



Governor's Action Team on Energy and Climate Change Cap and Trade Policy Framework: A Policy Design Menu

MARKET-BASED MECHANISMS INVENTORY

The following represents an overview of the two principal mechanisms: fees and trading regimes.

Emission Prices / Carbon Fees

A carbon fee or tax – placing a price tag on carbon dioxide emissions – is one market-based approach to reduce the amount of carbon dioxide released into the environment. Enacting a carbon fee would increase the price of emitting carbon dioxide, thereby encouraging firms as well as households to reduce their overall carbon signature. Unlike a cap and trade program, the straight carbon fee would not ensure a specific level of reduction but would help ensure price certainty.

Carbon fees are simply direct payments to a governmental entity based on the carbon content of the specific fuel being consumed (e.g. coal has more carbon content than natural gas so would be assessed at a higher rate). As such, carbon fees are a “priced-based” policy instrument which increases the price of certain goods and services thereby decreasing the quantity demanded. A cap and trade system, on the other hand, is considered a “quantity-based” environmental policy instrument. While both policy approaches are considered “market-based,” the implementation details and expected outcomes of each policy are distinct. A carbon fee policy fixes the marginal cost for carbon emissions and allows quantities emitted to adjust, so the exact level of carbon dioxide reduction is unknown until the fee is actually implemented. Cap and trade systems fix the total amount of carbon emitted and allow price levels to fluctuate according to market forces. This ensures a specific reduction of carbon.

Some argue that a fee or tax can be administratively more efficient (lower transaction cost) than a cap and trade program. Both, however, can be regressive. This regressive nature arises from the fact that as a percentage of income, a carbon fee (whether through a tax or a cap and trade program) would affect lower-income individuals more profoundly than higher-income individuals. One solution to this problem of regressivity is to redistribute some portion of the resulting revenue back to lower income people. This redistribution effort is often referred to as a revenue neutral tax or a ‘cap and rebate’ and may shift the burden away from traditional “positives,” such as productivity of labor, to “negatives,” such as pollution.

Designing a carbon fee or cap and trade program to be revenue neutral with respect to Florida’s tax system would be a remarkably challenging endeavor. Changes in tax policy, particularly at

the scale contemplated here, historically has been difficult to achieve in a comprehensive manner.

Emission Cap and Trade Approach

Another market-based policy approach is an emissions trading system. With an emissions trading system, the quantity of emissions is fixed (capped) and the right to produce emissions becomes a tradable commodity. These tradable commodities are often referred to as “permits,” “quotas,” or “allowances.” Under this system, compliance is achieved by holding permits or allowances greater than or equal to actual emission levels. These permits or allowances become tradable after they are initially allocated (by auction, historical usage patterns, or free allocation) to all eligible participants. “Trading would allow firms that could control their emissions most cheaply to do so in order to sell some of their allowances at a profit to firms that face higher costs to limit their emissions.”¹ Trading regimes can be based on absolute emissions (total quality emitted) or on a rate basis (quantity emitted per unit of output).

As the objective of any abatement policy is to reduce emission of carbon dioxide, an emissions trading regime has inherent benefits as well. First and foremost, a policy of emissions trading ensures a fixed level of carbon reduction and the resulting environmental improvements. This may be more palatable since emission reduction levels may be easier to agree upon than relative tax rates. Emission trading regimes can allow emission reductions to cross over borders in search of the lowest abatement costs and unlocks the benefits of resource specialization. The notion of a cap and trade emissions trading policy may have broader appeal to private industry by equating marginal benefits and marginal costs through the buying and selling of excess carbon dioxide allowances.

Unlike a carbon fee, a cap and trade program creates economic development opportunities in offset sectors such as forestry agriculture. A cap and trade program also enables Florida to link its efforts to reduce emissions of greenhouse gases to efforts under way in other nations and regions of the United States. Over time, this linkage will likely result in a fairly uniform cost for allowances, thus enabling Florida’s emitters to approach a level economic playing field with those in other jurisdictions actively working to reduce emissions.

CAP AND TRADE POLICY FRAMEWORK: A POLICY DESIGN MENU

In designing a cap and trade program, the United States Environmental Protection Agency² recommends that policymakers adhere to a set of guiding principles, which are worth consideration here:

1. Simplicity: The program must be designed to operate as simply as possible to reduce administrative costs and to assure that the market mechanism works effectively.;

¹ Ibid.

² United States Environmental Protection Agency, Office of Air and Radiation. “Tools of the Trade: A Guide to Designing and Operating a Cap and Trade Program for Pollution Control.” June 2003.

2. Accountability: Without adverse consequences, market participants have little incentive to participate. Further, holders of property rights must have some assurance that those rights will be honored.
3. Transparency: Participants must have timely access to important information within the marketplace in order for the orderly functioning of the market.
4. Predictability and Consistency: The rules governing the marketplace cannot be subject to frequent and unforeseen changes. Prices for allocations incorporate the participant's assessment of current and future market conditions, based upon a consistent set of assumptions. If rules frequently change, prices will likely be highly volatile.

In light of these guiding principles, the following “design menu” outlines specific choices in program design that must be made with the options available for each choice. The objective here is to outline the nature of these choices, define costs in qualitative terms, and to provide members of the Governors’ Action Team with specific cases in point as to how other jurisdictions have addressed these choices. We cover both in the context of pollution control and, more specifically, managing emissions of greenhouse gases.

Program Scope

The first set of choices will define the scope of Florida’s greenhouse gas emissions reduction program.

- What is the Cap? The effectiveness of any cap and trade program begins with the stringency of the cap and the timeframe over which it is reduced. Typically, caps are set at or near current emissions and maintained for some number of years to limit future emissions growth. Programs seeking reductions from current emissions then select a date, usually several years after the program starts, to begin a gradual decline to achieve GHG reduction targets or goals in the future. Since not all economic sectors are usually included, the decline may or may not parallel the broader economy-wide goals, such as those set by Florida’s Executive Order 07-127. Within the covered sectors the cap is critical to the functioning of the program. If the cap is set too high (more allowances are issued than needed to cover existing emissions) then they have little or no value and the incentive to invest in emissions reductions is lost. If the cap is too low (significantly fewer allowances issued than needed) the market will bid up the value of the allowance and those costs could result in a politically unacceptable increase in consumer prices. Setting the cap depends upon the sectors included in the program, the geographic coverage and other factors. The cap is usually decided near the end of the policy development process for this reason.
- Will Florida link to other markets? Florida has the opportunity to link a cap and trade system to other active or emerging markets including the European Union, RGGI, and potentially the Western Climate Initiative. ‘Linking’ can take several forms, from recognizing offset credits across jurisdictions to full programs merger. The obvious benefit of doing so would be a much larger marketplace in which an emissions allowance would be a great deal cheaper than would be the case were Florida to design

and implement a closed marketplace. Further, the development of offset projects within Florida could benefit with the ability to sell offset credits into other markets. In considering the question of linkage, Florida must weigh the impact of linking a high growth state carbon market to other regions in which population trends are flat or even declining. This uneven population distribution over time could lead to a net import of carbon allowances purchased from other jurisdictions, though the net economic benefit is very likely to be positive for Florida as compared to a scenario in which Florida maintained a Florida-only closed GHG allowance market.

- Which economic sectors are covered? Another choice facing Florida is whether to limit the initial greenhouse gas market-based mechanism to the electric utility sector as in the case of the Regional Greenhouse Gas Initiative (RGGI) states, or to broaden the program to include targeted industrial sectors. An example is the European Union, which included power plants, oil, cement, pulp & paper, iron & steel, and glass. Another is the state of California which proposes to include as much of the economy as possible. The design choice will likely be driven by consideration of Florida’s emissions profile (less industrial than Europe or California) and the relative cost/benefit of including industrial sectors of consequence to Florida’s economy, including pulp and paper, phosphate, and others. It should be noted that the choice here is what should be placed within the emissions cap; as is the case with RGGI, emission reductions from other industrial sectors outside the cap can be achieved by means of an approved offset mechanism.

- Which greenhouse gases are included? Many gases have the effect of warming the planet’s atmosphere, including water vapor. Programs developed within and among signatories of the Kyoto Protocol have recognized six regulated greenhouse gases: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. These gases warm the atmosphere at different rates – this is reflected by the “global warming potential” outlined in the following table. Thus, one ton of methane sequestered from a landfill would have the same climate benefit as reducing 21 tons of carbon dioxide from another source.

Gas	Global Warming Potential*
Carbon dioxide (CO ₂)	1
Methane (CH ₄)	21
Nitrous Oxide (N ₂ O)	310
Hydrofluorocarbons (HFCs)	1,300 to 11,700
Perfluorocarbons (PFCs)	6,500 to 9,200
Sulfur hexafluoride (SF ₆)	23,900
* The Global Warming Potential is the ratio of the warming caused by a substance to the warming caused by the same mass of carbon dioxide. It is a relative scale. For example, methane has 21 times the warming potential of carbon dioxide. ³	

³ US EPA, Climate Change Information at www.epa.gov/climate

The Regional Greenhouse Gas Initiative (RGGI) states use emissions of carbon dioxide as the principal unit of exchange within the initiative states, but recognize reductions in the other five Kyoto gases by use of “offsets” which, using the Global Warming Potential conversions above, can count toward reductions in carbon dioxide from power plants.

- What is the ‘Point of Regulation’? The point of regulation is the entity that is responsible for compliance with the cap and trade program, i.e., responsible for surrendering allowances at the end of a compliance period. This may vary depending upon the sector. For example, large stationary industrial sources could be regulated at the facility where the GHGs are released to the atmosphere, but numerous small mobile sources such as the owners of automobiles would be ill-equipped to manage the program requirements. However, it is possible to regulate mobile sources where transportation fuels are produced, imported or distributed. The electric power sector is different yet again. Florida imports electric power from Georgia and Alabama by means of high voltage transmission. A generator-based point of regulation would capture all in-state sources, but would exclude emissions resulting from in-state electricity consumption served by out-of-state generation. If the point of regulation is based on consumption, or ‘load’, the program would capture all emissions resulting from in-state consumption (even those from out-of-state plants), but not emissions from in-state generation that is exported for use outside Florida.
- Will there be a regulatory minimum? Other jurisdictions have placed lower limits which excluded certain sources – for instance, an electric generation unit smaller than 25MW in the case of RGGI. If Florida seeks to cap only the electric utility sector, key questions that would require consideration include the treatment of small peaking units, the treatment of merchant power plants, and other components of the state’s electric power generation system. If other sectors are included should there be a de minimus exemption?
- What about ‘Leakage’? The issue of “leakage” – shifting or moving emissions to other jurisdictions that have lower or nonexistent standards – must be considered in this context. The RGGI states and the Western Climate Initiative (WCI) states, all of which have much greater proportions of cross-state interconnections of electric power, have grappled with this issue. Policy development around this issue must not unconstitutionally constrain interstate commerce. Designing a policy that precludes leakage will require a firm definition of the emission sources to be included under the cap. Once the capped population has been determined, the specific terms of the cap can be helpful in combating leakage. To illustrate this point with an example, if the capped sources are load-serving, or ‘retail’ electric utilities, then the terms of the cap could be specified as a rate (pounds of carbon dioxide per kilowatt hour) that must be met by all electric power that given utility brings to market from all sources.
- Will Florida use offsets for sectors outside the cap? The experience of other jurisdictions in the use of regulated offsets suggests that cost effective emission reductions – that are

protective of climate systems – are possible and very desirable. In theory and in practice, the best emission reduction policy begins reductions from low cost and proceeds up the scale to higher cost reductions. Offsets can help make this happen in practice. The principal choices in offset policies will be: 1) whether to use offsets or not, and 2) whether to predefine acceptable offset project types or to predefine acceptable criteria by which any offset project could be used in the system. In considering offset policy design, one key criterion is to provide some level of certainty for emitters that a specific investment in an offset project will be honored. The RGGI states have achieved this certainty by pre-defining in regulations the specific offset types in which utilities can invest to garner emission credits. Offsets may be disallowed or limited to ensure that a certain proportion of the emissions reductions actually happen within the regulated sector(s). Offsets may also be used in a limited fashion to promote allowance market price stability. Other considerations in defining acceptable offsets for Florida will be the degree to which offsets spur economic opportunities for other key sectors such as agriculture, and the criteria used for offsets in other cap and trade markets such that Florida offsets can be sold elsewhere.

Program Startup

- When does the program start? The question of program timing will have cost implications for Florida, particularly with respect to the long lead planning time associated with capital-intensive investment decisions such as siting and building new electric power generation. The first RGGI states provided the utility sector with lead times of as much as four years.
- Should Florida institute a trial period? Because of the relative uncertainty of market behavior from the outset of a new policy, many jurisdictions have designed trial periods or graduated implementation periods in order to enable market participants to develop proxy prices in advance of full implementation. The European Union purposefully designed a trial Phase for market participants in the Emissions Trading Scheme (ETS) in which emission allowances were freely allocated to emitters, but banking of those Phase I allowances into Phase II (which began in January 2008) was not permitted. The intent of this trial period was to give participants experience with the regime prior to the 2008 – 2012 treaty obligation periods and thus reduce market volatility in the future compliance periods.

Program Operations

- How should emission allowances be allocated? A key question for Florida's cap and trade program will be how to allocate the emission allowances. The design options here include a free allocation to emitters, an auction of allowances to emitters, and a hybrid approach in which some portion are freely allocated and another portion auctioned. Free allocation may be based upon historical emissions, some 'benchmark' associated with output, or on some other basis. The first cap and trade program implemented for pollution control – the United States' national acid rain program – provides annual allowances to emitters on a "free" basis. The first phase of the European Union's

Emissions Trading Scheme also used free allocations, but under Phase II, auctions will be used. Meanwhile, the RGGI system, each state retains decision-making over how allowances are distributed internally, though nearly all are opting for an auction.

- What are the rules for banking and borrowing? A key design decision will be whether to allow emitters to “bank” unused allowances from one year to the next. A second consideration is whether emitters will be allowed to “borrow” an amount from a future compliance period for use in the current period. The benefits of banking and borrowing go largely to helping smooth the cost of compliance over time and, to a certain extent, reducing the volatility of the market. The potential concern here is that overly favorable banking and borrowing terms will erode the total emission reductions that can be achieved by the program over time. One interaction to keep in mind here is the extent to which banking and borrowing rules work with program start-up. Banking in trial periods is generally not advisable.
- Should the program include a “safety valve” for emergencies? A key design feature considered in cap and trade programs is a “safety valve” in which some action is taken in the event that program costs are higher than expected. There are many options for designing safety valves. One option is an allowance price cap -- a maximum price in dollars per ton at which the emitters needing to purchase allowances could instead purchase newly minted allowances from a regulatory body. This increases the quantity of allowances in circulation and thus lowers the price of each; however it does so by raising the overall emissions cap and therefore weakens the environmental integrity of the program. Another approach employed by the State of California is to empower the Governor to suspend emission limits in emergencies or a finding of significant economic harm. The concern many have raised with safety valves is that they dampen the price discipline of the market, they create disincentives for investments in real GHG reductions by introducing uncertainty over rates of return, and they erode the ability of a jurisdiction to reach a stated goal. The RGGI program has no price cap, but uses a stepped expansion of the use and availability of offsets as a means of discouraging excessive allowance prices. RGGI also allows unlimited banking and has chosen a three-year compliance period to mitigate wide market fluctuations.
- What reporting will be required? Compliance monitoring under simple cap and trade programs occur both in real time using “continuous emission monitors.” These are instruments that sample the content of the gases in the smoke stack and annual reports which compile data from several sources such as fuel records, operating records, and emission samples to develop a comprehensive picture of operations at a given source subject to the cap. Sectors regulated at a point other than the source would need to have their own enforceable monitoring and reporting systems. Florida is a member of The Climate Registry (TCR) which is a joint effort of 39 U.S. States, 8 Canadian Provinces and 2 Mexican States to establish standard monitoring, reporting and verification protocols for both voluntary and mandatory GHG reduction programs.

- What enforcement provisions should be implemented? In order for a cap and trade to work, participation in the program must be mandatory and noncompliance must bear consequences more costly than compliance. Nearly all cap and trade programs have a “true-up” at the end of the compliance period in which emitters assess total emissions during the just-ended compliance period. If necessary, emitters obtain additional allowances by purchase or if allowed, by using banked allowances from previous periods or borrowed allowances from future credits. RGGI states have adopted model legislation and rules that give enforcement authority to each state’s environmental agency using the existing administrative enforcement process as a means to enforce the cap and trade program.

Program Administration

- Who oversees allocations? The role of allocation oversight will be driven largely by the design decisions made for the cap and trade program itself. The administrative complexity of the allocation process moves from low in the case of free allocations to moderate in the case of auctions or hybrid approaches. In the European Union, each country’s central government manages allocations – in every case examined, the national environmental agency held that responsibility. Under the RGGI system, each state retains decision-making over how allowances are distributed internally, though nearly all are opting for an auction. RGGI will be holding centralized regional auctions in support of these policies.
- Who monitors for compliance? Assuring compliance is critical to assuring the integrity of the marketplace. This process is very similar to the reporting required in regulating traditional air pollutants administered in Florida by the Department of Environmental Protection’s Division of Air Resource Management. In RGGI and in the EU, this function has been assigned to air quality regulatory agencies.
- Who monitors for and then activates the safety valve? In the event that a safety valve is indeed employed, market monitoring becomes a necessary administrative function. Options for staffing the market monitoring function will be driven by the specific design of the safety valve, but would likely be most efficiently integrated into the reporting and compliance administrative functions.