Solomon Associates

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March 16, 2007

U.S. House of Representatives
Committee on Energy and Commerce
Washington, DC 20515-6115

Re: Response to Question 2.d in Industry Questionnaire on Climate Change Legislation

Dear Sirs,

As an individual member of an industry organization, HSB Solomon Associates LLC (Solomon) is electing to respond to the recent questionnaire sent to various U.S. industry organizations concerning issues related to potential U.S. climate change legislation. Specifically, Solomon is responding to Question 2.d regarding methodologies for allocating greenhouse gas (GHG) allowances to U.S. industries (refer to attached document).

Solomon has benchmarked the operational performance of the global energy industry for more than 25 years, with particular focus on the petroleum refining, petrochemicals, pipeline, and power industries. Solomon has a strong energy market presence, exhibited by more than 85% of the worldwide refinery capacity and approximately 70% of the worldwide steam cracking (olefin) capacity participating in our global benchmarking studies.

Solomon has global experience in GHG allocation methodologies, including our work with a number of countries/governments/industry organizations in addressing allocation issues over the past few years:

1. The United Kingdom's Department of Trade and Industries (DTI) retained Solomon to determine allowances for any new refining entrants for Phase II of the European Union's (EU) Emissions Trading Scheme (ETS). We have already completed this work for the first new entrant and are in the process of working with a second new entrant to establish the basis for allowances.
2. We are in the initial phases of discussions with the refining industry in California to evaluate and propose potential methodologies for allocating allowances in response to the California Climate Change Act of 2006 (AB32).
3. Solomon's methodologies for energy efficiency have been adopted by several countries—The Netherlands, Belgium, and New Zealand—as proxies for GHG, using our metrics and methodologies in target setting and managing GHG reduction programs with some application to allowance allocation in these countries.
4. We are participating in on-going discussions with the European Petroleum Industries Association (EUROPIA) and the Conservation of Clean Air and Water in Europe (CONCAWE) concerning the potential use of benchmarking in allocations for the petroleum refining industry.

5. We have worked with the Canadian Petroleum Products Institute (CPPI) to define an allocation system for the Large Final Emitters (LFE) groups, specifically focused on the Canadian Refining Industry using our benchmarking methodologies for refinery complexity.
6. Our energy efficiency metrics are also used by the U.S. Environmental Protection Agency (U.S. EPA) for the U.S. EPA's newly developed and recently launched ENERGY STAR program for U.S. refineries to help encourage reduction in energy consumption and GHG emissions through improved energy efficiency.
7. The American Petroleum Institute (API) has adopted our energy efficiency metrics as a proxy for GHG for use in driving emission reductions in the U.S. refining industry in support of the Bush Administration's voluntary GHG emissions reduction program.

Solomon's attached response to Question 2.d outlines our opinion in regard to the selection of appropriate allocation methodologies to ensure the equitable distribution of GHG allowances. It is our belief that the use of benchmarking methodologies for energy-intensive industries is the best alternative. Our response also highlights some of the pitfalls of grandfathering as a potential allocation methodology.

We appreciate this opportunity to provide our comments in regard to the relevant issues associated with potential climate change legislation for U.S. industries.

Best regards,

Greg Barats
President

Solomon Associates
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Response to Question 2.d on Greenhouse Gas Allocation Methodology

U.S. House of Representatives

Committee on Energy and Commerce Regarding Potential Climate Change Legislation

March 16, 2007

Bill L. Trout, Global Climate Change Director

HSB Solomon Associates LLC (Solomon) believes that the allocation of greenhouse gas allowances to each U.S. industry sector and the individual manufacturing plants within each sector should be made on an equitable basis. Solomon proposes the following methodologies to accomplish this objective.

Industry Sector Allocations

The total number of allowances to be distributed to a particular U.S. industry sector could be based on a cap derived from a targeted percent reduction in emissions for an established baseline year (e.g., 2% below year 1990). Solomon suggests that the targeted percent reduction in emissions be the same for all industries participating in the cap and trade system to equitably share the burden of emission reductions.

Plant Level Allocations

Once the total cap is set for a particular industry sector, allowances should be allocated to individual manufacturing plants on an equitable basis. For industries where varying raw materials, technology, and complexity (manufacturing intensity) contribute only minor variations to the amount of emissions (tons), a simplistic allocation approach linked to the total volume of raw materials or production should provide a reasonable basis for allocations without introducing significant inequities.

However, a simplistic, “one size fits all” approach to allocation across all industry sectors, though appealing from an administrative perspective, can result in significant inequities, especially for energy-intensive industries (e.g., power, petroleum refining, petrochemicals, cement, fertilizer, steel, etc.) where emissions can vary significantly based on varying raw material quality, technology, and complexity. For example, a petroleum refinery can process a light/sweet crude oil to produce 100 thousand barrels per day of clean-burning gasoline/diesel and produce far less emissions per barrel of crude or per barrel of product as compared to a refinery that processes heavy/sour crude to produce the same volume of clean-burning motor fuels. Thus, it would not be equitable to allocate the same number of allowances to each of these two refineries. One of the refineries has invested in the necessary technology to process poor quality raw materials to meet consumer demand for refined products. The higher thermal energy consumption required for upgrading poor quality raw materials directly translates into higher total emissions. Therefore, to be equitable, a benchmarking approach for allocations that takes raw materials, technology, and complexity into account would be best.

Grandfathering, which attempts to award allowances based on historical actual emissions, directionally awards more allowances to plants with historically higher emissions. However, this method does not adequately address “why” a plant experienced higher emissions than others. While higher emissions may be due to processing poorer quality raw materials, it is often not the only contributing factor. Often, these variations are also driven by energy efficiency differences. Similarly constructed plants may have significantly different energy efficiency. Grandfathering does not recognize nor reward plants for being more energy efficient than others. In fact, grandfathering penalizes those plants that have invested in energy efficient technology and have instituted energy best practices by awarding them fewer allowances than a similarly complex plant that is less energy efficient. The plant with poorer energy efficiency is actually awarded more allowances on a grandfathering basis due to its having historically higher emissions.

Therefore, Solomon recommends that allowances be allocated to energy-intensive industries based on an appropriate benchmarking approach rather than grandfathering. To further this thought, Solomon also recommends that the benchmarking methodology used not be overly simplistic (e.g., tons of emissions per unit of input or output) since both of these measures fail to recognize or properly account for raw material quality, technology, and complexity differences. An appropriate benchmarking approach should take into account all of these variables. A recommended approach would be to utilize “expected” or

"standard" emissions as a basis for allocations. Standard emissions are determined from an individual plant's raw material quality, technology, and complexity, assuming industry-average energy efficiency performance. Higher levels of energy efficiency could be considered in the standard, but it typically does not impact the ultimate allocation of allowances across individual plants within an industry sector, as evident in the following methodology description.

Methodology

When developing an allocation methodology for energy-intensive manufacturing plants, Solomon proposes the following considerations:

- Standard emissions for individual plants are pooled (summed) for a complete industry sector (e.g., petroleum refining).
- Total allowances to be awarded an industry sector are allocated to individual plants based on each plant's percentage of the total pooled amount of standard emissions. Note that this percentage allocation methodology is not dependent on the base energy efficiency used in establishing the emissions standard. Using average industry or some higher level of efficiency yields the same allocations to individual plants.

Depending on the total industry sector's emissions cap, the most likely scenario is that all plants in an industry sector would receive fewer allowances than their actual emissions, thus requiring all plants to either purchase carbon credits or invest in emission-reduction projects to meet their caps. However, the more energy efficient plants would have to purchase fewer carbon credits and invest less to meet their caps than less energy efficient plants, due to allocations being based on standard emissions derived from industry average energy efficiency. The energy efficient plants are better than industry average in energy efficiency and, thus, generate fewer emissions relative to standard emissions. This approach, in essence, appropriately rewards such plants for their early actions to improve energy efficiency.

An appropriate methodology for assessing the standard emissions for individual plants within an industry sector can be developed based on actual industry performance data. Benchmarking methodologies suitable for allocation of allowances within the power, petroleum refining, and petrochemicals industries have already been developed by Solomon. These methodologies are fundamentally linked to all direct emissions sources within plants, including emissions that are combustion-related (burning fuel to meet thermal energy heating requirements) and manufacturing-related emissions (typically by-products resulting from the manufacturing processes). In these cases, sufficient industry data permits a high correlation between key emission influencing variables and actual emissions.

In Closing

Adopting an appropriate benchmarking methodology will eliminate all potential inequities associated with grandfathering and the use of simplistic metrics, leading to the equitable distribution of allowances and appropriate sharing of the cost burden associated with the emission reductions required to achieve compliance with industry sector emission caps.

Questions/Comments?

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