological innovation and development and a new export growth opportunity for American industry.

Constellation embraces GHG reduction as a significant and necessary benefit to global society and as an important opportunity for Constellation to leverage its expertise in commodities markets and risk management.

Constellation Energy is committed to working with all other stakeholders to enact an environmentally effective, economically sustainable, and fair climate change program consistent with our principles at the earliest possible date.

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