Maryland Climate Action Plan

Appendix F

Stakeholder Letters

Severstal Sparrows Point

Redland Brick

Comments for ES-3 Cap-and-Trade

1. *"The MWG supports continued active involvement in RGGI and encourages consideration of the expansion of RGGI to sectors beyond the power sector if the federal government fails to enact a credible national cap and trade program in 2009. For the purpose of this recommendation a credible national cap and trade program must require at least a 20% reduction from current emission levels for covered sectors by 2020."*

National cap and trade programs must be given precedence to achieve competitive balance for manufacturers in Maryland. As currently stated, this draft policy option supports additional cap and trade requirements that would be imposed in Maryland above and beyond a national program. Effects of this policy will encourage manufacturers to leave the state and result in loss of manufacturing employment.

2. *"Maryland should advocate for expansion of RGGI to as many sources as practical, including major industrial emitters, the transportation sector, and the buildings sector (particularly state and university new buildings)."*

Expansion of RGGI cap and trade programs to other sources that include major industrial emitters must be combined with the development of technologies that could be put in place to achieve reductions. Without the availability of reduction technologies, the effect of this expansion of RGGI will reduce manufacturing production and competitiveness of manufacturers in Maryland.

3. *"Major industrial emissions should be regulated at the point of emissions, ..."*

Regulation that is restricted to the point of emissions does not afford manufacturers the ability to achieve reductions in GHG emissions that would be achieved by energy efficiency and renewable energy programs. These types of programs would reduce purchased energy requirements or indirect emissions only. Manufacturers that complete capital expenditures to reduce energy consumption in support of climate action initiatives must have a reporting mechanism.

4. *"Emissions projections data come from: 1) CCS inventory..."*

The current CCS inventory does not accurately reflect GHG emissions from manufacturing and industries in Maryland. Cap and trade programs developed from this inventory will not provide an acceptable cap and reduction projections for economically successful manufacturing in Maryland.

ES-3 Cap-and-Trade

Policy Description

Use of competitive forces within a cap and trade regime will provide the incentives for economic investment and efficient technological innovations necessary to achieve the desired environmental improvements. Under a GHG emissions trading program, the regulatory agency sets a maximum limit or *cap* on the total amount of emissions (in tons) of greenhouse gases (e.g., CO_2 or CO_2 equivalent for other covered gasses). The *cap* limits emissions from all covered facilities in a specific sector (e.g., electric generation). The program generally requires that the *cap* will be reduced over a period of years to achieve emission reduction targets.

The regulatory agency implements an emissions trading program by creating and distributing a specific number of *allowances* for use by regulated entities. An *allowance* represents an authorization to emit a specific amount of a pollutant (generally measured in tons) during a particular *compliance period*. The total amount of *allowances* cannot exceed the *cap*, thereby limiting total emissions.

At the end of each compliance period, each regulated entity must demonstrate that it possessed sufficient allowances to cover all emissions of the capped pollutant. If an entity releases emissions (for a particular compliance period) in excess of the allowances it holds, it can meet the program requirements by buying additional allowances from entities that have excess allowances due to reduced emissions. This exchange of allowances is called a *trade*. In effect, the seller of the allowances is rewarded for reducing its pollution below its number of allowances and the buyer of the allowances must pay a premium for releasing emissions in excess of its allocated level.

Through trading, participants with lower costs of compliance can choose to over-comply and sell their additional reductions to participants for whom compliance costs are higher. In this fashion, overall costs of compliance are lower than they would otherwise be. Programs that sell or auction allowances, as opposed to distributing them freely, rely less upon trading since the entity that over-complies with expected emissions reductions will avoid the cost of purchasing the allowances in the first place. The entity that requires additional allowances can purchase them at auction or from a secondary market. The compliance obligation for the cap-and-trade program can be imposed "upstream" (at the fuel extraction or import level) or "downstream" at points of fuel consumption or points of emissions.

One key policy issue in designing a cap-and-trade program relates to the treatment of energy efficiency and renewable energy (EERE). Unless a cap-and-trade program is well-designed, it will not assure the maximum achievable GHG reductions from renewable energy and energy efficiency projects.

There are several policy options available to assure that EERE development results in overall CO2 emission reductions under a GHG emissions trading program. For example, Maryland could adopt a key optional section of the model rule issued by the Regional Greenhouse Gas

Initiative (RGGI). This optional section authorizes States to retire allowances on behalf of voluntary purchases of renewable energy. However, if EERE programs and projects are not accounted for under the cap (through the retirement of allowances or in setting the level of the cap) in any future GHG emissions trading program that might be established in Maryland, then they will not affect the overall level of CO_2 emissions.

Among the other important considerations in designing a cap and trade program are: The geographic scope, the sources and sectors to which it would apply; the baselines for these sources and sectors; the level and timing of the cap; and what, if any offsets, would be allowed. Other issues to consider include which greenhouse gases are covered; whether there is linkage to other trading programs; banking and borrowing of allowances, and early reduction credit.

Maryland is already a partner in the Regional Greenhouse Gas Initiative, a cap-and-trade program for large electric power plants. As a result, nearly all of the questions regarding the program design and implementation have been resolved through the RGGI process. The MWG supports continued active involvement in RGGI and encourages consideration of the expansion of RGGI to sectors beyond the power sector if the federal government fails to enact a credible national cap and trade program in 2009. For the purpose of this recommendation a credible national program must require at least a 20% reduction from current emission levels for covered sectors by 2020. (1)

Policy Design

- **Goals:** Caps for electric power plants should match the RGGI goals, which are 2005 emissions starting in 2009 through 2014, followed by a 10 percent reduction through 2019. Other sectors could be included if RGGI were to expand by sector. If this were to happen the resulting reductions should contribute to the State goal, which is anticipated to be 25% below 2006 emissions by 2020 and 90% below 2006 emissions by 2050. These caps should be revisited periodically to reflect current scientific understanding of climate change.
- **Timing:** The state should meet the timing requirements set by RGGI for electric power plants, specifically the adoption of Maryland's RGGI Rule in sufficient time to allow a January 1, 2009 program start. Non-RGGI sectors should be studied for potential inclusion in RGGI and pursue complementary policies and measures in order to meet the state goal.
- **Parties Involved:** As a member of RGGI, Maryland must coordinate with the other members on matters involving the electric power sector. The MWG believes that a credible national cap and trade program is preferable to regional efforts like RGGI, and as stated above encourages enactment of such a program by Congress before the end of 2009. However, in the event that this does not happen and the RGGI members seek expansion of the program to include other sectors, Maryland should design its program to blend into the expanded regional effort. Maryland should advocate for expansion of RGGI to as many sources as practical, including major industrial emitters, the transportation sector, and the buildings sector (particularly state and university new buildings). (2) Inclusion of those sectors that are easier to regulate can begin prior to more complicated sectors.
- **Other:** For offsets that are a part of the cap-and-trade system, care should be taken that local jurisdictions can apply for offsets for qualifying programs which they create.

  Linkages to external comparable programs should be explored. The state should strongly

advocate links to other regional or national programs of equal strength and effectiveness.

Implementation Mechanisms

There are three key implementation mechanisms. The first concerns the designation of the entity responsible for acquiring and surrendering allowances for emissions, or "point of regulation". In some sectors, such as major industrial emissions, this is simply the in-state entity operating the facility from which the emissions are released.

RGGI has adopted a production-based (smokestack) system for the electrical power sector but is considering modifying this approach to incorporate greater consideration of load-based (consumer) emissions. The Western Climate Initiative states are considering a more load-based approach.

If RGGI were to expand to include additional sectors there will likely be a need to vary the "point of regulation" depending on the sector. There are many pros and cons to each approach which should be comprehensively fleshed out in the program development phase.

The transportation sector offers a challenge because a program requiring the surrender of allowances from the end users of motor fuels would be complex and is generally thought to be unworkable. Therefore, transportation sector emissions should be regulated upstream, focusing on the entity that imports or distributes the petroleum in the state.

Natural gas also should be regulated upstream, again focusing on the entity that imports the natural gas into the state. Major industrial emissions should be regulated at the point of emissions, except to the extent emissions are associated with natural gas and petroleum that has already been regulated upstream. Emissions of certain high global-warming potential gases may also be regulated upstream of their usage (e.g. at the distribution level) if more practical. (3)

Allowances may be distributed by auction or given free-of-charge to covered entities. The State of Maryland has decided to auction 100% of its RGGI allowances. Maryland may want to consider a different allowance distribution approach for new sectors if and when they are added.

The second key implementation mechanism concerns offsets. Offsets are out-of-sector emissions reductions or carbon sequestration projects that are recognized by the program as qualifying for allowance credit. By definition, offsets must be measures that are not required by the program, and they cannot be required by any emissions reduction program in most cases. They provide an incentive for low-cost investments in emissions reductions as an alternative to higher-cost in-sector reductions or allowance purchases. Offsets should be subject to stringent standards to ensure their environmental integrity, and should be limited to ensure that the overwhelming majority of emission reductions come from covered sectors. Any offsets allowed under the program should be real, verifiable, surplus, permanent, and enforceable.

Related Policies/Programs in Place

A Carbon Tax (ES-9) is seen as a complementary policy, applying to sectors not covered by the cap and trade.

Types(s) of GHG Reductions

All 6 statutory GHGs (CO_2, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and

sulfur hexafluoride)

Estimated GHG Reductions and Net Costs or Cost Savings

Model scenarios for the Cap and Trade policy are limited to the ten RGGI states and the power sector. Runs were performed assuming two initial allowance allocation strategies: (1) all allowances are freely given to regulated sources and (2) all allowances are auctioned. Due to the nature of some state emission caps and the state allowance budgets in 2020, allowance prices could not be projected to the exact dollar level. Instead, multiple runs were conducted assuming prices ranging from $1 to $7 per tCO2. Given that Maryland has decided to auction all allowances, only those results are presented here. Results from the free distribution model are given in the Annex to this report. In the auction case with a hypothetical allowance price of $7/tCO2, each state would utilize all its mitigation potential with a marginal cost less than $7/tCO2 before purchasing allowances from the auctioneer. As a result, the total emission reductions achieved by the 10 states in this case are 41.50 MMtCO2. Although considerable amounts of un-used mitigation potentials of some states such as MD and MA in the free granting case are associated with cost savings, the total cost savings of mitigation in the auction case (2.53 billion) are even higher than the total mitigation cost savings in the free granting case (1.94 billion). In addition, in the auction case, many states would reduce more emissions than required by the state mitigation target. The reason is that there is a penalty for each unit of CO2 emitted even if it is below the cap—this is the price of an auctioned permit that is required to emit. The additional reductions achieved by these states can, however, be saved for future use.

Comparing the two auction prices of $7 and $1, the amount the states choose to reduce by mitigation options (41.50 MMtCO2 vs. 39.62 MMtCO2, respectively) and the amount to be bought from the auctioneer (134.79 MMtCO2 vs. 136.68 MMtCO2, respectively) differ slightly. The trend is that the higher the auction price, the more the states choose to mitigate on their own and the less they buy from the auctioneer. The big difference of these two cases is the total auction cost. And this difference is primarily due to the difference in the two auction price levels.

At an assumed allowance price of $7 per ton in 2020, regulated sources within Maryland can expect to mitigate 16.66 $MMtCO_2e$ at a total cost savings of $604 million. In addition, they will purchase 22.17 million allowances (1 allowance mitigates 1 ton of CO_2) at a total cost of $155 million. The net savings is therefore $449 million. The expected cost savings from mitigation without the cap and trade would be approximately $408 million (assuming Maryland would only comply to the state cap set by RGGI—17.9% reduction of 2020 BAU-- and would not pursue further mitigation even though there are additional cost saving potentials), yielding a net cap and trade program savings to Maryland of $41 million in 2020. This does not include any savings that might be realized through the expenditure or application of auction revenues ($155 million). The cost-effectiveness of the auction-based C&T is computed in two alternative ways. The first way is to compute the cost-effectiveness by dividing the total net cost (mitigation cost plus auction cost) by all the emission reductions undertaken by MD under the C&T. The second way is to divide the total net cost by just the capped level of CO2e reductions. The former yields a cost-effectiveness of -$26.9/tCO2e and the latter yields a cost-effectiveness of -$36.4/tCO2e. Please note the second way of computation would reduce some of the double counting of benefits with other policy options.

At an assumed allowance price of $1 per ton in 2020, regulated sources within Maryland can expect to mitigate 15.7 $MMtCO_2e$ at a total cost savings of $608 million. In addition, they will purchase 23 million allowances (1 allowance mitigates 1 ton of CO_2) at a total cost of $23 million. The net savings is therefore $585 million. Compared with the expected cost savings from mitigation without the cap and trade ($408 million), the net cap and trade program savings to Maryland is $177 million in 2020. Again, this does not include any savings that might be realized through the expenditure or application of auction revenues ($23 million).

The cost associated with the auction of allowances is assumed to be fully passed on to consumers. Under Maryland's deregulated environment, some portion of the cost may in fact be borne by the owners and shareholders of these facilities. Any portion of the allowance cost that is not passed along to consumers would represent additional savings in the cost/ton column.

Finally, no assumption is made concerning indirect impacts through the broader economy of costs or savings resulting from this policy.

Data Sources:

Emission projections data come from: 1) CCS inventory and forecast studies of respective states, or 2) publicly available data from EIA *Annual Energy Outlook 2007* for states lacking detailed bottom up assessments.

Reduction potentials and cost-effectiveness data of mitigation options for the states are used to develop the cost curves. The data sources are:

1) Connecticut Governor's Steering Committee on Climate Change. 2005. *2005 CT Climate Change Action Plan.* http://www.ctclimatechange.com/StateActionPlan.html.

2) Maryland Commission on Climate Change. 2008. *Draft Straw Proposals of Policy Options.* http://www.mdclimatechange.us/GHG_Carbon_Mitigation_WG.cfm.

3) Maine Department of Environmental Protection. 2004. *Final Maine Climate Action Plan 2004.* http://www.maine.gov/dep/air/greenhouse/.

4) Center for Clean Air Policy and New York GHG Task Force. 2003. *Recommendations to Governor Pataki for Reducing New York State Greenhouse Gas Emissions.* http://www.ccap.org/pdf/04-2003_NYGHG_Recommendations.pdf

5) Rhode Island Greenhouse Gas Process. 2002. *Rhode Island Greenhouse Gas Action Plan.* http://righg.raabassociates.org/.

6) Vermont Governor's Commission on Climate Change. 2007. *Final Report and Recommendations of the Governor's Commission on Climate Change.* http://www.anr.state.vt.us/air/Planning/htm/ClimateChange.htm.

There are no direct mitigation options data for MA, NJ, NH, and DE. Marginal cost curves for these four states are developed based on cost curves of RI, NY, CT, and MD, respectively.

Quantification Methods:

In this study, a non-linear programming model of emission allowance trading is used. This model is based on the well established principles of the ability of unrestricted permit trading to achieve a cost-effective allocation of resources in the presence of externalities.[1] The model requires equalization of marginal cost of all trading participants with the equilibrium permit price. This ensures minimization of total net compliance costs for each state and minimization of total abatement costs for the cap-and-trade program as a whole.[2]

The marginal cost curves of the states are developed based on the reduction potential and mitigation cost/saving data of individual options that contribute to the emission reductions from power sector. These options not only include those designed directly for the electricity supply sector (such as promotion of renewable energy utilization, repowering existing plants, generation performance standards, etc.), but also include options in RCI sectors that contribute to the reduction of electricity consumption (e.g., demand-side management, energy efficiency appliances, building codes, etc.). The emission reduction potentials of these options are adjusted by multiplying the percentage of electricity consumption to total energy consumption in the RCI sector. RCI options that relate entirely to reduction of other fossil fuels consumption (such as gas, oil) are not included in the cost curves.

Key Assumptions:

The purpose of the simulations is to illustrate the economic impacts of the RGGI cap and trade program to Maryland under particular design scenarios.

All emissions considered are production-based and are gross emissions (excluding sinks).

The economic modeling conducted in this study helps to analyze the potential GHG reductions and associated cost for Maryland under several scenarios of different design configurations using the following variables: allocation methods (auctioning vs. free granting of permits), hypothetical allowance prices (at the range of $1 to $7 per tCO2).

A full list of assumptions adopted in the simulation model is presented in the Appendix.

Key Uncertainties

Market prices are bound to fluctuate and allowance price spikes and crashes are not uncommon in new programs as the market gains experience. RGGI has incorporated a number of design features to mitigate these tendencies but only actual experience after allowances are offered for sale will prove the point. Emission reductions result when the supply of allowances is less than

[1] See, for example, T. Tietenberg, 1985. *Emissions Trading: An Exercise in Reforming Pollution Policy,* Washington, DC, Resources for the Future.

[2] See, for example, B. Stevens, and A. Rose, 2002. "A dynamic analysis of the marketable permits approach to global warming policy: A comparison of spatial and temporal flexibility," *Journal of Environmental Economics & Management* 44(1):45–69; A. Rose, T. Peterson, and Z. Zhang, 2006. "Regional Carbon Dioxide Permit Trading in the United States: Coalition Choices for Pennsylvania," *Penn State Environmental Law Review* 14(2):203–229.

the unconstrained level of emissions. The RGGI cap was set several years ago and the precise quantity to force reduced emissions may not be found until the program has operated for one compliance period.

Additional Benefits and Costs

Additional benefits include the apparent effect on regulated entities that the anticipation of the program is already encouraging decisions resulting in reduced emissions, even before the program starts. The successful launch of a regional Cap and Trade program to limit GHG emissions will have an effect on policy makers in non-RGGI states and in Washington, D.C.

Feasibility Issues

Feasibility issues have been exhaustively studied through the RGGI development and design phases and have been resolved to the satisfaction of the ten member states. Some questions remain, especially within the context of expansion of the program to additional sectors. The feasibility of extending the Cap and Trade to stationary sources similar to power plants has been tested in the U.S. (SO2, NOx), Europe and elsewhere. Application of the approach to some other sectors remains untested and therefore should continue to be studied carefully before implementation.

Status of Group Approval

(to be completed at a future stage)

Level of Group Support

(to be completed at a future stage)

Barriers to Consensus

(to be completed at a future stage)

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June 9, 2008

Mr. Tad Aburn
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore, MD 21230

Redland BRICK
An ISO 9001:2000 Registered Quality System

Re: Greenhouse Gas and Carbon Footprint Reduction Strategy

Dear Tad:

On behalf of Redland Brick Inc., I would like to thank you for inviting me to the meeting on May 29th. We are quite interested in taking part in any subsequent meetings and will appreciate your invitation.

As you know, we have serious concerns about the potential of any legislation related to Greenhouse Gas and Global Warming. What if the models used by the experts to predict Global Warming are wrong? What happens to all of the companies who were negatively affected by legislation that was passed based on false precepts? How will the state rectify things for employees who lost their jobs as a result of their company going out of business? We do recognize that the issue of Global Warming is in vogue and we respect that so our interest is in finding a way to address it that will allow us to survive and hopefully grow as a business.

The manufacturing process of making brick has been unchanged for thousands of years. Only the technology that we work with has improved. We still must quarry and prepare our material, form the brick, dry them, fire them, package them, and ship them. At the end, firing anything creates CO2 emissions, we cannot change that. And currently, there is no technology available in the world today to control CO2 emissions from a brick kiln. But we are firing our kilns with natural gas, the cleanest burning fuel available, and we have invested heavily in fuel efficient kilns. At our Rocky Ridge Plant we reduced our energy consumption from 1500 BTU to 900 BTU's per thousand brick fired.

As I read through Chapter Four, I was surprised at how many recommendations that are going to be made that are consistent with things we have already done. We are in favor of energy efficiency and recycling. Below I have listed just a few of the positive environmental practices we have adopted. We have done a few things as a result of regulation but most of the environmental practices listed below we have done as a matter of survival. I welcome you to come to our plants and see what we have done first hand.

Our list is as follows:

1. All scrap clay in the manufacturing process is recycled back through the manufacturing process. Scrapped, fired brick are used to make quarry roads, used as check dams to slow stormwater runoff, or are chipped and resold.

2. We reclaim areas where we are finished quarrying, generally small sections at a time and the land reverts to the same use as before mining- this amounts to over 1,000 acres of open space and farming. We fertilize the land for planting with processed sewage sludge. If we go out of business this acreage will become housing developments.
3. We have planted over 30,000 tree seedlings during my employment at Redland Brick. The trees planted earliest are now over 30 feet tall.
4. We have maintained the riparian buffer along all streams and waterways at all locations. Our election to do this even caused our engineers to redesign the location of a new plant we built in Pittsburgh.
5. We have a scrubber on the kiln at one Maryland plant that controls our emissions of hydrogen fluoride and hydrogen chloride and will likely install a scrubber on the other plant in a few years depending on new federal regulations currently in development. The spent reagent in the scrubber is lime and it is recycled. We give it to a local farmer to use as lime on his farm.
6. Scrap metal from worn parts is recycled.
7. We have researched the possibility of using methane from landfills for firing our kilns but it is not feasible at our MD locations at present. We are currently looking at wind power and solar power to offset our consumption of electricity.
8. Our brick molds are washed with self contained systems, preventing sediment from entering the local waterways. The water is recycled. Sediment cleaned from the mold wash tanks is used as a backfill in our quarries prior to reclamation or recycled to manufacture brick.

In addition, the use of our product will help Maryland achieve one of the key goals in this report- energy efficient buildings. Secondly, the purchase of brick from our two MD plants will help MD achieve a second goal of minimizing vehicle emissions with the purchase of local products. We own the only two brick plants in MD.

We believe we can stand tall with our record and should be considered a leading, environmentally conscious business. At the same time we are concerned that the practices we have adopted could be a detriment to us if legislation is adopted. So regarding Chapter Four, we have the following comments, questions, and requests:

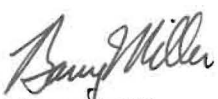
1. Where is Chapter One through Three? We might have additional comments after reading these or our opinions may change.
2. We need to see the statistical data in the report that is missing as this information may change our opinions. We still question if MD can meet their goals by focusing on the power plants and transportation alone.
3. We believe the report should focus on setting improvement goals based on industry benchmarking and the availability of technology that promotes energy efficiency. Goals set otherwise can be viewed as a disincentive for those who have already been environmentally conscious.
4. Revise P.34- Tax incentives and low interest loans should be extended to all MD manufacturers (not just the power plants) for R & D projects for reduced energy consumption (particularly wind and solar power as well as alternative but clean burning fuels). In addition, MD should simplify, streamline, and expedite the

permitting process to implement these items when they are proven as a legitimate option. Please consider revising this section.

5. On page 35, a revision is needed. MD manufacturers that provide product in MD for energy efficiency or otherwise meeting these goals should be allowed to reduce any potential cap and trade taxes by the dollar amount of product they supply in MD annually, on a dollar for dollar amount. Please consider making this recommendation.
6. On page 35, (cont.) MD manufacturers as in 5 above should be encouraged to grow their businesses via state grants and low interest loans, in recognition of the service they are providing the state i.e. meeting the goals for energy efficient buildings. Note: I can see no mention of business growth anywhere in this report. Please consider a means to address business growth particularly for the manufacturing sector.
7. References to ethanol should be removed from this report. Ethanol has proven to burn with greater emissions than petroleum products, uses more energy to produce than gas and the use of corn in ethanol production has contributed to increased food costs. Environmentalists have accepted this fact and this report should as well.
8. On page 47, under RCI-3, the revolving loans should apply to structural efficiency upgrades as well as appliances as we have been developing a product as a retrofit that may provide improved energy efficiency.
9. Low interest loans should apply to new home construction providing that home construction will be energy efficient.

Please give consideration to the changes I have suggested. I am interested in knowing if you will make these changes and would appreciate your response.

Sincerely,



Barry Miller

cc. Joseph L. Miles, President/CEO