Cap and Trade: From All Sides Now

Is cap and trade our best tool to find fast, low cost emissions reductions and battle climate change? Or is it a system that simply lets polluters buy their way out of compliance? This paper takes an independent look at the track record of cap and trade, and presents six success factors to make cap and trade work.

One of our greatest U.S. environmental success stories • Hasn't achieved any emissions reductions in Europe • Creates certainty in emissions reductions • Windfall profits for power companies and traders • Puts a hard legal limit on pollution • It's really a tax • Market-based systems will drive innovation • Ill-conceived policies might lead to price gouging and brownouts • Provides incentives for innovation •Finds low-cost ways to reduce emissions • Could lead to a steep rise in utility bills • Could worsen pollution in poor communities • Will reduce global warming • Lets industry, rather than government find technology solutions • Lets polluters buy their way out of compliance • Why are big companies against every other form of regulation, but for cap and trade?

Cap and Trade: From All Sides Now

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With climate change now well-recognized as a serious problem, policy makers throughout the U.S. are considering options to reduce greenhouse gas emissions. Chief among these options is a cap and trade system. Nearly every bill proposed in the US Congress relies on a cap and trade system as the core policy to reduce carbon emissions. The U.S. presidential candidates have said they support cap and trade as an important tool to address global warming. However, at the same time many still question cap and trade as the right tool to achieve the emissions reductions needed to combat climate change. This paper reviews past experiences with cap and trade, explains the approach, and addresses a number of these concerns.

To be sure, in some programs cap and trade systems have stumbled. Yet for other programs, cap and trade has achieved results beyond all expectations. This paper explores why, and identifies six critical factors for ensuring the success of cap and trade systems. If these elements are in place, the likelihood of success for any cap and trade program will be high.

What is Cap and Trade?

A cap and trade system works by setting a fixed limit on emissions (the cap), and distributing rights to emit, called allowances, up to the level of the cap to regulated entities who can then transfer the allowances among themselves (the trading part). Companies do not have individual caps, but rather must ensure that they acquire a sufficient quantity of allowances to cover their emissions in any given compliance period. Since any increase in allowances and emissions of one firm is matched by a corresponding reduction of allowances and emissions elsewhere, the environmental integrity of the cap is maintained. Overall, emissions reductions are achieved. The cap is reduced over time, and over time greater emissions reductions are obtained. Like a vice, cap and trade regulations squeeze emissions out of the economy over time.

Where It's Worked: Success With Acid Rain

While cap and trade has only recently emerged as a tool for addressing greenhouse gas (GHG) emissions, it has a long, successful history of solving a range of environmental problems. In the United States, the most well-known cap and trade success story is acid rain. In the early 90s, high levels of sulphur dioxide emissions resulted in sulphur deposition, more commonly known as acid rain, in the eastern United States. Rather than address the problem through traditional command and control regulation, Title IV of the Clean Air Act established a cap and trade program to reduce these emissions. The program, which began in 1995, established a goal of reducing SO_2 emissions to 50% of 1980 levels by 2000 and maintaining these levels thereafter.

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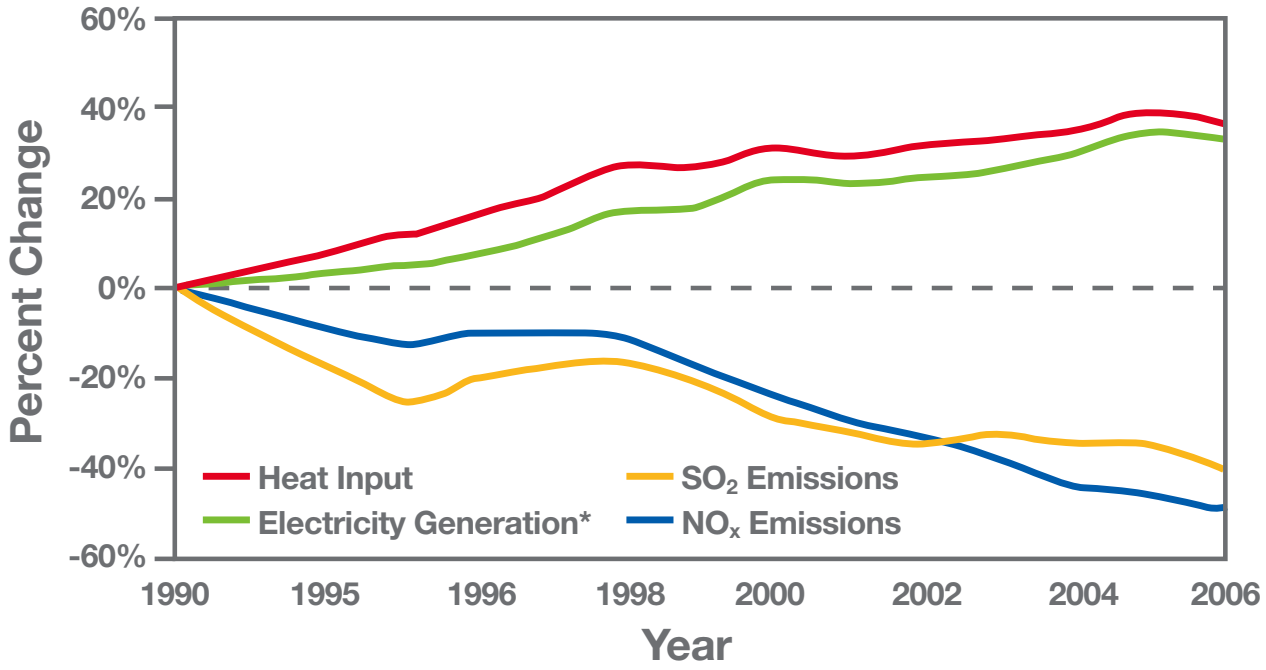
The results of the program were remarkable. Not only was the program successful in achieving the targeted emission level, with 100% compliance of regulated entities, it also achieved these reductions at a cost that was far lower than projected. Over the first 13 years, the program is estimated to have reduced compliance cost by $20 billion compared to what would have occurred under a traditional command and control regulation.[1] Cost estimates in advance of the program were in the range of $3-$25 billion per year. The long-term costs of the program are expected to be around $1.0-$1.4 billion per year, far below early projections.[2] More importantly from an environmental perspective, in the early years of the program this cost savings enabled many firms to reduce emissions more quickly than required by law.[3] These emission reductions were obtained despite the dramatic growth in electricity generation over the same period.

Similar results were achieved by another cap and trade program, the NO_x Budget Program, which began in 1999 as a regional program under the Ozone Transport Commission to reduce seasonal emissions of nitrogen oxides that contribute to smog. The NO_x Budget Program replaced an existing technology standard, which was the traditional approach to emission reductions prior to the advent of trading programs. It was later expanded in 2003 to a federal program comprising 22 states. Like the acid rain program, the NO_x Budget Program also achieved, and in fact, exceeded its emission reduction goal at costs that were far lower than projected. Although there was significant volatility in allowance prices during the early years of the trading program, once capped entities gained experience with the program and the market matured, prices stabilized at a level (about $2000 - $3000 per ton) that was at the low end of the projected cost range.[4]



[1] Ellerman, AD, Joskow P, Harrison D (2003) Emissions trading in the US: Experience, lessons, and considerations for greenhouse gases. Pew Center on Global Climate Change, Arlington

[2] Environmental Defense "The Cap and Trade Success Story" at http://www.edf.org/page.cfm?tagID=1085

[3] EPA ACID Rain Site: http://www.epa.gov/airmarkets/progsregs/arp/basic.html#phases

[4] WRI: "Greenhouse Gas Emission Trading in US States: Observations and Lessons from the OTC NO^x Budget Program"

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A Model for the World

Because of its success in addressing air pollutants in the U.S. and elsewhere, cap and trade emerged as the preferred solution for reducing GHG emissions. As a result of the cap and trade approach adopted under the Kyoto Protocol, many countries have, or are in the process of developing, national cap and trade systems to achieve their emission commitments under the Protocol. The first and most advanced program to date is the European Emissions Trading System (EU ETS), which covers the 25 countries of the European Union.

In the United States, cap and trade is being considered at national, regional and state levels. Nearly every bill proposed in the US Senate relies on a cap and trade system as a core policy to reduce GHG emissions. All the major U.S. presidential candidates have said they support this method as an important tool for addressing global warming. In the eastern U.S., 10 states have cooperated to adopt and implement the Regional Greenhouse Gas Initiative, which will begin operation in 2009. Similar initiatives are underway in California (under AB32), the West (the Western Climate Initiative, which includes 9 States and 3 Canadian Provinces), and the Midwest (the Midwest Greenhouse Gas Accord).

Is Cap and Trade an Appropriate Tool for Reducing GHG Emissions?

In light of the demonstrated success of the Acid Rain and NO_x Budget Programs, and the development of cap and trade programs internationally, why do some policy makers and stakeholders in the United States still question the efficacy of a cap and trade system to reduce GHG emissions? To address this question, we must first consider how cap and trade differs from alternative regulatory options and why it is an appropriate tool for reduction of GHGs.

A well-designed and monitored program can work. An ill-designed one will not.

Cap and Trade Provides More Compliance Flexibility Than "Command and Control"

Prior to the advent of cap and trade programs, the traditional approach to environmental problems was to mandate use of a specific technology to reduce emissions or to require that firms meet an environmental performance measure, such as an emission standard. While command and control regulation may have been successful in achieving environmental goals, it provided limited or no flexibility to regulated companies in how this goal was achieved. Each firm had to use the exact same technology, or achieve the same level of emissions per unit of output regardless of the size of the company, or the relative cost of compliance.
In contrast, under a cap and trade regulatory system, firms have two compliance options. They can either reduce emissions to the level of their allowance holdings, through whatever technologies or process improvements are available, or they can purchase allowances to cover additional emissions. If they do not comply, firms are fined. A firm that finds it relatively easy and inexpensive to reduce emissions can free up emission allowances which it can then sell to other firms. This buying and selling of allowances establishes a market price for the permit, which reflects the underlying cost of reducing emissions of that pollutant. Because of the flexibility provided to regulated entities by the trading system, the cap and trade system finds the lowest cost emission reduction opportunities first.

Cap and Trade Provides More Environmental Certainty Than a Tax

The fact that a cap and trade system creates a market and a price for pollution has led some to believe that such a system is essentially a tax in disguise. This is not the case. First and foremost, unlike a cap and trade system, a tax does not set a quantitative, legally enforcable limit on emissions. A cap and trade system measures, monitors, and achieves a specific environmental objective.

Additionally, while a cap and trade system can be used to generate government revenue through auction of emission allowances, this is a merely a design option, not a requirement. Allowances may be freely distributed to regulated firms.

The next section describes another important aspect of cap and trade: providing flexible investment incentives for new technology.

Spurring Technology Investment and Development

With the need to make significant long-term reductions in greenhouse gas emissions, comes the realization that the technologies required to achieve these massive reductions in an economically viable way do not currently exist. Technological breakthroughs will need to come in many areas – from renewable energy, energy efficiency, energy storage technology, new fuels, and more. Most observers agree that governments and policy makers should refrain from trying to "pick a winner" when it comes to technology. Fortunately, they don't have to. A cap and trade system can provide an important incentive for development of these new technologies by providing a 'carbon price signal' that enables firms to capture the value of these new technologies. As the quantity of emissions allowances becomes more scarce over time, their value goes up and higher cost emissions reduction technologies become viable. Because a cap and trade system is not technology specific, it can encourage and accommodate any emerging GHG control technologies or practices (renewables, carbon capture and storage, energy efficiency).

Can a Cap and Trade System Deliver Emission Reductions?

The ability of a cap and trade system to achieve emissions reductions is – like any other regulatory program – dependent on the design and implementation of the program. A well-designed, monitored and enforced program will achieve emission targets; an ill-designed one will not.

Cap and Trade is Only as Good as Its Cap

The level of emission reductions achieved under a cap and trade system is determined by the quantity of allowances issued and distributed – not by the ability of entities to trade these allowances. Regulators must set a cap that is stringent enough to reduce emissions and that declines over time. Trading will reduce the costs of achieving these caps, but it will not affect the overall level of emissions.

Determination of the appropriate level of the cap requires identification of significant sources of emissions to be included in the system, and accurate measurement of current (or historic) emissions from these sources. Opponents of cap and trade frequently cite the EU ETS, which did not significantly reduce GHG emissions in its first phase, as proof that a cap and trade system does not work. But the modest level of emission reductions achieved during Phase I of the EU ETS was not due to any inherent flaw in cap and trade as a regulatory tool, but simply to the fact that the EU emission cap was set too high. No overall emissions reductions were required, and none were achieved. Unlike the United States, many countries of the European Union did not have reliable facility level data on GHG emissions, particularly power plants, when the program went into effect. This led to a systematic overestimation of baseline emissions data, and over allocation of allowances.

The EU has since improved its reporting and monitoring system, and tightened its cap for Phase 2 (Kyoto implementation).[5]

The other factor in determining environmental effectiveness of the cap is the extent of geographic coverage. In order to reduce emissions, the cap must cover all significant sources of emissions within capped sectors in a geographic region. This is relatively straight-forward when regulators have legal jurisdiction over all emissions sources, but becomes much more complicated when regulators control sources within limited areas, such as under a regional or state-level cap and trade program. In a regional or state-level system, emission increases outside the cap and trade system may offset and potentially even completely negate emission reductions achieved within the cap. For example, the risk for a power-importing state like California is that in-state regulation might simply drive fossil fuel generation to neighboring states to avoid regulation. Such 'emission leakage' is not unique to a cap and trade system, but would occur under any unilateral attempt by a state or region to impose regulatory costs on emission sources in that region. The only way to completely eliminate the potential for emission leakage is to ensure complete geographic coverage of emissions through implementation of a national or multi-national cap and trade system.

Short of this, other options can minimize the potential for linkage. One innovative approach is that being considered by both California and the Western Climate Initiate. Under this trading system model, importers of electricity into the capped region would also be required to surrender allowances for emissions associated with that electricity.

[5] Decision of the European Commission establishing guidelines for the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council , January 29, 2004

Accountability is the Foundation of a Successful Cap and Trade System

Accurate reporting and verification of emission levels from all capped sources is necessary for determining the appropriate level of the cap, and for verifying compliance with these caps. Reporting and verification procedures must rely on rigorous and consistent methods and procedures for calculating, collecting, reporting, quality assuring and verifying emissions data.

Verification of entities' compliance with the program rules also requires knowing who holds emission allowances. A system to track the issuance, transfer and surrender of emission allowances and credits for compliance use is essential to ensure the integrity of the trading system, and provide regulators, stakeholders and participants with confidence in the emission market.

Tracking systems for allowances and offsets are essential to program integrity

From a systems point of view, the reporting and verification of actual emissions is very different from the creation, verification, serialization, tracking, trading, and retirement of emission allowances and offset credits. The treatment of allowances and offsets is inherently transactional in nature and requires very different core technology competencies than the emissions reporting of static time stamped information. Allowances and offsets are tracked using serial numbers; both have market value; both are traded and transacted, and both are retired. There is no analog to that in emissions reporting. Further, market oversight requirements may emerge that require the high volume, high availability infrastructure of financial markets. These requirements may include:

- The potential tracking of transaction prices, volumes, positions, trading limits or position limits
- Tracking of intermediate transactions between counterparties
- The potential need to report exchange transactions
- Forensic reporting and full audit trail capabilities for every transaction for the lifetime of the program
- The ability to investigate the possibility of fraud or manipulation in the marketplace via queries and reports of historical information.

To be sure, offset and allowance tracking systems must work hand in hand with emissions reporting systems to ensure the integrity of GHG cap and trade markets.

The final piece of ensuring accountability in a cap and trade system is the application of strong enforcement penalties. In order to provide a strong incentive for compliance, it is important that the penalties for failure to surrender sufficient allowances to cover emissions impose significant costs. In particular, it is important to ensure that non-compliance penalties are higher than the market price for allowances and credits. Otherwise, capped entities will choose to buy their way out of compliance rather than purchase allowances. To ensure that the costs of non-compliance are higher than the costs of compliance, and that the environmental target is not breached, the US Acid rain program imposes a significant financial penalty for each ton of excess emissions and deducts the equivalent quantity of allowances from the entity's allocation in the subsequent compliance period. Under the NO_x budget program, the non-compliance penalty is a deduction of allowances at the rate of 3:1 for each ton of excess emissions.

Hard Lessons: The RECLAIM Program Suffers Design Flaws

Without the right program design in place, cap and trade programs can struggle. In 1993 the South Coast Air Quality Management District adopted a cap and trade program, called RECLAIM to regulate nitrogen oxides and sulphur oxides that contribute to ozone in the Los Angeles basin. The RECLAIM operated smoothly for the first few years, but in 2000 allowance prices spiked to levels 10 times higher than previous years. This in turn led to a breach of the emissions target by some firms, and temporary suspension of the program in 2001. While the crisis stemming from deregulation of the California electricity markets contributed to these problems, several inherent program design flaws exacerbated the situation.

It is now recognized that the RECLAIM program was over-allocated in its early years, so that the quantity of allowances issued exceeded the cap by as much as 37%.[6] The over allocation was due in part to the politics of setting up and transitioning to a cap and trade system, but also to the fact that reliable facility level emissions data was not yet available for use in determining the program cap. Firms were able to self-select a base year and were allocated allowances based on reported emissions during that year, many of which were over-estimated.

The situation changed in the year 2000, when for the first time, the quantity of allowances issued was less than business-as-usual emissions. This cross-over point where allocations became short had been anticipated by SCAQMD to occur around this time. However, it had not been well communicated to companies. This fact and the over-allocation of allowances in the early years of the program, instilled market participants with overconfidence in

their ability to acquire allowances and deferred installation of emission control technologies. However, the California Energy crisis further spiked demand for allowances as facilities brought older, less efficient equipment on-line to meet electricity needs.[7]

Information that would have helped entities to understand and forecast market conditions was not available in the early years of the RECLAIM program. Data on facility emissions and installed control technology was not public, nor was information on the volume and prices of allowances traded. Had this information been available, perhaps more companies would have foreseen the increase in allowance demand and price in 2000.

A further complication was the fact that the spike in demand for allowances that occurred in 2000 – 2001 resulted in allowance prices that exceeded the penalty for facility non-compliance. While the program's penalty had been a deterrent in the earlier years of the program, as of 2000, some firms now found non-compliance less costly than compliance. This in turn resulted in a breach of the program's cap.

Fortunately, the district has learned from its mistakes and is now making real progress. In fact, despite initial design flaws, by 2004 the RECLAIM program had reduced nitrogen oxides emissions by 60 percent and sulphur dioxide emissions by 50 percent.

[6] "Over a Dozen Years of RECLAIM Implementation: Lessons learned in California's First Air Pollution Cap and Trade Program", South Coast Air Quality Management District, 2007

[7] US Environmental Protection Agency, "An Evaluation of the South Coast Air Quality Management District's Regional Clean Air Incentives Market - Lessons in Environmental Markets and Innovation" November, 2002

Cap and Trade: Designing the Costs

Hard Lessons in Europe with Windfall Profits

A frequently expressed concern about the use of a cap and trade system for the reduction of GHG emissions is the potential to create 'windfall profits' for regulated firms. Windfall profits result when a firm's increased revenue due to the regulation exceeds the additional cost of complying with the regulation. This concern is usually raised with respect to the electricity sector, and the experience in the EU ETS cited as example.

Implementation of the EU ETS has led to an increase in retail electricity prices across countries. This is due to two separate factors. The first is the fact that in a competitive power market, all generators operating at the same point in time receive the same price for their power, regardless of what it actually costs those generators to run. The price paid for that power is determined by the costs of the most expensive unit, which is frequently an older, less-efficient, more carbon-intensive plant. Because the market price for power increases by the cost of allowances for the dirtier generators, the revenue gains for cleaner generators exceed their increased costs. This effect is not solely a problem of cap and trade, but would occur under any type of regulation, be it a pure emission or technology standard, or a carbon tax. The extent to which the regulation raises prices depends on the ability of a firm to pass through costs to consumers; it does not depend on the nature of the environmental regulation.

The second factor which contributed to windfall profits to electricity generators in the EU ETS was the ability of electric power generators to reflect the value of emission allowances in power prices, despite the fact that they received these emission allowances for free. Without the potential for trading, emission allowances would not have a value and would not be passed through in electricity prices. Rather, only the direct costs of reducing emissions would be passed through to consumers. This factor is unique to a cap and trade system, but fortunately, can be addressed through the mechanism for allocating allowances.

Auctions Reduce Potential for Windfall Profits

In most trading systems implemented to date, notably the US Acid Rain Program and the EU ETS, emission allowances have been allocated at no cost to regulated entities based on their historic emissions levels. In other words, the permits to emit have been given away for free by the governments. This so-called 'grand fathering' allocation approach is well-recognized as contributing to the windfall profits problem. As a result, many new cap and trade systems are considering allowance auctions as a way to reduce windfall profits and minimize price increases to consumers.

Under an auction, companies would be required to purchase some or all the allowances required for compliance with the GHG cap from regulators. By requiring purchase of allowances, regulators ensure that entities incur direct costs. This will reduce the profit margin for those entities, but it will not reduce the impact on consumer prices.

Consumer impacts can be addressed by recycling the auction revenue back to consumers. Auction revenue can be used for any number of public policy purposes – for research and development of new technologies to reduce GHG emissions, for adaptation to climate change impacts, or simply to increase general funds. But these revenues can also be returned to consumers through direct rebates, low-income assistance programs or other means.

Cap and Trade Reduces Overall Societal Costs

Under a well-designed cap and trade system; regulated entities that find it extremely costly to reduce emissions can purchase emission allowances from entities with lower relative costs. Trading of emission allowances thus provides all firms flexibility to find and use the lowest-cost means of meeting their emission obligations. A trading system can thus achieve emission reductions equivalent to traditional regulatory approaches, but more efficiently and at a lower overall cost to regulated firms and to society as a whole.[8]

The ability of cap and trade to achieve emission reductions at least cost is particularly important in light of the level of emission reductions required over the long-term to address climate change. Many of the proposed federal bills aim to reduce emissions 50% to 80% below current levels by mid-century. Achieving this level of emission reductions will be costly. The deeper and faster the reductions, the more expensive it will be. In a world of limited resources, it is therefore critical that policy makers maximize the emission levels that are achieved for a given level of financial investment.

Price "Safety Valves" Can Restrain Costs

No matter how well designed the cap and trade system, unanticipated factors could lead to excessively high compliance costs or other unintended consequences, such as electrical system reliability problems. To address the potential for unintended consequences, many analysts have proposed a 'safety valve'. A safety valve could be implemented in one of several different ways, but the common objective is to reduce the stringency of the cap under specific conditions. For instance, if allowances prices reach a pre-specified level for a sustained period, the cap could be eased by injecting additional emission allowances into the market. Obviously, this would reduce the level of emission reductions achieved in a given year, and for this reason, safety valve provisions are opposed by many environmentalists. However, any excess emissions from triggering the safety valve in one year could be paid back by deductions in future year allocations. Policy makers may consider that the benefits of a safety-valve in providing price certainty and protecting the economy may outweigh the risk of short-term increases in emissions under a cap and trade program. The down side is that use of such safety valves has the potential to distort the allowance market, and undermine incentives for investment in cleaner technologies.

[8] Studies of the US Acid Rain Program found cost savings of 50% compared to traditional regulatory approaches. See Ellerman, A. D., et al. 2003. Emissions Trading in the U.S.: Experience, Lessons, and Considerations for Greenhouse Gases. Arlington, VA: Pew Center on Global Climate Change.

The Role of Carbon Offsets on Managing Program Costs

Carbon offsets are credits generated by specific projects that have reduced the emission of greenhouse gases in sectors not covered by the cap and trade program. These might include projects in forestry, landfill gas methane emissions reduction, or changes in agricultural practices, as examples. Offset credits are issued when these projects demonstrate a reduction in emission relative to an emission baseline or 'business as usual" base case. Offset credits must also be calculated, reported and verified in accordance with specific protocols and standards. Cap and trade mechanisms often allow companies to use offset credits to meet a portion of their compliance obligations. By providing an additional source of potentially low cost- emission credits, an offset program can help reduce and moderate the overall costs of a cap and trade system.

EPA's recent economic analysis indicates that there is a strong link between the cost of allowances (and hence overall compliance) and the use of offsets in a cap and trade mechanism. What is surprising in the EPA study is the size of the cost impacts due to offsets, relative to the current Warner Lieberman legislation before the U.S. Congress. In the EPA analysis, the swing in the cost of allowances ranges from a reduction in the allowance market price of -71% to an increase of up to +93%, depending on the extent of use of offsets[9]. The study looked at the use of domestic or international offsets, or both – as well as the percentage of offsets that could be used for compliance. Generally speaking, the broader the use of domestic and international offsets within the program, the lower the cost of allowances. Intuitively, this is what might be expected since the use of offsets gives companies more and lower cost options to purchase certificates (allowances and offsets) to meet their compliance obligations.

The EPA study indicates that the design of offsets in a cap and trade program can have a dramatic impact on overall program and compliance costs. However, offsets can also be used to achieve other objectives, for example, as a way to establish linkages with other cap and trade programs, or to encourage emissions reductions in sectors that do not fall under the cap and trade program.

[9] EPA Analysis of the Lieberman-Warner Climate Security Act of 2008, S. 2191 in 110th Congress, March 14, 2008

The Success Factors for Cap and Trade

Experiences in North America and Europe demonstrate that there are some key elements that are critical for the success of any GHG cap and trade program in the United States.

1) Emissions reporting and verification are fundamental for setting and meeting the cap

The ability of a cap and trade program to meet a specified emission goal is dependent on the use of rigorous methods and procedures for measuring, reporting and verifying facility emissions. Reliable facility-level emission data is necessary for regulators to determine the appropriate level of the cap, and to verify firms' compliance.

2) Reliable tracking of allowances, offset credits and market activity is needed

A tracking system provides certainty regarding the ownership and status of allowances and offset credits, and generates confidence in the market system. The implementation of a tracking system and registry to serialize and track emission allowances and credits is an essential element. Tracking systems also help regulated corporations and entities plan for and achieve GHG compliance by managing their carbon allowance and offset portfolio at both the firm and facility level.

3) Penalties must be in place and enforced

Penalties for non-compliance should "make the atmosphere whole" (e.g. result in the required emission reductions over time) and must be set at a level that is substantially higher than the market price of allowances.

4) Transparency of market conditions is important for planning

Having access to up-to-date information on market conditions is important to enable capped and other market participants to forecast allowance demand and to plan for compliance. Such information includes facility and program-wide emissions, allowance and credit prices and volume of trading. The timely availability of this information provides confidence and certainty in the market and allows regulated entities and regulators to make more informed decisions.

5) A liquid allowance market provides entities with compliance opportunities

The design of a cap and trade system can greatly influence the liquidity of the allowance market. Provisions that provide compliance flexibility over time, such as banking and borrowing of allowances, can increase the availability of allowances in a given period and moderate price volatility. Further, features that reduce the transaction costs of trading – such as trading platforms, participation of market intermediaries, and simple and straightforward trading rules – will also tend to increase the liquidity of the market and ensure that entities can acquire the allowances they need for compliance. Finally, if auctions are used to distribute allowances, these should be held frequently.

6) Market oversight can prevent market manipulation

Evolving GHG markets will likely require greater transparency and greater market oversight than prior air markets because the scale and value of the GHG markets is projected to be much larger. Establishment of an oversight body and systems to monitor market conditions would provide a mechanism to identify and respond to attempts at market manipulation or to intervene in the event of unacceptable allowance prices.

Conclusion

The lessons of the U.S. Acid Rain program, NO_x Budget Program, RECLAIM, and EU-ETS experiences have demonstrated the success that can be achieved with cap and trade as an environmental regulatory approach, potential pitfalls and the essential factors for success. Cap and trade can work, if properly designed.

The U.S. discussion should now turn from whether cap and trade can work – because it can achieve the targeted environmental results with high integrity – to a discussion of economic impact and pace of emission reductions.

Most legislation, most states, all current regional GHG programs, and all current presidential candidates support cap and trade. While cap and trade is currently popular, that doesn't mean it will pass as legislation in Washington. The costs of emissions reductions and their effect on the competitiveness of U.S. industries, sector by sector, will likely become even more prominent in discussions inside the Beltway over the next year. If the U.S economy remains sluggish for the next several quarters, the debate will become more difficult as we balance the short term costs of addressing climate change with the longer term consequences of doing otherwise.

Optimists have argued that we can "do well and do good at the same time." Certainly, cap and trade offers one of the best mechanisms to spur our economy to innovate, increase efficiency, and find the lowest cost emissions reductions first. We are not aware of a better choice.

About APX Inc.

APX is the leading infrastructure provider for environmental and energy markets in renewable energy and greenhouse gases including carbon commodities. Our technology is the backbone for every major renewable energy market in North America, including the PJM (GATS), ISO New England (NEPOOL GIS), ERCOT (Texas REC), MISO (MRETS) and Western States (WREGIS) markets. Most of these are cross-jurisdictional, multi state environmental markets. In total, more than 2 billion certificates representing renewable energy and generation have been created and are under management using this infrastructure. Our views are based on our experience over years in working with regulators and market participants in states and regions to set up reliable and efficient environmental market systems.

APX was selected from among 17 international bidders to create and has launched the Gold Standard's Registry for Verified Emissions Reductions (VERs) in the voluntary carbon market and CERs for CDM/JI programs. The Registry provides the Gold Standard, endorsed by 60 key environmental NGOs worldwide, with a user-friendly, web-based software application that creates, tracks, and enables trading of Gold Standard VERs and CERs with full audit trail and security capabilities.

APX also manages and operates the Climate Action Reserve carbon emissions reduction credit registry for the California Climate Action Registry. The California Climate Action Registry (CCAR) is one of the nation's leading developers of high quality carbon offset protocols, and a leading provider of verifier accreditation and registry services.

APX registries features serialization of each metric ton of CO_2 equivalent reduced versus an emissions baseline, a double-entry accounting framework, and full ownership and transaction tracking for carbon credits and emission allowances. Real-time reporting capabilities assist account holders in the management of credits and allowances, while also providing program transparency to account holders and the public.

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