PointCarbon

MEMORANDUM

TO: Greenpeace

FROM: Point Carbon

DATE: 9/10/09

SUBJ: Waxman-Markey (ACES 2009) Project Report

Findings:

- As a whole, Coal receives significant financial funding under the allowance allocation system.
    - The bill heavily incentivizes CCS based coal facilities, and they receive significant allowances under the bill.
    - Newly constructed, non CCS based coal has a limited role under a Waxman-Markey cap and trade due to performance standards and phase out of allocations to new facilities.
    - Existing, traditional coal facilities would continue operations until retired.
    - Without allocations to newly constructed plants after 2014, the free allocation to merchant coal plants keeps old plants operating longer than they would be if allowances were not allocated for free.
- Rebates to consumers through utility bills directly interfere with consumer incentives to conserve energy and reduce emissions. This is a problem with the consumer benefit rebates for both electric and gas LDC's.
- The allocation formulas for Trade Vulnerable Industries and Refineries, while presently undefined, should be based on output rather than historical emissions.
- Early action eligibility should be extended through the end of 2011.

Allocation Design and Incentives, General Discussion

The carbon price is the main vehicle for generating emissions reductions in cap and trade programs. The carbon price signal in broad terms does not depend on the primary method of allocation. The carbon price is primarily a function of the stringency of the cap and the cost of eligible emission reduction options. These factors remain unaffected by the decision whether allowances are allocated for free or auctioned by government.

However, there are numerous specific provisions under each allocation method that may impact emitter behavior by either enhancing the effectiveness of the price signal or impeding it. Unfortunately, much of the debate surrounding cap and trade programs focus on the wealth distribution issues related to allocation and less attention is devoted to the potentially distortive effects of the "small print".

One of the main advantages of cap and trade is that it exposes all covered emitters to a uniform price signal thereby making sure that reductions are introduced and capital allocated according

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to the cost in each individual sector. The allocation rules need to make sure that this important "allocative efficiency" is not impaired.

The carbon price attacks emissions along two important fronts. First the price for emitting carbon will be felt by the emitter. The first response will be to change the mode of operation by e.g. switching to cleaner fuels or optimize processes differently. The by far most important response takes place in the longer run and involves changes in technology through investments. The success of cap and trade will be measured by how effectively it will incentivize investment in clean technology. It happens that many of the details of allocation methodologies will have an important impact on investment decisions.

The other important function of cap and trade is to convey the cost of carbon emissions to the consumers in order to change their behavior towards purchase of less carbon intensive products and more attention to conserving energy. End use of various forms of energy entails the largest emissions, however most consumer products have embedded carbon emissions. If the cost of emitting carbon is effectively carried through to consumers, we will experience a second tier of behavioral change that will reduce emissions.

From a political perspective it may be desirable to compensate consumers for the increased cost associated with climate change legislation. The way in which distribution of auction revenue or allocation of allowances is designed can seriously impact the effectiveness of the carbon price signal.

This report will focus on selected issues related to allocation design and investment incentives as well as touch on the important issue of consumer incentives. The following two sections will elaborate on these two issues before we go on to discuss the specific provisions of the Waxman Markey legislation and their effects.

Impact of Allocation on Investment

Rational economic behavior suggests that the short term behavior of emitters is unaffected by the choice of allocation method. On the margin, the emitter will optimize operations according to the prevailing carbon price irrespective of whether the allowance is allocated for free or bought in the market.

In terms of decisions to replace capital assets, the behavior will be different. A free allocation given to an emitter can be looked upon as a fixed subsidy to maintain the current technology. If an existing plant receiving free allocations is decommissioned, the subsidy is normally discontinued. Allocation of free allowances may hence play an important role in conserving the capital structure and in any event it will impact the timing and economics of new investments.

This is why a cap and trade program may have a set aside allowance pool for new entrants. By offering free allocation to new plants, it will be possible to offset the disincentive caused by termination of free allocations to existing plant. The rules for allocation to new entrants are

critically important for investment decisions and not least for the economics of alternative technology choices. From an emission reductions perspective new entrants rules should be written to incentivize the cleaner technologies.

The concept of free allocation also introduces issues related to baseline setting and emission reduction disincentives prior to commencement of the cap and trade program. Allocation methodologies that involve a certain amount of free allowances to emitters need to relate entity wide allocations to baselines which are derived from plant data and/or historic emissions. This creates an incentive for emitters to exaggerate emissions levels to achieve high allocations. It could also create an incentive to put off modifications and other measures that may reduce emissions. This adverse incentive needs to be addressed by legislators through the detailed rules for allocations and it could be offset by including positive incentives for early emission reduction actions

Impact of Allocation on Consumer Behavior

Climate legislation cannot be effective unless the true causes of climate change are exposed to the true cost of emissions. While a cap and trade program levies the burden on the emitters, the cost needs to be passed on effectively to consumers so that the nature of consumption changes. There is ample evidence of substantial energy efficiency potential and alternative ways of behavior at consumer level that can be assisted by a price signal.

However, it is equally important to contain the cost for consumers to the real cost of reducing emissions and hence preventing the consumer from financing the potential windfall profits that may occur under cap and trade type programs. It is a legitimate political aim to prevent excessive cost to be passed on to consumers and it is luckily possible to find ways of reducing those cost while maintaining an efficient incentive to reduce emissions. These ways may include tax reductions or other cash transfers or it may be achieved through various forms of allowance allocations. In an auction based cap and trade program, government could return some of the auction revenue to the consumers, whilst in a system based on free allocation of allowances a certain share of the allowances can be set aside to consumer groups.

However it is also possible to design a consumer refund program in a way that jeopardizes the efficiency of the cap and trade system. This happens if money or allocations are returned to the consumers in some proportion to the emissions they cause. This will effectively reduce the incentive to reduce the emissions and the cap and trade program will automatically seek out reductions in other sectors which typically come at a higher cost of compliance and hence increase the carbon price.

Efficiency of Allocation Provisions in Waxman Markey

Within Waxman Markey emissions allowances are allocated to numerous groups impacted by the climate bill. For the purpose of analyzing the environmental efficiency of the bill, we will discuss allocations that reduce the effectiveness of the bill. The allocations that we will discuss, impact the bill's effectiveness by distorting investment incentives of the cap and trade program, or changing the behavior responses that would otherwise be caused by the bill. Within the allowance allocation section, allowances are provided for electric Local Distribution Companies (LDC's), merchant coal generators, long-term contract generators, cogeneration facilities, trade vulnerable industries, refineries, natural gas LDC's, carbon capture and storage, energy efficiency programs, and early compliance actors. The main allocated segments that will be discussed are electric LDC's, coal generators, trade vulnerable industries, refineries, small LDC's, and general early actors.

1. Electricity Local Distribution Companies (LDC's)

   The single largest group receiving allowance allocations is the group of LDC's. Electricity LDC's are granted roughly 40% of allowances in 2012 ($23.2 B), decreasing to 0% by 2030. These allowances are divided among the existing LDC's by equally factoring the LDC's base year emissions for electricity sold, and number of customers served in the base year. The base year is a 3 year period from 1999 and 2008, or 2012 for an LDC that acquires or purchases power from a new coal unit after the base year. A provision of the bill prohibits the EPA from granting allowances in excess of the LDC's cost increases due to cap and trade program. Additionally, the allowances are to be used exclusively for consumer benefit or reduction of customer bill increases.

   The provisions specifying the allocation formula for LDC's interfere with the cap and trade program in two ways, by muting the incentive for consumers to change consumption behavior, and by providing incentives for LDC's to game the system in order to get a higher baseline rating.

   The main intention of the allocations to LDCs is to limit utility bill increases to consumers due to the cap and trade program. While the bill does specify that any reductions should be made towards the fixed cost portion of the bill, so consumers would still respond to the variable cost portion of their bill, this will still result in reduced incentive for consumers to reduce consumption since consumers do not readily differentiate between fixed and variable cost portion. Thus by returning money to consumers through bill rebates, the program directly interferes with customer efforts to reduce consumption, which is one of the core mechanisms for reducing emissions under a cap and trade program. This approach also would require the involvement and possibly disparate implementation rules of some 50 state utility regulators. An alternative approach could be for government to auction this proportion of the allowances and return proceeds through a cash refund mechanism or tax cuts.

In terms of the LDC base year, under normal circumstances the LDC's must choose a 3 year period from 1999 through 2008 as their base year period. However, the base year choice has an exception, which could increase emissions and allow LDC's to game the allocation system. Under the LDC allocations, an LDC's base year is changed from a 3 year period in the past to 2012 if the LDC purchases or buys electricity from a new coal facility. Under such a program, an LDC could deliberately inflate the emissions from the electricity sources in 2012 and then purchase a coal facility or enter a long term power purchase agreement in order to maximize their emissions allocation. This would result in a direct increase in emissions in 2012, and would also increase the demand for new coal power facilities. To avoid manipulation all baseline years should be in the past.

Baseline adjustments due to a new coal facility should account for the emissions from the new facility alone, and not for the emissions footprint of an entire LDC. These coal facilities would still be subject to a performance standard which we discuss below.

One additional consideration is the allocation to small LDC's, which receive an extra allowance allocation under the provisions of the bill. The amounts allocated to LDC's are relatively small, so they are not significant on the larger scale. However, the allocations to small LDC's are made solely on the basis of emissions, which means they are provided to those small LDC's with a disproportionately emissions intensive electricity supply.

Under the LDC allocation:

- Customer behavior changes are directly counteracted by customer rebates on utility bills. Customer rebates are acceptable for limiting political fallout, but the rebates should be detached from power consumption in order to maintain conservation incentives. One commonly suggested alternative is to provide rebates on taxes.
- As a general observation, rules for allocation of free allowance should be designed in such a way that they do not create incentives to increase emissions. All baseline years should hence be in the past to avoid gaming and manipulation. By providing a mechanism to move an LDC's baseline year to 2012, the program could result in an increase of 2012 emissions and incentivize extra coal generation. The existing baseline provision overly incentivizes coal facilities. If any provisions are made for new facilities, the adjustment should be based solely on the portion of emissions attributable to the new facility.

2. Coal Power Plants

Traditional coal power facilities are eligible for incentives as merchant power generators, or indirectly through the electric LDC allocation. Additionally, coal facilities that employ carbon capture and storage are eligible for significant incentives which ramp up over time.

Under merchant coal provisions, a maximum of $2.6 B worth of allowances are allocated to existing merchant generators in 2012. These allocations are restricted by several details which serve to limit the incentive to merchant coal generators. First, to be eligible for such allocations the facility must begin operation prior to 2014. Secondly, eligible facilities receive their allocations based on an emissions formula specified within the bill. Eligible facilities receive a quantity of emissions allowances equal to (their emissions in the baseline year) times (0.5) times (a ramping factor which ranges from 1 to 0). This means in 2012 when the ramping factor is equal to 1, the merchant coal facilities receive at best half of the allowances required to cover their obligations. However, in 2013 the ramping factor is reduced from 1 down to 0.43. This means that at best merchant coal generators will only receive 21.5% of their required compliance obligation in 2013. This quantity then reduces on an annual basis until the allocations cease in 2030.

Based on this allocation scheme, we can conclude that:

- Conventional coal facilities built after 2014 would not receive any allowance allocation.
- Facilities that cease operations lose their allocation in the following year. This would serve as a disincentive to retirement, even though the free allocations only cover half of their emissions. This would make it economical to keep coal plant operating longer than in a system with no free allocations.
- The electricity LDC provisions could encourage LDC's to support merchant coal facilities beyond 2014.

Another consideration for coal power facilities is the introduction of emissions performance standards which mandate either 50% or 65% reduction in GHG emissions depending on the date of construction. These performance standards apply to all coal facilities constructed after 1/1/2009 after a trigger provision is met. The trigger provision is 4 years after 4 GW of CCS capacity is installed in the US. If the trigger is not met then the performance standard is implemented on 7/1/2026. While this flexible provision may be seen as lenient on industry, it introduces a large amount of uncertainty into the financial payback calculations for all coal facilities constructed after 2009. The industry's response under such uncertainty is unclear, but could evolve in either of the following two scenarios.

- This provision could cause the industry to avoid construction of any new coal generation capacity. While seemingly helpful environmentally, this would also incentivize the continued operation of existing coal assets, an effect that would be further exacerbated by the nature of the free allocations. Under this strategy the industry would stall to push the performance requirement to as late as possible.
- An alternative approach would be for the industry to fund the construction of CCS "capable" facilities that do not actually capture the carbon. Again, under this

scenario the strategy would be to push the compliance deadline further into the future.

The last type of allocations to consider for coal facilities is the allocation to incentivize Carbon Capture and Storage (CCS). CCS is allocated 1.75 % of available allowances from 2014 through 2017, 4.75% of available allowances in 2018 and 2019, and 5 % of available allowances from 2020 through 2050. Depending on the first year of operation, and the existing stock of CCS facilities, a CCS plant receives a varying rate of subsidy from allowance allocations. These CCS facilities may only receive allowances for the first 10 years of operation. This subsidy amounts to roughly $ 65 B 2014 through 2030.

- This provision provides a strong incentive towards CCS investments.

- Collectively, the proposed system of free allocations and incentives in Waxman Markey advantages coal plants with CCS and renewable based power over power plants based on natural gas and nuclear energy

3. Trade Vulnerable Industries (TVI) and Refineries

   In 2014 both TVI's and refineries are allocated 15% and 2% of available allowances respectively. Under the existing bill, the formulas for granting the allocations are undefined and are to be developed by the administrator of the EPA. Given the limited specificity in the bill, we cannot point to any shortcomings in a to be defined section. However, in order to maximize environmental performance and reward cleaner production, such allocations should be based on productive output rather than historical emissions.

   - The allocation formula should be made to reward efficient production.

4. Early Entrants

   The allocation formula provides 0.25% of 2012 allowances to early actors, or regulated facilities that reduced their emissions prior to the passage of Waxman Markey. These allowances are allocated to eligible facilities based on their amount early reductions. These reductions need to have occurred between 2001 and 2009.

   - Restricting eligible reductions to pre 2009 reductions, limits incentives for facilities to invest in reductions prior to the implementation of a cap. The specific impact depends on the type of regulated facility, and the baseline year if any considered for allocations. Extending the early action eligibility to 2011 could incentivize further investment in emission reductions.

5. Natural Gas LDC's:

Natural Gas LDC's are allocated 9% of the available allowances beginning in 2016 through 2025. In 2026 this percentage begins to decline, with allocations ceasing in 2030. The allowances are to be distributed for the benefit of the ratepayers. The allocation formula specifies that the available allowances will be distributed to LDC's proportionally based on their share of average gas deliveries to non-covered entities. The distribution is restricted to use for ratepayer benefits, must be allocated equitably to the ratepayers, and should only discount the fixed portion of the bill. Additionally, 1/3 of the allowances are to be used for energy efficiency programs.

- Similar to the electricity LDC case, offering rebates on utility bills interferes with the consumer incentive for conservation. Any rebates should be separated from the utility bill and offered to consumers directly.